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Oral Hygiene and dental student's knowledge, attitude and behaviour in managing HIV/AIDS patients

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Dates:
Accepted 11 March 2005

To cite this article:
Int J Dent Hygiene **3**, 2005; 213–217
Erasmus S, Luiters S, Brijlal P.
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Abstract: The human immunodeficiency virus (AIDS) and the acquired immunodeficiency syndrome (AIDS) have profoundly affected every aspect of the public health sector. 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 of HIV infection present orally during the first stages of the disease. Willingness to treat patients with HIV/AIDS appears to be related to knowledge of the disease process, its oral manifestations and modes of transmission, thus influencing health workers' attitudes and behaviour towards management of HIV/AIDS patients.This study assessed the level of management of HIV/AIDS patients amongst dental and oral hygiene students at the University of the Western Cape Dental faculty. Student's knowledge of HIV/AIDS, their behaviour and attitude in treating HIV/AIDS patients, the precautionary measures practiced and their perceptions of curriculum preparation on HIV/AIDS were assessed. Data were collected by means of a self-administered questionnaire. The results indicated that students' knowledge on HIV/AIDS generally increased as they progressed throughout their curriculum but their utilization of all barrier techniques for infection control and clinical protocol, lacked consistency and compliance. Given the fact that the possibility of transmission of HIV/AIDS does exist within the dental setting, it is important that supervisors reinforce universal precautions. Clinical application of these precautions has a direct impact on the spread of the disease.

Key words: AIDS, attitudes, dental students, HIV, knowledge, management, practices

Introduction

The human immunodeficiency virus (HIV) and the acquired immunodeficiency syndrome (AIDS) have profoundly affected every aspect of the public health sector. With the virus spreading throughout the world, global estimates indicate that over 40 million people are infected. Of these, 25.3 million live in Sub-Saharan Africa, with 4.7 million living in South Africa (1). In South Africa it is estimated that one-fourth of a million South African's will die of AIDS each year and this figure may rise up to half a million by the year 2008 (1). This pandemic is rapidly growing in South Africa, as more and more people become infected.

In a study, Angelilo *et al.* (2), concluded that early diagnosis of HIV infection was important to prevent the spread of the disease. Although the possibility of HIV transmission in the oral health care setting is very rare, this environment has become a helpful setting for early detection, as most lesions of HIV infection present orally during the first stages of the disease (1). However, health care workers, who come into contact with blood and blood products fall into the high-risk category for cross contamination. As more and more people become infected with HIV/AIDS, the likelihood of oral health care professionals treating more HIV/AIDS patients will increase. As a result, there will be an increased risk to oral health care professionals of becoming infected because of needle stick injuries and other modes of transmission.

There is worldwide concern about disease control. In 1985, the Center for Disease Control (CDC), a regulatory body in Italy, legislated that all health-care professionals should apply barrier techniques during treatment procedures of HIV/AIDS patients (1). Previous studies revealed that all barrier techniques were not fully met as set by the disease control bodies (1).

Dental health care settings require specific strategies to prevent the disease transmission among oral health care workers, their patients and from patient to patient (1). To carry out effective clinical management dental professionals, including dental and hygiene students, need to be aware of and understand the significance of HIV/AIDS (3). As future dental professionals it is important that dental and oral hygiene students are knowledgeable about the disease process, its oral manifestations and modes of transmission. Research has shown that students lacked knowledge on the management of HIV/AIDS patients, particularly in relation to transmission, i.e. through needle stick injury and contact with saliva from HIV seropositive patients (4, 5).

Seacat (4) reported that 47.1% of students reported that their curriculum prepared them well in the management of diverse patients, whilst 58.4% reported that their studies prepared them to treat patients with communicable diseases. Yet, as the students' knowledge increased throughout their curriculum, the knowledge essential for managing HIV/AIDS patients were never achieved. This was evident in the students' willingness to learn specifically about the treatment and management of such patients.

Willingness to treat patients with HIV/AIDS appears to be related to knowledge of the disease process, the recognition of oral manifestations and understanding modes of transmission (6), thus influencing the attitude and behaviour towards management of HIV/AIDS patients. Appropriate knowledge may also instill confidence in students about their own ability to manage HIV infected patients (3). Thus, gaining an insight into student perceptions and their management of HIV/AIDS patients is essential in assessing the adequacy of HIV/AIDS education in the curricula.

