

The Level of Awareness among Dental Students at Herat University Faculty of Stomatology Regarding HIV Prevention and Transmission

Mojibullah Jaheed ¹, * Osman Saei ², Wahid Noori ³, Ahmad Fahim Barakzaei ⁴

1. Department of Oral and Maxillofacial Surgery, Faculty of Stomatology, Herat University, Herat, Afghanistan
2. Department of Oral Medicine, Faculty of Stomatology, Herat University, Herat, Afghanistan
3. Department of Operative Dentistry and Endodontics, Faculty of Stomatology, Herat University, Herat, Afghanistan
4. Department of Periodontology, Faculty of Stomatology, Herat University, Herat, Afghanistan

ARTICLE INFO

Type: Original Article
Received: 30/07/2025
Accepted: 30/03/2026

*Corresponding Author:
E-mail:
osman@hu.edu.af

To cite this article:

Jaheed M, Saei O, Noori W, Barakzaei AF. The Level of Awareness among Dental Students at Herat University Faculty of Stomatology Regarding HIV Prevention and Transmission. Afghan J Infect Dis. 2026, 4(2):195-201 .

DOI:
<https://doi.org/10.60141/ajid.121>

ABSTRACT

Background: HIV poses significant public health challenges in Afghanistan due to stigma, fragmented health systems, and inadequate education. In dental settings, where exposure to blood and body fluids is unavoidable, comprehensive knowledge of HIV transmission, universal precautions, and ethical responsibilities is essential for safety.

Methods: This cross-sectional study assessed HIV knowledge among the 191 male dental students, selected via systematic random sampling, at Herat University in 2023-2024. A validated questionnaire evaluated general HIV/AIDS awareness, transmission modes, and infection prevention/control. Data were analyzed using ANOVA and Tukey's post hoc tests in SPSS v25. Female students were excluded due to sociocultural barriers, representing a study limitation.

Results: The overall mean knowledge score was 66.47% (general knowledge: 71.41%, transmission: 63.69%, and prevention: 64.32%). Only 31.68% of students reported receiving formal HIV education through university curricula. A significant knowledge decline occurred among third-year (42.77%) and fourth-year (46.06%) students, whereas fifth-year students scored highest (69.35%), revealing a mid-study "valley of knowledge." The differences between academic years were statistically significant ($P<0.001$).

Conclusion: Despite moderate awareness, significant educational gaps persist. The lack of structured HIV education compromises the clinical competence and ethical preparedness of future dentists. Integrating mandatory, updated HIV modules; covering biomedical, psychosocial, and infection control components, into the Afghan dental curriculum is essential.

Keywords: Dental students, Human immunodeficiency virus, Awareness, AIDS, Prevention, Afghanistan

Introduction

Human immunodeficiency virus (HIV) infection remains a significant global public health problem. The virus attacks the immune system and, if untreated, leads to acquired immunodeficiency syndrome (AIDS) (1, 2). Although the global response has been strengthened by the development of antiretroviral therapy (ART), which has made HIV a manageable chronic disease, major challenges remain in resource-limited settings (3, 4). In the dental setting, where contact with blood and body fluids is inherent, a comprehensive understanding of HIV transmission and prevention is critical for the safety of both patients and dental health care personnel (DHCP) (5).

In Afghanistan, a country struggling with the consequences of prolonged conflict and a fragile health infrastructure, the HIV epidemic has posed unique challenges. Although the national prevalence of the disease is low, the epidemic is largely concentrated among key groups such as injecting drug users (IDUs) (6). Official statistics likely underestimate the true burden of the disease due to surveillance limitations, low testing capacity, and strong social stigma that prevents people from seeking care (7, 8). Such circumstances place a special responsibility on the healthcare professionals, including future dentists, to be well-informed and non-discriminatory.

Dental education plays a pivotal role in shaping the knowledge, attitudes, and preparedness of future professionals. Inadequate education can reinforce fear and stigma and create barriers to access necessary care for people living with HIV (PLWH) (9).

Therefore, we aimed to assess the level of awareness of dental students at Herat University, one of the leading centers of dental education in Afghanistan, regarding HIV prevention and transmission. By identifying knowledge gaps and curriculum weaknesses, we attempted

to provide evidence-based recommendations to strengthen dental education in Afghanistan so that future dentists can provide safe, equitable, and compassionate care to all patients.

Materials and Methods

Study Design and Setting

This descriptive cross-sectional study was conducted at the Faculty of Stomatology, Herat University, Afghanistan, during the 2023-2024 academic year.

Study Population and Sampling

The total population of dental students at the faculty was 299. A systematic random sampling method by Rao Soft was employed to select participants.

