

A review of the knowledge, attitudes and behaviours of university students concerning HIV/AIDS

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SUMMARY

This paper reviews the current literature related to HIV/AIDS and university students, and discusses how this information can be used in health promotion programming and evaluation. Research related to HIV/AIDS among university students has focused primarily on the assessment of knowledge, attitudes and behaviours and, to a lesser extent, on the effectiveness of educational interventions. Ensuring the greatest success involves a multifaceted and coordinated effort which brings together faculty, administration, students, health education professionals and the external community of students. Any program targeting HIV/AIDS can be included in a more comprehensive initiative for improving and maintaining student health. The skills learned to reduce the risk of HIV infection are transferable to other health issues and involve empowering students to take control and responsibility for their actions. This empowerment, combined with good knowledge and healthy attitudes, will allow the skills learned to be used when students are outside of the university setting.

Social research can contribute to the achievement of safer sexual behaviour in three ways. First, by describing the range of the problem. Second, by detecting the most dominant factors that affect the acceptance or rejection of recommended health behaviours. Such factors have to be studied on the personal level, as well as on the social organizational levels—the specific community and its culture. Third, by evaluating the effectiveness of educational interventions by monitoring changes in health beliefs and behaviours, and particularly in association to specific methods of intervention. Repeated surveys and evaluation studies are necessary since beliefs and behaviour change over time. Based on the findings of such studies, health promotion should be planned, implemented and continuously evaluated, updated and changed. This indicates that health promotion is one of the areas where social science theory, research and practice have to be intertwined on an ongoing basis in order to be effective.

Key words: AIDS; health education; HIV; student health

INTRODUCTION

Acquired Immunodeficiency Syndrome (AIDS), caused by the Human Immunodeficiency Virus (HIV), was first diagnosed in the United States in 1981 (Gottlieb *et al.*, 1981). Since the first cases were diagnosed in North America, AIDS has

grown into an international pandemic (Chin, 1990).

Adolescents and young adults are at high risk for sexually transmitted diseases (STD), including HIV, since they are at an early stage of sexual

behaviour, changing partners frequently. They thus constitute a group. Of the >250 000 cases of AIDS that have been reported to the Centers for Disease Control and Prevention in the United States since 1981, fewer than 1% have occurred among 13–19-year-olds, and about 20% among 20–29-year-olds (Centers for Disease Control, 1993). Given that the median duration of the incubation period, between infection with HIV and onset of AIDS, is nearly 10 years, many 20–29-year-olds with AIDS may have been infected during adolescence (Morris *et al.*, 1993). In 1989, AIDS ranked as the sixth leading cause of death among 15–24-year-olds in the US (National Center for Health Statistics, 1994).

Two-thirds of the reported AIDS cases among adolescents have resulted from sexual behaviour. Adolescents with AIDS are less likely than adults to have acquired HIV from sex between men or by injected drug use. Instead they have been most likely to acquire HIV from heterosexual contact and, before 1985, from transfusion of blood (Vermund *et al.*, 1989).

Statistics of the general population in the US show significant differences in AIDS-related knowledge and behaviour among population groups which vary on age, education, race and gender differences. In general, minority groups, those with <12 years of education, and persons over the age of 50, are less likely to respond correctly to general AIDS knowledge questions. For example, analysis of knowledge about condoms revealed that men were somewhat more knowledgeable about condoms than women, and that younger adults and persons with >12 years of education were twice as likely to be knowledgeable about the damaging effect of oil-based lubricants. Perceptions of personal risk were found to increase with level of education. The highest percentage of respondents that reported participating in one or more high-risk behaviours associated with HIV infection (6%), was found in the 18–29 age group (National Center for Health Statistics, 1994).

These analyses lead to two basic conclusions about the fight against AIDS. First, that it is important to focus research and interventions on young people. Second, that young adults who differ in education and in cultural background should be separately studied. The purpose of this literature review is to summarize the latest publications about HIV/AIDS-related knowledge, beliefs and sexual behaviour of college and university students. Hopefully, such a summary will pro-

mote our knowledge and understanding of these issues and lead to effective suggestions regarding directions for further research and implementation.

