

ORIGINAL ARTICLE

## Practice of Personal Protective Equipment among Dental Surgery Assistants: Survey from a Public Sector Hospital

Mohsin Javaid,<sup>1</sup> Ejaz Hussain Sahu,<sup>1</sup> Aeeza Malik,<sup>1</sup> Nousheen Khan,<sup>2</sup> Asif Noor,<sup>1</sup> Malik Saleem Shaukat<sup>3</sup>

1-3. Department of Community Dentistry<sup>1</sup>/ Department of Periodontology<sup>2</sup>/ Department of Science of Dental Materials<sup>3</sup>/ Multan Medical & Dental College, Multan, University of Health Sciences, Lahore, Pakistan.

**Correspondence to:** Dr. Aeeza Malik, Email: [aeezamalik@gmail.com](mailto:aeezamalik@gmail.com), ORCID: [0092-3089162634](https://orcid.org/0092-3089162634)

### ABSTRACT

**Objective:** To evaluate the knowledge, attitude, and practices about personal protective equipment (PPE) among dental surgery assistants in a Public Sector Teaching Hospital of Multan.

**Methods:** A cross-sectional survey was carried out among dental surgery assistants in the dental outpatient departments of a public sector hospital of Multan city from Aug to Oct 2019. Pre-structured questionnaire which comprised of socio-demographic data, questions related to knowledge, attitude and practices was used. In the domain of knowledge there were 6 items. Dental assistant who scores  $\leq 4$  were considered to have appropriate knowledge for PPE. In the domain of attitude there were 5 items. Dental assistant who scores  $\leq 3$  were considered to have positive attitude for PPE. In the domain of practices there were 6 items. Dental assistant who scores  $\leq 4$  was considered good practicing of PPE.

**Results:** Of 80 participants, 65 (81.25%) were males and 15 (18.75%) were females. Majority (n=54, 67.5%) of them were between 21-30 years of age. Appropriate knowledge was observed in 77 (96.3%) participants, positive attitude in 53 (66.3%) while, only 8 (10%) participants practiced good PPE. A significant difference was reported in the practices of dental assistants when compared with their knowledge (p-value 0.046) while attitude was found to be insignificant (p-value 0.710).

**Conclusion:** Dental surgery assistants of the renowned public sector teaching hospital of Multan city reported sound and apposite knowledge, moderate attitude while inappropriate practices about PPE.

**Keywords:** Knowledge, Attitude, Practices, Personal protective equipment, Infection control, dental procedures.

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### INTRODUCTION

Prevention of oral disease is essential to all parts of the present medicinal services guaranteeing a sheltered situation for both the patient and human services specialist.<sup>1</sup> Clinical frameworks in dentistry have improved and progressed credibly in the last era. However, newer dental surgery methods are still at high risk of cross contamination to the Dental Health Care Provider (DHCP) and to the Health Care Recipient (HCR).<sup>1</sup>

Dental Health Professionals are susceptible to get contaminated by various microscopic organisms if they do not adopt the recommended preventive actions while offering treatment to the patients.<sup>2</sup> Transfer of infection may be a consequence of getting expose to the contaminated equipment or via contact to an infected patient.<sup>3</sup> Oral health providers including dental surgery assistants are at high risk and threat as they

clean and work with the infected instruments, sharps, saliva and even blood, as these are the source of infection.<sup>4</sup> There is evidence that many blood-borne diseases like Hepatitis B is a intimidation for cross-contamination to the health care workers specially those who are operational in dental setup.<sup>5</sup> Restricting the fear of transferable blood borne diseases through cross-infection is a vital part of modern dental practices. Their crucial intention is to improve the consciousness and endow with the better and safer treatment option in dentistry.<sup>1,6</sup>

As described by Javaid et al., dental assistants are the health professionals who work closely with patients under the guidance of a dental surgeon and other dental associates. The dental surgery assistants carry out the major task which is to provide support in many dental procedures and to look after the instruments disinfection and sterilization. Therefore, they are more vulnerable to cross-transmission in dental setup. To

avoid this, it is necessary that all dental surgery assistants are well trained in this regard and have sound knowledge to use personal protective equipment (PPE) and follow all the instructions compulsory for protecting themselves against the dangers of receiving traverse contaminations.<sup>7</sup> Demonstration of standard usage of PPE is supposed to be the optimum corresponding approach associated with the spread of contaminations in normal dental setups.<sup>6</sup> "Personal protective equipment is what a dental professional or dental nurse may utilize in their surgical practice against for protection against cross contamination." Generally, it consists of gears like eyes goggles, facial mask, single use hand gloves, sterilizable gloves and other professional apparel.<sup>8</sup>

