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ORIGINAL ARTICLE

Knowledge and attitudes toward HIV/AIDS among Turkish clinical medical and dental students

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Abstract

Objectives: Despite advances in HIV/AIDS treatment and prevention, persistent knowledge gaps and stigmatizing attitudes among healthcare trainees emphasize the need for early educational interventions to promote ethical and non-discriminatory care for people living with HIV/AIDS (PLWHA). This study aimed to assess and compare HIV-related knowledge and attitudes among clinical medical and dental students.

Methods: A cross-sectional, questionnaire-based survey was conducted among clinical-level students at a public university in Türkiye. Participants included fourth- to sixth-year medical students and fourth- to fifth-year dental students. The questionnaire assessed general HIV/AIDS knowledge, transmission routes, post-exposure prophylaxis and attitudes toward PLWHA. Data were analysed using descriptive statistics, independent samples *t*-test, Mann–Whitney *U* test and chi-square tests.

Results: Of 528 eligible students, 504 completed the survey (260 medical, 244 dental). Medical students scored significantly higher than dental students across all knowledge domains ($p < 0.001$) and demonstrated more positive attitudes ($p < 0.001$). However, both groups' overall knowledge levels were categorized as "weak," and their attitudes remained "negative." Common misconceptions included limited awareness of the "Undetectable = Untransmittable" principle, with only 11.5% of all students answering this item correctly, and false beliefs about transmission via casual contact, saliva, or shared utensils.

Conclusions: While medical students performed better, widespread deficiencies and stigmatizing beliefs across both groups indicate a need for curriculum reform. HIV-related education should integrate biomedical content with ethical reasoning, stigma reduction, and patient-centred approaches. Early, experiential learning may help foster more informed and inclusive attitudes among future healthcare professionals.

KEYWORDS

attitude, dental education, HIV/AIDS, knowledge, medical education

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BACKGROUND

Human Immunodeficiency Virus (HIV) is a retrovirus that progressively impairs the immune system by targeting CD4+ T lymphocytes, thereby increasing susceptibility to opportunistic infections and certain malignancies. If left untreated, HIV infection advances to Acquired Immunodeficiency Syndrome (AIDS), which is characterized by severe immune suppression and high morbidity [1]. Despite decades of progress in treatment and prevention, HIV remains a major global public health concern. In 2023, an estimated 39.9 million people were living with HIV, over half of them women and girls [2]. Approximately 9 million remain untreated, and viral suppression has been achieved in nearly three-quarters of those receiving antiretroviral therapy (ART). However, disparities persist—especially across specific geographic regions and in men [3].

The global distribution of people living with HIV/AIDS (PLWHA) shows marked regional disparities, with the highest burden in eastern and southern Africa, followed by the Asia-Pacific region, and lower prevalence in South America, western and central Europe, and North America [3]. These inequalities reflect differences in disease burden, healthcare access and treatment uptake.

Early diagnosis—typically via serological screening and confirmatory testing—is critical for initiating ART, which improves survival and suppresses viral load to undetectable levels. This effectively prevents sexual transmission, a principle summarized by the public health message "Undetectable = Untransmittable" (U=U) [4, 5]. HIV is mainly transmitted through sexual contact, contaminated needles, infected blood transfusions, and vertical transmission, whereas casual contact does not pose a risk [6, 7]. Healthcare professionals face occupational exposure risks, emphasizing the importance of universal precautions and post-exposure prophylaxis [8].

Despite advances in treatment and prevention, PLWHA continue to encounter widespread stigma and discrimination, even within healthcare systems [9]. Misconceptions about transmission and irrational fears contribute to negative attitudes among healthcare providers, sometimes resulting in substandard care or even refusal to provide treatment [10, 11]. Beyond clinical settings, PLWHA are often subjected to social exclusion and misinformation, exacerbating psychological and physical vulnerability. In healthcare education, stigma is often rooted in insufficient training on HIV-related issues, limited clinical exposure to PLWHA, and pre-existing cultural or moral biases [12, 13]. Such attitudes compromise not only the quality of care but also the ethical responsibilities of future clinicians.

Clinical medical and dental students are future frontline professionals who will encounter patients with infectious conditions, including HIV. They must adhere to infection control practices, make informed management decisions, and provide care without prejudice. Healthcare workers—particularly those performing invasive procedures—face occupational risk for HIV, but this can be minimized with universal precautions [14, 15]. The recognition of an undetectable viral load as non-infectious has transformed both clinical management and social perceptions of HIV [16]. Therefore, up-to-date knowledge about HIV transmission, prevention strategies, and clinical management is essential for medical and dental students to ensure safe practice and reduce stigma toward PLWHA.

In Türkiye, undergraduate medical education spans twelve academic semesters, whereas dental education encompasses ten semesters. Clinical training—where students gain hands-on experience by performing treatment procedures on patients—begins in the fourth and fifth years for dentistry, and in the fourth through sixth years for medicine. Comprehensive HIV-related content is introduced during the fifth and sixth semesters in both disciplines, coordinated by various academic departments, with microbiological aspects taught earlier in the fourth semester. Despite similar theoretical curricula, levels of clinical exposure and perceived risk may differ between medical and dental students [17–19]. These differences may affect both knowledge and willingness to treat PLWHA. Assessing these differences is essential for identifying educational gaps and informing curriculum development aimed at enhancing both competence and empathy among future healthcare providers [20, 21].

There is a lack of contemporary, programme-level comparisons between Turkish medical and dental students—two groups with equivalent theoretical curricula but differing clinical exposure—regarding HIV-related knowledge, awareness and attitudes. This gap has clinical relevance, as misconceptions and stigma can affect the HIV care cascade, from testing uptake to treatment adherence and even care refusal [22, 23]. Addressing these educational gaps is also vital for achieving global HIV elimination targets, such as the Joint United Nations Programme on HIV/AIDS (UNAIDS) 95–95–95 goals [24, 25]. By presenting a side-by-side assessment—including awareness of the "U=U" concept—this study aims to identify concrete targets for curricular reform and professional ethics training in both medical and dental programmes.

The aim of this study was to evaluate and compare the levels of knowledge and attitudes regarding HIV/AIDS among Turkish clinical medical and dental students. The assessment focused on three key domains:

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general knowledge about HIV/AIDS, awareness of transmission routes and prevention strategies and attitudes toward PLWHA.

