Adolescent decision making and risk behavior
by Dolores Jean Trombetta

A thesis submitted in partial fulfillment of the requirements for the degree of Master of Nursing
Montana State University
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Abstract:
Adolescents are a group primarily at risk of contracting HIV/AIDS due to their dangerous sexual activities. The period between HIV infection and clinical diagnosis of AIDS can be up to ten years. In Montana, the 20-29 year age group represents 24% of the total AIDS cases compared with a national rate of 19%. With the high rate of HIV among adolescents, there is an urgent need for interventions that will provide teenagers with information; decision making, communication, and assertiveness skills necessary to decrease risk and foster prevention.

Secondary data analysis was performed on the 1995 Montana Youth Risk Behavior Survey to determine relationships between sexual activity, demographic variables, education in the school setting and parental discussions of HIV/AIDS. Cluster analysis was applied to the variables in order to group similar entities. The three identified groups were characterized by differing number of sexual encounters, age, education about HIV/AIDS in school, discussion with parents regarding HIV/AIDS, and use of condoms or other birth control methods.

Interventions that increase knowledge about HIV/AIDS and influence decision making skills are effective in decreasing risk behavior among adolescents. Schools and health care providers are in the unique position to implement effective educational programs aimed at adolescents who have a variety of experiences and knowledge.

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of

Master of Nursing

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APPROVAL

of a thesis submitted by

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This thesis has been read by each member of the thesis committee and has been found to be satisfactory regarding content, English usage, format, citations, bibliographic style, and consistency, and is ready for submission to the College of Graduate Studies.

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Date April 7, 1996

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ABSTRACT

Adolescents are a group primarily at risk of contracting HIV/AIDS due to their dangerous sexual activities. The period between HIV infection and clinical diagnosis of AIDS can be up to ten years. In Montana, the 20-29 year age group represents 24% of the total AIDS cases compared with a national rate of 19%. With the high rate of HIV among adolescents, there is an urgent need for interventions that will provide teenagers with information; decision making, communication, and assertiveness skills necessary to decrease risk and foster prevention.

Secondary data analysis was performed on the 1995 Montana Youth Risk Behavior Survey to determine relationships between sexual activity, demographic variables, education in the school setting and parental discussions of HIV/AIDS. Cluster analysis was applied to the variables in order to group similar entities. The three identified groups were characterized by differing number of sexual encounters, age, education about HIV/AIDS in school, discussion with parents regarding HIV/AIDS, and use of condoms or other birth control methods.

Interventions that increase knowledge about HIV/AIDS and influence decision making skills are effective in decreasing risk behavior among adolescents. Schools and health care providers are in the unique position to implement effective educational programs aimed at adolescents who have a variety of experiences and knowledge.

Chapter 1

INTRODUCTION

Acquired immunodeficiency syndrome (AIDS) was first recognized in 1981 and has had a profound effect on every aspect of our society since then. In the United States today, one in 250 people is infected with the virus. As of November 1, 1995, the cumulative number of AIDS cases reported in the United States was 496,263 with 295,423 resulting deaths (Montana AIDS/STD Project, 1995). Among United States adolescents, aged 13-19 years, the reported number of AIDS cases has increased from one case in 1981 to 588 in 1993 and to 1,768 through June 1994 ("AIDS in Adolescence," 1995). In Montana there were 277 reported cases of AIDS, including two in the adolescent age group and 65 cases among adults aged of 20-29 (Montana AIDS/STD Project, 1995). Among those diagnosed with AIDS, the 20-29 year old age group accounts for one in four cases in Montana as compared to one in five throughout the United States (Montana Office of Public Instruction [OPI], 1995).

The average incubation period between infection with human immunodeficiency virus (HIV) and AIDS diagnosis is ten years. Therefore, it can be concluded that a large proportion of those in the 20 to 29 year age group with the diagnosis of AIDS contracted the disease as teenagers ("AIDS

in Adolescents", 1995; Fogiel, 1995; Facts About Adolescents & HIV/AIDS, 1994; Cohen, 1993). With no known cure or vaccine available, adolescents are at risk of contracting HIV because of their known sexual behaviors. Nationally, a 1992 study by the Centers for Disease Control (CDC) found that of adolescents between the ages of fourteen and seventeen, 43% have had sexual intercourse at least once and 13% reported having sex with four or more partners. Of the 43% of sexually active adolescents, 59% did not use a condom during their last encounter (CDC, 1994). The 1995 Montana Youth Risk Behavior Survey Report noted that among a sample of Montana ninth graders, 36% of males and 29% of females reported having sexual intercourse at least once, with the rate increasing to 62% among Montana's sampled high school seniors. Among the sexually active respondents, 46% did not use a condom during their last sexual intercourse. Further, 15% of Montana's youth claim to have had intercourse with four or more people in their lifetimes (Montana OPI, 1995).

Problem Statement

Many of Montana's teenagers are engaging in behaviors that may put them at risk of acquiring HIV infection. One-third of ninth graders having reported had sexual intercourse at least once and by the twelfth grade nearly two-thirds of high school students say they have had sexual intercourse. Only half of these reported the use of a

condom at their last experience and one-fourth acknowledged multiple sex partners. The number of sexual partners and age at first intercourse are associated with increased sexually transmitted diseases (Montana OPI, 1995).

Education is the best defense against the spread of HIV/AIDS and other sexually transmitted diseases. Educators are in a

> position to disseminate accurate information about AIDS, and, by presenting facts, to dispel much of the fear this disease has generated. Accurate AIDS information enables people to make informed decisions and to cope rationally with the many-faceted problems this fatal disease presents (Volberding, 1988).

Purpose

The purposes of this study were three-fold. The first purpose was to describe the current status of sexual activity among Montana's adolescents, specifically related to age, frequency of sexual intercourse, and condom use. The second purpose was to study whether being taught in school about HIV/AIDS related to adolescent sexual behavior. The third purpose was to study the relationship between adolescent sexual behavior and parental discussion of HIV/AIDS.

Background and Significance of Study

In a time where one in seven adolescents has contracted a sexually transmitted disease, safer sex behaviors aimed at reducing susceptibility to contracting the AIDS virus are

essential (Walters, 1992). The objectives of Healthy People 2000 (Public Health Service, 1991) include confining the prevalence of HIV, reducing the proportion of adolescents engaging in sexual intercourse, and increasing condom use and birth control among single adolescents. Adolescents as a group tend to be impulsive regarding sexual activity and often do not take responsibility for their behavior. Viewing themselves as indestructible, they may perceive AIDS as something that will not happen to them and do not worry about the potential consequences (Roscoe & Kruger, 1990).

Hingson and Strunin (1992) reported that while adolescents generally know the principal modes of HIV transmission, teens continue to engage in unprotected sex. These authors suggested moving beyond education about modes of transmission to stressing that there is no cure for AIDS and abstinence is the primary method of prevention. For those adolescents who will not forego sexual activity, educators should emphasize condom use and even teach proper use of condoms. In addition, the authors encouraged varying forms of instruction, such as role play, that promote(s) safe practices. Kolbe and Jones (1988) noted that brief educational offerings (such as single filmstrips or lectures) to adolescents are not sufficient to influence risk behaviors. They also advocated programs to assist teens in developing knowledge, skills and the support they need to refrain from participating in sexual activities

until they are ready to establish a mutually faithful, monogamous relationship.

The CDC has worked with schools and other youth supporting agencies since 1974 to develop, evaluate, improve health education programs that target health-risk behaviors among youth. Since 1986, the CDC has been responsible for helping national, state, and local education agencies in the provision of effective HIV education for this population. In 1987, a national program was launched by DASH, the CDC's Division of Adolescent and School Health. The intent of the program was "to help schools and other agencies that serve youth across the nation provide effective health education to prevent the spread of HIV" (Moore, et al., 1991). One component of DASH is their Curriculum Dissemination Project. This venture recommends curricula based on behavioral impact, which include delaying initiation of intercourse, reducing frequency of unprotected intercourse, reducing the number of partners and increasing condom use. The curricula are initially evaluated by outside reviewers. Programs are then revised and introduced nationally to state-level teacher training coordinators. The selected curricula are introduced to local schools and districts with the option to adopt or reject them. The goal of the program is for students throughout the United States to receive programs with credible evidence of effectiveness.

Of Montana's youth, 91% reported having had AIDS/HIV education in school (Montana OPI, 1995). However, only 54% of sexually active youth in Montana acknowledged using a condom at their last sexual experience. The finding that knowledge of AIDS is common among adolescents, but does not translate into actual use of safer sex practices is verified in studies (DiIorio, Parsons, Lehr, Adame, & Carlone, 1993a; Ransum, Marion, and Mathias, 1993; Roscoe & Kruger, 1990; Ross & Rosser, 1989).

Obtaining additional knowledge should assist educators and health professionals in determining the prevalence of risk behaviors among Montana's rural adolescents. Additionally, the level of parental and/or school provided instruction/information about HIV/AIDS will be identified. The focus is to identify areas of need in the development of statewide comprehensive health education. This supports the Healthy People 2000 (Public Health Service, 1991) goal to promote safer sex practices among adolescent risk takers. The ultimate goal is to reduce those unhealthy behaviors that place Montana youth at jeopardy.

Conceptual Framework

Sieving and Bearinger (1995) described adolescents as a group of people who are learning to develop their mental abilities to reason, assess, evaluate, and to use divergent thinking. They are also beginning to think beyond the

present and into the future. However, the ability to make good judgements is still limited by inexperience and insufficient knowledge to gain adequate perspectives for problem solving.

Schurman, Hancock, Fast, and Murphy (1994) noted that adolescents see time differently than they did as children. Responding to a problem is often delayed in order to think through the possibilities for resolving the problem. But, even though patterns are developing, the cognitive and psychologic changes adolescents are experiencing may affect their adherence to preventive health care practices. Older adolescents may not consider the risks of their behavior and are unlikely to act differently than their peers. Adult values and beliefs may be rejected while striving for independence.

Most health promotion models being used with adolescents were developed for use with adults. The assumption of most of these models is that adults are 'free' to engage in certain activities and behaviors that are not routinely acceptable for adolescents. The Pre-Adult Health Decision-Making Model (PAHDM), based on the assumptions of symbolic interactionism, was developed by Langer and Warheit (1992) in an effort to account for the different information processing mechanisms adolescents employ. These mechanisms include peers, parents and critical or reflective self-analysis.

Symbolic interaction is a theory formulated in the early part of the 20th century by social psychologists. This approach advocates that interaction is symbolic, "based on the symbols/meanings persons develop in the course of their conduct" (Langer & Warheit, 1992, p. 923). Accordingly, conforming behavior is a part of the process of identity development in the adolescent. Willingness to conform to group norms is especially characteristic of this age group and the acceptance by peers is of utmost importance (Erikson, 1950).

> An underlying premise of symbolic interactionism is that the subject component of experience should be examined in order to gain insight into behavior. The symbols/meanings people assign to objects serve to organize their behavior into social acts. Thus, the emergence, construction, and maintenance of self, as based on the attitudes, values, and behaviors of others is the focus of symbolic interactionism. (Langer & Warheit, 1992, p. 923).

The PAHDM is strongly influenced by symbolic interactionism with the central postulate being that adolescents are in the process of self-development. To understand their decision making, the concept of emerging self (as it interacts with their lifeworld) must be taken into account preceding and succeeding cues to action (Langer and Warheit, 1992). One major assumption of the PAHDM is that directedness/orientation is a major component of adolescent decision-making. "The focus is on how reference groups associated with decision-making direct and reinforce

the attitudes, beliefs, and behaviors related to risk" (Langer and Warheit, 1992, p. 933).

The PAHDM was developed from a theoretical perspective with three major components. First, from a psychosocial viewpoint, identity development during adolescence is comprised of three parts: (a) the previously held view of self and identity fostered by parents is differentiated; (b) there is a migration from the parental sphere of influence to that of peers; and (c) a blend of parental and peer influences are linked with the adolescent's own social and personal characteristics. Second, utilizing symbolic interactionalism, the PAHDM considers adolescent decision-making to be socially interactive and mediated by others. Third, adolescent decision-making is considered in two contexts: (a) the processing of external information regarding health risks as an input into knowledge and beliefs; and (b) the processing of this external information into the outputs of attitudes and behaviors. (Langer and Warheit, 1992)

The conceptual framework of the PAHDM (Figure 1) focuses on two major aspects of decision making: Inputs, the adolescent's knowledge and beliefs; and outputs, the attitudes and behaviors.

