

Practice Guidelines Addressing Needs of Pakistani Dentists During the COVID-19 Pandemic Part 1: Needs Assessment



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OBJECTIVE: The aim of this study was to identify needs of Pakistani dentists, in order to establish recommendations for essential dental care during the COVID-19 pandemic.

METHODOLOGY: Initial needs assessment was performed using social media. A field survey of clinics in 16 localities of Lahore, as well as an online survey of dental practitioners in Pakistan was conducted.

RESULTS: There were 60 respondents from 15 cities in Pakistan; 46 general dental practitioners including 3 unqualified practitioners, and 14 specialists. Adequate PPE was available with 60-70% of practitioners. Ventilation was inadequate in most establishments, and in 30%, aerosols generated in the dental surgery had the potential to spread to the entire clinic. Majority (59%) of patients presenting to practices were walk-in. In the 25 clinics inspected, PPE was not being used adequately, or being saved for use on COVID-19 patients. One third of the practices had rubber-dam, high volume suction, and adequate waste disposal. Patient records were not maintained by 28%.

CONCLUSION: Needs identified were: infection control training for dental health care workers (DHCWs), patient awareness and compliance, protocols for walk-in patient management, use of rubber-dam and high volume suction, financial aid and loans, availability and correct use of PPE and disinfection supplies, and economically feasible means of aerosol control and improvement in clinic ventilation. The role of governing and regulatory authorities in addressing these needs has been suggested. Guidelines based on the needs identified are presented in part 2 of this study.

KEYWORDS: COVID-19, dentistry, infection control, Pakistan, training

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INTRODUCTION

The COVID-19 outbreak originated in Wuhan, China on Nov 17, 2019¹ and was declared a global pandemic by the World Health Organization (WHO) on March 11, 2020.² Pakistan declared a nationwide lockdown and medical emergency on March 24³, restricting dental practices to emergency care. Similar restrictions were in place in many parts of the world⁴, and numerous dental bodies defined what constituted emergency and urgent care⁵, and issued guidelines necessary for infection control.⁶

Dental services over the world struggled to meet requirements for implementation of additional contact and airborne infection control precautions.⁷ Many services in Pakistan closed due to inadequacies in infrastructure and lack of access to infection control supplies, while others

continued to operate as normal.⁸

COVID-19 is caused by SARS-CoV-2, a highly contagious coronavirus with rapid velocity of transmission.⁹ In dentistry, the transmission of SARS-CoV-2 is thought to be via inhalation of the virus present in aerosols and droplets, and by contact of virus with the host oral, nasal and eye mucous membranes.¹⁰ The virus may last in the air for more than 3 hours after generation of dental aerosols, and on most surfaces in the dental surgery for up to 72 hours after droplet or aerosol contamination.¹¹

The virus has an asymptomatic incubation period of 24 hours to 14 days¹², with up to 30% of transmission occurring during this period.¹³ Detection of patients during this asymptomatic period by point of care tests is not yet reliable.¹⁴ Any patient or dental health care worker (DHCW) may be infected, and DHCWs are at an additional risk due to high viral loads in saliva¹⁵, and hence in dental aerosols.

There are 19,539 registered dentists in Pakistan¹⁶, of which 65% are likely to be active.¹⁷ The dentist to population ratio is 1:1,305,811¹⁶, though unqualified dental practitioners

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outnumber qualified registered dentists¹⁶, and provide routine care to the masses. Infection control in many of the lower end dental practices in Pakistan has been of concern in the past^{18,19}, and may have implications on the progress of the pandemic.

Recent International guidelines have focused on going back to work.²⁰⁻²⁶ The Government of Pakistan issued guidelines for practice of dentistry on May 5, 2020, focusing on provision of emergency care during the pandemic.²⁷ Though adequate, this document does not provide necessary details for implementation of these recommendations, with regards to Pakistan's socioeconomic status and limitations of infrastructure and resources.

The objective of this study was to identify the needs of Pakistani dentists in order to establish infection control recommendations for essential dental care among different categories of dental practices in Pakistan during the COVID-19 pandemic.

METHODOLOGY

An informal needs assessment survey was performed on social media groups of dental fraternity, and qualitative data organized according to themes. Two questionnaires were developed; for a field survey of clinics, and for an online survey of dental practitioners.

A field survey was conducted on May 8 to May 9, 2020 by the third author, targeting dental practices in 16 localities of Lahore: Baghwanpura, Barkat Market, Bhatta Chowk, Daronghawala, DHA, Fortress Cantt., Garhi Shahu, Ghazi Road, Iqbal Town, Johar Town, Lari-adda Multan Road, Model Town, Saddar Cantt., Santnagar, Township, and Wahdat Road. After seeking verbal consent from the dental practitioners, the facilities were visited, clinic parameters noted, and the practitioners interviewed based on 42 close ended and 2 open ended questions, followed by a discussion on the problems faced by them and their needs.

