

‘Do No Harm’

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Abstract: This study was conducted with a purpose to assess the perception of Cross infection in Dental practice at 3 institutes and some private clinics. Total of 150 dentists were questioned/interviewed and data recorded on a Questionnaire consisting of 15 questions. 69% of dental practitioners were immunized & 62% routinely screen their patients for the Hepatitis B. Verbal history taking method is predominantly adopted by most of the dentists and this accounts to 76.5 %, rest document it in writing. 93 % were of the opinion that autoclaving is the best method of sterilization but only 47.5 % run autoclave every day, 76.1 % dentist routinely uses gloves and among them 92 % dentist handles one patient with a single and new pair of gloves. 65 % dentists neglected use of protective eye wear at the time of procedure and mask wearing was noted only in 40.3 % dentists. Resource deficiency and Cost factor was considered to be the primary reason by 64 % of the dentists for not following the standard Cross infection control precautions.

Key words: Do no harm, Cross infection, Control, Sterilization.

I. Introduction

First, Do No Harm or ‘Primum Nil Nocere (Latin) is one of the key precepts of medical ethics¹, which means one should not add to woes of already ailing patient if not capable of benefitting him. Cross infection control is one such issue that comes under purview of ‘First, Do No Harm’. Inter-transmission of infectious agent between health care provider and patients within a clinical set up is called Cross Infection². This requires personal contact or contact with contaminated objects example instruments and requires an infectious source or reservoir³. This can be a diseased patient or healthy carriers of pathogenic micro-organisms⁴. Dentists work area is one such biological environment which poses a constant threat not even to the dentist but also to the other patients by means of cross infection. Viral diseases like Hepatitis (B, C, D), HIV, HSV (I & II) and CMV are constant threat to dentist and to the society^{5,6}. Cross infection to patients during dental treatment can occur by use of improperly sterilized instruments, non wearing/changing of gloves between two patients and to dentist by direct contact of tissues, secretions (saliva, blood, exudates), conjunctival inoculation of pathogen during splatter from oral cavity, by aerosol produced from dental drills and needle stick injuries^{4,7}. Any abrasion/cut lesion on skin of working hands provides a potential route for blood borne viral infections from dentist to patients and vice versa⁸. Duration of high risk procedure is directly proportional to chance of transmission of blood borne infections. The above can be avoided by strict following of CDC criteria⁹ of standard sterilization protocol and safe disposal of used disposables. Checking the status of patients before treatment solves the tri-fold purpose 1. The status of the patient is known so the patient can be further referred for proper treatment. 2. Extra precautions can be taken during treatment of patients to avoid cross infection and last but not the least 3. Legal issues^{10,11}. Infection control has become an integral and indispensable part of treatment now and none neither dentist nor patients questions its necessity¹².

II. Material And Methods

This cross sectional study included dentists working as faculty at Uttarakhand Dental & Medical research Institute, Dehradun, Saraswati Dental College & Hospital, Lucknow, Department of Dentistry, Era's Lucknow Medical College, Lucknow and various private clinics in the locality of Daliganj and Balaganj of Lucknow city. The sample size comprises of 150 dentists. Proper ethical clearance was obtained from the colleges ethical committees, the names and identity of dentists have been concealed to take care of ethical issues, the dentists were interviewed and the data recorded on questionnaire consisting of 15 questions pre-validated by a pilot study (attached). The data analyzed using SPSS version 10.0

QUESTIONNAIRE

Name

Qualification with Specialization if any.....

Working in- 1. Institutional Set-up (Name).....

2. Private Set-up (tick if yes).....

Tick in the relevant boxes to answer

	Questions	YES	NO
1	Do you document the medical history of patient?		
2	Screening of the patient before procedure for HIV		
3	Screening of the patient before procedure for HIV and Australian antigen		
4	Screening of the patient before procedure for HIV, Australian antigen & HCV		
5	Are you immunized for Hepatitis B?		
6	Do you use gloves?		
7	If yes, Do you use gloves during examination of the patients also?		
8	Every time you use a separate gloves pair for different patient?		
9	After gloving yourself, do you touch light/chair handles and switches?		
10	Do you wear face masks during attending the patient?		
11	Do you change your facemask every time you attend a new patient?		
12	Do you run Autoclave every day for sterilizing the instruments?		
13	Do you wear protective eye wear during the procedure?		
14	Do you follow the 'Segregation at the point of generation' color coded waste disposal system?		
15	Reason for not following Standard Sterilization protocol? 1. Patient load. 2. Shortage of manpower/auxiliary. 3. Cost factor. 4. None of the above.		

III. Results

No drop outs from the study were there. According to the present study 69.3% of the dental practitioners were immunized against hepatitis B and most of the dental practitioners routinely screened their patients for Hepatitis B and C i.e., 62%. The verbal history taking method is predominantly adopted by most of the practitioners in the region i.e., 76.5%. They are very well aware of the sterilization methods i.e., 93.5% are of the opinion that autoclave is the best method for sterilization. Protective Eye shield wearing at the time of surgery often neglected by majority of practitioners i.e. 65.8 %. Gloves were used by majority, even for examination purpose i.e., 76.1 % while mask wearing was noted in 40.3% (Table 1). 92 % Dentists those used gloves, handled one patient with a single pair of gloves while numbers of masks worn in a single day were one to two masks by 36.5% of the practitioners. With regards to autoclaving of instruments, 47.5% of the dentists autoclaved them every day. Resource deficiency & cost factor was considered to be the primary reason (64%) for not following standard precautions.