> Both inputs and outputs are mediated at different points by biopsychosocial/environmental factors which exist along a time sequence. That is, past, present, and self-perceived future factors are considered by the PAHDM to intervene or mediate adolescent decision-making at the input state (prior to any cue to action)

> and/or the decision-making stage. Further it is suggested that biopsychosocial factors may determine if the cue to action will occur at all. (Langer and Warheit, 1992, p. 935)

The adolescent is portrayed by three overlapping circles which illustrate the three categories of decision making orientation, referred to as directedness: self-directed, peer-directed and parent-directed. The overlap indicates blending of the types; however, strength of directedness varies by individual. (Langer and Warheit, 1992)

Testing of the PAHDM found that decision-making orientation and directedness were significantly associated with AIDS-related attitudes, beliefs, and behaviors. These attitudes and beliefs, along with personal skills and high risk sexual behaviors, were most often found among peer-directed students and less often among self-directed and parent-directed students (Langer, Zimmerman, Warheit, & Duncan, 1993).

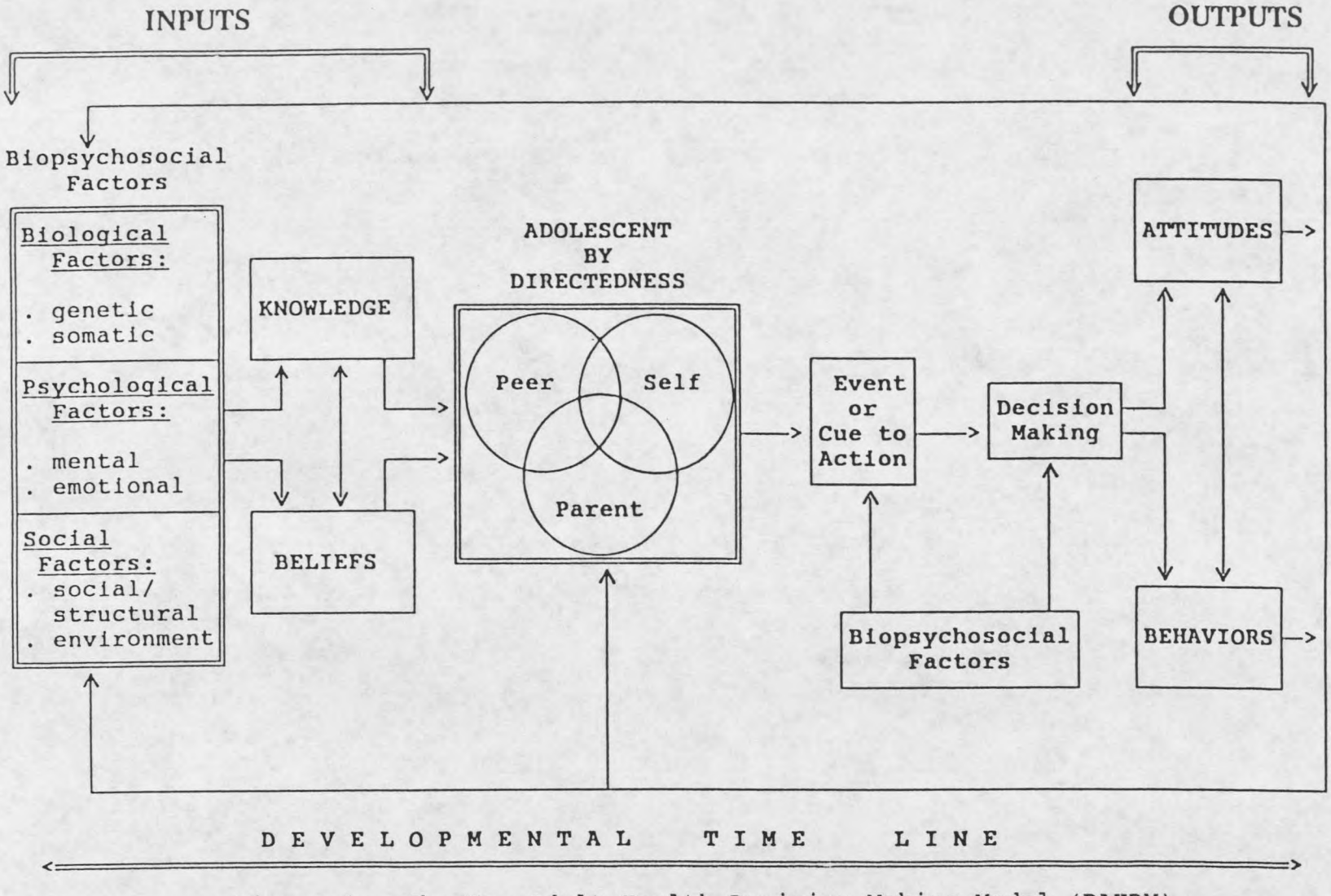


Figure 1. The Pre-Adult Health Decision-Making Model (PAHDM). (Langer and Warheit, 1992, Reprinted by permission)

Definitions

The definitions for purposes of this study included the following:

1. An adolescent is a person thirteen to nineteen years of age. However, since the survey was administered to Montana high school students, several were below the age of thirteen. Therefore, the operational definition is a person in the ninth through twelfth grades.

2. At risk or risky sexual behavior was designated by the CDC in 1988 to be behaviors that have the potential to result in HIV infection or other STDs and/or in unwanted pregnancy. This definition was adapted from the Montana Youth Behavior Risk Survey (Montana OPI, 1995) with the addition of the word 'potential'.

Assumptions

The PAHDM assumes health behavior modeling for adolescents must exist along a developmental time line. In other words, adolescents must have progressed to a certain developmental stage in order for this type of training to be effective (Langer & Warheit, 1992).

Limitations

Three major limitations were identified during the course of this research. First, since secondary analysis was conducted on existing data, it was not possible to

develop questions specifically related to peer-directed and parent-directed influences. Responses are restricted to questions in the survey with none relating to actual mechanisms of decision-making in this population. Second, there was no mechanism to determine differing amounts of instruction. The question, "Have you ever been taught about HIV/AIDS in school," had a wide area of interpretation as the survey did not specify the type or duration of instruction. The OPI's recommendation for education is for eight to twelve hours of instruction, as published in the AIDS Curriculum Planning Guidelines in 1993. This guide suggested a curriculum for schools to follow when planning HIV/AIDS education. Some students may have responded affirmatively to this question with less than an hour of instruction in the school. And third, it is possible for respondents in a self-reported survey to under-report behaviors that are socially undesirable, unhealthy, or illegal (such as alcohol and/or drug use, non-use of seat belts, and sexual activity) while over-reporting behaviors that are socially desirable (amount of exercise or proper diet).

Chapter 2

REVIEW OF LITERATURE

Adolescent knowledge and risk behavior have been thoroughly researched since the identification of the AIDS epidemic. The literature reviewed for this study was in relation to adolescent development, relationships and sexuality. Also explored was literature related to decision-making, sexual and behavioral changes in response to the AIDS epidemic, and health educative approaches for adolescents.

The Adolescent

Development

Mercer (1979) described the adolescent as one who is working toward "achieve(ing) the ability to maintain stable relationships" (p. 10) with chosen life tasks and goals forming. During this time, six developmental tasks are accomplished:

1. acceptance and achievement of comfort with body image,
2. determination and internalization of sexual identity and role,
3. development of personal value system,
4. preparation for productive citizenship,
5. achievement of independence from parents, and
6. development of an adult identity (Mercer, 1979, p. 10).

A critical task of adolescence is to determine an identity and a place in the world. Also during this time, the

adolescent develops a future time orientation and becomes better able to delay immediate gratification in order to gain more satisfaction in the future (Schurman, et al. 1994). Schuster, Cronk, and Reno (1992) concurred with Schurman et al. and added that adolescent maturation is accomplished by the assumption of increased responsibility for personal behavior and its consequences and is working toward acquiring the personal, academic, and social skills essential to adult living. However, as Frieberg (1992) concluded, this does not imply that adolescents are intellectually mature as individuals since they lack the breadth of experience needed to form firm foundations of wisdom. Jurich, Adams and Schulenberg (1992) noted: "The development of accountability and responsibility for one's actions is an important component in the maturation process and in the development of ego-identity" (p. 98). This concept is a crucial point in the development of the adolescent. Decision-making may be more difficult for these adolescents if a clear sense of self-definition and values has not been developed. And as a result, decision-making related to positive sexual behaviors may be impaired (Jurich, et al. 1992).

Moore and Rosenthal (1991) commented that adolescents often perceive themselves to be invulnerable to consequences of risky behavior. Adolescents also become fatalistic particularly when they feel that they have little control

over behavioral outcomes. As a result, taking sexual precautions for example will not matter. Additionally, Weinstein, Rosen, and Atwood (1991) commented that fear tactics are unsuccessful in decreasing risk for adolescents. The authors found that extreme fear creates a sense of loss of control feeling which in turn sanctions the continuation of high risk behaviors.

Relationships

Adolescents often experience not only intense sociability but also profound loneliness. In spite of the parent-child relationship being at its low point, adolescents require a supportive family atmosphere and acceptance by peers for interpersonal maturation to occur. Behavioral standards are primarily set by the peer group and fear of rejection is great (Sieving & Bearinger, 1995). A sense of autonomy is evident during this period along with a desire for identity and independence within society (Schurman, et al., 1994). Frieberg (1992) noted that adolescents are anxious for changes to occur but are still dependent on the stability of their parents. If parents recognize this and act as mentors and role models while providing a supportive and encouraging environment, the adolescent will more likely be receptive to parental involvement. The result will be the development of self-confident, responsible, thinking adults (Frieberg, 1992).

The peer group is an important socializing agent for adolescents. This group is a strong support to its members and provides a sense of belonging and a feeling of power and strength. Therefore, as adolescents increase the time spent with their peers and decrease time at home, they can and will question and challenge adult values and societal institutions (Sieving and Bearinger, 1995). As adolescents move out and away from the family unit, the peer group assists in providing the means for achieving the goals of individualization. Again, it is the parents' responsibility to identify crucial consequences of actions and provide alternate opportunities in decision making. Limits on independence should be decreased providing for a smooth transition into adulthood and responsible independence (Cronk, 1992).

Sexuality

Our Western society allows individuals freedom to decide when to begin sexual activity and whom to select as partners. In some adolescents' views, the right to choose is an indication of maturity. The 'sexual revolution' of the 1970's launched an era in which sexual activity began at an earlier age along with increased sexual experience and rise in number of partners in unmarried youth (Netting, 1992). Schurman et. al (1994) noted that "adolescents have sex for affection, because of peer pressure, as a symbol of maturity, as spontaneous experimentation, to feel close and

because it feels good" (p. 567). In addition, intercourse "may be engaged in by those who are lonely in an attempt to gain a sense of security or reassurance through intimacy" (Moon, 1995, p. 227).

Adolescents as a group tend to be impulsive regarding sexual activity and often do not take responsibility for their behavior. Often contraception is not used nor are the potential outcomes of sexual intercourse considered. Sieving and Bearinger (1995) expanded on this idea by adding that physical maturity precedes psychological and cognitive maturity. Long-term implications of behavior may be considered by some older adolescents (those over the age of sixteen). Therefore, they may be able to respond to health promotion efforts that require a future time perspective. However, younger adolescents (up to the age of fourteen) are often concrete thinkers and unable to conceptualize long-range consequences of their behavior. They may view themselves as indestructible and engage in sex spontaneously, based on passion of the moment. As a result, a common attitude is that AIDS is something that will not happen to them and they do not worry about the potential consequences (Roscoe & Kruger, 1990).

Hernandez and DiClemente (1992) evaluated sensation seeking, self-control and ego-identity related to sexual risk behavior in older adolescent males. Examining social factors alone, it was found that adolescents who had low

scores for ego-development (goal-directedness) and self-control were significantly more likely to engage in sex without condoms.

