CODEN [USA]: IAJPBB ISSN: 2349-7750

INDO AMERICAN JOURNAL OF
PHARMACEUTICAL SCIENCES

Available online at: http://www.iajps.com *Research Article*

ANALYSIS OF KNOWLEDGE AND PRACTICES ABOUT DENTAL IMPRESSIONS DISINFECTION IN PAKISTAN

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Abstract

Introduction: *Infection control is an imperative issue in the dental practice. It is reported that 1 ml of saliva sample from the mouth of an average healthy person contains about 750 million microorganisms; therefore, it is one of the most discussed topics in dentistry and has become an integral part of the practice that dental health workers no longer question its necessity.*

Objectives of the study: *The main objective of the study is to find the knowledge and practices about dental impressions disinfection in Pakistan.*

Material and methods: *This study was conducted at Punjab dental hospital, Lahore during 2018 with the permission of ethical committee of hospital. There were 100 participants of both genders who participate in this study.* ***Data collection:*** *A validated self-administrated questionnaire was used as data collection tool. The questionnaire assessed the information on duration of experience of the participant in their field, education and any additional courses in their field, their knowledge about the impression procedures and disinfection of these materials.* ***Results:*** *The disinfection action of three mentioned disinfectants showed no significant difference after 5 minutes for* Candida albicans *and* Pseudomonas aeruginosa, *however, this difference was significant for* Staphylococcus aureus. *(P value <0.05). It was observed that Epimax is more efficient in eradicating* Staphylococcus aureus *compared to two others disinfectant agents.*

Conclusion: *It is concluded that that most of the dental technicians were not aware of the basic infection control protocols. A single set of standard precautions in accordance with the CDC and OSHA guidelines should be mandatory for all the dental laboratories. It is therefore essential that the foregoing outline of a workable laboratory infection control policy should be implemented.*

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Please cite this article in press Nauman Shehzad et al., ***Analysis of knowledge and practices about dental impressions disinfection in Pakistan.,*** *Indo Am. J. P. Sci, 2018; 05(12).*

INTRODUCTION:

Infection control is an imperative issue in the dental practice. It is reported that 1 ml of saliva sample from the mouth of an average healthy person contains about 750 million microorganisms; therefore, it is one of the most discussed topics in dentistry and has become an integral part of the practice that dental health workers no longer question its necessity [1]. Dentistry is predominantly a field of surgery, involving exposure to saliva/blood and other potentially infectious materials, and therefore, requires a high standard of infection control and safety in controlling cross-contamination and occupational exposures to blood- and saliva-borne diseases. Dental care professionals are at an increased risk of cross infections while treating patients. However, in contrast to the dental treatment rooms and surgical operatories where infection control measures are rigidly recommended, the dental laboratories are often overlooked [2]. This constitutes a threat to the safety of dental technicians, who may acquire pathogenic microorganisms from contaminated impressions, prosthesis, and/or by improper handling of clinical materials after arrival at the dental laboratory. The principal route of transmission of infection from the patient to the dental technician is through these materials as they are in direct contact with patient's mouth, saliva, and possibly blood. It has been documented that dental personnel have a 5–10-fold chance of acquiring hepatitis B infection than the general population [3].

Moreover same scenario is observed in many developing countries. In a study conducted by Marya CM et al the authors concluded that there is lack of commitment to high standards of infection control practice in dental colleges in India [4]. On the other hand, a study conducted among the students and house officers in Pakistan by A. Saad at al in Lahore Pakistan reported that infection control protocols for the disinfection of do have knowledge and are following cross infection protocols for impression disinfection [5]. Considering the variability of data about cross infection control procedures of dental impressions performed in developing countries the aim of this was to assess the current practice of cross infection control of dental impressions, also to evaluate how dentists are communicating with lab personnel about impression disinfection, and finally to detect the awareness about infection control practices[6].

Objectives of the study

The main objective of the study is to find the knowledge and practices about dental impressions disinfection in Pakistan.

