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Awareness of infection control techniques among postgraduate students and staff members - A questionnaire study

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Abstract
Aim: Infection control practices are an important issue in dentistry, as dentists are primarily responsible for observing the appropriate procedures. Therefore, the present study evaluated awareness of infection control techniques in patient management.
Materials and methods: This cross-sectional study was done among 162 participants. A self-administered questionnaire was distributed through email to all the postgraduate students and staff members in different dental colleges**.** The questionnaire collected data on knowledge pertaining to infection control procedures and various sterilization techniques. The Student's t-test was applied for the statistical evaluation of means. The level of significance was set at 0.05.
Results: Evaluating the results of studies indicated that postgraduate students were more aware and follows proper methods of sterilization than staff members. The level of awareness of infection control measures which was above average among all participants. There are various methods of sterilization adopted by the respondents as most common (40.6%) was combination of autoclave and boiling water.
Conclusion: The knowledge among all the participants was good but still they should be educated more on the subject and special professional training programs should be required to monitor the dental settings.
Clinical significance: Infection control procedures will not only improve the health of patients but also of care takers.

Keywords: Awareness; dental professional, infection control, sterilization.

Introduction

Cross infection control has occupied the attention of health care workers (HCW) since the discovery of different diseases such as human immunodeficiency virus, hepatitis etc [1]. Dentists are in general are more susceptible to contracting infectious diseases while providing patient care if they do not follow proper infection control techniques. Oral surgeons are at more risky places as they provide care with sharp instruments at very high speed and limited access in the oral cavity [2].

Researchers have observed that infective health hazards are present in dental hospitals because many infections can be transmitted by blood or saliva through direct or indirect contact, contaminated instruments and other equipments [3].

Many diseases can be transmitted in dental environs, including streptococcal and staphylococcal infections, tuberculosis, the common cold, influenza, mumps, herpes simplex, Hepatitis B virus (HBV), syphilis, and human immunodeficiency virus (HIV) [4].

There is evidence to suggest that many infected patients are also unaware of their status because of long incubation periods and post-infection window period during which antibodies cannot be detected [5]. And therefore dental personnel have a five- to ten-fold chance of acquiring hepatitis B infection than the general population [6].

The Centers for Disease Control and Prevention and other professional associations, thus recommended adherence to infection control guidelines to decrease the risk of these and related occupationally acquired infections [7].

The purpose of infection control is to eliminate the transfer of microorganisms which may be accomplished in several ways. These methods include (1) the use of personal barrier equipments, (2) immunization of dental health care workers against infectious diseases of concern, (3) correct cleaning and disinfection of surfaces and equipment to remove infectious agents, (4) sterilization of instruments, and (5) proper techniques for handling sharp instruments [8].

Therefore, it is the prior responsibility of training and teaching institutions to make certain the safety of trainees. The burden of cross infection can be reduced when a dental practitioner working in a dental office is completely proverbial to the current and universally accepted standard precautionary measures.

Infection control practices in developing countries have not been widely documented. Most hospitals have no infection control programs due to the lack of awareness of the problem or absence of properly trained personnel [9]. Therefore the study was planned to assess the knowledge and practices of infection control.

Materials and Methods

This cross-sectional study was conducted among the

postgraduates and staff members in dental colleges of Jammu, India.

Pilot study was done to validate the questionnaire which was constituted of 15 items on awareness of infection control practices. The questionnaire collected data on knowledge pertaining to infection control procedures, medical history of the patients, usage of gloves and masks, surface covering, disinfection of instruments & equipments, methods of personal protection, transmission methods and immunization, etc.

The self-administered questionnaire was distributed through email among all the study subjects in different dental colleges. Around 162 participants replied with completely filled questionnaires, out of which 96 were postgraduate students and 66 were staff members.

Statistical analysis

Questionnaire data was entered into Microsoft Excel 2007 sheet and analyzed. The Student's t-test was applied for the statistical evaluation of means. The level of significance was set at 0.05.

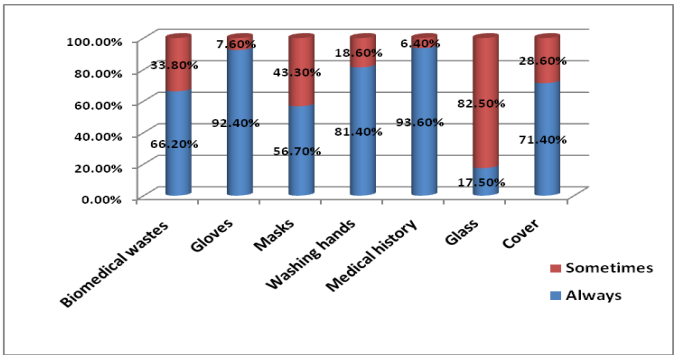
Results

A total of 162 participants took part in the study, consisted of 97 (59.9%) males and 65 (40.1%) females.