Data Collection Instrument

A structured, self-administered questionnaire was developed to assess HIV/AIDS-related knowledge. The instrument was created following a review of existing literature and previously validated questionnaires from similar studies (10, 11). The questionnaire consisted of 25 multiple-choice questions divided into three domains:

1. **General Knowledge about HIV/AIDS (8 questions):** Covered the basics of the virus, its effect on the immune system, and the definition of AIDS.
2. **Knowledge of Transmission Routes (10 questions):** Focused on identifying correct and incorrect modes of HIV transmission.
3. **Knowledge of Prevention Methods (7 questions):** Assessed understanding of preventive measures, including infection control in dental settings.

The questionnaire was reviewed for content validity by a panel of three senior stomatology faculty members at Herat University. A pilot study was conducted with 20 students (not included in the final sample) to assess the clarity

and reliability of the instrument. The internal consistency of the questionnaire was acceptable, with a Cronbach's alpha of 0.78. For each question, a correct answer was scored as 1 and an incorrect answer as 0. The percentage of correct responses was calculated for each of the three domains separately.

Data Analysis

Data were analyzed using SPSS version 25 (IBM Corp., Armonk, NY, USA). Descriptive statistics (frequencies, percentages) were used to summarize the participant demographics and the percentage of correct responses for each knowledge domain. To compare the mean knowledge scores across the six academic years, a one-way Analysis of Variance (ANOVA) was performed, followed by a post-hoc Tukey HSD test to identify specific inter-group

differences. A *P*-value of < 0.05 was considered statistically significant.

Ethical Considerations

Ethical approval was obtained from the institutional review board at Herat University. Informed consent was obtained from all participants, who were assured of anonymity, confidentiality, and their right to withdraw from the study at any time.

Results

Participant Demographics and Flow

A total of 191 male dental students participated in the study. The participant selection process and The distribution of students across the six academic years are outlined in Figure 1.

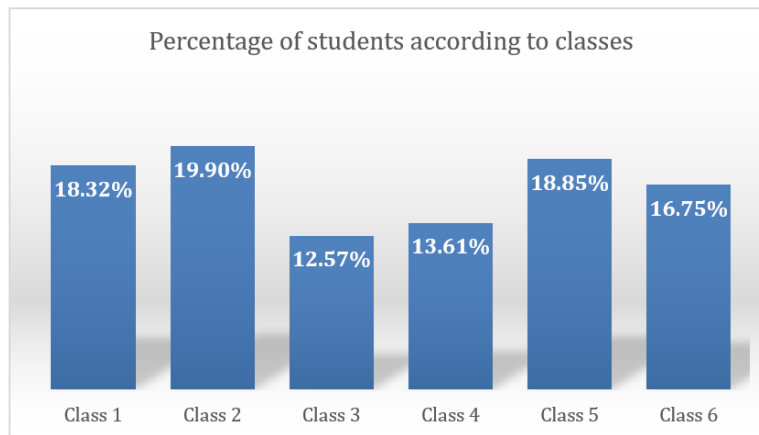


Figure 1: Distribution of students according to academic year

Table 1: Distribution of participating students by academic year

Academic Year	Number of Students	Percentage (%)
Class 1	35	18.32
Class 2	38	19.90
Class 3	24	12.57
Class 4	26	13.61
Class 5	36	18.85
Class 6	32	16.75
Total	191	100.00

HIV Knowledge Scores

Students' knowledge was assessed across three domains. The percentage of correct responses for each domain was as follows: General Knowledge (71.41%), Transmission Routes (63.69%), and Prevention Methods (64.32%).

Receipt of Formal HIV Education

A significant finding was the low level of formal HIV education reported by students. Only 31.68% of participants confirmed receiving information about HIV through university courses or textbooks, while 68.32% reported they had not.

Comparison of Knowledge Scores by Academic Year

A one-way ANOVA revealed a statistically significant difference in mean knowledge scores across the academic years ($F(5, 185) = 4.78, P < 0.001$). The mean scores and standard deviations for each year are presented in Table 2 and visualized in Figure 2. A post-hoc Tukey HSD test indicated that the mean score for fifth-year students ($M = 69.35, SD = 15.2$) was significantly higher than that of third-year ($M = 42.77, SD = 12.8$) and fourth-year ($M = 46.06, SD = 14.1$) students. No other inter-group differences were statistically significant.

