



## DETERMINANTS OF SAFER SEX BEHAVIORS AMONG COLLEGE STUDENTS

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**Abstract.** Safer sex behaviors (monogamy, sexual abstinence, correct and consistent condom usage) are important for prevention of sexually transmitted diseases and HIV/AIDS among college students. The purpose of this article was to review studies addressing determinants of safer sex behaviors among college students. In order to collect materials for this study a search of seven databases (CINAHL, MEDLINE, ERIC, Academic Search Premier, Scopus, Web of Science, Social Sciences Citation Index) was conducted for the time period 1990-2008. A total of 12 studies for determinants of safer sex behaviors were extracted. Alcohol usage, religiosity, barriers to condom use and perceived social norms were some of the determinants of safer sex behaviors. Recommendations for developing safer sex interventions in college students are presented.

**Key words:** Safer sex, college students, determinants, monogamy.

### Introduction

Safer sex is important for protection against STDs (sexually transmitted diseases) including HIV/AIDS (Human Immunodeficiency virus/acquired immunodeficiency syndrome). Consistent and correct condom usage along with a monogamous relationship are two important aspects for STD and HIV/AIDS prevention. The HIV/AIDS epidemic has grown to alarming proportions. Of the 281,421 persons getting a diagnosis of HIV infection during 1996-2005, 45% had a diagnosis of AIDS, 3 years after their HIV diagnosis [1]. The demographic trends from 1981- 2004 have shown that these cases are more in males as compared to females (71.3% vs. 28.7%), more in the age-group 30-44 years, (50.8%), highest in black, non-hispanics (51%), and more because of male to male sexual contact (43.5%) and heterosexual contact (34.0%)[2]. Most of the HIV-related research is targeted towards high-risk groups such as prostitutes, gays and substance abusers but there is evidence that it's increasing in college students and adolescents as well [1], [3].

In a recent study that examined the determinants of HIV/AIDS related risky behaviors among adolescents, lower self-esteem and emotional distress significantly predicted unprotected sex and multiple partners [4]. Another recent study which looked at predictors of HIV/AIDS risk among college students, showed gender to be the strongest predictor of condom use and race to be the strongest predictor of number of sexual partners [5]. Based on the study of these determinants some of the suggestions made were of reinforcing knowledge about HIV/AIDS, promoting social norms and skills for condom usage, and address number of sexual partners as a risk factor for African-American population [5]. Similar factors emerged significant in a study which looked as demographic and personality factors in HIV/STD partner specific risk perceptions among young adults [6].

Some of the risk factors for engaging in unsafe sexual activities among the college students are use of alcohol [7, 8], partner characteristics such as steady versus non steady partner (8), and substance abuse [7]. Several studies have found that pregnancy prevention rather than disease prevention was the impetus for condom use [9, 10]. Health education in the form of information about pregnancy

prevention can unintentionally increase condom use. HIV/AIDS knowledge provided to individuals does not help in generating behavior change. In a recent study conducted among undergraduates, it was seen that students who had very good knowledge about HIV/AIDS, had low condom use to prevent its transmission [11]. Further evidence of knowledge-behavior gap comes from a study, which used a random sample survey of students in which the level of student knowledge was very high but did not lead to protective condom behaviors. However knowledge was found to be an enabling factor in maintaining a comfort level when asking partners about their sexual histories and in requesting their partners to take an AIDS test [12].

### **Methods**

In order to collect materials for this review a detailed search of CINAHL, MEDLINE, ERIC, Academic Search Premier, Scopus, Web Of Science, Social Sciences Citation Index databases was carried out for the time period 1990-2008. A Boolean search strategy, where the key words entered for search were “safer sex” and “determinants” and “college students” and “HIV/AIDS” and “determinants” and “college students” in differing orders was used for extraction of studies related to determinants of safer sex among college students

The criteria for inclusion of studies were (1) publication in English language, (2) publication between 1990 and 2008, (3) location of studies anywhere in the world, and (4) relating to determinants of safer sex involving college students. Exclusion criteria were publications in languages other than English and studies published prior to 1990. A total of 12 studies met the criteria for determinants of safer sex behaviors.

### **Results**

In Table 1. the results of the research are presented.

