

# Analysis of the Correlation between Awareness of HIV/AIDS and Willingness to Use Condom among 3128 Freshmen in a University in the Border Area

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## Abstract

**Objective:** A correlation study was conducted between AIDS awareness and condom use among 3128 freshmen in a border university to understand their knowledge of AIDS, their mastery of preventive measures, and their attitudes, and to explore the factors influencing their willingness to use condoms, with the aim of providing targeted and effective scientific recommendations for the prevention and treatment of AIDS and sexual health education in the region.

**Methods:** A random whole-cluster sampling method was used, and a self-constructed questionnaire was administered to university freshmen via the Questionnaire Star platform to conduct a survey study, and SPSS 25.0 statistical software was used to analyze the relevant statistics. The  $\chi^2$  test and binary logistic regression were applied to analyze the influence factors. **Results:** The knowledge rate of freshmen about AIDS was 80.3%, and 5.7% of freshmen were not willing to use condoms when having sex. Multifactorial analysis showed that female students (OR = 3.96, 95% CI: 2.66 - 5.89), knowledge of AIDS (OR = 1.70, 95% CI: 1.19 - 2.42), unwillingness to have sex with others (OR = 2.12, 95% CI: 1.45 - 3.10), and having received AIDS education (OR = 0.34, 95% CI: 0.22 - 0.52) as facilitators influencing condom use. **Conclusions:** Freshmen in a border university have relatively good knowledge of AIDS and overall high willingness to use condoms, but still need to be improved. Schools should emphasize AIDS entrance education, focusing on health interventions

for male students, establishing correct sexual concepts for new students, and improving AIDS knowledge to increase the rate of condom use among new students.

## **Keywords**

Borderland Area, College Freshmen, AIDS, Awareness, Condom, Influencing Factors

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## **1. Introduction**

Teenagers exhibit active sexual behaviors [1] and open-minded sexual attitudes [2]. College students are characterized by strong learning capabilities and great receptivity to new things. However, they often experience asynchronous psychological and physiological maturation and lack appropriate sexual attitudes and education [3]. Consequently, the incidence of high-risk sexual behaviors among college students is relatively high [4]. The HIV infection rate among adolescents is on the increase [5], with nearly 3000 new infection cases among students aged 15 - 24 each year [6]. Studies have demonstrated that only when the condom utilization rate exceeds 90% can HIV and other sexually transmitted diseases be effectively prevented [7]. Hence, condom use is of great significance. Nevertheless, domestic scholars usually concentrate on HIV education, prevention, and intervention [8], and there are few studies on the willingness of college freshmen to use condoms [9] [10]. Consequently, this research examines the freshmen of a particular university in the border region to ascertain the current state of their awareness regarding AIDS knowledge and the factors influencing their inclination to use condoms. This, in turn, offers references and a foundation for formulating comprehensive intervention strategies for freshman entrance education in universities within the border area.

## **2. Objects and Methods**

### **2.1. Research Subjects**

A total of 3128 freshmen from different prefectures of a university in Yunnan Province (a border area) were selected as the research subjects.

### **2.2. Method**

#### **2.2.1. Research Methodology/Content**

The whole cluster sampling method was used to conduct the on-site survey using the Questionnaire Star platform; Respondents were informed of the strict confidentiality of information and anonymity of responses before the survey. Reviewing a large number of literature [11] [12], the questionnaire was designed based on the Core Information on AIDS Prevention and Control Publicity and Education (2019 Edition) [13] and the Operation Manual of National AIDS Sentinel Surveillance Implementation Program (Young Students) [14] and in combination with the

characteristics of college students themselves. The questionnaire includes the general situation of the respondents, AIDS knowledge, attitude, behavior and so on. Among them, there were 20 questions on AIDS-related knowledge, and  $\geq 15$  correct answers were regarded as knowledge of AIDS.

### 2.2.2. Statistical Methods

Data were collected by questionnaire star, and statistical analysis was performed by SPSS 25.0 statistical software. The quantitative data were represented by  $(\bar{x} \pm s)$ , and the two groups were compared by t-test. The count data were represented by %, and statistical analysis was performed by  $\chi^2$ -test. The factors with  $P < 0.05$  in the univariate analysis results were included in the binary logistic regression analysis, and the test level  $\alpha = 0.05$ .