An internet based survey was conducted from May 11 to May 18, which was administered to dental practitioners with the help of Dental News²⁸ to have national reach. The online survey link was circulated by Dental News and responses were received through online survey submission. The questionnaire included 35 close ended and 2 open ended questions.

Qualitative data was incorporated into the previous needs assessment themes, defining new themes where necessary. Quantitative data was analyzed using IBM SPSS Statistics for Windows, version 21 (IBM Corp., Armonk, N.Y., USA). Descriptive data analysis was performed. Continuous data did not meet parametric assumptions and median values were used for averages. Results were analyzed using Chi

square, Mann Whitney U, and Wilcoxon Signed Ranks tests. Statistical significance was set at $p < 0.05$.

RESULTS

Sixty dental practitioners were surveyed; 35 (58%) in the online survey, and 25 (42%) in the field survey conducted in Lahore. Among respondents, 45 (75%) were private practitioners, 15 (25%) were hospital based practitioners, and there were 46 (77%) general practitioners, and 14 (23%) specialists. Three of the general practitioners in the field survey in Lahore were unqualified. Overall 27 (45%) practitioners were from Lahore and 19 (32%) from Karachi, with representation from 13 other cities of Pakistan (Fig. 1).

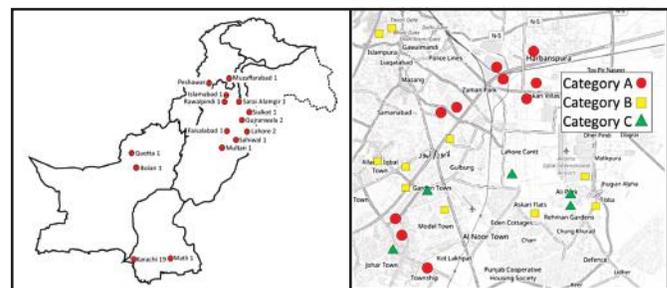


Fig. 1: Location of 35 respondents to the online survey, on a map of Pakistan, and location of 25 clinics in the field survey, on a map of Lahore. The clinics in Lahore were divided into three categories based on infrastructure, facilities, and availability of resources. Category A: clinics with minimal facilities and inadequate ventilation. Category B: clinics with potentially adequate facilities and ventilation. Category C: clinics conforming to international standards.

In the online survey, 40% (14/35) of practitioners were hospital based, while only one (5%) hospital based practice was included in the field survey.

Additional measures for COVID-19 infection control had been taken by 86% of respondents. In the online survey, frequent references to additional measures were: PPE (22 references), disinfection (18), hand hygiene (11), emergency treatment only (5), patient screening (3), limiting attendants (3), and maintaining 2-3 foot distance during examination (2). Refer to Table 1 for clinic parameters and availability of supplies.

On average, each private practice ($n=45$) had 4 staff members including the dentist (min. 1, max. 35), 3 rooms (min. 1, max. 9), 2 dental units (min. 1, max. 20), and one air conditioner (AC). General dentists on average had 4 staff members, 2 rooms, 2 dental units, and 2 ACs. Specialists had 3 staff members, 5 rooms, one dental unit, and 3 ACs. Unqualified practitioners on average had 5 staff members, 2 rooms, 2 dental units, and one AC.

Average dental surgery size was 100 sq ft. and average

	n	Availability				
		All Practices (%)	General Dentists (%)	Specialists (%)	Unqualified Practices (%)	
Clinic Supplies Available	N95 respirators	60	62	65	64	0
	Eye protection	60	68	60	86	33
	PPE Suits	25	72	73	71	67
	Face Shield	25	80	87	86	33
	Rubber Dam	24	33	27	57	0
	High Volume Suction	25	36	33	57	0
	Hand Sanitizers	25	92	93	86	100
Clinic Parameters	Complete Partition*	57	70	71	85	0
	Separate Sterilization area	60	72	72	86	0
	Toilet on premises	60	43	37	64	33
	Adequate Waste Disposal	25	28	43	27	0
Require Financial Help	56	58	53	54	33	

Table 1: Availability of supplies, and clinic parameters, for general, specialist and unqualified practices. * Complete partition of the dental surgery from the rest of the clinic, preventing aerosol travelling from the surgery to the rest of the clinic.

reception size was 144 sq ft. Openable windows were present in 38% dental surgeries and in 43% of the reception areas. One or more exhaust fans were present in 60% clinics, and in 60% of the dental surgeries.

