

CROSS INFECTION CONTROL — A STUDY

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ABSTRACT

Cross infection is defined as the transmission of infectious agents among patients and staff within clinical or hospital environment. This study was done to assess methods of sterilization in dental practitioners of Hyderabad City and to investigate methods of cross infection control in dental set-ups. It was a descriptive cross sectional study conducted at Faculty of Dentistry, Liaquat University of Medical & Health Sciences, Jamshoro, Pakistan from January 2016 to March 2016. Descriptive statistics were computed and differences between groups were assessed through chi-square test using Statistical Package for the Social Sciences (SPSS) version 20.0. P-value < 0.05 was taken as statistically significant. Autoclaves were used in 76% dental clinics followed by dry heat sterilizer (12%), chemical sterilization (9%) and (03%) of study participant were using boiling water as method of sterilization. Statistically significant difference was found in infection control practices of specialists, postgraduate trainees and general dentists regarding method of monitoring sterilization with majority of dentists never monitored.

Key Words: *Cross infection control, sterilization, methods, Hyderabad dental clinics.*

INTRODUCTION

Infection control has become fundamental part in dentistry. Dentists may expose themselves to pathogens through contact with blood and or oral secretions, as they are working with sharp instruments.¹ Most human microbial pathogens have been isolated from oral secretion.^{2,3,4} For this reason, since the end of the 1980s, many surveys have been carried out in several countries, especially in North America and Europe where dental set ups were inspected^{5,6}

Although several suggestions have been made by medical & dental societies as well as governmental organizations, studies disclose that infection is not well-controlled in dental settings.⁷ The results of past studies done in many countries signify that there is inappropriate knowledge, attitude, and practice con-

cerning proper measures of infection control among dentists.^{8,9,10} Current study was done to investigate methods of infection control and sterilization procedures in dental set ups of Hyderabad — Sindh.

METHODOLOGY

The descriptive cross sectional study was conducted on dental practitioners of Hyderabad City of Sindh Province. A self administered close ended questionnaire was designed to obtain information about procedures used for the prevention of cross-infection control in dental practices and to determine the attitudes and perceptions of respondent dental practitioners. The questionnaire was pre-tested before taking the interview.

In this study one hundred dentists were recruited working in public and private setups of Hyderabad — Sindh. It was conducted from January 2016 to March 2016. Single researcher gathered questionnaire data by meeting with dental practitioners. No tracking system was used to determine who responded and who did not, in order to ensure anonymity. The questionnaire required data on socio-demographic characteristics, knowledge and practice of infection control procedures, immunization about HBV vaccine, screening of patients before procedure, sterilization, wearing of gloves, masks, eye shields, warping instruments, use disinfect after every patient and disposal methods of contaminated materials. Data collection was done using SPSS version 20.0. Descriptive statistics were computed and

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differences between groups were assessed through Chi square test. P-value ≤ 0.05 was taken as statistically significant.

RESULTS

A total of 100 dental practitioners completed the questionnaires. The distribution of dental surgeons are shown in Fig 1. Other details are shown in Fig 2-3.

DISCUSSION

The majority of procedures performed in dental practice involve devices that are classified as critical or

semi-critical, since they frequently breach the patient’s mucosa or gingiva. There have been a number of reported transmissions of hepatitis B in dentistry, although it has been difficult to prove or disprove direct links associated with failure of decontamination of dental instruments. Nevertheless, there is clear potential for cross-infections to occur if certain basic principles are not adhered to.¹¹

There are number of areas of concern arising from this survey; A fundamental principle of any sterilization method is that it should be carried out using a validated process. This is because it is not practical to test the instruments emerging from the sterilizer for sterility prior to use. It is necessary to establish that the sterilization process when correctly implemented will consistently and reliably produce the required outcome; this is demonstrated during the validation process.¹²

The most practical and safe method of operating is to clean and steam sterilize all re-usable instruments. Many dental instruments are categorized as critical devices and as such devices should be sterilized at the point of use.¹² Improvements in dental infection control practices have been steadily made since the start of the HIV epidemic.¹³ The results of previous studies indicate inappropriate KAP regarding proper measures of infection control among dentists.^{10,14} In spite of advances in infection control in recent years, there is still infection control problem in healthcare centers including dentistry clinics and hospitals in many parts of the world.¹⁵

According to the results of this study, autoclave (76%) was the most common method of sterilizing instruments followed by dry heat (12%), boiling water (03%) and chemical sterilization (9%). These findings are in accordance with other studies^{16,17,18} whereas study done by Ahmed H¹⁵ shows 82% dental practitioners were using an autoclave. The remainder of respondents used either a dry heat (10%) or used a central sterile service department or other facility (8%). However, although steam sterilization is used so widely in general dental practice, there is evidence that the equipments are not being tested, monitored or maintained correctly.¹⁷ According to some studies, dry heat was the most common method of sterilization followed by autoclave.^{19,20} An important factor related to sterilization is monitoring of sterilization.

