



RESEARCH ARTICLE

KNOWLEDGE, ATTITUDE AND PRACTICE AMONG DENTAL PRACTITIONERS REGARDING METHODS OF DISINFECTING DENTAL IMPRESSIONS

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ABSTRACT

Objective: To evaluate the knowledge, attitude and practice among dentists, considering the need and methods of disinfection of dental impressions.

Materials and Methods: Data were collected through questionnaire composed of multiple choice questions. The study included 150 students and a questionnaire consisting of 15 questions was provided to each student.

Results: Out of the 150 students who took up this survey, 60% were BDS students and 40% were MDS students. Only 26% of the students believed that disinfecting dental impressions leads to change in dimensional accuracy. Streptococcus is the most commonly present bacteria in dental impressions. Spraying of disinfectant is the routine method followed by dentists to disinfect dental impressions. 2% glutaraldehyde and sodium hypochlorite are the most effective and commonly used disinfectants. Cidex is the most commonly used disinfectant brand.

Conclusion: Most dentists prefer using 2% glutaraldehyde for disinfection. Both sterilization and disinfection help in the prevention of infection to dentists, patients and dental technicians. It is very important to create a protocol on how to disinfect to make it clearer and accessible to students.

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INTRODUCTION

Dentists, patients and dental technicians tasked with impression making, preparing casts are highly vulnerable to cross contamination from pathogens commonly found in the saliva, blood and dental offices. While much attention has been directed towards proper surface disinfection, sterilization and instrument care, one of the most over-looked links continues to be how effective we are at disinfecting the pathogens which infect the dental impressions. (Gladwin and Bagby, 2000) When improperly disinfected, these pathogens contaminate the dental cast and the work area throughout the dental laboratory. Several studies have shown that pathogenic microorganisms been recovered from casts obtained from contaminated impressions. (Gopinath, 2010) Casts can be treated by immersing the casts or spraying them with disinfecting solutions. Sterilization techniques can also be used to free the casts and impressions from microorganisms. (Kugel et al., 2000) Hepatitis B virus poses a greater risk to dentists and dental technicians with its ability to be transmit in minute quantities in bodily fluids and remain virulent outside the body for lengthy periods. Dental technicians have a significantly high prevalence of hepatitis B serological markers (Ganapathy

et al., 2015) The cross-infection control guide published by the British Dental Association states that 'the only safe approach to routine treatment is to assume that every patient may be a carrier of an infectious disease'. Therefore, all impressions should be handled in the same way as an impression from a high risk patient. (Jain et al., 2016; Sofou et al., 2002) The aim of the study was to assess the knowledge and attitude of dentists towards the various disinfection and sterilization methods to disinfect dental impressions.

MATERIALS AND METHODS

A descriptive survey was conducted among undergraduate and postgraduate dental students using a structured questionnaire. The questionnaire gathered information on respondent's knowledge regarding the various disinfection and sterilization procedures used to disinfect dental impressions. The study included 150 students and a questionnaire consisting of 15 questions was provided to each student. (Sivaramakrishnan and Neelakantan, 2014; Look et al., 1990; Memarian et al., 2007) All questionnaires were evaluated and the collected data was analyzed.

RESULTS

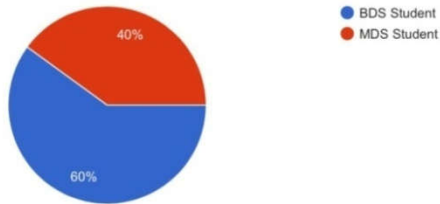
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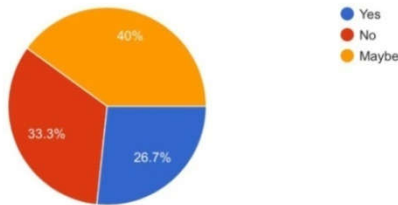
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students believed that disinfecting dental impressions leads to change in dimensional accuracy while 33% of the students disagreed to it. Around 40% of the students were unsure about change in dimensional accuracy.

Qualification

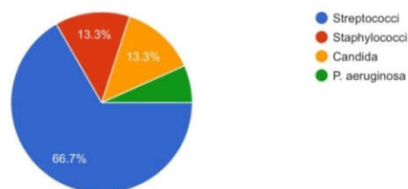


Do you think disinfecting of dental impressions leads to change in dimensional accuracy?

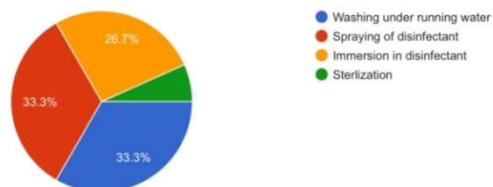


Streptococci is the most commonly present bacteria in dental impressions. Spraying of disinfectant is the routine method followed by dentists to disinfect dental impressions. Some even wash the impressions under running water. Sterilization is not followed by many.

Which bacteria infects dental impressions?



Routine method of disinfecting impressions



2% glutaraldehyde is the most effective disinfectant among the dentists who took up this survey. Sodium hypochlorite (NaOCl) is the most preferred for alginate, impression compound and agar impressions. Glutaraldehyde is the most preferred for zinc oxide eugenol and polysulphide and addition silicone impressions. Iodophor is preferred for polyether impressions. UV sterilization was found be the best method of sterilization.

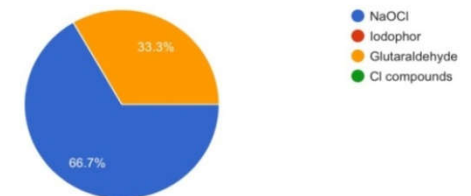
Which disinfectant is most effective?



Best disinfectant for alginate impressions?



