Knowledge and Attitudes About HIV/AIDS of Dental Students from Kuwait and Sri Lanka


Abstract: Several studies regarding knowledge and attitudes of dental students towards HIV/AIDS have been reported from various countries. However, to the best of our knowledge, an international comparison between countries with diverse cultural and educational backgrounds has not been reported in the literature. The aim of this study was to compare the knowledge and attitudes towards HIV/AIDS of dental students of Kuwait University (KU), Kuwait and the University of Peradeniya (UP), Sri Lanka, the only dental schools in the respective countries. A cross-sectional survey was conducted among a total of 258 dental students, representing the clinical years of both universities, using a similar structured questionnaire with sixty questions to examine their knowledge of various aspects of HIV/AIDS and thirteen questions to examine their attitudes towards the disease.

The mean knowledge and attitude scores were calculated and compared between students from the two universities using t-test with SPSS 17.0. A total of 215 questionnaires were completed and returned, giving a total response rate of 83.3 percent. The KU students were significantly more knowledgeable (p=0.018) regarding HIV/AIDS than the UP students. However, the UP students demonstrated a more highly significant positive attitude (p<0.001) towards the disease than those in KU. This information might help to define strategies to improve the quality of education in these countries.

Keywords: HIV, AIDS, Kuwait, Sri Lanka, dental students

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All health care professionals, including dental students, have the ethical responsibility to provide appropriate treatment and care for people living with human immunodeficiency virus (HIV) and acquired immunodeficiency syndrome (AIDS; PLWHA). Dental students need to be aware of and understand the significance of HIV/AIDS in order to provide effective clinical management to these patients. They also need to possess adequate knowledge of its disease process, oral manifestations, and modes of transmission.

Dental therapeutic procedures frequently involve blood and saliva that may contain a variety of bloodborne pathogens and microorganisms such as HIV. Yet, the possibility of HIV transmission in the oral health care setting is low. In spite of the low risk of HIV transmission during dental procedures, many dentists are reluctant to treat PLWHA. Investigators from South Africa, Brazil, Nigeria, Tanzania, Sudan, and Iran have reported about the knowledge and attitudes of dental students towards HIV/AIDS. However, to the best of our knowledge, a comparison between students of different countries with diverse cultural, economic, and educational backgrounds has not been reported in the literature.

Sri Lanka, a South Asian island, is a source and destination for men, women, and children trafficked for the purposes of involuntary servitude and commercial sex exploitation. Kuwait, a Middle Eastern Arab country, is predominantly a destination country for people who migrate legally from South and Southeast Asia for domestic or low-skilled labor. There are also significant disparities in the economies of the two countries. Sri Lanka, with a per capita GDP (2009 est.) of $4,500, is ranked 148 in the world, while Kuwait with $54,100 is ranked 7. Both countries have a low HIV/AIDS adult prevalence rate. The HIV/AIDS adult prevalence rate (2001 est.) in Sri Lanka is less than 0.1 percent, while that of Kuwait is 0.1 percent. However, both countries share a danger of
the infection accelerating to epidemic proportions if adequate measures are not taken to prevent its spread. High prevalence of commercial sex in Sri Lanka and underreporting of cases in Kuwait due to fear of deportation are two of the main risk factors.

Dental students represent a dynamic and highly educated group in the society. As future health care providers, they are expected to play a crucial role in treatment of PLWHA as well as in health education. Therefore, the dental faculties should provide students with numerous opportunities to develop their knowledge, attitudes, and skills regarding HIV/AIDS. Thus, measuring the knowledge and attitudes of dental students towards HIV/AIDS is essential for assessing the adequacy of HIV/AIDS education in the dental curriculum.

The Faculty of Dental Sciences, University of Peradeniya (UP), is the only educational institution in Sri Lanka that conducts an undergraduate dental program. The dental program is of four years duration and leads to a B.D.S. (Bachelor of Dental Surgery) degree. The first two years are preclinical years; students undergo clinical training during the last two years.