All surgeries, surveyed had a steam sterilizer, but the documentation, testing and operation of these machines were frequently unsatisfactory, increasing the risks of an adverse event occurring. The lack of periodic and daily testing being undertaken on the sterilizers is a fundamental lapse in the quality control of the steam sterilization process and has identified both training requirements and the need for formal recording of tests that are undertaken. With respect to reason for not

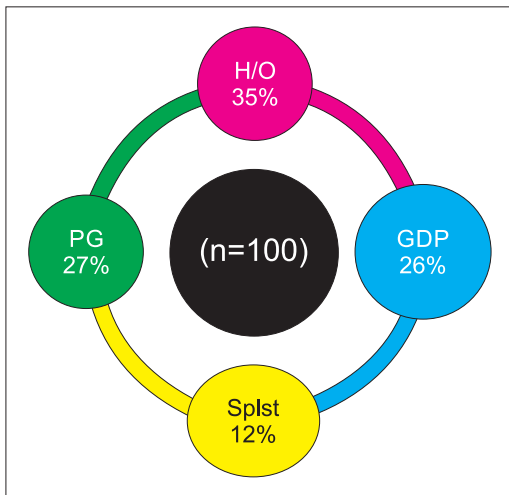


Fig 1: Status of dental practitioners (n=100)

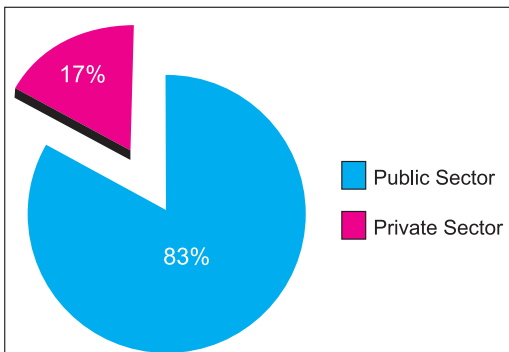


Fig 2: Current status of working place (n=100)

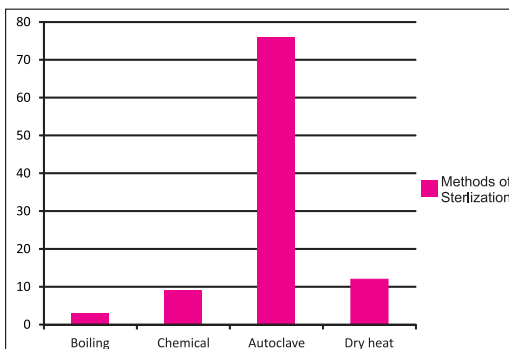


Fig 3: Commonly used methods of sterilization (n=100)

following cross-infection control guidelines, majority of dentists stated lack of formal training in infection control and negligence in following guideline as the primary causes.

Dental education can play a significant role in the training of dentists by helping them to adopt adequate knowledge and attitudes related to infection control procedures. Limited literatures are available on this subject for comparison but the result is understandable since Pakistan is a developing country.

Cross-infection control is becoming a global problem. Worldwide, 300-400 million people are chronic hepatitis B carriers. It is important to make note of this problem especially among dentists as it is postulated that dentists and dental staff are a frequent cause of transmitting infections to themselves as well as to patients.²¹ Studies in Pakistan also show that dental procedures are the most common cause of hepatitis C transmission.²²

CONCLUSION

The results of the present study indicated that the knowledge of general dental practitioners of Hyderabad City is relatively average about infection control procedures and there is a deficiency in continuing dental education on how to avoid cross-infections in dental practice. Improved compliance with recommended infection control measures is required for all dentists. Continuing education programs and short-time courses should be organized by health care professionals and Government Health Institutes about cross-infection and infection control procedures to improve the knowledge of dentists.

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CONTRIBUTIONS BY AUTHORS

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| 1 Munir Ahmed Banglani: | Concept/methodology. |
| 2 Priya: | Data collection/results. |
| 3 Suneel Kumar Punjabi: | Intro/disussion/conclusion. |
| 4 Muntaha Banglani: | Proof reading/editing. |