Average patient numbers per day in dental practices had reduced from 10.25 before the pandemic to 3. Majority (59%) of the patients presenting to the practices were walk-in (Table 2).

Online respondents, when compared to the

	Patients/day pre-COVID-19 median	Patients/day post-Covid-19 median	% Reduction in patients p value*	Walk-in patients/day Pre-COVID-19 median	Scheduled Patients/day Pre-COVID 19 median
General n=29	12.5	3	76 p<0.001	7.5	5
Specialist n= 8	9.5	1.5	84 p=0.012	4.75	4
Unqualified n=3	12.5	5.5	56 p=0.18	9	0
All Private Practices n=40	10.25	3	71 p=0.005	6.5	4.5

Table 2: Average patients per day in private practices surveyed: pre and post-COVID-19, and pre-COVID-19 walk-in and scheduled patients. *Wilcoxon Signed Ranks test result, comparing the difference in pre and post- COVID average patients/day.

field survey respondents, had greater access to separate sterilization areas (91% vs. 44%, $p<0.001$, Chi square test), N95 respirators (71% vs. 48%, $p=0.066$, Chi square Test), lower frequency of on-premises toilets (20% vs. 76%, $p<0.001$, Chi square Test), and need for financial help (38% vs. 63%, $p=0.064$, Chi square Test).

In the field survey, most (88%) of the practices were

located on the ground floor. Staff uniforms were in use in 28% practices. N95 respirators, though available at 48% clinics, were in use for patient care in 9 (35%) clinics, and in 4 of these by only the dentist and not the other dental staff. Out of the 401 staff members present in clinics surveyed, 29 (7.2%) had beards. None of the clinics were using air purification or aerosol reduction devices. Majority (68%) of these practitioners were under the impression that the pandemic was a hoax or a conspiracy.

Patient records were not maintained by 28% of the clinics in the field survey. Paper records were being used by 36%; 24% had both paper and electronic medical records (EMR), and 12% were using EMR alone. Twenty percent had electronic scheduling of appointments.

Overall, 52% of the respondents were in need of financial aid, and 58% were interested in loans. Nearly all (97%) respondents were interested in COVID-19 infection control training.

Problems faced by dentists during the pandemic, identified in the qualitative data, were: decrease in the number of patient (15 references, all Lahore based); overpricing of supplies (11 references, all Lahore based); aerosol control (8), patient issues (8) including irresponsible attitude, and lack of patient awareness and compliance; non-availability of supplies (6); inadequate screening methods (6); uncertain future (6); financial issues (5); lack of provision of infection control supplies in hospitals based practice (4); difficulty in social distancing (3); indifferent seniors(3); limitation of dental services to emergencies (3); lack of ventilation (3); lack of guidelines (3); lack of transport for staff (2); fake PPE (2); increased patient demand for treatment (1), and risk of infection (1).

DISCUSSION

Aim of this study was to identify needs of Pakistani dentists during the COVID-19 pandemic. Sixty practitioners were surveyed from 15 cities in Pakistan (Fig. 1), including a field survey of 25 clinics in Lahore, three of which were owned by unqualified practitioners. Specific needs identified were: financial aid and loans, patient awareness and compliance, walk-in patient management, use of rubber-dam and HV suction, economical means of aerosol control and improvement in clinic ventilation and sterilization facilities, availability and correct use of PPE and disinfection supplies, and infection control training for DHCWs.

The ratio of walk-in to scheduled patients in the practices was 1.4:1. Nearly all patients in clinics of unqualified practitioners were walk-in (Table 2). Remote dentistry and screening of patients on the phone may not be possible for a significant proportion of practices, hence recommendations

are required for management of walk-in patients.

High volume suction and rubber dam kits were not available in two thirds of practices in the field survey (Table 1). Both these items are essential for aerosol reduction and control.^{29,30} Practices need to invest in these resources, and receive training for their correct use, before attempting aerosol procedures.

In the field survey, most of the practices were single room clinics, on the ground floor in busy commercial areas. Many had one outside wall, with no openable windows, and no exhausts or other means of ventilation. The dental unit was frequently separated from the reception and waiting area by a partial partition, potentially allowing aerosols to spread throughout the practice. Improving ventilation and expelling contaminated air from these clinics poses a challenge due to close human traffic, and lack of awareness and knowledge of the practitioners about ventilation.

Lack of adequate sterilization facilities, and disposal of clinical waste as routine garbage, pose further challenges in controlling COVID-19 spread (Table 1). Nearly all clinics had hand sanitizers, possibly indicating the reach of the media, but there was sparse evidence of routine disinfection of clinic surfaces.

