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Multicenter, Cross-sectional Survey on Oral and Maxillofacial Surgery Cases and its Management in Pakistan during the COVID-19 Pandemic: A National Perspective

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ABSTRACT

Objective: The objective of this study was to perform a multicenter, cross-sectional analysis to assess the maxillofacial cases presented and their management in a Pakistani population during the COVID-19 Pandemic along with academic activities.

Materials and Methods: The study was conducted from April 30, 2020, to Oct 30, 2020, in different maxillofacial centers across the country. The questionnaire aimed to elicit information regarding the maxillofacial services provided during the pandemic, the use of personal protective equipment, the effect on academic activities, the development of new standard operating procedures, and other aspects. All these data were collected through an online Performa and data was analyzed through SPSS 23.0v.

Results: The results showed that the COVID-19 pandemic has adversely affected maxillofacial services provided in Pakistan. Elective surgeries have been largely reduced whereas emergency services are being delivered in all centers. Academic activities have been negatively impacted, and alternate means of communication are being employed. The provision of personal protective equipment has become the focal point in delivering health services along with the formation of standard operating procedures for managing patients during the pandemic.

Conclusion: Maxillofacial surgeons must remain updated to use the information and inform new guidelines to help patients in a way that minimizes the risk to the operating team and provides the best level of care to the patients during this crisis.

Keywords: COVID-19, Maxillofacial surgery, Pandemic, Pakistan

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INTRODUCTION

The first case of novel coronavirus (COVID-19) reported in China dates back to November 17th of 2019. It was reported by a 55-year-old resident of the Hubei province of China as stated by South Morning China Post. A single case turned into an epidemic and then traversed the globe to be declared a pandemic by World Health Organization (WHO) on 11th March 2020.[1] COVID-19 had the potential to cause severe acute respiratory tract infection among infected humans with high-grade fever, dry cough, and dyspnea.[2] Many other symptoms were reported related to COVID-19 disease including gastrointestinal disturbance, anosmia, ageusia, headache, myalgias, arthralgias, and sore throat.[3] Several anecdotal reports have reported neurologic, psychiatric, and ophthalmologic symptoms as well. Transmission is from person to person via hands, saliva, nasal droplets, and surface contacts.[4,5] Nations across the world took drastic measures to limit the spread of the virus which included wearing masks at all times outside, social distancing, working from home, and closing educational institutions.[6] Preventing transmission of infection through the use of personal protective equipment (PPE) i.e face masks, gloves, goggles, respirators, gowns, and face shields were mandatory in hospitals around the world.[7]

Healthcare systems and organizations took drastic measures to adapt to the continuously evolving political and economic circumstances during this pandemic.[8,9] The rapidly spreading characteristic potential of this virus advocated restrictions on mass gatherings affecting every field of life including teaching institutions, social gatherings, sports activities, airports, banks, and even hospitals are not spared from modifications to execute routine work and services.[4] The world was responding with behavior modifications like social distancing, lockdowns, and quarantine of suspected cases as well as restricting practices that generated aerosols since the virus was known to spread by the airborne route.[10]

All the elective procedure of dentistry whether they were endodontics, restorative dentistry prosthodontics, periodontics etc. were suspended during pandemic but the emergency procedures of OMFS were continued such as emergency tooth extraction, facial space infections management, minor soft tissue injury, tooth avulsions, dentoalveolar injuries.

Other surgical fields such as general surgery, plastic surgery studies cannot be extrapolated to Oral and maxillofacial dynamics as the Oral and Maxillofacial surgeon works directly at the site of COVID virus inoculation making Maxillofacial surgeons particularly susceptible to this virus owing to the nature of their work and the kind of instrumentation.[11]

Taking into consideration these modifications in providing health care, this study was done to assess how the Maxillofacial Surgery Departments all over Pakistan are affected and managing the patients in the COVID-19 pandemic situation. To the authors' knowledge, there is no such study done yet in the country highlighting the specialty-related challenges being faced and the steps taken to address them.

MATERIALS AND METHODS

This cross-sectional study was conducted from April 30, 2020, to Oct 30, 2020, in different maxillofacial centers across the country. The ethical approval for this study was obtained from the Ethical review board of Shaheed Zulfiqar Ali Bhutto Medical University, Islamabad, Pakistan (Reference no. ERB No. F. 1-1/2015/ERB/SZABMU/572). The reliability of the questionnaire was assessed using Cronbach's Alpha ($\alpha = 0.83$). For validity, the Content Validity Index (CVI) was calculated for each item, and the Scale-Level Content Validity Index (S-CVI) was determined based on expert evaluations through Focus Group Discussions (FGDs) and the Delphi method. The CVI for individual items was found to be above the accepted threshold (typically ≥ 0.78), and the overall S-CVI for the scale was above 0.90, indicating good content validity. These results demonstrate that the questionnaire is both reliable and valid for the intended purpose.