KNOWLEDGE AND CONCERN ABOUT HIV/AIDS

In general, studies of college students indicate that they have a relatively high level of knowledge, including general knowledge, knowledge about HIV/AIDS transmission and prevention (Svenson and Varnhagen, 1990; Green *et al.*, 1991). Most of the studies, however, report some caveats in knowledge which lead to significant misconceptions and risky behaviour. In one of these studies, for example, only 61% knew that people with the AIDS virus do not necessarily look sick (Greenlee and Ridley, 1993). Mass-media—television, magazines, newspapers and pamphlets—rather than family members, friends or medical personnel, are the major sources of information about AIDS-related issues for adolescents and young adults (DiClemente *et al.*, 1986; King *et al.*, 1988; Green *et al.*, 1991). Relatively high percentages of adolescents (20–45%) report that they do not receive information from parents or medical professionals (Hingson and Strunin, 1992). When asked, young adults express the wish to learn more about the disease, and from medical sources, which they see as more reliable than the mass media (King *et al.*, 1988; Green *et al.*, 1991).

According to Becker and Maiman (1975), knowledge about disease prevention and personal concern about disease contraction should lead to disease prevention behaviour. However, the high level of general knowledge about AIDS-related risky behaviours, including knowledge about the effectiveness of condom use, as well as concern about being at risk for HIV infection, are often reported to be unrelated to safe sexual behaviour (Svenson and Varnhagen, 1990; Varnhagen and Svenson, 1990; Carmel *et al.*, 1992; Oswald and Pforr, 1992; Greenlee and Ridley, 1993). These findings with university students are similar to those reported about adolescents (Varnhagen and Svenson, 1990; Varnhagen *et al.*, 1991; Carmel *et al.*, 1992; DiClemente, 1992; Svenson *et al.*, 1992) and adults (National Center for Health Statistics, 1994). Hence, efforts in the direction of increasing awareness and concern about the disease among university students,

although necessary, are not sufficient to promote the desired behaviour.

Coupled with studies that reveal relatively high knowledge is an extensive literature that indicates that college students are beginning to realize they are at risk for AIDS and are concerned about contracting HIV. For example, Hingson *et al.* (1990a, b) found that the percentage of 16–19-year-old adolescents who worried about AIDS increased from 46 to 74% between 1986 and 1988. Other studies have produced similar results, indicating that 45–60% of university students express some concern over the possibility of HIV infection (Baldwin and Baldwin, 1988; Gottlieb *et al.*, 1988; Svenson and Varnhagen, 1990; Varnhagen and Svenson, 1990).

SEXUAL BEHAVIOUR

In spite of the AIDS pandemic, studies of adolescents in Western countries report that their sexual activity has increased during the last 10 years. The reported changes include having first sexual intercourse at a younger age and an increase in the reported numbers of sexual partners (Hingson *et al.*, 1990a, b; Carmel *et al.*, 1992; Oswald and Pforr, 1992). The percentages of adolescents who report being sexually active vary in the different studies from 40 to 90% (Baldwin and Baldwin, 1988; Galt *et al.*, 1989; Hingson *et al.*, 1990a, b; Svenson and Varnhagen, 1990; Varnhagen *et al.*, 1991; Carmel *et al.*, 1992).

Significant differences in sexual behaviour among subgroups of adolescents within societies and among societies are also detected (Traeen *et al.*, 1992a). In an Israeli study on 18–19-year-olds, males consistently report being more sexually active than females: They start having sex at a younger age and report having more sexual partners (Carmel *et al.*, 1992). In North American studies of adolescents, however, there are reports of either an opposite trend, i.e. of women being more sexually active than men (Leland and Barth, 1992; Traeen *et al.*, 1992a), or of no significant gender differences in sexual behaviour (Caron *et al.*, 1993). Such differences are mainly explained on the basis of age, ethnicity and culture (Carmel *et al.*, 1992).

With regard to patterns of sexual activity, frequency of sexual intercourse among adolescents is reported to be associated with the number of years of sexual activity and the number of years of dating. Baldwin and Baldwin (1988) found that

university students who had sexual intercourse at a young age and those who have had many sexual partners continue to have a high number of sexual partners, regardless of their level of knowledge concerning AIDS. This is consistent with the findings of DuRant and Sanders (1989) who also found that frequency of sexual intercourse among adolescents was associated with the number of years of sexual activity and the number of years of dating.

