Dental students' knowledge of AIDS and HIV infection in Helsinki, Finland, and in Dar es Salaam, Tanzania

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The purpose of this investigation was to study the knowledge about HIV infection and AIDS among dental students in Helsinki, Finland, and in Dar es Salaam, Tanzania. All respondents knew that HIV is not transmitted via hand-shaking, drinking water, or breathing air. More than half of the students in both countries did not know that HIV can be transmitted via breast-feeding. A higher proportion of students in Dar es Salaam than in Helsinki believed that all HIV-positive persons will get AIDS. Tanzanians recognized the early symptoms of HIV infection better than the Finnish students. Many students in both countries did not mention bisexual men as belonging to the high-risk group. Most of the dental students in Dar es Salaam but only one in five in Helsinki believed that dentists belong to the at-risk group.
☐ *Clinical symptoms; questionnaire; risk groups*

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The epidemic nature of acquired immunodeficiency syndrome (AIDS) in eastern and central Africa is well documented (1–4). According to Quinn et al. (3), the annual incidence of AIDS in central Africa can reach 550 to 1000 cases per million adults. In Finland, with approximately 5 million inhabitants, 258 human immunodeficiency virus (HIV)-positive individuals had been identified by 31 December 1989, after a screening of almost 10% of the population (personal communication, National Board of Health, Finland). Since the number of persons with AIDS continuously increases, dentists can play an important role in early detection of HIV infection (5, 6).

Knowledge of AIDS among dentists has previously been studied by means of questionnaires and interviews. According to Atchison et al. (6), 41% of dentists in Los Angeles County could not mention any oral signs of AIDS, and 52% did not know any systemic signs. In Gerbert's study (7), using closed questions, dentists were knowledgeable about some risk factors and risk groups. In Denmark 86% of dentists studied assessed the threat of being infected during daily work as small (8), and in Amsterdam the corresponding figure was 68% (9). In contrast, in Zambia 59% of dentists considered the threat to be great (10). Knowledge of HIV infection among dental students has not yet been studied.

The aim of the present work was to study the level of knowledge of AIDS among dental students in Helsinki, Finland, and in Dar es Salaam, Tanzania.

Materials and methods

Two samples were obtained by systematic sampling from the registers of dental students in the clinical phase of their studies at the Universities of Helsinki, Finland, and Dar es Salaam, Tanzania. In Helsinki a sample of 52 and in Dar es Salaam a sample of 16 students were drawn, representing 32% and 59% of all clinical students, respectively.

Identical questionnaires were distributed to the students. No separate pilot study was performed because the questions had pre-

Table 1. Percentages of students in Helsinki and in Dar es Salaam recognizing each risk group of AIDS

	Students in Helsinki	Students in Dar es Salaam
Homosexual males	97	100
Lesbians	10	31
Bisexuals	72	63
Those with many sexual partners	95	100
Intravenous drug users	100***	63
Prostitutes	100	100
Blood-transfusion patients	59**	100
Other risk groups	21**	56

Statistical evaluation: *** $p < 0.001$; ** $p < 0.01$.

viously been used among randomly selected subjects aged 15–64 years in Finland (11). In Helsinki students were asked to return the questionnaires to sealed drop-boxes placed in the dental clinic. In Dar es Salaam all students returned the questionnaires in unmarked envelopes to a student representative. In Helsinki, a second set of questionnaires was distributed, and the overall participation rate reached 75.0%.

The chi-square test was used in statistical comparisons between the groups.

Results

In Helsinki 63% of the respondents were women, and in Dar es Salaam 6%. Among dental students in Dar es Salaam 18% believed that only people belonging to some risk group(s) can be infected by HIV. The corresponding figure among the students in Helsinki was about 8%.

Blood-transfusion patients were reported to belong to a risk group by more than half of Helsinki University students and by all students in Dar es Salaam. In contrast, all students in Helsinki knew intravenous drug users to be a risk group, but only about two-thirds of those in Dar es Salaam were able to name these. The students, especially those in Tanzania, named other risk group(s) apart from the given alternatives. Dental and/or medical personnel were named by both groups (Table 1).

All respondents knew that HIV is not transmitted through hand-shaking, drinking water, breathing air, or hugging. Breast-feeding was known by less than half of students in both countries. When the students named other ways of transmitting the virus, dental and/or medical treatment was mentioned by both groups (Table 2).

