Adolescents Not Attending Schools: Their Knowledge and Behavioral Response to AIDS

by

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Introduction

As the AIDS epidemic has progressed, education of adolescents has received increasing priority. High schools have been the primary focus of education and research, which unfortunately neglects those adolescents who are not attending schools. This is a significant population considering that twenty-five percent of students drop out from high school before graduating (Belfer, et al., 1988). The focus of this study was directed towards furthering understanding of this largely understudied population of adolescents. The purpose of this study was to describe this subpopulations' current knowledge and behavioral response to AIDS.

Since the emergence of the disease, Acquired Immunodeficiency Syndrome (AIDS), in 1981 the disease has reached epidemic proportions and stymied the medical profession. The disease is fatal and to this date there is no effective treatment or cure. Education focusing on prevention is the only currently available method to curtail the spread of this disease. Due to their developmental level, adolescents tend to view themselves as omnipotent and consequently are less likely to be concerned with the potential consequences of their behavior (Wadsworth, 1979). For this reason prevention poses a particularly difficult

problem with the adolescent population who engage in behaviors that place them at risk for contracting the disease.

In the effort to educate and affect preventive behaviors in the adolescent population it is critical to understand how effective the current educational efforts have been and to what extent behaviors have changed as a result of this knowledge. The majority of the education and research that has focused on adolescents and AIDS has occurred in high schools where the population is large and highly accessible. Although this research has provided useful information about the knowledge, attitudes, beliefs and behaviors of adolescents regarding AIDS, it does not include the population of adolescents who do not attend school. This is a more difficult population to access than students attending school, and is also the population identified as more likely to engage in behaviors, such as IV drug use and prostitution, that place them at greater risk of contracting the human immunodeficiency virus (HIV) that causes AIDS (Haffner, 1988).

Because this population is at greater risk, it is important to expand our knowledge of how they are obtaining information about AIDS, the level and accuracy of their knowledge, their view of personal risk, and, if they have made behavioral changes towards prevention, what influenced

their decisions to make changes. A clearer understanding of these factors is necessary to guide our efforts to protect this population.

It is particularly important that health care professionals are aware of this information because they are often called upon as consultants for education regarding health and illness. Nurses and doctors were also identified by the majority of students in a study by Helgerson, et al. (1988) as their preferred potential source of information regarding AIDS and were the second source of choice identified in the study by Johnson (1989).

Significance

At the end of 1988, 977 adolescent AIDS cases in persons aged 13-21 years were reported to the Centers for Disease Control, accounting for 1% of the total reported cases. However, the mean latency time from viral infection to time of illness is estimated to be 5-7 years (Hein, 1989). Therefore, most infected adolescents would not become ill until they are young adults. The percent of reported cases in people 20-29 years of age is 21% of the total cases which was estimated by the Centers of Disease Control (1988) at 1.5 million.

In understanding the risk of contracting AIDS for adolescents, the incidence of sexually transmitted diseases and IV drug abuse provide some information as to the

potential risk. Fifty percent of all sexually transmitted diseases occur during adolescence and 75% of all reported sexually transmitted diseases occur between the ages of 15 and 24 (Dekker, 1988). If this pattern continues with AIDS it could potentially have a significant impact on adolescents' health status.

Quackenbush (1987) reports approximately 1% of high school seniors report having used IV drugs and that the use is higher among youth who have quit school. The Center for Disease Control (1988) study reported 2.8% to 6.3% of 10,081 respondents reported IV drug use. The potential risk is considered even higher for teenagers who have run away from home and are also more likely to be represented in the population not attending schools. Haffner (1988) reports about one million teenagers run away each year, and an estimated 187,500 of runaways are involved in illegal activities including drug use and prostitution. These estimates are based on the results of personal communications by Haffner with G. Loken and results of questionnaire responses in 1986 of a national sample of high school seniors.

Literature Review

From 1985 to the date of data collection for this study (March, 1989) there had been five published research studies examining the knowledge, attitudes, behaviors and beliefs of

adolescents regarding AIDS (Price, et al., 1985; DiClemente, et al., 1986; Strunnin & Hingson, 1987; Helgerson, 1988; Centers For Disease Control, 1988) and one unpublished study by Johnson (1989). The sample sizes, age ranges, survey tools and locations of these studies are summarized in Table 1.

All of these studies used questionnaires, either self-administered or telephone surveys, and all but the Price (1985) study gave examples of similar types of questions targeting the areas of interest. They also used similar response sets of a "true", "false" and "don't know" type. The Price (1985) study did not ask the same types of questions targeting knowledge of modes of transmission, and instead asked more questions targeting misunderstanding of the disease (ie. Are people with AIDS more likely to go blind?).

Only one of these studies reported the reliability and validity of the survey tool used. Price, et al (1985) reported test-retest reliability of .80 with 30 students three days apart and a Kuder-Richardson 20 internal reliability of .96 on the knowledge test.

The studies varied in additional information sought such as knowledge and use of preventive measures, sources of knowledge, risk behaviors and behavior changes, but were consistent in the questions regarding general knowledge and

Table 1.

Summary of Research Studies

Researcher & Date	Sample	Age & Sex	Tool
Price, et al. (1985)	250	16-19 M & F	29 item questionnaire True-False 19-General knowledge 9-Information source 1-Personal risk beliefs Developed by authors
Location/# enrolled in school: 4 high schools, Toledo Ohio. 100% enrolled in school. 27% reported receiving AIDS ed. in school.			
DiClemente, et al. (1986)	1,326	14-18 M & F	41 item questionnaire True-False-Don't know 30-General knowledge 11-Attitudes & beliefs Developed by authors
Location/# enrolled in school: 10 high schools, San Francisco Unified School District, Calif. All enrolled in Family Life education classes. 35.3% reported receiving AIDS ed. in school.			
Strunnin & Hingson (1987).	860	16-19 M & F	Telephone survey-# of items not reported. Yes-No-Don't know General knowledge Attitudes and Beliefs Behavioral changes Developed by authors
Location/# enrolled in school: Random digit dial, Boston, Mass. Percent enrolled in school not identified. 57% reported AIDS discussed by teacher but not taught in school.			
Helgerson & Peterson (1988)	657	8th-11th grade M & F	38 item questionnaire True-False-Don't know General knowledge Developed by authors
Location/# enrolled in school: Junior and Senior high schools in Bridgeport and Stratford school districts, Connecticut. 100% enrolled in school. No AIDS ed. received in schools prior to study.			

Table 1 cont.

Researcher & Date	Sample	Age & Sex	Tool
Centers For Disease Control (1988) U.S. wide combined study	778-7013 mean=2093	13-18 M & F	49 item questionnaire Yes-No-Not Sure 33-Knowledge & beliefs 12-Risk behaviors 4-Demographics Developed by Kahn, et al. (1989)
Location/# enrolled in school: 24 state and local departments of education (6 cities & 9 states) all enrolled in school. Education received in schools not reported. 11 locations asked all 49 questions and 13 omitted risk behavior questions.			
Johnson (1989)	107	13-20 M & F	37 item questionnaire True-False-Mult.Choice & open ended 5-Demographics 1-Knowledge source 14-General knowledge 7-Behavioral practices Developed by author
Location/# enrolled in school: 3 street youth agencies, Salvation Army Greenhouse, Burnside Projects Youth Shelter & Outside In, Portland, Oregon. School enrollment and AIDS education in school not asked in survey.			

beliefs regarding possible modes of transmission. One additional study by Miller and Downer (1988) was designed to evaluate the effectiveness of an AIDS education lesson plan. It used questions similar to those in the other studies and yielded similar results as the other studies in the pretest given to measure knowledge level prior to receiving the lesson plan (N=215).

Although the independent studies presented concerns about generalizability due to location or inconsistent response rates, the accumulation of knowledge from all these surveys is more likely to be representative of the adolescent population of students. All of these studies pose a similar limitation in that they can not be generalized to adolescents who are not attending schools, because they have not been included in the samples of four of the studies. The subjects for the survey by Strunin and Hingson (1987) were selected by random digit-dial and the demographics reported did not include whether or not they were attending school, so it is unknown what portion of this sample may have included adolescents not attending school. The study by Johnson (1989) also did not include school attendance in the demographics, although the sample was drawn at locations serving street youth and was likely to have included adolescents not attending school. Table 2 contains a summary of these study results.

Table 2

Summary of Study Results

Study	Knowledge	Risk Behavior Behavior changes	Perception of Risk
Price 1985	sex & IV risk not asked 60% believe close contact = risk	not asked	73% not worried
DiClemente 1986	92% correct sex 84% correct IV 60% correct Condoms decrease risk 32% believe close contact = risk	not asked	34% not worried 61.5% believe not at risk
Strunnin & Hingson 1987	92% correct sex 43% correct kissing not risk 60% correct giving blood 37% sharing food utensils = risk	15% behavior change 1% use IV 55% sex active	54% not worried 61% believe risk unlikely
Helgerson & Peterson 1988	95% correct sex 80% correct IV 48% believe living with = risk 44% correct giving blood 54% correct kissing not risk	not asked	not asked

Code: % correct indicates the percent who answered the question correctly that it is or is not a risk factor.

(M)=male (F)=female

Table 2 cont.

Study	Knowledge	Risk Behavior Behavior changes	Perception of Risk
Centers for Disease Control 1988	88%-98% correct sex 83%-98% correct IV 28%-53% correct giving blood 29%-47% correct insect bites 42%-65% correct public toilets	3%-6% use IV drugs 29%-76% sex active 24%-67% (M) 3 or more sex partners 8%-26% (F) 3 or more sex partners Behavior change not asked	not asked
Johnson 1989	95% correct sex, no condoms 86% correct sex 93% correct IV 86% correct condoms decrease risk	Questions asked in specifics versus Yes-no, 90% gave preference of sex partner 10% no answer 56% use condoms 20% always use condoms 34% do not use 48% indicated IV drug use	65% believe at risk

There have been two studies regarding contraception (Seltzer, et al., 1989 & Rickert, et al., 1989) and one National Adolescent Health Survey (Centers For Disease Control, 1989) that included questions regarding AIDS as part of the larger study. While these studies did not have AIDS as the sole focus of the studies, they did report results specific to knowledge or behaviors related to AIDS and will be included in the discussion of study results. These studies, however, were not included in Tables 1 and 2 because a limited number of the questions asked regarded AIDS. The National Adolescent Student Health Survey was administered to eighth and tenth graders in 217 different schools across 20 states, with a total sample of 11,419 students (Centers for Disease Control, 1989).

