

# Infection Control Procedures Employed During Dental Practice In Haryana (India)

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## Abstract

**Objectives:** To survey the infection control procedures used by dental practitioners in Haryana, India.

**Methods:** Questionnaires were distributed to 207 randomly sampled dentists practicing in haryana. Each questionnaire comprised 24 questions about basic infection control procedures.

**Results:** A 98% response rate to the questionnaire showed that 78% of dentists routinely wore gloves when treating patients, 21% gown, 59% face masks, 2% protective eye wear and 27% patients drape sheets. Furthermore 62% of the practitioners had been immunized against hepatitis B. The majority of general dentists (61%) used boiling water, 1% autoclave, 7% dry heat and 31% used chemical sterilization while specialized dentists 15% autoclaves, 3% dry heat, 37% boiling water and 55% used chemical sterilization. While safe disposal of clinical waste was undertaken by only 8% of dentists although 28% of practitioners stored sharp items in closed containers. All respondents used disposable dental needles.

**Conclusion:** There is a clear need to improve the existing situation particularly with regard to instrument sterilization, the safe disposal of clinical waste and immunization of dentist against hepatitis B.

## INTRODUCTION

Pervasive increases in serious transmissible diseases over the last few decades have created global concern and impacted the treatment mode of all Indian health care practitioners.

Every health care specialty that involves contact with mucosa, blood or blood-contaminated body fluids is now regulated. The goal is to ensure compliance with universal barriers and other methods to minimize, infection risks.

There are many routes by which contamination in dental surgery can be transmitted from patients to dental health care workers and vice-versa.<sup>1</sup> Infection can also be transmitted from patient to patient. from the dental surgery to the wider community and from the community to other patients.<sup>2</sup>

Documented cases of transmission of hepatitis B, HIV and other infectious disease have been reported in literature.<sup>3,4</sup>

Infections have since been suspected in five more dentists without other apparent risks. However, no dentists for whom negative HIV blood tests were established at time of job-related exposure have acquired job-related HIV infection.<sup>5,6</sup> The transmission of viral hepatitis types B, C and D is

mainly by blood. IV drug abuse, and sexual contact. Upto billions of HBV may occur per milliliter of infectious blood.<sup>7</sup> HBV is also found in saliva at lower concentrations. In studies performed during treatments of HBV infected persons, aerosolization of HBV could not be detected by tests for HB surface antigen,<sup>8</sup> the majority of these studies have been conducted in industrialized countries where government regulations, patient expectations and education strategies have all contributed to improvement in infection control procedures.<sup>9</sup> In India, the carrier rate of HBS Ag in hospital staff has been found to be higher (10.87 percent) than in voluntary blood donors (6 per cent) and in the general population (5 percent).<sup>10,12</sup> In India alone there are an estimated 43 to 45 million HBS Ag carrier and, among them 10 to 12 million also have HBe Ag. The early cases of HIV/AIDS were concentrated primarily to Chennai and Mumbai.<sup>10,11,12</sup> The disease soon spread to other parts of country, often following the parts of major highways and labour migrants. By mid 2003, Tamil Nadu had nearly half of the reported AIDS cases. Mumbai and rest of Maharashtra now share about 21% of the AIDS reported cases. According

to HIV sentinel surveillance 2003, males account for 73.5% of AIDS cases and females 26.5%, the ratio being 3 : 1.<sup>10,11,12</sup> The present study was designed to examine current infection control procedures among dentists in dental practice in Haryana, India.

**METHODS**

Questionnaires were distributed to 207 randomly sampled dentists practicing in Haryana. Each questionnaire comprised 24 questions about basic infections control procedures. The questionnaire was designed to collect information about the key measures of infection control in dental practice, including, methods and sterilization, use of protective barriers, use of disposables, waste disposal and operatory surface disinfection. The collected data, this was followed by feeding of data into the computer in FoxBASE and analysed.