A higher proportion of students in Dar es Salaam than in Helsinki thought that all HIV-positive persons will also get AIDS. None of the Tanzanian students but some of the students in Helsinki agreed with the statement that all those infected will have symptoms. In Dar es Salaam some students believed that only people with symptoms can infect others, whereas none of the students in Helsinki agreed with this statement (Table 3).

Rash as an early symptom of HIV infection was rarely known by the students in

Table 2. Dental students' opinion, in Helsinki and Dar es Salaam, of possible venues of HIV transmission (%)

	Students in Helsinki	Students in Dar es Salaam
Common objects	0**	25
Kissing	15	31
Sex with condom	21	25
Intravenous drugs	100	94
Breast-feeding	41	38
Unborn fetus	90	94
Other ways	26	19

Statistical evaluation: ** $p < 0.01$.

Table 3. Percentages of agreement on different statements concerning HIV infection and AIDS among dental students in Helsinki and Dar es Salaam (DSM)

	Agree (%)		No opinion (%)	
	Helsinki	DSM	Helsinki	DSM
All infected will have symptoms	18	0	3	13
Only some infected will have symptoms	74	88	5	13
Symptom-free stage can last for years	95	88	0	0
All infected people can infect others	92	87	3	7
Only those with symptoms can infect others	0	13	3	0
There is no effective medicine against the virus at present	92	88	0	13
All infected will develop AIDS	16	44	11	25
Only some infected will develop AIDS	72	44	13	6
All AIDS patients die of AIDS	74	69	10	13

Table 4. Dental students' knowledge of early signs and symptoms of HIV infection in Helsinki and in Dar es Salaam (%)

	Students in Helsinki	Students in Dar es Salaam
Fever	92	88
Aching throat	62	44
Rash	10***	63
Enlarged lymph nodes	92	88
Diarrhea	31***	88
Loss of weight	54*	88
Nervousness	13	31
Tiredness/weakness	85	81

Statistical evaluation: *** $p < 0.001$; * $p < 0.05$.

Helsinki but was often known by students in Dar es Salaam. Most of Tanzanians recognized both long-lasting diarrhea and unexplained loss of weight as early symptoms, whereas corresponding figures among students in Helsinki were much lower (Table 4).

Discussion

Although the sample size in this study was rather small, it represents one-third of all dental students in Helsinki and two-thirds in Dar es Salaam. Probably as a result of the active debate concerning AIDS among dental staff and in professional journals, the response rate was high: 75% in Helsinki and 100% in Dar es Salaam.

Data about the potential risk of dentists being infected with HIV during daily work are contradictory. Many reports emphasize increased risk and give new recommendations on how to protect oneself (5, 12–14). According to Klein et al. (15), however, only 1 dentist out of 1309 dental professionals is known to have contracted the virus through dental treatment of an infected patient. Also, several authors have shown that even multiple needle-stick injuries from HIV-infected patients do not result in HIV transmission among health care workers, including dental personnel (16–19). Nevertheless, in Denmark 60% of dentists reported being afraid of becoming infected when treating HIV-positive patients (8), and in California 63% of dentists do not accept as patients those belonging to the risk groups (7). In the

present study dental students both in Finland and in Tanzania believed that dental professionals are at increasing risk in their daily work (Tables 1 and 2).

According to many authors, bisexuals constitute a clear risk group, especially in Western countries (7, 13, 20). May & Anderson (21) have even indicated that in developed countries it is probable that HIV infections among females are likely to be transmitted mainly from bisexual males. Gerbert (7) found that in California 99% of the dentists studied were able to name bi- and homosexuals as a risk group. It was therefore surprising that only 72% of students in Helsinki and 63% in Dar es Salaam recognized bisexual men as a high-risk group. However, almost all students in both schools named homosexual men as a risk group, even though homosexual activity in Africa is rare (3, 20).

Six of 10 students in Helsinki named blood-transfusion patients as a risk group, whereas all students in Dar es Salaam were aware of this risk (Table 1). When asked whether HIV can be transmitted via blood transfusion, however, only one student in Helsinki answered no. This discrepancy may be due to the fact that in Finland today all donated blood has been screened. Thus, students in Helsinki probably related the first question to the situation in Finland, where blood transfusion is not a major risk.

Atchison et al. (6) asked dentists in Los Angeles County about systemic signs of AIDS. More than half of them could not mention any of the symptoms. Less than one-third recognized weight loss, and only 6% diarrhea. In the present study almost 90% of the students in Dar es Salaam mentioned these two, whereas this knowledge among students in Helsinki was negligible (Table 4). This can be explained by the fact that in Africa AIDS is called 'slim'. However, comparison between the present study and that of Atchison et al. (6) is difficult because we provided a list of typical symptoms instead of open questions.

