

Original Article

EVALUATION OF STERILIZATION AT DENTAL CLINICS IN HYDERABAD CITY – A CROSS-SECTIONAL STUDY

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Abstract:

Background: Dentistry predominantly involves exposure not only by patient to patient, but also by the dentist to patient or dental staff to patients, dental laboratory to dental health care workers (DHCWs) and patients. Sterilization and disinfection of dental equipments and clinics is of utmost important to ward off deadly diseases like HIV, hepatitis, etc. Aim: To evaluate sterilization and disinfection processes in dental clinics in Hyderabad city. Materials and method: 30 dental clinics were selected for the survey. Sterilization and disinfection processes, awareness regarding the same were evaluated using a simple questionnaire. Results: 47% of dentists were using autoclaves for sterilization, 67% sterilized instruments daily once, 66.7% carried out disinfection methods for sterilization of the clinic area and 40% of them uses phenol based disinfectant solution. 46.7% uses glass bead sterilizer for sterilizing root canal files. Conclusion: The revealed results provide a support for the need of some monitoring authority that would carry regular check towards a safe practice of sterilization of dental instruments in the private sector and create awareness regarding the harmful effects of ignorance towards sterilization and disinfection.

Keywords: Sterilization, Biological risk, Awareness, Infection.

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INTRODUCTION:

The occupational potential for disease transmission becomes evident when one realizes that most human microbial pathogens have been isolated from oral secretion. Dental care professionals are at an increased risk of cross infection while treating patients and also in the transmission of diseases from patient to patient.^{1,2} Dental environments possess physical, chemical and biological risks, both to patients and the professionals working there. Biological risks include contamination by microorganisms on equipment, instruments and materials used in clinical practice, which makes cross-infection and occupational infection possible if not properly prepared and disinfected before use.³ Dentistry predominantly involves exposure not only by the dentist to patient or dental staff to patients but also from the dental laboratory to dental health care workers (DHCWs) and patients.⁴ Infection control practices in developing countries have not been

widely documented.⁵ Most hospitals have no infection control programs due to the lack of awareness of the problem or absence of properly trained personnel.⁶ The routine application of precautions such as multiple aseptic procedures, latex gloves, masks, protective eyewear, clinic coats, automated instrument decontamination devices, time-efficient heat sterilization modalities, chemical disinfectants, waste management procedures and single-use disposable items have created a safer environment for dental personnel and patients alike. Evidence supporting the application of these and other current practices includes a long history of scientific and clinical investigations, technological advances in equipment and materials, and periodic publication of updated recommendations from professional health care organizations.⁷ After the rise of 21st century, healthcare professionals and patients are more concerned about transmission of pathogenic microorganisms. Sterilization by different techniques

is an important component in clinical practices to ensure protection of the patient, and the health care professional from various infectious diseases.⁴ Sterilization is a process that ensures to eliminate the living microorganisms e.g. bacteria, viruses, fungi and spores from the surface of instrument or any other item. Sterilization can be achieved by various means, which includes heat (dry & moist/steam heat), chemical (ethylene oxide, formaldehyde, alcohol), radiation (ultraviolet, cathode) or filtration (mechanical method).⁸ The present study to evaluated the sterilization and disinfection processes in dental clinics in Hyderabad city

MATERIAL AND METHODS:

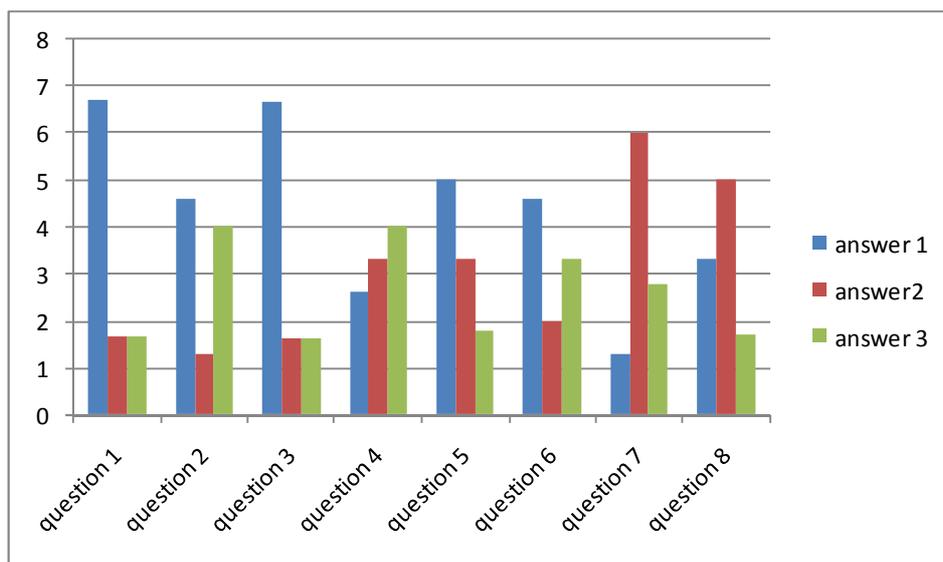
Total 30 dental clinics of Hyderabad city were selected, owned or run by qualified dentists in the

public or private sector, for the study. The study was a cross-sectional questionnaire (table1) based survey. A self administer questionnaire were delivered personally to dental practitioners. The questionnaire consisted of data regarding socio-demographic characteristics, knowledge and practice of infection control procedures (sterilization) carried out in their dental units. Ethical clearance for the commencement of the study was taken from the institute. Informed consent was taken from the study participants. The study was conducted in the month of June 2014 in Hyderabad city, duration of the survey was 2weeks (June 1st to June 16th). Data collected was analysed using SPSS software version 10.0 and statistical analysis was done using chi-square test. p value <0.05 was considered as significant value.