Our aim was to assess the level of HIV/AIDS patient-management amongst students by determining their knowledge, attitude, behaviour practices as well as their perceptions of curricula preparation on HIV/AIDS.

Methodology

The study included a convenience sample comprising of dental and oral hygiene students in the different levels of study from the University of Western Cape Dental faculty, in Mitchell's Plain. The Oral Hygiene programme is made up of a 2-year diploma or an additional year of researched based curriculum to make a 3-year degree. The Dentistry programme is 5 years. The sample was obtained from first and second year Oral Hygiene students and second, third, fourth and fifth year Dentistry students. Students from both programmes collectively made up the sample.

No distinction was made between the two programmes unless the survey question required a distinction. The focus of the study was on the students who were clinically active. Third year Oral Hygiene students and first year dentistry students were excluded from the study based on the following: the third year oral hygiene students were a small group, with some being part of the research team thus making their numbers negligible; and the first year Dentistry students were not exposed to treating patients. In addition their first year curriculum was chemical science orientated. Refer to Table 1 to view the sample selection and response rates.

Table 1. **Sample Selection and response rates**

Programme	Year of study	Number of students targeted ($n = 211$)	Number responded ($n = 150$)	Response rate (%)
Oral Hygiene	1	13	8	61.5
Oral Hygiene	2	28	17	61
Dentistry	2	62	46	74
Dentistry	3	41	37	90
Dentistry	4	38	31	82
Dentistry	5	29	11	38

Average of total response rate = 68%.

The variables measured were: students knowledge on the disease, its process of transmission and its effects on patients with the disease; their attitudes, behaviour practices and management during treatment of HIV/AIDS patients and student perceptions on the adequacy of curriculum preparation on HIV/AIDS. The structured questionnaires were piloted on randomly selected Oral Hygiene and Dentistry students prior to being administered ($n = 15$).

Results

Of the 211 students targeted, 125 Dentistry and 25 Oral Hygiene students completed the questionnaire ($n = 150$). Refer to Table 1 for a detailed selection and response rates for the individual categories of students. The response rate was 61% for the Oral Hygiene and 71% for the Dentistry students (average response of total students = 68%). The age range was 18–35 years, with a mean of 21.66.

Knowledge of HIV/AIDS

Knowledge was tested on the definition, statistics, understanding of HIV and AIDS, transmission of the disease, oral lesions HIV/AIDS. Most students (98,7%) felt that HIV/AIDS is a problem in South Africa. Fifty-six per cent more accurately reported that almost a quarter (25%) of the South African population is infected with the virus whilst 44% of them indicated that half is infected with the virus.

Most students ($n = 142$, 94.7%) had a good understanding of the terms HIV positive and AIDS. Ninety-eight per cent ($n = 147$) knew that a needle stick injury could result in the transmission of HIV. Fifty-two per cent (52%) reported that the virus could not be transmitted through aerosols produced by a hand piece. With regards to the protocol regarding needle stick injury, only 12.7% of the students knew the protocol of the faculty dental clinic, if an injury should occur.

Ninety-one per cent of the students reported to have heard of the listed pathological conditions in the course of their study. There seemed to be an increase in knowledge as the level of study increased with the exception of the Oral Hygiene programme which seemed to decrease although not significantly.

The follow-up question as to which of the same pathological conditions were associated with HIV/AIDS, revealed that fewer students could make the association when compared with figures illustrating students having heard of the lesions. (Refer to Table 2).

Please note in the tables to follow that OH refers to Oral Hygiene students and Bchd refers to Dentistry students. When a number next to it is present, it represents the year of study.