The Faculty of Dentistry, Kuwait University (KU), is the only institution in the entire state of Kuwait that is involved in the dental education and clinical training of students in the various dental specialties. The dental program offered by the Faculty of Dentistry (FOD) is a six- and half-year program. The first four years are preclinical years leading to the degree of B.Med.Sc. (Bachelor of Medical Science) degree. The students are exposed to clinical teaching during the last 2.5 years, after which they are awarded the Bachelor of Dental Medicine (B.D.M.) degree.

The dental students in Sri Lanka are multiethnic and multireligious, whereas the dental students at Kuwait University are predominantly Arabs and members of Islamic culture. Comparison of oral health care in countries with such cultural, linguistic, educational, and economic diversities is difficult and time-consuming. However, it provides valuable information for assessing the adequacy of HIV/AIDS education in the respective curricula of the two dental schools, as well as for planning changes in the existing curricula. Therefore, the aim of this cross-sectional study was to compare the knowledge and attitudes towards HIV/AIDS between clinical dental students of Kuwait University and the University of Peradeniya, Sri Lanka.

Methods

The sample for the study was comprised of all the clinical dental students from both universities (fifth-, sixth-, and final-year dental students of academic year 2008–09 at KU and third- and fourth-year students who had just completed their fourth year at UP). Thus, a total of 258 students were included (187 in Sri Lanka and seventy-one in Kuwait). The number of students at UP was higher than that at KU as the student intake per year is higher in UP. Approval for this study was obtained from the Research and Ethical Clearance Committee of the Faculty of Dentistry, KU, as well as from the Research Committee of the Faculty of Dental Sciences of UP, Sri Lanka.

The survey instrument consisted of a structured questionnaire with sixty questions to examine students’ knowledge and thirteen questions to examine their attitudes. The questionnaires were distributed to all students. The students were notified that the questionnaire was intended for research purposes and that strict confidentiality would be maintained.

Students’ knowledge of the students was tested under the following categories: 1) the virus (HIV) and the disease (AIDS); 2) potential routes of transmission; 3) oral lesions associated with HIV; 4) risk groups; and 5) HIV transmission in the dental setting. The attitudes of the dental students towards the HIV/AIDS patients and data regarding their sources of information pertaining to HIV/AIDS were also obtained. The questions had simple check-off answers (yes/no, don’t know for knowledge and agree/disagree for attitude questions).

The data analysis was performed with the Statistical Package for Social Sciences (SPSS) version 17.0. A score of 1 was given for each correct answer to the knowledge questions, and a total knowledge score was computed for each respondent. The total attitude score was also calculated for each respondent by giving a score of 1 for the correct response to each attitude statement. The mean scores have been presented as mean±standard deviation (SD). The mean knowledge and attitude scores calculated were compared for students from the two universities using the independent samples t-test. The Z-test for two proportions was also used to compare the proportions between the two groups of students for each knowledge and attitude question to determine if they were significantly different from each other. A probability value p less than 0.05 was considered statistically significant.
Results

A total of 215 questionnaires (fifty-five from KU and 160 from UP) were completed and returned giving a total response rate of 83.3 percent. The response rate in UP was 85.6 percent, while that of KU was 77.5 percent.

Knowledge Scores

Knowledge related to the virus and disease process. The KU students scored significantly higher than the UP students in this knowledge category (p<0.001). Also, the female students scored significantly higher than the male students (p=0.02). Only 40 percent of UP students answered that AIDS is a contagious disease as compared to 87.3 percent of KU students (p<0.001). Also, 98.2 percent of the KU students knew that an HIV carrier may look healthy without showing any symptoms of the disease, whereas only 86.9 percent of the UP students knew it (p=0.03). Only 43.8 percent of UP students and 40 percent of KU students knew that an individual carrying anti-HIV antibodies is an HIV carrier. Also, only 25 percent of UP students knew that the average time interval between contracting HIV and producing antibodies is six to twelve weeks as compared to 40 percent of KU students.

Knowledge of potential transmission routes. The UP students’ mean score was higher than the KU students in this category; however, the mean difference was not statistically significant. In addition, 88.1 percent of the UP students knew that AIDS does not spread by sharing public toilets and swimming pools compared to 63.6 percent of KU students (p<0.001). Surprisingly, only 36.4 percent of KU students knew that HIV is not transmitted by mosquito bite as opposed to 73.1 percent of UP students (p<0.001), while 68.1 percent of UP students knew that urine does not transmit HIV as compared to 50.9 percent of KU students (p=0.03). However, 27.5 percent of UP students had the misconception that the mucus or nasal fluid of an infected person is infective, whereas only 5.5 percent of KU students thought so (p=0.001).

