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ORIGINAL ARTICLE

Assessment of Knowledge and Attitude Towards HIV Patients among Dental Students in Universiti Sains Islam Malaysia (USIM)

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ABSTRACT

Introduction: Dental officers could be the first medical personal to diagnose HIV/AIDS and cross–contamination may happen. More efforts should be taken to improve knowledge and the behaviour of dental students towards HIV/AIDS patients. The objective of this study is to assess and compare knowledge and the attitude of USIM dental students towards HIV patients. **Methods:** A total of 136 dental students from Year 2 to Year 5 of academic year 2017/2018 participated in this study. Students were consented and briefed about the purpose of the current project prior to answering self-administered questionnaires that have been previously validated. **Results:** The mean total knowledge and attitude score were 69.65% (good) and 68.54(%) (passive), respectively. Both clinical and pre-clinical students have passive attitude towards HIV patients and showed good level of knowledge with 70.81% and 66.39% respectively. There were significant association between sex and knowledge of HIV/AIDS among USIM dental students (p=0.001). There is also a statistically positive weak correlation between knowledge and attitude towards HIV/AIDS patients. **Conclusions:** USIM dental undergraduates have good knowledge and passive attitude towards HIV/AIDS patients. Improvement of dental curriculum regarding HIV/AIDS knowledge and attitude towards HIV/AIDS patients is recommended through conducting activities such as seminar, workshop and small-group discussion among dental students.

KEYWORDS: AIDS, awareness, undergraduates, dentist.

INTRODUCTION

Human Immunodeficiency Virus (HIV) is a virus that was discovered by a French virologist and joint recipient, Luc Antoine Montagnier with Francoise Barre-Sinoussi and Harald zur Hausen. It came to light first when rare opportunistic infections and treatment resistant cancers began to develop among number of healthy homosexual males in New York [1]. HIV virus is a virus that attacks the immune system of body's natural defence mechanism. It affects CD4+ lymphocytes which play a big role in sending signals to the other types of immune cells including CD8 killer cells, which then destroy the infectious particles by reducing CD4 cell counts in human body. This will worsen the condition of people living with HIV who are left untreated because they are susceptible to diseases due to weak immune response. Eventually, they will develop Acquired Immune Deficiency Syndrome (AIDS). HIV/AIDS infection has become a major health public concern in the world [2]. Statistically, the world population affected by HIV/AIDS is about 34.3 to 41.4 million [3]. However, according to National strategic plan on HIV and AIDS 2015, Malaysia's notification of HIV cases had decreased from 28.4 thousand cases in 2002 to 11.4 thousand in 2013. However, the notification increased up to 11.7 thousand cases per 100 000 population in 2014. Hence, Malaysia had a cumulative number of HIV patients which is 105 189 cases, AIDS cases which is 21 384 cases and death related HIV/AIDS is 17 096 cases. As a conclusion, the number of cases shown in this country is alarming [4,5]. Apart from that, people living with HIV/AIDS exhibit clinical oral manifestations that are potentially harmful

and predispose to malignancy. Examples of oral manifestations are Kaposi's Sarcoma and hairy leukoplakia that have higher tendency to develop into oral cancer. Thus, the oral health care has included oral cancer screening as primary intervention to prevent the disease at the early stage [6]. However, this situation had led to the risk of exposure of dentists to blood-borne pathogens transmission including HIV virus especially by needle prick injury. Dental practitioners could be the primary medical personal to refer a patient to a medical department if they show adequate understanding of the early oral signs and symptoms of HIV and its modes of transmission [7]. However, there are some dentists who have fear regarding transmission of HIV virus and probably have discrimination towards people living with HIV or AIDS as well as prejudice, negative attitude and abuse directed to them. Even some of the health care professionals who acknowledge this circumstance should act the right way in treating HIV patients instead of refusing and denying health services to them because of stigma and discrimination. Thus, human rights approach to HIV and AIDS needs to be adopted in the best interest of public health and it is important to eradicate stigma and discrimination. Therefore, it is necessary to have intuition into dental student's knowledge levels as well as attitudes towards HIV-positive patients.

