

Knowledge, Attitude and Health Behavior of Dental Students towards HIV Patients

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ABSTRACT

Aim: To investigate a group of Iraqi dental students knowledge about HIV infection, attitudes towards treating HIV/AIDS patients and behavior practices. **Materials and Methods:** The study population consisted of 220 dental students from University of Mosul, College of Dentistry who were treating patients in the clinics of the College. The survey instrument was a self-administered questionnaire. **Results** General and knowledge of the oral and other conditions related to AIDS patient was low, students attitude towards treating HIV patient was low (167) refused to treat such patient with a highly significant difference, most of the students (160) were willing to treat HBV (hepatitis B patient) compared to only 60 that agreed to treat HIV patient, (32.7%), of the student had experienced a needle stick injury, (65.9%) of the students stated that an AIDS patient should be referred to a supporting group to provide him with dental treatment. A significant difference in the number and percentage of students that knew they needed to undertake precautionary measures in treating patients which was 213 compared to 7 students only. The three types of barrier technique during routine work was not undertaken by any of the students, 213 students i.e. (96.4%) required more knowledge concerning infection control, cross infection, modes of transmission of the disease. **Conclusions:** These findings clearly highlights the importance of the teaching emphasis of dental educators on the disease, it is vital that universal precautions also should be adopted through faculty policy and reinforced at an early level of study, so that the barrier techniques become a protocol and a norm in their daily practices as clinicians. Because of certain inadequacies in knowledge and infection control practices among respondents, a curriculum focusing on the management of HIV/AIDS, including infection for all blood borne diseases is recommended.

Key words : AIDS, dental students, dental knowledge, attitude, behavior.

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INTRODUCTION

The Human Immune Deficiency Syndrome (AIDS) have profoundly affected every aspect of the public health sector, with the virus extending throughout the world, global estimates indicated that over 40 million people are infected, of these 25.3 million live in Sub-Saharan Africa and 4.7 million are living in South Africa, it is estimated that one fourth of a million South Africans will die of AIDS each year and this figure may rise up to half a million by the end of the year 2008.⁽¹⁾

The possibility of HIV transmission in the

oral health care setting is very rare, nonetheless the oral health care environment has become a helpful setting for early detection, as most lesions are present orally during the first stages of the disease, willingness to treat patients with HIV / AIDS appears to be related to the knowledge of the disease process, its oral manifestation and modes of transmission, thus influencing health care workers attitudes and behavior towards management of such patient.⁽²⁾ A sound basis of knowledge about HIV infection is essential to allow students to develop as dentists who undertake appropriate measures during clinical prac-

tice.⁽³⁾ The aim of the study was to determine the amount of knowledge, attitude and behavior of dental students in Mosul University towards AIDS/HIV patients.

MATERIALS AND METHODS

Two hundred and twenty dental students in their third ,fourth and fifth stage of their study (clinically active and in contact with patients), first and second year students were excluded, because of not being exposed to treating patients, in addition to the reason that their curriculum was chemical science oriented.

The students were asked to fill up a self administered questionnaire, general knowledge was tested with 5 questions regarding type of virus, modes of transmission, prevalence of HIV, could handpiece transmit the virus, and about why there is no vaccine to the virus(each question scored 2 points and the students general knowledge was analyzed as the sum of correct answers of each statement with a total of 10 scores). Knowledge of the conditions related to an AIDS patient was tested by including 10 of the most clinically and orally related conditions including apthous, hairy leukoplakia, Kaposi sarcoma, candidial infections, erythematous candidiasis, melanin hyper pigmentation, purpura, herpes, lymphoma and angular chelitis , each condition scored 1 point and the data was analyzed after the sum of each correct answer was determined (total score 10 points).

Attitude of the students was determined by asking them who was willing to treat HIV patient, and their choice if they had to mandatory choose between treating HIV or HBV (hepatitis B patient), their fear from needle stick injury and fear from having the disease transmitted to them through their work as dentists in the future, how and where do they think HIV/AIDS patient should be treated.

