

# Assessing the Relationships between Knowledge and Attitudes to HIV/AIDS among College Students in China

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**Abstract**-This study focuses on assessing the relationships between knowledge correctness and cognitive attitudes towards HIV/AIDS infected for college students in China. The goal is to explore the improvement of HIV prevention knowledge, whether it is energy efficient to reduce the spread of HIV/AIDS and reduce the discrimination against HIV infected for college students in China. The results show most college students in China have participated HIV prevention education courses with good HIV/AIDS knowledge. But HIV/AIDS is still a shameful and discriminated disease for most respondents.

**Keywords**- *Human Immunodeficiency Virus (HIV), Acquired Immune Deficiency Syndrome (AIDS), Attitude, College Students*

## I. INTRODUCTION

HIV/AIDS (Human immunodeficiency virus infection / acquired immunodeficiency syndrome) is a disease of the human immune system caused by the human immunodeficiency virus [6]. According to UNAIDS 2019 [7] data, the good news is that global new HIV infections among young women aged 15–24 years were reduced by 25% between 2010 and 2018. However, the AIDS epidemic has put a spotlight on the many fault lines in society. Where there are inequalities, power imbalances, violence, marginalization, taboos and stigma and discrimination, HIV takes hold UNAIDS 2019 [7].

The number of new HIV infections worldwide tends to decrease, and it is expected to drop to a new low level in 2020.

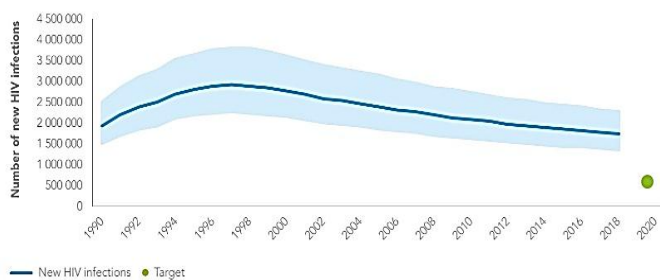


Figure 1. Number of new HIV infections, global, 1990–2018 and 2020 target. Source: UNAIDS 2019 estimates.

However, HIV infections and AIDS epidemic are still a serious problem in China. Table 1 shows the data of AIDS epidemic in China from 2012 to 2019. The morbidity and mortality rate are increasing gradually during the last decade.

Even though HIV is preventable and treatable, the young women who don't know how to keep themselves HIV-free, the men who won't or can't seek out health care, the transgender people who are discriminated against and the hundreds of thousands of people who die each year. Now we still cannot eliminate the virus, but we have the knowledge and tools to end AIDS. By knowledge and communication, by strong efforts by both governments and communities can change behaviors and societies to accept HIV infections without taboos, stigma, and discrimination [7]. Success is being achieved where policies and programs should focus on people's lives. To accept HIV infections be friends, and to encourage HIV infections do not hide and get properly medical treatment, are the good methods to reduce the source of infection.

TABLE I. DATA OF AIDS IN CHINA FROM 2012 TO 2019

year	incidence (cases)	number of deaths (person)	morbidity (/100,000)	mortality rate (/100,000)
2012	42,286	11,575	-	-
2013	41,929	11,437	-	-
2014	45,145	12,030	-	-
2015	50,330	12,755	3.6940	0.9362
2016	54,360	14,091	3.9656	1.0280
2017	57,194	15,251	4.1450	1.1053
2018	64,170	18,780	4.6195	1.3520
2019	71,204	20,999	5.0986	1.5036

The source of the data is the 2012–2019 national infectious disease epidemic data released by the National Health Commission of China (excluding foreigners, Taiwan, Hong Kong and Macau)

With the China government continued efforts to promote HIV/AIDS prevention education for years, whether college students' awareness of HIV and self-protection in sexual behavior has improved has aroused the concern of this study. To understand the attitudes of college students towards HIV/AIDS knowledge and self-protection of sexual behavior. The aim is to find out the gaps between HIV education courses

and college students' HIV knowledge, to reduce discrimination attitude against HIV infections and encourage them to actively treat AIDS and prevent the spread of HIV/AIDS.

The content of this paper contains five parts, the first part is introduction to introduce that aim of this study. The second part is the literatures to review to the research on HIV knowledge and HIV related attitudes of college students in different countries. The third part is the description of the survey questionnaire design and statistics analysis methods. The fourth part is the statistics analysis of the sample. The fifth part is the conclusions and suggestions for the research results.