From a study conducted in Malaysia, it can be concluded that undergraduate dental students showed satisfactory level of knowledge but they exhibit a non-professional attitude towards HIV patients. Gender and ethnicity were shown to be significantly affecting their level of knowledge. However, no association was found between age and knowledge or between age, gender, ethnicity and attitude [7,8]. A cross-sectional study conducted in India showed that there was no statistically significant difference in the aspect of mean level knowledge and attitude towards HIV/AIDS between the different ages [6] but there was a statistically significant difference in terms of mean level knowledge and attitude towards HIV /AIDS between gender, and among the different year of degree course. In another study, only 28% students in National Capital Region, India have excellent knowledge regarding HIV/AIDS and approximately 43% of the dental students have an overall negative attitude towards HIV infected patients [7].

Some dentists refuse to treat HIV patients because of fear of HIV transmission risk from exposure to the saliva and blood-borne infection [9]. Hence, it is important to assess USIM dental student's knowledge levels and attitudes towards HIV patients. The aim of this research is to assess the knowledge and attitude of dental students towards HIV patients.

METHODS

This is a cross sectional study conducted from February to September 2018 among students of Faculty of Dentistry, Universiti Sains Islam Malaysia (USIM). This study was granted an ethical approval from the Ethics committee, Faculty of Dentistry, USIM. All dental students except first year students were invited to participate in this study (35 students in each year). Year 2 students are referred as preclinical students while students of year 3,4 and 5 are referred as clinical students. Students who volunteered were given a self-administered questionnaire to be answered after their consent was obtained. A validated questionnaire was distributed, and participant was interviewed in English language [7,9].

The questionnaire consists of four parts including 1) the socio-demographic of respondents, 2) 18 close-ended questions related to HIV/AIDS, 3) close-ended questions related to knowledge of oral manifestations in HIV/AIDS patients and 4) close-ended questions addressing students' attitudes to HIV patients as shown in Table 1. Each correct answer for part 1 and 2 regarding respondent knowledge was scored 2 and incorrect answer was scored 0. A total score ranged between 0 to 66 and converted into percentage. The final score was interpreted as weak, moderate, good or excellent based on the percentage level as shown in Table 1. Whereas, attitude questions score was rated using five-point Likert scale with a maximum score of 80. Reverse score was use for negative attitude questions. The final score was also converted to percentage and interpreted as positive, passive or negative attitudes as shown in Table 1.

Data analysis was performed using IBM SPSS software version 24.0. Descriptive analysis was used to determine the level of knowledge and attitude using frequency and percentages. Pearson's chi-square test was conducted to look for association between socio-

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demographic characteristics and level of knowledge and attitudes of the respondents. The classification for level of knowledge was reclassified into binomial data consist of excellent and good/moderate/weak. Pearson's Correlation Coefficient test was used to assess the correlation between knowledge and attitude towards HIV patients.

Table 1 HIV/AIDS questionnaire characteristics and scoring system.

Part	Characteristics	Scoring
1	Socio-demographic characteristics of the respondents	
2	Close-ended questions related to knowledge of HIV/AIDS.	a. < 25%: Weak level of knowledge. b. 25% to 50%: Moderate level of knowledge.
3	Close-ended questions related to knowledge of oral manifestations in HIV/AIDS patients.	c. 51% to 75%: Good level of knowledge. d. > 75%: Excellent level of knowledge.
4	Close-ended questions addressing students' attitudes to HIV patients.	a. > 75%: Positive attitude b. 50% to 75%: Passive attitude c. < 50%: Negative attitude

RESULTS

From total of 140 questionnaires distributed, only 136 were returned (97% response rate). The ratio of pre-clinical to clinical dental students in this study was 1 to 3. Females were the majority across year of study as compared to males (Table 2).

It was found that the percentage of knowledge about HIV/AIDS among the students regarding the specificity test, the effect of sterilization against HIV and special rooms for treating HIV/AIDS patients were lower than the others, approximately about 50%, 46% and 49% respectively.