METHODS

Study Design and Ethical Approval

This cross-sectional, questionnaire-based study was conducted among clinical undergraduate students enrolled in the Faculties of Medicine and Dentistry at Çanakkale Onsekiz Mart University during the 2023–2024 academic year. Ethical approval was granted by the Çanakkale Onsekiz Mart University Graduate Education Institute Ethics Committee (Approval No: 01/14, 18 January 2024). In accordance with the Declaration of Helsinki, which identifies university students as a potentially vulnerable population, all procedures were strictly conducted in line with established ethical standards.

Prior to data collection, the principal investigator (B.S.) provided students with a detailed in-person explanation of the study's objectives, procedures and ethical framework in a classroom setting, emphasizing the protection of the rights of vulnerable individuals. Students were explicitly informed that participation was entirely voluntary and that there were no incentives or penalties involved. To ensure anonymity and minimize bias, questionnaires were completed without personal identifiers, and the data collection process was supervised by two assistant researchers (T.A. and B.A.) who held no teaching responsibilities related to the students' coursework. To mitigate potential coercion or influence, the principal investigator—who holds an academic position at the university—did not remain in the classroom during data collection. Informed consent forms clearly outlined all ethical obligations, and only students who fully understood and agreed to these conditions completed the survey.

Study Participants

The study population consisted of clinical-level students enrolled in the Faculties of Medicine and Dentistry at Çanakkale Onsekiz Mart University. Participants included fourth-, fifth-, and sixth-year medical students and fourth- and fifth-year dental students, all of whom had reached the stage of performing clinical procedures and had completed relevant coursework on HIV/AIDS. For analytical purposes, participants were grouped into two categories: clinical medical students (years 4–6) and clinical dental students (years 4–5).

Sample Size Determination

The required sample size was estimated using G*Power statistical software (version 3.1.9.7, Universität Kiel, Kiel, Germany). The calculation was based on findings from a previous study by Özenci et al. [26], which compared knowledge levels related to HIV/AIDS among medical, dental and pharmacy students. In that study, 58% of dental students and 34% of medical students correctly recognized that HIV/AIDS can present with oral manifestations, with the difference reported as statistically significant ($p < 0.001$). Based on these proportions, the effect size was calculated as 0.1541. With a significance level (α) of 0.05 and a statistical power of 90%, the minimum required total sample size was determined to be 443 participants (critical chi-square = 3.841).

Data Collection Procedure and Survey Structure

Following an in-person briefing conducted by the principal investigator (B.S.) in classroom settings, informed consent forms—detailing the study's objectives and ethical considerations—were distributed to medical and dental students by two assistant researchers (T.A. and B.A.). Participants were allowed sufficient time to review the information before signing the consent form and completing the survey independently.

At the beginning of the questionnaire, students were asked to indicate their age, sex, academic year and faculty (medicine or dentistry). The survey instrument was developed by combining and adapting items from previously published, validated studies that assessed HIV/AIDS-related knowledge and attitudes among healthcare students [27–32]. The final form consisted of three main sections. All survey items used in this study are provided in Supporting Information to ensure transparency and reproducibility.

The first section evaluated participants' foundational knowledge of HIV/AIDS, risk groups and transmission in healthcare settings. It included 20 statements, each with three response options: "True," "False," and "I don't know." One point was assigned for each correct answer, while incorrect and "I don't know" responses received zero points. The total score for this section ranged from 0 to 20.

The second section assessed knowledge related to potential HIV transmission routes and post-exposure prophylaxis. This section consisted of 16 statements—13 related to transmission pathways and 3 concerning mother-to-child transmission and post-exposure interventions. Scoring followed the same principle as the previous

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section, with correct answers earning 1 point. Thus, the total score for this section ranged from 0 to 16. The scores from the first and second sections were summed to calculate the overall knowledge score, which ranged from 0 to 36. Based on total scores, knowledge levels were categorized as follows: <24 = weak, 25–28 = moderate, 29–32 = good, and ≥ 33 = excellent, which were adopted directly from a previously published study [30].

The final section explored students' attitudes toward PLWHA. This section included 17 items, encompassing both positive and negative sentiments. Responses were measured using a 5-point Likert scale: "Strongly disagree," "Disagree," "Neutral," "Agree" and "Strongly agree." Positively worded items were scored from 1 (Strongly disagree) to 5 (Strongly agree), while negatively worded items were reverse-coded. The total attitude score could range from 17 to 85. Scores above 75 indicated a positive attitude; scores between 50 and 75 reflected a negative attitude; and scores below 50 were considered indicative of a passive or indifferent stance, which were also adopted from the same previously published study [30].

Statistical Analysis

All statistical analyses were conducted using IBM SPSS Statistics for Windows (version 26.0; IBM Corp., Armonk, NY, USA). Descriptive statistics—including frequencies, percentages, means and standard deviations—were used to summarize demographic characteristics and survey responses. The normality of continuous variables was assessed using the Kolmogorov–Smirnov test. Comparisons between the two faculty groups (medical and dental students) were performed using the independent samples t-test for normally distributed variables and the Mann–Whitney U test for non-normally distributed variables. The chi-square (χ^2) test was used to examine differences in categorical variables. A p-value of <0.05 was considered statistically significant.

RESULTS

A total of 280 clinical medical students and 248 clinical dental students were invited to participate in the study. Among them, 12 medical and 3 dental students either declined to participate or did not sign the informed consent form. Additionally, 8 medical and 1 dental student submitted incomplete or incorrectly filled questionnaires. After applying these exclusion criteria, the final sample included 260 medical students and 244 dental students. The mean age of medical students was 22.98 ± 1.09 years, with 118 males (45.4%) and 142 females (54.6%). The mean age of dental students was 22.13 ± 1.43 years, with 118 males (48.4%) and 126 females (51.6%). There were no statistically significant differences between the two groups in terms of age or sex distribution ($p > 0.05$).

Table 1 presents the knowledge scores and comparisons between medical and dental students concerning HIV/AIDS, risk groups, transmission in healthcare settings, potential transmission routes and post-exposure prophylaxis. Medical students demonstrated significantly higher knowledge scores regarding HIV/AIDS, risk groups and transmission in healthcare settings (11.61 ± 2.85) compared with dental students (10.48 ± 2.52; $p < 0.001$). Similarly, their scores on potential transmission routes and post-exposure prophylaxis were also significantly higher (11.62 ± 2.24 vs. 9.05 ± 2.36; $p < 0.001$). When total knowledge scores were considered, medical students again outperformed dental students (23.23 ± 4.33 vs. 19.53 ± 4.08; $p < 0.001$). Despite this difference, the average total knowledge level for both groups fell within the "weak" category, according to the scoring classification.