IV. Discussion

Cross infection control is a pertinent topic among health care workers today. Dentists in particular are very prone to such detriments due to the nature of their work. According to the results of our study 69.3% of practitioners were immunized against hepatitis B.

These results are highly variable to studies done in Berlin¹³. However values are much higher as compared to Lithuania (35.9%)¹⁴ and Kenya (45%)¹⁵ where less number of dentists were immunized against hepatitis B. This shows increased concern of dentists in our region regarding hepatitis B. However immunization status of dentists in England (97%)¹⁶ and Jordan (95%)¹⁷ was found to be much high. Reason may be due to the many awareness campaigns and free immunizations available for dental personnel in those areas. This study showed that 62% of dentists routinely screened their patients for hepatitis B & C. It is a part of current recommendations to routinely screen patients for hepatitis B before having dental treatment so that necessary precautions can be taken.¹⁸ It is a well known fact that dentists are in particular vulnerable to hepatitis B and C due to the nature of procedures and instruments for dental treatment, making it vital for dentists to screen patients prior to treatment.¹⁹ This number is slightly more than half of the sample size of dentists

screening their patients high- lights that still about 40% of dentist follows a casual approach regarding concerns of hepatitis among dentists.

Regarding knowledge about cross infection it was found that majority of the dentists were well aware of universal precautions (masks, gloves) to be used during patient management. This is in general comparable to trends throughout the world where gloves and masks are preferred as a part of personal protective equipment while sterile coverings and protective eye wear are in less common use. It is important to increase the use of eye wear as majority of dental procedures like scaling and root canal treatment exposes the dentist to a high number of microorganisms²⁰ contained in aerosol. Our study showed very less number of dentists using glass protection during dental procedures as compared to literature.^{21,22} However studies done in well developed countries like Canada²³ showed an increased trend towards personal protective equipment. Reasons for this result may be the extra burden of patients and less resources. Also dentists in general wrongly consider contamination from splashes a minor source of cross infection.

Another important factor related to spread of infectious agents is failure to change gloves between patients. It is important to use gloves during dental treatment in order to not only avoid contamination from patient's blood, saliva or infected instruments but also to prevent cross infection from patient to patient.²⁴ When asked about gloves use 92% of dentists stated that they treat one patient with single pair of gloves and this number is higher as compared to previous studies done on the matter.^{21,25,26}

With regards to sterilization it was found that only 47.5% of dentists autoclaved their instruments daily. This is less as compared to studies done in England and Holland where hand pieces are routinely autoclaved by dentists^{27,28} however this number is more as compared to a study done in Malaysia.²⁹ Reason may be due to the perception of dentists that frequent autoclaving may lead to malfunctioning of the hand pieces and rusting and blunting of instruments. Also many practitioners use single hand piece and due to burden of patients it may be difficult to find out time for autoclaving hand piece and other instruments daily.

With respect to reason for not following cross infection control guidelines, majority of dentists stated resource deficiency to be the primary cause. Limited literature is available on this subject for comparison. The cause may be burden with the resultant lack of proper patient management according to international protocols of cross infection control.³⁰ Cross infection control has become a global problem. Worldwide 300 to 400 million people are chronic hepatitis B carriers. It is important to make note of this problem especially among dentists as it is postulated that dentists and dental staff are a frequent cause of transmitting infections to themselves as well as to other patients.³¹

V. Conclusion

In conclusion the knowledge of the dental practitioners in the region is good and there is increased awareness as far as sterilization and cross infection is concerned but knowledge is all about application, thus further effort is required on the application side in order to tackle the hazard of infective diseases like HIV, Hepatitis B & C. The various reasons for not practicing universal precautions were Cost, Resource deficiency and burden of the patients.

Table 1

S. No.	Personal protective modality	% responded- YES	% responded- NO
01	Face mask use	40.3 %	59.7%
02	Eye wear	34.2 %	65.8 %
03	Gloves use	76.1 %	23.9 %

