

Hand Hygiene and Cross Infection Control among Dental Auxiliaries working in Private and Public Dental Institutes of Punjab

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ABSTRACT

Objectives: To evaluate the knowledge attitude and practices of dental assistants regarding hand hygiene and cross infection control in public and private dental institutes.

Methods: Survey was carried out on 240 subjects working in five private and two public dental institutes using online questionnaires developed by the authors, and distributed via E-mail and WhatsApp. The target population were dental assistants and hygienists. Survey included a confidentiality and consent statement. Data was analyzed using the IBM SPSS version 20.

Results: There were 240 respondents and majority were male. 71.3% of the participants received formal training in hand hygiene. 51.7% were aware of the presence of cross infection manual at workplace, however, fewer were aware of it contents. There was a significant difference between auxiliaries of private and public dental institutes when it comes to wearing gloves without washing hands, usage of alcohol rub and following recommended steps of hand washing. The auxiliaries of public institutes were performing hand washing before touching the patients only. Majority of the respondents especially from public institutes (38.3%) believe that hand should be dried using paper towel.

Conclusion: Auxiliaries of private institutes were more aware about hand hygiene. Public institutes' auxiliaries were lacking in knowledge and practice especially when it comes to usage of alcohol-based rub, washing hands before wearing gloves and performing hand hygiene before and after touching the patients. Regular workshop and courses should be done to keep their adherence to quality hand hygiene especially in public institutes.

Keywords: American Dental Association, Center for Disease Control, Cross Infection, Dental Assistants, Hand Hygiene, Hygienists, World Health Organization

INTRODUCTION

The prevention of infection and disease transmission from patient to patient is a primary goal for dental professionals. ¹ Despite international efforts, hand hygiene is still neglected worldwide. Health care associated infection affect around 2 million people round the globe putting an economic stress on health care systems. ^{2, 3} In United Kingdom, over five thousand people die every year from acquiring infections in hospital settings. ⁴ In America, a survey in eight hospitals reported that only 4 out of 10 people followed hand hygiene. ⁵ According to WHO, 7 out of 10 health care workers do not follow the hand hygiene protocols, stressing a need for proper monitoring and behavioral intervention. ^{6,7} In China, hand hygiene promotion with multimedia campaign improved its compliance from 24% to 41%. ⁸ A study done in Sydney, Australia reported that hand hygiene compliance in hospitals declined from 94% to 30% when left unmonitored indicating proper surveillance along with behavior change is essential for hand hygiene adherence. ⁹

Since principles of cross infection control are universal, hand hygiene is critical and yet highly neglected when it comes to dentistry. ¹⁰ Dental staff including dentists are exposed to blood, saliva, body fluids and contaminated surfaces on daily basis, therefore, in order to prevent cross contamination, the dentist as well as the dental staff should be aware of the importance of hand hygiene and cross infection control protocols. ¹¹

Dental assistants in clinics can become a mode of transmission for various pathogens as they have to travel from room to room, handling dental materials, assisting patients and touching unclean surfaces during procedure. ¹² Their mobility and interaction with various parts of clinic and waste makes them more exposed to pathogens and a potential carrier. ¹³

The implementation of infection-control practices and precautions in dental procedures are beneficial in minimizing microbiological pollution and cross-contamination, according to the CDC, American Dental Association and many other health authorities. ^{14,15} Infection control policies in underdeveloped

nations, on the other hand, are not well documented. Because of a lack of knowledge or a lack of appropriately qualified employees, most hospitals do not have proper infection control programs. ¹⁶

The aim of this study was to evaluate the knowledge attitude and practices of dental assistants regarding hand hygiene compliance and cross infection control in public and private dental institutes of Lahore

METHODS

This descriptive cross-sectional study was conducted on 240 subjects employing non-probability convenience sampling, with the approval of the de' Montmorency college of dentistry's institutional review board and the respective administrations of the participating institutes. The survey was carried out in five private and two public dental institutes, with online questionnaires distributed via E-mail and WhatsApp. The target population were dental assistants and hygienists. The questionnaire included a confidentiality and consent statement, and those who agreed with the terms and clicked on the consent button could only proceed to answer the questionnaire.

The questionnaire was developed by the authors after extensive literature review. Individual items were developed, cross checked and finalized following the best practice guidelines. ¹⁷ The first section of the questionnaire included demographic information, while the second section included items about hand hygiene awareness and practices. In some items, Likert's scale, with four-point rating, was used to collect respondents' awareness, attitude and opinions regarding hand hygiene. The questionnaire was revised and pretested several times before the final version was selected and pilot tested.