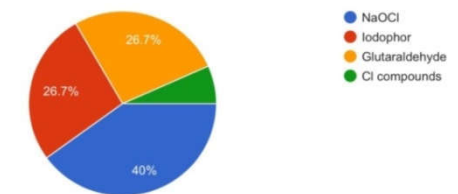
Best disinfectant for agar impressions?



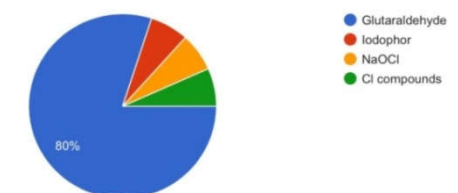
Best disinfectant for zinc oxide eugenol impressions?



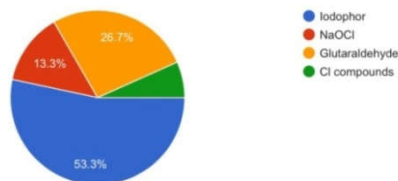
Best disinfectant for impression compounds?



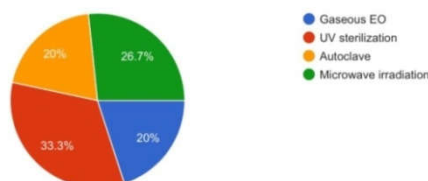
Best disinfectant for Polysulphide and addition silicone?



Best disinfectant for Polyether?

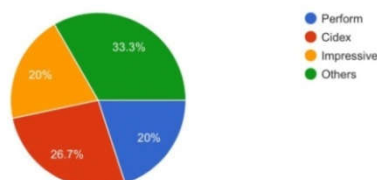


Which method of sterilization is best for disinfecting dental impressions?

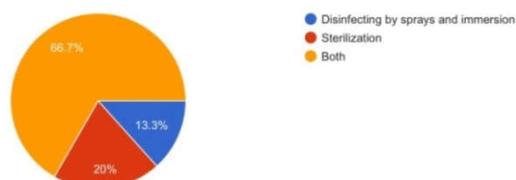


Cidex is the most commonly used disinfectant brand.

Which brand of disinfectant do you use?

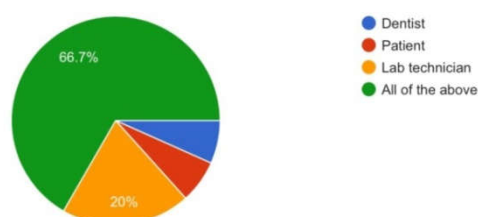


What is more effective?



Dentists, patients and dental technicians are prone to infections from dental impressions.

Who is more prone to infection from dental impressions?



DISCUSSION

The present study suggests the different disinfectants used in dental offices and the various methods of using the disinfectant. Most of the students practice disinfection of dental impressions. However, there are still a considerable number of these, who have not executed such procedures, so it is a factor

of worry facing the possibility of getting several diseases through manipulation of the contaminated impression. Besides, if the students do not understand the real importance of preventing cross-contamination, probably they will not adopt control measures when they are in their clinical office. (Rowe *et al.*, 1978; Look *et al.*, 1990) Current guidance on decontamination and disinfection of dental impressions states that 'the responsibility for ensuring impressions have been cleaned and disinfected before dispatch to the laboratory lies solely with the dentist. (Rios *et al.*, 1996) It is a good practice to agree the cleaning and disinfection process with the laboratory and label the device to indicate disinfected status'. (Drennon *et al.*, 1989) The instruction in regard to disinfection techniques, it is still much little practiced in offices and prosthetic laboratories, so, there is a need of implementing notions of biosecurity, not only in Dental Schools, but also in the curriculum of all Medical Colleges, improving the quality of life and reducing the risk of future problems with contaminated impressions. (Dychdala, 1991; Martin *et al.*, 2007; Westerholm *et al.*, 1992) It was noted that 2% glutaraldehyde and sodium hypochlorite were the most preferred by all. Change in dimensional accuracy was noted to be less when these solutions were used for disinfecting dental impressions. (Minagi *et al.*, 1990) Peracetic Acid, since its introduction in the market in 1998, has been indicated for high-level disinfection and sterilization of hospital equipment and devices. (Memarian *et al.*, 2007; Júnior *et al.*, 2003)

Nowadays, in the context of universal precaution, it is important to consider impressions and stones as an eminent risk of contamination. To eliminate possible contamination, infection control programs must be recommended to Dental Schools. So, it is necessary to rethink the teaching-learning process. In this way, obligatory infection control courses and guidelines for professional graduation is an important strategy to care disease health process. (IosVandewalle *et al.*, 1994; Zanet *et al.*, 2003) Rinsing is considered beneficial as it removes organic matter that may prevent exposure of the impression surface to the disinfectant and compromises the activity of disinfectant and reduces the load of viruses and bacteria. It has been reported by Bergman 1989, McNeill 1992 and Beyerle 1994 that washing the impression materials with water alone removes only 40% to 90% of bacteria and should be regarded as merely a gross decontamination. It was also observed that materials differ widely in terms of absorption and retention of bacteria and viruses, it is therefore not sufficient to simply rinse the impressions with water without further disinfection procedures. According to the Organization for Safety and Asepsis Procedures and Health Department of the French Ministry of Employment and Solidarity indicates the similar disinfection time 10 to 15 minutes for all impression materials, whatever their properties (hydrophilic and hydrophobic).

CONCLUSION

Dental impressions can act as a vehicle for microorganism's transmission, playing an important role in cross infection. Selection of the type of disinfectant for impressions is very important as it can induce changes in accuracy and detail. Streptococcus is the most prevalent bacteria present in dental impressions. Most dentists prefer using 2% glutaraldehyde for disinfection. Both sterilization and disinfection help in the prevention of infection to dentists, patients and dental technicians.

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