



Knowledge and attitudes toward HIV/AIDS among male students at Herat University, Afghanistan: a cross-sectional study

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ABSTRACT

Background: Human Immunodeficiency Virus (HIV) remains a major global health challenge, particularly among young adults. In Afghanistan, despite relatively low national prevalence, stigma and misconceptions hinder effective prevention and treatment.

Objective: This study aimed to assess the knowledge and attitudes of Herat University students toward HIV/AIDS.

Methods: A cross-sectional survey was conducted among 391 male students of Herat University during April–May 2024. Stratified random sampling was applied, and data were collected using a structured self-administered questionnaire. Knowledge and attitude scores were analyzed using descriptive statistics and Chi-square tests.

Results: Although 98.5% of participants had heard of HIV/AIDS and 83.6% recognized it as a contagious disease, 39.8% demonstrated low knowledge. Misconceptions were common, with 52.2% believing HIV could be transmitted through food or water and 33.5% through shared bathrooms. Only 30.9% expressed willingness to study or work with HIV-positive individuals, and 43.7% exhibited poor attitudes overall. A significant association was found between knowledge and faculty ($p = 0.03$), and between knowledge and attitudes ($p < 0.01$).

Conclusion: Students at Herat University showed limited knowledge and predominantly negative attitudes toward HIV/AIDS. Misconceptions and stigma were common. Universities can play a critical role in addressing these gaps through targeted educational programs that promote accurate understanding and supportive attitudes.

Keywords: HIV/AIDS, knowledge, attitude, stigma, university students, Herat, Afghanistan

Introduction

Human Immunodeficiency Virus (HIV) remains a serious global health challenge, particularly among young adults, including university students [1]. By the end of 2024, approximately 40.8 million people were living with HIV, with 1.3 million new infections and 630,000 AIDS-related deaths reported globally [2]. The burden is greatest in low- and middle-income countries, especially in sub-Saharan Africa and parts of Asia [1].

Although HIV can affect anyone, young people aged 15–24 years are more vulnerable, risk factors such as unprotected sexual activity, drug use, and limited awareness contribute to this vulnerability [3]. Alarming, only one in three young people worldwide has correct knowledge of HIV prevention, highlighting significant gaps in awareness [4].

Increasing knowledge among young people plays a critical role in preventing new infections [15]. Stigma and fear of discrimination discourage individuals from testing, resulting in undiagnosed cases and weakening national prevention strategies [5].

In Afghanistan, the first case of HIV was reported in 1989 [6]. While national prevalence remains relatively low, the country is considered a high-risk region with elevated rates among drug users (4.4%), sex workers (0.3%), and prisoners (0.7%) [7]. According to latest UNAIDS data an estimated 13,000 HIV-positive cases were reported in Afghanistan [8].

Currently, five voluntary counseling and testing centers operate in Kabul, Herat, Mazar, Nangarhar, and Khost provinces. Of those diagnosed with HIV, approximately 95% are linked to medical care, and nearly 90% receive antiretroviral therapy [7].

Knowledge gaps among young people are concerning. A study conducted in 2007 among university students in four provinces of

Afghanistan (Kabul, Herat, Balkh, and Nangarhar) revealed that 36.5% of students had poor knowledge, 35.1% moderate knowledge, and 28.3% good knowledge about HIV/AIDS [9]. Recent university-based data from Afghanistan, particularly from Herat, are limited, leaving an important gap in understanding current awareness and attitudes among young adults. Therefore, this study aims to evaluate the knowledge and attitudes of Herat University students toward HIV/AIDS in 2024.

Material and methods

Study setting: This cross-sectional study was conducted among male students at Herat University in April and May 2024.

Target population: The study encompassed male students from various faculties of Herat University during the spring semester of 2024, when the university had a total enrollment of 5,882 male students.

Eligibility criteria

Inclusion criteria: Male students enrolled at Herat University during the study period who were randomly selected.