Table 2 shows the distribution and comparison of correct responses for each item in the HIV/AIDS, risk groups, and transmission in healthcare settings section. Dental students were significantly more likely than medical students to correctly identify that dental practice may pose a risk for HIV/AIDS transmission ($p < 0.001$), that HIV/AIDS can be diagnosed through oral manifestations ($p < 0.001$), and that hepatitis B is more infectious than HIV/AIDS ($p = 0.045$). Conversely, medical students outperformed dental students on several knowledge items, including those related to Western blot ($p < 0.001$), ELISA ($p < 0.001$), and the specificity of HIV tests ($p = 0.033$). They were also significantly more knowledgeable about HIV concentration in saliva ($p < 0.001$), aerosol transmission risks ($p < 0.001$), ART ($p < 0.001$), transmission risk with undetectable viral load (U=U) ($p = 0.024$), the relationship between HIV and oral contraceptives ($p = 0.041$), and HIV prevalence ($p < 0.001$).

Regarding specific statements, only 11.5% of participants correctly responded to the item: "HIV-positive individuals with undetectable viral loads in their blood, as confirmed by relevant tests, do not transmit the virus during unprotected sexual intercourse." Similarly, only 19.4% of students correctly answered the statement "HIV tests have a specificity close to 100%," and 21% correctly identified that "Western blot test provides definitive evidence for the diagnosis of HIV/AIDS." These findings highlight a significant gap in students' understanding of HIV diagnostic testing and the implications of the U=U

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TABLE 1 Comparison of HIV/AIDS knowledge scores between medical and dental students across thematic domains.

Knowledge of HIV/AIDS	Scores (Mean ± SD)		
	Medical students ($N = 260$)	Dental students ($N = 244$)	p-value[a]
The virus (HIV) and the disease (AIDS), risk groups, and HIV transmission in healthcare settings	11.61 ± 2.85	10.48 ± 2.52	**<0.001**
Potential transmission routes and post-exposure prophylaxis	11.62 ± 2.24	9.05 ± 2.36	**<0.001**
Total Scores	23.23 ± 4.33	19.53 ± 4.08	**<0.001**

Abbreviations: AIDS, Acquired Immune Deficiency Syndrome; HIV, Human Immunodeficiency Virus; N, Number; SD, Standard deviation.
[a]Independent samples *t*-test. Bold values mean statistically significant.

principle, indicating that these clinically important concepts are not yet well integrated into their knowledge base.

Figure 1 illustrates the percentages and comparisons of correct responses provided by medical and dental students to statements related to potential HIV transmission routes and post-exposure prophylaxis. Medical students were significantly more likely than dental students to correctly identify blood transfusion and mother-to-child transmission during pregnancy and childbirth as possible routes of transmission ($p = 0.019$ and $p < 0.001$, respectively). Additionally, they were more accurate in identifying that HIV cannot be transmitted through handshaking, mosquito bites, hugging, sharing towels, kissing, sharing utensils, or using public toilets ($p < 0.001$ for all items except hugging, $p = 0.001$).

Medical students also demonstrated significantly higher correct response rates than dental students for the statements "Mother-to-child HIV transmission can be prevented" ($p < 0.001$) and "If treatment is initiated promptly after unprotected sexual intercourse, the risk of HIV infection can be reduced" ($p = 0.016$). With the exception of the item regarding breastfeeding as a transmission route, the correct response rate exceeded 50% for all other items in this section among medical students. In contrast, dental students exhibited substantial misconceptions, particularly concerning non-transmissible routes of HIV infection.

Table 3 presents the distribution and comparison of students' responses to statements assessing attitudes toward PLWHA. Although medical students had significantly higher total attitude scores (61.12 ± 8.23) than dental students (57.58 ± 8.05; $p < 0.001$), both groups remained within the "negative attitude" range. Significant differences in response distributions were observed between the two groups for most items. In particular, statements addressing ethical obligations (e.g., "I am not obligated to treat patients with HIV/AIDS"), infection control (e.g., "I have sufficient knowledge to safely treat PLWHA"), and social attitudes (e.g., "HIV-positive women should not have children" or "If I found out that a friend was HIV positive, I would end the friendship.") yielded p-values below 0.05, indicating differing patterns of agreement. However, the distributions also reveal that negative or hesitant attitudes are still prevalent in both groups. For example, over 85% of all students agreed or strongly agreed with the statement "I believe I have the right to know if my patient is HIV positive", and fewer than 10% strongly agreed that they had sufficient knowledge to safely treat PLWHA. In summary, the analysis of attitudinal items revealed statistically significant differences between medical and dental students on several key statements. However, both groups demonstrated continued concerns and uncertainty regarding ethical obligations and infection risk.

DISCUSSION

This study evaluated and compared HIV/AIDS-related knowledge and attitudes among clinical-level medical and dental students. Medical students scored significantly higher than dental students across all domains, yet both groups demonstrated generally low knowledge levels. While the differences in knowledge scores were statistically significant in all domains, these modest absolute gaps are educationally relevant, as they may lead to disparities in recognizing transmission risks, applying infection control measures, and initiating timely post-exposure interventions. Similarly, although medical students achieved higher attitude scores, both groups' mean scores remained within the "negative" range, indicating that statistical differences alone are insufficient to eliminate stigma or hesitation in treating PLWHA without targeted attitudinal training. The overall low performance in both cohorts raises concerns about the adequacy of current undergraduate curricula, underscoring the need for more comprehensive, clinically integrated and

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TABLE 2 Item-level comparison of correct responses to HIV/AIDS knowledge statements between medical and dental students.