Knowledge of HIV-associated oral lesions. The KU students scored significantly higher than the UP students in this knowledge category (p<0.003). The knowledge of HIV-associated oral lesions of the dental students of both universities is shown in Table 1.

Knowledge of risk groups. The KU students scored higher than the UP students in this knowledge category, but the mean difference was not statistically significant. Only 25.6 percent of the UP students perceived hairdressers to be at a higher risk of HIV infection as compared to 47.3 percent of KU students (p=0.004). However, only 81.8 percent of KU students considered prostitutes to be at high risk, whereas 96.3 percent of UP students knew it (p=0.001).

Knowledge of HIV transmission in the dental setting. A significantly higher percentage

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Table 1. Knowledge of HIV-associated oral lesions among students from Kuwait (KU) and Sri Lanka (UP)

<table>
<thead>
<tr>
<th>Oral Kaposi's sarcoma (A)</th>
<th>96.4</th>
<th>0</th>
<th>3.6</th>
<th>51.9</th>
<th>9.4</th>
<th>38.8</th>
<th>&lt;0.001*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral candidiasis (A)</td>
<td>96.4</td>
<td>1.8</td>
<td>1.8</td>
<td>90.0</td>
<td>9.4</td>
<td>0.6</td>
<td>0.235</td>
</tr>
<tr>
<td>Oral hairy leukoplakia (A)</td>
<td>89.1</td>
<td>7.3</td>
<td>3.6</td>
<td>66.3</td>
<td>14.4</td>
<td>19.4</td>
<td>0.002*</td>
</tr>
<tr>
<td>Salivary gland enlargement (A)</td>
<td>38.2</td>
<td>23.6</td>
<td>38.2</td>
<td>42.5</td>
<td>26.9</td>
<td>30.6</td>
<td>0.688</td>
</tr>
<tr>
<td>Xerostomia (A)</td>
<td>60.0</td>
<td>18.2</td>
<td>21.8</td>
<td>34.4</td>
<td>33.8</td>
<td>31.9</td>
<td>0.002*</td>
</tr>
<tr>
<td>Idiopathic thrombocytopenic purpura (A)</td>
<td>43.6</td>
<td>21.8</td>
<td>34.5</td>
<td>26.3</td>
<td>40.0</td>
<td>33.8</td>
<td>0.02*</td>
</tr>
<tr>
<td>Crohn's disease (NA)</td>
<td>67.3</td>
<td>12.7</td>
<td>20.0</td>
<td>10.6</td>
<td>37.5</td>
<td>51.9</td>
<td>&lt;0.001*</td>
</tr>
<tr>
<td>Necrotizing gingivitis (A)</td>
<td>70.9</td>
<td>18.2</td>
<td>10.9</td>
<td>62.9</td>
<td>17.0</td>
<td>20.1</td>
<td>0.336</td>
</tr>
<tr>
<td>Herpes simplex (A)</td>
<td>52.7</td>
<td>23.6</td>
<td>23.6</td>
<td>36.9</td>
<td>42.5</td>
<td>20.6</td>
<td>0.057</td>
</tr>
<tr>
<td>Non Hodgkin's lymphoma (A)</td>
<td>63.6</td>
<td>14.5</td>
<td>21.8</td>
<td>39.4</td>
<td>20.6</td>
<td>40.0</td>
<td>0.003*</td>
</tr>
<tr>
<td>Aphthous ulcers (A)</td>
<td>52.7</td>
<td>27.3</td>
<td>20.0</td>
<td>50.6</td>
<td>32.5</td>
<td>16.9</td>
<td>0.911</td>
</tr>
<tr>
<td>Aggressive periodontitis (A)</td>
<td>50.9</td>
<td>23.6</td>
<td>25.5</td>
<td>65.6</td>
<td>17.5</td>
<td>16.9</td>
<td>0.075</td>
</tr>
</tbody>
</table>

*A=associated with HIV
NA=not associated with HIV
*Significant difference A (KU) vs. A (UP)
(24.4 percent) of UP students knew that blood/saliva contaminated splash/spatter produced by a handpiece can transmit HIV as compared to 5.5 percent of KU students (p=0.004). Only 28.8 percent of UP students considered the risk of HIV transmission in the dental setting to be low compared to 52.7 percent of KU students (p=0.002). A comparison of their knowledge of HIV transmission in the dental setting is shown in Figure 1.