## II. LITERATURES REVIEW

Assessing knowledge and attitudes concerning HIV infection and individuals with AIDS among female students attending colleges in Nagasaki, Japan. That found female students demonstrated a high level of knowledge concerning HIV/AIDS, but there had considerable misconceptions and prejudices to HIV infections and AIDS. The results suggest that a more appropriate education program in colleges in Japan may be necessary to reduce the discrepancy between general knowledge and desirable attitude regarding HIV/AIDS [4].

To assess the level of knowledge on HIV/AIDS and its risk factors, attitude towards HIV/AIDS and AIDS patients and its transmission, and to identify high risk behaviors associated with HIV/AIDS among university students in the Xinjiang Uyghur Autonomous Region in China. That found most Xinjiang university students had good knowledge, but negative attitude towards HIV/AIDS and HIV/AIDS patients, and 15% of them reported having at least one high-risk behavior related to sex and unprotected sex [3]. Thus HIV/AIDS health education efforts should be intensified to change attitude and practice among university students in Xinjiang especially among female students, newly enrolled students, and among the Uyghur and other minority students.

To investigated the knowledge, behaviors and attitudes of undergraduate university students about HIV/AIDS, that found that majority of students were aware of the transmission of HIV/AIDS, however that students were less likely to translate their knowledge about HIV/AIDS transmission into healthy behavior. Health and education sectors need to review the way in which they are delivering the information in relation to HIV/AIDS risk awareness and safer sex practice and to develop and implement new policies to promote HIV/AIDS prevention education and healthy sexual behavior among university students. [2]

To assess HIV/AIDS knowledge and attitudes related to HIV/AIDS among a wide group of university students in the United Arab Emirates (UAE). The findings provide strong evidence that there is a need to advocate for appropriate National HIV/AIDS awareness raising campaigns in universities to reduce the gaps in knowledge and decrease stigmatizing attitudes towards people living with HIV/AIDS [1].

A paper researched the level of knowledge, attitude, and perception among students in the university in Malaysia. The research conclusion is an increase in the level of knowledge contributed to the positive attitude and perception also reduce the stigma and discrimination toward people living with HIV/AIDS [5].

To improve knowledge level of HIV/AIDS for college students, and to introduce effective prevention education and methods of HIV/AIDS for those students, a research surveyed for college/university students' awareness and prevention knowledge of HIV/AIDS has done. The research found the degree of college intervention is relatively low, and even many university students hide the secrets of STDs and AIDS. Due to lack of relevant knowledge of HIV/AIDS, some AIDS patients have delayed medical treatment resulting in high mortality [8].

## III. METHODOLOGY

### A. Study Design and Data Collection

This research aims to assess the relationships between knowledge and attitudes to HIV among college students in China, and it also to explore the knowledge of HIV and the attitude of self-protection against HIV infection for the respondents.

An online questionnaire, including correct knowledge selection and attitudes to HIV infected, to collect sample data. Respondents anonymized and used the questionnaire collecting app online. The knowledge and attitude responses of college visitors, basic information including gender, whether they have participated in HIV education courses, and the school Province area of China.

### B. Sample size and sample collection

The questionnaire was collected in May 2020. At the end of May 2020, totally 1,330 complete questionnaires are collected by different university students, from 17 Provinces and Autonomous Regions in China. The samples include 329 male (24.7%) and 1001 female (75.3%), and 1078 respondents (81.1%) have participated in HIV prevention program during university, while the other 252 respondents (18.9%) do not have.

### C. Questionnaire items

The knowledge question section contains 14 items are listed as follows. There are 3 optional chooses including correct, wrong, and unknown. So that the respondents are prevented from answering by guessing.

VQ01. When using a condom, you can use petrolatum or baby oil as a moisturizer.

VQ02. It is not needed to wear a condom when you have oral sex during the sexual intercourse.

VQ03. Even though I only have sex with a single partner, I still have a chance to get HIV.

VQ04. HIV is more likely to be transmitted from female to male.