Statements	Number (percentage) of correct responses			
	Medical students ($N = 260$)	Dental students ($N = 244$)	p-value[a]	Total number (percentage) of correct responses
Dental practice is considered a risk factor for the transmission of HIV/AIDS.	224 (86.2)	234 (95.9)	**<0.001**	458 (90.9)
Patients with HIV/AIDS can be diagnosed through oral manifestations.	124 (47.7)	224 (91.8)	**<0.001**	348 (69)
Needle-stick injuries occurring during dental procedures can lead to HIV transmission.	246 (94.6)	236 (96.7)	0.097	484 (96)
Hepatitis B is more infectious than HIV/AIDS.	110 (42.3)	126 (51.6)	**0.045**	236 (46.8)
Healthcare workers are more susceptible to cross-infection compared with non-healthcare individuals.	226 (86.9)	218 (89.3)	0.422	444 (88.1)
A negative HIV test result provides definitive evidence that the individual is not infected with the virus.	202 (77.7)	172 (70.5)	0.065	374 (74.2)
Western blot test provides definitive evidence for the diagnosis of HIV/AIDS.	72 (27.7)	34 (13.9)	**<0.001**	106 (21)
ELISA is a screening test for HIV infection.	186 (71.5)	94 (38.5)	**<0.001**	280 (55.6)
HIV tests have a specificity close to 100%.	60 (23.1)	38 (15.6)	**0.033**	98 (19.4)
HIV can be transmitted through saliva.	132 (50.8)	86 (35.2)	**<0.001**	218 (43.3)
Infection control procedures used for hepatitis B are also sufficient to protect against HIV transmission.	90 (34.6)	76 (31.1)	0.409	166 (32.9)
The saliva of HIV/AIDS patients contains a high concentration of the HIV virus.	108 (41.5)	62 (25.4)	**<0.001**	170 (33.7)
All sterilization methods are effective in killing the HIV virus.	152 (58.5)	182 (74.6)	**<0.001**	334 (66.3)
HIV can be transmitted through aerosols generated by dental rotary instruments.	138 (53.1)	74 (30.3)	**<0.001**	212 (42.1)
HIV infection can be controlled with antiretroviral therapy (ART).	176 (67.7)	74 (30.3)	**<0.001**	250 (49.6)
Every individual who is HIV-positive is considered to have AIDS.	200 (76.9)	188 (77)	0.973	388 (77)
Today, with appropriate treatment, the life expectancy of HIV-positive individuals can be comparable to that of HIV-negative individuals.	188 (72.3)	164 (67.2)	0.214	352 (69.8)
HIV-positive individuals with undetectable viral loads in their blood, as confirmed by relevant tests, do not transmit the virus during unprotected sexual intercourse.	38 (14.6)	20 (8.2)	**0.024**	58 (11.5)
Birth control pills protect women from acquiring HIV.	200 (76.9)	168 (68.9)	**0.041**	368 (73)
It is currently estimated that approximately 39 million people worldwide are HIV-positive.	146 (56.2)	96 (39.3)	**<0.001**	242 (48)

Abbreviations: AIDS, Acquired Immune Deficiency Syndrome; HIV, Human Immunodeficiency Virus; N, Number.
[a]Chi-square test. Bold values mean statistically significant.

ethically grounded HIV/AIDS education in both medical and dental programmes, with emphasis on improving both knowledge and attitudes.

The overall pattern of low knowledge and predominantly negative attitudes observed in both medical and dental students suggests that current undergraduate training is insufficient to equip future healthcare providers with the competencies needed for evidence-based HIV prevention and stigma-free patient care. These deficits may stem from multiple factors, including limited curricular emphasis on HIV/AIDS relative to other infectious diseases, the timing of formal instruction later in the programme, and scarce opportunities for direct clinical exposure to PLWHA. In contexts with relatively low

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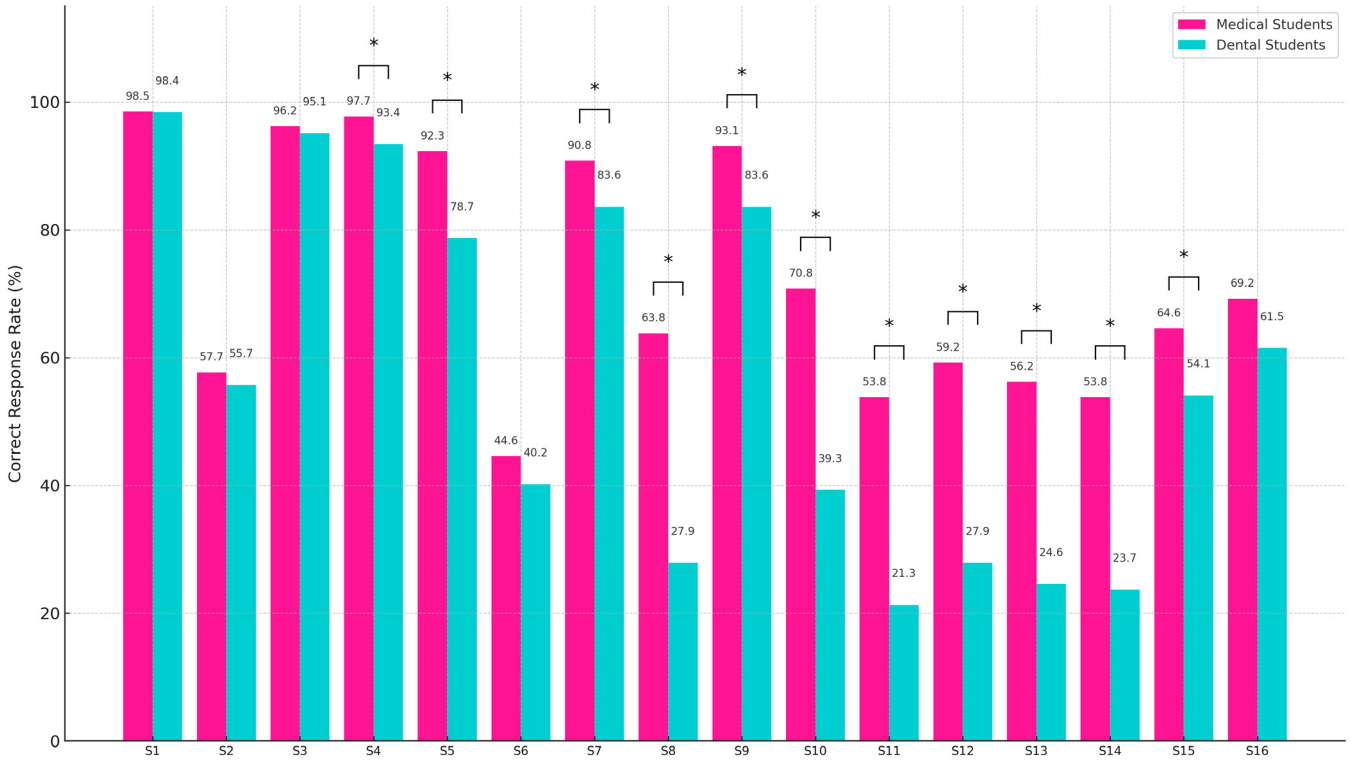