Exclusion criteria: Students who did not provide informed consent or those with incomplete questionnaires.

Sample size estimation: The sample size was calculated by the Raosoft sample size calculator. Using a 95% confidence interval, and a 50% response distribution, the minimum sample size was calculated as 361 participants. By adding 10% and excluding missing cases, a total of 391 students were included in the study.

Sampling method: Stratified simple random sampling was applied, with each faculty considered a distinct stratum. The total student population (5,882) was divided by the sample size (361), resulting in a sampling index of 16.2. The number of students in each faculty was

subsequently divided by the index to determine the required sample size for that stratum. Participants were then selected using simple random sampling within each faculty.

Data collection: Data were collected using a structured, self-administered questionnaire developed by the researchers. Content validity was ensured through expert review, and pilot testing among 30 students. Reliability was assessed using Cronbach's alpha. The Cronbach's alpha coefficients were 0.78 for the knowledge domain and 0.61 for the attitude domain. Knowledge and attitude scores were categorized into low, moderate, and good levels based on tertiles of the score distribution, using SPSS software. The knowledge section comprised 25 items with three response options (Yes, No, I don't know). Correct answers were scored as 1, while incorrect or uncertain responses were scored as 0. Knowledge levels were categorized as low (<13), moderate (13–16), and good (>16). The attitude section included 12 items with three options (Agree, Disagree, No idea). Items were scored according to defined directions, with reverse coding applied where necessary. Attitude levels categorized as poor (<5), moderate (5–7), and good (>7).

Statistical analysis: Data were analyzed using IBM SPSS Statistics (version 26). Qualitative variables were presented as frequencies and percentages, while quantitative variables were summarized using the median and the interquartile range (IQR).

Associations between categorical variables were assessed using the Chi-square test, with $p < 0.05$ regarded as statistically significant.

Ethical considerations: This study was approved by the Ethics Committee of Herat Faculty of Medicine (protocol 5, 30011403). Written informed consent was obtained from all participants prior to their enrollment in the study. Participants were informed that their participation was voluntary and that they had the right to withdraw from the study without any consequences. Participants' privacy and confidentiality were maintained throughout the study.

Results

A total of 391 male students from Herat University participated in this study. The participants had a median age of 22 years (IQR: 21–23). Among them, 22.5% were in the second semester, 24.3% in the fourth semester, 28.1% in the sixth semester, 23.5% in the eighth semester, and 1.5% in the tenth semester. Table 1 presents the distribution of participants according to faculty, semester, and permanent residence.

Table 1. Distribution of participants according to faculty, semester and permanent residence

Variables	responses	N (%)
Faculty	Medicine	36 (9.3)
	Literature	30 (7.7)
	Veterinary science	18 (4.6)
	Computer science	31 (7.9)
	Public administration	23 (5.9)
	Engineering	30 (7.7)
	Economics	30 (7.7)
	Journalism	12 (3.1)
	Law	30 (7.7)
	Arts	6 (1.5)
	Islamic studies	30 (7.7)
	Dentistry	24 (6.1)
	Education	30 (7.7)
	Agriculture	43 (11.0)
	Science	18 (4.6)
Semester	Second	88 (22.5)
	Fourth	95 (24.3)
	Sixth	110 (28.1)
	Eighth	92 (23.5)
residence	Tenth	6 (1.5)
	Herat province	294 (75.2)
	Other provinces	97 (24.8)

The majority of participants (98.5%) had heard of HIV/AIDS, and 83.6% were aware that it is a contagious disease. As shown in Table 2, 89.0% of students recognized that unprotected sex can transmit HIV, while 33.5% incorrectly believed that sharing a bathroom or toilet could also be a transmission route.

