

Awareness, Attitude and Behaviour Trends in Dental Students & Interns Towards Infection Control Measures in Prosthodontic Clinics

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ABSTRACT

Background: The aim of the study is to evaluate attitude and awareness of dental students and interns towards infection control measures and to assess their satisfaction towards applying these measures during prosthodontic treatment in Baba Jaswant Singh dental college, hospital & Research Institute.

Materials and Methods: A questionnaire study was conducted among third, fourth year students and interns of Baba Jaswant Singh Dental College, hospital & Research institute to determine their awareness, attitude towards infection control measures and their satisfaction towards applying these measures in prosthodontic clinic. It was consisted of close ended questionnaire related to cross infection, vaccination status, personal protective barriers, sterilization and disinfection of dental equipment's, previous education about infection control and subject's satisfaction with their knowledge and attitude. The data will be collected and analysed. Results will be calculated on the basis of percentages.

Results: Total of 300 study subjects enrolled in questionnaire. Their attitude and awareness toward infection control in prosthodontic clinic was varied between 100% were regularly using gloves with patient to 47.3% were regularly disinfecting dental cast before sending it to dental laboratory. Most of the subjects responded to the evaluation of their knowledge and policy implementation of infection control in a prosthodontic clinic in the present survey. ($P < 0.0001$).

Conclusion: The findings indicated low awareness toward qualitative infection control in prosthodontics clinic. Thus, an increased number of quality control workshops programs concerning prosthodontics clinics is required.

Keywords: Sterilization, Disinfection, Vaccination, Infection control.

INTRODUCTION

Since the human oral cavity is an excellent route and residence for the variety of microbes that might be infectious &/or detrimental to others.¹ Also, the research has been advocating since ancient times that disease transmission is most common in dental

clinics via diversity with routes.² These diverse routes include contact directly through blood, oral fluids, &/or other secretions.^{3,4} Although, the indirect contact with contaminated instruments, operatory equipment, or environmental surfaces; or

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aerosol contaminants can never be left neglected.⁵ It's in a dental practice that dental surgeons are frequently exposed to patient blood, blood-contaminated saliva during dental procedures and this is an easy proven source of greatest transmission from patient to dentist or an assistant in the dental clinic itself.⁶ This is the main cause why infection quality control regimen is an integral part of dental practice. Here the role for all dental graduates by dental education necessitates a high level of training skills knowledge on infection control. Especially since we as human integrity to pass from the deadly era of pandemic COVID19 need to follow recommended infection control regimen i.e. explained meticulously and needs to be taught to all students in their early years in dental education itself as a necessity.⁷ This is indispensable to be considered as an ethic on humanitarian grounds as well as to adapt their learned attitudes on qualitative infection control when they become professional dentists

Though as per various sources advocating research those large numbers of new dental personnel currently are trained in dental hospitals and are allowed to participate in rendering treatments to patients only if they are following infection control program as per recommendation. Cross-contamination is in dental students as compared with more experienced members of the dental team have demonstrated that future dentists have not always adhered to infection control measures properly since ancient times.⁸ Well, it is the ethical duty of qualified dentists to ensure qualitative and correct infection control procedures are followed when patients are treated. Also, it is imperative here to emphasize to the dental students the protocols essential in reducing the risk of infection in regards to both individuals i.e. themselves, and to their patients.

The only factor is the absence of a comprehensive institutional effort to teach infection control regimens responsible for the failure of qualitative infection control in dental clinics; therefore, start from the institution where the students will acquire their training is demanded. The absences of structured programs in dental healthcare ever since have been a major factor to contribute to the failure of training faculty on why poor infection control measures become more propounded.

Prosthodontics Clinic in contrast to other streams required a high degree of concern regarding cross-infection through patients, personnel, unsterilized instruments, equipment's and during prosthodontics treatment similar infection control regimen should be supplemented by the laboratory as well because cross-infection chances have to be halted in both the fronts in regards to prosthodontics stream where both clinics and laboratory is on stake.