VQ05. HIV can be transmitted by mosquito bites.  
 VQ06. Sharing tableware with a HIV infected will not be infected with HIV.  
 VQ07. Even if you live with a HIV infected, without sexual behavior, it is not easy to infect with HIV.  
 VQ08. HIV can be transmitted through kissing.  
 VQ09. The amount of HIV in saliva is small and not easy to survive.  
 VQ10. Avoid using mouth-to-mouth artificial respiration to avoid HIV infection during emergency treatment.  
 VQ11. After being infected with HIV, the HIV infected can maintain their health for many years before they become ill.  
 VQ12. AIDS already has drugs that can delay the onset of viral infections.  
 VQ13. There is already a vaccine to prevent HIV.  
 VQ14. CDC announced HIV screening hospital can accept people to test HIV anonymously.

The attitude question part also has 14 items, as Table 3. That are designed to collect respondents' attitudes towards HIV and self-protection, using the Likert five-point questionnaire design, providing five options: very agree equal is to 5, agree is equal to 4, no opinion is equal to 3, disagree is equal to 2, and strongly disagree is equal to 1.

Q1. AIDS is not terrible. It will be free from the threat of AIDS by carefully prevented.  
 Q2. If I have a sexually transmitted disease, I will seek medical treatment immediately.  
 Q3. If I suspect that I am infected with HIV, I will go for blood donation test.  
 Q4. I am willing to accept AIDS and be friends with them.  
 Q5. If a friend of mine is a HIV infected, I can still get along with him naturally.  
 Q6. Accept HIV infected can encourage them to face their lives bravely.  
 Q7. I am willing to participate the activities of caring for AIDS.  
 Q8. Help a HIV infected may make my classmates alienate me.  
 Q9. I do not want to be a neighbor with an AIDS service institution.  
 Q10. AIDS is a shameful disease.  
 Q11. It is a shame to proactively take the test for HIV.  
 Q12. People infected with HIV should be quarantined.  
 Q13. Mass media should spread the correct knowledge of HIV/AIDS.  
 Q14. It is difficult to persuade sex partners to use condoms to prevent HIV.

**D. Reliability and validity**

After sample was collected, reliability test and validity test are conducted. The Cronbach's Alpha value of the reliability test of 1,330 samples is 0.659, although it is lower than 0.7 but higher than 0.5 is acceptable. The content validity test adopts KMO and Bartlett test. The Kaiser-Meyer-Olkin sampling suitability is 0.805, which is acceptable. Both the reliability and validity of the sample can be used for investigation and analysis. The statistical analysis of the questionnaire items was conducted by using SPSS 20.0.

**IV. RESULTS ANALYSIS**

**A. Description Analysis**

TABLE II. THE INFORMATION OF RESPONDENTS

gender	frequency	percentage
male	329	24.7
female	1001	75.3
Participation HIV courses	frequency	percentage
No	252	18.9
Yes	1078	81.1

According to the collected sample, 75.3% of the respondents were female, and male accounted for 24.7%; more than 80% of the respondents had participated school's HIV/AIDS prevention courses or programs, only 18.9% respondents did not participate in any HIV/AIDS prevention education.

Totally 1330 samples were interviewed for testing HIV knowledge, and the rate of correct, wrong, and unknown were showed in Table 3. The overall correct rate was 54.0%. The error rate over 30% items are listed as follows: VQ03 (35.3%) , VQ05 (32.6%), VQ08 (31.6%), VQ10 (31.6%), and VQ06 (30%). The high error rate showed the respondents have a negative attitude to AIDS patients, and they are afraid of being infected by HIV.

TABLE III. HIV/AIDS KNOWLEDGE QUESTION TEST RESULTS OF RESEARCH SAMPLE

No.	Correct %	Wrong %	Unknow %
VQ01	33.2	24.2	42.6
VQ02	60.5	9.5	30.0
VQ03	29.5	35.3	35.3
VQ04	58.4	18.9	22.6
VQ05	55.3	32.6	12.1
VQ06	57.9	30.0	12.1
VQ07	63.2	24.2	12.6
VQ08	54.2	31.6	14.2
VQ09	51.6	27.4	21.1
VQ10	48.4	31.6	20.0
VQ11	64.2	17.4	18.4
VQ12	55.3	20.5	24.2
VQ13	50.0	28.4	21.6
VQ14	74.2	10.5	15.3

The number of total samples is 1330.