FIGURE 1 Comparison of Medical and Dental Students' Correct Response Rates (%) to Statements on HIV Transmission Routes and Post-Exposure Prophylaxis *(S1, Unprotected sexual intercourse; S2, Sexual intercourse with condom use; S3, Sharing an infected needle / injury from an infected needle; S4, Blood transfusion; S5, Mother-to-child transmission during pregnancy and childbirth; S6, Mother-to-child transmission through breastfeeding; S7, Handshaking; S8, Mosquito bites; S9, Hugging; S10, Sharing towels; S11, Kissing; S12, Sharing utensils; S13, Using public toilets; S14, Mother-to-child HIV transmission can be prevented; S15, If treatment is initiated promptly after unprotected sexual intercourse, the likelihood of HIV infection can be reduced; S16, If treatment is initiated promptly after injury from an infected needle, the likelihood of HIV infection can be reduced). Statistically significant differences between groups are indicated with asterisks ($p < 0.05$).*

HIV prevalence, the topic may receive less visibility in clinical rotations and public health campaigns, reducing its perceived relevance to daily practice. This lack of consistent, hands-on reinforcement can hinder retention of essential knowledge—such as accurate transmission routes, effective preventive measures, and up-to-date treatment principles—and limit the development of empathetic, patient-centred attitudes. Addressing these gaps requires targeted educational strategies that integrate HIV-related content across the curriculum, combine theoretical instruction with scenario-based learning [33], and foster early, structured encounters with affected individuals [34] to bridge the gap between classroom knowledge and clinical application.

Comparative studies examining HIV/AIDS-related knowledge between medical and dental students remain relatively limited in the existing literature. A study conducted in Pakistan involving 414 participants reported an overall inadequate level of knowledge; however, it did not offer a direct comparison between the two groups [35]. In contrast, a study from Iraq that included 319 medical and 207 dental students found that medical students had significantly higher knowledge levels than dental students, aligning with the findings of the present study [36]. Conversely, Özenci et al. [26] reported no significant difference in overall knowledge scores between the two groups, although dental students demonstrated greater awareness of HIV-related oral manifestations, whereas medical students showed a better understanding of HIV test specificity. These discrepancies across studies likely reflect variations in curricular design, including the depth and integration of infectious disease education, opportunities for interprofessional learning, and the timing and extent of clinical exposure to HIV-related cases. Differences in assessment methods, public health priorities and institutional emphasis on evidence-based practice may further influence the distribution of knowledge scores between student groups.

Beyond comparative studies, numerous investigations have examined HIV/AIDS knowledge within individual student groups. For instance, Larosa et al. [29] reported generally good knowledge among dental students regarding biosafety and common oral manifestations of HIV, although notable gaps persisted in recognizing less typical

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TABLE 3 Distribution of responses to attitude statements toward people living with HIV/AIDS and comparison between medical and dental students.

Statements on attitudes toward people living with HIV/AIDS	Medical students ($N = 260$)					Dental students ($N = 244$)					p-value[a]
	Strongly disagree (%)	Disagree (%)	Neutral (%)	Agree (%)	Strongly agree (%)	Strongly disagree (%)	Disagree (%)	Neutral (%)	Agree (%)	Strongly agree (%)	
Treating patients with HIV/AIDS is a waste of national resources.	56.9	26.9	11.5	2.3	2.3	59.8	34.4	4.9	0	0	**0.002**
All patients undergoing invasive procedures should be considered potential carriers of HIV.	6.2	12.3	20	43.1	18.5	3.3	11.5	15.6	28.7	41	**<0.001**
If I found out that a friend was HIV positive, I would end the friendship.	50.8	36.2	10	0.8	2.3	36.1	37.7	12.3	10.7	3.3	**<0.001**
HIV-positive women should not have children.	3.8	10	30.8	31.5	23.8	11.5	20.5	35.2	23.8	9	**<0.001**
Supporting people living with HIV/AIDS improves public health.	3.1	2.3	6.9	52.3	35.4	4.9	2.5	13.1	42.6	36.9	0.215
HIV-positive healthcare providers should not treat patients.	42.3	32.3	15.4	5.4	4.6	18.9	30.3	24.6	13.1	12.3	**<0.001**
Patients with HIV/AIDS should be treated in a separate section of the clinic.	16.2	27.7	23.1	27.7	16.2	4.9	3.3	8.2	45.1	38.5	**<0.001**
Blood testing for HIV should be mandatory for all patients undergoing invasive procedures.	2.3	18.5	20.8	30	28.5	4.1	15.6	16.4	34.4	29.5	0.572
People living with HIV/AIDS can live in the same place as others.	4.6	9.2	12.3	37.7	36.2	4.9	18	27.9	39.3	9.8	**<0.001**
I am not obligated to treat patients with HIV/AIDS.	42.3	30	19.2	6.9	1.5	30.3	37.7	15.6	13.1	3.3	**0.006**
HIV-positive individuals can live a normal lifespan.	3.8	6.2	12.3	49.2	28.5	1.6	13.1	22.1	39.3	23.8	**0.016**
I have sufficient knowledge to safely treat patients with HIV/AIDS.	13.1	25.4	47.7	8.5	5.4	13.1	23.8	41.8	15.6	5.7	0.303
I intend to provide treatment to HIV/AIDS patients in the future.	3.1	3.1	19.2	41.5	33.1	2.5	5.7	22.1	54.9	14.8	**0.003**
My knowledge of infection control is sufficient to treat patients with HIV/AIDS.	14.6	29.2	41.5	11.5	3.1	6.6	32.8	31.1	26.2	3.3	**0.002**
I am concerned about contracting HIV from my patients.	6.9	8.5	23.1	46.9	14.6	1.6	9	12.3	56.6	19.7	**0.001**

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TABLE 3 (Continued)

