
EVALUATION OF INFECTION CONTROL MEASURES IN A PUBLIC SECTOR DENTAL HOSPITAL OF PESHAWAR

Ahmed Abdullah¹, Saira Afridi¹, Syed Imran Gillani¹

1. Sardar Begum Dental College

ABSTRACT

Objective:

To evaluate infection control measure in a public sector dental hospital of Peshawar.

Methodology:

It was a cross sectional study conducted in Khyber college of Dentistry. Study subjects were Dental health care providers who were willing to participate in the study. A structured questionnaire was designed that included various categories of infection control. Data was entered into SPSS version 17. Descriptive statistics were applied and frequencies and percentages were obtained.

Results:

The results from the data shows that the overall score for the infection control standards were less than 50%. Among the various categories of infection control only personal hygiene standards showed good score (77.3%). Personal protective equipment score was adequate (61%) while hand hygiene score was inadequate (52%). The rest of the categories showed poor scores.

Conclusion:

The result of the study shows that majority of categories of infection control measures at Khyber college of Dentistry are inadequate or poor.

Keywords:

Sterilization, Infection control, Personal Protective Equipment and hand hygiene.

INTRODUCTION

Infection control in dentistry has always been a worldwide concern. Infection Control is defined as procedures and protocols designed to prevent or limit cross-contamination in the

Correspondence:

Dr. Ahmed Abdullah
Sardar Begum Dental College
Contact: 0332-5822622
Email: ahmedakg@gmail.com

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health care delivery environment.¹ If compromised, it plays an alarming role in the spread of highly debilitating infectious diseases. Blood borne pathogens such as Human Immuno-deficiency Virus (HIV), Hepatitis B & C and respiratory pathogens such as M. tuberculosis which affect the quality of life and may be fatal.² Therefore, the control of cross-infection and cross-contamination in dental practice is an important consideration

Current evidence indicates that, if recommended infection control procedures are followed, there is minimum risk of transmission of serious infectious diseases during dental treatment. CDC issued guidelines in 2003 for proper maintenance and sterilization of dental equipment, hand hygiene for dentists and dental hygienists, dental radiology, medications, and oral surgery, environmental infection control, and standards for dental laboratories.³ Dentists have a duty to take appropriate precautions to protect their patients and their staff from the risk of cross-infection. To minimize the risk of transmission of infection between patients and between patients and Health Care Worker (HCW) a sensible and practical but strict routine

for the prevention of cross-contamination and cross-infection should be followed. Clinical dental and auxiliary staff should additionally protect themselves by ensuring up-to-date immunization against hepatitis B and other infectious diseases including tuberculosis, poliomyelitis, rubella, tetanus, and diphtheria and varicella zoster. Unfortunately, Pakistan does not have any policy or guidelines on infection control particularly for dental settings.⁴ Dentists have a duty to take appropriate precautions to protect their patients and their staff from the risk of cross-infection. To minimize the risk of transmission of infection between patients and between patients and Health Care Worker (HCW) a sensible and practical but strict routine for the prevention of cross-contamination and cross-infection should be followed. Clinical dental and auxiliary staff should additionally protect themselves by ensuring up-to-date immunization against hepatitis B and other infectious diseases including tuberculosis, poliomyelitis, rubella, tetanus, and diphtheria and varicella zoster. Given the importance of infection control in dentistry, this study aimed at evaluating the infection control measures at a public sector dental hospital of Peshawar.

METHODOLOGY

It was a descriptive cross sectional study conducted at Khyber college of Dentistry Peshawar. A total number of 86 participants were selected through non probability sampling. An interview based structured questionnaire was developed which included questions regarding Infection Control Practices; sub-categorized into nine individual areas namely Practice Management (Policy, Guidelines, Standard Operating Procedures, Training), Personal Protective Equipment (Standard protocols for using Eye-wear, Gown/Coat, Gloves, Face-Mask for every patient), Hand Hygiene (Steps & Protocols), Immunization Status of DHCPs (Including Screening and record keeping), Work Related Injuries (Post-Exposure Protocols), Sharps Management (Needles and Blades), Instrument Reprocessing, Sterilization & Disinfection, Waste Management (Handling & Proper Disposal) & Personal Hygiene (General & Specific). Individual results for different categories of infection control were gathered and were classified into the following categories.