The study by Seltzer, et al. (1989), contained a sample of 100 females enrolled in a teenage pregnancy program in Queens, New York. Of the total sample 15% were not enrolled in some form of school. The study by Rickert, et al. (1989) also included females only with a sample of 99 from the Arkansas Children's Hospital Teen Program, in Little Rock, Arkansas. Of this sample 84% were enrolled in school. These two studies focused primarily on behaviors and behavior changes related to AIDS so will only be included in the discussion of behaviors. They were both limited by the location of sample selection as adolescents enrolled in a

teen health program may not be representative of the same population of adolescents in the studies done in schools.

The results of the above studies will be discussed in three sections: Knowledge-including source, level of knowledge and misperceptions; Behaviors-including risk behaviors and behavioral changes and Perception of risk. Since all of the studies used different questionnaires, a direct comparison of results will not be possible.

Knowledge

The students identified television, magazines, newspapers, and radio as their primary sources of knowledge in the studies that asked this question, with no change from 1985 to 1988 (Price, et al., 1985; Helgerson, et al., 1988; Miller & Downer, 1988). The largest and most recent study by the Centers for Disease Control (1988) did not report knowledge source so it remains unknown whether this has changed as a result of the increased educational efforts in schools.

The study by Johnson (1989) asked where the respondents would go for information. Interestingly, the respondents listed television, magazines, newspapers, and radio low on their list and chose youth service agency, nurse or doctor, Cascade AIDS Hotline, pamphlets, sexually transmitted diseases clinics, and county and state health departments in that order. In the study by Helgerson (1988) students listed

their choice of information as: nurse or doctor, teacher or group leader, and lecture or talk. Radios, television, magazines and newspapers were also lowest on their list. This may indicate that where students report getting most of their information is not consistent with where they want to obtain their information.

In the 1985 study by Price only 47% of the respondents answered the general knowledge questions about AIDS and modes of transmission correctly, and over 50% believed being near an infected person was a risk factor. By 1986, 92% of respondents knew that sexual intercourse was a mode of transmission and 84% knew sharing IV drug needles was a mode of transmission. The percent that believed close contact was a risk factor had decreased to 32%. Only 60% knew that condom use decreased risk of infection (Helgerson, 1986). The 1987 study by Strunnin & Hingson also reported 92% knew sex was a mode of transmission, however, 29% did not know that vaginal fluids is a mode of transmission and 22% did not know that semen is a mode of transmission. This study also reported misperceptions that indicated the rate of misperceptions about transmission had not decreased, however, the questions asked about a greater degree of contact than close contact. The investigators reported that 33% responded that sharing eating and drinking utensils was a risk factor, 57% believed kissing was a risk factor and

60% believed donating blood was a risk factor.

The more recent studies by Helgerson & Patterson (1988) and the Centers for Disease Control (1988) yielded similar results. Helgerson & Patterson reported 95% knew sex with an HIV infected person was a risk factor and 80% knew risk of sharing IV drug needles. The Centers for Disease Control reported 88.3% to 98.1% knew sexual transmission risk and 83.8% to 98.4% knew IV drug needle sharing risk. The percentage of students who continued to believe donating blood is a risk had increased, from 40% in 1987 to 44% in the 1988 studies. The responses in both the 1988 studies indicate that there continues to be misperceptions about what is and is not a risk factor for HIV infection, as shown in Table 2.

The results from the National Adolescent Health Survey reported by the Centers for Disease Control (1989) reported similar results as the 1988 studies; 94% knew sex was a risk factor and 91% knew sharing IV drug needles was a risk. Misperceptions were unchanged in that 47% believed donating blood was a risk factor and 51% were unsure or believed that washing after sex decreased risk.

Behaviors

Only two of the major published studies (Strunnin and Hingson, 1987; Centers for Disease Control, 1988) asked specific questions about engaging in risk behaviors. The

study by Johnson (1989) asked about behaviors in a fashion that makes it difficult to know what percent were actually engaging in risk behaviors (ie. If you have sex, do you primarily have it with a partner who is...same sex... other sex...either sex). It is unclear if the respondents that did not answer this question were not sexually active or did not want to state their sexual preference.

The Centers for Disease Control (1988) asked only about risk behaviors and reported 3% to 6% report IV drug use and 27% to 76% report being sexually active. Of those reporting sexual activity 24% to 67% of males reported 3 or more partners and 8% to 26% of females reported 3 or more partners. These findings indicate that some high school students are engaging in high risk behavior.

The Strunnin & Hingson (1987) study reported 55% responded they were sexually active and 1% reported use of IV drugs. Of those who reported being sexually active only 15% reported changing their behavior to prevent HIV infection, and of those only 20% reported effective methods: 10% avoid sex, 10% condom use, 3% monogamy (this assumes the partner is not infected), 35% be more selective of partner. Of those who reported IV drug use, only one third were no longer using needles. This study indicates that although a large percentage (96%) knew of the risk factors for HIV infection, only a small percentage (15%) had changed their

behaviors.

In the Johnson study 90% indicated sexual activity by reporting sex of partner of choice. Of the 107 respondents, 56% reported condom use but only 20% reported always using them. IV drug use was indicated by 48% of the respondents and, of those, 25% reported sharing needles. No specific questions were asked regarding behavior changes as a result of knowing about AIDS. This study indicates that there may be a larger percentage of adolescents seeking services targeted for street youth (where Johnson's sample was drawn) that are sexually active and using IV drugs than in the population of adolescents attending school.

The studies by Seltzer, et al. (1989) and Rickert, et al. (1989), although limited by their sampling location, support the concern that, although adolescents may be aware of the primary risk factors for HIV infection, a large number had not reported changing their behavior to prevent infection. In the Seltzer, et al. study 100% knew sex was a risk factor for HIV infection, 100% were sexually active, and 60% had a history of having sexually transmitted diseases. Behavioral changes as a result of concern about HIV infection were reported by 59%. Of these, 41% had reduced the number of sexual partners, 23% reported having less frequent sex, 38% reported using condoms and 7% reported learning more about their partners previous or

current sexual activity. There was overlap in the responses. This study indicates that some adolescents are changing their behaviors, although some of these changes are not totally effective for prevention. Many adolescents, however, (41% in Seltzer's study) are not changing their behavior.

The Rickert, et al. (1989) study reported similar results. Of the 99 respondents 85% reported they are sexually active and 62% reported behavioral changes as a result of concern about HIV infection. Only 11 of the 99 respondents, however, reported using condoms. The survey did not ask about specific behavior changes beyond whether or not they had made changes.

In summary, it appears from these studies that although a large percentage of adolescents know about AIDS and risk factors for infection, many are not reporting making changes in their behaviors. Those that are making changes may not be making effective preventive behavioral changes.

Perception of Risk

In the four studies that asked about respondents perception of risk the percentage that were worried about possible infection had increased. This increase was most dramatic from 1985 (Price, et al.) in which 73% reported they were not worried, to 1986 (DiClemente, et al.) when 34% responded they were not worried. However in the DiClemente, et al. (1986) study 61.5% reported believing they were not

at risk. This indicates that being worried about possible HIV infection and believing in personal risk are different concepts that cannot be interchanged. These two studies did not ask about risk behaviors so no inference can be made as to whether their lack of concern might have been related to their lack of risk behaviors.

The Strunnin and Hingson (1987) study yielded similar results, with 54% reporting they were not worried at all and 61% reporting the belief they were unlikely to become infected. Certainly some of these respondents were correct in their perception as only 55% reported they were sexually active and only a small percentage (1%) reported IV drug use. Likewise HIV infection is currently low in the adolescent population.

The only recent study that reported concern about risk was Johnsons' (1989) in which 65% reported believing they were at risk. This population also reported a higher percentage of risk behaviors than was reported in the studies that asked about risk behaviors. The fact that, with the exception of Johnson's study, over 60% of the respondents did not perceive themselves as being at risk for HIV infection may help to explain why such low percentages of adolescents are reporting making behavior changes because of concern about possible infection. This cannot be inferred conclusively, however, because so few of the studies asked

about all three areas of risk behaviors, perception of risk and behavior changes.

Summary of Literature Review

What can be summarized from these studies is that adolescents were more knowledgeable about AIDS in the 1988 and 1989 studies than in the earlier studies, particularly in their knowledge that IV drug use and sexual intercourse are modes of transmission. However, their knowledge varied widely and they continued to have numerous misconceptions about AIDS and its transmission.

The 1988 studies, unfortunately, did not ask specific questions regarding behavior changes and practice of preventive methods, so it is unknown at this time if there have been any behavior changes since the results reported by Strunnin and Hingson (1987). The studies by Seltzer, et al. (1989) and Rickert, et al. (1989) that asked behavior change questions indicated that the behavior changes that were occurring may not be effective for prevention. These studies, because of sampling location, cannot be generalized to the larger population of adolescents in school.

It appears from these studies that knowledge alone does not indicate that behavior changes will be made as a result of this knowledge and that many adolescents do not believe that they are at risk. The only study that might be representative of adolescents not attending school, Johnson

(1989), indicates cause for concern as they reported a higher percentage of involvement in behaviors that may place them at risk for infection and many were not reporting effective preventive practices.

The studies discussed in this review support the need for additional information about adolescents' risk behaviors, perceptions of risk and what factors influence behavior changes. As none of these studies specifically targeted adolescents not attending schools, it is unknown how this subpopulation may differ from those currently being studied. More information is needed about this subpopulation to assist in determining where to place our priorities in attempting to influence effective preventative practices.