Attitude of students

Attitudes were measured on how and where students think HIV/AIDS patients should be treated. The majority (79%) felt that HIV/AIDS patients should be treated at any dental facility and that these patients are entitled to be treated with the same respect and dignity as other patients. Eighty

Table 2. **Pathology and its association with HIV infection**

	Periodontal disease		Aphthous ulcers		Karposi's sarcoma		Herpes	
Programme + year of study	Heard of (%)	HIV related (%)	Heard of (%)	HIV related (%)	Heard of (%)	HIV related (%)	Heard of (%)	HIV related (%)
OH1 ($n = 8$)	8 (100)	4 (50)	7 (88)	7 (88)	6 (75)	3 (38)	8 (100)	8 (100)
OH2 ($n = 17$)	15 (88)	10 (59)	14 (82)	11 (65)	17 (100)	14 (82)	15 (88)	10 (59)
Bchd 2 ($n = 46$)	41 (89)	29 (63)	44 (96)	35 (76)	19 (41)	17 (37)	37 (80)	35 (76)
Bchd 3 ($n = 37$)	37 (100)	26 (70)	36 (97)	30 (81)	36 (97)	34 (92)	37 (100)	30 (81)
Bchd 4 ($n = 31$)	31 (100)	29 (94)	31 (100)	30 (97)	31 (100)	29 (94)	31 (100)	29 (94)
Bchd 5 ($n = 11$)	11 (100)	9 (82)	11 (100)	8 (73)	11 (100)	9 (82)	11 (100)	8 (73)
Total ($n = 150$)	143 (95)	107 (71)	143 (95)	121 (81)	120 (80)	106 (71)	139 (93)	120 (80)

The number of Oral Hygiene (OH) and Dentistry (Bchd) students having heard of pathological conditions and its association to HIV.

per cent of them felt they would refer HIV infected patients to a support group. Eighty-six per cent indicated that special precautionary measures should be taken when treating HIV/AIDS patients.

Behaviour practices of students

Behaviour practices of students were measured on whether they take the necessary precautions when treating patients (Refer to Table 3). Only thirty-one per cent of all students (Oral Hygiene and Dentistry) reported to be using all barrier techniques. Categorically, all (100%) oral hygiene students reported on wearing gloves, protective eyewear and masks when treating patients, whilst dental students differed in the type of protection worn. Protective eyewear was worn less by dentistry students than oral hygiene students. Of the different types of protective wear, eyewear was the least worn.

Curriculum preparation

Sixty-seven per cent (67%) of all students reported that their curriculum prepared them in understanding HIV/AIDS, whilst 61% felt that it prepared them well enough on the disease process, its transmission and effect it has on HIV/AIDS patients. However, only fifty-three per cent of all students felt that they would be able to manage patients infected with the HIV (Table 4).

The percentage of students having a better understanding of the disease, its transmission and its effects on HIV/AIDS patients increased as their level of study increased irrespective of which programme they were on.

However, categorically, the percentage of students in their ability to manage patients with the disease decreased as the level of study increased with Oral Hygiene students and was applicable as well only when comparing fourth and fifth year Dentistry students. The increase between second and third year Dentistry was negligible. Students that did have a fair knowledge on the diseases did not necessarily mean increased management capabilities.

Discussion

The results of this study are in agreement with that of Seacat (4), that the students' knowledge of the HIV/AIDS disease process, and oral manifestations increased as the level of study increased throughout the curriculum, but more significantly, from third to fifth year Dentistry. However, in this study, it does not translate to students' behaviour practices toward infected patients.

Universal precautions is a philosophy that considers all patients to be infected with pathogenic organisms and thus maintains that certain basic infection control procedures must be used during care of all patients (7). The mere fact that only a small percentage (31%) reported using all three barrier techniques indicates the lack of compliance regarding the application of universal precautionary measures against communicable diseases. A study conducted by Hartshorne, Carstens, Engelbrecht and Hattingh yielded similar results (5).

Table 3. **Precautionary practices by students – use of personal protective clothing**

	Programme + year of study (*n* (%))						
Type	OH 1 ($n = 8$)	OH 2 ($n = 17$)	Bchd 2 ($n = 46$)	Bchd 3 ($n = 37$)	Bchd 4 ($n = 31$)	Bchd 5 ($n = 11$)	Total ($n = 150$)
Gloves	8 (100)	17 (100)	45 (98)	34 (92)	29 (97)	11 (100)	144 (96)
Masks	8 (100)	17 (100)	39 (85)	29 (78)	27 (87)	10 (90)	130 (87)
Protective eyewear	8 (100)	17 (100)	19 (41)	5 (14)	10 (32)	10 (91)	69 (46)

OH, Oral Hygiene; Bchd, Dentistry.