CONDOM USE

Risky sexual behaviour includes participation in casual sex, often changing sexual partners, and the failure to use condoms. The most efficient and recommended means to reduce the chances of contracting HIV is condom use. Reported condom use by adolescents and young adults is rather low, ranging from 10 to 66% (Strunin and Hingson, 1987; Kegeles *et al.*, 1988; Galt *et al.*, 1989; Hingson *et al.*, 1990a, b; Oswald and Pforr, 1992; Traeen *et al.*, 1992b; Pleck *et al.*, 1993).

Factors that are not related to condom use are more prevalent in the literature than factors that do appear to be related to condom use. Knowledge that condoms can be used to prevent HIV infection is widespread among these population groups (Strunin and Hingson, 1987; Baldwin and Baldwin, 1988; King *et al.*, 1988; Kegeles *et al.*, 1988; DuRant and Sanders, 1989; Galt *et al.*, 1989; Cochran *et al.*, 1990; DeBuono *et al.*, 1990; Green *et al.*, 1991; Hingson *et al.*, 1990a, b; Svenson and Varnhagen, 1990; Varnhagen *et al.*, 1991; Carmel *et al.*, 1992; DiClemente, 1992; Hingson and Strunin, 1992; Oswald and Pforr, 1992; Strunin and Hingson, 1992; Svenson *et al.*, 1992; Caron *et al.*, 1993; Chan and Fishbein, 1993; Greenlee and Ridley, 1993; Pleck *et al.*, 1993). As well, intent to use condoms, as measured by female students who report that they would ask their sexual partner to use a condom, is high (Chan and Fishbein, 1993).

In a few studies on college and university students, increase in the use of condoms over time has been reported. For example, DeBuono *et al.* (1990) reported an increase in condom use among the male partners of female college students from 12% in 1975 to 41% in 1989. Given the minimal increase in reported use, DeBuono *et al.* (1990) concluded that increases in the rates and seriousness of STDs over the time period had little effect on the sexual practices of college females.

Cochran *et al.* (1990) also reported a small increase in condom use among university students. On the other hand, 44% of the students indicated that they had not changed their sexual behaviour to reduce their risk of HIV infection. Some researchers have detected increasing trends toward greater condom use as a function of the frequency of sexual intercourse (DuRant and Sanders, 1989), and as a function of greater number of sexual partners (Varnhagen *et al.*, 1991). Others report opposite trends (Traeen *et al.*, 1992b).

There are indications that adolescents (16–19-year-olds) who have sex after drinking or using marijuana use condoms less frequently than when not drinking or using drugs (Strunin and Hingson, 1992). Such associations, which have important practical implications, are not consistent, however, and need further study (Leigh and Stall, 1993).

Rates of reports about condom use vary in different cultures, with no relation to the objective risk. For example, in Israel—a low-incidence country for AIDS—58% of males and 31% of females reported in 1988 that they used condoms, while in US samples of similar age (18–19) the percentages were lower—31 and 23%, respectively (Carmel *et al.*, 1992).

Interesting findings in this context are the repeatedly reported lower percentages of women, in comparison to men, who report that their partners use condoms (Carmel *et al.*, 1992; DiClemente, 1992; Caron *et al.*, 1993; Sacco *et al.*, 1993). Since the reported level of condom use should be approximately the same for males and females, if the male and female respondents are representative of the partners of each, these findings suggest that both sexes expect the male partner to provide condoms, that males do so more often, and that whether they provide them is what predicts the rate of condom use (Sacco *et al.*, 1993).

In conclusion, condom-use behaviour reported by university students is low, regardless of whether they: (i) know that condoms can reduce the risk of HIV infection; (ii) feel they may be at risk for, or are concerned about contracting HIV; and (iii) report intent to use condoms and/or communicate about condom use with their sexual partner.

In a more positive light, Fisher *et al.* (1992) in a longitudinal study of college students report that perceived norms regarding condom use among present and potential future sexual partners

strongly predict actual condom use. Other recent research has indicated that consistent condom use is primarily explained by psychosocial factors, such as being able to communicate about the use of condoms with sexual partners, peer-group norms which support the use of condoms, and positive beliefs about the effects of the condom on pleasure during intercourse (Catania *et al.*, 1989; Carmel, 1990; Carmel *et al.*, 1992; DiClemente, 1992; Oswald and Pforr, 1992). Thus, the peer group and influencing social norms may provide an effective target for health education.