Conceptual Framework

The theories of reasoned action and cognitive appraisal coupled with developmental theory offers a framework for explaining the relationship between adolescents knowledge and attitudes regarding AIDS and resultant behaviors (Figure 1). According to the theory of reasoned action, behavior is a function of one's intention to perform the behavior and this intention is determined by the attitude towards the behavior and subjective norms (Ajzen & Fishbein, 1980). In this theory, behavioral beliefs influence attitude towards the behavior. The behavioral beliefs of adolescents are influenced by their developmental level. Silber (1982)

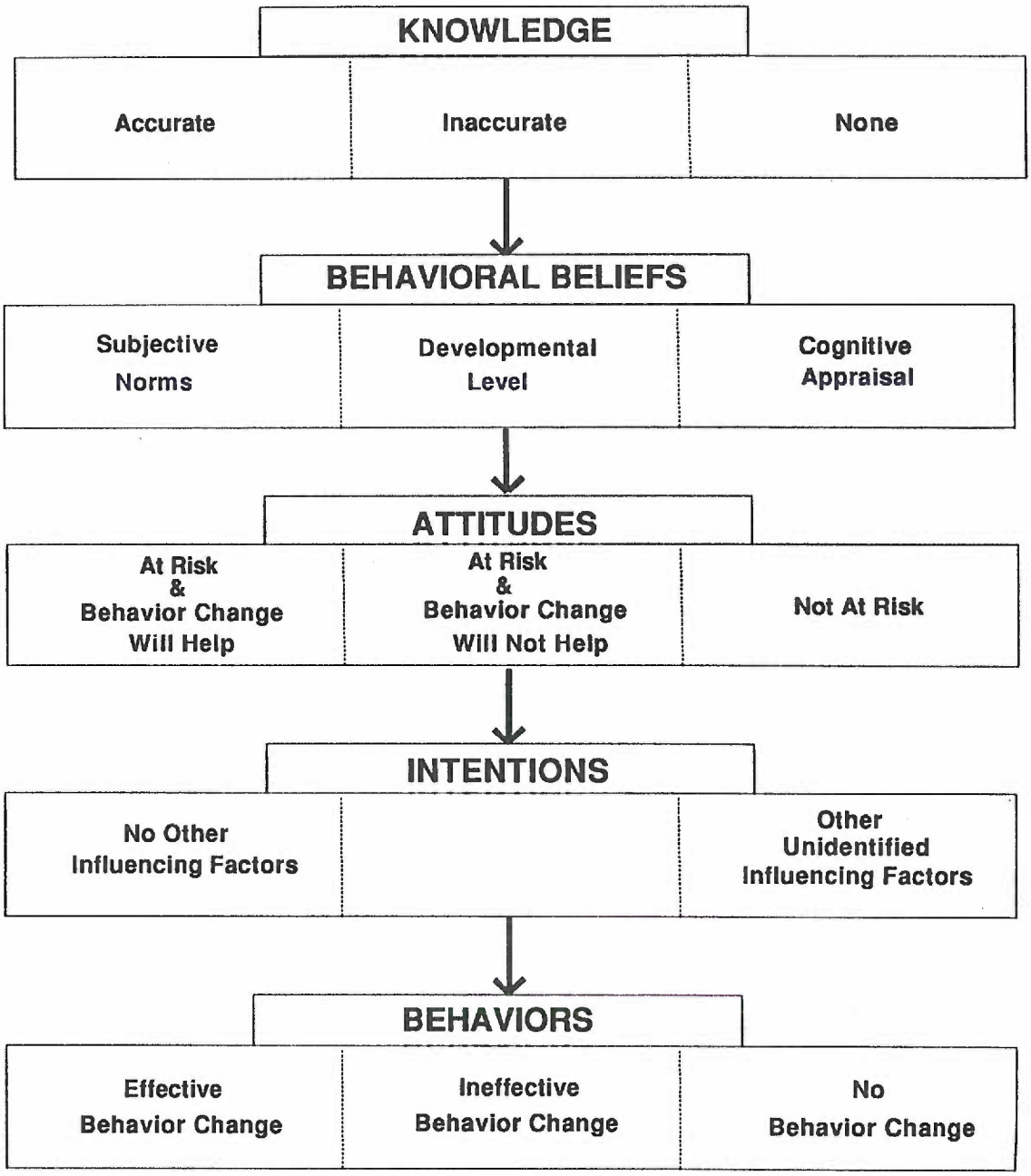
reports that at mid-adolescence teenagers often express the view that they are unable to affect the course of events. This view may be one of the contributing factors to the lack of behavior changes reported by adolescents towards prevention of AIDS.

Another component of reasoned action that influences beliefs and resultant behaviors is subjective norms. Subjective norms are the person's belief that other individuals or groups think they should or should not perform the behavior and the motivation to comply with these norms and expectations (Ajzen & Fishbein, 1980). Subjective norms are of particular importance with adolescents for whom the peer group serves as a dramatic influence (Silber, 1982; Rigg, 1982). Klien et al. (1987) suggests that interventions be tailored to the specific subgroups and that programs designed to increase the sense of control over outcome might be most effective with more mature individuals, and appeals to peer group social norms may prove more successful in younger individuals. Belfer et al. (1988) suggest that for adolescents who are alienated from adults, and particularly authority figures such as health care professionals and teachers, alternative approaches, such as training and supervising peer counselors, may be more palatable and produce quicker results.

Cognitive appraisal is another factor that may play a

Figure 1

Conceptual Framework of Factors Influencing Behavior of Adolescents



role in adolescents' attitudes and resulting behaviors.

Lazarus and Folkman (1984) identified cognitive appraisal as a component of coping with stressful events or situations. Cognitive appraisal is the process by which a person determines the degree to which a situation is stressful and poses a threat to their emotional or physical well being. Given a potential threat, each individual may appraise the degree of threat differently based on their cognitive appraisal of the threat. This appraisal process is affected by the individual's coping style, life experiences and resources. Lazarus and Folkman note that when an individual is faced with a potential threat and perceive themselves as helpless to impact the situation, they may reappraise the situation along a continuum of less threatening to denial of the existence of the threat. As adolescents have been identified as perceiving themselves as unable to affect the course of events (Silber, 1982), their cognitive appraisal of their personal risk of contracting AIDS may be affected.

Grant and Demetriou (1988) stress the importance of acknowledging the developmental stage at all times when working with adolescents and that knowledge alone does not change attitudes and behaviors. In addition to imparting knowledge about AIDS to adolescents, other influencing factors need to be identified and incorporated into the

overall plans for intervention. Further information about the current knowledge and behaviors of adolescents not attending schools may provide indicators as to what interventions may be more effective in imparting knowledge and influencing attitudes and behaviors of this subgroup of adolescents.

Psychosocial Factors and Risk Taking Behavior

Adolescence is a period of high-risk health behavior (Jessor, 1984). Developmentally, adolescents reach physical maturity before they are cognitively able to appreciate the consequences of their behavior. This is currently understood to be a result of the developmental process. During adolescence cognitive development is beginning to move from concrete operational thinking to formal operational thinking. One result of concrete thinking or incomplete development of formal operational thinking in adolescents is believing that they are omnipotent and infallible. There is a sense that they are immune from mishaps and this thinking results in excessive risk taking (Grant & Demetriou, 1988). Such risk taking, coupled with a belief of infallibility, creates a difficult problem when it comes to attempting to alter high-risk behavior of adolescents based on the potential consequences.

Hein (1989) identifies four psychosocial features of adolescence that may influence their understanding and

reaction to information about AIDS: feelings of invulnerability, concrete versus abstract thinking, peer conformity, and denial. Hein notes that for adolescents feelings of personal susceptibility are often not present until a problem is experienced first hand. This first hand experience is complicated by the concrete thinking process characteristic of many adolescents and their understanding of illness. Adolescents, in general, define illness as the absence of health, and as a consequence the idea of being a asymptomatic carrier of a fatal disease is a particularly difficult one to accept for themselves or others (Hein, 1989). So although some adolescents may have first hand experience with persons who are HIV infected, they may not interpret it as illness until there is concrete and overt evidence of it.

Denial and peer group influences are also important considerations. Denial is a coping mechanism that adolescents often use to handle experiences that produce excessive fear and/or are perceived as being overwhelming (Hein, 1989). The fact that AIDS is fatal may evoke such a response in some adolescents. Peer group acceptance, which is of great importance to most adolescents, may also influence denial (Silber, 1982; Rigg, 1982). Adolescents who associate with a peer group engaging in behaviors known to increase risk of HIV infection may be overwhelmed by the

prospect of HIV infection in their peer group or the possibility of being ostracized if they behave differently than their peer group resulting in denial as a coping response.

Summary of Conceptual Framework

In summary, the conceptual basis of this study is that providing information (knowledge) to adolescents about AIDS does not necessarily result in their using effective preventative measures (behaviors). There are likely to be other mediating factors, such as their developmental level, subjective norms, and cognitive appraisal, that may independently or collectively influence their attitudes. Their attitudes about their risk for HIV infection, effectiveness of preventative measures, and about taking preventative action, will influence their intentions towards these behaviors. Their intentions towards these behaviors will in turn influence their actual behaviors. There may also be other influential factors that effect their actual behaviors that have not yet been identified. This conceptual framework is summarized by the model in Figure 1.

Research Questions

The research questions this study attempted to answer about the population of adolescents who are not attending schools were:

1. What is their current knowledge about AIDS?

2. What are their current attitudes about AIDS?

3. What are their current behaviors that may place them at risk for contracting AIDS?

4. Have they changed any behaviors to decrease their risk of contracting AIDS?

5. If they have changed behaviors to decrease their risk of contracting AIDS, what factors were most influential in making these decisions.

6. What do they identify as their primary knowledge sources?

CHAPTER 2

Method

Design

This was a descriptive study using survey methods to collect data and both univariate and bivariate analysis to analyze the data. The variables included the demographics of the sample, their current knowledge, their primary knowledge source, their current attitudes, their risk behaviors, their behavioral responses, and the primary factors influencing their behavioral responses.