As the quality control in oral treatment practices has been escalating, the community is also getting more aware of their dental health and safer treatment options.<sup>9</sup> Preventing the spread of infection should be a priority of every professional person working in a dental office. Awareness of the use of PPE particularly among dental surgery assistants can truly lessen the probabilities of spread of contagious pathogenic organisms and terminate the cross contamination.<sup>10</sup> Therefore, this research was planned to evaluate the knowledge, attitude and practices about personal protective equipment among dental surgery assistants of a Public Sector Hospital, Multan, Pakistan.

## METHODS

For this cross-sectional survey, a total of 80 dental surgery assistants working in the Dental Out Patient Departments were conveniently and purposely approached from August to October 2019. Patients were recruited from a tertiary care government hospital of Multan city as it is the only public sector teaching hospital in southern Punjab, Pakistan. Dental assistants those who were working for over one year and were at least matriculate were included while those who were either not present when the survey was conducted, had lesser than matric education or had one or less than one-year experience were excluded assuming insufficient knowledge about dental disinfection protocols.

Study tool was a pre-tested, piloted and reliable questionnaire. A prior pilot study was conducted over 5 days on a haphazard sample of 10 dental surgery assistants to ensure the applicability of the tool and to confirm that the questions were clear and appropriate. The questionnaire comprised of 4 sections including socio-demographic data, questions related to

knowledge, attitude and practices. Institutional Review Board approval was obtained from the Health Services Academy and informed consent was attained from the participants.

In the domain of knowledge there were 6 items. The minimum score obtained was 0 whereas; the maximum attained score was 6. The score "4" was taken as limit (cutoff value) which advocated that scores less than or equal to 4 were considered to have appropriate knowledge however, scores more than 4 reflected as inappropriate knowledge of the assistants for PPE. In the domain of attitude there were 5 items. The minimum score obtained was 0 whereas; the maximum attained score was 5. The score "3" was taken as limit (cutoff value) which supported that scores less than or equal to 3 were considered to have positive however, scores more than 3 reflected as negative attitude of the assistants for PPE. In the domain of practices there were 6 items. The minimum score obtained was 0 whereas; the maximum attained score was 6. The score "4" was taken as limit (cutoff value) which supported that scores less than or equal to 4 was considered good practicing while score more than 4 was considered as poor practicing of PPE.

Data collected was analyzed using SPSS 21. Descriptive statistics were explored using frequency and percentages for quantitative variables for questions related to knowledge, attitude, and practice and its categories. Fisher-exact test was applied. p-value of  $\leq 0.05$  was considered as significant.

## RESULTS

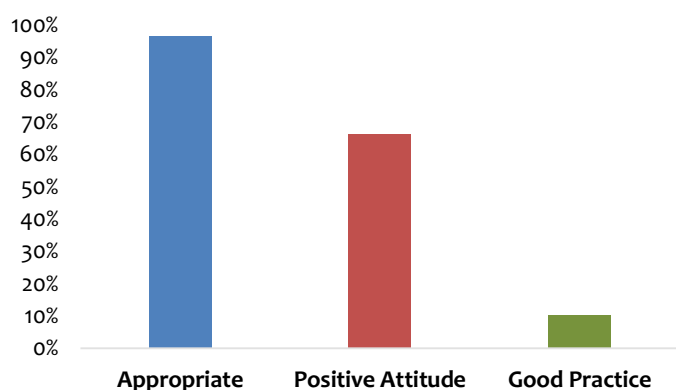
A total of 80 participants (males= 65, female=15) were recruited for this study. Majority (n=54, 67.5%) of them were between 21-30 years of age. Thirty-four (42.5%) of the participants had less than 5 years of employment experience, 31 (39%) had between 5-10 years, 4 (5%) had between 11-15 years and 11 (14%) had above 16 years of employment experience as dental assistant.