Table 2. Perceived HIV transmission routes

Can HIV/AIDS be transmitted in the following ways?	Yes (N/%)	No (N/%)	I don't know (N/%)
Unprotected sex	348 (89.0)	13 (3.3)	30 (7.7)
Syringe	315 (80.6)	28 (7.2)	48 (12.3)
Dental instruments	280 (71.6)	50 (12.8)	61 (15.6)
Shaving materials (razor or scissors)	269 (68.8)	55 (14.1)	67 (17.1)
Tattoo equipment	253 (64.7)	60 (15.3)	78 (19.9)
Contact with saliva, runny nose, sweat, cough or sneeze	234 (59.8)	95 (24.3)	62 (15.9)
Mother to child (pregnancy)	230 (58.8)	78 (19.9)	83 (21.2)
Insect bites that have recently bitten an HIV patient	220 (56.3)	68 (17.4)	103 (26.3)
Breastfeeding	208 (53.2)	83 (21.2)	100 (25.6)
Equipment related to water/food	204 (52.2)	124 (31.7)	63 (16.1)
Personal items such as clothes, towels or mattresses	170 (43.5)	144 (36.8)	77 (19.7)
Kissing or hugging	168 (43.0)	158 (40.5)	65 (16.9)
Bathroom or toilet	131 (33.5)	168 (43.0)	92 (23.5)

Table 3 presents students' information on HIV/AIDS prevention, diagnosis, and treatment. Among the participants, 32.6% demonstrated good knowledge, 27.6% had moderate knowledge, and 39.8% exhibited low knowledge levels.

Table 3. Knowledge about prevention, diagnosis and treatment of HIV/AIDS

	Use these options indicate whether the following statements are true or false	Yes (N/%)	No (N/%)	I don't know (N/%)
prevention	Having sex with more than one person increases the risk of HIV/AIDS	329 (84.1)	29 (7.4)	33 (8.4)
	Having sexually transmitted disease increases the risk of	283 (72.4)	25 (6.4)	83 (21.2)

	Use these options indicate whether the following statements are true or false	Yes (N/%)	No (N/%)	I don't know (N/%)
Diagnosis	HIV/AIDS transmission			
	Correct use of condoms can prevent the transmission of AIDS during sex	273 (69.8)	36 (9.2)	82 (21.0)
	There is a vaccine to prevent AIDS	165 (42.2)	123 (31.5)	103 (26.3)
	Early diagnosis and treatment of AIDS can prolong the patient's life.	244 (62.4)	55 (14.1)	92 (23.5)
	Blood test is the only way to definitively diagnose HIV	227 (58.1)	61 (15.6)	103 (26.3)
Treatment	People with AIDS can be identified by their appearance.	112 (28.6)	185 (47.3)	94 (24.0)
	Treatment can reduce the risk of transmission for others.	228 (58.3)	69 (17.6)	94 (24.0)
	HIV-infected patient can lead a normal life if have proper diet, healthy lifestyle and antiretroviral therapy	225 (57.5)	63 (16.1)	103 (26.3)
	AIDS can be completely cured	111 (28.4)	158 (40.4)	122 (31.2)

As shown in Table 4, 90.5% of participants believed that individuals living with HIV/AIDS require support and treatment, whereas 14.8% perceived that they intend to infect others. Overall, 29.2% of participants demonstrated a good attitude, 27.1% a moderate attitude, and 43.7% a poor attitude towards HIV/AIDS.

Table 4. Attitude toward HIV/AIDS

	Choose your attitude toward the following sentences	Yes (N/%)	No (N/%)	No idea (N/%)
HIV patients need support and treatment		354 (90.5)	20 (5.1)	17 (4.3)
HIV is not only the problem of drug users or having illicit relationships		218 (55.8)	72 (18.4)	101 (25.8)
Family members of HIV patients should not be avoided		210 (53.7)	124 (31.7)	57 (14.6)
Should not kiss or hug HIV-patient		208 (53.2)	106 (27.1)	77 (19.7)
Best way to prevent HIV is to quarantine HIV infected patient		156 (39.9)	126 (32.2)	109 (27.9)
Agree to eat at the same table with an HIV patient		133 (34.0)	183 (46.8)	75 (19.2)