The questionnaire was directed toward the head of departments of Oral and Maxillofacial Surgery across the country working in private or government setup. The soft copy questionnaire was distributed through WhatsApp or Email whatever the particular recipient deemed convenient. Consent was taken at the beginning of the form and were informed that the data provided will be used for educational purposes. The participants filled out the form online and hence omitted the physical contact that may have been unavoidable if hard copies of the questionnaire were distributed.

RESULTS

The questionnaire consisting of different questions regarding maxillofacial surgery during the novel Coronavirus pandemic was distributed. Data was collected and stratified in which we got a response from 20 major maxillofacial centers in Pakistan.

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Services and elective surgeries

The results showed that all 20 centers are providing emergency services. Outpatient services have been suspended in the majority of the maxillofacial centers. The pattern of trauma management has also changed with closed treatment being preferred to minimize aerosols as shown in Table 1. Various elective surgeries have also been suspended.

Table No 1: Frequency of Services Provided in Maxillofacial Centers During a Pandemic

Question	Variables		Frequency (N)	Percentage (%)
Services provided by a maxillofacial center for the general population during the Covid-19 outbreak	Emergency services	Yes	20	100
		No	0	0
	Facial space infection treatment	Yes	15	75
		No	5	25
	Indoor facility(ward)	Yes	13	65
		No	7	35
	Surgical exodontia	Yes	10	50
		No	10	50
	Oncology surgical management	Yes	9	45
		No	11	55
	Outpatient department (OPD)	Yes	7	35
		No	13	65
	Elective surgeries/ procedures	Yes	4	20
		No	16	80
	Implantlogy	Yes	1	5
		No	19	95
	Reconstruction surgeries	Yes	1	5
		No	19	95
	Any other elective surgical procedure	Yes	1	5
		No	19	95
	Benign pathologies treatment	Yes	0	0
		No	20	100
	Pre-prosthetic surgical procedures	Yes	0	0
		No	20	100
	Cleft lip and palate repair	Yes	0	0
		No	20	100
	Orthognathic surgical procedures	Yes	0	0
		No	20	100
	TMJ surgeries	Yes	0	0.0
		No	20	100

Academic activities and consultations

Around 12 (60%) centers are still conducting morning rounds while other institutions are using telephonic and online methods for patient consultations and decisions. Other academic activities are being conducted through the zoom online application in 15 (75%) centers, module in 2 (10%), physically in 1 (5%), and suspended in 2 (10%) centers as shown in Table no 2.

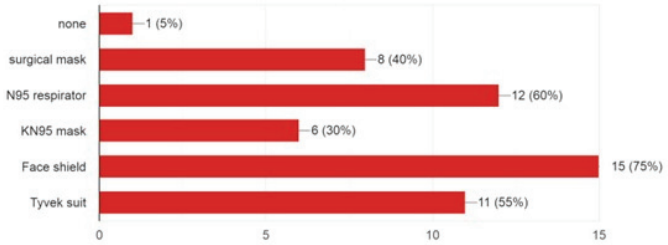
Table No 2: Frequency of Various Forms of Conduction of Academic Activities

Question	Variables		Frequency (N)	Percentage (%)
Academic activities during the Covid-19 outbreak	Zoom online sessions	Yes	15	75
		No	5	25
	Any other online application	Yes	6	30
		No	14	70
	Module application	Yes	2	10
		No	18	90
	Physical presence in auditorium / lecture hall	Yes	1	5
		No	19	95
	No academic activity	Yes	2	10
		No	18	90

Personal protective equipment

The results show PPEs are being used in almost all the major maxillofacial centers. They include surgical masks, KN95 masks, N95 respirator masks, face shields, Tyvek suits, and gowns. Priority is being given to respirator masks and face shields as they provide the closest protection for surgeries in and around the oral cavity (Figure 1).

Figure No 1: Frequency of Various PPE's Used in Maxillofacial Centers



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Covid-19 facilities and SOPs

The results show that 16 (80%) out of 20 maxillofacial centers are equipped with an isolation ward for Covid-19 positive patients. 15 (75%) have a sample collection facility while 12 (60%) have a sample testing facility. 18 (90%) centers have formed their own SOPs for managing patients during the covid-19 crisis (Table No 3).