Decision-Making

"Physical maturity affects adolescents' self-perception and social interactions; cognitive development affects their ability to make decisions about risk taking" (Beaman, 1993, p. 174). As decision-making abilities increase over the adolescent period, so does the ability "to consider hypothetical risks and benefits of possible behaviors, along with potential consequences of such behaviors" (Sieving & Bearinger, 1995, p. 832). Lewis (1981) found that as an adolescent cognitively matures, she or he is more likely to consult with mentors, role models and adult experts regarding concerns. However, those adolescents who are able to apply reasoned decision-making do not use these processes on every occasion. Rational thought processes are likely to be abandoned by adolescents when facing overwhelming peer pressures, personal stress or time pressures. In addition, thought processes are less sophisticated and more vulnerable to effects of stresses and pressures when youths deal with unfamiliar or emotionally arousing topics. Health related decisions, including sexual behavior, encountered by adolescents are often personally stressful, emotion laden, or new. During such circumstances, even those with advanced

decision-making skills may not utilize their capacities of abstract formal reasoning (Sieving & Bearinger, 1995).

Bandura's social cognitive theory (1986), examined how environmental events, cognitive factors and behavior all interact with each other. The author suggested that human beings have the opportunity to apply control over their own destiny as well as set limits of self-direction. Specifically, people will anticipate the likely consequences of their actions and set goals and plan courses of action. Humans also have the capacity to learn by observation which enables them to acquire rules for generating and regulating behavioral patterns. This modeling occurs among groups of all ages (including adolescents).

Bandura (1992) noted that interpersonal aspects of sexuality require extensive practice among all age groups. Once knowledge of new skills and social strategies is gained, opportunities must be provided to perfect these skills. Practicing in simulated situations should be promoted, where participants need not fear making mistakes or appearing inadequate. "This is best achieved by role playing in which they practice handling the types of situations they have to manage in their social environment" (Bandura, 1992, p. 103). Finally, people are able to analyze their experiences and think about their own thought processes in order to derive knowledge about themselves and their environment. The skills of applying control over

one's own destiny develop and influence decision-making throughout the lifetime.

Behavior and Behavioral Changes

Fisher, Misovich, and Fisher (1992) focused their literature review on the effects of reference group social norms on HIV-risk behavior and prevention. They defined social norms as "expected modes of behavior and belief that are established formally or informally by a group" (p. 118). Humans behave in certain ways in order to gain approval from their reference group and avoid group sanctions.

Surveyed high school students showed a high level of understanding of HIV and its transmission in addition to knowledge that contracting the virus can be decreased by employing safer sexual behavior (such as condom use). While some students showed evidence of decreasing high-risk behaviors in favor of safer ones, and a belief that they are practicing safer sex, a large portion of the students had not changed their behavior despite a cognitive understanding of AIDS and its risks (Brown, 1991; DiIorio, Parsons, Lehr, Adame,& Carlone, 1992; DiIorio et al., 1993a; DiIorio, Parsons, Lehr, Adame, & Carlone, 1993b; Hobart, 1992; Jurich, et al., 1992; Moore and Rosenthal, 1991; Netting, 1992; Roscoe and Kruger, 1990; Strader and Beaman, 1991; Svenson and Varnhagen, 1990; Walters, 1992; Weinstein, Rosen and Atwood, 1991).

Interestingly, a major finding in Hobart's (1992) study was that those sampled who knew the most AIDS victims and had high awareness of the mechanisms for spread of the disease were the respondents who rated sex with briefly known partners as least risky. In addition, the same respondents were least inclined to use condoms in sexual encounters with briefly known partners. A sobering statistic was presented by Weinstein et al. (1991): When students were asked if they would tell their sexual partner if they were HIV positive, 3% stated no, 20% did not know, only 71% indicated yes, and 6% did not answer.

A research study by Smith and Rosenthal (1995) polled adolescents regarding risk behavior, perceived risk behavior on the part of the adolescent, peer approval and parental distress. Respondents identified having unprotected sexual intercourse as a high risk activity. The boys surveyed indicated a higher peer approval and less parental distress related to intercourse without a condom than the girls surveyed. Other findings were that older adolescents (grade eleven) had a more realistic assessment of their risk environment than the younger adolescents (grades seven and nine).

Pendergrast, DuRant, and Gaillard (1992) employed a questionnaire with a convenience sample of adolescent males attending a general adolescent clinic to determine correlates of condom use. Increased condom use was

significantly associated with lower perceived hassle of use, perception of girl-friend's positive attitude toward condoms, greater self-confidence in correct use, younger age, reported degree of education about sexually transmitted diseases (STD), greater perceived condom safety, and higher perceived risk of STD if not wearing a condom. One surprising result was that 30% more respondents were concerned about acquiring AIDS than impregnating their partner, this within a geographic study area where there was a low AIDS prevalence. However, while attitudes about condom use were found to be positive, results indicated that high-risk sexual behaviors were widespread. One of the authors' data-based conclusions "was that health concerns do not play a significant role in adolescents' decisions to use condoms" (p. 137).

A study of female adolescents identified four risk groups. Categories of risk were related to 1.) knowledge, beliefs, and behavioral practices relevant to HIV transmission; 2.) history of intravenous drug use and/or STD; and 3.) probable risk contact with an HIV/AIDS infected individual (Millstein, Moscicki & Broering, 1993). The sample consisted of an ethnically diverse group of sexually active adolescents recruited from several health clinics. The four identified groups were: Very high risk, moderately high risk, moderate risk, and low risk. As expected, those subjects in the lowest-risk group were also the ones

engaging in less risky behaviors. The number of sexual contacts did not differ among the three highest groups. The risk group having the least knowledge about AIDS was the moderately high risk group. Among all respondents, this group also had the highest concentration of those living in a high risk geographic area. And, finally, as subjects' risk status increased, so did their perceptions that they would engage in risky behaviors in the upcoming year.

Leigh, Morrison, Trocki, and Temple (1994) presented results from a national survey of the sexual behavior of adolescents (aged twelve to seventeen). Results showed that few twelve and thirteen year old boys and twelve through fourteen year old girls had engaged in sexual intercourse. These numbers increased significantly in the sixteen to seventeen year olds. Condom use at last intercourse was 47% for girls and 67% among boys, with the boy providing the condom 86% of the time. There was no relationship between condom use at most recent intercourse and perceived AIDS risk. Condom use in general was not more likely for those who were worried or afraid of contracting AIDS or by those who perceived their behavior as risky.

Contrary results were found by Nguyet, Naheux, Beland, and Pica (1994). Sexual behaviors and condom use were surveyed among adolescent boys, aged twelve to nineteen. Results of the self-administered questionnaire revealed this group of boys became sexually active at an average age of

13.9 years. While 60% of them utilized condoms at their first intercourse, the rate decreased to 33% use in subsequent episodes. Condom use was greatest among fourteen year old boys and decreased with increase in age, being replaced most often by oral contraceptive use among their female partners. This finding suggests that this group is more concerned with unwanted pregnancy than with an STD or AIDS.

Education

It is society's expectation that parents should provide some sort of sex education for their children. Morris (1993) found that a majority adolescents and their parents "saw teens' risk taking as both normal and inevitable" (p. 76). The teens and their parents were aware of the consequences of high-risk behaviors, but also felt the consequences were part of a 'good time.' However, contrary to the adolescents' opinion, the parents did not think that this meant the behaviors were acceptable. Mueller and Powers (1990) commented that "current formal, institutionalized sex education programs are not significantly lowering sexual activity and pregnancy rates" (p. 469). They investigated the relationship between parent's style of sexual communication as perceived by adolescents and adolescents' behavior and information accuracy. Findings included the belief by parents that they

are the most important source of information to their children. However, adolescents expressed the need for sex education for parents in order to deal with teenagers' concerns and the need to create better parent-child sex communication. Adolescents also identified the need for earlier sex education than their parents did.

Mueller and Powers' (1990) data indicated students who perceived their parents' communicative styles as friendly and attentive were less likely to engage in sexual activity as adolescents and young adults. This style was seen as supportive, possibly lending to a greater impact on sexual behavior than a communication style perceived as a threat to self-image and self-esteem. However, the strength of correlation of these variables was not documented.

Results of a study by Shoop and Davidson (1994) revealed knowledge alone about AIDS was not an effective deterrent to unsafe practices (specifically condom use). However, increased condom use was linked to communication with parents about sex and AIDS and the adolescent's perceived ability to talk with partners about AIDS.

Findings from several studies suggest that traditional education programs have not been successful in altering unsafe sexual behaviors in adolescents. Therefore, educational programs must be revised to include alternative methods. Jurich et al. (1992) presented several recommendations for adolescent education and decreased risk

behavior. First, programs must be structured to address behavioral variation among participants. Students should be encouraged to evaluate and label their own behavior with the desired outcome being recognition of vulnerability. This perceived vulnerability will instill a motivation for change. Second, the information should be tailored specifically to the situation in which action is to be taken. In this case, changing risky behavior would be easier when such behavior has been clearly identified and alternative 'safer' behaviors are offered as possible solutions. Lastly, intervention programs should teach individuals skills (such as communication about sex, responsible contraceptive behavior and a strong sense of values related to dating relationships) related to developing and maintaining relationships. These skills could result in engaging in relationships that tend to be less risky.

DiIorio et al. (1993a) also recognized that traditional methods of education related to AIDS and safer sex behavior are not successful and suggested including teaching strategies that promote skill development and practical application of information. These programs may include small discussion groups, role-playing activities, and workshops. Brown (1991) concluded that media presentations can change beliefs and concerns about AIDS and as a result change the way people communicate about AIDS. Hernandez and

DiClemente (1992) indicated that enhancing ego identity development would improve adolescent health promotion and disease prevention behaviors.

> A health promotion program which encourages adolescents to envisage themselves in the role they wish to grow into, under conditions of poor or good health, might be quite effective in giving them new perspectives on adolescent risk taking behavior (Hernandez & DiClemente, 1992, p. 445).

Mueller and Powers (1990) advocated identifying the communicator styles that tend to discourage sexual activity and encourage contraceptive use at different age levels. Training in these styles should be offered to parents and sex educators (teachers and health care providers).

Beaman (1993) advocated providing instruction to school children of all ages, with content being age specific. An advisory committee comprised of teachers, school nurses, health educators, administrators, clergy, students and parents could be appointed to assist in planning. The AIDS education policy should be broad, with a simple purpose statement and should be coordinated with other community efforts. A program for young adolescents should be focused on concrete facts with problem solving exercises related to every day experiences in order to strengthen self-confidence and prepare young teens to make independent decisions. A program at the high school level should focus even more on decision making, assertiveness, and skills training. These programs can be integrated in a variety of ways in order to provide repetition which is important for retention.

Variations could include reading stories in English class about teens who take risks and suffer the consequences, writing an essay related to AIDS, or preparing debates arguing specific aspects of HIV/AIDS; in social studies, articles could be collected related to the AIDS epidemic; studies related to viruses and HIV could be undertaken in science; and finally, students could take home assignments that encourage family and peer discussions. The desired result is teaching teens to make decisions through problem identification, analysis of results and evaluation of final choices. The emphasis focuses on learning respect for each individual's personal choice within the peer group or in a more intimate relationship. Beaman (1993) further added that adolescents need complete information in order to make sound decisions, with questions answered honestly and encouragement to discuss material with their parents. Finally, educators "must be role models for students, accepting the students' views and allowing them room to explore alternatives and gradually make changes" (Beaman, 1993, p. 178).

Sieving and Bearinger (1995) stated, "Health promotion efforts, especially those aimed at younger adolescents, should offer learning strategies that enhance decision making skills" (p.832). These endeavors could emphasize health promoting norms for behavior as well as alternatives

to unhealthy behaviors. Further efforts could be focused on practicing skills necessary to resist unhealthy behaviors.

Fisher, Misovich, and Fisher (1992) promoted 'normative social influences' in which processes within the group work to increase preventive behavior. They suggested instituting group-level interventions to change reference group norms in a pro-prevention direction. Interventions include

> continual presence in the intervention of attractive, popular peers who continually endorse HIV prevention and attempt to make it seem like 'the thing to do,'... presentation of videotaped pro-prevention testimonials by individuals who are viewed by adolescents as especially influential referent others...(and recognition of) changed behavior of adolescent intervention participants themselves (Fisher, et al., 1992, p. 131).

Kirby (1992) reported that curricula which focused primarily on cognitive approaches were effective in changing knowledge only, not behavior. He advocated presenting curricula implementing social learning theory or a social-influence approach to change behavior via decision-making. Topics could focus on presenting skills to resist pressures and establishing more positive and accurate norms regarding risk-taking behaviors.