Table 2 Distribution of students according to year of study and gender (n= 136).

Year of study	n	Gender	
		Male	Female
		n (%)	n (%)
Second	35	6 (17.1)	29 (82.9)
Third	35	11 (31.4)	24 (68.6)
Fourth	32	8 (25.0)	24 (75.0)
Fifth	34	8 (23.5)	26 (76.5)

Regarding student's knowledge about oral manifestations towards HIV patients, approximately about 39% of students knew that xerostomia and condyloma are the oral manifestations of HIV/AIDS patients (Table 3). More than 60% of the students strongly agree to have the right to know if their patients are infected with HIV. They also strongly agree that all patients should be considered as potentially infectious (50%). Moreover, they feel worried about being infected with HIV from their patient (50%). However, about 55% of them responded as neutral when it comes to performing CPR on HIV/AIDS patients if needed. (Table 4).

There was a significant association between HIV/AIDS knowledge and gender (z= 10.424, df= 1, p= 0.001). However, no significant difference was reported for other variables with knowledge and attitude as shown in Table 5. Mean knowledge and mean attitude score were both significantly higher in clinical compared to preclinical students (Table 6). Pearson's correlation coefficient showed a significant positive, weak correlation between knowledge and attitude (r= 0.186, p= 0.031).

Table 3 Students' knowledge regarding HIV/AIDS and oral manifestations of AIDS.

Knowledge	Correct Responses (%)
Knowledge statements about HIV/AIDS	
1. HIV/AIDS patients can contaminate dental workers	94.9
2. HIV/AIDS patients can be diagnosed with oral manifestations	88.2
3. ELISA is a screening test for HIV infection.	93.4
4. The specificity of the HIV tests is 100%	**50.0**
5. Western blot is a definite test for HIV/AIDS diagnosis	62.5
6. Dental workers can act as an intermediary of transmission of HIV	77.9
7. Saliva can be a vehicle for the transmission of AIDS.	72.8
8. All sterilization methods have cidal effects against HIV	**45.6**
9. Needle-stick injury can transmit HIV	96.3

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10. The negative HIV tests surely indicate that the persons are free of viruses	60.3
11. Hepatitis B is more communicable than HIV/AIDS	70.6
12. Infection control methods for Hep B provide adequate protection against HIV transmission	76.5
13. Medical staff are more prone for cross-contamination	94.9
14. There is a lot of HIV in the saliva of HIV/AIDS patients	88.2
15. HIV can be transmitted through aerosols by handpieces	68.4
16. There are special dental clinics for treatment of HIV/AIDS patients in your dental institute	**49.3**
17. Now, AIDS is the most important health problem in the world	80.0
18. CPR for patients with AIDS can transmit HIV infection	72.1
Knowledge about oral manifestations of AIDS	
1. Oral candidiasis	97.1
2. Kaposi's sarcoma	94.9
3. ANUG	55.9
4. Major apthous	58.1
5. Crohn's disease	69.1
6. Cytomegalovirus	69.1
7. Hairy leukoplakia	91.2
8. Severe periodontitis	74.3
9. Xerostomia	**39.0**
10. Salivary gland infection	73.5
11. Gingivitis	54.4
12. Herpes zoster	56.6
13. Herpes simplex	64.0
14. Condiloma	**39.0**
15. Papilloma	69.9

Table 4 Students' attitude towards HIV/AIDS patients.

