

## INFECTION CONTROL PRACTICES AMONG DENTAL PRACTITIONERS OF LAHORE, PAKISTAN

Syed Akhtar Hussain Bokhari<sup>1</sup>, Shamta Sufia<sup>2</sup>, Ayyaz Ali Khan<sup>3</sup>

### ABSTRACT

**Objective:** To observe adoption of infection control measures among dental practitioners.

**Methodology:** A cross-sectional study based on a convenient sampling technique was conducted. Dental Practitioners in each subdivision (towns) of the Lahore, Pakistan were approached through 15 dental hygiene students to fill a close ended structured questionnaire. Study was conducted during 1<sup>st</sup> March-15 March 2005. Chi square test was applied with a significance level of  $p \leq 0.05$ .

**Results:** Four hundred dental practices were visited and response rate of 83.25% was obtained. 62.76% surgeries were found being run by un-qualified dental practitioners and 37.23% by qualified dentists. 94.35% qualified practitioners used gloves as compared to only 28.2% of the un-qualified practitioners and a high percentage of qualified practitioners used gloves for every patients compared to their un-qualified counterparts (85.48% and 14.35%) respectively. 97.5% qualified practitioners and 80.3% of the un-qualified dentists used face masks. 85.1% of un-qualified and 98.3% of the qualified dental practitioners used fresh set of instruments for each patient. Use of sterilization methods including disinfectants, autoclaving of instruments was higher in qualified practitioners. Infection control measures among qualified and non-qualified practitioners were statistically significant. ( $p = 0.000$ )

**Conclusion:** A poor level of infection control practice was observed in dental practices run by un-qualified practitioners. Majority of qualified dentists were observing infection control measures. There is need for further education and training for all the dental practitioners.

**KEY WORDS:** Dental practitioners, Infection control Measures.

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### INTRODUCTION

The public expectations from a health care facility are zero risk.<sup>1</sup> Infection control is a dynamic and ever-changing subject and all dental staff should be kept aware of the most up-to-date procedures required to prevent the

transmission of infection. Dental practitioners should understand why these procedures are necessary.<sup>2</sup> Unless precautions are taken, there is a high possibility that patients and Dental Health Care Personnel (DHCP) will be exposed to blood-borne and other potentially pathogenic infectious materials. By understanding principles of disease transmission and using infection control practices, dental personnel can prevent disease transmission.<sup>3</sup> Adequate precautions for infection control should be in place for protection of both dental staff and patients. Sterilization, disinfection and barrier protection are universal precautions. Unique nature of most dental procedures, instrumentation,

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#### Correspondence

Dr. Syed Akhtar Hussain Bokhari  
22-Rewaz Garden,  
Lahore - Pakistan.  
E-mail: pdplhr@yahoo.com

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and patient-care settings call for specific strategies directed to the prevention of transmission of pathogens among dental personnel and their patients; "universal precautions", must be observed routinely in the care of all dental patients.<sup>4</sup>

Dentistry predominantly involves exposure to blood and other potentially infectious materials and involves high standard of infection control.<sup>5</sup> Dental Practices in Pakistan have been identified as potential risk factor in transmission of infectious diseases especially Hepatitis B & C.<sup>6</sup> Oral health care services are provided through dental surgeries both in public and private sector. There are also a substantial number of unqualified practitioners in the country.<sup>7</sup> A previous study reports poor status of infection control measures among dental practitioners of Lahore.<sup>8</sup> This study was conducted to collect information about the cross infection control and sterilization methods adopted by the qualified and un-qualified practitioners in the city of Lahore, Pakistan.

## METHODOLOGY

Data about the distribution of dental practices in Lahore is not available. Lahore, the second biggest city of Pakistan is divided into six administrative towns as defined by City District Government (CDG). A convenient sampling technique was used to cover each locality of the towns. First 70 dental practices in each town irrespective of the fact whether the practice was owned or run by a qualified / non-qualified practitioner were visited. The owner / practitioner were explained the purpose of study and verbal consent was taken. Information about infection control and sterilization methods were collected through a close ended structured questionnaire designed by the authors. Fifteen trained dental hygiene students of Lahore medical & dental college filled the questionnaires and completed the survey in two weeks (1<sup>st</sup> March-15 March 2005).