Behavioral practices were measured on whether they took necessary precautions when treating any patient and the use of barrier technique. Finally, the students perception on the adequacy of curriculum preparation on HIV/AIDS was determined.

The analysis of the data was performed using descriptive statistics including

mean, standard deviation and percentages, Duncan's multiple range test, Chi square test and Fisher Freeman Halton test, results were significant when $P \leq 0.05$.

RESULTS AND DISCUSSION

Distribution of the sample by age and gender is shown in Table (1). The sample was composed of 104 males and 116 females in their third, fourth and fifth stage of their study.

Table (1) Distribution of the Sample by Stage and Gender

Stage	Males	Females	Total
Third stage	24	27	51
Fourth stage	26	45	71
Fifth stage	54	44	98
Total	104	116	220

Table (2 and 3) display the general and oral knowledge of the students, it can be observed that the students in the fourth stage exhibited the greatest knowledge concerning general knowledge with a mean of 6.54 and 6.13 for males and females respectively, also their knowledge of oral manifestations and other related conditions to AIDS was the highest compared to other students with a mean of 6.00 and 6.62 for males and females respectively, this is in contrast to the results obtained in other studies(2,3), which concluded that as the level of study increased, knowledge increased also. Although there was no specific gender difference it can be seen that the male students in the third and fifth stage (general) and female students in the fourth stage (oral) had better knowledge compared with their peer groups, another study found that female students tended to have more knowledge compared to males.(4)

One of the general questions was whether HIV could be transmitted through aerosols produced by a handpiece (78 %) responded negatively. This may be because of the fact that reports of HIV transmission through this rout are rare, but the possibility does exist.⁽⁵⁾ Concerning to the oral related conditions, the majority of students answered correctly to some of the conditions with a mean of 4.08 and 6.62,

majority of the students were aware of the association between HIV and oral candidiasis (70.5%), oral hairy leukoplakia (65%), Kaposi's sarcoma (62.5%), while other conditions like hyperpigmentation

(29%) and purpura (20%) had least percentage concerning their association with the disease, these figures are much lower than that reported in other studies.^(2,4)

Table (2) Knowledge according to Gender and Stage

Stage	General Knowledge Mean \pm SD		Oral Knowledge Mean \pm SD	
	Males	Females	Males	Females
Third Stage	6.08 \pm 2.17ab(A)	5.26 \pm 1.48 b(B)	4.08 \pm 2.50 c(A)	4.04 \pm 3.07 c(A)
Fourth Stage	6.54 \pm 1.5a (A)	6.13 \pm 1.56 a(A)	6.00 \pm 2.56ab(A)	6.62 \pm 2.03 a (B)
Fifth Stage	6.26 \pm 2.02ab(A)	5.73 \pm 2.14ab(B)	5.19 \pm 2.03bc(A)	5.57 \pm 2.07 ab(A)

Means with different letters have significant difference at $p \leq 0.05$; Small letters compare between the stages; Capital letters between brackets compare between males and females in the same stage

Table (3) Percentage of Oral and General Knowledge

General Questions	Oral and Other related conditions		
Question	Percentage of correct answers	Condition	Percentage of correct answers
Type of virus	%61	Apthous	54 %
Modes of transmission	%84.5	Hairy leukoplakia	65%
Most AIDS individuals prevalence	%65	Kaposi sarcoma	62.5%
		Candidial infection	70.5%
Could handpiece transmit the virus	22 %	Erythematous candidiasis	34 %
		Melanin hyper pigmentation	29 %
		Purpura	20 %
		Herpes	65.5%
		Lymphoma	48.6%
Why no vaccine Present for AIDS	62.7%	Angular cheilitis	61.4%

Table (4) shows the percentage of the students that were willing to treat HIV patient as only 53 students were willing to treat HIV patient, while the majority of students 167 refused to treat such patient with a highly significant difference for both males, females and the total sample, this is in agreement with other studies⁽⁶⁻¹⁰⁾, In a study conducted by Maccarthy *et al*⁽⁷⁾, one in every six dentists refused to treat HIV patient it may be attributed to

the fear of being contaminated and infected with AIDS as the reason for their decision to refuse to treat such patient.