	Choose your attitude toward the following sentences	Yes (N/%)	No (N/%)	No idea (N/%)
HIV/AIDS is a sign of past inappropriate actions.		132 (33.8)	181 (46.3)	78 (19.9)
Willing to work or study with HIV- patient		121 (30.9)	188 (48.1)	82 (21.0)
If I get AIDS, life will be meaningless.		119 (30.4)	184 (47.1)	88 (22.5)
Prefer to break up with HIV-positive friend		110 (28.1)	202 (51.7)	79 (20.2)
HIV brings shame to the family		107 (27.4)	222 (56.8)	62 (15.9)
HIV patients like to infect others		58 (14.8)	264 (67.5)	69 (17.6)

Chi-square analysis revealed a statistically significant association between students' knowledge level and faculty ($p = 0.03$). However, no significant association was observed between attitude level and faculty ($p = 0.52$). Similarly, semester was not significantly associated with either knowledge level ($p = 0.17$) or attitude level ($p = 0.30$). In contrast, a significant association was found between knowledge and attitude levels ($p < 0.01$).

Discussion

This study assessed the knowledge and attitudes of Herat University students toward HIV/AIDS. While nearly all participants had heard of HIV/AIDS and most recognized it as a contagious disease, a substantial proportion demonstrated low knowledge, with misconceptions about transmission routes remaining widespread. Similar findings have been reported in Ghana, where university students showed limited awareness and high misconceptions regarding HIV prevention and transmission (10). The results highlight the importance of providing accurate education about HIV transmission.

Awareness of the absence of a vaccine and the incurability of HIV/AIDS were limited among participants. Only 31.5% correctly identified that no vaccine exists, and fewer than half knew HIV/AIDS cannot be completely cured. In recognizing the lack of a vaccine and over 62% acknowledging that HIV/AIDS cannot be cured [11]. Such differences suggest that regional variations in health education and public awareness campaigns significantly influence knowledge levels. Evidence from South Africa further supports this, where students demonstrated strong awareness of sexual transmission risks but continued to engage in unsafe practices such as inconsistent condom use [12]. This indicates that knowledge alone may not translate into protective behavior without supportive interventions.

The analysis revealed that approximately one-third of the students reported unwillingness to study or work with HIV-positive individuals, and an equivalent proportion associated HIV/AIDS with inappropriate behavior. Similar negative attitudes have been documented in Iran, where stigma and moral judgments continue to shape perceptions of HIV-positive individuals [13]. Conversely, some studies have reported more positive attitudes in contexts where awareness campaigns and peer education programs were implemented, suggesting that structured interventions can reduce stigma and foster acceptance [14].

Stigma remains a major barrier to HIV/AIDS prevention and treatment globally, as highlighted by UNAIDS, which emphasizes that discrimination discourages individuals from testing and seeking care [1].

This study also found a significant relationship between knowledge and attitude ($p < 0.01$), consistent with evidence from Iran showing that higher knowledge levels can reduce stigma [13]. Strengthening HIV education within universities, combined with peer-led initiatives and collaboration with health authorities, may play a key role in

improving both knowledge and attitudes among young adults, who remain one of the most vulnerable populations worldwide [16].

Conclusion

Among surveyed male students at Herat University, misconceptions about HIV transmission and stigmatizing attitudes toward people living with HIV were common. These findings support the need for culturally appropriate, university-based HIV education and stigma-reduction programs. Strengthening awareness initiatives within academic settings may help address knowledge gaps and foster more supportive attitudes toward individuals living with HIV/AIDS.

Limitations

This study has some limitations that should be considered when interpreting the findings. The use of a self-administered questionnaire may have introduced social desirability bias. The cross-sectional design further restricts the ability to infer causal relationships between knowledge and attitudes. In addition, contextual constraints meant that the sample was limited to male students from Herat University, which narrows the generalizability of the results and prevents conclusions about female students or other academic populations in Afghanistan.

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