### 2.2.3. Quality Control

Consistent pre-investigation training for investigators by CDC experts; On-site survey under the guidance of CDC professionals. the questionnaire must be completed by students independently and anonymously, and the same IP address can only be answered once. After the questionnaires were collected, unqualified questionnaires such as those with logical problems and short response times were eliminated; two-person parallel data entry was used and inconsistent data were further verified.

## 3. Results

### 3.1. General Information

A total of 3128 questionnaires were collected in this survey, with 3121 valid questionnaires and an effective rate of 99.77%. Among them, there were 1355 males (43.4%) and 1766 females (56.6%); 2358 Han Chinese (75.6%), 299 Yi (9.6%); 56 Bai (1.8%); 37 Hui (1.2%); 61 Dai (2%); 310 other nationalities (9.9%); 670 in towns and cities (21.5%), and 2451 in rural areas (78.5%), see **Table 1**.

**Table 1.** Knowledge of AIDS among freshmen in a college ( $\bar{x} \pm s$ ).

projects	n	score	F/t value	Pvalue	unknown	known
sex						
male	1355	16.15 $\pm$ 2.24	1.871	0.061	248	1107
women	1766	15.99 $\pm$ 2.24			366	1400
ethnic group						
han	2358	16.04 $\pm$ 2.25	1.117	0.349	466	1892
yi	299	15.93 $\pm$ 2.43			67	232
bai	56	16.41 $\pm$ 1.88			6	50
hui	37	16.05 $\pm$ 2.06			7	30
dai	61	16.48 $\pm$ 1.97			7	54
others	310	16.18 $\pm$ 2.10			61	249

**Continued**

residence		2.996	0.003
urban	670	16.29 ± 2.20	115 555
rural	2451	16.00 ± 2.25	499 1952

**3.2. Knowledge of AIDS among Freshmen in Colleges**

Freshmen in the region scored  $16.06 \pm 2.24$  points for their knowledge of AIDS, with a maximum of 20 points and a minimum of 1 point. There was a statistically significant difference in the AIDS knowledge scores of freshmen from urban and rural origins ( $t = 2.986$ ,  $P < 0.05$ ), with urban scores higher than rural. The overall knowledge rate of AIDS was 80.3% (2507/3121), of which the three questions with the lowest knowledge rate were: it is not possible to be infected with AIDS by kissing an AIDS patient, with a knowledge rate of 49.2%; it is not possible to be infected with AIDS by being bitten by mosquitoes, with a knowledge rate of 34.2%; at present, the main mode of transmission of AIDS in China's youthful students is transmission by men who have sex with men, with a knowledge rate of 19.0%, see **Table 1** and **Table 2** for details.

**Table 2.** The awareness rate of AIDS-related knowledge among freshmen in a university.

AIDS-related knowledge	number of people who know	awareness rate/%
You can't tell if someone has AIDS by looking at them.	2798	89.7
AIDS is a serious and incurable epidemic	2390	76.6
You can't get HIV from eating with someone who has it.	2636	84.5
Sharing toilets and baths with HIV-infected people does not spread AIDS	2020	64.7
It is not possible to be infected with HIV by studying in the same classroom for a long time with someone who has HIV.	2793	89.5
You can't get HIV from a mosquito bite.	1066	34.2
You can't get HIV from kissing an AIDS patient.	1534	49.2
HIV can still be transmitted even if a condom is used during sexual activity.	2709	86.8
At present, China has not succeeded in developing a cure for AIDS.	2720	87.2
Currently, among young students in China, the primary mode of HIV transmission is through sexual contact between males.	593	19.0

**3.3. Condom Use among College Freshmen**

5.7% (178/3121) of freshmen were unwilling to use condoms during sexual intercourse, and 1.6% (50/3121) were unwilling to accept HIV testing after having high-risk sex. 3.9% (121/3121) of the freshmen had had sexual intercourse without using

condoms, and the three main reasons for their unwillingness to use condoms were: forgetting to use condoms, accounting for 83.7%; being too embarrassed to buy condoms, accounting for 6.6%; and being unwilling to use condoms, accounting for 3.7%.