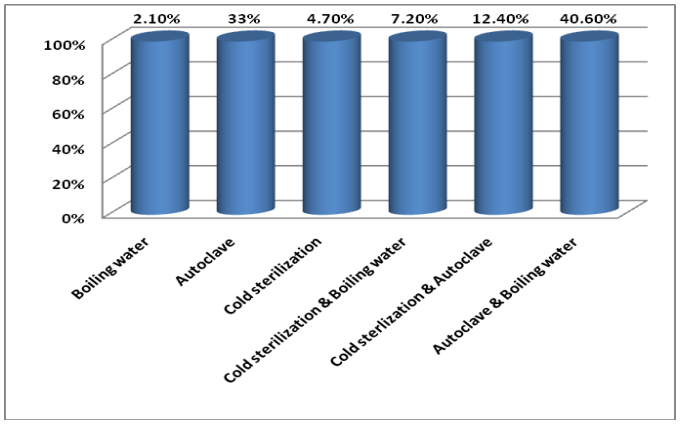
When questions were asked regarding infection control practices, 66.2% of the participants always follow proper biomedical waste management for waste disposal. More than ninety percent of subjects always take medical history of the patients and always perform procedures with gloves. Around half of the participants (56.7%) wear masks during treatment most of the times. 81.4% respondents regularly washed their hands before patients examination while 18.6% of them do it occasionally. Most of the participants (71.4%) always cover the surfaces before doing surgical procedures (Graph 1).

Graph 2 showed various methods of sterilization adopted by the respondents as most common (40.6%) used was combination of autoclave and boiling water for sterilization, 33% used only autoclave. Less number of participants uses cold sterilization methods.

It was found that postgraduate students were more aware and follow proper methods of sterilization than staff members as mentioned in Table 1. According to gender a significant difference was seen with female participants are more involved in infection control practices (p=0.000) (Table 2).



Graph 1: Percentage of participants with infection control measures



Graph 2: Showing different methods of sterilization

Table 1: Mean score of participants with infection control measures

Characteristics	No	Mean	SD	p-value
Postgraduate students	96	.67	.474	0.555**
Staff	66	.62	.489	

Table 2: Mean score of participants with infection control measures

Sex	No	Mean	SD	p-value
Female	65	.88	.331	0.000*
Male	97	.49	.503	

Discussion

Cross infection control forms an important part of practice for all healthcare professionals and remains one of the most cost effective medical interventions available.

The different aspects of infection control practices that were addressed in the questionnaire ensured the attainment of the objective of each of these measures. In the present study the implementation of different cross infection control measures was above average. This claim was supported by the usage of gloves by the participants regularly which was more than 90%. These findings were supported by the study conducted by Nasiral in 2009 [10].

The results of previous studies indicate inappropriate knowledge and attitude towards infection control among dentists [11]. Studies conducted in Iran also demonstrate low knowledge and attitude among dentists regarding this issue [12, 13].

The data showed level of awareness of infection control measures which was fairly good. It was, however, found to be significantly better among postgraduate students than staff members and the results were similar to the study done by Uti *et al*. among Nigerian dentists [14]. This could be attributed to better training in infection control in their curriculum. It may also be that the younger practitioners are more receptive to new thinking than the older practitioners. However the level of awareness was comparatively good among 3rd year medical students as compared to II year students [15].

In this study, mostly dental surgeons always took a patient's medical history. This is similar with an earlier study in which about 92% claimed that they always took medical history [16]. This practice will enable the dentist to examine the patients more closely for oral manifestations and this will also ensure prompt treatment.

Hand hygiene prevents cross infection in dental hospitals, washing hands in between patients where level of application of these measures by practitioners was twice the application level of general dentists [14]. This difference could be attributed to the type of cases that are treated by study participants and more involvement in surgical treatments. There is evidence of a reduction in skin flora when hands are scrubbed with soap and this should be encouraged in practice [17]. In a study by Patarakul *et al*., (2005) hand hygiene observance among Health care workers was 34% [18]. Also it was similar with Pittet *et al*., who had observed many opportunities for hand hygiene before implementing a campaign of hand hygiene during routine patient care in Geneva [19]. Using hand hygiene as a solitary gauge to diminish infection is improbable to be successful when further factors in infection control, such as environmental hygiene, stuff levels and education are insufficient [20].

The usage of eye glasses was even more uncommon than use of facemasks. These proportions are higher than those reported in the previous Kenya study [21]. However in another study by Al-Rabeah and Mohamed, 100% of dentists treat patients with the usage of gloves and 90% of them with masks [22]. Similarly, Al Ruhaimi reported that that around 2 to 4% of dentists in Saudi Arabia never wore gloves during treatment [23]. Authors in Kuwait observed that 90% of dentists wore gloves, 75% masks and 52% wore protective spectacles at the time of treatment [24]. Some studies mentioned less usage of gloves, masks and protective spectacles [25].

The autoclaving of instruments is the most frequently adopted method of sterilization in this study and less number of participants use combination of autoclaving and cold sterilization. These findings are in agreement with study conducted by Saheeb *et al*. in 2003 [26]. Cold sterilizing solutions are not suitable for routine use and it has been recommended that their use should only be limited to instruments, which cannot be exposed to heat [27].

Sofola and Savage [16], 84.1% reported using a steam autoclave in their study; this could be a result of the difference in the sample of dentists. Boiling and cold sterilization are not acceptable methods of sterilization and need to be discouraged as their effectiveness cannot be verified.

It is very imperative for dental practitioners to set up positive measures to prevent cross infection and transmissible diseases. To implement these, dental health care takers must be aware regarding the risk factors of theses serious infectitious diseases.

Conclusion

The results of this study indicated that there was an increased awareness among study subjects towards the implementation of cross-infection control techniques. The awareness level was higher among postgraduate students than staff members. Still this level of implementation can be improved by following proper sterilization guidelines. To improve infection control in the dental field, dentists require more professional training.

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