Infection control among dental therapists in Zimbabwe

MM CHIDZONGA, F MAKONI, L MAHOMVA

Abstract

Objectives: To assess the general infection control practices with special reference to the prevention of transmission of HIV/AIDS infection among dental therapists in Zimbabwe.


Methods: A descriptive cross sectional study using a self-administered questionnaire. Questions dealt with infection control practices in the procedure rooms, including barriers to transmission of infection, the practice of disinfection of working surfaces, the use of autoclave, and sterilization of the handpiece. The questionnaire also covered issues of personal protection through the use of protective wear, vaccination against hepatitis B as well as knowledge of one's HIV status.

Results: There was a 68% (24/35) response rate. The therapists were predominantly male and they were evenly distributed in the provinces of Zimbabwe. All were trained in Zimbabwe; 91.7% had not been vaccinated against hepatitis B and only 20% (n=7) had undergone previous HIV testing. Use of gloves was universal; 92% used face masks; 66.7% used protective eyewear; 87.5% wore protective garments; 95% autoclaved/chemoclaved high speed handpieces; 83.3% autoclaved/chemoclaved slow speed handpieces. Barriers to infection control ranged from 22.7% to 40.9% and was attributed to non-availability of gloves and disinfectants.

Conclusion: The dental therapists seem to practise acceptable infection control methods. There is need to improve upon handpiece sterilization, the use of eyewear and improvement upon supplies for disinfection. Vaccination against hepatitis B virus needs to be encouraged.
Introduction

Oral health care workers risk exposure to a variety of saliva and blood-borne pathogens from their patients. Cross infection between patient and practitioner, from patient to patient is a real risk if adequate infection control practices are not adhered to. The advent of the HIV/AIDS pandemic and the re-emergence of multidrug-resistant tuberculosis has added a new challenge to infection control in the oral health care setting. Other infectious agents encountered include those causing the common cold, pneumonia, Herpes simplex virus (type 1) and hepatitis B and C viruses.

The UNAIDS WHO Epidemiological Fact Sheet on HIV/AIDS and Sexually Transmitted Infections, Zimbabwe 2002 update, estimates that by the end of 2001, 33.7% of the adult Zimbabwe population were living with HIV/AIDS. Prevention of further spread of HIV infection and other infections is thus critical especially in the oral health care delivery system. The Centre for Disease Control (CDC) recommendations for infection control is a guideline for achieving a safe and disease-free environment in the oral health setting. The CDC guidelines promote the concept of universal precautions which hinge upon the premise that every patient is regarded as a potential source of infection and thus infection control protocols that are meant to protect the health and safety of health care providers and patients are the same for all patients.

Developing countries account for more than 90% of new HIV infections and more than half of these are spread in sub-Saharan Africa. Thus, effective infection control practices are essential to prevent further spread of HIV infection.

The aim of this study was to assess the current state of infection control practices among dental therapists in Zimbabwe. The objectives of the study were to assess the general infection control practices and barriers thereto and also infection control practices with special reference to HIV/AIDS among dental therapists. The dental therapist is an oral health cadre trained to work in Oral Health Clinics under the direct supervision of a dentist (or where there are no resident dentists, or where dentists are unwilling to work (in which case there is remote supervision by the nearest dentist). The dental therapist undergoes a three year training programme to enable him/her to do fillings, extractions, scaling and polishing as well as preventive and community dentistry.

Materials and Methods

A descriptive cross section study was carried out using a self-administered questionnaire based on the infection control guidelines compiled by the OSHA and CDC. The questions dealt with personal protection, infection control in the surgery and barriers to infection control practices. Questions about infection control in the dental surgery included queries about autoclaving instruments, sterilization of handpieces, and use of barriers to achieve physical protection. Questions on personal protection referred to clinical attire and vaccination against hepatitis B. The questionnaire was hand delivered or posted (with a self-addressed and stamped envelope for questionnaire return) to all practising dental therapists in government service in Zimbabwe.

Results

A total of 35 dental therapists were identified as working in government hospitals and 35 questionnaires were either hand delivered or posted. (68.89) 24 of completed questionnaires were returned.

Table I shows the response distribution of the dental therapists in the 10 administrative provinces of Zimbabwe. All dental therapists indicated that they trained in Zimbabwe.

Figure 1 shows the age and gender distribution of dental therapists. There was predominance of males in the 31 to 40 year age group.
Figure II shows the number of years the respondents have been in practice, ranging from six months to 22 years.

Table II shows respondents' answers to questions on HIV testing and hepatitis B. Of the seven who underwent HIV testing, five did it voluntarily, one because of a needle stick injury and one for insurance purposes.