It can be observed in Table (5) that the majority of the students when asked to mandatory provide dental treatment to one of 2 patients, either infected with hepatitis B virus or AIDS, most of the students for both sexes and all stages chose HBV (160) compared with only (60) whose choice was AIDS patient with no sex difference

and significant difference for the total sample. This is in agreement with other studies(7,8,11), many dentists are much more willing to treat patients with infectious B virus, but according to a study the annual cumulative risk of infection from routine treatments in patients

whose seropositivity is undisclosed is 57 times greater for HBV than from HIV and the risk of dying from HBV infection is 1.7 times greater than the risk of HIV infection, for which the mortality is almost certain.(12)

Table (4) Distribution of Students who were Willing or Refused to Treat HIV Patient according to Gender and Stage of the Study Sample.

Rx		Yes		No		p-value
Sex	Stage	No.	%	No.	%	
Male	Third	9	40.9	15	18.3	0.035
	Fourth	2	9.1	24	29.3	
	Fifth	11	50.0	43	52.4	
	Total	22	100	82	100	
Female	Third	13	41.9	14	16.5	0.005
	Fourth	6	19.4	39	45.9	
	Fifth	12	38.7	32	37.6	
	Total	31	100	85	100	
Total	Third	22	41.5	29	17.4	<0.001
	Fourth	8	15.1	63	37.7	
	Fifth	23	43.4	75	44.9	
	Total	53	100	167	100	

- Using Chi Square test

Table (5) Distribution of Mandatory Treating One of Two Patients either Infected with HIV (AIDS) or HBV (Hepatitis)according to Stage and Gender of the Study Sample

Mandatory		HBV		HIV		p-value
Stage	Sex	No.	%	No.	%	
Third	Male	16	44.4	8	53.3	0.56 (NS)
	Female	20	55.6	7	46.7	
	Total	36	100	15	100	
Fourth	Male	24	40.7	2	16.7	0.19 (NS)
	Female	35	59.3	10	83.3	
	Total	59	100	12	100	
Fifth	Male	32	49.2	22	66.7	0.10 (NS)
	Female	33	50.8	11	33.3	
	Total	65	100	33	100	
Total	Male	72	45.0	32	53.3	0.027 (S)
	Female	88	55.0	28	46.7	
	Total	160	100	60	100	

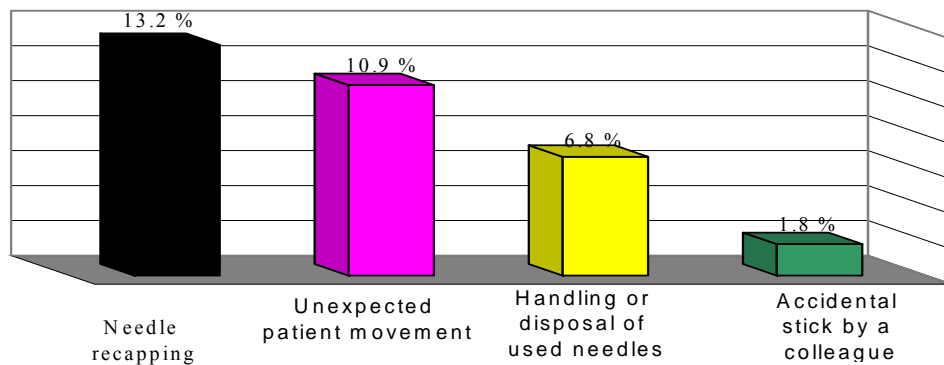
HBV=hepatitis B virus, HIV= human immune deficiency virus
Using Chi Square test