COMMUNICATION

Sexual behaviours, including condom use, are difficult to change because, unlike most preventive health behaviours, they are not self-controlled but involve the mutual agreement of two parties. Furthermore, in most societies sexual intercourse is perceived to be one of the most intimate and spontaneous behaviours, about which, and during which, verbal communication is often unacceptable. Communication about sex or any behaviour that implies it, such as in the purchase of condoms, is embarrassing to almost everybody, particularly adolescents and young adults. Even students who report practicing some of the safer sex behaviours do not appear to discuss previous sexual experiences or exposure to disease with sexual partners (Svenson and Varnhagen, 1990). Galt *et al.* (1989) found that communication with sexual partners about past sexual experiences was indicated by only 6% of male and 8% of female 19-year-olds. These figures are less than half of the values of corresponding reports of condom use. In a study of first-year Canadian university students, fewer than one-third of the students who reported that they practiced safer sex because of their concern about AIDS, also reported discussing AIDS and other STDs with their sexual partners as a part of safer sex (Svenson and Varnhagen, 1990).

The roots of this embarrassment can be traced, even in permissive Western society, to the reported difficulties of parents in discussing the importance of the use of condoms with their children. In a national survey in the US, only 75% of the parents of 10–17-year-olds reported discussing the importance of condom use with their children (National Center for Health Statistics, 1994). In an Israeli study, these percentages were much lower among parents of 12–18-year-olds (Green and Carmel,

1994). In both studies, significantly more mothers than fathers reported that they had discussed the importance of condom use with their children.

EVALUATIONS OF HEALTH EDUCATION PROGRAMS

Reports of evaluations of AIDS-related educational programs for adolescents or university students are often not very encouraging (DiClemente, 1992). Baldwin and Baldwin, for example, found that taking a university education course did not affect students' sexual behaviour, including with respect to condom use, number of sexual partners, or frequency of casual sex (Baldwin and Baldwin, 1988; Baldwin *et al.*, 1990). The findings that neither knowledge nor concern about contracting the disease are related to engagement in the recommended sexual behaviours among adolescents and young adults, might explain why health education messages regarding risk prevention tend to go unheeded.

There are, however, also reports of success in reducing risky sexual behaviour or intentions to change sexual behaviour (Varnhagen and Svenson, 1990; Kelly *et al.*, 1991; Waldron *et al.*, 1995; McAleavy *et al.*, 1996). In a number of studies on communities of homosexuals, where key opinion leaders invested much effort in education and persuasion to change norms of sexual behaviour, a considerable decrease in risky sexual behaviour has reported (Catania *et al.*, 1991; Kelly *et al.*, 1991).

There are also reports of specific interventions which achieve short- and long-term results. Kipke and colleagues (1993) report an improvement in behavioural skills, which are prerequisites for the recommended behavioural change. They succeeded in developing skills for negotiating prevention and risk reduction, and resisting peer pressure to engage in risk-related sexual and drug-use behaviour. In another intervention among women college students, which focused on applying a peer-influence model by identified opinion leaders, results at 6 months follow-up demonstrated modest changes in sexual behaviour among the intervention group in comparison to a control group (Kauth *et al.*, 1993). This specific program addressed the major barriers to the use of condoms—communication problems with sexual partners and perceived peer norms about condom use.

Other successes from peer-based education pro-

grams have been reported (Varnhagen and Svenson, 1990; Waldron *et al.*, 1995; McAleavy *et al.*, 1996). Varnhagen and Svenson (1990) assessed the effectiveness of an AIDS peer education program compared to other types of education and no participation in an AIDS education program. Knowledge and attitudes did not differ significantly across the three groups demonstrating a relatively high awareness in the university population. However, those students who participated in the peer education program were more likely to engage in safer sexual practices including condom use and communication with partners on follow-up 6 months after the program.

RECOMMENDATIONS FOR HEALTH EDUCATION PROGRAMS

Considering the current knowledge about barriers to consistent condom use among young adults, the reported success of some educational programs, as well as the relatively small and closed social environment of colleges and universities, we suggest the use of multilevel interventions. The purpose of these interventions should be to change campus norms regarding sexual behaviour, focusing on consistent condom use.

Educational programs, in addition to providing relevant knowledge, should focus on motivational issues, and on developing communication skills relevant to the specific recommended behaviours (Catania *et al.*, 1989; DiClemente *et al.*, 1989; Carmel, 1990; Fisher *et al.*, 1992). Given that the success noted above involved some form of peer involvement, programs should be addressed not to individuals, but to dyads or peer groups by peers. Small group discussions might be an effective method to change peer-group norms. The educational program could be included as part of orientation programs for new students (Caron *et al.*, 1993), and/or of a required course for first-year students.