Table 4. **Students opinion on how well they think their curriculum prepared them on HIV/AIDS and its management**

	Programme + year of study (*n* (%))					
Curriculum preparation	OH 1 ($n = 8$)	OH 2 ($n = 17$)	Bchd 2 ($n = 46$)	Bchd 3 ($n = 37$)	Bchd 4 ($n = 31$)	Bchd 5 ($n = 11$)
Understanding of HIV/AIDS (total average 67%)	5 (63)	14 (82)	19 (41)	29 (78)	24 (77)	10 (91)
Effects of HIV/AIDS (total average 61%)	5 (63)	15 (88)	15 (33)	26 (70)	21 (68)	10 (91)
Management of patients (total average 53%)	6 (75)	12 (71)	20 (43)	17 (46)	19 (61)	6 (55)

OH, Oral Hygiene; Bchd, Dentistry.

With 86% of students indicating that special precautions should be taken whilst treating HIV/AIDS patients, it suggests that most students are aware of disease transmission but non-compliance data indicates otherwise as well as a lack of commitment to protect themselves and their patients.

These findings clearly highlight the importance of the teaching emphasis of dental educators on disease transmission. It is vital that universal precautions should also be adopted through faculty policy and reinforced at an early level of study, so that all barrier techniques become protocol and a norm in their daily practice as clinicians. This will eventuate in a truly professional and patient-centred health care provider (4).

On the question whether HIV could be transmitted through aerosols produced by a hand piece, 52% responded negatively. This may be because of the fact that reports of HIV transmission through this route are very rare, however, the possibility does exist (8). A patient's oral fluids and blood can be aspirated ('sucked back') into a hand-piece or dental unit waterline and unless water quality is controlled, a practitioner or new patient could be exposed to the microbes of previous patients. In addition, a practitioner's skin is often not completely protected, thereby increasing the possibly of spatter and aerosol contact (7). The fact that more than half the students think that it is not possible, indicates that the transmission of the disease is not fully understood. It may also explain why most students regard wearing protective eyewear to be unimportant.

It is also alarming to note that such a small percentage (12.7%) of students know what to do in the case of a needle stick injury. Efforts should be made to ensure that students know exactly what the protocol entails at the faculty dental clinic with regards to such injuries. Needle stick injuries are a potential risk to dental-professionals; therefore it is imperative that more emphasis should be placed on the prevention and protocol thereof. Needle stick injuries can also be quite alarming to the practitioner creating extreme psychological stress. Therefore students need to be made aware of the channels for prompt management.

The student's attitudes towards treating HIV/AIDS patients were positive. Seventy-nine per cent of them were prepared to treat HIV infected patients and felt that these patients should be treated at any dental facility and with the same respect and dignity as any other patient.

With almost half (53%) of the students feeling that their curriculum prepared them adequately to manage HIV/AIDS patients, focus on aspects to overcome this problem is urgently required in the curriculum. Although students' knowledge about the disease was relatively high, it was still inadequate in preparing them to manage patients clinically. These figures may also suggest that the curricula alone may not enable students to manage these patients, but it could be that personal feelings and attitudes prevent students achieving their full potential as clinicians. Their fear of contracting the diseases may overpower their intellectual and practical ability to cope with the treatment and management of such patients.

Conclusion

The study clearly portrays a relatively high understanding of the HIV/AIDS and disease process and to a lesser extent the oral manifestations. However this has little if no influence on the students' attitude and behaviour in managing HIV/AIDS patients. The lack of consistency in the utilization of all barrier techniques among students is of grave concern. The lack of management skills and non-compliance to universal precautions may be a reflection of the lack of appropriate HIV/AIDS teaching focus and faculty policy on universal precautions and protocol emphasis in the curriculum. Given the fact that the possibility of transmission of HIV/AIDS does exist within the dental setting, it is important that attending supervisors, hospital managers, curriculum designers and lecturing-staff reinforce universal precautions. Stringent clinical application of these precautions may in future reassure the control and prevention of the spread of the disease.

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