**Table 1.** Determinants of safer sex in college students

Study	Purpose	Methods	Results	Conclusion	Comments
Braithwaite study (Braithwaite et al., 1998).	The purpose of this study was to examine if African- American college students differed in the use of condoms during oral and anal sex.	A convenience sample of 1,593 undergraduate students was surveyed using paper and pencil questionnaire on items of knowledge, attitude and belief regarding HIV/AIDS and barriers to risk reduction	Most respondents had engaged in oral sex without a condom. Statistically significant relationship noted between reporting being afraid to ask the partner to use a condom and past anal intercourse without a condom (p<0.000)	Female participants were consistently more likely to use condoms during oral and anal sex than male participants. Women were 24 times more likely to engage in oral sex without a condom compared to men. Overall substantial numbers of students are placing themselves for STI and HIV/AIDS risk.	Important limitation was that it was not clear whether men gave or received oral sex. Preventive counseling for HIV/AIDS risk reduction behavior is essential. To reinforce condom use not only during vaginal sex but also during oral and anal sex.
Poulson study (Poulson et al., 1998)	To estimate the incidence of risky sexual behavior at a large university in conservative rural area and how drinking pattern and religiosity related to risky sexual behaviors.	Convenience sample of 210 participants from general student population. Survey developed in collaboration with graduate and undergraduate students and an 88 question survey was pilot tested. Three areas were alcohol and other drug use, sexual behavior and religious	Majority (84%) reported having engaged in sexual intercourse. Only 27% reported they consistently used condoms. 48% reported having engaged in sexual intercourse with multiple partners during past year.	Alcohol strongly related to risky sexual behavior. Women with strong religious convictions less likely to engage in risky sexual practices. Findings consistent with previous research	Not generalizable to other college campuses. Data based on self-reports. Third variable issues when judging a causal relationship

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Prince study(Prince, and Bernard, 1998)	The purpose is to provide an overview of sexual behaviors and safer sex practices of a unique sample of college students (location and demographics different).	Data was obtained from, 2525 students out of which 1,919(76% response rate) completed a survey, related to sexual behaviors, safer sex practices and attitudes towards condom usage.	68.2% of the sexually active participants had practiced monogamy during the past year. Half of the sexually active students reported they never used condoms. Women were more likely to use HIV/AIDS communication strategies( $p<0.0001$ )	The percentage of participants with multiple partners was high. Only half of the participants indicated talking about HIV in every new relationship. Issue of monogamy is important in determining condom use. Positive attitudes don't translate into safer sex behavior.	Study was unique in sense done on a rural commuter campus. The characteristics of sexual behavior are consistent with traditional college students. Monogamy in a year is different from serial monogamy and that is not HIV protective. HIV testing is a safer sex practice.
Wilkinson study (Wilkinson et al.,1998)	The purpose of this study was to develop a model of sexual-risk taking behavior that included psychological measures as well as social and demographic factors and contextual variables.	Use of Theory of Planned behavior which was operationalized to predict behavior. All psychological measures were used in a multiple logistic regression analysis to predict the behavior. Socio-demographic, belief and contextual variables were used to predict subjective norms	Practice of safer sex was associated with attitudes towards, condom use, subjective norms, and normative beliefs (norms that promote safer sex). Goodness of fit index -129.77 $p<0.01$ –model fitted data for predicting subjective norms and was 87.32 for predicting safe sex behavior.	Perceived social influence was a consistent predictor across all samples and gender. Perceived control over one's sex life was inversely related to safer sex practices. Normative beliefs were endorsed by students.	Social influence is an important factor when considering an intervention. Environment which promotes safer sex norms need to be nurtured.