Statements on attitudes toward people living with HIV/AIDS	Medical students ($N = 260$)					Dental students ($N = 244$)					p-value[a]
	Strongly disagree (%)	Disagree (%)	Neutral (%)	Agree (%)	Strongly agree (%)	Strongly disagree (%)	Disagree (%)	Neutral (%)	Agree (%)	Strongly agree (%)	
I would not hesitate to perform cardiopulmonary resuscitation (CPR) on a patient with HIV/AIDS if necessary.	3.8	7.7	20	32.3	36.2	4.9	7.4	27.9	39.3	20.5	**0.007**
I believe I have the right to know if my patient is HIV positive.	1.5	6.2	5.4	22.3	64.6	0.8	2.5	0.8	13.1	82.8	**<0.001**
Total score (Mean ± SD) (min.-max.)	61.12 ± 8.23 (28–80)					57.58 ± 8.05 (41–79)					**<0.001**

Abbreviations: AIDS, Acquired Immune Deficiency Syndrome; HIV, Human Immunodeficiency Virus; N, Number; SD, Standard deviation; min, minimum; max, maximum.
[a]Mann–Whitney U test. Bold values mean statistically significant.

lesions and understanding diagnostic tools. Compared with the weak knowledge levels identified in the present study, the students in Larosa et al.'s cohort appeared to be relatively better informed. Conversely, studies from Egypt and China highlighted substantial educational deficiencies among dental students, particularly regarding their readiness to identify and treat PLWHA [37, 38]. Similarly, research from Romania found that while dental students demonstrated generally good infection control knowledge, their understanding of bloodborne virus transmission was limited, and a considerable proportion expressed reluctance to treat patients with HIV, indicating persistent stigma despite advanced training stages [39]. Among medical students, research from Croatia revealed significant gaps in understanding of transmission risk, as well as concepts related to pre-exposure prophylaxis, post-exposure prophylaxis, and treatment effectiveness [32]. In Poland, medical students frequently overestimated HIV transmission risks yet reported low HIV testing rates, reflecting a disconnect between theoretical knowledge and its application [40]. Likewise, a study from Serbia identified persistent misconceptions and attitudinal barriers among medical students, with more senior students benefiting from cumulative training but still requiring targeted educational interventions [41]. Collectively, these single-cohort studies show that gaps in core HIV knowledge and persistent stigma remain common despite advancing training, highlighting the importance of curricular strategies that extend beyond content depth to strengthen application and attitude change in a clinical context.

The misconceptions identified in this study—particularly regarding HIV transmission routes, prevention strategies, and post-exposure prophylaxis—have direct consequences for both patient safety and quality of care. Clinically, such gaps may lead to inappropriate infection control practices, unnecessary precautions, ineffective patient counselling and reinforcement of stigma toward PLWHA. Misunderstandings surrounding issues such as the relative infectivity of hepatitis B compared with HIV, non-transmissible contact scenarios or saliva as a transmission route can undermine evidence-based decision-making in clinical settings. Limited understanding of ART—and the very low awareness of the U=U principle—signals a missed opportunity to embed contemporary prevention science into training, with clear consequences for counselling quality and stigma reduction.

From an educational perspective, these findings underscore the need for targeted curricular reforms. Inadequate understanding of key diagnostic tools, such as ELISA and Western blot, suggests limited exposure to relevant serological concepts, particularly among dental students. Integrating accurate, evidence-based HIV content throughout the curriculum—rather than confining it

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to isolated lectures—would ensure better retention and application. Approaches such as scenario-based learning [33], clinical case discussions, and simulation exercises can help translate theoretical knowledge into practical competence. Moreover, structured early encounters with PLWHA [34] can foster empathy, challenge stereotypes and encourage inclusive care.

Addressing attitudinal barriers is equally essential. Even with higher scores among medical students, the persistence of predominantly negative or hesitant attitudes toward PLWHA signals deeper educational and cultural shortcomings. Comparative studies from diverse regions [31, 42–44] demonstrate that stigma remains entrenched despite conventional education, influenced by sociocultural norms, perceived personal risk, and sources of HIV-related information. Therefore, curricula should explicitly integrate ethics, stigma-reduction training, and patient rights education alongside biomedical content. Without such interventions, future healthcare providers may remain ill-equipped to deliver equitable, non-discriminatory care to this vulnerable patient population.

This study possesses several notable strengths. It included a relatively large sample of clinical-level medical and dental students from the same institution, enabling a controlled comparison between groups with similar educational exposure. By limiting participation to students who had already completed relevant coursework on HIV/AIDS, the study enhanced internal validity and reduced curricular variation as a confounding factor. The survey instrument addressed a wide range of HIV-related domains—including epidemiology, transmission routes, post-exposure prophylaxis and attitudes toward PLWHA—allowing for a comprehensive, multidimensional assessment. Furthermore, ethical rigour was ensured through in-person briefings, anonymous participation, and the exclusion of the principal investigator from the data collection process to minimize response bias.

Nevertheless, several limitations should be acknowledged. As a cross-sectional study, causal relationships between knowledge levels and attitudes cannot be inferred. The study was conducted at a single public university in Türkiye, which may limit the generalizability of the findings to other institutions or geographic contexts. Although anonymity was preserved, the use of self-reported measures may have introduced social desirability bias, particularly in responses related to attitudes. In addition, the categorization of knowledge and attitude scores was adopted directly from a previously published study [30] and has not been externally validated, potentially limiting the comparability of findings with other research. Lastly, unmeasured variables such as prior personal experiences, cultural attitudes or informal sources of information (e.g., social media) may have influenced student responses.

Overall, this study provides a timely and comprehensive insight into the persistent gaps in HIV-related knowledge and attitudes among future healthcare providers. By highlighting both factual deficiencies and enduring stigma, the findings underscore the dual necessity of strengthening biomedical instruction and addressing sociocultural barriers within medical and dental education. Implementing integrated, evidence-based, and empathy-driven curricula can equip future practitioners with the competence and compassion needed to deliver equitable care to PLWHA. Such efforts are essential not only for improving individual patient outcomes but also for advancing broader public health goals in HIV prevention and stigma reduction.

CONCLUSION

This study demonstrated that clinical medical students possessed higher levels of HIV-related knowledge and more positive attitudes toward PLWHA compared with dental students. Despite this relative advantage, overall performance in both groups remained below optimal, indicating persistent misconceptions and attitudinal barriers. These findings highlight the need for substantial improvements in HIV-related education across health professions. Educational reforms should prioritize both the delivery of accurate, evidence-based biomedical content and the integration of ethics, stigma reduction and patient-centred care principles. Incorporating interactive learning strategies, clinical case discussions and patient narratives may foster empathy and reduce discriminatory tendencies. In the context of global efforts to eliminate HIV-related stigma in healthcare, academic institutions bear a crucial responsibility to ensure that graduates are demonstrably competent—both in knowledge and attitudes—to deliver equitable, inclusive care.