Sample and Setting

This study used a purposive sampling method. Although a random sampling method would have been preferable, the inherent difficulties in accessing adolescents not enrolled in school directed the choice of a purposive sampling method. The target population for this study was adolescents not attending school who reside in Portland, Oregon. The sample was drawn from the youth receiving services at Project LUCK agencies.

Project Luck (Link Up the Community for Kids) is a multi-agency effort to provide services to homeless street youth in Portland, Oregon. The project is coordinated by the Project LUCK Tri-county Youth Services Consortium and direct services to youth are provided by participating public and private non-profit agencies in the community. There are

currently 13 participating agencies who meet monthly to coordinate referrals and services to street youth. The Tri-county Youth Services Consortium facilitates these meetings and the entire interagency effort.

Of the Project LUCK agencies three were identified by the Project LUCK director and researcher as serving the largest number of youth likely to agree to participate in this study. The sample for the study was drawn from three locations. Agency one provides food, clothing and various other support services to adolescents. Agency two provides housing and case management services to adolescents. Agency three provides emergency night shelter to homeless youth from 9:00 p.m. to 9:00 a.m. and youth may stay at the shelter for an average of 30 days.

The intended sample size was 50 to 100. This sample size was an estimate based on the sample Johnson (1989) was able to obtain at the same locations. The actual sample obtained was 49. The number of youth served by Project LUCK Agencies at the time of data collection was estimated by the director, to be 1000 based on the most current agency statistics (personal communication, October 3, 1989). The estimate of 1000 from the 1500 documented to be served was due to youth receiving services from more than one Project LUCK agency.

Ethical Considerations

Due to the nature of services provided by Project Luck agencies and the circumstances that may have precipitated the need for services by the youth served, it was possible that some of youth eligible to participate in this study would be emotionally distressed. Melton (1989) recommended special precautions when doing any kind of research with adolescents who may be emotionally distressed. The two primary considerations related to this particular research study were the adolescents ability to make informed consent and whether the questions about private matters might raise undue anxiety.

The interventions Melton recommended to address these concerns were to involve independent third-party decision makers and to ask individuals or a community of youth about their perceptions of the sensitivity of the research topics or procedures. For the purpose of this study the directors and case workers of the agencies participating in this study acted as the independent third-party decision makers. No youth were allowed to participate in this study without the consent of a responsible adult familiar with the youth's emotional condition.

The researcher performing this study was a qualified mental health professional with a specialty in crisis evaluation and treatment, and was available to all

participants in the study for assessment and assistance with any follow-up services indicated as a direct or indirect result of participation in this study. Furthermore, the agencies and individual participants were given resource lists of general crisis services and AIDS specific services. None of the participants in this study requested follow-up mental health services or reported any adverse effects related to their participation in the study. Several participants requested information regarding sources for further information about HIV infection which was provided at the time of request.

Data Collection Methods

The survey used in this study was the Secondary School Student Health Risk Survey, No. 09020-XXXX, approved for nation wide use by the Division of Adolescent and School Health, Center for Chronic Disease Prevention and Centers for Disease Control (Appendix A). This survey was developed by 14 State Education Agencies and 9 Local Education Agencies in conjunction with the Division of Adolescent and School Health (Kann, et al. 1989).

The original survey contained 49 core questions and was the one used in the Centers for Disease Control studies (1988). During the fall of 1988 the survey was revised and reduced to 39 core questions (Kann, et al., 1989). The questions dropped from the original 49 item survey were

primarily questions that asked about two types of specific behaviors. One type included questions about behaviors that the respondent thought other youth might be engaging in (eg. "How many persons your age do you think are having sexual intercourse?) and the other type included personal questions about what the participant is doing as a result of knowing about AIDS (eg. "Because of AIDS, have you stopped having sexual intercourse?). These revisions were made in response to the needs, interests and constraints of diverse educational systems and political climates (Kann, et. al., 1989).

The author of the survey reported the questionnaire had content validity based on the experience and knowledge of its developers and consultants. No other validity testing had been done and no further work will be done on the survey in this area because the survey was being incorporated into a more global adolescent health survey covering a diversity of adolescent health practices. Kann (1989) also reported that reliability tests such as test-retest had not been done because it was designed to function as a surveillance tool and each question in the survey was designed to measure independent concepts. This was done so that each location could choose which items to eliminate or include. The author recommended use of the revised 39 item survey for this study (Laura Kann, personal communication, October 23, 1989).

In addition to the Secondary School Student Health Risk Survey seven additional questions developed for this study were added to the survey. The additional questions targeted personal perceptions of risk, behavioral changes and knowledge sources.

The survey included four sections: Section one included the same demographic information found in the Secondary School Student Health Risk Survey with one modification. The question asking grade of school attended was eliminated and substituted with two questions asking what the last grade attended was and how long it had been since the participant attended school. Sections Two and Three included parts II through part III (questions 6-39) taken directly from the Secondary School Student Health Risk Survey. Section Four contained specific questions regarding behaviors and knowledge sources (part IV).

Procedure

Prior to data collection the research proposal was submitted to the Human Subjects Committee of the Oregon Health Sciences University for approval. Once approval was obtained the steps for data collection were as follows:

1. The directors of the three participating agencies reviewed the approved survey and consented to administration of the survey to the youth served at their agencies. The coordinator of client services for Project LUCK agencies

provided a written letter of support of the study and consent for participation (Appendix B).

2. A signed consent for participation in the study was provided by the directors and/or case workers responsible for the youth receiving services at the research site and was required for participation in the study (Appendix C). This method of consent was determined to be necessary due to the unavailability of responsible adult relatives to provide consent. The participants names were not included in the consent to assure anonymity.

3. The questionnaire was presented to potential subjects. The purpose of the study was explained by the researcher as the surveys were presented and was also included on the cover sheet of the questionnaire (Appendix A). In compensation for their efforts snacks and apple juice were provided by the researcher to all potential subjects regardless of participation.

4. For the purpose of assuring anonymity, the surveys were placed in a box by the participants upon completion. The survey took 15 to 30 minutes to complete.

5. The researcher and advisor were available to all participants to answer questions and address any other needs that may have resulted from the data collection process. Referrals to appropriate social services were provided upon request.

CHAPTER 3

Results

This chapter presents the results of this study and the statistical analysis of the data for each research question.

Analysis of Data

The data were analyzed using the CRUNCH statistical package and guided by the research questions. The analysis involved descriptive statistics regarding demographics, knowledge level and sources, attitudes, risk behaviors, perception of risk, behavior changes, use of condoms, reasons for not using condoms and factors identified as influencing preventive behaviors. Correlative statistics were used regarding knowledge, attitude, behavior change, risk behaviors and perception of risk. The significance level was set at an alpha of .05.

For the purpose of examining correlations, scales were created for attitude, knowledge and risk behaviors. Alpha reliability tests were also done on the attitude and knowledge scales. The alpha reliability test was not designed for this type of reliability testing and was done to verify the content validity rather than to function as an absolute measure of reliability.

On the attitude scale respondents received a score of one for each positive response and zero for negative or not

sure responses. The alpha reliability for this scale was .48. The reliability of this scale may have been affected by the original design of the survey which was to measure concepts independently. This reliability result may also indicate that there was a lack of consistency in attitudes on various issues regarding HIV infection. On the knowledge scale respondents received a score of one for correct responses and a score of zero for incorrect or not sure responses. The alpha reliability for this scale was .69. Here again the original design of the survey may account for this result. The alpha may also be reflective of inconsistency in knowledge about HIV infection, particularly regarding misperceptions about its transmission.

On the risk scale respondents received a score of one for each positive/higher risk or not sure responses and zero for negative/lower risk responses. Alpha reliability was not run on this scale because its reliability was based on the respondents answering honestly about their own behaviors.

Description of the Sample

There was a total of 49 questionnaires completed at the three locations. The response rates at the three locations were: agency one (66%), agency two (71%) and agency three (61%). At agency two, five of the seven eligible youth participated (10% of total sample). At agency three, eleven of eighteen eligible participated (23% of total sample).

Agency one had a total of 80 youth enter the building of which 50 were approached to participate and 33 completed the survey (67% of total sample). Not all youth who entered the agency were approached because many of the youth left before they could be asked to participate.

The sample of 49 included 26 females (53%) and 23 males (47%), between the ages of 15 and 20, with a mean age of 18 years. Thirty-eight were Caucasian (78%), one Black (2%), two American Indian (4%), two Hispanic (4%), and six identified themselves as belonging to more than one of these ethnic origins (12%). The last grade they attended in school ranged from grade 8 to 12, with a mean of grade 11. The number of months they had been out of school ranged from one to 72, with a mean of 22. All but one reported being sexually active, with the largest percentage (40%) reporting their age of first sexual intercourse as age 12 or younger (Table 3).

Description of Results

Research question one: Knowledge. Questions 15-31 reflected the respondents general knowledge about how the HIV virus is transmitted. A score of one was given for each correct response and zero for an incorrect or not sure response. The total possible score was 17. The total number of correct responses ranged from 7 to 17, with mean score of 15. Sixty-two percent received a score of 15 to 17 (Table 4).

Table 3. Demographic Distribution of Respondents (N=49)

Characteristic	Frequency	Percentage
Sex		
Female	26	53%
Male	23	47%
Ethninicity		
Caucasian	38	78%
Black	1	2%
American Indian	2	4%
Hispanic	2	4%
More than one ethnicity	6	12%
Age of First Sexual Intercourse (N=48)		
No sexual intercourse	1	2.0%
Age 12 or younger	19	39.6%
Age 13-14	13	27.1%
Age 15-16	8	16.7%
Age 17-18	7	14.6%

Characteristic	Mean	Median	SD
Age (range 15-20)	18	18	1.3
Education			
Last Grade Attended (range 8-12)	11	10	1.2
Months Out of School (range 1-72)	22	12	18.5

Table 4

Percentage of Correct Responses to Questions Reflecting

Knowledge about AIDS (N=49) Correct response = ( )

Question	Percent Correct
Modes of transmission	
By holding hands (No)	96%
Sharing IV drug needles (Yes)	96%
From insect bites (No)	47%
By donating blood (No)	62%
From blood test (No)	88%
From public toilets (No)	82%
From sex without condoms (Yes)	92%
From class room contact (No)	94%
By having sex with person with AIDS (Yes)	98%
Pregnant woman with AIDS to fetus (Yes)	98%
General knowledge	
Can identify person with AIDS on sight (No)	90%
There is a cure for AIDS (No)	88%
Only homosexual men get AIDS (No)	98%
Sexual abstinence decreases risk (Yes)	90%
Using condoms decreases risk (Yes)	92%
No sex with IV drug user decreases risk (Yes)	88%
Use of birth control pills decreases risk (No)	94%

The majority of the knowledge questions were answered incorrectly by only 6% or less of the respondents. The question receiving the highest percentage of incorrect responses regarded HIV virus transmission by mosquitoes which 26 (53%) answered incorrectly. Two other questions also had incorrect response rates above 6%, transmission by donating blood (18% incorrect) and by public toilets (9% incorrect).