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<p>Redding study (Redding, and Rossi, 1999).</p>	<p>The purpose of this study was to develop psychometrically sound general and situational scales to measure confidence in safer sex and temptation for unprotected sex.</p>	<p>395 students were recruited from a mid-size university to complete a survey. Participation was anonymous and voluntary. CSS (Confidence in safer sex) and Temptation for unprotected (TUS) scales were used.</p>	<p>ANOVA on frequency of vaginal sex with condoms and without condoms by stages of change revealed significant differences (<math>p &lt; 0.01</math>). Various model fits were tested and the 5 correlated factor models provided best fit. Follow up univariate ANOVA's for each subscale were significant (<math>p &lt; 0.05</math>)</p>	<p>The discriminant validity of constructs of confidence and temptation is supported by fact that its different at each stage of change. Situational subscale ratings were related to subject's stage of change and gender</p>	<p>Males had more inclination for temptation for unsafe sex than females as females put themselves in a protective mode by using contraception. Situation specific interventions may be targeted for temptation management.</p>
<p>Lance study (Lance, 2001).</p>	<p>The purpose was to study upto what extent knowledgeable college students (regarding HIV/AIDS) engaging in protected sexual intercourse. Are there any gender differences?</p>	<p>A convenience sample of 183 college students were given a survey questionnaire (knowledge about HIV/AIDS and attitude about sexuality, questions pertaining to HIV/AIDS and unprotected sex).</p>	<p>46% of students perceived their HIV/AIDS knowledge high. Statistically significant gender difference was found (<math>p &lt; 0.05</math>) with respect to involvement in unprotected sex. 55% of females said they never had unprotected sex compared to 33% of males.</p>	<p>Unprotected sex is widespread in heterosexual students despite adequate HIV/AIDS knowledge levels. Future research needs to be longitudinal opposed to cross-sectional to follow changes in sexual behavior and safer sex.</p>	<p>Study findings agree with previous studies</p>

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Langer study (Langer et al., 2001).	The purpose is to identify predictors of risky sexual practices among heterogeneous sample of students and the relationships between key risk and protective factors among risky sexual behaviors.	Data obtained as a part of larger study on substance abuse among college students (388 undergraduate students). Classes selected by convenience sampling. Nine risk factors and five protective factors selected from prior literature review.	Six of the nine risk factors and four of five protective factors were significantly correlated with scores on risky sexual behavior. Age, age at first sex, number of sex partners in last 6 months, age at first alcohol use and binge drinking -22.1% of total variance.	Some of these findings were consistent and some inconsistent with reported literature. Age at first sex, number of partners and early alcohol use can be foci for preventative efforts. Reliance on risk factors until more comprehensive theoretically driven models are done and tested.	Terminology for risk communication may differ among samples and results may not apply to other samples.
Boone study(Boone, and Lefkovitz, 2004	The purpose of this study was to hypothesise safer sex behaviors (using condoms at intercourse) would be predicted by peer norms and sexual socialization in addition to original variables established by Health Belief Model.	220 individuals completed a survey. The sample size was 154. The measures used were perceived vulnerability to AIDS, condom use self-efficacy, outcome expectancies for condom use, peer norms for condom use and sexual behavior, sexual attitudes, condom and alcohol use.	Older individuals reported reported more frequent sexual intercourse without a condom ( $p < 0.001$ ). Females who reported less frequent alcohol use before or during sex used condoms frequently. Condom use among females was due to higher self-efficacy and positive outcome expectancies	By including peer-norms and sexual socialization variables this model explained 28% of variance in lifetime condom use and 14% of variance of lifetime alcohol use before or during sexual intercourse. Condoms were projected as a protective mode of sexual behavior.	Limited generalizability. Cross-sectional design so causality can't be established. Associations between sexual attitudes, condom and alcohol use should be studied in detail in future.

Study	Purpose	Methods	Results	Conclusion	Comments
Netting study(Netting, and Burnet, 2004)	The purpose is to examine sexual behavior at a Canadian college over past twenty years and evolving behavioral norms of subcultures	Students at OUC college were surveyed 1980, 1990, and 2000 about sexual behaviors by questionnaires.	Unmarried sexually experienced who always used condoms increased from 30% to 52 % (1990-2000).	There was a gradual shift to committed relationships and increased condom usage over 20 yr period.	Good study but results may not be generalizable. Subculture trends identified.
Opt study (Opt, and Loffredo, 2004)	To study students knowledge and behavior regarding HIV/AIDS	Survey focusing on demographics, HIV/AIDS knowledge and perceptions, testing behaviors and sexual practices	Women considered HIV/AIDS a more serious problem for college students than men (p<0.01). The majority were quite knowledgeable concerning topic of HIV/AIDS (lack of cure, condom use etc). Majority (54%) of the sample were not tested for HIV.86.7% had engaged in some form of sexual activity and 35% of sexually active said they always used condoms.	Confirm previous findings that knowledge about HIV/AIDS doesn't translate into taking appropriate safer sex precautions (always using a condom).Ethnicity related to more personal concerns. Intervention strategies for HIV testing –focus on younger students	Limited generalizable. Survey not pretested. Mostly categorical data hence non-parametric, less powerful analysis