The data was statistically analyzed using the IBM Statistical Package for Social Sciences (SPSS version 20, IBM corporation, USA, New York, 2011). Results were compiled using descriptive statistics. Independent sample t was used to compare means of two groups i.e., designation (dental assistants and hygienists) and institutes (private and public). In order to compare categorical

variables, the Chi Square test was used. P values less than or equal to 0.05 were considered significant.

RESULTS

There was a total of 240 respondents in this study and response rate was 95%. The demographic details of participants are expressed in Table 1. Majority of the respondents were males and those working in private institutes.

Table 1: Demographic characteristics of participants (n=240)

Demographics		n	%
Gender	Male	173	72.1
	Female	67	27.9
Institute	Private	167	69.6
	Public	73	30.4
Designation	Dental Assistants	121	50.4
	Dental Hygienists	119	49.6

Three-fourth (71.3%) of the participants reported that they had received formal training in hand hygiene and a significant majority of them were from private institutes. More than half (55%) of the respondents reported that they had not received any workshop on cross infection control in the last two years and a significant majority of them were from public institutes (Table 2).

There was no statistically significant difference between dental assistants and dental hygienists between private and public sector institutes when it comes to regular practice of hand hygiene. Majority (71.7%) of the participants reported that they 'always practice hand hygiene (Table 4).

Majority of the respondents (81.7) revealed that they use soap and water as hand washing agents in their institutes (Table 2).

Majority of the auxiliaries (57.5%) were performing hand hygiene before as well as after touching the patient. However, there was a significant difference between private and public institutes; the auxiliaries of public institutes were performing hand washing before touching the patients only (Figure 3). Majority of the respondents (38.3%) believe that hand should be dried using paper towel and a significant majority of them were from private dental institutes (Table 2).

Table 2: Comparison of private and public institutes' dental auxiliaries regarding hand hygiene using Chi-square test (p<0.05)

Statements	Private	Public	X ²	p-value
Formal training in hand hygiene				
Yes	80.2	50.6	21.66	<0.001*
No	19.8	49.4		
Workshop on hand hygiene in last 2 years				
Yes	52.6	27.3	13.13	<0.001*
No	47.4	72.7		
Hand hygiene agent used at your workplace				
Water only	11.3	8.2	1.7	0.423
Soap and water	82	80.8		
Alcohol based rub	6.5	10.9		
Hand hygiene practice done by auxiliaries				
Before touching the patients	21.5	46.5	23.45	<0.001*
After touching the patients	10.7	19.1		
Before and after touching the patients	67.6	34.2		
Time needed for alcohol-based rub to kill most of germs				
20 seconds	50.8	50.6	14.66	0.002
10 seconds	33.5	49.3		
5 seconds	4.1	0		
Alcohol based rub is effective option even hands are visibly soiled or dirty				
Yes	62.2	63	2.13	0.343
No	26.9	20.5		
Unaware	10.7	16.4		
How hand should be dried after hand hygiene				
Using air dry (naturally)	20.9	39.7	12.53	0.006
Using cloth towel	8.3	2.7		
Using paper towel	43.1	27.3		
Using electric hand dryer	27.5	30.1		

Comparison of statements, using chi-square test, regarding hand hygiene knowledge, attitude and practices have been expressed in Table 2.

Majority of the respondents (51.7%) were aware of the presence of cross infection manual at their workplace and a significant proportion of them were from private institutes. Moreover, dental assistants were more aware about presence of manual as compared to hygienists (Figure 1). Majority of the auxiliaries of public institutes were 'slightly aware' of the contents, whereas, majority of the private institutes' auxiliaries were 'fully aware' of the contents (X²=7.9, P=0.047) (Figure 2).