Research question two: Attitude. Questions 6, and 8-13 measured attitude about HIV infection in relation to aspects such as whether or not information about it should be taught in school, if they would attend the same class with someone HIV infected, if they knew how to prevent infection and if they had talked with friends about it. Respondents received a score of one for a positive response and zero for a negative or not sure response. There was total of seven points possible. The largest percentage (53%) answered all seven questions positively. This was followed by 22% receiving a score of six and 16% receiving a score of five, with a small percentage (8%) scoring 2 to 4 points. The mean score was 6.1 with S.D. of 1.1 (Table 5).

Questions seven and 14 had initially been included in the attitude scale but were removed because they did not measure attitudes. Question seven was removed because it asked if the respondents had received AIDS education in

Table 5

Responses to Survey Questions Reflecting Attitudes About AIDS (N=49)

Question	Yes(%)	No(%)
Want AIDS info. taught in school	92%	8%
Allow PWA to attend school	88%	12%
Would attend class with PWA	86%	14%
Know where to get AIDS info.	86%	14%
Know where to get tested	88%	12%
Know how to prevent AIDS	94%	6%
Talked with friends about AIDS	84%	16%

Note: PWA = Person with AIDS

school, reflecting school curriculum and attendance rather than an attitude. On this question 53% reported they had not been taught about AIDS in school. Question 14 was removed because it asked if the respondent had talked to an adult in their family about AIDS as opposed to any adult. It was decided that this question might be reflecting family relations rather than attitude about speaking with adults about HIV infection. On this question 57% responded negatively.

Research question three: Risk behaviors. Questions 32-37 and 39 asked about behaviors such as IV drug use, sexual activity and condom usage that may place the respondents at risk for HIV infection. A score of one was given for positive/higher risk or not sure responses and zero for negative/lower risk responses. Two questions asked about numbers of sexual partners in their lifetime and in the last year. The range of response options was from zero to four or more. These two questions were scored with zero for no sexual partners and one for any number of sexual partners. This scoring was based on the premise that any sexual activity presents potential risk for HIV infection, and that it could not be determined that one partner presented less risk than more than one. The total possible score was seven, with a range of zero to seven and a mean of four. Two participants did not answer the questions about

number of sexual partners in their life and three did not answer the questions about number of sexual partners in the last year and condom use.

The majority (92%) had a score of two or more positive answers for risk behaviors. Forty three percent had three positive answers for risk behaviors. The risk behaviors receiving the highest percentage of positive responses were regarding number of sexual partners in their life (98% reported one to four or more) and in the last year (96% reported one to four or more). Eighty-three percent reported having four or more sexual partners in their lifetime and 48% reported four or more sexual partners in the last year. The mean number of reported sexual partners in the last year was three.

Regarding IV drug use, 41% reported use in their lifetime and 31% reported use in the last year. Eighteen percent reported having shared needles in their lifetime and 16% reported having shared needles in the last year.

Question 39 asked about how frequently condoms are used with five response options; "I have never had any kind of sexual intercourse", "always", "sometimes", "rarely" and "never". A score of zero was given for no sexual activity or always responses and a score of one for inconsistent or no use. Three respondents did not answer this question. Of the 46 who did respond, 28% received a score of zero and 72%

Table 6

Percentage Responding Positively to Risk Behavior Questions

Risk behavior	Percentage
(N=49)	
Used IV drugs in lifetime	41%
Used IV drugs in last year	31%
Shared IV drug needles in lifetime	18%
Shared IV drug needles in last year	16%
(N=47)	
No sexual partners in lifetime	2%
Two sexual partners in lifetime	2%
Three sexual partners in lifetime	13%
Four or more sexual partners in lifetime	83%
(N=46)	
No sexual partners in last year	2%
One sexual partner in last year	20%
Two sexual partners in last year	20%
Three sexual partners in last year	9%
Four or more sexual partners in last year	48%
No sexual contact or always use condoms	28%
Sometimes, rarely or never use condoms	72%

Table 7

Scores Received on Attitude, Knowledge and Risk Behavior Scales (N=49)

Attitude		Knowledge		Risk Behavior	
Score	%	Score	%	Score	%
2	2.04%	7	2.04%	0	6.12%
4	6.12%	9	2.04%	1	2.04%
5	16.33%	11	2.04%	2	10.20%
6	22.45%	12	4.08%	3	42.86%
7	53.06%	13	8.16%	4	12.24%
	100%	14	18.37%	5	12.24%
		15	16.33%	6	4.08%
		16	22.45%	7	10.20%
		17	24.49%		100%
			100%		
Range = 0-7		Range = 0-17		Range = 0-7	
Mean = 6.1		Mean = 14.9		Mean = 3.6	
S.D. = 1.1		S.D. = 2.1		S.D. = 1.8	

received a score of one (Table 6). Table seven summarizes the total scores on the attitude, knowledge and risk behavior scales.

Research questions four and five: Behavior change. Questions 40-44 asked about perception of risk for HIV infection, behavior change, factors influencing behavior change and reasons for not using condoms. There were three questions regarding behavior change; one asked if they had changed their behavior with a yes or no response option. This was followed with a request that if they had changed their behavior to write in what they were doing different. The third question asked about what factors were most influential in making a behavior change with six response options including "other". Regarding behavior change, 59% reported having made some change in their lives to protect against HIV infection and 41% reported making no changes. Of the respondents that noted making behavior changes, 26 (44%) wrote in what changes they had made. One to three changes were noted by each respondent. The changes most frequently noted were use of condoms (N=13, 50%) and being monogamous (N=6, 23%). Four respondents (15%) noted being more selective about partners or knowing their partners better. Three (12%) noted stopping use of drugs, and self and/or partner getting tested for HIV. Two respondents (8%) noted being abstinent, cleaning IV drug needles, not shooting

drugs and avoiding risk. Changes noted by one respondent (4%) were never sharing needles, being more aware, taking care of their body and sharing with others.

The question regarding factors influencing behavior change asked respondents to answer if they had made behavior changes, however to account for misreading of this question the first response option stated "I have not made any changes". Thirteen respondents checked this response option and seven did not answer this question, totaling the 20 who reported making no changes. Of the 29 respondents who reported making behavior changes, 69% identified one factor, 24% identified two and 7% identified three. Of the factors identified as influencing their behavior changes, the highest percentage (44%) identified what they had learned as an influencing factor. The second most frequently identified factor was knowing someone who was infected with the HIV virus (26%). Fourteen percent identified friends as an influencing factor, 10% identified other people, 10% stated they were not sure what influenced their change, and three percent checked "other". The one respondent who checked "other" wrote, "I don't know, I guess I just don't want to die" (table 8).

There were two questions regarding perception of risk, one about personal perception and another about perception of risk for friends. The question about personal perception

Table 8

Factors Identified as Influential in Decision to Make Behavior Changes to Prevent AIDS (N=29)

Influencing factor	Percentage
What was learned about AIDS	48%
Knowing someone with AIDS	38%
Friends	21%
Other people	14%
Not sure	14%
Other factors	3%

Note: Some respondents identified more than one influencing factor. The N=29 represents 100% of sample that reported making behavior changes.

of risk, asked what they thought were the chances they might get infected with the HIV virus and had four response options: none, unlikely, likely and definitely. None of the respondents checked definitely. One participant did not answer this question. Of the 48 participants who did answer this question; 29% checked "none", 58% checked "unlikely" and 13% checked "likely". The second question asked if they worried that their friends might get infected with the HIV virus and had a yes or no response option. Sixty percent said they were worried and 40% said they were not.

Question 40 asked participants who seldom, rarely, or never use condoms to identify reasons. There were nine response options including "other" with a range of one to five options checked per respondent. Reasons written in the "other" category that occurred more than once were given a separate category from "other" for the purpose of scoring frequencies of responses. Eight (16%) of the 49 participants did not answer this question and had either not answered the previous question about frequency of use of condoms or had noted other than always use. Nine (18%) of the participants had said that they always use condoms, so this question was not applicable. There were 32 respondents to this question. The most frequently identified reasons for inconsistent use of condoms were: dislike of the feel of them (47%), not having them handy (44%), partner disliking them (41%) and

Table 9

Reasons Identified For Not Always Using Condoms (N=32)

Reason	Frequency	Percentage
Dislike the feel	15	47%
Partner dislikes them	13	41%
Never have handy	12	38%
Other	7	22%
Too much trouble to use	4	13%
Don't need them	3	9%
Monogamous	3	9%
Condoms break easily	2	6%
Forget to use	2	6%
Too expensive	1	3%
Makes no difference	1	3%

Note: One to four reasons were identified by each respondent.

other reasons (22%). The other reasons identified were noted by 12% or less of the respondents (Table 9).

Research question six: Knowledge sources. Question 45 asked participants to identify sources from which they learned the most about HIV infection. There were 18 sources presented including "other" and respondents checked as many as applied. There were two participants who did not answer this question. The sources of knowledge identified by the highest percentage (30%-42%) were pamphlets, friends, youth service agencies, and television. The sources identified by 21% to 28% were nurses or doctors, magazines, newspapers, and families. Seventeen percent identified schools, movies, billboards and other sources. Sources identified by 13% to 15% were sexually transmitted disease clinics, County Health Departments, videos and radios. State Health Departments were identified by six percent and two percent identified the Cascade AIDS Project (Table 10).