On the campus level, such educational programs have to be supported by increasing the availability and accessibility of condoms, and information about how to get them and how to use them. This level should be used creatively for dispersing reminding messages on a regular basis. It is also recommended to use multifaceted community mobilization strategies (Kelly *et al.*, 1993) that is, to ask student organizations, leaders, and popular students to participate and play a major/leading part in these campaigns.

Health authorities, university administrators and students, as well as the mass media, should cooperate in order to achieve the desired goal (Weiss *et al.*, 1995).

Berg *et al.* (1993) outlined steps for the development and implementation of a peer education program for university students. It was recommended that any campus-wide education program be directed by a multidisciplinary steering committee with representation from faculty and students from a number of faculties. Strong links with campus groups and department chairs are considered essential for the program's success and to gain better access to students. Such a model requires a strong commitment and a need for an individual to have a coordinating role to ensure the program stays focused and maintains momentum. For campuses without an health education coordinator, Berg *et al.* (1993) suggest a modest increase in student fees which is allocated directly to supporting health education. A multifaceted approach is also recommended where the educational presentation is specifically designed towards the target audience, whether in a classroom, theatre, fraternity, or other venue. Ensuring the program is tailored to the specific group's needs helps to assure effective delivery of the message. The model described by Berg and colleagues (1993) has had some success in reducing risk-related behaviours (Varnhagen and Svenson, 1990).

FUTURE RESEARCH

The major problem in our inability safely to draw general conclusions from the large number of published studies derives from the variability in samples, and research tools, as well as in the lack of conceptual frameworks. Although it can be concluded that health attitudes rather than health knowledge determine health behaviour, few studies have examined the relationship between sexual behaviour attitudes and sexual behaviour longitudinally, on specific populations, using a conceptual framework.

Regarding condom use, the reported changes in longitudinal studies, such as relapse in condom use over time (Catania *et al.*, 1991; Traeen *et al.*, 1992b; Pleck *et al.*, 1993), or the more positive attitudes to condoms among consistent condom users in comparison to others (Oswald and Pffor, 1992), raise the need for studies that clearly distinguish among three different conditions relevant

to the use of condoms among young adults: (i) acceptance of a recommended behaviour, for those who have not experienced sexual intercourse; (ii) change—for those who practiced sex but without using a condom, and (iii) maintenance—for those who use condoms but who have to be encouraged to continue such use on a regular basis. It might be that different messages are appropriate for students who differ on such baseline intervention conditions (Carmel, 1990). It is therefore recommended to differentiate among such conditions when studying HIV/AIDS-related issues among young persons.

The use of theoretical models in studies of health beliefs and behaviour is helpful to the organization of knowledge in a systematic conceptual framework. Such a framework can also lead to efficient implementation by helping to define priorities in areas of intervention, and to construct the appropriate educational messages.

In this context, we suggest to use the conceptual model recommended by Carmel (1990) for the prediction of adolescents' AIDS-related protective behaviour. Basically, it is an elaboration of the original Health Belief Model and the adaptation of it to the study of adolescents' AIDS-related behaviour. The Health Belief Model suggests that preventive health behaviour can be understood as a function of: perceived self-susceptibility of acquiring the disease, perceived severity of the disease, perceived benefits to be realized by engaging in particular preventive behaviours, as opposed to the costs—barriers—of such behaviours or actions; and information or advice that focuses the attention of the individual on the disease and on the recommended behaviours (Becker and Maiman, 1975). The recommended model for the study of AIDS-related beliefs and behaviour includes additions of relevant explanatory factors which have proven to be good predictors of preventive health behaviour among adolescents, such as 'self-efficacy', which is a belief in one's own competence in implementing a recommended specific behaviour (Bandura, 1986; Rosenstock, 1990), and perceptions of peer group norms (Ajzen and Fishbein, 1980).

In view of the reported variability in AIDS-related knowledge, beliefs and behaviour among various social groups, conducting basic research, intervention and evaluation studies on specific groups, who are concentrated in a defined social setting, such as university students, might be very efficient. A similar acceptable conceptual framework, and a set of similarly phrased questions, sys-

tematically and repeatedly used in comparative studies of different population groups, might significantly and in a short time increase our knowledge of health-education-relevant issues.

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