Thus, during the fabrication of prostheses various measures controlling the spread of infectious disease carriers that tends to presents a cross-contamination hazard shall be incorporated.⁹ Dental impressions, maxilla-mandibular registration bases/apparatus, trial/final prostheses are all exposed to contamination in the patient's mouth and such dental particulars that can spread infectious agents to the clinician, other patients, and the staff of the dental laboratory needs extra attention for preventing the risk of infection.¹⁰ The present research paper aims to evaluate the attitude, awareness, behavior trends in dental students and interns towards infection control measures in prosthodontics clinics.

MATERIALS & METHODS

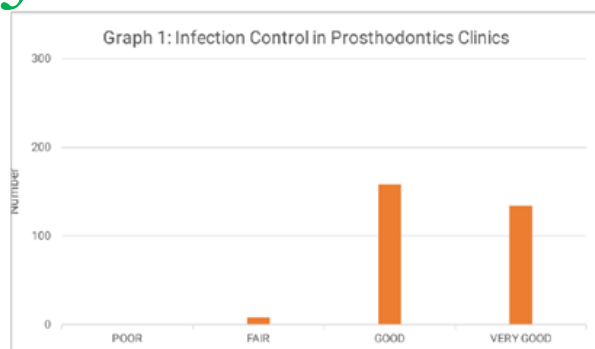
A questionnaire study was conducted among dental students (fourth year and fifth year) and interns of Baba Jaswant Singh Dental College, Hospital & Research Institute to determine their awareness, attitude towards infection control measures. The sample comprised of 300 subjects and was consisted of the close-ended questionnaire related to cross-infection, vaccination status, personal protective barriers, sterilization and disinfection of dental pieces of equipment, previous education about infection control, and subjects satisfaction with their knowledge and attitude.).

The questionnaire consisting of 13 close-ended questions: one question each related to the cross-infection knowledge, recording hepatitis B virus (HBV) vaccination status and previous sharp injuries, 8 questions to assess the attitude and awareness towards infection control in prosthodontics clinic, one question each on related to previous education in infection control during the graduate studies, and assessing subjects' satisfaction about their knowledge and attitude.

Table 1: Master data questionnaire.

S.No.	QUESTION	RESPONSE	NUMBER	PERCENTAGE
1.	Are you familiar with the term “Cross infection”?	Yes No	300 0	100% 0
2.	Have you ever been vaccinated for HBV?	Yes No	243 57	81% 19%
3.	Have you ever had injury from sharp instrument while doing patients?	Yes No	157 143	52% 48%
4.	Do you regularly wear the following barrier during dental procedure in prosthodontic clinic? Gloves Face mask Protective glass Protective gowns Head cap	Yes No Yes No Yes No Yes No Yes No	300 - 300 - 250 50 300 - 300 -	100% - - 100% 83% 17% 100% 100% -
5.	Do you make the patients wear apron during treatment?	Yes No	280 20	93% 7%
6.	Do you disinfect dental chair after each patient?	Yes No	289 11	96.3% 3.7%
7.	Do you regularly disinfect the following items before being used for patients? • Rubber Bowl • Alginate mixing spatula • Shade Guide	Yes No Yes No Yes No	300 0 292 8 258 42	100% - 97.3% 2.7% 86% 14%

8.	Do you regularly disinfect the following items before sending it to dental laboratory? - Dental cast - Denture prosthesis - Metal framework for Removable, fixed prosthesis after try in - Bite registration or wax rim	Yes No Yes No Yes No Yes No	142 158 280 20 300 0	47% 53% 93% 7% 100% -
9.	Do you resterilize, sterilize and packed instruments if not used for few days?	Yes No	300 0	100% 0
10.	Do you discard clinical waste in colour coded bins?	Yes No	300 0	100% 0
11.	Do you find informative lectures about infection control during your under graduate or internship programme helpful?	Yes No	300 0	100% 0
12.	How do you evaluate your implementation of infection control policy in prosthodontic clinic?	Poor Fair Good Very Good	0 8 158 134	0 2.7% 52.7% 44.6%
13.	Are you satisfied with your knowledge and performance in infection control in Prosthodontic clinics?	Not Satisfied Little Satisfied Fairly Satisfied Almost Satisfied Totally Satisfied	0 6 27 200 67	0 2% 9% 67% 22%



Graph 1: Infection control in prosthodontics clinic.