Relationship Between Variables

Data analysis included examining the relationship between variables based on the conceptual framework and demographics. The analysis was done to support the conceptual framework, not to test hypotheses.

No strong associations were found between the following variables: (a) age and attitude, knowledge, risk behaviors, view of risk and behavior change, (b) length of

Table 10

Sources of Information About AIDS and HIV Infection Identified by Participants (N=47)

Source	Frequency	Percentage
Pamphlets	20	42%
Friends	19	40%
Youth Service Agency	15	32%
Television	14	30%
Nurse or Doctor	13	28%
Magazine	13	28%
Newspaper	11	23%
Family	10	21%
School	8	17%
Movies	8	17%
Billboards	8	17%
Other	8	17%
STD Clinic	7	15%
County Health Dept.	6	13%
Video	6	13%
Radio	6	13%
State Health Dept.	3	6%
Cascade AIDS Project	2	4%

Note: STD Clinic = Sexually Transmitted Disease Clinic

behaviors, (d) knowledge and view of risk, risk behaviors time out of school and attitude, knowledge, risk behaviors, view of risk and behavior change, (c) attitude and view of risk and risk and behavior change, (e) risk behaviors and behavior change, (f) view of risk and behavior change, and (g) location and attitude, knowledge, risk behaviors and view of risk.

Moderate trends were found among three combinations of variables: (a) knowledge and attitude, (b) view of risk and risk behaviors, and (c) location and behavior change.

The variables of knowledge and attitude were found to have a positive trend ($r=.50$, $p<.0002$), indicating a direct relationship between increased knowledge and increased positive attitude.

The relationship between view of risk and risk behaviors was found to be progressive ($p<.04$, Test for Trend $=.01$). Increased view of risk directly related to increased risk scores.

A strong association was found between location and behavior change using ANOVA ($p<.01$). To determine more specifically where this relationship existed, a Chi-square was done revealing a correlation 8.35, $p<.01$ ($df=2$, $N=49$). Due to an empty cell in the Chi-square which may have effected the accuracy of the probability value, the two locations that provide housing were collapsed based on that

distinguishing characteristic. The Chi-square with the two housing locations combined continued to be significant at 6.2, $p<.01$ (df=1, N=49). The two locations providing shelter were positively correlated with the report of having made behavior changes.

There was also a relationship found between attitude and behavior change. There was a difference between the mean attitude scores of the group that reported a behavior change and the group that did not. The probability value on the t-test between these groups and the attitude score was $p<.03$ with df=47. The group that reported behavior changes had a mean attitude score of 6.5 (S.D.=.7), while those that reported no change had a mean score of 5.7 with more variability (S.D.=1.4).

CHAPTER 4

Discussion

This chapter will discuss the sample characteristics and relate the results of this study to the research questions concerning knowledge and knowledge sources, attitudes, risk behaviors, and behavioral response to AIDS. The relationship between these variables will be explored and evaluated within the context of the literature review and conceptual framework.

Sample Characteristics

The sample was balanced in representation of males (47%) and females (53%), in contrast to Johnson's (1989) study sample which had a larger percentage of males (60%). The majority (66%) were 18 to 20 years old and Caucasian (78%). Johnson's sample was also very similar in ethnic and age representation, however the age range started at a younger age (13) than in this study (15).

Seventy percent had been out of school 12 months or longer with a large variance in the sample on this characteristic. The sample (N=49) represents approximately three percent of the estimated 1500 youth served by Project LUCK agencies.

There was a good response rate by youth asked to participate at the three locations. Many of the participants stated they would do the survey because they were eating the

snacks the researcher had brought. Several who had initially refused later agreed to participate when they were told that the study was being done by the person asking them to participate. Many also asked what the survey was for and agreed when told it was a student project. The most common reasons stated for not participating were: "I already know everything about AIDS", "I don't have AIDS", "That's too long (the survey)" and "I don't have time".

Research Questions

Question 1. What is their current knowledge about AIDS? Overall the respondents were quite knowledgeable about the modes of transmission and general information that were covered in the survey. In a general comparison with the results obtained in the CDC (1989) study regarding knowledge about modes of transmission, this sample's percentage of correct responses was comparable to the higher end of the percentage range of correct responses of the CDC's samples on the questions regarding sexual intercourse, sharing needles, and insect bites. This sample had a higher percentage of correct responses on the questions regarding donating blood and public toilets (Table 11). It was interesting that the misperception regarding mosquitoes as a mode of transmission was consistent across both study samples and had not decreased in this more recent study, unlike the other misperceptions about donating blood and

Table 11

Comparison of Correct Responses About Modes of AIDS Transmission and Occurrence of Risk Behaviors of Gage (1990) and CDC (1988) Studies.

Item	CDC (1988)	Gage (1990)
	Modes of transmission	
Sex intercourse	88%-98%	98%
Sharing needles	83%-98%	96%
Donating blood	28%-53%	62%
Insect bites	29%-47%	47%
Public toilets	42%-65%	82%
	Risk behaviors	
IV drug use	3-6%	41%
Sexually active	29-76%	96%
Three or more sex partners	15-43%	57%

public toilets. This may be attributable to the concrete thinking discussed in the conceptual framework that is characteristic of the developmental level of adolescents. An excellent example of this is the statement one respondent wrote in; "They say you can't (get AIDS from mosquitoes), but isn't a nozzle a needle?"

Johnson's (1989) study was not included in the table comparison because he did not ask most of these questions. On the two questions that were asked regarding sexual intercourse and IV drug use as modes of transmission, this study sample had a slightly higher percentage of correct responses than in Johnson's study. The percentage of correct responses in Johnson's study about sexual intercourse was 86% and about IV drug use 93% as compared to the 98% correct about sexual intercourse and 96% correct about IV drug use in this study. There was also an increase in the correct response rate about use of condoms decreasing risk, 86% correct Johnson's study and 92% correct in this study. This indicates the knowledge level may have increased in this population.

Question 2. What are their current attitudes about AIDS? All the attitude questions were responded to positively by 84% to 96% of the sample indicating an overall positive attitude. Their attitude about their risk for HIV infection was related to their risk behaviors, which

indicated that their knowledge about modes of transmission affected their attitude about their own risk. The correlation found between increased knowledge with increased attitude and increased risk with increased perception of risk supports the conceptual framework that there is a positive relationship between knowledge and attitude.

In Johnson's (1989) study 65% answered positively to the question, "Do you think you can get AIDS?". This was consistent with the 70% in this study that checked a response other than "none", indicating some perception of risk, for the question in this study, "What do you think are the chances you might get AIDS?".

Question 3. What are their current behaviors that may place them at risk for contracting AIDS? All but three respondents (97%) engaged in one or more risk behaviors. Compared to the results reported in the CDC (1989) study, a significantly higher percentage were sexually active, had three or more sexual partners and have used IV drugs (Table 11). These results support the evidence in the literature that this sub-population of adolescents were engaging in more high risk behavior than those adolescents attending schools.

The findings of this study in relation to sexual activity, IV drug use and sharing needles were similar to those of Johnson's (1989) study. In Johnson's study 90%

indicated sexual activity, a lower percentage than found in this study (96%), however this may be due to how the question was asked as discussed earlier in the literature review. A slightly higher percentage indicated IV drug use in Johnson's study (48%) than in this study (41%). In this study 16% reported sharing needles compared to 25% in Johnson's.

In relation to condom use, 36% of the 56% reporting condom use in Johnson's study reported they always use condoms. In this study a higher percentage reported condom use (82%), but only 32% reported they always use condoms. These results indicate that more adolescents in this sample may be using condoms, however the differences in sample sizes may account for some of the differences found in the results.

Reasons given for not using condoms were also very similar, however this question was posed only to those who do not use condoms in Johnson's study while it was asked of those who do not always use condoms in this study, so a comparison of percentages would not be accurate. The reasons given in Johnson's study were: disliking of the feel of condoms, no need for them, too much trouble to use, partner dislikes them, partner loved them and would not give them anything and not having them handy. With the exception of the reason, "partner loved them and would not give them

anything", the reasons given in this study were the same (table 9). This indicated that the reasons for not using condoms or not always using were consistent in these samples.

Question 4. Have they changed any behaviors to decrease their risk of contracting AIDS? The majority (59%) reported making behavior changes and the written responses reporting types of behavior changes made, indicated the majority of those changes were effective ones. There was not a direct correlation between knowledge and behavior change, however there was a correlation between knowledge and attitude as well as a difference in attitude scores between the group reporting changes and those that did not. This fit with the conceptual framework that knowledge alone does not cause behavior change and that other factors such as behavioral beliefs and attitudes play a role in intentions and resultant behaviors. Since there was also no correlation between perception of risk and behavior change, but perception of risk was correlated with risk behaviors, it is likely there were other mediating factors that distinguished those who changed behaviors and those who did not. The developmental issues discussed in the conceptual framework, may be a mediating factor. The results indicated that those engaging in high risk behaviors knew they were at risk, however this knowledge did not always result in behavior

changes. From the developmental perspective there are two possible explanations. One is that the adolescents may have viewed themselves as "omnipotent" and, therefore, immune and the other is that they may not perceive themselves as able to affect the course of events. In reviewing the comments written on the surveys of those who reported making no behavior changes such as; "you play, you pay" and "take the risk and disease seriously", it appeared that they had internalized the reality of their risk at some level. The apparent recognition of risk indicated that some other factors such as perception of their ability to prevent infection with the HIV virus may have been influential in their decision not to make behavioral changes. As there were no questions in this survey that targeted their perception of ability to effect courses of events, the influence this perception may have can only be hypothesized. There may be any number of other unknown factors that influenced their lack of behavior change.

In comparison to the other studies that asked about behavior changes, the results were similar to the more recent studies. In Strunnin & Hingson (1987) only 15% had reported behavior changes. In the Seltzer, et al. (1989) study, 59% reported behavior changes and in the Rickert, et al. (1989) study, 62% reported behavior changes. The increase in percentage of reported behavior changes in the

later studies and this study from the 1987 study may be reflective of increased educational efforts.