**Total knowledge score.** The comparative mean scores of students from both universities in all categories of HIV/AIDS tested are shown in Figure 2. The total mean knowledge score of the KU dental students was found to be 45.23±4.35, while that of the UP students was 43.56±4.71.

### Attitude Scores

The attitude scores of the dental students in both universities towards HIV/AIDS are shown in Table 2. The UP dental students showed more positive attitude towards HIV/AIDS than the KU students. While 79.4 percent of UP students disagreed that people infected with HIV should be isolated in a special center, only 43.6 percent of KU students disagreed with that statement (p<0.001). In addition, 65.0 percent of the UP students and 85.5 percent of the KU students were concerned that working with AIDS patients might endanger their health, and 11.3 percent of UP students and 34.5 percent of the KU students refused to treat HIV/AIDS patients (p<0.001).

As regards the overall mean attitude score, the UP students scored 7.1±2.13, significantly higher (p<0.001) than the KU students (5.36±2.56).

### Discussion

#### Knowledge of HIV/AIDS

On the knowledge of KU and UP dental students regarding HIV/AIDS, the following findings were of significant interest:
- The KU students were more knowledgeable about all aspects of HIV/AIDS included in the questionnaire than the UP students, except for the knowledge of potential transmission routes.

![Figure 1. Comparison of dental students' knowledge of HIV transmission in dental setting](image-url)
• On knowledge related to virus and the disease process, less than half of UP and KU students knew that an individual carrying anti-HIV antibodies is an HIV carrier. One-quarter of UP and less than half of KU students knew the average time interval for producing antibodies after contracting the virus. This lack of understanding about the relevance of HIV-antibody testing and the exact time to request for a test could result in danger to the practitioner as well as the public and also affect the long-term management of an HIV carrier.

• On knowledge related to HIV/AIDS modes of transmission, nearly half of the KU students thought that AIDS could be acquired by a mosquito bite, and one-fourth thought that HIV could be contracted by sharing public toilets and swimming pools with an infected person.

• Nearly one-fourth of the UP students thought that AIDS can be acquired by exposure to mucus or nasal fluid of an infected person who coughs or spits.

• It is quite alarming to note that only half of KU and UP students knew that breast milk of an infected person is a potential route of transmission of HIV/AIDS. In fact, breast feeding may be responsible for one-third to one-half of HIV infections in infants.  

• On knowledge related to oral manifestations of HIV/AIDS, only a little more than half of UP students recognized even the common HIV-associated oral lesions such as oral hairy leukoplakia and Kaposi’s sarcoma. On the other hand, only a few students in both universities knew the association of salivary gland enlargement and non-Hodgkin’s lymphoma with HIV/AIDS.

• On knowledge related to HIV risk groups, less than half of KU students and only a quarter of UP students considered hairdressers to be at risk—whereas infection can occur during hairdressing procedures. Items such as razors, scissors, combs, and hairpins can accidentally penetrate the skin, and blood and body fluids on instruments, equipment, or working surfaces can transmit infection directly to the blood of another individual (other clients as well as operators) if that individual has open cuts, sores, or broken skin. In 1985, the U.S. Centers for Disease Control and Prevention established universal precautions to be followed by personal service workers such as hairdressers, barbers, cosmetologists, and massage therapists, similar to those of health care workers, which are designed to protect both workers and customers from HIV and other bloodborne diseases.
On knowledge related to HIV transmission in the dental setting, about three-fourths of UP students and a great majority of KU students (94.5 percent) did not know that blood/saliva-contaminated splash/spatter produced by a handpiece can transmit HIV.

It is quite surprising to note that about half of KU students and about three-fourths of UP students overestimated the risk of HIV transmission in the dental setting.

