ASSESSMENT OF STERILIZATION STANDARDS IN PUBLIC AND PRIVATE DENTAL SETTINGS OF PESHAWAR – A CROSS SECTIONAL SURVEY

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ABSTRACT

Objective: *To assess the sterilization standards of the dental setups both in public and private settings of Peshawar.*

Materials and Methods: *This Cross Sectional Study was started from Nov 2017 to Apr 2018 in Khyber College of Dentistry, Sardar Begum Dental College Peshawar, Rehman Dental College Peshawar and Private Clinics in Board Bazar and University Town Peshawar which were included in the study through Convenient Sampling technique. Total 100 professionals were interviewed; 50 from public and private. A semi-structured questionnaire was used with open and close ended questions. Data was analyzed using SPSS version 20 and Microsoft Excel.*

Results: *Of the 100 total professionals, dental surgeons, house officers, TMOs, Specialists and technicians were interviewed. All the private settings were using autoclave method of sterilization i.e 50 while the public sector was 46. Immediate sterilization of instruments after use public : private 27 : 33. Disinfection of operatory surfaces in between patients: public : private 33 : 25. Presence of destruction boxes for syringe disposal: public : private 13 : 44. Both these settings were almost identical in sterilization practices except use of destruction box.*

Conclusion: *Sterilization practices needs to be improved both in public and private settings. Dental personnel need to be given proper training on regular interval.*

Keywords: *Sterilization, Autoclave, Chemical sterilization*

INTRODUCTION

Sterilization is a procedure in which both vegetative and spore of any living organism, pathogenic and nonpathogenic, are completely destroyed. It is an absolute term.[1] An item or product that is free of living microorganisms is defined as sterile.[2] The recent rise in cross infections has led to increased concerns in the medical and dental community about hygiene and sterilization practices in the hospitals.[3] Many infected individuals are uninformed of their status, according to collected data and proof, because of the long incubation periods and post-infection window period during which detection of antibodies is not possible.[4] Dental personnel have a five to ten fold increased chance of acquiring hepatitis B than the general society.[5] Increasingly, management of dental procedures requires more skilled dentists, in terms of both knowledge and competence.[6,7] The current minimum job requirement is having a Diploma in sterilization techniques, which means the staff are often unaware of the significance of sterilization or the full extent of the damage that can be caused by mal sterilization practices.[8] There is also a need to increase awareness of the importance of routine autoclave servicing and calibration, along with validation

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and monitoring.[9] A large number of dental personnel do not use goggles during dental procedures in the dental clinic.[10] The speed of executing sterilization after an intervention depends on factors like availability of sterilization facilities and the ability of the team to deal with critical situations.[11,12] For a long time, main sterilization practices were physical heat sterilizations in dental practices, chemical steam and dry heat. The latter 2 methods are obsolete these days.[13] The autoclave is the instrument responsible for the sterilization of dental instruments.[14]

MATERIALS AND METHODS

This cross sectional study was conducted in both Public and Private sector dental settings. These settings included Khyber College of Dentistry Peshawar, Rehman College of Dentistry, Peshawar, Sardar Begum Memorial Hospital, Peshawar, Private clinics of Board Bazar and University Town Peshawar. All these settings were selected through Convenient Sampling Technique. Duration of the study was 6 months started November 2017 to April 2018. Those settings which gave their consent to appear in the survey were included in the study. A semi-structured questionnaire was used with open and close ended questions. Frequency & percentages were calculated for all catagorical variables. Data was analyzed using SPSS version 20 and Microsoft Excel.

RESULTS

Total 100 dental professionals, 50 from public and 50 from private sectors, were interviewed. Breakups of the dental professionals are as follows: Undergraduate BDS students; public : private 37 : 29, postgraduate; public : private 3 : 3, house officer; public : private 1 : 10, technician; public : private 9 : 8.

Adequate hand washing/hygiene facilities in the respective hospital was public : private 43: 42. Usage of aseptic gloves while doing dental procedures: public : private 47 : 50. Use of new gloves for every patient: public : private 47 : 48. Immediate sterilization of instruments after use public : private 27 : 33. Disinfection of operatory surfaces in between patients: public : private 33 : 25. Presence of destruction boxes for syringe disposal: public : private 13 : 44. Sterilization of instruments (dental drills) in between patients was 32 in government setup and 28 in private setups out of 50 each. Adequate knowledge of hospital staff regarding sterilization and disinfection: public: private 36: 35. Refresher courses/trainings of the staff about the sterilization and infection control: public : private 43 : 45. Awareness of the potential threats from unsterilized dental instruments: public : private 50 : 49

DISCUSSION

Sterilization is an absolute term referring to any process that kills all microorganisms including bacterial spores which are highly resistant. Sterilization is usually carried out by autoclaving which consist of exposure to steam at 121 degree C under a pressure of 15 lb./in2for 15 minutes.

Table 1: Procedures used for sterilization of dental instruments

Method	Government Sector	Private Sector
Boiling	1	0
Autoclaving	46	50
Chemical Sterilization	3	0
Total	50	50

Table 2: Number of procedures after which the non-disposable instruments are sterilized

Frequency	Govt;	Pvt
Once	34	37
Five	15	10
Ten	0	3
Fifteen	1	0
Twenty	0	0
Total	50	50

Proper sterilization reduces the rate of morbidity and eliminates the chances of acquisition of various infectious diseases. Improper dental sterilization is the cause of various serious infectious diseases which was proved by Dr. Butt in a research in 2003. He stated that "in most part of the world, the dental procedures are the most common causes of hepatitis C transmission".

In this study we compare the quality of sterilization between the public and private dental clinics in hospitals of Peshawar. We went to these clinics and hospitals and observed the sterilization techniques

and collected data from the resident. Almost 100% of the private sector is using autoclaving while in public it is 92%, rest of them are using boiling and chemical sterilization. Private sector shows more concern in monitoring of sterilization cycle; about 96%, while in public it is 92%. Immediate sterilization is achieved in 66% of private and 54% in public. These results are compatible with an international study.[15] Non-disposable instruments are sterilized frequently after first procedure; 74%, and after five procedures; 20% in private while 68% and 30% in public sector respectively. Uses of aseptic gloves is prevalent; 100% in private while 94% in government. Destruction boxes for syringes disposal are available in 88% private and 26% of public hospitals. These results are almost similar to the finding of Dagher J.[16]

CONCLUSIONS

Although sterilization practices are properly followed to a great extent both in public and private setups but still there is need for a monitoring system to ensure complete following of sterilization practices. Dental personnel need to be given proper training on regular interval.

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