QUESTIONS	RESPONSES %				
	Strongly Agree	**Agree**	**Neutral**	**Disagree**	**Strongly Disagree**
Treatment of HIV/AIDS patients means wasting national resources.	0.7	2.9	20.6	47.8	32.4
All dental patients should be considered potentially infectious.	**50.0**	32.4	8.1	2.9	12.5
If I know that my friend has HIV, I end the friendship.	0.7	0.7	12.5	38.2	43.4
Supporting HIV/AIDS patients improves community health.	29.4	43. 4	17.7	11.8	3.7
Dentists with HIV/AIDS should not be allowed to treat patients.	30.9	24.3	27.2	8.8	10.3
HIV/AIDS patients should be treated at a separate clinic.	32.4	30.9	20.4	8.8	2.2
A blood test should be taken for diagnosis of HIV in all dental patients.	17.7	20.6	31.6	19.1	18.4
HIV/AIDS patients can live with others in the same place.	13.2	47.8	28.7	4.4	2.9
I am not obligated to treat HIV/AIDS patients.	4.4	17.7	24.3	40.4	18.4
HIV/AIDS patients can lead a normal life.	23.5	49.3	17.7	10.3	10.3
I can safely treat HIV/AIDS patients.	13.2	45.6	34.6	0.7	1.5
I will treat HIV/AIDS patients.	15.4	41.9	28.7	1.5	0.7
My knowledge about infection control is enough to treat HIV/AIDS patients.	3.7	30.2	47.1	13.2	0.7
I worry about being infected with HIV by my patients.	14.7	**50.0**	29.4	3.7	0.0
I will do CPR if HIV/AIDS patients need it.	2.2	20.6	**55.2**	16.2	2.2
It is my right to know if my patients are infected by HIV.	**64.0**	26.5	3.7	0.7	0.0

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Table 5 Association between HIV/AIDS knowledge and attitude on gender and year of study.

Variables	Excellent	Good/moderate/weak	χ^2 test (df)	*p*-value
	N (%)	N (%)		
Knowledge				
Gender				
Male	3 (7.0)	30 (32.6)	10.424 (1)	0.001
Female	40 (93.0)	62 (67.4)		
Year of study				
Pre-clinical	7 (16.3)	28 (30.4)	3.058 (1)	0.080
Clinical	36 (83.7)	64 (69.6)		
Attitude				
Gender				
Male	1 (10.0)	32 (25.8)	1.246 (1)	0.450
Female	9 (90.0)	92 (74.2)		
Year of study				
Pre-clinical	3 (30.0)	32 (25.8)	0.084 (1)	0.721
Clinical	7 (70.0)	92 (74.2)		

Note: Pearson's chi-square test was used

Table 6 Comparison of knowledge and attitude score on HIV/AIDS between pre- and clinical year dental students

Variables	Pre-clinical	Clinical	*t*-test (df)	*p*-value
	Mean (SD)	Mean (SD)		
Knowledge score	66.4 (9.32)	70.8 (8.98)	2.486 (133)	0.014
Attitude score	66.7 (6.51)	69.2 (4.95)	2.333 (132)	0.021

Note: Independent t-test was used.

DISCUSSION

Human services experts should have sufficient learning of HIV/AIDS, and their frame of mind and conduct ought to be legitimate to deal with such patients. Medicinal services experts obtain their insight and conduct from their professional training. About 78% of the undergraduate dental students in this research concurred that dental laborers could go about as a middle person for the transmission of HIV, which proposes that most dental students knew about malady transmission. Be that as it may, this number is viewed as low compared with studies done in India and Iran [7,8]. These results highlight the significance of teaching students about HIV disease transmission.

An increase of oral appearances of HIV have been accounted for giving appropriate dental consideration to HIV/AIDS patients. This requires great information for acknowledgment of the oral manifestations related with the illness. The outcomes exhibit that a large portion of the USIM dental students in this study knew about the significant oral manifestations of AIDS. Kaposi's sarcoma, oral candidiasis and hairy-leukoplakia, three of the most well-known oral sores in HIV-positive patients, were the most recognized in our research. However, the students required a more extensive learning of other signs and symptoms less firmly connected with HIV such as condyloma, papilloma and xerostomia.

Dental students should likewise be instructed that even the sores emphatically connected with HIV/AIDS are not elite to HIV/AIDS. Kaposi's sarcoma, oral candidiasis, and bushy leukoplakia may likewise be found in patients not tainted with HIV/AIDS. These findings are consistent with another study done in Malaysia where dental undergraduate students of Manipal Melaka show similar results when it comes to knowledge [8].