### 3.4. Univariate Analysis of Freshmen's Willingness to Use Condoms

There were significant differences in the willingness to use condoms among freshmen of different genders, knowledge of AIDS, attitudes toward premarital sex, willingness to have sex with others, multiple sexual partners, and whether or not they had received AIDS-related education ( $P < 0.05$ ). There was a statistically significant difference in the willingness to use condoms between different genders ( $\chi^2 = 95.402$ ,  $P < 0.001$ ), and girls were more willing to use condoms. There was a statistically significant difference in the willingness to use condoms among freshmen with different levels of AIDS knowledge ( $\chi^2 = 8.461$ ,  $P = 0.003$ ), and freshmen with higher levels of knowledge were more willing to use condoms. There was a statistically significant difference in the willingness to use condoms among freshmen with different attitudes towards premarital sex ( $\chi^2 = 24.345$ ,  $P < 0.001$ ), and freshmen who opposed premarital sex were more inclined to use condoms. There was a statistically significant difference in the willingness to use condoms among freshmen with different views on having sex with others ( $\chi^2 = 67.941$ ,  $P < 0.001$ ), and freshmen who did not want to have sex with others were more willing to use condoms. There was a statistically significant difference in condom use willingness between freshmen with different sexual partners ( $\chi^2 = 9.469$ ,  $P = 0.002$ ), and freshmen without multiple sexual partners were more willing to use condoms; there was a statistically significant difference in condom use willingness between freshmen with and without AIDS education ( $\chi^2 = 39.945$ ,  $P < 0.001$ ), and freshmen who had received AIDS-related education were more willing to use condoms. See **Table 3**.

**Table 3.** Univariate analysis of condom use willingness of college freshmen.

projects	n	willing	unwilling	$\chi^2$ value	<i>P</i> value
gender				95.402	<0.001
man	1355	1215	140		
woman	1766	1728	38		
residence				0.002	0.968
urban	670	632	38		
rural	2451	2311	140		
HIV/AIDS Knowledge					
unaware	614	564	50	8.461	0.003
aware	2507	2379	128		

**Continued**

attitudes towards premarital sex				24.345	<0.001
it doesn't matter.	231	207	24		
as long as it's not known to others or agreed upon by both parties.	330	300	30		
just don't spread diseases.	585	545	40		
oppose	1975	1891	84		
would you be willing to engage in sexual relations with others?				67.941	<0.001
willing	561	488	73		
unwilling.	2560	2455	105		
have you ever had multiple sexual partners?				9.469	0.002
yes	66	56	10		
no	3055	2887	168		
ever had same-sex intercourse?				1.817	0.178
yes	31	27	4		
no	3090	2916	174		
have you received education related to AIDS?				39.945	<0.001
yes	2906	2761	145		
no	215	182	33		
should people with HIV/AIDS be allowed to use public facilities?				5.038	0.078
in favor	1734	1648	86		
oppose	1189	1113	76		
it doesn't matter.	198	182	16		

### 3.5. Multifactorial Analysis of Freshmen's Willingness to Use Condoms

Variables with  $P < 0.05$  in the results of univariate analysis were included in the analysis of binary logistic regression model, which showed that female students (OR = 3.96, 95% CI: 2.66 to 5.89), knowledge of AIDS (OR = 1.70, 95% CI: 1.19 to 2.42), reluctance to have to have sex (OR = 2.12, 95% CI: 1.45 to 3.10), and having received AIDS-related education (OR = 0.34, 95% CI: 0.22 to 0.52) were the facilitators influencing condom use, as shown in **Table 4**.