Taken together, these observations regarding the knowledge of HIV/AIDS indicate that both UP and KU students need substantial improvement in their education about the disease. A similar study at the University of Western Cape, South Africa, demonstrated a relatively high understanding of the virus and disease process but, to a lesser extent, the oral manifestations. A study in Nigeria revealed that the students had adequate knowledge of transmission routes of HIV in clinical practice; however, a need for improvement in teaching of virology and recognition of bloodborne virus risk groups was identified. Brazilian dental students showed certain inadequacies in knowledge and infection control practices. In another previous study, Puttaiah et al. concluded that the knowledge and practice of dental infection control and safety (IC&S) was high among U.S. practitioners compared to Asian practitioners. They also suggested that immunization and IC&S should be an integral part of dental education in Asia.

### Attitudes About HIV/AIDS

With reference to the students’ attitudes, the following observations were noted:

- Significantly more KU students than UP students were concerned about endangering their health while working with AIDS patients.
- A vast majority of students from both universities were concerned that AIDS could be transmitted in ways that are now thought to be safe.
- Only a few students from both universities were willing to perform mouth-to-mouth resuscitation on AIDS patients.
- A majority of students from both universities stated that they would inform an AIDS patient’s sexual partner against the patient’s wishes.
- Significantly more KU students believed that they had the right to refuse to treat patients with HIV/AIDS.
- Significantly more KU students also mentioned that they would actually refuse to treat them.

Previous studies have found that students with improved HIV-related knowledge tend to have a greater willingness to work with AIDS patients, suggesting that education plays an important role in...
changing perceptions about HIV infection and AIDS in a direction that may foster better patient care. However, people may have knowledge, but the knowledge itself does not necessarily translate into their attitudes or practices. Hence, it is not unusual to find that even highly knowledgeable people have a genuine fear as well as a certain degree of stigma towards PLWHA. Though some individuals may be aware that it is important not to discriminate against PLWHA, they may subconsciously have some reservations in treating these patients as shown in our study.

In a similar study in Iran, although a majority of the students had excellent knowledge (78.4 percent), only 1 percent had positive attitudes about treating patients with HIV/AIDS. In our study, though the overall knowledge regarding HIV/AIDS was found to be higher among the KU students, their increased knowledge did not influence their attitude as they held significantly more negative attitudes and misconceptions about the disease than the UP dental students. A majority of KU students got their information on HIV/AIDS from the college and academic staff. The UP dental students derived their knowledge mainly from mass media (television, newspapers, and magazines). Very low percentages of students in both universities cited parents and family as a source.

Although the students are familiar with the disease, they have no or minimal clinical experience with encountering PLWHA. Since the vast majority of students depend on college and academic staff for information pertaining to HIV/AIDS, educators must design strategies to address the critical problems outlined in this study and should assist students in alleviating unjustified fears. Such training must also confront the fact that, for both groups, some fears are legitimate and well founded and must be acknowledged by appropriate and useful educational approaches.

Corrigan et al. reported that negative attitudes towards a person with a stigmatizing condition can be reduced with face-to-face contact. Efforts should be made to invite PLWHA to come to colleges and talk to students about their illnesses. Reports from Australia and Guam have indicated positive changes in student perceptions towards PLWHA after such talks. By learning from real stories, it is hoped that students will reduce their fears of contracting the virus and show more empathy towards PLWHA. In a survey by Seacat and Inglehart, dental and dental hygiene students indicated that treatment with clinical supervision of HIV-positive patients would give them more confidence in treating these patients in the future.

In our study, the dental students in both countries have an acceptable level of knowledge. However, their attitudes are influenced not only by factors like the curriculum but also their diverse cultural and social backgrounds. Our findings suggest that the academic institutions need to carefully examine their curricula related to HIV infection and AIDS education in order to address these issues. The KU students required more knowledge regarding potential transmission routes, whereas the UP students required more education about the virus and the disease process and HIV-associated oral lesions. Both KU and UP students needed more clarification about HIV transmission in the dental setting. Efforts need to be made to not only increase students’ knowledge of HIV/AIDS, but also reduce their negative attitudes towards PLWHA. Accurate and factual information about the virus and the disease transmission should be disseminated to dispel erroneous beliefs.

REFERENCES