The number of students that have experienced a needle stick injury in the total sample was(32.7%). This figure is much less than that reported in another study⁽¹³⁾ which might be contributed to the reason

that in the former study all the health care students in the university were included in the study and not only dental students. The causes of needle stick injury can be seen in Figure (1). The major cause was

needle recapping which was prevalent in (13.2%) of the sample, unexpected patient movement contributed to (10.9%) of the cases ,while handling or disposal of used needles exhibited (6.8%) and (1.8%) was a result of accidental stick by a colleague, the human immunodeficiency virus (HIV) transmission risk for health care professionals, after percutaneous exposure to HIV contaminated blood was estimated to be between 0.2 and 0.5% and following exposure to mucous, it was approximately 0.1%. In contrast, to hepatitis B virus (HBV), the transmission risk after accidental exposure is between 6 and 30%. It is estimated that after percutaneous exposure with infected instruments, 200 to 5000 HIV virus infections and 66000 HBV infections a year occur among health care professionals around the world,^(14) only (5.4%) of the total sample was not afraid from occupational risk of getting the disease through their work. If the recommended infection control practices are used, the risk of occupationally acquired infection with blood borne pathogens such as HBV, HCV or HIV is limited to sharps injuries. These injuries can be minimized if puncture-proof containers for sharp dis-

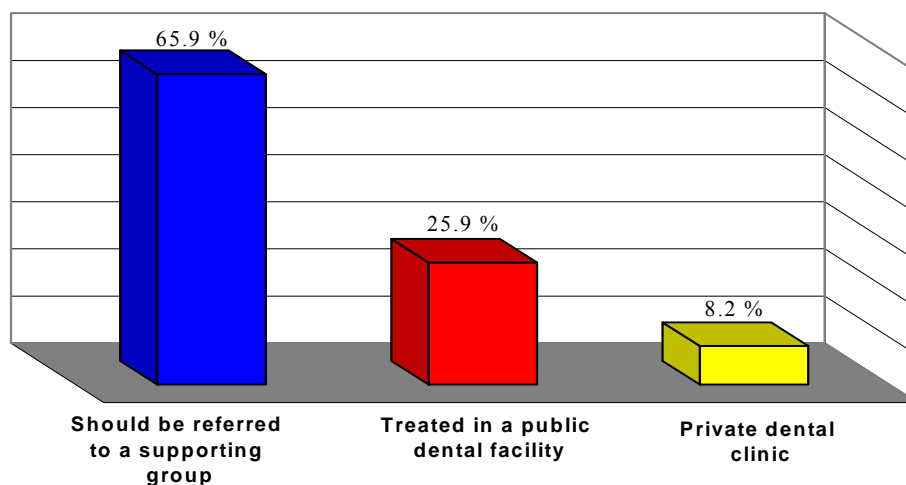
posal of needle tips are used and careful operating procedures are undertaken, if needle stick injury occurs it must be managed correctly to prevent any blood borne infection by washing the area immediately under running water ,making the wound bleed for three to four minutes whilst continuing to wash the area. Dry the area with paper towel, then cover the wound with a water-impermeable sticking plaster and consider double gloving any hand injury, if continuing to work, then seek appropriate medical advice for post exposure prophylaxis. Since the usual transmission modality for HIV is through an individual's contact with infected blood or other body fluids, it is essential that every effort be made to protect both health care workers and patients from serious and potentially life-threatening exposure in dental practices. HIV transmission could occur from patient to dental provider, from dental provider to patient, and from one patient to another. The greatest opportunity for transmission is from a patient to a dental provider because of the provider's frequent exposure to patient blood and blood-contaminated saliva during dental procedures.



Figure(1) Major Causes of Needle Stick Injury

Figure (2) shows the place that an AIDS patient should be treated in according to the students opinion, (65.9%) of the students stated that an AIDS patient should be referred to a supporting group to provide him with dental treatment, (25.9%) thought that he should be treated in a public dental facility while only (8.2%) stated that he should be treated at a private dental clinic, Some studies found

that increased knowledge of issues concerning HIV has led to increased willingness by dentists to treat HIV infected patients^(4,15) and in this regard, health care professionals and university professors in the health care area have an important participation, because they are responsible for educating their students and other professionals



Figure(2): The Place that an AIDS Patient should be Treated according to Students Opinion

Table (6) displays a significant difference in the number and percentage of students that needed to undertake precautionary measures in treating patients for the total sample which was 213 compared to 7 that stated that they did not take precau-

tionary measures in treating patients, no significant difference was observed between total male and female students. Dental students that will become the future dentists have the obligation to provide safe treatment for all patients.