A sexuality education curriculum entitled "Reducing the Risk" was evaluated by Kirby, Barth, Leland, and Fetro (1991) using a quasi-experimental method. The program was based on social learning theory, social inoculation theory and cognitive-behavioral theory as well as employing explicit norms against unprotected sexual intercourse.

Treatment and control groups were surveyed four times before, during, and after the program. Knowledge and parent-child communication about abstinence and contraception was significantly increased. For the students who had not participated in intercourse, the curriculum significantly reduced the likelihood that they would not have intercourse eighteen months later. However, the curriculum did not significantly affect frequency of intercourse or use of birth control among students already sexually active.

An AIDS prevention intervention presented by Schinke and Gordon (1992) utilized social learning theory and cognitive-behavioral approaches in the development of the SODAS model. The steps in SODAS stand for "stop", "options," "decide," "act," and "self-praise." This comic book approach is divided into two sections. The first section integrated HIV information into five segments: AIDS definition, transmission, high-risk behaviors, symptoms, and prevention. The second section utilizes a game format and presents hypothetical situations in which the student must utilize a sequence of steps in order to complete the situation. The players read the situation, then "stop" and consider their choices along with the consequences of risky behavior. In the "options" section, players are encouraged to brainstorm a variety of options and rank them a certain way. "Decide" shows players how to select the best option

while evaluating positive and negative consequences of each solution. Here, students are taught to base their decisions on an informed assessment of the problem. In the "act" step, students plan and rehearse the best responses to the situation in relation to peer pressures. These responses include "I" statements, delay statements, refusal statements, alternative suggestions and "blunt and blur" statements. In the last step, "self-praise," reinforcement is given to completion of situations and encouraged to continue to the next problem.

Finally, a study was undertaken by the CDC in order to survey school affiliated programs designed to reduce sexual risk-taking behavior (Kirby, et al., 1994). Twenty-three such studies based on sound research were reviewed. Findings showed that some, but not all, programs related to HIV and sex education delayed the initiation of sexual intercourse, reduced the frequency of intercourse, reduced the number of sex partners, or increased the use of condoms or other contraceptives. No programs were found to increase sexual activity. Effective curricula shared the following characteristics: (a) A narrow focus on reducing specific sexual risk-taking behaviors that may lead to HIV infection, other STD's, or unplanned pregnancy, (b) use of the four components of social learning theory (knowledge, motivation, outcome expectancy, and self-efficacy) as a foundation for program development, (c) provision of basic accurate

information about the risks of unprotected intercourse and methods of avoiding unprotected intercourse, (d) instruction on social and media influences on sexual behaviors, (e) reinforcement of individual values and group norms against unprotected sex, and (f) activities to increase skills in communicating and negotiating, as well as confidence in those skills. Ineffective curricula covered a broader array of topics but failed to emphasize particular facts, values, norms, and skills needed to postpone sex or avoid unprotected sex.

Health and Education

In this time of adolescent participation in risky sexual behavior, health care providers must be aware of the unique needs of this population. All adolescents are in need of education regarding AIDS/HIV disease processes, transmission, prevention, and skills training/decision-making instruction.

> The primary purpose of health education is to provide instruction that will result in adoption of behaviors that will enhance health status (thus prevent disease) or motivates changes in those behaviors that do not contribute to health maintenance (Weinstein, et al., 1991, p. 317).

Nurses should to be aware of methods to promote non-risk taking behaviors and be able to recognize adolescent norms for behavior while being accepting of the adolescent's need to emulate their chosen role models. As mentioned in the review of literature, one effective health promotion

campaign is to use famous role models in programs such as smoking cessation and birth control/STD prevention (Schurman, et al., 1994). Another effective strategy is to develop adolescent-focused clinics where specific needs of this age group are addressed. Education services related to preventive health care are easily incorporated into a clinic setting. Establishing a clinic environment in which adolescents can speak freely about STD's, risk behavior, substance use, birth control, and HIV/AIDS issues is of utmost importance. Every visit can be used as a time when decision making and behavioral choices can be discussed. Liaison work with other agencies dealing with adolescent issues can also be incorporated into this setting (Villareal, 1988).

However, Baldwin (1988) reported that health professionals, as a general rule, are not comfortable talking about sex issues. For example, he noted that few physicians ask about sexual activities nor have they been trained to do so. He feels that it is imperative for health professionals to become more comfortable with discussing sex or they will not adequately respond to the needs of their clients. "If we are going to educate the public effectively, we must first educate ourselves" (Baldwin, 1988, p. 356). Additionally, adolescents need to be able to talk to someone whom they trust and who had experienced the same problems they had (Morris, 1993).

Health care providers for adolescents must feel comfortable and competent in evaluating adolescents from a sexual standpoint. Sanders (1988) suggested four ways in which this objective may be accomplished. First, the providers of adolescent health care must maintain professional standards. When adolescents come to a health care facility, they are seeking a professional not someone who looks, talks and acts like an adolescent. The health care provider must be able to send the subtle message that she or he is genuinely interested in why the adolescent came to the health care facility and what that individual has to say. Second, confidentiality must be established and maintained. The adolescent must be able to trust the provider to maintain confidentiality and not pass information along to parents or others. If the youth comes to the facility with a parent, time must be allowed to interview the adolescent in private.

The third suggestion Sanders (1988) presented was to explore the chief complaint completely. Allowing the youth to verbalize and actively listening to what is said is imperative. At times, however, the chief complaint is not the real reason for coming to the facility. The provider must trust the adolescent to reveal the 'hidden agenda' and be able to discuss this topic in a non-threatening, trusting atmosphere. Lastly, perform a thorough physical exam. Often the 'hidden agenda' will surface during the exam and

can be addressed openly at that time. Since adolescents are extremely aware of and concerned with their bodies, any abnormalities may be viewed as catastrophic. A reassuring explanation by the provider may relieve overwhelming anxiety. When these suggestions are undertaken by the health care professional, adolescents may be able to comfortably address their concerns and receive competent information to improve their knowledge and, hopefully, impact on their behaviors.

CHAPTER 3

METHODOLOGY

Design

A nonexperimental, exploratory design was used to examine relationships among the variables in this study. Nonexperimental designs are used by researchers who wish to "construct a picture of a phenomenon or make account of events as they naturally occur" (LoBiondo-Wood & Haber, 1994). LoBiondo-Wood and Haber (1994) defined an exploratory design as one in which researchers

> collect detailed descriptions of existing variables and use the data to justify and assess current conditions and practices or to make more intelligent plans for improving health care practices (p. 233).

Participants in this study included 2,537 students enrolled in ninth through twelfth grades and randomly selected from throughout Montana. The Montana Youth Risk Behavior Survey (YRBS) was the data collection instrument and consisted of an 84 item questionnaire. The survey was part of a surveillance and reporting system for adolescent risk behaviors developed by the Division of Adolescent and School Health, National Center for Chronic Disease Prevention and Health Promotion, U.S. Centers for Disease Control and Prevention (Montana OPI, 1995).

Secondary data analysis was performed by the researcher on thirteen questions from the survey related to sexual knowledge and behavior. Secondary data analysis

> involves reanalysis of data originally collected and analyzed by another investigator addressing the same question, a different question, or applying different methods of analysis (Woods, 1988b, p.334).

Variables examined included demographic characteristics, sexual behavior, school presented education related to HIV/AIDS, and parental discussions regarding HIV/AIDS. Cluster analysis was applied to the variables in order to group similar entities. "Cluster analysis yields a reorganization of these entities into relatively homogeneous groups" (Woods, 1988a). The obtained clusters were then analyzed using one-way analysis of variance (ANOVA) which is used to "test the significance of differences between the means of two or more groups" (Woods, 1988c, p.410).

Population and Sample

Eligibility for inclusion in the original study sample was open to all public and private schools in Montana with grades nine through twelve. Of these, 54 schools were randomly selected with probability proportional to enrollment. A total of 38 schools agreed to participate in the survey and 89% of the students in these schools volunteered to take part in the survey. A total of 2,535 students ultimately participated in the survey (Montana OPI, 1995).

Data Collection Procedures

In the study conducted by the OPI, eligible schools were randomly sampled. The superintendents of those school districts were then contacted in November, 1994. Permission was obtained to approach the principals of selected schools to present the purpose of the survey. Sufficient time was allowed to address questions about the survey from parents and school boards and gain their approval. Participating schools submitted lists of second-period classes to the Montana OPI and a random set of these classes was surveyed. Packets of information (including instructions, survey booklets, and answer sheets) were mailed to each school in March 1995. School coordinators for each school were assigned by school adminstrators. All 2,535 participants were given the survey on the same date during their second period classes. Detailed written instructions were provided to the teachers administering the questionnaire in order to ensure uniform survey administration across sites. The surveys were then collected and returned from the school district to the OPI within one week for processing (Montana OPI, 1995).

Data Collection Instruments

The original survey instrument included 84 questions intended to assess the six priority health risk behaviors that result in the greatest amount of social problems,

morbidity and mortality among adolescents. These risk-behaviors include those that result in injuries, whether intentional or unintentional; tobacco use; alcohol or other drug use; sexual behaviors that result in STD's, HIV infection, or unintended pregnancy; physical inactivity; and dietary excesses and imbalances. Results were weighted utilizing standard format in order to reduce bias by compensating for differing patterns of nonresponse and to reflect the likelihood of sampling each student. Using a normal approximation, the estimated error rate was plus-or-minus three percent (Montana OPI, 1995).

Statistical Analysis

Demographic data were summarized in this study using descriptive analyses to include respondent's age, grade in school, and gender. The multivariate analysis techniques of cluster analysis and analysis of variance (ANOVA) were also used in this study. As stated above, the data were collected by the OPI and entered on a computer management program by Dodge Data Systems, Inc. The Statistical Package for Social Sciences (SPSS/PC+) was used to analyze the data.

Cluster analysis is a statistical technique which allows a researcher to study relatively homogenous groups called "clusters" that share common characteristics. Aldenderfer and Blashfield (1990) stated that "cluster analysis is the generic name for a wide variety of

multivariate statistical procedures that can be used to create a classification" (p. 7). These procedures empirically form "clusters" or groups of highly similar entities (Woods, 1988a). Lorr (1983) defined cluster classification as "a process of sorting individual variables or objects into an end group which then can be categorized based on its unique characteristics" (p. 1). Additionally, "clustering methods are used to discover structure in data that is not apparent by visual inspection....The key to using cluster analysis is knowing when these groups are 'real' and not merely imposed on the data by the method" (Aldenderfer & Blashfield, 1990, p. 16).

Different cluster group sizes were analyzed using different numbers of cluster groups. The study cluster group size was determined to be three, since three groups provided the "best" combination of participant distribution. According to Aldenderfer and Blashfield (1990), there are no standardized methods of selecting cluster groups. Cluster groups are selected using the researcher's "best judgement."

The SPSS cluster analysis program was initially utilized in the cluster analysis phase of this study. After the three cluster groups were decided upon, the SPSS quick cluster procedure was used since it "can be used to cluster large numbers of cases efficiently without requiring substantial computer resources" (Norusis, 1988, p. B-91). This procedure produced one solution for the number of

clusters specified by the researcher, with the results discussed in Chapter 4, Data Analysis.

Analysis of variance (ANOVA) was performed on the variables to determine if there was a significant difference among three YRBS demographic variables and the eight variables related to sexual risk. The computed statistic is the F ratio and is obtained by comparing variation between groups with variation within groups.

> When the variation between groups is large relative to the difference within groups, the difference in scores is likely to be due to the effect of the group rather than to random fluctuation (Woods, 1988c, p. 410).

While ANOVA indicates whether or not significant differences exist between groups, there is no indication of which groups differ. To determine which groups' scores differ significantly, a post hoc comparison test must be performed. In this study the Tukey test was utilized. The advantage of post hoc comparison tests is "that they adjust the level of significance to decrease the influence of chance that occurs with more than one comparison" (Woods, 1988c, p. 411).

Human Subjects Review

Student participation in the OPI survey was voluntary and there was no monetary exchange. Students who declined to participate were instructed to turn in blank or incomplete survey forms. Additionally, they were permitted to exclude any questions they felt uncomfortable answering and could stop completion of the survey at any time.