Availability of dental and infection control supplies was a frequent concern, though practitioners in Lahore were more concerned about gouging of prices by suppliers, and supply of counterfeit items. Though PPE was available and displayed at many clinics, some were "saving it" for treating COVID-19 patients, while others were using coveralls as routine clinic attire. Where it was in use, PPE was inadequately donned. Pre COVID-19 infection control precautions i.e. standard infection control protocols in dentistry were not being observed in most practices. Practitioners lacked knowledge about fitting, and seal-check of respirators, and about donning and doffing of PPE.

There was a sense of fear and uncertainty among the practitioners surveyed in Lahore, though their main concern was a decrease in the number of patients presenting to the clinic. Overall, respondents complained about lack of awareness and non-compliant attitude of patients and seniors, inadequate screening methods, and difficulties in aerosol control. Many had financial concerns related to increasing costs linked to additional safety precautions as well as making treatment charges affordable for their clientele.

General and specialist practices had experienced approximately 80% reduction in patients during the pandemic, while the numbers had halved for unqualified practitioners, who were treating twice as many patients per day compared to the rest (Table 2). A number of dental practices in Pakistan are closed due to non-availability and overpricing of supplies³¹, and there is concern that patients may be

presenting to unqualified practitioners for treatment, and to other practices that may have continued operation without taking any precautions. A number of clinics were noted to be closed during the field survey, but closure may have been due to working hours, and breaks for prayers and Ramzan iftar.

Majority (68%) of practitioners in the field survey seemed to be under the impression that COVID-19 was a hoax or conspiracy. Although, all practitioners showed an interest in receiving training on COVID-19 infection control. None of the practitioners had been approached by a governing or regulatory body for guidance or monitoring during the pandemic.

Infection control has been a concern in Pakistan since heightened awareness in the 1980s and 1990s³², and the issue of unqualified practitioners has plagued Pakistan for many years¹⁶, especially with reference to infection control.¹⁸

Numerous opportunities have been lost over the years by governing and regulatory authorities³³⁻⁴¹, and by associations and organizations of dentists which were unable to resolve the issue of unqualified dental practitioners. Lack of implementation of standard precautions for infection control in dental practices within Pakistan has serious implications for the COVID-19 pandemic, as most dental practices are entirely unprepared to accept and implement the much needed measures.

Release of Government of Pakistan guidelines for dental care during the pandemic is a step in the right direction. Emergency or urgent care was not defined in these guidelines, though it is clear from the content that only emergency treatment has been recommended. The continued strategy of delaying non-emergency treatment and not addressing emergent problems has serious implications for oral health, and is likely to result in unnecessary use of painkillers and antibiotics, undue patient suffering, and eventually, more invasive treatment modalities, greater patient contact time, and worse prognosis. Clear guidelines are necessary in this regard, allowing dentists to make informed decisions, based on treatment need and risk.

Role of regulatory bodies and government of Pakistan

Dissemination of guidelines is not enough. Leadership and coordinated actions at national level using multidisciplinary approaches are essential to prevent dental practices in Pakistan becoming hotspots for COVID-19 transmission. DHCWs require training in basic and COVID-19 infection control, and practices needed to make organizational and infrastructure changes. The following measures may be considered.

- Regulatory bodies need to form teams, possibly

headed by dentists, to guide practitioners in the infrastructure and organizational changes necessary, facilitate financial aid and loans, provide basic training, and then monitor the care provided.

- Monitoring should include hospital based dental services, both Government and private, to ensure provision of PPE and infection control supplies, and adherence to protocols.
- Online COVID-19 infection control training for all DHCWs needs to be organized and certification be made mandatory for all practices.
- Dental practices need access to genuine certified PPE and disinfection supplies at reasonable costs
- DHCWs need access to fit testing services for respirators.
- Use of print and electronic media, social networking sites and applications may be considered for both public and DHCW awareness, for dissemination of information and updates, and for notification of training opportunities.
- Guidelines are needed to define urgent, emergent and routine care during the pandemic, with algorithms to help practitioners make informed decisions about treatment needs.
- The issue of unqualified practitioners needs to be addressed, on more than just paper.³³⁻⁴¹

CONCLUSION

The main needs identified for the implementation of infection control measures in Pakistani dental settings during the COVID-19 pandemic were: infection control training of dental health care workers (DHCWs), financial aid and loans, patient awareness and compliance, management of walk-in patients, correct use of PPE and disinfectants, use of high volume suction and rubber dam, economical means of aerosol control and improvement in clinic ventilation and sterilization facilities, and access to genuine and reasonably priced infection control supplies. The role of governing and regulatory bodies in addressing these needs has been identified. Recommendations based on the needs have been developed to supplement the Government of Pakistan guidelines for dental practice during the pandemic, and are presented in part 2 of this study.

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CONFLICT OF INTEREST

None declared

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