Table (6) Distribution of Precautionary Measure according to Gender and Stage of the Study Sample.

Precautionary measure		Yes		No		p-value
Sex	Stage	No.	%	No.	%	
Male	Third stage	23	22.5	1	50.0	0.24 (NS)
	Fourth stage	26	25.5	0	0.0	
	Fifth stage	53	52.0	1	50.0	
	Total	102	100	2	100	
Female	Third stage	25	22.5	2	40.0	0.09 (NS)
	Fourth stage	44	39.6	1	20.0	
	Fifth stage	42	37.8	2	40.0	
	Total	111	100	5	100	
Total	Third stage	48	22.5	3	42.9	0.05
	Fourth stage	70	32.9	1	14.2	
	Fifth stage	95	44.6	3	42.9	
Total		213	100	7	100	

- Using Fisher Freeman Halton test

Table (7) shows the number and percentage of students that knew that it is essential to wear gloves, masks and eye glasses in treating any patient which was 200 compared to 20, with significant difference for total females and the total sample, yet non of the student really wore eye glasses in their dental practice and confined to wearing gloves and some times mask in their routine dental work,

these results are in contrast to results in other countries that reported the use of the three types of barrier technique during routine work.^(2,16,17) another study reported a low percentage of subjects that wore eye protection⁽¹⁸⁾, dentistry staff are exposed to infectious agents during work, especially when proper barrier precautions are not followed.^(14,19-20) The adequacy of curriculum preparation on HIV/AIDS was

assessed for all the students as shown in Figure (3), (19%) of the total sample stated that their curriculum provided them with enough information regarding HIV patients while the rest found it inadequate(81%), the percentage of students that required more information in their curriculum are much more than those reported in other studies that had adequate knowledge to cope with such situation,^(2,3) it is also much less than that of Oliveira et al.⁽⁴⁾ that found that less than half of the Brazilian dental students who participated in their study agreed that they do have adequate information to maintain good infection

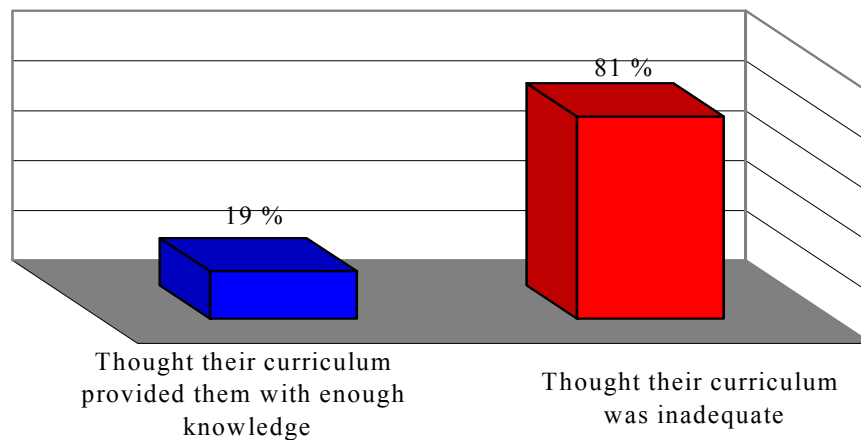
control while treating patients at the university clinics.

Table (8) shows the number of students that required more knowledge information in the curriculum, 213 students (96.4%) required more knowledge concerning infection control ,cross infection , modes of transmission of the disease. This finding clearly highlights the importance of the teaching emphasis of dental educators on disease transmission, it is vital that universal precautions also should be adopted through faculty policy and reinforced at an early level of study, so that barrier techniques become a protocol and a norm in their daily practices as clinicians

Table (7) Distribution of Barrier Technique according to Gender and Stage of the Study Sample.