> The protocols used in the YRBS ensure that participating schools are not violating any federal laws protecting students' rights and privacy, including the protection of Pupil Rights Amendment and the Family Educational Rights and Privacy Act (FERPA). (Montana OPI, 1995, p. 6)

Written permission was not obtained, the return of the questionnaire implied consent. Participants were instructed not to write their names anywhere on the questionnaire. They were assured that their names could not be identified by participating in the survey nor their grade affected by not taking part. Participants were informed that future programs regarding AIDS education and enhanced health care opportunities may be developed as a result of the answers they provided on the questionnaire.

A proposal was submitted for approval by the Montana State University College of Nursing, Human Subjects Review Committee prior to data collection. Approval to proceed granted was granted by the committee on May 31, 1995 (Appendix C). The data was supplied to the researcher on a disk by officials at the Montana OPI with assurances that the data would not be copied or utilized in any manner other than for this study. In addition, only those sections related to the research topic were analyzed. The data was secured by the researcher and only the statistician was granted access to the disk. At the conclusion of the study, the data disk was returned in its complete form to the Montana OPI (Appendix C).

CHAPTER 4

DATA ANALYSIS

The purposes of this study were three-fold. The first purpose was to describe the current status of sexual activity among Montana's adolescents specifically related to age, frequency of sexual intercourse, and condom use. The second purpose was to study whether being taught about HIV/AIDS in school related to adolescent sexual behavior. The third purpose was to study the relationship between adolescent sexual behavior and parental discussion of HIV/AIDS.

Analysis for this study was performed on 2,537 respondents to the 1995 YRBS. Data presented below represent a secondary analysis of the YRBS data (See Appendix A) on a data file disk provided by the Montana OPI.

Demographics

Demographic information included age, grade in school, and gender. Ages ranged from '12 or younger' to '18 or older' (see Table 1). The mean age was 16 years with standard deviation of 1.16.

Table 1. Demographic Data for Age Groups.

Age	Number	Percent
12 or younger	2	0.1
13	1	0.1
14	163	6.4
15	565	22.3
16	691	27.2
17	703	27.7
18 or older	409	16.1
No response	3	0.1
Totals	2537	100.0

Female participants in the survey were 47.9% and male participants totaled 51.8% (See Table 2).

Table 2. Gender of Participants.

	Number	Percent
Female	1,215	47.9%
Male	1,314	51.8%
No response	8	0.3%
Totals	2,537	100.0%

Grade in school was evenly distributed among the four grades with eleventh graders being the most populous group (See Table 3). The mean grade was 10.5 (SD=1.10).

Table 3. Grade in School.

Grade	Number	Percent
9th	595	23.5
10th	595	23.5
11th	735	29.0
12th	588	23.2
No Response	24	1.0
Totals	2537	100.0

Results

Eight other variables from the OPI study were analyzed in relation to education about HIV/AIDS, sexual behavior, and risk behavior (See Appendix A). When answering survey question 54, "Have you ever been taught about AIDS/HIV in school," nine out of ten students responded affirmatively (Table 4). In contrast, when answering question 55, "Have you ever talked about AIDS/HIV with your parents or other adults in your family," only six out of ten students had, while four out of ten had not (Table 4).

Table 4. Education About HIV/AIDS at School or With Parent.

	# School	Percent	# Parent	Percent
Yes	2,252	88.9%	1,573	62.0%
No	123	4.8%	785	30.9%
Not Sure	124	4.9%	165	6.5%
No Response	38	1.5%	14	0.6%
Totals	2,537	100.0%	2,537	100.0%

In response to question 56, "Have you ever had sex," less than half responded that they had engaged in sex while nearly half had not and six percent did not respond (Table 5).

Table 5. Students Who Have Engaged in Sexual Intercourse.

	Number	Percent
Yes	1,132	44.6%
No	1,250	49.3%
No Response	155	6.1%
Totals	2,537	100.0%

Question 57 asked, "How old were you when you had sexual intercourse for the first time?" Ages ranged from less than eleven years to greater than seventeen (Table 6). Of those who responded, the mean age at first intercourse was 14.5.

Table 6. Age at First Intercourse.

Age	Number	Percent
Never	1,246	49.1%
≤11	94	3.7%
12	51	2.0%
13	130	5.1%
14	239	9.4%
15	294	11.6%
16	223	8.8%
≥17	109	4.3%
No Response	151	6.0%
Totals	2,537	100.0%

There was a wide range in number of sexual partners among the total group. Question 58 asked, "During your lifetime, with how many people have you had sexual intercourse?" The range of responses was from zero partners to six or more partners (Table 7). Among respondents and of those students who have had intercourse, the mean number of partners was 2.8. This was calculated on six being the maximum number of partners.

Table 7. Number of Sexual Partners--Lifetime.

Partners	Number	Percent
Never	1,247	49.2%
1	438	17.3%
2	193	7.3%
3	134	5.3%
4	82	3.2%
5	73	2.9%
≥6	215	8.5%
No Response	155	6.1%
Totals	2,537	100.0%

Question 59 related to the number of partners in the recent past, "During the last three months, with how many people did you have sexual intercourse?" Nearly two-thirds had not engaged in sexual activity during that time, including the group of students who have never had intercourse (Table 8). The mean number of times for those who had participated in sexual intercourse within the last

three months was 1.5 calculated on six being the maximum number of partners.

Table 8. Number of Partners--Last Three Months.

Partners	Number	Percent
Never	1,247	49.2%
Have had sex, not in last 3 months.	356	14.0%
1	596	23.5%
2	92	3.6%
3	36	1.4%
4	16	0.6%
5	9	0.4%
≥6	27	6.2%
Totals	2,537	100.0%

The use of condoms was addressed in question 61, "The last time you had intercourse, did you or your partner use a condom?" Of the affirmative and negative responses, there was a fairly even division with 55% using condoms and 45% not (Table 9).

Table 9. Last Intercourse--Condom Use.

Use	Number	Percent
N/A	1,245	49.1%
Yes	617	24.3%
No	510	20.1%
No Response	165	6.5%
Totals	2,537	100.0%

Condom use was the most widely used form of birth control employed by those engaging in sex, with 47% of those who responded stating that the condom was their method of choice (Table 10). A large number of these adolescents used an unreliable method such as withdrawal, used no method of birth control, or were not sure what they had used.

Table 10. Last Intercourse--Method of Birth Control.

Method	Number	Percent
N/A	1,246	49.1%
No Birth Control	181	7.1%
Birth Control Pill	178	7.0%
Condom	533	21.0%
Withdrawal	172	6.8%
Other	49	1.9%
Not Sure	16	0.6%
No Response	162	6.4%
Totals	2,537	100.0%

Cluster Analysis

A cluster analysis procedure was utilized to determine if distinctive groups of students could be formed based on answers related to sexual behavior and demographics. Cluster analysis is a multivariate statistical procedure that "starts with a data set containing information about a sample of entities and attempts to reorganize these entities into relatively homogeneous groups" (Aldenderfer & Blashfield, 1990, p. 7). In other words, groups are formed that have similar data characteristics.

There is no 'right' method to determine the selection of cluster groups. Because there is no established correct procedure for selecting clusters, researchers are cautioned that different numbers of clusters from the same data set may produce different results (Aldenderfer & Blashfield, 1990).

The statistical procedure, SPSS Quick Cluster, resulted in three clusters. What follows are numbers of students in each cluster: Group 1 = 1317, Group 2 = 816, and Group 3 = 398. After these groups were chosen, the means for each group were calculated for each of the eight non-demographic items on the questionnaire in order to determine if there were significant diffences among the three groups (Table 11). Group mean values for each question correspond to mathematical means of numbers assigned to each response by the SPSS/PC+ statistical program (See Appendix B). Some

Table 11. Group Means Per Variable.

Question	Cluster 1	Cluster 2	Cluster 3
Taught about HIV/AIDS in school	1.1116	1.0956	1.2864
Parent Discussions about HIV/AIDS	1.4867	1.3750	1.4020
Ever Had Sex	1.9165	0.9044	0.9297
How Old the First Time	0.9856	5.5956	4.1080
How Many Partners Ever	0.9909	2.3897	5.8694
How Many Partners Last 3 Mo.	0.9863	2.3958	3.5578
Condom Use at Last Intercourse	0.9969	2.1593	2.3467
Birth Control Method Last Time	0.9924	3.5098	3.4397

Refer to Appendix B for numbers assigned to each response.

means were less than one as a result of 'no response' answers included in the calculation, since 'no response' was assigned a number '0.'

A one-way analysis of variance (ANOVA) was performed on each of the variables in the study. All but one variable, gender, showed significant differences between clusters (Table 12).

Table 12. ANOVA Differences Among Variables Between Clusters.

Variable	F	df	p
Age	71.02	2/2528	.0000
Gender	2.71	2/2528	.0666
Grade in School	66.33	2/2528	.0000
Taught about HIV/AIDS in school	23.63	2/2528	.0001
Parent Discussions	9.04	2/2528	.0001
Ever Had Sex	2839.77	2/2528	.0000
How Old the First Time	2819.66	2/2528	.0000
How Many Partners Ever	3805.40	2/2528	.0000
How Many Partners Last 3 Mo	1193.11	2/2528	.0000
Condom Use Last Intercourse	1210.84	2/2528	.0000
Birth Control Method Last Time	1719.72	2/2528	.0000

The ANOVA indicated whether or not significant differences existed between the groups or clusters, however, there is no indication of which groups or clusters differed. To determine which groups' scores differed significantly, the post hoc comparison test, the Tukey Procedure, was implemented to determine where differences existed between the groups. In the questions related to age, grade in school, parental discussion about HIV/AIDS, and involvement

in sexual intercourse, Cluster 1 was found to be different from Clusters 2 and 3. The question referring to being taught about HIV/AIDS in the school showed Clusters 1 and 2 with more teaching than Cluster 3. Therefore, Cluster 3 was different from the other two. The questions relating to age at first intercourse, number of partners ever, number of partners during the last three months, and use of condoms at last intercourse showed that all three clusters were different from each other, with Cluster 1 not being involved. Finally, in the question regarding birth control at last intercourse, Cluster 1 differed from Clusters 2 and 3, as a result of not being involved in sexual activities.

Descriptions of Clusters

Each group had distinguishable characteristics which indicated that age, grade, knowledge, and behavior were represented differently in each group (Table 13).

Cluster 1. Cluster 1 represented a group with a young age and history of non-participation in sexual intercourse. The average age of the group was just under sixteen years and in the tenth grade class. This group had received HIV/AIDS education in school; but, had fewer discussions with parents or family members about HIV/AIDS than the other two clusters did. This group, as a whole, had not engaged in sexual intercourse. As a result, the remaining variables of age at first intercourse, number of partners, use of

condoms and use of birth control were not significant for this group.

Cluster 2. Cluster 2 characterizes members more of whom had experienced sexual intercourse at least once but with relatively few sexual encounters. The age of the group was between sixteen and seventeen and in tenth and eleventh grades. Of all three groups, this group reported the most HIV/AIDS education in school and the most discussions with parents or family about HIV/AIDS. However, this group had a higher affirmative response to the question, "Have you ever had sex?" than the other two groups. The average age at first intercourse was fourteen and one-half. Cluster 2 members had one to two sexual partners in their lives. While this group has been sexually active, most of them had not participated in sexual activities in the last three months. This group reported a higher use of a condom during their last encounter than Cluster 3. However, birth control method was evenly split between condoms and birth control pills.

Cluster 3. Cluster 3 reflects a membership with increased sexual activities. The age of the group was similar to Cluster 2, ranging between sixteen and seventeen. The grade in school was slightly higher than Cluster 2, but still in the tenth and eleventh grades. This group reported the least amount of school HIV/AIDS education while parent discussion about HIV/AIDS was between the other two

clusters. This group had responded affirmatively to having ever had sex. The most significant findings for Cluster 3 was the age at first intercourse, thirteen; and the number of partners during their lives, four to five. In the last three months this group reported having between one to two partners. Condoms were used less often than Cluster 2. At their last encounter, this group's members tended to use condoms and birth control pills, but fewer reported condom use when compared to Cluster 2.

Table 13. Composition of Clusters.