AUTHOR CONTRIBUTIONS

Conceptualization: B.S., T.A.; Methodology: B.S., T.A.; Data Collection: B.S., T.A., B.A.; Formal Analysis: B.S.; Writing – Original Draft: B.S.; Writing – Review and Editing: B.S., T.A., B.A.; Supervision: B.S. All authors have read and approved the final manuscript.

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CONFLICT OF INTEREST STATEMENT

The authors declare no conflicts of interest related to this work.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

ETHICS STATEMENT

Ethical approval was granted by the Çanakkale Onsekiz Mart University Graduate Education Institute Ethics Committee (Approval No: 01/14, 18 January 2024).

CONSENT

All participants were undergraduate students, and informed consent was obtained from each participant prior to data collection.

PATIENT CONSENT STATEMENT

This study did not involve patients or direct patient data.

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REFERENCES

1. Parija SC. Retrovirus. *Textbook of Microbiology and Immunology*. Springer; 2023:881-902. doi:10.1007/978-981-19-3315-8_61
2. Global AIDS Monitoring, 2024 (https://aidsinfo.unaids.org/) or UNAIDS epidemiological estimates, 2024 (https://aidsinfo.unaids.org/). Accessed 19 May 2025.
3. Global HIV Statistics, 2024 (UNAIDS). Accessed 19 May 2025. https://www.unaids.org/sites/default/files/media_asset/UNAIDS_FactSheet_en.pdf
4. Feng X, Wang J, Gao Z, et al. An alternative strategy to western blot as a confirmatory diagnostic test for HIV infection. *J Clin Virol*. 2017;88:8-11. doi:10.1016/j.jcv.2016.12.010
5. Bor J, Fischer C, Modi M, et al. Changing knowledge and attitudes towards HIV treatment-as-prevention and "Undetectable = Untransmittable": a systematic review. *AIDS Behav*. 2021;25:4209-4224. doi:10.1007/s10461-021-03296-8
6. Amin O, Powers J, Bricker KM, Chahroudi A. Understanding viral and immune interplay during vertical transmission of HIV: implications for cure. *Front Immunol*. 2021;12:757400. doi:10.3389/fimmu.2021.757400
7. Shey MS, Garrett NJ, McKinnon LR, Passmore JA. The role of dendritic cells in driving genital tract inflammation and HIV transmission risk: are there opportunities to intervene? *Innate Immun*. 2015;21:99-112. doi:10.1177/1753425913513815
8. Tekalign T, Awoke N, Eshetu K, Gelaw Walle B, Teshome Guta M. HIV/AIDS post-exposure prophylaxis knowledge and uptake among health professionals in Africa: systematic review and meta-analysis. *HIV Med*. 2022;23:811-824. doi:10.1111/hiv.13271
9. Fauk NK, Hawke K, Mwanri L, Ward PR. Stigma and discrimination towards people living with HIV in the context of families, communities, and healthcare settings: a qualitative study in Indonesia. *Int J Environ Res Public Health*. 2021;18:5424. doi:10.3390/ijerph18105424
10. Senyurek G, Kavas MV, Ulman YI. Lived experiences of people living with HIV: a descriptive qualitative analysis of their perceptions of themselves, their social spheres, healthcare professionals and the challenges they face daily. *BMC Public Health*. 2021;21:904. doi:10.1186/s12889-021-10881-y
11. Wiginton JM, Maksut JL, Murray SM, et al. Brief report: HIV-related healthcare stigma/discrimination and unmet needs among persons living with HIV in England and Wales. *Prev Med Rep*. 2021;24:101580. doi:10.1016/j.pmedr.2021.101580
12. Mkhize N, Garrido J, Cole-Haley S, et al. Breaking down global barriers: a multinational and multi-community approach to combat stigma and enhance mental wellbeing in people with HIV. *HIV Med*. 2025;26:621-632. doi:10.1111/hiv.13763
13. Cota Medeiros F, Méndez-López A, Correia de Abreu R, Sarmento e Castro R, Maltez F, Antunes F. Knowledge and HIV-related stigma among Portuguese healthcare professionals: a cross-sectional analysis. *HIV Med*. 2025;26:1096-1107. doi:10.1111/hiv.70039
14. John SA, Quinn KG, Pleuhs B, Walsh JL, Petroll AE. HIV post-exposure prophylaxis (PEP) awareness and non-occupational PEP (nPEP) prescribing history among U.S. healthcare providers. *AIDS Behav*. 2020;24:3124-3131. doi:10.1007/s10461-020-02866-6
15. Wyżgowski P, Rosiek A, Grzela T, Leksowski K. Occupational HIV risk for health care workers: risk factor and the risk of infection in the course of professional activities. *Ther Clin Risk Manag*. 2016;12:989-994. doi:10.2147/TCRM.S104942
16. Ngure K, Ongolly F, Dolla A, et al. "I just believe there is a risk" understanding of undetectable equals untransmissible (U = U) among health providers and HIV-negative partners in serodiscordant relationships in Kenya. *J Int AIDS Soc*. 2020;23:e25466. doi:10.1002/jia2.25466
17. Jahić R, Porobić-Jahić H, Žepić D, Piljić D, Petrović J, Čustović A. Knowledge, attitude and stigma towards HIV patients: a survey among medical students in Tuzla, Bosnia and Herzegovina. *J Infect Dev Ctries*. 2020;14:1019-1026. doi:10.3855/jidc.12526
18. Oyeyemi AY, Jasper US, Aliyu SU, Oyeyemiz AL. Knowledge and attitude of health professional students toward patients living with AIDS. *Afr J Med Med Sci*. 2012;41:365-371.
19. Azodo CC, Ehigiator O, Oboro HO, et al. Nigerian dental students' willingness to treat HIV-positive patients. *J Dent Educ*. 2010;74:446-452.
20. Spach DH, Wood BR, Karpenko A, et al. Creating a national HIV curriculum. *J Assoc Nurses AIDS Care*. 2016;27:261-273. doi:10.1016/j.jana.2016.02.002
21. Wagner C, Gossett K, Hasnain M, Linsk N, Rivero R. Integration of the national HIV curriculum in medicine, nursing, and pharmacy programs in the United States. *BMC Med Educ*. 2025;25:422. doi:10.1186/s12909-025-07017-w
22. Medland NA, McMahon JH, Chow EP, Elliott JH, Hoy JF, Fairley CK. The HIV care cascade: a systematic review of data sources, methodology and comparability. *J Int AIDS Soc*. 2015;18:20634. doi:10.7448/IAS.18.1.20634