RESULTS:

Table 1: Questionnaire and summary of data obtained from dental clinics (n=30)

Questions	Answer	Percentage
1. How often you sterilize your instruments in your clinic	Once daily	20 67%
	Twice in a day	5 16.5%
	Once in a weak	5 16.5%
2. What kind of sterilization equipment used in your clinic	Autoclave	14 46.7%
	Hot air oven	4 13.3%
3. Is disinfection procedure followed in your clinic	Boiler	12 40%
	Yes	20 66.7%
	No	5 16.2%
4. What type of disinfectant used in your clinic	Some time	5 16.2%
	Halogen based disinfectant	8 26.7%
	Alcohol based disinfectant	10 33.3%
	Phenol based disinfectant	12 40%
5. Do you sterilize your root canal files	Yes	15 50%
	No	10 33.3%
	some time	5 17.7%
6. If yes how do u sterilize your files	Using glass bead sterilizer	14 46.7%
	Using chemiclave methods	6 20%
	Using spirit	10 33.3%
7. Do you use sterilization pouch for instruments packing after sterilization	Yes	4 13.3%
	No	18 60%
	Some time	8 27.7%
8. Do you use hand sterilization agent sterileum after attempting the patient	Yes	10 33.3%
	No	15 50%
	Some time	5 17.7%
p-value	.0023	



Graph 1: Summarizing data obtained from questionnaire

A total of 30 dental surgeons who was running dental clinics in Hyderabad city participated in the present cross-sectional study. Out of the 30 analyzed dental clinics, 14 (47%) of them carried out process of sterilization using autoclaves and 4 (13.3%) uses hot air ovens, 12 clinics uses boiler for sterilization (40%) and 20 (67%) of them sterilized instruments daily once and 5 (16.5%) twice daily and 5 (16.5%) once in a weak. Procedures for disinfection of clinic area was carried out in 20 (66.7%) out of the 30 dental clinics, 40% of them were using phenol based disinfectant agents, 33% alcohol based and 26.7% halogen based disinfectants. Sterilization of hand piece and root canal files was carried out by 15 dentists out of 30, 5 of them carried out some times, 46.7% uses glass bead sterilizer for sterilizing root canal files, 33.3% cleaned files with spirit and 10 of them were not sterilizing files (Table 1, Graph 1).

DISCUSSION:

A variety of bacterial, viral, fungal, and protozoan microbes present hazards to the dental team and patients. They may be exposed to these microbes through direct contact with a patient’s tissues such as blood, skin, and other secretions, or by indirect contact like injuries caused by sharp contaminated instruments, or by droplet infection from aerosols and spatter.⁹ This study evaluated basic routine procedures followed by dentists in prevention of cross-infection

and results revealed that there is still need for improvement in disinfection and sterilization in dental practice, especially including monitoring and documentation of sterilization processes, proper use of disinfectants according to manufactures instructions and frequent disinfection of surfaces which contact with patients. In the present study 47% of dentists were using autoclaves for sterilization, 67% were sterilizing instruments daily once and only 66.7% dentist were carrying out procedures for disinfection of the clinic area and only 46.7% were using glass bead sterilizer for sterilizing root canal files. Our results were in concurrence with the study carried out by Matsuda JK¹⁰ et al in the municipality of Sao Paulo, which reported that autoclave was used by 69.38% of participants.^[12] In another study, Venkatasubramanian R¹¹ reported that almost 81% of the dental clinics used moist heat/autoclaving for the sterilization.

The method of choice for the sterilization of all instruments is the autoclave, using temperature of 134-138°C with minimum holding time of 3 minutes and minimum temperature of 126-129°C with minimum hold time of 10 minutes.¹⁰

Uti OG et al¹² carried out a study regarding infection control knowledge and practices related to HIV among Nigerian dentists and found partial compliance with recommended infection control procedures among Nigerian dentists. Mallick A et al,⁴

conducted a study in Karachi, Pakistan and reported that 81% of the clinics used autoclaving method of sterilization. Al-Rabeah A et al⁹ conducted a study and reported that 37.9% of the dentists sterilized their hand pieces by autoclaving, while the other 53.7% used disinfectant. The development of infection control manual for dental practices, in addition to a campaign of health education for dentists in the private sector, is recommended. Fatma Ahmed Hamdy El Shehaby et al¹³ also conducted a study regarding measures and decontamination pattern of reused stainless steel crowns and bands among a sample of Egyptian dentists and found that majority of the participating dentists were re-using stainless steel crowns and bands that have been tried-in the mouth due to their high cost. Thus, however the majority of dentists are carrying out approved decontamination procedures but still there is need to provide guidelines into the most effective method of decontamination.

CONCLUSION

This study shows that the infection control measures taken in dental clinics are not satisfactory. It is expected that the results found can provide support for actions of education and monitoring towards a safe practice of sterilization of dental instruments in the private sector in Hyderabad city, contributing to and stimulating the academic classes about the importance of this topic in the professional training.

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