## 4. Discussion

This survey found that the AIDS knowledge rate among freshmen in the region was 80.3%, which was higher than the AIDS knowledge rate among college students in some provinces and cities in China in 2017 (77.4%) [15], but there was

still a certain gap with the national requirement (90%) [16]. Low AIDS awareness can lead to high-risk sexual behavior [17], increasing the risk of AIDS. Studies have shown that health education is an important way to improve AIDS knowledge awareness [18]-[20], so incorporating AIDS health education into freshman admission education is of great significance to improving freshmen's AIDS awareness. In addition, the AIDS knowledge score in urban areas was significantly higher than that in rural areas in this study, which is similar to the results of Zhang Wen *et al.* [21], which may be related to the fact that urban areas have more AIDS prevention and control publicity channels.

**Table 4.** Binary logistic regression analyses influencing the willingness of college freshmen to use condoms.

Projects	$\beta$	SE	$\chi^2$ value	P value	OR value	95% CI
Gender						
Man					1.00	
Woman	1.377	0.203	45.9	<0.001	3.96	2.66 - 5.89
HIV/AIDS Knowledge						
Unaware					1.00	
Aware	0.533	0.181	8.716	0.003	1.70	1.19 - 2.42
Would you be willing to engage in sexual relations with others?						
Willing					1.00	
Unwilling.	0.754	0.193	15.282	<0.001	2.12	1.45 - 3.10
Have you received education related to AIDS?						
Yes					1.00	
No	-1.067	0.217	24.239	<0.001	0.34	0.22 - 0.52

The use of condoms can effectively prevent the occurrence of AIDS and other sexually transmitted disease. This survey found that as many as 83.7% of freshmen forgot to use condoms when having sex, highlighting the lack of education on AIDS and STDs among college freshmen. Multivariate analysis found that gender, AIDS knowledge, willingness to have sex with others, whether there are too many sexual partners, and whether AIDS education has been received are important factors affecting condom use. This result is similar to the research results of Yan Yizhe [22]. In terms of gender: some studies have shown [10] that boys have more open sexual attitudes and weaker risk awareness, and low risk awareness leads to low willingness to use condoms. Some studies have also shown [23] that boys think it is normal to refuse to use condoms with their partners and think that this behavior is "part of the game" in interacting with female partners. Some individuals believe that using condoms can affect their sexual experience. The above are

all the reasons why girls are more willing to use condoms than boys in this study. In terms of knowledge of AIDS: people who know AIDS knowledge are more willing to use condoms than those who do not know. People who know have a higher risk awareness and are more willing to use condoms for self-protection. Factors related to willingness to have sex with others: People who are unwilling to have sex with others are more willing to use condoms. Studies have shown that [24] premarital sex may reduce the awareness of high-risk sexual behavior and make it more likely to engage in high-risk sexual behavior. College students have an open attitude towards sex and are a high-risk group for high-risk sexual behavior; in terms of AIDS health education: health education is the best “vaccine” to prevent AIDS. People who have received AIDS-related education have good AIDS-related knowledge, a higher awareness of self-protection, and are more willing to use condoms. A review of the literature found that most domestic and foreign researchers focus on AIDS treatment, education, prevention, and intervention, and there are fewer studies on the willingness of college freshmen to use condoms, especially in border areas, applied undergraduate colleges, and freshmen. There are fewer analyses of condom use and influencing factors. Therefore, this study “Correlation analysis between AIDS awareness and condom use willingness of 3128 freshmen in a border college” provides a new idea and method for the targeted AIDS prevention and control work of relevant departments in the future.

To sum up, the knowledge rate of AIDS among freshmen in border areas is relatively good, but gender, living environment, knowledge of AIDS, willingness to use condoms and so on have a certain impact on high-risk sexual behavior. Schools, as an important place for students to study and live, should play their role in increasing the strength of AIDS health education, especially focusing on the risk of male students, unwilling to use condoms and other key groups. Education, so that students have a correct understanding of “sex”, set up a correct concept of sex, improve their own awareness of prevention, and face up to the important role of condoms, and learn to be responsible for their own health and the health of others.

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### **Authors' Contributions**

Yun Zhou: Writing—original draft, Design questionnaire, Funding. Wei Su: Writing—original draft. Xueyin Liang: Writing—review & editing. Yixuan Huang and Xuexia Tang: Completing the on-site questionnaire. Xiang Cao: Methodology, Investigation, Data curation.

### **Conflicts of Interest**

All authors declare that they have no conflicts of interest.

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