Table 2: Mean knowledge scores by academic year

Academic Year	Mean Score (%)	Standard Deviation
Class 1	60.69	13.9
Class 2	61.99	14.8
Class 3	42.77	12.8
Class 4	46.06	14.1
Class 5	69.35	15.2
Class 6	52.64	13.5

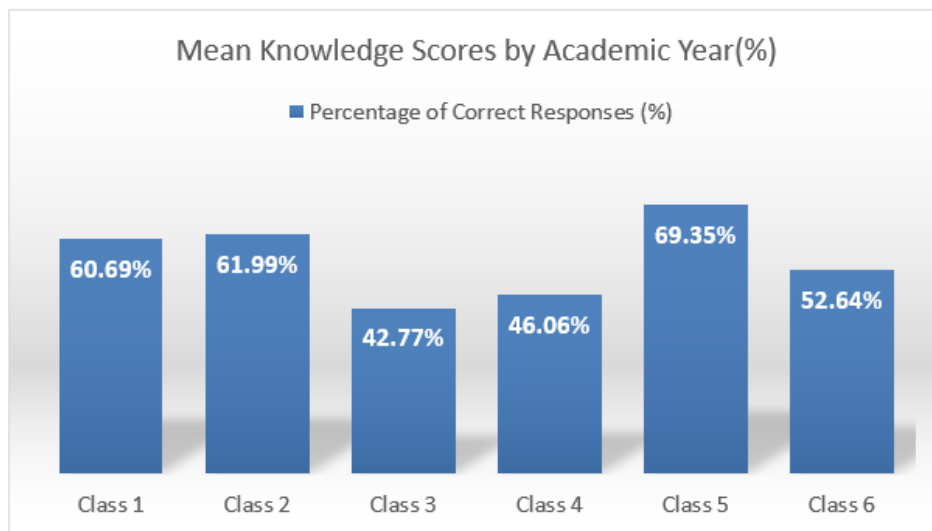


Figure 2: Mean knowledge scores by academic year

Discussion

This study revealed a moderate but inconsistent level of HIV awareness among dental students at Herat University. While general knowledge was relatively high (71.41%), significant gaps were identified in understanding transmission routes and prevention methods. A particularly concerning finding was that over two-thirds of students (68.32%) reported receiving no formal HIV education within their curriculum, pointing to a major gap in educational planning.

Our findings of moderate overall knowledge are comparable to studies in other resource-limited settings. For instance, a study at Umm Al-Qura University, Saudi Arabia, reported a similar mean knowledge score (69%) among dental students (12). However, the lack of a clear upward trend in knowledge across academic years at Herat University, particularly the significant dip observed in the third and fourth years, is a critical issue. This “knowledge valley” suggests that initial theoretical knowledge is not being effectively reinforced during the middle years of the curriculum, and that clinical experience alone, which intensifies in the final years, is not a substitute for structured, continuous education. This dip may be attributable to a curriculum structure where basic sciences are taught in early years, but specialized clinical topics, including infectious diseases, are not revisited until later, leaving a gap where knowledge can decline.

Unlike studies in some other regions where knowledge was higher, such as in central China (79.4% score) (13), the challenge at Herat is compounded by the unique socio-cultural and infrastructural landscape of Afghanistan. Decades of conflict have weakened the health system, and pervasive social stigma surrounding HIV discourages open discussion and education (7). This environment makes it even more critical for dental schools to serve as a primary source of accurate, scientific information. The lack of formal education found in our study

means that students might be relying on informal, and potentially inaccurate, sources of information, which can perpetuate fear and discriminatory attitudes.

Furthermore, the disconnect between knowledge and practice is a global concern but is especially acute in contexts like Afghanistan. Studies from Tunisia and Saudi Arabia have shown that even with adequate knowledge, a significant portion of dental professionals, exhibit reluctance to treat HIV-positive patients (14, 15). This highlights that education must go beyond biomedical facts to include ethical training, patient communication skills, and strategies to combat stigma. The high prevalence of negative attitudes, even among knowledgeable students in other studies, underscores the need for an integrated educational approach that fosters empathy and professionalism (13).

To address these deficiencies, Herat University should implement specific, actionable reforms. This includes the integration of a mandatory, longitudinal HIV/AIDS module into the dental curriculum. This module should begin in the early years and be reinforced with increasing clinical relevance through to graduation. It should cover not only the Virology and transmission of HIV but also post-exposure prophylaxis (PEP), the oral manifestations of HIV, and the management of PLWH. Incorporating case-based learning, simulation training, and discussions on the ethical and social dimensions of HIV care can help bridge the gap between knowledge and compassionate practice (16).

Limitations

This study has several significant limitations that must be considered when interpreting the findings. The most substantial of these is the exclusion of female students, which introduces a major selection bias and means the results cannot be generalized to the entire dental student population at Herat University. This was a direct consequence of profound cultural and

logistical barriers in Afghanistan that made mixed-gender research unfeasible at the time of the study.

Second, the study's cross-sectional design means that it can only provide a snapshot of knowledge at a single point in time and cannot establish causality. The observed differences in knowledge across academic years could be influenced by factors other than the curriculum itself.

Third, the data were self-reported, which introduces the potential for social desirability bias, where participants may have provided answers, they believed were more socially acceptable.