Knowledge related questions showed that only 58 (72.5%) knows that sharp ended instruments should be collected with care to prevent cross contamination, 77 (96.3%) knows that sterilized instruments are free of contamination, and 78 (97.5%) knows that reuse of PPE on another patient may cause cross contamination. The attitude of dental assistants revealed that 32 (40%) believes that dental assistant should be vaccinated for hepatitis B and 41 (51.3%) believes that goggles and facemask should be used while assisting the aerosol generating procedures. The practice of dental assistants showed that 32 (40%) were vaccinated

**Table 1: Questions related to knowledge, attitude and practice of dental assistants (n=80)**

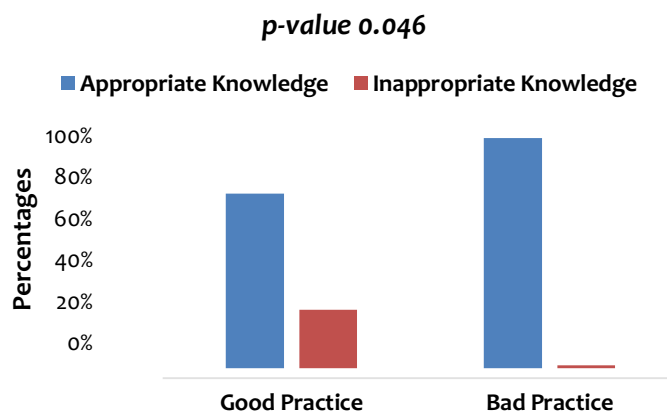
	Correct Answers	
	n	%
<b>Knowledge</b>		
Use of PPE plays a major role in prevention of cross contamination	80	100
Hepatitis B vaccination is necessary in dental profession	72	90
Sharp ended instruments should be collected with care to prevent cross contamination	58	72.5
Reuse of PPE on another patient may cause cross contamination	78	97.5
Long nails could rupture the gloves	80	100
Sterilized instruments are free of contamination	77	96.3
<b>Attitude</b>		
Dental assistant should be vaccinated for hepatitis B	32	40
Used and unused instruments should be kept separately to reduce the risk of contamination	80	100
Using PPE is an important practice	80	100
Awareness program should be conducted for PPE	80	100
Goggles and facemask should be used while assisting the scaling procedure	41	51.3
<b>Practice</b>		
Vaccinated against Hepatitis B	32	40
<i>How often do you use the following PPE</i>		
Mask	66	82.5
Use gloves during the sterilization procedure	73	91.3
Plastic Apron/Gowns	2	2.5
Head Covering	20	25
Protective Eyewear	3	3.8

against Hepatitis B, 73 (91.3%) used gloves during the sterilization procedure, 66 (82.5%) used mask, 3 (3.8%) used protective eyewear, 20 (25%) used head covering, and 2 (2.5%) used plastic apron/gowns as PPE. (Table 1) Appropriate knowledge was observed in 77 (96.3%) participants, positive attitude in 53 (66.3%) while, only 8 (10%) participants practiced good PPE (Figure 1).

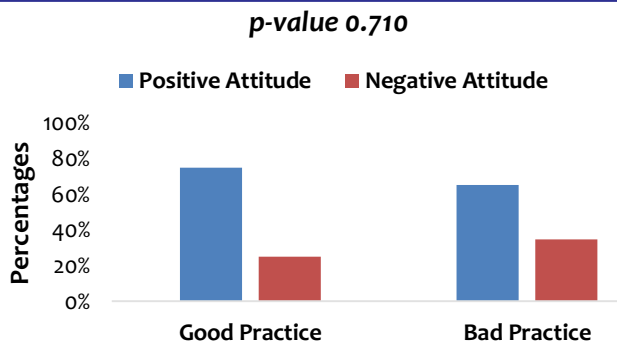


**Figure 1: Frequency of knowledge, attitude and practice among dental assistants (n=80)**

Figure 2 illustrates a significant difference in the reported practice of dental surgery assistants when compared with their knowledge (p-value 0.046) whereas, figure 3 demonstrates that attitude was found to be insignificant (p-value 0.710).



**Figure 2: Practice of Dental Surgery Assistants In Comparison With the Knowledge**



**Figure 3: Practice of Dental Surgery Assistants In Comparison With the Attitude**

## DISCUSSION

This survey was conducted to evaluate the knowledge, attitude and practices about personal protective equipment among dental surgery assistants and has identified sound knowledge and reasonable attitudes about PPE but deficiencies in the domain of PPE practices were observed. It is therefore recommended as mandatory for all oral health care workers to adopt all self-protective methods to avoid the eventual life threatening event to them. Similar finding was also provided in another survey conducted in a public sector hospital of Karachi.<sup>11</sup>