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23. Lujintanon S, Eshun-Wilson I, Tourneau NL, et al. Implementation strategies to improve HIV care cascade outcomes in low- and middle-income countries: a systematic review from 2014 to 2021. *J Int AIDS Soc*. 2024;27:e26263. doi:10.1002/jia2.26263
24. Lima VD, St-Jean M, Rozada I, et al. Progress towards the United Nations 90-90-90 and 95-95-95 targets: the experience in British Columbia, Canada. *J Int AIDS Soc*. 2017;20:e25011. doi:10.1002/jia2.25011
25. Musuka G, Moyo E, Cuadros D, Herrera H, Dzinamarira T. Redefining HIV care: a path toward sustainability post-UNAIDS 95-95-95 targets. *Front Public Health*. 2023;11:1273720. doi:10.3389/fpubh.2023.1273720
26. Özenci İ, Alshalabi FM, Yildiz MS, İpci ŞD, Çakar G. Knowledge and attitude of dentistry, medicine and pharmacy students related to HIV/AIDS. *Curr Res Dental Sci*. 2024;34:281-286. doi:10.17567/currresdentsci.1556053
27. Wimardhani YS, Ossa YF, Wardhany II, Maharani DA, Lee C. Indonesian dental students' attitudes, knowledge, preparation, and willingness to treat HIV/AIDS patients. *Eur J Dent*. 2022;16:867-874. doi:10.1055/s-0041-1740350
28. 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;11:6438-6443. doi:10.4103/jfmpc.jfmpc_832_22
29. Lorosa AH, Pereira CM, Hussne RP, Silva-Boghossian CM. Evaluation of dental students' knowledge and patient care towards HIV/AIDS individuals. *Eur J Dent Educ*. 2019;23:212-219. doi:10.1111/eje.12423
30. Li R, Dong W, He W, Liu Y. Chinese dental students' knowledge and attitudes toward HIV/AIDS. *J Dent Sci*. 2016;11:72-78. doi:10.1016/j.jds.2015.09.001
31. Sallam M, Alabbadi AM, Abdel-Razeq S, et al. HIV knowledge and stigmatizing attitude towards people living with HIV/AIDS among medical students in Jordan. *Int J Environ Res Public Health*. 2022;19:745. doi:10.3390/ijerph19020745
32. Ljubas D, Škornjak H, Božičević I. Knowledge, attitudes and beliefs regarding HIV among medical students in Zagreb, Croatia. *BMC Med Educ*. 2024;24:1004. doi:10.1186/s12909-024-05994-y
33. Liabsuetrakul T, Sirirak T, Boonyapipat S, Pornsawat P. Effect of continuous education for evidence-based medicine practice on knowledge, attitudes and skills of medical students. *J Eval Clin Pract*. 2013;19:607-611. doi:10.1111/j.1365-2753.2012.01828.x
34. Hatem DS, Gallagher D, Frankel R. Challenges and opportunities for patients with HIV who educate health professionals. *Teach Learn Med*. 2003;15:98-105. doi:10.1207/S15328015TLM1502_05
35. Ali A, Ali NS, Nasir U, et al. Comparison of knowledge and attitudes of medical and dental students towards HIV/AIDS in Pakistan. *Cureus*. 2018;10:e2426. doi:10.7759/cureus.2426
36. Hamid Albujeer AN, Shamshiri AR, Taher A. HIV/AIDS awareness among Iraqi medical and dental students. *J Int Soc Prev Community Dent*. 2015;5:372-376. doi:10.4103/2231-0762.164788
37. Abou El Fadl RK, Abdelmoety A, Farahat Z, Hussein MA. Assessing the levels of HIV-related knowledge and attitudes toward HIV-infected patients among undergraduate dental students: a cross-sectional study. *HIV AIDS (Auckl)*. 2019;11:83-92. doi:10.2147/HIV.S195984
38. Lee C, Fan Y, Starr JR, Dogon IL. Dentists' and dental students' attitudes, knowledge, preparedness, and willingness related to treatment of people living with HIV/AIDS in China. *J Public Health Dent*. 2017;77:30-38. doi:10.1111/jphd.12168
39. Dincă FI, Dimitriu BA, Săndulescu O, Sîrbu VD, Săndulescu M. Knowledge, attitudes, and practices of dental students from Romania regarding self-perceived risk and prevention of infectious diseases. *Dent J (Basel)*. 2024;12:97. doi:10.3390/dj12040097
40. Kowalska J, Cholewik M, Bieńkowski C, Maciejczyk A, Bursa D, Skrzat-Klapaczyńska A. Knowledge and awareness of risk factors for HIV infection and about HIV testing among medical students in Warsaw. *Viruses*. 2024;16:1470. doi:10.3390/v16091470
41. Vowa EM, Jankovic J, Savu T. Knowledge, attitude and behaviour of Belgrade medical students related to HIV/AIDS. *Eur J Public Health*. 2015;25:ckv176.169. doi:10.1093/eurpub/ckv176.169
42. Ellepola AN, Sundaram DB, Jayathilake S, Joseph BK, Sharma PN. Knowledge and attitudes about HIV/AIDS of dental students from Kuwait and Sri Lanka. *J Dent Educ*. 2011;75(4):574-581.
43. Pourjam R, Rahimi Khalifeh Kandi Z, Estebsari F, et al. An analytical comparison of knowledge, attitudes, and practices regarding HIV/AIDS among medical and non-medical students in Iran. *HIV AIDS (Auckl)*. 2020;12:165-173. doi:10.2147/HIV.S242784
44. Kuete M, Huang Q, Rashid A, et al. Differences in knowledge, attitude, and behavior towards HIV/AIDS and sexually transmitted infections between sexually active foreign and Chinese medical students. *Biomed Res Int*. 2016;2016:4524862. doi:10.1155/2016/4524862

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