Finally, while the questionnaire was pilot-tested, its psychometric properties were not as rigorously evaluated as they might be in a more resource-rich setting. Further validation of the instrument would be beneficial for future research.

Conclusion

Dental students at Herat University possess a moderate but inconsistent level of awareness regarding HIV. The significant lack of formal, structured education on HIV within the dental curriculum is a major deficiency that requires immediate attention. To ensure that future dental professionals in Afghanistan are prepared to provide safe, ethical, and non-discriminatory care, it is imperative that Herat University integrates comprehensive and longitudinal HIV education into its curriculum. This should include not only biomedical aspects but also training on infection control, patient communication, and the ethical management of PLWH. Such reforms are critical for strengthening the healthcare response to HIV in Afghanistan and for protecting the health of both patients and providers.

Acknowledgments

We sincerely thank the dental students of Herat University Faculty of Stomatology for their voluntary participation in this study. Their cooperation was essential to the success of this research. We also extend our gratitude to the faculty and administrative staff of the Faculty of Stomatology for their support during data collection. This study received no external funding.

Conflict of Interest

The authors declare no potential conflicts of interest with respect to the research, authorship, or publication of this article.

References

1. Fauci AS, Lane HC. Human Immunodeficiency Virus Disease: AIDS and Related Disorders. In: Kasper DL, Fauci AS, Hauser SL, Longo DL, Jameson JL, Loscalzo J, editors. *Harrison's Principles of Internal Medicine*. 20th ed. New York, NY: McGraw-Hill Education; 2018. p. 1219-1272.
2. World Health Organization. HIV/AIDS. Available from: <https://www.who.int/news-room/fact-sheets/detail/hiv-aids>
3. Saag MS, Gandhi RT, Hoy JF, et al. Antiretroviral Drugs for Treatment and Prevention of HIV Infection in Adults: 2020 Recommendations of the International Antiviral Society–USA Panel. *JAMA*. 2020;324(16):1656-1672.
4. UNAIDS. Global HIV & AIDS statistics — Fact sheet. Available from: <https://www.unaids.org/en/resources/fact-sheet>
5. Cottone JA, Molinari JA. State-of-the-art infection control in dentistry. *J Am Dent Assoc*. 1991;122(10):33-41.
6. Siddiqui JA, Vohra LI, Essar MY. HIV in Afghanistan: challenges, efforts and recommendations. *Ann Med Surg (Lond)*. 2023;85(4):1833-1836.

7. World Health Organization Regional Office for the Eastern Mediterranean. Afghanistan HIV country profile. Available from: <https://www.emro.who.int/asd/country-activities/afghanistan-hiv-profile.html>
8. Alemi Q, Stempel C. Association between HIV knowledge and stigmatizing attitudes towards people living with HIV in Afghanistan: findings from the 2015 Afghanistan Demographic and Health Survey. *Int Health*. 2019;11(6):440-447.
9. Al-Ansari A. Knowledge and attitudes of dental students towards HIV/AIDS patients in Saudi Arabia. *J Contemp Dent Pract*. 2009;10(5):E049-E056.
10. Mohamadi M, Ahmadi B, Hamidi A, Aghajani M. Knowledge and attitudes towards HIV/AIDS among dental students in Iran. *3DJ*. 2020;9(2):7-13.
11. Rani V, Dumpala S, Shyamala R. Knowledge and attitude among students towards HIV/AIDS patients at a dental college, Suraram, India. *Int J Basic Clin Pharmacol*. 2017;6(11):2646-50.
12. Abiadh AAS, Jabali MA, Sahal RM, Alzahrani TA, Nassar AA, Marghalani AA. Knowledge and attitude of dental students toward HIV infection in Umm Al-Qura University, Saudi Arabia. *J Family Med Prim Care*. 2022;11(10):6438-6443.
13. Li R, Dong W, He W, Liu Y. Chinese dental students' knowledge and attitudes toward HIV/AIDS. *J Dent Sci*. 2015;10(4):383-390.
14. Besbes A, Nasri W, Nafti R, Bennasrallah C. Knowledge, attitudes and practices about HIV: a pilot study among Tunisian dentists. *World J Dent*. 2022;13(2):123-128.
15. Alali FM, Tarakji B, Alqahtani AS, et al. Assessment of Knowledge and Attitude of Dental Students towards HIV and Its Oral Manifestations in Saudi Arabia-A Cross-Sectional Study. *Healthcare (Basel)*. 2022 Jul 25;10(8):1379.
16. Ranauta A, Tappuni AR, Coulthard P. HIV Teaching: A dental curriculum which fosters knowledge and attitude. *Oral Dis*. 2020 Sep;26 Suppl 1:123-126.