A previous investigation suggested that divisional groups of therapeutic specialists are at increasing threat of an unpredictable and unavoidable risk to many infections. The contaminated environment of the dental practice may expose the patients and the dental health care workers simultaneously. Also, continuous use of sharp dental instruments which if occupied with pathogens makes the Dental Health Care Workers vulnerable to life threatening pathologies.<sup>12</sup> In this regard, use of PPE and the recommended dress code for the dental health care workers is almost mandatory. Also, it is essential to sustain a deliberate distance from every patient assuming the airborne transfer of pathogens.<sup>13</sup>

As reported in the current study dental surgery assistants had sound knowledge about PPE. The participants replied positively when they were inquired about the role of PPE in the prevention of cross-contamination against diseases which are at risk of transmission from dental surgeries, necessity of vaccination against such diseases, care with sharps and sterilization as mode of decontamination. This is close to the findings obtained in another similar study conducted in a public sector teaching hospital of Karachi and Multan by Mohiuddin S et al and Maqbool A et al respectively.<sup>11,14</sup>

This investigation has explored reasonably positive attitude of dental surgery assistants concerning PPE. The participants reproduced well when asked about the segregation of used and unused instruments, conduction of awareness programs and use of goggles and face masks. All this is parallel to the results of few other similar studies conducted in Karachi and Cairo.<sup>11,12,14</sup>

In this research, 82.5% participants reported that they apply facemask every time when working in close contact with the patient; this result is much better than reported by Amna maqbool (46.1%) in the same institution of Multan city in near past<sup>14</sup>. Similarly, 91.3% of the participants used gloves every time when dealing with the patient. This finding is similar to the Saudi study reported by Noura A. Al-Essa and one more study of Arinze-Onyia SU who establish that approximately all study participants persistently consumed gloves.<sup>15,16</sup> Comparatively the results of the present study are much better than the similar studies conducted in some developed countries as reported by F.J.T Burke in United Kingdom.<sup>17</sup> In a study by Kanjirath and Preetha P explained that the main practicalities in employing PPE as a safekeeping manager, it is essential to protect oneself from being exposed to the mucous oral areas which may be contaminated by saliva and blood. To accomplish this hand gloves must be worn by the dental assistants for their own security.<sup>18</sup>

One more finding of this study was that, only 2.5% of the study participants specified that they utilized plastic aprons in all the dental procedures. This might be because of inaccessibility of these covers to the staff by the administration of the hospitals or the leading dental surgeons of the dental set ups. This result is much below than reported in another similar study reported by Amna Maqbool (12.7%)<sup>14</sup> and J Allsopp et al (95%).<sup>14,19</sup> Moreover, 25% participants in this study specified that they apply head caps every time when in close contact with the patient. This finding is much lower than provided by Noura A. Al-Essa (65%)<sup>15,19</sup>. Furthermore, use of self-protective eyewear every time while dealing with the patient was found out to be much lesser (3.8%) than in other similar study reported by S L Farrier<sup>20</sup>. While inquiring about the employment of gloves during the sterilization processes, 91.3% of the participants replied that they always use gloves while performing any type of sterilization technique. These outcomes of this investigation are much better than (<50%) reported by S.L. Farrier.<sup>20</sup>

Present study identified a significant difference between the knowledge and practices (P=0.046), while insignificant difference between attitude and practices (P=0.710) concerning PPE of the dental assistants

participated in this study. These findings are close the one publicized by J. Dagher and suggested a significant difference between the reported knowledge and the practical performance of PPE among the dental assistants. Conversely, the present study is not in line with the results of J. Dagher as a non-significant relation was present between the informed attitudes and the practical performance in current study whereas a significant difference existed in the other.<sup>21</sup>

This study recommends aggressive training of dental paramedical staff through workshops or by incorporating the proceeding with therapeutic guidance sessions to control the spread of infection. Awareness campaign regarding usage and hazards of cross contamination will be of great importance. Introduction of compulsory ongoing teaching to dental surgery assistants regarding infection control would increase obligingness with defined infection control protocols, which is vital due to the dangers of spread of blood borne infections and drug resistant producers of diseases or pathogens. Also, dental administration of either public or private sector must keep a critical check on them while dealing with infectious material.<sup>22,23,11</sup>

## CONCLUSION

Dental surgery assistants of the renowned public sector teaching hospital of Multan city reported sound and apposite knowledge, moderate attitude while inappropriate practices about Personal Protective Equipment.

**ETHICAL APPROVAL:** This study was approved by Health Services Academy, Islamabad.

**AUTHORS' CONTRIBUTION:** MJ, EHS & AM: Basic conception, designation, data collection and write up.

NK & AN: Data entry, data analysis, literature search and final approval.

MSS: Data analysis, literature interpretation, critical reviewing and final approval.

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