Variable	Cluster 1	Cluster 2	Cluster 3
	n=1317	n=816	n=398
Age	<16	16-17	16-17
Grade in School	10th	10th-11th	10th-11th
Taught about HIV/AIDS in school	Some	Most	Least
Parent Discussions about HIV/AIDS	Least	Most	Some
Ever Had Sex	No	Yes	Yes
How Old the First Time	N/A	14.5	13
How Many Partners Ever	N/A	1-2	4-5
How Many Partners Last 3 Mo	N/A	0	1-2
Condom Use Last Intercourse	N/A	Yes	Fewer Yes
Birth Control Method Last Time	N/A	Pill/condom	Pill/condom

N/A: Not applicable

CHAPTER 5

DISCUSSION

Acquired Immune Deficiency Syndrome will continue to impact public health for years to come. Each year, as a new generation of adolescents matures, the sexual lifestyles they establish will determine their risk for HIV. A multitude of curricula have been developed related to sexuality education, abstinence, prevention of pregnancy, and prevention of STD/HIV/AIDS. Education based on facts, values, norms, decision-making, and skills has proven to be effective in many instances. In addition, alternative methods in educating adolescents must address behavior variation, recognition of vulnerability, and safer behaviors. Based on the review of literature, techniques could include role play, small groups, assertiveness training, small groups and workshops. Media presentations and pro-prevention testimonials by famous individuals may also be effective. Studies reviewed by Kirby, et al. (1994) indicated that sexuality education did not increase the incidence of sexual activity.

Three purposes were identified for this study. The first purpose was to describe the current status of sexual activity among Montana's adolescents specifically related to age, frequency of sexual intercourse, and condom use. The

second purpose was to study whether being taught in school about HIV/AIDS related to adolescent sexual behavior. The third purpose was to study the relationship between adolescent sexual behavior and parental discussion of HIV/AIDS. Secondary data analysis of the 1995 Montana Youth Risk Behavior Survey was performed to answer the research questions.

Evaluation of Results

Cluster analysis was utilized to determine relationships among the research variables. Major findings included the identification of three distinct clusters. Cluster 1 included 52% of the participants and was characterized by a group of adolescents under the age of sixteen who had never engaged in sexual intercourse. This group had been taught about HIV/AIDS in school more then Cluster 3, but less than Cluster 2. Additionally, this group had the least parental discussions about HIV/AIDS of the three groups.

Cluster 2 was characterized by a group of 816 students aged sixteen to seventeen. This group had engaged in sexual intercourse once or twice in their lifetimes, but not in the last three months. The age at first intercourse was fourteen and one half. This group tended to have used a condom during their last sexual encounter and reported using the condom or pill as their chosen method of birth control.

Cluster 2 had been taught in school about HIV/AIDS more than the other two groups and had also had the most parental discussions about HIV/AIDS.

Cluster 3 included the most sexually active group of students and was the smallest group with sixteen percent of the sample. Aged sixteen to seventeen, Cluster 3 members were characterized by age at first intercourse of thirteen, with four to five partners in their lifetimes and one to two partners in the last three months. Condoms were used less during last intercourse when compared to Cluster 2, with the pill or condoms used as the dominant birth control methods.

An interesting finding in the data analysis was that 21% of the sexually active students in Clusters 2 and 3 had used no birth control, or withdrawal, or were unsure of the method used at last intercourse.

Limitations

Two significant limitations related to data analysis were identified. First, there was no mechanism to determine differing amounts of instruction. The question, "Have you ever been taught about HIV/AIDS in school," had a wide area of interpretation as the survey did not specify the type or duration of instruction. Second, there also was no mechanism to determine to what extent there was discussion with parents. Had there been more specificity of these two questions clearer conclusions could have been drawn

regarding successful teaching programs and parental involvement. A third limitation related to secondary data analysis. Existing data was utilized. Therefore it was not possible to develop questions specifically related to peer-directed and parent-directed influences. Responses were restricted to questions in the survey and none of these related to actual mechanisms of decision-making in this population.

Results of this study can only be generalized to high school students in Montana. The original data were obtained from a randomized sample of Montana high school students. However, due to considerations such as rurality of Montana and the ethnic configuration of the sample, generalizing to any other population would be inappropriate. Additionally, results of cluster analysis are specific to this sample and not considered to be generalizable.

Implications For Practice

Practice implications may occur on two levels: As health care providers in clinics or in schools or as health educators in schools. In either case, recommendations are similar. Health care professionals and educators must instill upon adolescents the importance of reducing risk in their lives. However, proper presentation is mandatory so that the message is not 'tuned out.' That adolescents submit to peer pressure and may not assert themselves in

certain situations is well known. Education must focus, in part, on techniques to improve assertiveness. One way to do this is to encourage adolescent girls to carry condoms and to insist upon their use with every sexual encounter. Because condom use decreases with age and is replaced by the pill, reinforcement of condom use is especially important for the older adolescent in order to prevent transmission of sexually transmitted diseases and HIV/AIDS. In addition, the social norm of not using a condom must be modified with condom use becoming widely acceptable to adolescents. Another aspect of assertiveness training is impressing upon adolescents the importance of assuming their partners are positive and requiring condom use with every encounter. As mentioned in the review of literature, there are no assurances that an HIV positive partner will confide this fact to their partner.

Not only must adolescents be educated, but so too must their parents. Communication in the family has correlated negatively with decreased sexuality among adolescents. Parents seen as friendly, attentive, and supportive were viewed by adolescents as promoting the teen's self-image and self-esteem. Interestingly, while parents thought they were knowledgeable and the most important factor in providing information to their teenaged children, the adolescents felt that sex education was needed for the parents so that improved communication could be achieved.

Decision-making in the adolescent, as discussed in the Pre-Adult Health Decision-Making Model (PAHDM), is directly related to maturation and developmental phasing that occur during the transition from childhood to adulthood. "Decision-making directedness is a significant predictor of AIDS-related knowledge, attitudes, beliefs, skills, and behaviors of adolescents" (Langer & Warheit, 1992, p. 939). Health behavior modeling is a strong determinant in the decision-making process of adolescents. Effective role models, such as parents and peers, who project positive health behaviors effect the decision-making cues to action in a positive manner.

Nurses are in the unique position of being able to provide needed education to both generations. Whether it be under the auspices of a school program or in a clinic setting, courses are readily available to provide any educational offering desired. Additionally, one-on-one instruction may be beneficial. However, it is of utmost importance to maintain professionalism and confidentiality, and provide a trusting environment, while listening and being interested in the adolescent or his/her parent.

Many established curricula have proven to be successful in meeting the objective of reducing risk behavior among adolescents. The CDC's DASH program has curricula available for schools interested in participating in this type of education. School districts, community members, parents,

and health care providers must be proactive and encourage sexuality education that focuses on reducing risk behavior by using proven successful techniques. However, educational curricula must focus on the three groups of students identified in this study with each groups' individual needs considered.

Implications for Research

Future research may encompass several areas. Studies should focus on adolescent/parent communication related to HIV/AIDS and sexual activity. Do communication styles affect the likelihood of early sexual activities? If a parent knows his/her child is not sexually active, does that mean that discussion of STD/HIV/AIDS, unplanned pregnancy, or use of condoms is unnecessary? Additionally, studying parental involvement in school based sexuality education should be accomplished to determine the relationship between parent participation and adolescent behavior. Further studies may include an examination of intra-personal processes of behavior including decision-making skills, risk taking behaviors, and self esteem development; along with interpersonal processes with focusing on parents, other adults, and peers. The YRBS should be expanded to include what type of parental discussions occurred with the adolescent and how much education was presented in the school, and the resulting relationship.

With respect to decision-making, there is a need to develop and test valid and reliable instruments to investigate decision-making orientation in adolescents related to specific sexual attitudes and behaviors. Future research could also explore the link between the perceived risk environment and actual risk behaviors of this age group.

Research may focus on social aspects in the adolescents' life, including the community influences of media, health care systems, and religious groups. Research related to psychological aspects should examine factors that influence health damaging and health promoting behaviors, including social support and peer pressure.

Educational research should be developed in several areas. First, determine relationships between topics and methods of instruction, student ages, and sexual and contraceptive behavior. Second, investigate which characteristics of curriculums are important in reducing risk-taking behaviors. Third, determine whether abstinence focused curriculums indeed delay the onset of intercourse, and if these curricula are more or less effective than other methods. Fourth, assess more accurately which approaches improve access to and utilization of reproductive health services. Fifth, assess the impact of health services and educative approaches on pregnancy, STD, and HIV rates. And,

finally, determine whether instruction had a lasting effect or if reinforcement sessions would be beneficial.

Qualitative research should be undertaken to examine adolescents' definitions of disease and illness, risky behavior, perceived self-efficacy, and significance of parent and/or school provided education. This type of research would provide additional information to complement and add contextual depth to the HIV/adolescent/risk knowledge base.

Conclusions

Montana's adolescents exhibit varying degrees of sexual experience. Nurses must recognize this and be able to provide care and education in a compassionate, non judgmental manner. To some degree, adolescents will always participate in sexual activities. School districts must also acknowledge behavioral differences and be proactive in educating our youth. By soliciting community, parental, and health care involvement in establishing meaningful programs, we hope to appreciate a healthier population in our state. These healthy behaviors include decreasing risk as well as promoting sexual health. We are challenged with the responsibility of providing appropriate education to young Montanans.

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APPENDICES

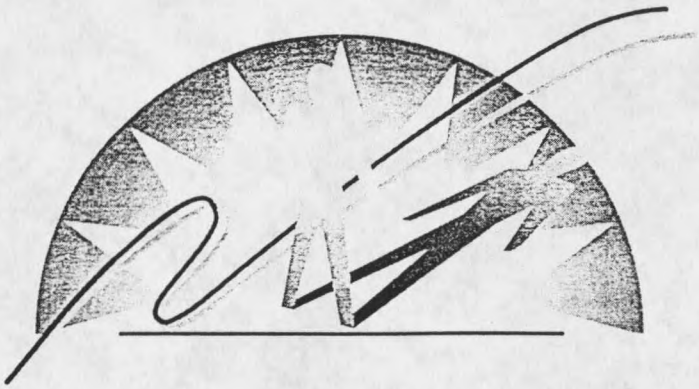
APPENDIX A

YOUTH RISK BEHAVIOR SURVEY

QUESTIONNAIRE

1995

Montana Youth Risk Behavior Survey



1995 YOUTH RISK BEHAVIOR SURVEY

INSTRUCTIONS

This survey is about health behavior. It has been developed so you can tell us what you do that may affect your health. The information you give will be used to develop better health education programs for young people like yourself. There are some important things to remember as you do this survey:

- DO NOT write your name on this survey. The answers you give will be kept private. No one will know what you write. Answer the questions based on what you really do.

- Completing the survey is voluntary. You may skip any questions you do not want to answer. Whether or not you answer the questions will not affect your grade in this class.

- The questions that ask about your background will only be used to describe the types of students completing this survey. The information will not be used to find out your name. No names will ever be reported.

- Fill in the circles completely on your answer sheet! When you are finished, follow the instructions of the person giving you the survey.

THANK YOU VERY MUCH FOR YOUR HELP

INSTRUCTIONS: Read each question carefully. Fill in the circle on your answer sheet that matches the letter of your answer. CHOOSE THE **ONE** BEST ANSWER FOR EACH QUESTION.

1. How old are you?

   a. 12 years old or younger
   b. 13 years old
   c. 14 years old
   d. 15 years old
   e. 16 years old
   f. 17 years old
   g. 18 years old or older

2. What is your sex?

   a. Female
   b. Male

3. In what grade are you?

   a. 9th grade
   b. 10th grade
   c. 11th grade
   d. 12th grade
   e. Ungraded or other

4. How do you describe yourself?

   a. White - not Hispanic
   b. Black - not Hispanic
   c. Hispanic or Latino
   d. Asian or Pacific Islander
   e. American Indian or Alaskan Native
   f. Other

The next 17 questions ask about safety and violence.