The questionnaire was piloted on ten dental practitioners and dental hygiene students were trained to fill in the questionnaire; a reliability of 90% was achieved.

Following questions were asked in the questionnaire:

1. Practice owned by — — — Qualified / Un-qualified practitioner;
2. Use of gloves — — — All patients / selected patients / on demand / occasionally;
3. Use of Face mask — — — All patients / selected patients / on demand / occasionally;
4. Method of sterilization — — — — Boiling / autoclaving / chemicals / Dry Heat;
5. Use of Separate instruments for hepatitis patients — — — Yes / No;
6. Use of pouches for instruments — — — — Yes / No;
7. Change instruments for each patient — — — — Yes / No

Data was categorized into qualified and un-qualified practitioners and their characteristics were compared using SPSS version 11.5 for Windows. Cross tabulation was done using Chi square test to find the associations between the different variables, and a probability level of  $p < 0.05$  was considered significant.

## RESULTS

Four hundred dental practices of Lahore were approached by dental hygiene students to collect the required information. Fifty two practitioners refused to participate, 25 forms were rejected on the basis of incomplete information; 333 forms were found with complete information. A response rate of 83.25% was obtained.

Results of study on ownership of practice, use of gloves, use of face masks, sterilization methods, and on use of separate instruments for patients are presented in Table-I. 62.76% surgeries of Lahore were found being run by un-qualified dental practitioners and 37.24% were under the control of qualified dentists.

A significantly higher number of qualified practitioners used gloves while working on their patients (94.35%) compared to the un-qualified practitioners (28.2%) ( $p=0.000$ ). Similarly a very high percentage of qualified practitioners used gloves for every patients compared to their un-qualified counter parts (85.48% and 14.35% respectively) ( $p= 0.000$ ).

Table-I: Cross infection control and sterilization methods adopted by Dental Practitioners of Lahore

<i>Practices by the Dentist</i>	<i>Qualified practitioners</i>	<i>Non qualified practitioners</i>	<i>P – value*</i>
Practice owned by	37.23%	62.76%	
Gloves			
uses gloves	117(94.3%)	59(28.2%)	0.000
All patients	106(85.4%)	30(14.3%)	0.000
Selected patients	8(6.4%)	12(5.7%)	0.002
On demand	1(0.8%)	11(5.2%)	0.025
occasionally	2(1.6%)	6(2.8%)	0.000
Face Masks			
Uses face mask	121(97.5%)	168(80.3%)	0.000
All patients	99(79.8%)	68(32.5%)	0.000
Selected patients	18(14.5%)	42(20%)	0.009
On Demand	1(0.8%)	26(12.4%)	0.005
occasionally	3(2.4%)	32(15.3%)	0.000
Sterilization methods			
Boiling water	60(48.3%)	141(67.4%)	0.000
Dry heat	12(9.6%)	12(5.7%)	0.000
Autoclave	16(12.9%)	18(8.6%)	0.000
Chemical	36(29%)	28(13.3%)	0.000
Change instruments for every patient	122(98.3%)	178(85.1%)	0.000
Keeps instruments in Pouches	88(70.9%)	178 (85.1%)	0.000
Separate instruments for Hepatitis patients	97(78.2%)	43(20.5%)	0.003

\*Chi-Sq Test, Degree of freedom=1

Gloves were not worn for every patient by the both categories of practitioners in this study.

The use of face masks between qualified and un-qualified practitioners was also statistically significantly different ( $p= 0.000$ ). 97.5% among qualified practitioners and 80.3% among the un-qualified practitioners were in the habit of wearing face masks. However 79.8% among qualified and 32.5% among the un-qualified dentists used a face mask for all patients during examination and treatment ( $p= 0.000$ ).

The sterilization methods also differed significantly between the two categories of dental practitioners in this study ( $p= 0.000$ ). 67.4% of the un-qualified practitioners were using boiling of instruments as sterilization method and 48.3% of the qualified practitioners reported this technique. Autoclaving was

practiced by 12.9% and 5.7%, dry heat sterilizers by 9.6% and 5.7% of qualified and of un-qualified practitioners respectively. A chemical method of sterilization was practiced by 29% of qualified and 13.3% of un-qualified dentists.