Question 5. If the sample have changed their behaviors to decrease their risk of contracting AIDS, what factors were most influential in making these decisions? The factors that were identified by the highest percentages as influential in deciding to make behavior changes were: what was learned about AIDS, knowing someone with AIDS and friends. These findings correspond with the conceptual framework in regards to the importance of peer group influence (subjective norms) and cognitive appraisal, in addition to knowledge. Hein (1989) had noted that adolescents often do not have feelings of personal susceptibility until the problem is experienced first hand. For this sample it appeared that the experience of knowing someone with AIDS, may have functioned as a first hand experience sufficiently to influence behavior. The identification of "friends" as an influential factor supports the importance of peer group influences in the behaviors of adolescents and the theory of reasoned action that subjective norms influence behaviors.

Question 6. What do these adolescents identify as their primary knowledge sources? The primary sources of knowledge identified by this sample differed significantly from those identified in the published studies, and was similar to

those identified in Johnson's (1989) study. In the other studies that asked this question (Price, et al., 1985; Helgerson, et al., 1988; Miller & Downer, 1988), the primary sources of information were television, magazines, newspapers and radios. In this study the primary sources identified were pamphlets, friends, youth service agencies, and television. In Johnson's (1989) study the primary sources identified were youth service agencies, nurse or doctor, Cascade AIDS Project and pamphlets. These results indicated that, with the exception of television, this subpopulation of adolescents obtained information from different sources than those attending schools.

Based on the overall high knowledge scores, it appeared that these sources were effective and accurate in distributing information to adolescents not in school and should be used when attempting to inform this population.

Other Findings. The relationship found between location and reported behavior change was incidental. In a discussion with one of the agency directors, about this finding, it was pointed out that youth who were being served at the locations providing housing would be more likely to make changes because some behavior changes were required to get into these services. There may also be other factors that influenced this, such as staff relationships and security.

CHAPTER 5

Summary and Recommendations

This study was designed to increase the knowledge about what adolescents who were not attending schools have learned about HIV infection, what their attitudes were about it, what behaviors they were engaging in that place them at risk, what behavior changes they had made, what factors influenced making behavior changes and what their primary knowledge sources were.

The literature review addressed the potential risk of HIV infection for adolescents in general and for adolescents not attending schools and discussed the results of studies that have been done regarding adolescents and HIV infection. The literature indicated that adolescents not attending schools were more likely to be engaging in high risk behaviors. Research findings indicated that the adolescents have become increasing more knowledgeable about HIV infection but their knowledge varied widely and they continued to have numerous misperceptions about AIDS and its transmission. None of the published studies targeted adolescents not attending schools and only one was not done at schools. One unpublished study was included that sampled the same population as targeted in this study.

The conceptual framework applied in this study combined the theory of reasoned action (Ajzen & Fishbein, 1980) with

cognitive appraisal (Lazarus & Folkman, 1984) and developmental theory (Grant & Demetriou, 1988; Jessor, 1984; Silber, 1982; Rigg, 1982; Hein, 1989). The conceptual basis of this study was that providing information to adolescents about AIDS would not necessarily result in a behavioral change and there were likely to be other mediating factors, such as developmental level, subjective norms, and cognitive appraisal, that may independently or collectively influence their attitudes. Their attitudes would influence their intentions towards making behavioral changes and their intentions towards these behaviors would influence their actual behaviors.

The design of the study was descriptive, using survey methods to collect data. The sample included 49 adolescents who were not enrolled in schools. The sampling method was purposive and drawn at locations providing services to street youth. Any eligible youth that agreed to participate were asked to complete a 46 question survey. The survey consisted of 39 questions measuring knowledge, attitudes and risk behaviors taken directly from the Secondary School Student Health Risk Survey used in the Centers for Disease Control studies (1988) and nine additional questions designed for this study that targeted perception of risk, behavioral changes and knowledge sources.

The sample was balanced in representation of males and

females. The majority were Caucasian and 18-20 years old. Seventy percent had been out of school 12 months or longer with a large variance. There was a 61%-71% response rate.

The data analysis used descriptive statistics for demographics, knowledge level and sources, attitudes, risk behaviors, perception of risk, behavior changes, use of condoms, and factors identified as influencing preventive behaviors. Correlative statistics were used to test relationships among the variables of knowledge, attitude, behavior change, risk behaviors and perception of risk. With a significance level set at 0.05.

The majority of the sample had a positive attitude about AIDS and high degree of knowledge about HIV transmission, although they continued to have misperceptions. The vast majority engaged in two or more risk behaviors. Over half (53%) reported making behavior changes and identified what they had learned, knowing someone with AIDS and friends as the most influential factors in deciding to make behavior changes. The majority reported some use of condoms, but less than half (32%) used them consistently. The most common reasons for inconsistent or none use were: dislike of the feel, partner dislikes them, never having handy and too much trouble to use. The most frequently identified sources of information were pamphlets, friends, youth service agencies and television.

Moderate correlations were found among three combinations of variables: (a) increased knowledge was correlated with positive attitude, (b) increased risk behaviors was correlated with increased perception of risk and (c) locations that provided housing were correlated with report of making behavior changes. There was a difference between the mean attitude scores of the group reporting behavior changes and those that did not, indicating that a more positive attitude may relate to making behavior change. These results were consistent with and supported the conceptual framework of this study.

Limitations and Recommendations

The major limitation of this study was its generalizability, due to the small sample size, purposive sampling and location. The sample size in this study was affected by the rate of turn over of youth served by the youth service agencies. At the time the data was collected the agencies predicted a one to three month wait would be necessary to sample new potential subjects. Replication of this study with a larger sample, drawn in more diverse geographic locations, would improve the generalizability of this study. The problem of purposive sampling is likely to be inherent in attempting to study this subpopulation.

Another limitation of this study was the questionnaire used in this study. The questionnaire was originally

designed as a surveillance tool with each question designed to measure independent concepts. To improve the alpha reliability, the questions in each scale may need to be revised and additional questions added. In addition to the low reliability, it became apparent during data gathering process that this survey did not allow for inclusion of changing misperceptions. One participant asked that his survey be reviewed in his presence for the accuracy of his responses on the knowledge questions. He had answered all knowledge questions correctly, yet proceeded to tell some of his peers that AIDS is also transmitted via food. Inclusion of open ended questions may increase identification of changing attitudes and misperceptions.

The question regarding knowledge sources should include school as an option as 17% of the respondents included it. The primary sources of information identified by the respondents may not accurately reflect the actual sources. Although pamphlets were identified as a primary source it is unknown where these were obtained. It may be useful to also include a question regarding location where information is obtained, to know where to distribute such information.

Implications for Practice and Research

The practice implications of this study are primarily in the area of education. The current methods of distributing information to this subpopulation appear to be

effective and the use of pamphlets and peers may be the most effective agents. Informing this population was not sufficient because knowledge alone did not translate to making change. The importance of the influences of attitudes, peers and first hand experiences need to be considered in attempting to effect changes with adolescents. Using peers and people personally affected by the topic of concern may be the most effective method to reach these adolescents.

There is a need for more research into factors influencing behavior changes with adolescents. One factor that should be studied further is the influence of perceived ability to effect change in the course of events. Methods to identify this trait need to be developed and if it is found to be significantly influential, techniques to increase the perceived ability to effect events should be developed.

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APPENDIX A

Questionnaire

AIDS SURVEY

The purpose of this survey is to learn what teenagers know or do not know about AIDS.

The youth who are asked to fill out this survey are those who are not attending high school and are 20 years old or younger. If you are currently attending high school and/or are older than 20 please do not fill out this survey.

No names will be asked so your identity will remain unknown.

If you have questions or concerns after you have completed the survey, now or later, you can contact me (Kay Gage) at 228-0373 or Barbara Limandri (my advisor) at 279-7827.

If you have trouble reading or understanding any of the questions please come ask me.

Thank you for your help!

Part I

(Please put an X before the answer you choose)

1. What is your sex?

___Female ___Male

2. How old are you?

_____Years old

3. What is your race?

____White _____Black _____American Indian _____Hispanic

____Asian _____Other _____Not Sure

There are two related words used in this survey you need to understand: AIDS and HIV.

* AIDS stands for acquired immunodeficiency syndrome.
* AIDS is caused by the virus called HIV.
* HIV stands for human immunodeficiency virus.

Part II

(please put an X in front of the answer you choose)

4. How long has it been since you have attended high school or junior high school?
_____(please write in how many months or years).

5. What was the last grade you attended in school?

_____(please write in the last grade you attended).

6. Should students your age be taught about AIDS/HIV infection in school?

____Yes ____NO ____Not Sure

7. Have you been taught about AIDS/HIV infection in school?

____Yes ____NO ____Not Sure ____Have not been in school

8. Should a student with AIDS/HIV infection be allowed to go to school?

____Yes ____No ____Not Sure

9. Would you be willing to be in the same class with a student with AIDS/HIV infection?

____Yes ____No ____Not Sure

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

____Yes ____No ____Not Sure

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

____Yes ____No ____Not Sure

12. Do you know how to keep from getting the AIDS virus (HIV)?

____Yes ____No ____Not Sure

13. Have you ever talked about AIDS/HIV infection with a friend?

____Yes ____No

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

____Yes ____No

15. Can a person get AIDS/HIV infection from holding hands?

____Yes ____No ____Not Sure

16. Can a person get AIDS/Hiv infection from sharing needles to inject (shoot up) drugs?

____Yes ____No ____Not Sure

17. Can a person get AIDS/HIV infection from being bitten by mosquitos or other insects?

____Yes ____No ____Not Sure

18. Can a person get AIDS/HIV infection from donating blood?

____Yes ____No ____Not Sure

19. Can a person get AIDS/HIV infection from having a blood test?

____Yes ____No ____Not Sure

20. Can a person get AIDS/HIV infection from using public toilets?

____Yes ____No ____Not Sure

21. Can a person get AIDS/HIV infection from having sexual intercourse without a condom (rubber)?

____Yes ____No ____Not Sure

22. Can a person get AIDS/HIV infection from being in the same class with a student who has AIDS/HIV infection?

____Yes ____No ____Not Sure

23. Can you tell if people are infected with the AIDS virus (HIV) just by looking at them?

____Yes ____No ____Not Sure

24. Can a person who has the AIDS virus (HIV) infect someone else during sexual intercourse?

____Yes ____No ____Not Sure

25. Can a pregnant woman who has the AIDS virus (HIV) infect her unborn baby with the virus?

____Yes ____No ____Not Sure

26. Is there a cure for AIDS/HIV infection?

____Yes ____No ____Not Sure

27. Is it true that only homosexual (gay) men can get AIDS/HIV infection?

____Yes ____No ____Not Sure

28. Can people <u>reduce</u> their chances of becoming infected with the AIDS virus (HIV) by <u>not</u> having any kind of sexual intercourse (being abstinent)?