None of the students in Helsinki, unlike one of four in Dar es Salaam, agreed with the statement that HIV can spread via casual contacts and common objects (Table 2). According to previous studies, 12%–16% of physicians in the USA also agreed with this statement (20, 21). Because the prevalence of AIDS in the USA and in Africa is high, this result may reflect fear and a view of common objects as a possible venue of infection becoming pronounced.

Because dental students do clinical work as part of their studies, they should be able to identify the risk groups of AIDS and to protect themselves. Therefore, more effort should be directed towards increasing knowledge about AIDS through education among dental students in both countries.

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References

1. Kreis JK, Koech D, Plummer FA, et al. AIDS virus infection in Nairobi prostitutes. Spread of the epidemic to East Africa. N Engl J Med 1986;314: 414–8.
2. Piot P, Plummer FA, Mhalu FS, Lamboray J-L, Chin J, Mann JM. AIDS: an international perspective. Science 1988;239:573–9.
3. Quinn TC, Mann JM, Curran JW, Piot P. AIDS in Africa: an epidemiologic paradigm. Science 1986; 234:955–63.
4. Mhalu F, Bredberg-Rådén U, Mbena E, et al. Prevalence of HIV infection in healthy subjects and groups of patients in Tanzania. AIDS 1987;1:217–21.
5. Anonymous. AIDS. The disease and its implications for dentistry. JADA 1987;115:395–403.
6. Atchison KA, Dolan TA, Meetz HK. Have dentists assimilated information about AIDS? J Dent Educ 1987;51:668–72.
7. Gerbert B. AIDS and infection control in dental practice: dentists' attitudes, knowledge, and behavior. JADA 1987;114:311–4.
8. Scheutz F. Dental care of HIV-infected patients: attitudes and behavior among Danish dentists. Community Dent Oral Epidemiol 1989;17:117–9.
9. ter Horst G, Hammann-Konings GMJ, van Hegten MJ, et al. AIDS and infection control: Amsterdam dentists surveyed. J Publ Health Dent 1989;49:201–5.
10. Scheutz F, Mmembe CK. Attitudes, behaviour and infection control among Zambian dental personnel concerning HIV and HBV infections. Afr Dent J 1988;2:48–53.
11. Tikkanen J. AIDS in Finland. Prevalence and perceptions in the population. Publications of the National Board of Health, Finland. Series original reports 1/1987, Helsinki, Finland (summary in English).

12. Anneroth G, Anneroth I, Lynch DP. Acquired immunodeficiency syndrome (AIDS) in the United States in 1986: etiology, epidemiology, clinical manifestations, and dental implications. J Oral Maxillofac Surg 1986;44:956–64.
13. Silverman S Jr. Infectious disease control and the dental office: AIDS and other transmissible diseases. Int Dent J 1987;37:108–13.
14. Wall C. The impact of AIDS on the general practitioner of dentistry. Int Dent J 1987;37:98–107.
15. Klein RS, Phelan JA, Freeman K, et al. Low occupational risk of human immunodeficiency virus infection among dental professionals. N Engl J Med 1988;318:86–90.
16. Gerberding JL, Bryant-LeBlanc CE, Nelson K, et al. Risk of transmitting the human immunodeficiency virus, cytomegalovirus, and hepatitis B virus to health care workers exposed to patients with AIDS and AIDS-related conditions. J Infect Dis 1987;156:1–8.
17. Flynn NM, Pollet SM, van Horne JR, Elvebakk R, Harper SD, Carlson JR. Absence of HIV antibody among dental professionals exposed to infected patients. West J Med 1987;146:439–42.
18. McCray E. Occupational risk of the acquired immunodeficiency syndrome among health care workers. N Engl J Med 1986;314:1127–32.
19. Marcus R, and the CDC Cooperative Needlestick Surveillance Group. Surveillance of health care workers exposed to blood from patients infected with the human immunodeficiency virus. N Engl J Med 1988;319:1118–22.
20. Barrett-Connor E. Physician knowledge and concerns about AIDS. West J Med 1984;140:652–3.
21. May RM, Anderson RM. Transmission dynamics of HIV infection. Nature 1987;326:137–42.
22. Valenti WM, Anarella JP. Survey of hospital personnel on the understanding of the acquired immunodeficiency syndrome. Am J Infect Control 1986;14:60–3.

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