Barrier	Sex	Stage	Yes		No		p-value
			No.	%	No.	%	
Male		Third stage	21	22.6	3	27.3	0.68 (NS)
		Fourth stage	23	24.7	3	27.3	
		Fifth stage	49	52.7	5	45.5	
		Total	93	100	11	100	
Female		Third stage	24	22.4	3	33.3	0.05
		Fourth stage	43	40.2	2	22.2	
		Fifth stage	40	37.4	4	44.5	
		Total	107	100	9	100	
Total		Third stage	45	22.5	6	30.0	0.03
		Fourth stage	66	33.0	5	25.0	
		Fifth stage	89	44.5	9	45.0	
		Total	200	100	20	100	

* Using Fisher Freeman Halton test



Figure(3): Adequacy of Curriculum Preparation on HIV/AIDS for all the Students

Table (8) Distribution of more Knowledge Information in the Curriculum according to Gender and Stage of the Study Sample.

Information		Yes		No		p-value
Sex	Stage	No.	%	No.	%	
Male	Third stage	24	23.8	0	0.0	0.14 (NS)
	Fourth stage	26	25.7	0	0.0	
	Fifth stage	51	50.5	3	100	
	Total	101	100	3	100	
Female	Third stage	27	24.1	0	0.0	0.09 (NS)
	Fourth stage	42	37.5	3	75.0	
	Fifth stage	43	38.4	1	25.0	
	Total	112	100	4	100	
Total	Third stage	51	23.9	0	0.0	0.046
	Fourth stage	68	31.9	3	42.9	
	Fifth stage	94	44.1	4	57.1	
Total		213	100	7	100	

* Using Fisher Freeman Halton test

In Iraq according to WHO (World Health Organization) the prevalence of HIV before 2003 was less than 0.2% mostly coming from imported infected blood reported in young men with hemophilia⁽²¹⁾, however, the number is rising and changing the mode of which it was basically transmitted by, so oral health care workers have an important role to play in the overall health care delivery to patients with or without HIV/AIDS. The concept of universal precautions (all patients treated as infectious) continues to be the most important method in treating all patients, and patients must be treated with the same infection control procedures that should be routinely applied in every dental treatment (sterilized instruments, non-contaminated operative field, professionals wearing gloves, masks, caps, glasses). It is therefore imperative and if oral health care workers are not confident about their infection control practices they must seek advice or attend educational programmes to improve their knowledge. According to the Centre of Disease Control guidelines⁽²²⁾ (CDC) the concept of universal precautions and dental infection control protocols, that focus primarily on reducing the risk of transmission of blood borne pathogens among dental health care personnel and patients is called "Standard Precautions," with resulting guidelines

that promote a safe working environment and efforts to assist dental practices in developing and implementing infection control programs.

CONCLUSIONS

These findings clearly highlights that general and oral knowledge of the students was low. Students attitude towards treating HIV patient was low and most refused to treat such patient with a highly significant difference stating that an AIDS patient should be treated by a supporting group, the three types of barrier technique during routine work was not undertaken by any of the students, Reported infection control practices also showed a lack of compliance, 213 students (96.4%) required more knowledge concerning infection control, cross infection, modes of transmission of the disease, the importance of the teaching emphasis of dental educators on the disease is vital so that universal precautions also should be adopted through faculty policy and reinforced at an early level of study. So that the barrier techniques become a protocol and a norm in their daily practices as clinicians. Because of certain inadequacies in knowledge and infection control practices among respondents, a curriculum focusing on the management of HIV/AIDS, including infection for all blood borne diseases

is recommended. Therefore, teachers in the health area have an important role diffusing knowledge to their students, future health care professionals. Although there has been considerable research on AIDS, uncertainty towards the management of HIV-infected patients and refusal to treat infected patients still persists along with the fear.

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