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Graph 2: Satisfaction with knowledge and performance of infection control.

The questionnaire was given to all students manually and was filled along with informed consent – which was obtained from each student before commencing the questionnaire. The questionnaire (Annexure 1- questionnaire and attached consent form in dual language) was pretested on a random sample of dental students to ensure practicability, validity, and interpretation of responses. To evaluate the implementation of infection control policy grading was done as poor zero mark, fair one point, good two points, very good three points, Satisfaction of knowledge and performance in infection control grading was done as not satisfied, little satisfied, fairly satisfied, and satisfied. The data was collected tabulated and percentages were calculated for comparison

(Note- the present survey study was conducted at At Baba Jaswant Singh Dental College & Research Institute & Hospital and local ethical committee permission was taken priorly)

RESULTS

A total of 300 subjects enrolled in the research questionnaire all were adverse with terminology cross-infection. (Table1) In the 300 study subjects; there were 103 interns, 98 fourth-year students, and 99 third-year students. Among them, 81% were vaccinated for HBV and only 19% were not vaccinated. For the sharp and eye splashing injuries, 52.5% of the subjects were reported that they had a sharp injury at least once, comparing to 48% affected with eye splashing injury. Results of study subjects attitudes and awareness towards infection control in the prosthodontics clinic are varied between 100% were regularly using gloves, 100% Face mask, 83% Protective glass, 100% Protective gowns & 100% Head cap. Also, all dental personnel and surgeons 100% were resterilizing the sterilized and packed instruments if not used for few days. With patients about 93%, dental surgeons were regularly wearing an apron during treatment and 96.3% of dental surgeons were disinfecting dental chairs after each patient. Rubber bowl, alginate mixing spatula, shade guide before being used for patients by dental personnels, was not observed in 0, 2.7%, and 14% respectively. The dental cast was disinfected by 47.3% of dental personnel's, 93%times denture prosthesis. About 100% disinfecting of metal framework removable of the fixed prosthesis was done and 86% bite registration or wax rim after try in which was disinfected.

100 % of dental personnel were discarding clinical waste in color-coded bins and 100% were assuring that the lectures about infection control during undergraduate or internship programs are informative and helpful. Only 45% of study subjects had evaluated implementation of infection control policy in prosthodontics clinic as very good and about 27% of them assigned it fair. (Graph1)Towards satisfaction of infection control policy in their prosthodontics clinical practice (Graph II), only 22.3% had evaluated it as totally satisfied; while 2% as little satisfied with their knowledge and their performance in infection control in the prosthodontics clinic practice were evaluated in this survey. The questions of infection control indicate statistical significance in the responses to all the questions. The attitudes percentage of enrolled subjects in the study was statistically significant to the two questions related to the evaluation of their knowledge and related to

policy implementation of infection control in prosthodontics clinic (< 0.0001).

DISCUSSION

Measuring attitudes and awareness of dental personnel are toward qualitative infection control in prosthodontics clinic is need of the hour and needs to be incorporated in the early years of education for practice. Enhancing dental student's skills and motivating them to adopt attitudes and behaviors learned on infection control guidelines as recommended when they become professional dentists is indispensable.¹¹ This questionnaire added to data in the literature and also evaluated the attitudes and awareness of dental students and interns towards infection control measures in the Prosthodontics Clinic.¹² This survey also assessed dental personnel education and provided a vital assessment of their knowledge and implementation of qualitative infection control policy in the Prosthodontics Clinic. It is pretentious here to mention that this study is internal validity, which means the data represents one dental school only. Not all infection control procedures though are incorporated and/or investigated because of concerns that increase the number of questions would reduce the accuracy of response and response rate. This high percentage of respondents in the study responds to the questionnaire. HBV immunization among the subjects was 81%. Only 19% of subjects were not vaccinated. Increase number of vaccinated dental personnel's attributes to the strong encouragement of the dental school as well. The result of this study is in concordance to one reported out in other dental schools.¹³ De Souza *et al.*¹⁴ reported that 90.8% of all senior students received vaccinations in and McCarthy and Britton's¹⁵ study showed 100% immunization on other hand. A previous study advocated that about 20% of the incidences of hepatitis B developed after needlestick injuries and the sharp injuries are more likely to occur in the dental environment than in other health care settings which itself is an undeniable fact. The study by McCarthy and Britton¹⁵ reported 82% accidental injuries, whereas, in our questionnaire, 48% of the subjects reported that they don't have a sharp injury.