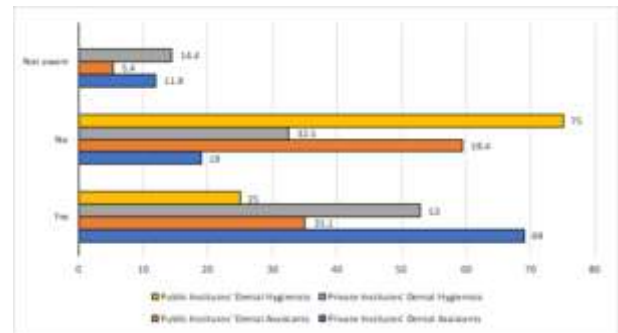


Figure 1: Reponses of dental auxiliaries regarding the presence of cross infection control manual at their workplace

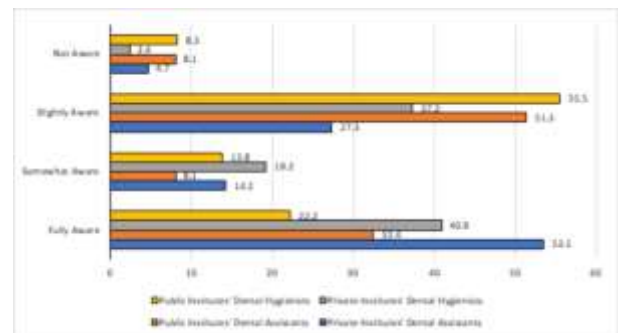


Figure 2: Awareness about the contents of cross infection control manual

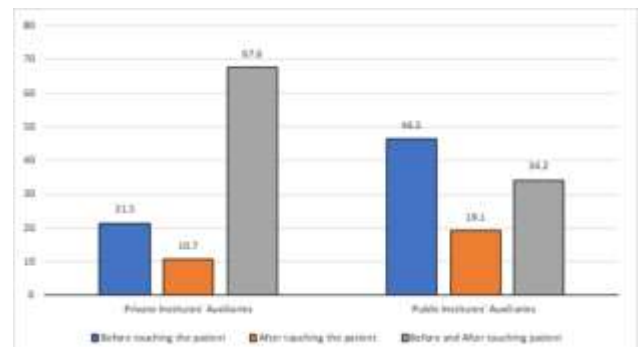


Figure 3: Comparison of hand hygiene practices between dental auxiliaries of private and public dental institutes (X²=23.45, p<0.001*)

Table 3 demonstrates and compares the attitude of dental auxiliaries between private and public institutes. Majority of the participants had a positive perception about the hand hygiene. There was significant difference between the auxiliaries of private and public dental institutes when it comes to the view that assistant should be trained regularly, and private dental institute's auxiliaries had a more positive perception about. However, six out of ten participants think that wearing gloves eliminates the need of hand hygiene (Table 3).

Table 3: Attitude of dental auxiliaries regarding hand hygiene

Statements	Strongly Agree (%)	Agree (%)	Disagree (%)	Strongly Disagree (%)	Mean			P Value
					Total	Private	Public	
Hand Hygiene plays important role in cross-infection control	82.9	7.5	9.6	0	1.27	1.24	1.33	0.309
Assistants should be regularly trained for hand hygiene	91.7	8.3	0	0	1.08	1.04	1.19	<0.001
Wearing gloves eliminates the need for hand hygiene	43.8	15	22.9	18.3	2.16	2.1	2.29	0.260
Hand accessories should be removed during hand hygiene	60.8	29.6	9.2	0.4	1.49	1.47	1.55	0.397

P<0.05, using independent sample t test

Table 4 demonstrates and compares the basic hand hygiene practices of auxiliaries between private and public dental institutes using independent sample t test. There was a statistically significant difference between auxiliaries of private and public dental institutes when it comes to wearing gloves without washing hands, usage of alcohol-based rub and following all recommended steps of hand washing. The auxiliaries of private institutes were more frequently practicing hand hygiene when compared to public dental institutes (Table 4).

Table 4: Practices of dental auxiliaries regarding hand hygiene

Statements	Always (%)	Sometimes (%)	Rarely (%)	Never (%)	Mean			P value
					Overall	Private	Public	
Do you practice hand hygiene regularly at your workplace	71.7	11.3	17.1	0	1.45	1.43	1.52	0.378
Do often do you wear gloves without washing hands	30.4	42.1	15.4	12.1	2.09	1.87	2.6	<0.001
Do you scrub your hands for 20-30 seconds as recommended by WHO	63.3	20	14.6	2.1	1.55	1.53	1.6	0.543
How often do you use alcohol based rub your workplace	37.5	40	21.7	8	1.86	1.6	2.44	<0.001
Do you perform all recommended steps of hand hygiene	35	11.3	40.8	12.9	2.32	2.08	2.86	<0.001