Among the respondents, only 12 (8.3%) had received hepatitis B vaccination in the preceding three years of the seven (30.4%) who had undergone HIV testing, five had done so voluntary and one followed accidental needle stick/sharp injury.

Of the 23 individuals who responded regarding their HIV status, six were negative, 16 did not know their status and one did not know.

Table III shows the responses to questions on routine infection control practices.

Table IV shows responses to barriers to routine infection control practices with 38% (N=8) claiming that disinfectants are in short supply or not usually available.

Discussion

As part of infection control in the oral health setting one is expected to sterilize instruments and decontaminate working surfaces and also know what personal protection is required and how to use it to control cross infection. The present study is a survey among dental therapists in Zimbabwe on their infection control knowledge and practices.

The majority of the dental therapists are in the age range 31 to 40 years with a spread of working years from six months to 22 years. The relatively young age would imply that their training is recent and as such done during the period when there is heightened interest in infection control against the backdrop of the HIV/AIDS pandemic. The therapists were evenly distributed in all provinces with the exception of Bulawayo where there were no responses.
The majority of the dental therapists (91.7%) had not been vaccinated against hepatitis B nor do they know their HIV status. This would be due to the fact that health care workers in Zimbabwe are not required by law to be vaccinated against hepatitis B. Only one respondent had been tested post needle stick injury and six underwent voluntary testing. There is need to encourage voluntary HIV testing as part of the prevention of the spread of HIV infection in the country. It is encouraging to note that the majority of therapists used protective wear during practice: ie. gloves, masks, protective clothing.

The use of gloves (100%) compares well with studies among other oral health workers McCarthy et al. 92%; Woo et al. 94%; Naidoo-87%; Gachigo and Naidoo-97%; deKock and VanWyk; Yengopal et al. 97.1%. This is encouraging when one considers that 40.9% indicated difficulty in accessing gloves. This is not surprising in a resource poor environment like Zimbabwe where these supplies are erratic.

Routine use of face masks (91.96%) compares favourably with that reported in other studies: McCarthy 82.4%; McCarthy - 75%; deKock and VanWyk - 87.5%.

Protective eyewear forms an essential component of barrier protection during routine dental treatment. This study showed that 66.7% of the therapists used protective eyewear. This figure is rather low compared to that in other more recent studies: McCarthy et al. 84%; Gibson et al. 72%. This is higher, though, than the figure of 52.9% among some dentists in South Africa given by Yengopal et al. This low figure in the present study could be linked to the difficulty in accessing protective eyewear as indicated by the 40.9% who had difficulty in accessing gloves and similarly possibly protective eyewear.

A South African study showed that 52% of the dental hygienists wore overcoats. In the present study, 87.5% of the dental therapists wore protective garments and 22.3% indicated difficulties in accessing the garments. The non-wearing of protective clothing could also be linked to the initial general reluctance to make use of protective barriers. Other studies have shown a shift towards wearing protective barriers: Boyer in 1984 - 50% and by 1995, 94% wore masks, 14% face shields and 59% protective eyewear. The use of the autoclave in this study is similar to that in other studies (83.3% to 95.8%); Yengopal et al 90%; Wadдель - 97%.

The sterilization of instruments forms a fundamental aspect of infection control in the oral health setting. In the present study, the autoclaving/chemoclaving of both high and low speed handpieces was 95.8% and 83.3% respectively. This is in contrast to a study among some South African dentists and dental hygienists where only 39.7% dentists and 41.1% of hygienists autoclaved their high speed handpieces. While immersion in chemical solutions is unacceptable, it would appear to be commonly used in this part of the world mainly due to lack of a sufficient number of handpieces to meet patient scheduling needs and fear of equipment failure resulting from sterilization. However, some people believe the handpiece is not an invasive instrument and thus there would appear to be minimal justification for subjecting the handpiece to the rigours of heat sterilization when intermediate disinfectants will destroy all significant microorganisms. There was a high adherence to disinfection of working surfaces and light handles indicative of good infection control practices in spite of the fact that 38.1% of the respondents had difficulty in accessing disinfectants.

The use of disposable items was high with 100% properly disposing of needles for injections after use. In the present study, 8.3% reused local anaesthetic cartridges. This is highly unacceptably since it poses a great danger in transmitting infection from patient to patient. Surprisingly, 6.2% of some South African dentists reused local anaesthetic cartridges. This practice is on the decline since 1981 with the emergence of the HIV/AIDS pandemic.

This study concludes that while the standard of infection control by the dental therapist is high, there is need for improvement in the sterilization of handpieces, use of eyewear and hepatatis vaccination.

References


Cent Afr J Med 2006;52(7/8)