**OBSERVATIONS AND RESULTS**

Questionnaires were distributed to 207 randomly sampled dentists practicing in Haryana, although not all of them answered all the questions. Of the 207 dentists, 79% were general dental practitioners and 21% were specialists.

The majority of dentists 78% of dentists routinely wore gloves when treating patients and 49% changed gloves after each patient. In contrast however only 59% wore face masks protective gown were used by 21%, whereas protective eye wear was worn by only 2% of dentists. Regarding the use of disposables, 92% of the dentists used single use disposable dental needle, 1% use disposable trays.

Methods of sterilization included 61% used boiling water, 1% autoclave, 7% dry heat and 31% used chemical sterilization their instruments. When dentists were asked about their hepatitis B vaccination status only 62% stated that they were immunized. In relation to handling of clinical waste, 8% stored, neutralized and safely disposed of their clinical waste however the majority 80% disposed of their surgery waste along with household waste. Used sharp items were stored in closed disposable containers by 28% of dentists.

When general dentists and specialized dentists were compared with respect to sterilization a statistically significant difference was found between the groups (Chi square  $p < .002$ ) (Table 1). The general dentists tended to manage their patients as if they were HIV or Hepatitis B carriers, so then specialized dentists did ( $p < .002$ ).

**Figure 1**

Table 1

Method of Sterilization	General Dentists in percentage	Specialized dentists in percentage
Autoclaves	1%	15%
Dry Heat	7%	3%
Boiling Water	61%	37%
Chemical Sterilization	31%	55%

**Figure 2**

Table 2: Barrier Techniques use by Dentists

Protective Barriers	Response	Frequency	Percentage
Eye wear	No	203	98%
	Yes	4	2%
Gowns	No	164	79%
	Yes	43	21%
Gloves	No	41	22%
	Yes	161	78%
Masks	No	85	41%
	Yes	122	59%

**DISCUSSION**

This study was first to investigate dentist is compliance with infection control procedures in dental practice in Haryana. A high level of routine gloves use 78% was reported in the present study while less as compared reported in Sudan.<sup>1</sup> Indeed the levels of glove use reported is less as compared to that reported in general dental practitioners surveys in Canada, Ireland, New Zealand, Saudi Arabia and the Caribbean.<sup>13,14</sup> Although face masks are important for protection against aerosoles, they were only used by 59% of the study population, which is higher than reported in Khartoum.<sup>1</sup>

Less use of disposables such as impression trays, suction tips, anaesthetic cartridges and rinsing cup was probably due to financial constraints as reported of Khartoum.<sup>1</sup>

Important finding in the present study was relatively uptake of Hepatitis B vaccination as only 62% of dentists were vaccinated. This is higher than that reported for Khartoum.<sup>1</sup> In spite of the reported high prevalence of hepatitis B, it is clear from the study that vaccination is not considered a priority for practicing dentistry related to individual dentist's motivation as reported in Khartoum.<sup>1</sup>

The methods of sterilization used by study population were also not optional and the overall tendency to use of boiling water in general dentists and 55% chemical sterilization rather than the autoclaves and moist heat sterilization is contrary to advice on current sterilization practice. The use of boiling water as a method of sterilization is no longer accepted in clinical dentistry,<sup>15</sup> but was reported.

Disinfection of operative surface is a vital procedure in

infection control it was reported by only 78% of dentists higher as compared to that reported in Khartoum<sub>1</sub> and Saudi Arabia.<sup>14</sup>

Transmission of infection from the dental surgery to the community has been considered a possibility through improper handling and disposal of contaminated and clinical waste.<sup>1</sup> The fact that safe handling and disposal of clinical waste was undertaken by only 8% of dentists less as compared to reported in Khartoum relects.<sup>1</sup> The need for further education and clear legally enforced health policies to deal with this problem.

## **CONCLUSION**

The study has shown the present level of compliance with sterilization in Haryana. There is clear need for improvement especially waste disposal, sterilization techniques hepatitis B vaccination. Such improvement can be achieved by financial investment and promotions of clear infection control policies by health ministry of Haryana.

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