References

- [1]. Smith, C. M. (2005). "Origin and Uses of Primum Non Nocere — Above All, Do No Harm!". *The Journal of Clinical Pharmacology* 45 (4): 371–377.
- [2]. Neagu EA, Bălteanu M, Ionescu G, Băncescu A, Iliescu A and Skaug N. Control of blood-transmitted infections in dentistry. *Roumanian archives of microbiology and immunology*. 2007; 66: 26-36..
- [3]. Adel A, Mousa, Nadia M, Mahmoud, Azza M, Tag El Din, Knowledge and attitudes of dental patients towards cross infection control measures in dental practice. *Eastern Mediterranean health j*. 1997; 3(2): 263-73.
- [4]. Verrusio AC et al. The dentist and infectious diseases, a national survey of attitudes and behaviour. *JADA* <1989;1 18: 553 62.
- [5]. Waikinson AC. Primary Herpes Simplex in a dentist. *BDJ*,1982,153:190-91.
- [6]. Tullman AB et al. The threat of hepatitis B from dental school patients, *Oral surg, oral med and oral path*,1980,44:214-16.
- [7]. Girdier NM. Mathews RW, Scully C. Use and acceptability of rubber gloves for OP dental treatment. *Journal of dent*, 1987,15:209-12.
- [8]. Zaaïjjer HL, transmission of hep. B virus by aurgeons. *Ned Tijdschr Genesk* 1999;143(47);p2348-50.
- [9]. DePaola LG. Infection control and dental practice: frequently asked questions. *Compendium of continuing education in dentistry* (Jamesburg, NJ: 1995). 2004; 25: 38-42.
- [10]. Sultan Mehmoed et al, Scrum hepatitis and liver cirrhosis practical guideline for prevent; on. *J MS*; 1997;(7): 1-2.
- [11]. Umer khitab et al. hepatitis in dental practice, *PODJ*, Jr.25(1) June 2005:25-28.
- [12]. Abdullah Al-Rabeah et al, infection control in the private dental sector in Riyadh *Annals of Saudi medic me*, vol 22, Nos 1 2,2002:13-17.

- [13]. Ammon A, Reichart PA, Pauli G and Petersen LR. Hepatitis B and C among Berlin dental personnel: incidence, risk factors, and effectiveness of barrier prevention measures. *Epidemiology and infection*. 2000; 125: 407-13.
- [14]. Rimkuvienė J, Puriene A, Peculiene V and Zaleckas L. Percutaneous injuries and hepatitis B vaccination among Lithuanian dentists. *Odontologijos studija*. 2011; 13: 2.
- [15]. Suckling RM, Taegtmeier M, Nguku PM, et al. Susceptibility of healthcare workers in Kenya to hepatitis B: new strategies for facilitating vaccination uptake. *Journal of Hospital Infection*. 2006; 64: 271-7.
- [16]. Rhodes A, Aw TC, Allen C and Ridout M. Immunisation status of dental practice staff in Kent. *British dental journal*. 2008; 205: 20-3.
- [17]. Qudeimat MA, Farrah RY and Owais AI. Infection control knowledge and practices among dentists and dental nurses at a Jordanian university teaching center. *American journal of infection control*. 2006; 34: 218-22.
- [18]. Scully C. Hepatitis B: an update in relation to dentistry. *British dental journal*. 1985; 159: 321-8.
- [19]. Krsteva A, Panov VI, Garova M, Velikova R, Kisselova A and Krastev Z. Hepatitis B and C in dentistry. *Journal of IMAB*. 2008: 38-40.
- [20]. Bennett AM, Fulford MR, Walker JT, Bradshaw DJ, Martin MV and Marsh PD. Occupational health: Microbial aerosols in general dental practice. *British dental journal*. 2000; 189: 664-7.
- [21]. Scully C, Porter SR and Epstein J. Compliance with infection control procedures in a dental hospital clinic. *British dental journal*. 1992; 173: 20-3.
- [22]. Hudson-Davies SC, Jones JH and Sarll DW. Cross-infection control in general dental practice: dentists' behaviour compared with their knowledge and opinions. *British dental journal*. 1995; 178: 365-9.
- [23]. McCarthy GM, Koval JJ and MacDonald JK. Compliance with recommended infection control procedures among Canadian dentists: results of a national survey. *American journal of infection control*. 1999; 27: 377-84.
- [24]. Wood PR. A practical gloving and handwashing regimen for dental practice. *British dental journal*. 1992; 172: 367-68.
- [25]. Stevenson AR and Higgins TJ. Infection control in general dental practice: Results of a postal survey of 600 registered dental practitioners in New South Wales. *Australian dental journal*. 1989; 34: 106-14.
- [26]. Burke FJT, Baggett FJ and Wilson NH. Glove wearing by dental surgery assistants in general practice: results of a survey. *Dental update*. 1992; 19: 263-65.
- [27]. Scheutz F and Langebæk J. Dental care of infectious patients in Denmark, 1986–1993: theoretical considerations and empirical findings. *Community dentistry and oral epidemiology*. 1995; 23: 226-31.
- [28]. Howard C. A survey of cross-infection control in general dental practice in England. *Health Trends*. 1989; 1: 9-10.
- [29]. Razak IA and Lind OP. Cross-infection control in Malaysian dental practice. *Singapore dental journal*. 1995; 20: 11.
- [30]. Hafeez A, Khan Z, Bile KM, Jooma R and Sheikh M. Pakistan human resource for health assessment, 2009. *Eastern Mediterranean Health Journal* 2010. 2010: 146-50.
- [31]. Mahboobi N, Agha-Hosseini F, Safari S, Lavanchy D and Alavian SM. Hepatitis B virus infection in dentistry: a forgotten topic. *Journal of viral hepatitis*. 2010; 17: 307-16.