5. How often do you wear a seat belt when **riding in** a car driven by someone else?

   a. Never
   b. Rarely
   c. Sometimes
   d. Most of the time
   e. Always

6. During the past 12 months, how many times did you ride a motorcycle?

   a. 0 times
   b. 1 to 10 times
   c. 11 to 20 times
   d. 21 to 39 times
   e. 40 or more times

7. **When you rode a motorcycle** during the past 12 months, how often did you wear a helmet?

   a. I did not ride a motorcycle during the past 12 months
   b. Never wore a helmet
   c. Rarely wore a helmet
   d. Sometimes wore a helmet
   e. Most of the time wore a helmet
   f. Always wore a helmet

8. During the past 12 months, how many times did you ride a bicycle?

   a. 0 times
   b. 1 to 10 times
   c. 11 to 20 times
   d. 21 to 39 times
   e. 40 or more times

9. **When you rode a bicycle** during the past 12 months, how often did you wear a helmet?

   a. I did not ride a bicycle during the past 12 months
   b. Never wore a helmet
   c. Rarely wore a helmet
   d. Sometimes wore a helmet
   e. Most of the time wore a helmet
   f. Always wore a helmet

10. During the past 30 days, how many times did you ride in a car or other vehicle **driven by someone who had been drinking alcohol**?

    a. 0 times
    b. 1 time
    c. 2 or 3 times
    d. 4 or 5 times
    e. 6 or more times

11. During the past 30 days, how many times did **you** drive a car or other vehicle **when you had been drinking alcohol?**

    a. 0 times
    b. 1 time
    c. 2 or 3 times
    d. 4 or 5 times
    e. 6 or more times

12. During the past 30 days, on how many days did you carry **a weapon** such as a gun, knife, or club?

    a. 0 days
    b. 1 day
    c. 2 or 3 days
    d. 4 or 5 days
    e. 6 or more days

13. During the past 30 days, on how many days did you carry **a gun**?

    a. 0 days
    b. 1 day
    c. 2 or 3 days
    d. 4 or 5 days
    e. 6 or more days

14. During the past 30 days, on how many days did you carry a weapon such as a gun, knife, or club **on school property**?

    a. 0 days
    b. 1 day
    c. 2 or 3 days
    d. 4 or 5 days
    e. 6 or more days

15. During the past 30 days, how many days did you **not** go to school because you felt you would be unsafe at school or on your way to or from school?

    a. 0 days
    b. 1 day
    c. 2 or 3 days
    d. 4 or 5 days
    e. 6 or more days

16. During the past 12 months, how many times has someone threatened or injured you with a weapon such as a gun, knife, or club **on school property**?

    a. 0 times
    b. 1 time
    c. 2 or 3 times
    d. 4 or 5 times
    e. 6 or 7 times
    f. 8 or 9 times
    g. 10 or 11 times
    h. 12 or more times

17. During the past 12 months, how many times has someone stolen or deliberately damaged your property such as your car, clothing, or books **on school property**?

    a. 0 times
    b. 1 time
    c. 2 or 3 times
    d. 4 or 5 times
    e. 6 or 7 times
    f. 8 or 9 times
    g. 10 or 11 times
    h. 12 or more times

18. During the past 12 months, how many times were you in a physical fight?

    a. 0 times
    b. 1 time
    c. 2 or 3 times
    d. 4 or 5 times
    e. 6 or 7 times
    f. 8 or 9 times
    g. 10 or 11 times
    h. 12 or more times

19. During the past 12 months, how many times were you in a physical fight in which you were injured and had to be treated by a doctor or nurse?

    a. 0 times
    b. 1 time
    c. 2 or 3 times
    d. 4 or 5 times
    e. 6 or more times

20. During the past 12 months, how many times were you in a physical fight **on school property**?

    a. 0 times
    b. 1 time
    c. 2 or 3 times
    d. 4 or 5 times
    e. 6 or 7 times
    f. 8 or 9 times
    g. 10 or 11 times
    h. 12 or more times

21. The **last time** you were in a physical fight, with whom did you fight?

    a. I have never been in a physical fight
    b. A total stranger
    c. A friend or someone I know
    d. A boyfriend, girlfriend, or date
    e. A parent, brother, sister, or other family member
    f. Someone not listed above
    g. More than one of the persons listed above

Sometimes people feel so depressed and hopeless about the future that they may consider attempting suicide, that is, taking some action to end their own life. The next four questions ask about attempted suicide.

22. During the past 12 months, did you ever **seriously** consider attempting suicide?

    a. Yes
    b. No

23. During the past 12 months, did you make a plan about how you would attempt suicide?

    a. Yes
    b. No

24. During the past 12 months, how many times did you actually attempt suicide?

    a. 0 times
    b. 1 time
    c. 2 or 3 times
    d. 4 or 5 times
    e. 6 or more times

25. **If you attempted suicide** during the past 12 months, did any attempt result in an injury, poisoning, or overdose that had to be treated by a doctor or nurse?

    a. **I did not attempt suicide** during the past 12 months
    b. Yes
    c. No

The next ten questions ask about tobacco use.

26. Have you ever tried cigarette smoking, even one or two puffs?

    a. Yes
    b. No

27. How old were you when you smoked a whole cigarette for the first time?

    a. I have never smoked a whole cigarette
    b. 8 years old or younger
    c. 9 or 10 years old
    d. 11 or 12 years old
    e. 13 or 14 years old
    f. 15 or 16 years old
    g. 17 years old or older

28. During the past 30 days, on how many days did you smoke cigarettes?

    a. 0 days
    b. 1 or 2 days
    c. 3 to 5 days
    d. 6 to 9 days
    e. 10 to 19 days
    f. 20 to 29 days
    g. All 30 days

29. During the past 30 days, on the days you smoked, how many cigarettes did you smoke **per day**?

    a. I did not smoke cigarettes during the past 30 days
    b. Less than 1 cigarette per day
    c. 1 cigarette per day
    d. 2 to 5 cigarettes per day
    e. 6 to 10 cigarettes per day
    f. 11 to 20 cigarettes per day
    g. More than 20 cigarettes per day

30. During the past 30 days, how did you usually get your own cigarettes? (Select only **one** response.)

    a. I did not smoke cigarettes during the past 30 days
    b. I bought them in a store such as a convenience store, supermarket, or gas station
    c. I bought them from a vending machine
    d. I gave someone else money to buy them for me
    e. I borrowed them from someone else
    f. I stole them
    g. I got them some other way

31. **When you bought cigarettes** in a store during the past 30 days, were you **ever** asked to show proof of age?

    a. I did not smoke cigarettes during the past 30 days
    b. I did not buy cigarettes in a store during the past 30 days
    c. Yes, I was asked to show proof of age
    d. No, I was not asked to show proof of age

32. During the past 30 days, on how many days did you smoke cigarettes **on school property**?

    a. 0 days
    b. 1 or 2 days
    c. 3 to 5 days
    d. 6 to 9 days
    e. 10 to 19 days
    f. 20 to 29 days
    g. All 30 days

33. Have you ever tried **to quit** smoking cigarettes?

    a. Yes
    b. No

34. During the past 30 days, on how many days did you use **chewing tobacco or snuff**, such as Redman, Levi Garrett, Beechnut, Skoal, Skoal Bandits, or Copenhagen?

    a. 0 days
    b. 1 or 2 days
    c. 3 to 5 days
    d. 6 to 9 days
    e. 10 to 19 days
    f. 20 to 29 days
    g. All 30 days

35. During the past 30 days, on how many days did you use **chewing tobacco or snuff on school property**?

    a. 0 days
    b. 1 or 2 days
    c. 3 to 5 days
    d. 6 to 9 days
    e. 10 to 19 days
    f. 20 to 29 days
    g. All 30 days

The next five questions ask about drinking alcohol. This includes drinking beer, wine, wine coolers, and liquor such as rum, gin, vodka, or whiskey. For these questions, drinking alcohol does not include drinking a few sips of wine for religious purposes.

36. How old were you when you had your first drink of alcohol other than a few sips?

    a. I have never had a drink of alcohol other than a few sips
    b. 8 years old or younger
    c. 9 or 10 years old
    d. 11 or 12 years old
    e. 13 or 14 years old
    f. 15 or 16 years old
    g. 17 years old or older

37. During your life, on how many days have you had at least one drink of alcohol?

    a. 0 days
    b. 1 or 2 days
    c. 3 to 9 days
    d. 10 to 19 days
    e. 20 to 39 days
    f. 40 to 99 days
    g. 100 or more days

38. During the past 30 days, on how many days did you have at least one drink of alcohol?

    a. 0 days
    b. 1 or 2 days
    c. 3 to 5 days
    d. 6 to 9 days
    e. 10 to 19 days
    f. 20 to 29 days
    g. All 30 days

39. During the past 30 days, on how many days did you have 5 or more drinks of alcohol in a row, that is, within a couple of hours?

    a. 0 days
    b. 1 day
    c. 2 days
    d. 3 to 5 days
    e. 6 to 9 days
    f. 10 to 19 days
    g. 20 or more days

40. During the past 30 days, on how many days did you have at least one drink of alcohol **on school property**?

    a. 0 days
    b. 1 or 2 days
    c. 3 to 5 days
    d. 6 to 9 days
    e. 10 to 19 days
    f. 20 to 29 days
    g. All 30 days

The next four questions ask about marijuana use. Marijuana also is called grass or pot.

41. How old were you when you tried marijuana for the first time?

    a. I have never tried marijuana
    b. 8 years old or younger
    c. 9 or 10 years old
    d. 11 or 12 years old
    e. 13 or 14 years old
    f. 15 or 16 years old
    g. 17 years old or older

42. During your life, how many times have you used marijuana?

    a. 0 times
    b. 1 or 2 times
    c. 3 to 9 times
    d. 10 to 19 times
    e. 20 to 39 times
    f. 40 to 99 times
    g. 100 or more times

43. During the past 30 days, how many times did you use marijuana?

    a. 0 times
    b. 1 or 2 times
    c. 3 to 9 times
    d. 10 to 19 times
    e. 20 to 39 times
    f. 40 or more times

44. During the past 30 days, how many times did you use marijuana **on school property**?

    a. 0 times
    b. 1 or 2 times
    c. 3 to 9 times
    d. 10 to 19 times
    e. 20 to 39 times
    f. 40 or more times

The next nine questions ask about cocaine and other drug use.

45. How old were you when you tried **any** form of cocaine, including powder, crack, or freebase, for the first time?

    a. I have never tried cocaine
    b. 8 years old or younger
    c. 9 or 10 years old
    d. 11 or 12 years old
    e. 13 or 14 years old
    f. 15 or 16 years old
    g. 17 years old or older

46. During your life, how many times have you used **any** form of cocaine, including powder, crack, or freebase?

    a. 0 times
    b. 1 or 2 times
    c. 3 to 9 times
    d. 10 to 19 times
    e. 20 to 39 times
    f. 40 or more times

47. During the past 30 days, how many times did you use **any** form of cocaine, including powder, crack, or freebase?

    a. 0 times
    b. 1 or 2 times
    c. 3 to 9 times
    d. 10 to 19 times
    e. 20 to 39 times
    f. 40 or more times

48. During your life, how many times have you used the **crack or freebase** forms of cocaine?

    a. 0 times
    b. 1 or 2 times
    c. 3 to 9 times
    d. 10 to 19 times
    e. 20 to 39 times
    f. 40 or more times

49. During your life, how many times have you sniffed glue, or breathed the contents of aerosol spray cans, or inhaled any paints or sprays to get high?

    a. 0 times
    b. 1 or 2 times
    c. 3 to 9 times
    d. 10 to 19 times
    e. 20 to 39 times
    f. 40 or more times

50. During your life, how many times have you taken **steroid pills or shots** without a doctor's prescription?

    a. 0 times
    b. 1 or 2 times
    c. 3 to 9 times
    d. 10 to 19 times
    e. 20 to 39 times
    f. 40 or more times

51. During your life, how many times have you used any other type of **illegal** drug, such as LSD, PCP, ecstasy, mushrooms, speed, ice, or heroin?

    a. 0 times
    b. 1 or 2 times
    c. 3 to 9 times
    d. 10 to 19 times
    e. 20 to 39 times
    f. 40 or more times

52. During your life, how many times have you used a needle to inject any **illegal** drug into your body?

    a. 0 times
    b. 1 time
    c. 2 or more times

53. During the past 12 months, has anyone offered, sold, or given you an illegal drug **on school property**?

    a. Yes
    b. No

The next two questions ask about AIDS education and information.

54. Have you ever been taught about AIDS or HIV infection in school?

    a. Yes
    b. No
    c. Not sure

55. Have you ever talked about AIDS or HIV infection with your parents or other adults in your family?

    a. Yes
    b. No
    c. Not sure

The next eight questions ask about sexual behavior.