Dental practitioners in the present study also differ in their practice of changing instruments for every patient. 85.1% of un-qualified and 98.3% of the qualified dental practitioners use fresh set of instruments for each patient. The results are different significantly for the two groups ( $p=0.000$ ). Storage of instruments in pouches and having separate instruments for Hepatitis patients was significant among qualified and un-qualified practitioners ( $p= 0.000$  and  $0.003$  respectively. Degree of freedom for Chi-Sq test in each application is noted as '1'.

## DISCUSSION

In Lahore, the second largest city of Pakistan and capital of Punjab province, higher numbers of dental practices were found being owned and/or run by un-qualified (traditional practitioners) dental personnel. The standard of these dental settings were lower in respect of the dental personnel working there and the working environment that may be considered acceptable for the patients' satisfaction. Standardization and quality control of private practices has never been on agenda of Government of Pakistan. Every Pakistani with little / no knowledge and training in medicine / dentistry can run a private clinic/hospital and play with lives of people.

There are 7046 dentists registered with the Pakistan Medical & Dental Council (PMDC) by Feb. 2007<sup>9</sup>; a Dentist (qualified) to Population ratio in Pakistan becomes 1: 23000, if un-qualified are included then this ratio becomes 1:5000. Only 200 qualified dentists are working in the rural areas of Pakistan that make up 70% of the country population;<sup>10</sup> thus 30% population has access to the qualified dentists.

This study is the 3<sup>rd</sup> one in Pakistan to give results for a comparison of studies on infection control in dental practices in Lahore. Another study from Lahore in 1998 on use of infection control measures reported use of gloves by 60% (our study 94%), use of face-masks by 76% (our study 97%) of qualified dentists. 62% used autoclave, 46% dry heat and 36% chemical sterilization methods.<sup>5</sup> The findings of our study shows an improvement in adoption of infection control measures by the qualified dentists. Results of our study correspond to other studies that report a high proportion of qualified practitioners using gloves (always, 91.8%; sometimes, 7.8%), masks (always, 74.8%; sometimes, 21.1%),<sup>11</sup> using gloves and changing gloves after each patient.<sup>12</sup> In Durban, 89% dentists have autoclaves, 97% reported routine use of gloves and masks<sup>13</sup> Al-Omari and AlDwairi<sup>14</sup> reports 81.8% wear and change gloves during treatment, 54.4% wear and change masks, and 95% change extraction

instruments and burs between patients. The management of dental instruments can be considered efficient as long as they are sterilized in an autoclave (97%) and undergo periodic sterilization efficacy tests (76%).<sup>15</sup>

Infection control procedures e.g. use of gloves etc was observed negligible among traditional practitioners; that indicates lack of awareness, training and potential source of transmissible diseases. Disparity of infection control measures among qualified and un-qualified dental practitioners observed in this study calls for an attention of the stake holder of health to take necessary measures to control dissemination of infectious diseases through the dental practices. Further education is required in infection and sterilization, in particular the use of chemical sterilization/autoclaves. Provision of Guideline for Infection Control in Dental Health-Care Settings is an important update of current infection control practices that will help the dental profession to be better prepared to reduce the transmission of infectious disease(s) in the foreseeable future.<sup>16</sup>

## CONCLUSION

Infection control / sterilization measures are rather poor in dental settings run by un-qualified (traditional) practitioners. There is need for creation of awareness and continuous education about the prevention of cross-infections and use of self protection methods. There is also need for a legislation regarding the standard and quality of dental practice.

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Authors:

1. Syed Akhtar Hussain Bokhari, BDS, MCPS  
Assistant professor of Community Dentistry,  
Margalla Institute of Health Sciences,  
Gulraiz III,  
Rawalpindi - Pakistan.
2. Shamta Sufia, BDS, MSc  
Assistant professor of Community Dentistry,  
FMH College of Medicine & Dentistry,  
Shadman,  
Lahore - Pakistan.
3. Ayyaz Ali Khan, BDS, MSc, PhD  
Professor of Community Dentistry,  
Riphah International University,  
Islamabad - Pakistan.