Study	Purpose	Methods	Results	Conclusion	Comments
Mwaba study(Mwaba, and Naidoo, 2005)	To determine sexual behavior and attitudes of sample of South African university students towards premarital sex and condom use.	Research tool was several anonymous questionnaires for 153 black undergraduate psychology students .Topics were demographics, health seeking behavior, knowledge of STI's and attitude towards sex.	94% reported willingness to talk to their partners about condom usage. 88% reported that they would refuse to have sex if partner didn't use a condom.79% reported that they would be able to use condoms every time they had sex.	Sexual practices, attitude towards condom usage and premarital sex indicate healthy sexual relationships.Good knowledge of the risks of unprotected sex doesn't lead to engaging in safer sex behavior.	.Results not generalizable. Self-report a limitation
Sunmola study(Sunmola, 2005)	The aim of this study was to analyze the link between barriers, sexual behavior and condom use of sample of Nigerian university students	Random sampling was used to anonymously survey undergraduate university students(96 female and 128 male) on demographics, substance use, sexual behaviors and condom use	45% of women reported they had only one sexual partner and 30% of men reported they had one partner. Majority of women (72%) and men (50%) had used condoms in two weeks preceding survey. The barriers reported were decreased sexual satisfaction, causing health problems and reduced sexual interest	One should counter the barriers for condom usage. The predictors of condom use are: procuring condoms from clinics and perception that they do not cause health-problems	HIV prevention intervention should develop strategies to control for condom use barriers. Findings should be generalizable to non-university students.



The studies that discussed determinants of safer sex behaviors among college students are summarized in Table I chronologically. The first study [13] discussed risky sexual behaviors such as non-condom usage during oral and anal sex. The second study [14] concluded that alcohol was a strong risk factor for risky sexual behavior and women with religious convictions were less likely to engage in risky sexual behaviors. The next two studies [15, 16] addressed issues of monogamy as an important determinant of condom use and perceived social influence and perceived control for safer sex behaviors respectively. The next study [17] discussed the use of situational subscales to measure confidence in safer sex and temptation for unprotected sex while the subsequent study [18] pointed towards a knowledge-behavior gap regarding HIV/AIDS knowledge and safer sex behaviors among a group of college students. Age at first sexual encounter, number of sex partners and alcohol were some of the determinants predicting risky sexual behavior in the next study [19] while the next study [20] tried to predict condom usage by including peer norms and sexual socialization variables. The next study [21] showed increase in condom usage over a twenty year period while the next two studies [22, 23] reaffirmed the problem of knowledge-behavior gap mentioned earlier. The last study [24] discussed barriers to condom usage and ways of procuring condoms.

### Discussion

The purpose of this article was to review studies addressing determinants of safer sex among college students between 1990 and 2008. Based on this review, it can be said that there are number of determinants of safer sex behaviors among college students such as alcohol usage and religiosity [14], condom use barriers such as decreased sexual satisfaction and reduced sexual interest [24] and perceived social influence and peer norms [16, 20]. Four of the 12 studies [18, 23, 22, 15] also mention that knowledge of safe sex or HIV/AIDS does not translate into safer sexual behavior and suggest a knowledge-behavior gap which is consistent with other studies done among college students [25, 26].

The knowledge-behavior gap addresses an important concern worldwide of translating strong attitudes and intentions into effective health behavior changes. The information deficit model of 1960s clearly attributes this gap to a) immediate consequences of unhealthy behaviors are in general pleasurable and b) health threat posed by this unhealthy behavior is considered far-fetched and long-term [28]. This translates into real world settings as impulsivity among substance abusers leading to risky sexual behaviors despite adequate knowledge about HIV/AIDS [27], and good knowledge about HIV/AIDS transmission but less than half-of –the student population demonstrating correct and consistent condom usage [11].

### Implications for practice

Since we have identified the major determinants for safer sex among college students, interventions in this target population are expected to modify or address these determinants in promoting safer sex behaviors. For health practitioners, the evidence from our review clearly points to number of issues which needs to be addressed such as substance abuse, partner reduction, condom promotion, social norms and attitude-behavior gap. Interventions should be built at the school, community, mass media and health services levels which address these concerns. There is also a need of additional research identifying determinants specific to young population at risk as a result of behaviors they adopt or rather forced to adopt due to social, economic or cultural factors [29].

### Literature

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