Table 4 showed the mean score and variation of attitude items. There are several items that the mean scores higher than 3.0. They are items Q3 (3.56), Q8 (3.14), Q9 (3.23), Q10 (3.31), Q11 (3.76), Q12 (3.50), Q13 (4.16), and Q14 (3.49).

The high mean score showed highly agreed of respondents. It is worth to concern that mean score of Q3 is 3.56, it showed the most respondents will go for blood donation test when they suspected infected with HIV. Even if they know HIV screening hospital can accept people to test HIV anonymously.

The mean score of Q14 is 3.49, which indicated it is difficult to ask sex partners to use condoms for college students in China. That may show college students' awareness of HIV and self-protection in sexual behavior has improved, however it is not easy to persuade sex partners to use condoms. In practices, it is difficult for respondents to use condoms in sexual behaviors to prevent themselves from HIV infection.

TABLE IV. ATTITUDE ITEMS AND THE MEAN SCORE

attitude item	mean	variation
Q1	2.27	1.555
Q2	1.43	0.582
Q3	3.56	2.269
Q4	2.45	0.953
Q5	2.47	0.944
Q6	1.94	0.739
Q7	1.88	0.749
Q8	3.14	1.312
Q9	3.23	1.155
Q10	3.31	1.434
Q11	3.76	1.163
Q12	3.50	1.030
Q13	4.16	1.376
Q14	3.49	1.335

Other high mean score items showed that HIV/AIDS is a shameful and discrimination disease form the concepts of respondents. Most college students do not want to have any contact with HIV infected or HIV institution, neither than pay attention to care the HIV infected. Most college students do have knowledge about HIV/AIDS, and they know the transmission route of HIV/AIDS. However, more college students are still discriminating against HIV infected or afraid of AIDS.

#### B. Chi-square test for HIV knowledge

According to the results of Chi-square test, there is a significant correlation between gender and respondents' choice of answers for HIV knowledge items. The finding showed that respondents who had participated in prevention HIV education courses were more negative attitude to HIV infected, especially for the male. Male students are more resistant to HIV infection.

There was a high correlation between the correctness of answers to several knowledge questions and having received AIDS prevention education, which showed that respondents that had participated HIV prevention education had significant differences in the answers given.

TABLE V. CHI-SQUARE TEST

Dependent variables	gender*variables		HIV education*variables	
	$\chi^2$	p	$\chi^2$	p
VQ01	97.336	0.000	0.750	0.687
VQ02	19.993	0.000	59.086	0.000
VQ03	19.211	0.000	14.620	0.001
VQ04	49.240	0.000	16.592	0.000
VQ05	12.039	0.002	30.938	0.000
VQ06	5.930	0.052	5.530	0.063
VQ07	12.783	0.002	14.564	0.001
VQ08	18.300	0.000	77.656	0.000
VQ09	16.142	0.000	13.899	0.001
VQ10	7.769	0.021	0.963	0.618
VQ11	12.784	0.002	4.883	0.087
VQ12	10.154	0.006	1.215	0.545
VQ13	9.167	0.010	15.832	0.000
VQ14	8.544	0.14	12.473	0.002

#### V. CONCLUSIONS

It is generally believed that the college students that have ever participated in HIV courses should have more HIV knowledge, then should be less afraid of HIV infection and willing to care for the infected. However, the finding showed that respondents who had participated in prevention HIV education courses were more afraid of HIV threat, especially for the male. Male students are more resistant to HIV infection. However, the current HIV prevention education in colleges in China, mostly adopts centralized advocacy mode, and does not advocate education separately for male and female students. However, the information or learning contents received by men and women are different, so there will be such test results.

The sample showed there are over 80% of the respondents had participated HIV education courses or programs, with better knowledge level of HIV. However, the high level of HIV education and knowledge still not reduce discrimination for HIV infected. This study result is totally different from the similar study in the United Arab Emirates (UAE), which supported raising relevant knowledge to reduce the gaps and decrease stigmatizing attitudes towards HIV infected.

In the willing to care and accept HIV infected, the results indicated the students who have participated in HIV prevention education were more discriminating against HIV infected. Their recognition of government investing resources in prevention HIV/AIDS was also lower. All results indicated a phenomenon, the more knowledge about HIV the more afraid of HIV for college students in China. This result is worthy of further exploration. What causes the respondents that have participated in HIV education courses to be more discriminating against AIDS.

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