As the rate of people infected with HIV/AIDS increases, the need of improving knowledge and attitude among dentists become a necessity [10,11]. In this study, the total mean of knowledge and attitude were observed as 69.65% and 68.54% respectively.

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These results indicate that dental students in USIM showed good level of knowledge and passive attitude towards HIV/AIDS patients. However, the total mean of knowledge was lower in comparison to the excellent knowledge reported in Iran (82.1%) and positive attitude reported from a research conducted in India (77.7%) [7,12].

The maximum correct response (96.32%) was obtained for the question 'Needle stick injury can transmit HIV' while the least correct response (45.59%) was for 'All sterilization methods have cidal effects against HIV'. These indicates that most of USIM students are aware that HIV transmission can occur via needle stick injury while more than half of the students believed not all sterilization methods can kill HIV. Regarding oral manifestations, 97.06% of the students correctly identified oral candidiasis, however only 38.97% agreed that condiloma is one oral manifestations of HIV. Thus, knowledge regarding oral manifestations of HIV/AIDS must be enhanced to make sure students know that not only major oral manifestations such as oral candidiasis and Kaposi Sarcoma can appear in patient infected with HIV/AIDS but also minor oral manifestation like condiloma can also occur. These findings are similar to other studies that has been done in varies other countries [13-16].

In terms of gender, there was a significant association between HIV/AIDS knowledge and gender (z= 10.424, df= 1, p= 0.001). However, no significant difference was reported for other variables with knowledge and attitude. Our study found that female has higher mean score of knowledge compared to male students. This finding is similar with other previous studies [17-19] that showed females has higher knowledge mean score compared to males. In the study conducted among pharmacy students [10], male students were more positive about both their competency and willingness to treat HIV patients, while females were more confident about their HIV/AIDS education. This was also observed in our study. Moreover, the proportion of female participants in our study was significantly higher than the male participants. Students from the different socio-religious, ethnicity and family backgrounds had different levels of exposure to knowledge.

In our study, the attitude score did not show the desired result as overall students showed passive (non-professional) attitude towards HIV/AIDS patients. More than half of the students (54.71%) worried that they might be infected with HIV while 22.05% of students believed that they are not obligated to treat HIV/AIDS patients. On the other hand, only 33.83% students agreed that they have enough knowledge to treat HIV/AIDS patients. This is similar to other studies done in Nigeria and Europe [20,21]. This may indicate that most of our students are still not confident enough to treat patients infected with HIV/AIDS.

In this study, 56% of the dental students agree to treat HIV/AIDS positive patients, and about 14% refuse to treat these types of patients. This is an alerting sign as they should be prepared to treat all patients without discrimination. The greater part of the students (63.9%) unequivocally concurred that they are entitled to know whether their patients are contaminated by HIV. Findings in a Thai study revealed about 41.9% of respondents concurred with the announcement 'You would feel furious if a patient revealed to you that he/she has HIV/AIDS after the treatment' [22]. In this study, there was a weak correlation between knowledge and attitude. These findings are in agreement with another research done by Chew and Cheong [23].

As for our limitations, the participants were from single educational institute only, thus the external validity of our results is limited. Factors that can influence the knowledge and attitude towards HIV/AIDS patients such as family background were not studied. As our study is a cross-sectional study, we can only analyse the results at one point of time, thus a longitudinal study can be conducted in the future to observe students' knowledge and attitude over time. There are few recommendations that we would like to suggest on the basis of our study. One of them is to suggest an improvement of dental curriculum regarding HIV/AIDS knowledge and attitude towards HIV/AIDS patients. Activities such as seminar, workshop and small-group discussions can be conducted among dental students. Besides improving students' knowledge, there is also a need to enhance their attitude by revising our curriculum to be more practically oriented in order to prepare them for the future.

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CONCLUSION

USIM dental undergraduates have good knowledge and passive attitude towards HIV/AIDS patients but they can be further improved. Therefore, more effort should be done in order to improve the knowledge and attitude of future dentists towards these patients via conducting workshops, seminars, and discussions with the students regarding HIV/AIDS.

Conflicts of Interest

Authors declare none.

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