The subject's attitudes toward infection control in the Prosthodontics Clinic, by dental personnel's, is cared most by about means of protective barriers

(gloves, face mask, and protective gown), and the same is mentioned in our questionnaire. However, they were less concerned about using other protective glasses 83%. This result is comparable to previous studies where using protective glasses were low, around 59%.^{16,17} It is pretentious here to revisit awareness about disinfecting important items used regularly in the Prosthodontics Clinic (rubber bowl, alginate mixing spatula, face bow, and shade guide) and these are assets for infection control between dental office and dental laboratory^{18,19}. The questions included in the questionnaire related to disinfecting Items sent or received by the dental laboratory were being associated with significant infection control measures in our survey. As per the Centers for Disease Control and Prevention Guideline for Infection Control in Dental Health-Care Settings in 2020 different strategies to control infection in the dental clinic and dental laboratory are recommended.²⁰ This is to reduce the risk of infection of laboratory technicians by saliva or blood-borne infection such as HBV has been documented well. The items such as impressions, dental cast, denture prosthesis, a metal framework for a removable or fixed prosthesis, bite registration, or wax rim shall be disinfected before they are sent to the dental laboratory.²¹ In this study, 47.3% of the study subjects rinsed the impression and apply disinfectant before sending it to the dental laboratory. On contrary to this in the previous study²² by Ahmad *et al.*¹⁷ 87% of the subjects disinfect the impression before it was sent to the laboratory. Also in our survey, the (80% - 95%) study subjects disinfected other dental prosthetic items (denture prosthesis, the metal framework for a removable or fixed prosthesis, bite registration or wax rim, and face bow and fork) before sending them to the laboratory. These results intimate that the remaining population in dental school needs additional education about routine disinfection of impressions and prostheses. Thus, to facilitate awareness on qualitative infection control amongst dental students especially in the COVID19 era, it is necessary to have a background about control infection in the dental clinic included in the education system as a basic subject. Questions related to previous education of quality infection control included in the questionnaires showed sufficient knowledge among the subjects in this survey. All of them (100%) had lectures

about infection control during their academic program; The result of this study regarding Abreu *et al.*²² Question for satisfaction regarding dental surgeon attitude towards infection control in the prosthodontic clinic, and the correlation of their satisfaction with their attitude was evaluated and results reflect study subjects responded 45% cases on a positive scale. This suggested that educational, motivational, and guidance efforts are needed to improve dental personnel's attitudes and awareness toward qualitative infection control in the prosthodontic clinic. This also aids in recommending that focus on strategies to motivate dental education in the early years on implementing infection control measures with routine usage is a necessity.

Various limitations of the present survey are also acknowledged as this questionnaire being conducted in a single institution results cannot be generalized to the general population. However, the findings would be useful for planning, implementation of future interventions, including a national survey of dental institutions across the country that is an additive effort to the literature database.

CONCLUSION

The findings of the present survey indicate insufficient attitude and awareness toward qualitative infection control in prosthodontics clinics. As the deficiency of education to support the latest recommended infection control measures, reflected poor performance toward infection control policy. Thus suggesting, increased number of quality control workshops programs in dental healthcare are required with infection control regimen in prosthodontics setup.

CONFLICTS OF INTEREST

The authors declare they have no potential conflict of interests regarding this article.

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