56. Have you ever had sexual intercourse?

    a. Yes
    b. No

57. How old were you when you had sexual intercourse for the first time?

    a. I have never had sexual intercourse
    b. 11 years old or younger
    c. 12 years old
    d. 13 years old
    e. 14 years old
    f. 15 years old
    g. 16 years old
    h. 17 years old or older

58. During your life, with how many people have you had sexual intercourse?

    a. I have never had sexual intercourse
    b. 1 person
    c. 2 people
    d. 3 people
    e. 4 people
    f. 5 people
    g. 6 or more people

59. During the past 3 months, with how many people did you have sexual intercourse?

    a. I have never had sexual intercourse
    b. I have had sexual intercourse, but not during the past 3 months
    c. 1 person
    d. 2 people
    e. 3 people
    f. 4 people
    g. 5 people
    h. 6 or more people

60. Did you drink alcohol or use drugs before you had sexual intercourse the **last time**?

    a. I have never had sexual intercourse
    b. Yes
    c. No

61. The **last time** you had sexual intercourse, did you or your partner use a condom?

    a. I have never had sexual intercourse
    b. Yes
    c. No

62. The **last time** you had sexual intercourse, what **one** method did you or your partner use to **prevent pregnancy**? (Select only **one** response.)

    a. I have never had sexual intercourse
    b. No method was used to prevent pregnancy
    c. Birth control pills
    d. Condoms
    e. Withdrawal
    f. Some other method
    g. Not sure

63. How many times have you been pregnant or gotten someone pregnant?

    a. 0 times
    b. 1 time
    c. 2 or more times
    d. Not sure

The next six questions ask about body weight.

64. How do **you** describe your weight?

    a. Very underweight
    b. Slightly underweight
    c. About the right weight
    d. Slightly overweight
    e. Very overweight

65. Which of the following are you trying to do about your weight?

    a. **Lose** weight
    b. **Gain** weight
    c. **Stay** the same weight
    d. I am **not trying to do anything** about my weight

66. During the past 30 days, did you **diet** to lose weight or to keep from gaining weight?

    a. Yes
    b. No

67. During the past 30 days, did you **exercise** to lose weight or to keep from gaining weight?

    a. Yes
    b. No

68. During the past 30 days, did you **vomit or take laxatives** to lose weight or to keep from gaining weight?

    a. Yes
    b. No

69. During the past 30 days, did you **take diet pills** to lose weight or to keep from gaining weight?

    a. Yes
    b. No

The next seven questions ask about food you ate yesterday. Think about all meals and snacks you ate yesterday from the time you got up until you went to bed. Be sure to include food you ate at home, at school, at restaurants, or anywhere else.

70. Yesterday, how many times did you eat fruit?

    a. 0 times
    b. 1 time
    c. 2 times
    d. 3 or more times

71. Yesterday, how many times did you drink fruit juice?

    a. 0 times
    b. 1 time
    c. 2 times
    d. 3 or more times

72. Yesterday, how many times did you eat green salad?

    a. 0 times
    b. 1 time
    c. 2 times
    d. 3 or more times

73. Yesterday, how many times did you eat **cooked** vegetables?

    a. 0 times
    b. 1 time
    c. 2 times
    d. 3 or more times

74. Yesterday, how many times did you eat hamburger, hot dogs, or sausage?

    a. 0 times
    b. 1 time
    c. 2 times
    d. 3 or more times

75. Yesterday, how many times did you eat french fries or potato chips?

    a. 0 times
    b. 1 time
    c. 2 times
    d. 3 or more times

76. Yesterday, how many times did you eat cookies, doughnuts, pie, or cake?

a. 0 times
b. 1 time
c. 2 times
d. 3 or more times

The next eight questions ask about physical activity.

77. On how many of the past 7 days did you exercise or participate in sports activities for at least 20 minutes **that made you sweat and breathe hard**, such as basketball, jogging, swimming laps, tennis, fast bicycling, or similar aerobic activities?

a. 0 days
b. 1 day
c. 2 days
d. 3 days
e. 4 days
f. 5 days
g. 6 days
h. 7 days

78. On how many of the past 7 days did you do **stretching exercises**, such as toe touching, knee bending, or leg stretching?

a. 0 days
b. 1 day
c. 2 days
d. 3 days
e. 4 days
f. 5 days
g. 6 days
h. 7 days

79. On how many of the past 7 days did you do exercises to **strengthen or tone your muscles**, such as push-ups, sit-ups, or weight lifting?

a. 0 days
b. 1 day
c. 2 days
d. 3 days
e. 4 days
f. 5 days
g. 6 days
h. 7 days

80. On how many of the past 7 days did you **walk or bicycle for at least 30 minutes** at a time? (Include walking or bicycling to or from school.)

a. 0 days
b. 1 day
c. 2 days
d. 3 days
e. 4 days
f. 5 days
g. 6 days
h. 7 days

81. In an average week when you are in school, on how many days do you go to physical education (PE) classes?

a. 0 days
b. 1 day
c. 2 days
d. 3 days
e. 4 days
f. 5 days

82. During an average physical education (PE) class, how many minutes do you spend actually exercising or playing sports?

a. I do not take PE
b. Less than 10 minutes
c. 10 to 20 minutes
d. 21 to 30 minutes
e. More than 30 minutes

83. During the past 12 months, on how many sports teams **run by your school**, did you play? (Do not include PE classes.)

a. 0 teams
b. 1 team
c. 2 teams
d. 3 or more teams

84. During the past 12 months, on how many sports teams **run by organizations outside of your school**, did you play?

a. 0 teams
b. 1 team
c. 2 teams
d. 3 or more teams

APPENDIX B

NUMBER VALUES ASSIGNED TO RESPONSES

SELECTED QUESTIONS FROM YRBS

Question 1. How old are you?

Value Label	Value	Frequency
12 or younger	1	2
13	2	1
14	3	163
15	4	565
16	5	691
17	6	703
18 or older	7	409
No response	0	3
	Total	2537

Question 2. What is your sex?

Value Label	Value	Frequency
Female	1	1215
Male	2	1314
No response	0	8
	Total	2537

Question 3. In what grade are you in?

Value Label	Value	Frequency
9th	1	595
10th	2	595
11th	3	735
12th	4	588
Ungraded or other	5	7
No response	0	17
	Total	2537

Question 54. Have you ever been taught about AIDS or HIV infection in school?

Value Label	Value	Frequency
Yes	1	2252
No	2	123
Not sure	3	124
No response	0	38
	Total	2537

Question 55. Have you ever talked about AIDS or HIV infection with your parents or other adults in your family?

Value Label	Value	Frequency
Yes	1	1573
No	2	785
Not sure	3	165
No response	0	14
	Total	2537

Question 56. Have you ever had sexual intercourse?

Value Label	Value	Frequency
Yes	1	1132
No	2	1250
No response	0	155
	Total	2537

Question 57. How old were you when you had sexual intercourse for the first time?

Value Label	Value	Frequency
I have never had sexual intercourse	1	1246
11 years old or younger	2	94
12 years old	3	51
13 years old	4	130
14 years old	5	239
15 years old	6	294
16 years old	7	223
17 years old or older	8	109
No response	0	151
	Total	2537

Question 58. During your life, with how many people have you had sexual intercourse?

Value Label	Value	Frequency
Never	1	1247
1	2	438
2	3	193
3	4	134
4	5	82
5	6	73
≥6	7	215
No response	0	155
	Total	2537

Question 59. During the last three months, with how many people did you have sexual intercourse?

Value Label	Value	Frequency
I have never had sexual intercourse	1	1247
I have had sexual intercourse but not in the last three months	2	356
1 person	3	596
2 people	4	92
3 people	5	36
4 people	6	16
5 people	7	9
6 or more people	8	27
No response	0	158
	Total	2537

Question 61. The last time you had sexual intercourse, did you or your partner use a condom?

Value Label	Value	Frequency
I have never had sexual intercourse	1	1245
Yes	2	617
No	3	510
No response	0	165
	Total	2537

Question 62. The last time you had sexual intercourse, what one method did you or your partner use to prevent pregnancy (Select only one response).

Value Label	Value	Frequency
I have never had sexual intercourse	1	1246
No method was used to prevent pregnancy	2	181
Birth control pills	3	178
Condoms	4	533
Withdrawal	5	172
Some other method	6	49
Not sure	7	16
No response	0	162
	Total	2537

APPENDIX C

APPROVAL LETTERS

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Fax (406) 243-5745

May 31, 1995

TO: Dee Trombetta

FR: Marty Rhea, PhD, RNCS
Interim Chair, College of Nursing Human Subjects Committee

RE: Proposal submitted

I have reviewed your proposal entitled, "The Association Between Knowledge and Behavior in Relation to Sexual Activity and Prevention of HIV/AIDs Among High School Students in Montana." Acting on behalf of the Committee per their request, I have given approval to your proposal. You are free to proceed with data analysis.

Good luck! I look forward to hearing of your results.

cc: Sharon Hovey
Committee Chair

Dolores J. Trombetta
342 Clarke Street
Helena, MT 59601
May 15, 1995

Richard Chiotti, Health Education Specialist
Office of Public Instruction
State Capitol
Helena, MT 59620

Dear Mr. Chiotti,

This letter is in follow-up to our meeting in April 1995 regarding secondary analysis of data from the Montana Youth Risk Behavior Survey (YRBS). During the meeting we agreed to the following:

1. Dolores (Dee) Trombetta will have access to data from the 1995 Montana YRBS in order to determine the relationship between AIDS knowledge and sexual behavior among high school students.

2. Dick Dodge from Dodge Data Systems will provide requested data.

3. All data analysis and conlcusions will be held in strict confidence.

4. A copy of results will be provided to your office.

Thank you for your consideration in this project.

Dolores Trombetta

Dolores Trombetta, R.N.

Permission is granted for Dolores Trombetta to analyze data provided by Dodge Data Systems in order to determine if sexual activity of high school students in Montana is related to knowledge of AIDS.

Richard Chiotti 3/15/95
Richard Chiotti

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October 26, 1995

Rick Chiotti, Health Education Specialist
Office of Public Instruction
State Capitol
Helena, MT 59601
(406) 444-3095

Dear Rick,

This letter is in follow-up to your meeting with Dee Trombetta and Dick Dodge on October 24, 1995. Several issues were discussed and I feel it important to summarize the conclusions and agreements we made.

1. Your office will provide a data disk copy of the 1995 Montana Youth Risk Behavior Survey (YRBS) with school identifiers removed to Dee Trombetta. The format is to be a tab deliminated ASCI file.

2. In return for access to the data, I, Dee Trombetta agree to use only the sections related to demographics, sexual activity, and knowledge of AIDS for secondary analysis as part of my master's thesis. The data and data disk will remain secured and only myself and the statistician will have access to it. I agree not to copy any of the data on the disk and will return the disk to you when analysis is complete.

3. Results of analysis reported in my master's thesis will be in the form of group data with credit given to the primary source, the 1995 YRBS.

4. Findings of this study will be bound as a professional thesis and be placed in the library at Montana State University, Bozeman. In addition, results may potentially be submitted for professional nursing publications.

MONTANA STATE UNIVERSITY
1893•CENTENNIAL•1993

College of Nursing

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Great Falls, Montana 59405

Telephone 406-455-5610
FAX 406-454-2526

September 25, 1995

Lilly M. Langer, PhD.
Florida International University
University Park, DM 334
Miami, Florida 33199

Dear Dr. Langer,

As a graduate student at the Montana State University College of Nursing, I am interested in incorporating your model, the Pre-Adult Decision-Making Model, into my thesis. I will perform secondary analysis of data from the 1995 Montana Youth Risk Behavior Survey in order to determine relationships between knowledge of AIDS and sexual behavior among high school students.

There are very few models available specifically relating to adolescents. May I have permission to use your model in my study?

Enclosed you will find a self-addressed envelope for your mailing convenience.

Thank you for your consideration.

Dolores Trombetta

Dolores Trombetta, RN, BSN
P.O. Box 211
Helena, MT 59624
(406) 442-1630

Ms. Trombetta
You have my
permission to use
the PATHDM
Good Luck
Lilly Langer

I sincerely appreciate having access to this data. This study is significant to professional nursing since the results may be utilized to promote healthy behaviors in adolescents. My hope is that professional nurses will have some impact in the various situations in which nurses encounter this impressionable group.

Sincerely,

Dee Trombetta

Dolores (Dee) Trombetta

xc: Professor Sharon R. Hovey, Committee Member, 455-5620 Sharon R. Hovey
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