____Yes ____No ____Not sure

29. Can people reduce their chances of becoming infected with the AIDS virus (HIV) by using condoms (rubbers) during sexual intercourse?

____Yes ____No ____Not Sure

30. Can people reduce their chances of becoming infected with the AIDS virus (HIV) by not having any kind of sexual intercourse with a person who has injected (shot up) drugs?

____Yes ____No ____Not Sure

31. Can people reduce their chances of becoming infected with the AIDS virus (HIV) by taking birth control pills?

____Yes ____No ____Not Sure

Part III
(Please answer these questions about your own behavior as honestly as you can.)

32. Have you ever injected (shot up) cocaine, heroin, or other illegal drugs into your body?

____Yes ____No ____Not Sure

33. In the last year, have you injected (shot up) cocaine, heroin, or other illegal drugs into your body?

____Yes ____No ____Not Sure

34. Have you ever shared needles used to inject (shoot up) any drugs?

____Yes ____No ____Not Sure

35. In the last year, have you shared needles used to inject (shoot up) any drugs?

____Yes ____No ____Not Sure

36. With how many people have you had any kind of sexual intercourse <u>in your life</u>?

____0 ____1 ____2 ____3 ____4 or more

37. With how many people have you had any kind of sexual intercourse <u>in the last year</u>?

____0 ____1 ____2 ____3 ____4 or more

38. How old were you the first time you had any kind of sexual intercourse?

____I have never had any kind of sexual intercourse

____12 years old or younger

____13 to 14 years old

____15 to 16 years old

____17 to 18 years old

____19 to 20 years old

39. When you have any kind of sexual intercourse, how often is a condom (rubber) used?

____I have never had any kind of sexual intercourse

____Always

____Sometimes

____Rarely

____Never

Part IV

40. If you seldom, rarely, or never use condoms (rubbers) check any of the following reasons that are true for you.

____Don't need them ____ Can't get them

____Never have them handy ____Partner doesn't like them

____Too much trouble to use ____Too expensive

____Don't like the feel of them

____Don't think it really makes any difference

____Other reasons (please describe)_____

_____

41. What do you think are the chances that you might get infected with the AIDS virus (HIV)?

____None ____Very unlikely ____Likely ____Definitely

42. Do you worry that your friends might get infected with the AIDS
virus (HIV)?

____Yes ____No

43. Have you changed the way you do any things in your life to protect yourself from getting infected with the AIDS virus (HIV)?

_____Yes _____NO

If you answered yes please tell me what you are doing different.

_____

_____

_____

44. If you have changed some of your behavior to protect yourself from getting infected with the AIDS virus (HIV) what was most important in your choice to make changes?

_____I have not made any changes

_____What I learned about AIDS

_____My friends

_____Other people (please write what relationship ...like family, caseworker...)_____

_____Knowing someone infected with the AIDS virus (HIV)

_____I am not sure

-----Other (please describe)_____

_____

45. Where did you learn the most about AIDS and HIV infection?

____TV ____Radio ____Newspaper ____Billboard

____Magazine ____Movies ____Video ____Friends

____Pamphlets ____Youth Service Agency ____Family

____Cascade AIDS Project Hotline ____County Health Dept.

____State Health Dept. ____Sexually Transmitted Disease Clinic

____Nurse or doctor ____Other (please write source)_____

46. Is there anything else you would like to share about your thoughts on AIDS/HIV infection?

APPENDIX B

Letters of Support

To: Committee on Human Research
Oregon Health Sciences University

From: Chris Johnson

Re: Research proposal by Kay Gage, "Adolescents Not Attending Schools: Their Knowledge & Behavioral Response to AIDS."

Date: November 13, 1989

Dear Committee Members,

I am writing to epxress my support for the research study proposed by Kay Gage. Ms Gage has reviewed her proposal with me and it is similar to a survey study conducted by myself for the Multnomah County Health Division during the fall of 1988. There were no adverse effects observed or reported by the youth that participated in my sutdy. My study was done in the the same locations that Ms. Gage intends to perform her study.

Based on my experience in conducting a survey with this population of adolescents, I do not anticipate that any adverse effects will be experienced by the youth that choose to participate in Ms. Gage's study. There is considerable potential for use of the information that Ms. Gage is attempting to gather, and it is my hope that you will allow her to conduct this study.

Sincerely,

Chris Johnson

Christopher Johnson
Health Educator/Multnomah County HIV Outreach Project

Project LUCK
Link Up the Community for Kids

October 31, 1989

TO: The Committee on Human Research
Oregon Health Sciences University

FROM: Lisa Burk, Project LUCK Client Services Coordinator

RE: Research Study: "Adolescents not attending school: Their Knowledge and Behavioral Response to AIDS."
Researcher: Kay Gage Sponsor: Barbara Limandri

I am writing as a representative of Project LUCK to advise you of our support of the research study "Adolescents Not Attending School: Their Knowledge and Response to AIDS" proposed by Kay Gage. Project LUCK is an interagency effort to coordinate services for Portland's homeless street youth. Ms. Gage presented and discussed the research proposal with staff from Project LUCK participating agencies and after careful review we agreed to our participation in the study.

We are concerned about the risk of HIV infection among street youth and are in need of additional information to guide our intervention efforts. We believe the potential usefulness of this research study outweighs any potential risks of participation.

Ms. Gage discussed with us the need for adult consent and screening of potential participants. Because many street youth served by our programs are not in contact with adult relatives, parents or guardians, our program directors and/or staff will be happy to provide screening and consent for the youth's care.

Please call me if you need additional information.

2000 SW First, Suite 100 Portland, Oregon 97201 (503) 227-6445

APPENDIX C

Consent

OREGON HEALTH SCIENCES UNIVERSITY
CONSENT FORM

Title: Adolescents not attending school: Their knowledge and response to AIDS.
Investigator: Kay Gage, RN., BSN.
Sponsor: Barbara Limandri, RN., DNSc. Department of Mental Health Nursing.
Purpose: The purpose of this study is to find out what you as teenagers know about AIDS.
Procedure: You will be asked to fill out a 46 question survey. The questions asked in the survey are about your knowledge, attitudes and responses to AIDS.

The survey will ask about sensitive issues and possible illegal activities, for this reason you will be asked to give verbal rather than written consent to participate in this study.

Confidentiality: To protect your privacy, this consent will not require your signature and the first page of the survey that has information that might identify you will be kept in a separate box. No one will be able to connect you with the survey answers. Neither your name nor your identity will be used for publication or publicity purposes.
Risk/ Benefits to Participants: While we believe the risks of this study are small, we want you to be aware that you may feel uncomfortable answering some of the questions and that the topics may stimulate further thoughts about the topics covered in the survey . You may leave out any question in the survey you feel uncomfortable with.

If for any reason you would like referrals to follow-up services, the investigator will provide those referrals.

Liability: The Oregon Health Sciences University, as a agency of the state, is covered by the state liability fund. If you suffer any injury from this research project, compensation would be available to you if you establish that the injury occurred through fault of the University, its officers or employees. If you have further questions about this, please call Dr. Michael Baird at (503) 279-8014.
Questions: The investigator or sponsor would be happy to answer any questions that you may have. Call Kay Gage at 228-0373 or Barbara Limandri at 279-7827.

Consent: If you give verbal consent, an adult witness will sign this form if you have agreed to participate in this study. Participating or refusing to participate will have no effect on the services you are receiving or may need in the future. The adult signing this consent form is witnessing your verbal consent to participate in this study.

The subject has read this consent form and has given verbal consent to participate in this study.

_____
Witness date

The witness signing this consent will receive a copy of it.

APPENDIX D

Abstract of Thesis

Abstract

Title: Adolescents Not Attending Schools: Their Knowledge and Behavioral Response to AIDS.

Author: Katharine Gage

Approved: _____
Barbara J. Limandri, R.N., D.N.Sc., Thesis Advisor

The purpose of this descriptive correlational study was to describe the knowledge, knowledge sources, attitudes, risk behaviors and behavioral responses of adolescents not attending schools regarding AIDS and to examine the relationship between these variables. The sample included 49 males and females receiving services from Project LUCK Youth Service agencies. A 46 item questionnaire was used for data collection,consisting of 39 questions from the Secondary School StudentHealth Risk Survey and seven additional questions designed for this study regarding behaviors and knowledge sources.

The majority of the sample were knowledgeable about AIDS, had a positive attitude and engaged in one or more risk behaviors. Over half reported making behavior changes and identified what they had learned about AIDS, knowing someone with AIDS and friends as the most influential factors for making changes. Their primary knowledge sources were pamphlets, friends, youth service agencies and television. Moderate trends ($p<.05$) were found among three

combinations of variables: (a) knowledge and attitude, (b) sampling location and behavior change and (c) view of risk and risk behaviors. There was also significant difference found between the mean attitude scores of those reporting behavior changes and those that did not.

The major factors limiting generalizability of this study were the purposive sampling, small sample size, and geographic location. The practice implications of this study were primarily educational in terms of methods most likely to be effective in reaching and influencing the target population. Recommendations for further research focused on factors influencing behavior changes with adolescents, in particular the influence of perceived ability to influence the course of life events.