Table: 1 Categorization of results of infection control.

S.No	Categories	Percentage
1	Excellent	90-100%
2	Very good	80-89%
3	Good	70-79%
4	Adequate	60-69%
5	Inadequate	50-59%
6	Poor	1-49%

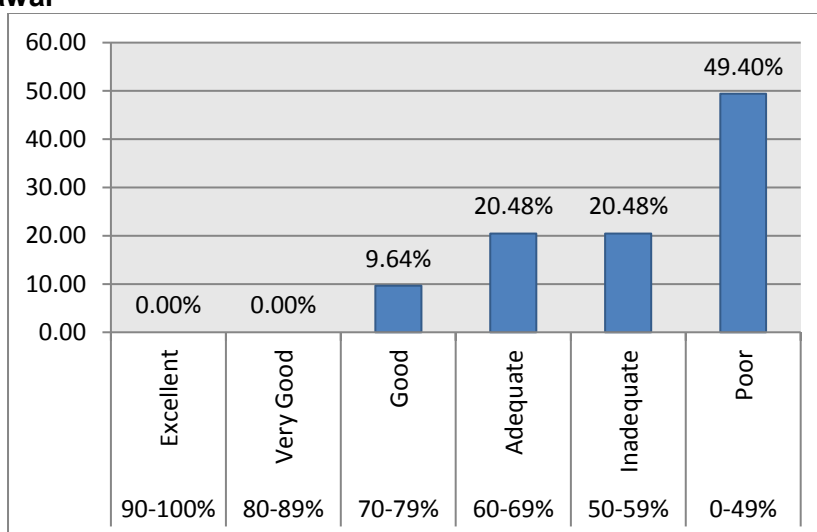
The questionnaire was scored, such that each sub-category received its sub-total score and the whole questionnaire then given a total score. This data was entered into SPSS version 17. Descriptive statistics were applied and frequencies and percentages were obtained.

RESULTS

The results from the data shows that the overall score for the infection control standards were less than 50% (Fig. 1). Among the various categories of infection control only personal hygiene standards showed good score (77.3%). Personal protective equipment score was adequate (61%) while hand hygiene score was inadequate (52%). The rest of the categories showed poor scores (Table 2).

Table: 2 Levels of Individual Components of Infection Control among DHCPs at Khyber College of Dentistry

S.No	Components of Infection Control	Total Response	Frequency of Positive Responses	Frequency of Negative Responses	Result %	Remarks
1	Practice Management	166	31	135	18.67	Poor
2	Personal Protective Equipment	747	456	291	61.04	Adequate
3	Hand Hygiene	913	480	433	52.57	Inadequate
4	Immunization Status	581	284	297	48.88	Poor
5	Work Related Injuries	332	133	199	40.06	Poor
6	Sharps Management	249	123	126	49.40	Poor
7	Instrument Reprocessing, Sterilization & Disinfection	1577	778	799	49.33	Poor
8	Waste Management	249	90	159	36.14	Poor
9	Personal Hygiene	415	321	94	77.35	Good
	Total Score	5229	2696	2533	48.6	Poor

Figure 1: Overall score in Percentage of Infection Control standards at Khyber College of Dentistry Peshawar

DISCUSSION

The results demonstrate that Practice Management regarding Infection Control (which includes Policies, Guidelines, Standard Operating Procedures and Training on infection control) is 18.67%. This means that the facility lacks Policies, Guidelines, Standard Operating Procedures and Training on infection control and therefore it is in poor condition. According to a study, Pakistan, China, Philippines and South Korea scored poorly on both perceived and tested knowledge of infectious diseases.⁵