P<0.05, using independent sample t test

DISCUSSION

Hand hygiene play a very important role in cross infection control. Effective hand hygiene practices in dental health care settings are essential as dental clinics have a higher risk of cross infection. Previous studies have revealed that hand hygiene compliance among health care employees ranged from 35 to 80%, with developed countries showing higher compliance over developing countries.^{8,18,19,20} Previous studies in Pakistan revealed that hand hygiene compliance ranged between 38 and 68%.^{21,22, 23} However, in current study, it was 71%, with higher compliance recorded in private dental institutes. These findings were consistent with the previous studies. Since the private sector in Pakistan is more developed with more resources and funding, auxiliaries working there may be more trained and better monitored than those working in public dental institutes.^{21,22}

Previous literature has reported significant improvement in the hand hygiene compliance of those healthcare professionals who were regularly trained and received workshops or refresher courses on hand hygiene. Studies have also reported a decreased compliance in hand hygiene over time among the auxiliaries who were not regularly trained or had workshops, indicating the importance of these refresher courses.^{24,25} In the present study, 71.3% of the respondents reported that they were regularly trained, whereas, 55% of the auxiliaries revealed that they have not received any workshops on hand hygiene in the past two years. In contrast to private institutes, public institutes lack regular hand hygiene training and workshops for their auxiliaries. The issue could be underdeveloped and underfunded public sector dental institutes in Pakistan.²⁶

World Health Organization (WHO), in its 5 Moments of hand hygiene program, and CDC in its guidelines has emphasized on performing regular hand hygiene before and after touching the patient.^{27,26} In current study, majority of the respondents from private institutes were practicing hand hygiene before and after touching the patients, whereas, majority from public institutes were practicing only before touching the patients. Auxiliaries from public institutes should be educated through regular workshops and refresher courses. Moreover, underfunded and overburdened

public sector dental institutes could be the reason for this neglect.²²

The ADA and CDC advises washing hands with soap and water and using paper towel as a drying agent. According to literature, paper towels effectively remove bacteria, dries quickly, and reduce environmental contamination. Electric air dryers cannot compete with paper towels especially in places where hygiene is crucial, like hospitals and clinics.²⁸ In present study majority of the respondents from public institutes believed that hand should be dried naturally in air, whereas majority of the private-sector auxiliaries rightly responded that hands should be dried using paper towel.²⁹

Wearing gloves does not eliminate the need for hand hygiene. Hands should be cleaned before wearing gloves as recommended by CDC and ADA.²⁶ Conversely, majority of the participants in our study, both from private and public, think that there is no need of hand hygiene before wearing gloves. Germs can be transferred if the hand are not properly cleaned before wearing gloves, therefore, assistants should be trained and educated to perform hand hygiene before wearing gloves. Previous studies have reported that hand accessories (wrist watches, rings, nails) are associated with increased bacterial load on the hands of healthcare workers and therefore should be removed during hand hygiene.^{29, 26} Majority of the respondents in our study agreed that hand accessories should be removed during hand hygiene.

Cross infection control manual should be present at a health care setting especially in dental clinics. The auxiliaries should not only be aware of the presence of the manual but also with the contents of the manual.^{30,26} Majority of the respondents in this study were aware of the presence, however, when it came to the awareness about the contents, public sector auxiliaries were lacking, and between assistants and hygienists, hygienists were more aware of the contents.

Previous studies have shown that even though knowledge scores of the basics of hand hygiene were high, only fewer people were actually practicing it. The results of this study were consistent with the previous literature.^{31,21} However, private sector auxiliaries were better at hand hygiene practice especially when it came to

use of alcohol-based rub, performing all steps and wearing gloves without washing hands.

One of the limitations of this study was limited sample size and unequal distribution of groups as there were more response from assistants than hygienists. Therefore, there may be some bias at the level of sample collection collected using purposive sampling technique.

CONCLUSION

Overall knowledge and awareness of the auxiliaries was cogent. Auxiliaries of private institutes were more aware and better at practicing hand hygiene. Hygienists were more aware however there was no difference when it comes to practice. Auxiliaries were aware of the presence of cross infection control manual, but majority of public sector auxiliaries were slightly aware of its contents, The most common hand hygiene agent was soap and water whereas the most common drying agent was paper towel. Public institutes were lacking in use of alcohol-based rub, washing hands before wearing gloves, workshops and performing hand hygiene before and after touching the patient. Regular workshop and courses should be done to keep adherence to quality hand hygiene especially in public institutes.

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