MATERIAL AND METHODS:

This study was conducted at Punjab dental hospital, Lahore during 2018 with the permission of ethical committee of hospital. There were 100 participants of both genders who participate in this study.

Data collection

A validated self-administrated questionnaire was used as data collection tool. The questionnaire assessed the information on duration of experience of the participant in their field, education and any additional courses in their field, their knowledge about the impression procedures and disinfection of these materials.

Statistical analysis

Student's t-test was performed to evaluate the differences in roughness between group P and S. Two-way ANOVA was performed to study the contributions. A chi-square test was used to examine the difference in the distribution of the fracture modes (SPSS 19.0 for Windows, SPSS Inc., USA).

RESULTS:

The disinfection action of three mentioned disinfectants showed no significant difference after 5 minutes for *Candida albicans* and *Pseudomonas aeruginosa*, however, this difference was significant for *Staphylococcus aureus*. (*P* value <0.05). It was observed that Epimax is more efficient in eradicating *Staphylococcus aureus* compared to two others disinfectant agents. Also Deconex showed significantly higher disinfectant action in removing *Staphylococcus aureus* compared to 0.525% hypochlorite sodium.

Table 1: Comparison of disinfectant agents and control group in 5 minutes and 1 dilution.

Disinfectants	Bacteria		
	Candida albicans	Staphylococcus aureus	Pseudomonas aeruginosa
	P value	P value	P value
Deconex-control	0.05	0.046	0.043
Hypochlorite sodium 0.525%-control	0.046	0.046	0.043
Epimax-control	0.046	0.037	0.043
Deconex-hypochlorite sodium 0.525%	0.507	0.043	0.099
Deconex-Epimax	0.507	0.034	0.099
Hypochlorite sodium 0.525%-Epimax	1.000	0.034	0.796

Table 02: Percentage of bacterial growth prevention by different disinfectant agents in 5 and 10 minutes.

Disinfectant	Time (min)	Bacteria		
		Candida albicans	*Staphylococcus aureus*	*Pseudomonas aeruginosa*
Hypochlorite sodium 0.525%	5	90.62%	97.12%	99.63%
	10	96.09%	98.84%	99.54%
Epimax	5	93.74%	100%	99.52%
	10	100%	100%	100%
Deconex	5	91.40%	95.39%	99.27%
	10	99.21%	96.83%	100%

DISCUSSION:

Dentists practicing dentistry encounter potentially harmful microorganisms. Patients are the most important source of microorganisms [6]. Studies indicate that the surface of impressions taken out of the mouth is polluted with bacteria. The Occupational Safety and Health Administration (OSHA) has given specifications for handling and transporting specimens of blood contaminated or other potentially infectious materials [7]. According to it, "potentially infectious materials shall be placed in a container which prevents leakage. Labeling or color coding is required when such specimens/containers leave the facility. Regarding awareness about the various infection control measures to be taken into practice, only 25% of technicians said that they were aware of it. Al-Kheraif and Mobarak did a survey on infection control practice in private dental laboratories in Riyadh and found that 87.5% of the respondents were unaware and did not follow any infection control procedure. They suggested that it should be mandatory to provide formal infection control courses for the dental technicians in the dental institutes either as a part of their training or before the appointment in the institutes [8]. Furthermore, they should be motivated to follow a single set of standard precautions assuming every patient as a source of infection. About 55.76% of the dental technicians reported that they receive impressions while wearing gloves. On enquiring on the separate receiving area for impression/prostheses, 61.53% of the dental technician responded that they have separate receiving areas in their laboratories [9]. About the disinfection of the impressions received in the laboratory, only 30.76% of dental technicians responded that they disinfect all the impressions they receive from clinics. The results showed that there is a lack of commitment of technicians toward disinfection of impressions [10].

CONCLUSION:

It is concluded that that most of the dental technicians were not aware of the basic infection control protocols. A single set of standard precautions in accordance with the CDC and OSHA guidelines should be mandatory for all the dental laboratories. It is therefore essential that the foregoing outline of a workable laboratory infection control policy should be implemented.

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