Personal Protective Equipment PPE is a device worn mandatory by all Health Care Personnel as a barrier against infectious diseases while giving treatments and performing procedures. PPE includes wearing examination or sterile gloves, Face-masks, eye-protection

glasses and gown or coat. The result shows that the level of proper use of PPE is 61.04% among the DHCPs of Khyber College of Dentistry & Hospital Peshawar. This is remarked as adequate. This result coincides with another study done in Lahore in 2001, which demonstrates similar results.⁶ Hand Hygiene involves certain protocols like washing hands with soap and water, before and after treating patients, using hand sanitizers like alcohol hand rubs, not touching any surfaces while the hands are sterile and free from germs and before donning new pair of gloves. The results show that 52.57% of the DHCPs use these hand hygiene techniques at Khyber College of Dentistry & Hospital Peshawar and hence deemed as Inadequate, which is contrast to a similar study done at Dr. Ishrat-ul-Ebad Khan Institute of Oral Health Sciences (DIKIOHS) Karachi which showed 93%.⁷ Similar studies done in various dental hospitals also demonstrated higher scores.⁷ Immunization Status of the DHCPs is necessary for ensuring their up-to-date immunization against hepatitis B and other infectious diseases including tuberculosis, poliomyelitis, rubella, tetanus, diphtheria and varicella zoster. And that these DHCPs are free from such infections and not spreading them to their peers and patients. A record should be maintained and kept up-to-date by the administration. The result shows 48.88% compliance of DHCPs with this component of infection control and were remarked as poor. This is in contrast with another study done on dental practitioners of Dr. Ishrat-ul-Ebad Khan Institute of Oral Health Sciences (DIKIOHS) Karachi, which showed immunization status against Hepatitis B virus at 96.7%.⁸ Other studies also demonstrated higher level of immunization status as compared to the current study.^{9,10,11}

Work Related Injuries are very common in dental settings. These include needle-stick injuries and pricks from sharp instruments during patient treatment. In case of such injuries, Post-Exposure Prophylaxis protocol and follow-up is mandatory by the Dental Health Care Providers. A record of such injuries is maintained by the administration of that dental setting for monitoring infection control. The results show 40.06% compliance with this component of infection control at KCD&H which is considered in poor category.

Sharps Management means handling of needles, blades and instruments with certain protocols after use which eliminates the chances of any injuries that might be a potential risk for cross-infection between the Health Care Provider and the patient Harmful infectious agents are the blood-borne pathogens and body fluid pathogens such as HIV and Hepatitis B&C which can be spread through such injuries. Precautions must be taken and sharps should be properly disposed off in sharps containers after use to avoid injuries. Result of this component is 49.40% and is remarked as poor. Steps involved in Instrument Reprocessing are handling of used instruments in proper manner, their mechanical cleaning manually by hand or in ultra-sonic baths, chemical disinfection, drying, packaging, autoclaving and proper storing. Sterilization of instruments can be done in three ways namely dry-heat, chemical and steam under pressure (autoclave). In KCD&H, the instrument sterilization component was given 49.33% and was regarded as poor. Waste Management means the proper protocol to follow for handling medical hazardous waste from the point of collection in impervious bags from the procedure rooms, carrying & transferring it to the appointed disposal points or incineration rooms located at or near the health facility with proper record maintenance. Results show that this component of infection control was 36.14% at Khyber College of Dentistry & Hospital and hence labeled as poor. Personal Hygiene of the DHCPs was scored 77.35% according to this result and labeled as good. This component includes neatly cut finger-nails, covered hair, no hanging clothing such as tie, scarves, dupattas etc. The overall accumulative result of the level of infection control and its components among DHCPs at Khyber College of Dentistry & Hospital Peshawar was calculated at 48.16% which is poor.

CONCLUSION

This study concluded that Infection Control among Dental Health Care Providers at Khyber College of Dentistry & Hospital is poor, which is mainly due to lack of guidelines and protocols. Only the personal protective equipment category was evaluated to be adequate.

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