Table No 3: Maxillofacial Centers Affiliated Hospitals Providing COVID-19 Related Services

Question	Variables		Frequency (N)	Percentage (%)
COVID-19 facilitations	Isolation facility	Yes	16	80
		No	4	20
	The COVID-19 sample collection facility	Yes	15	75
		No	5	25
	COVID-19 sample testing facility	Yes	12	60
		No	8	40
	SOP's following	Own	18	90
		Others	2	10

DISCUSSION

The novel Sars-Cov-2 pandemic rattled the health systems of the most prosperous countries of the world and adversely affected the provision of healthcare services due to the rapidly increasing cases afflicted with the deadly virus.[13] The situation in Pakistan was no different from the rest of the world.[14] Boasting a population of 220 million, the country was struggling to manage the rapidly rising cases at that time of an economic crisis. As of 1st July 2020, the total number of Sars-Cov-2 cases in Pakistan were reported around 213,000.[15] Many health services were suspended as the hospitals were facing shortages of ventilators, beds, personal protective equipment, and other medical supplies. The residencies, fellowships, and other academic activities were also affected because of the increased risk of virus transmission to frontline health professionals. All elective surgeries were halted at the time.

This study was conducted to ascertain the effect of the Covid-19 crisis on every aspect of maxillofacial surgery in Pakistan. Dentists and maxillofacial surgeons are in the highest risk category for contracting the virus as their work involves the oral cavity and working with aerosols.[16] Therefore it is imperative that the risk of acquiring the virus be thoroughly determined and measures are taken to prevent or minimize the risk of transmissions from patient to doctor and then to other health professionals. For this purpose, a questionnaire was designed and distributed to 20 renowned centers of maxillofacial surgery throughout Pakistan covering in detail the impact of Covid-19 on outdoor and indoor services, maxillofacial procedures and SOPs formed to effectively deal with the crisis and inform guidelines on how to minimize the risk of virus transmission while providing the needed dental and maxillofacial care.

Surgical triage was systematized everywhere in the world, giving priority to lifesaving operations and elective surgeries being deferred. [17,18] The results collected showed that emergency services were being offered in all centers and outpatient services in 35% of centers. Trauma was managed on a priority basis and the pattern of trauma management was also see to be shifted from open reduction to closed reduction as the risk of virus transmission was higher with aerosol-producing equipment used in open reduction and fixations. Most elective surgeries were also suspended throughout the country. Around 15 (75%) centers were treating facial space infections amid this crisis, while only 9 (45%) were offering surgical oncology services and 10 (50%) were performing complex exodontia. These results coincide with studies done on dental procedures amid Covid-19 in other countries. Guo et al [19] report that emergency dental services such as treatment of dental trauma, acute pulpitis, cellulitis, and abscesses were being provided by dental centers in China. Another study conducted in Germany by Al-Halabi et al [20] reported the suspension of all elective dental procedures and provision of only urgent dental care to patients in need under strict guidelines.

The survey also showed that 18 (90%) of maxillofacial departments in the country established their own departmental SOP for managing patients amid this crisis. Departmental academic activities also suffered at the hands of Covid-19 but did not stop. Journal clubs and presentations were managed on zoom online application [21] in 15 (75%) centers while the rest were using other online software for a similar purpose. Telephonic communication was; head of a department and consultants' prevalent means of staying up to date and advising indoor patient management rather than physical rounds. The reduction

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of health personnel for indoor and emergency services also became a part of the SOP. This sudden transition to online interactive learning taught us the incorporation of IT technology in new levels of blended learning.[22]

The use of personal protective equipment (PPE) became standard practice for health professionals working in hospitals as their safety means that they can work efficiently and serve those in need of medical help. The emphasis at that time was on the efficient supply and usage of PPE all over the world.[23] The PPEs that were supplied in Pakistan were mask, gloves, face shield, goggles, and Tyvek suits. The face shield became an integral part of a maxillofacial surgeon's PPE working in the Covid-19 crisis. According to the survey, the face shield was preferred more than N95 masks and Tyvek suits by the maxillofacial centers of Pakistan for their working personnel. The results do not show a marked difference in preference between N95 respirator, KN95, and simple surgical mask. Hirschmann et al [24] conducted a systematic review regarding the use of PPEs for orthopedic and trauma surgeons and collected data from six countries concluding that PPE had a vital role in the safety of a surgeon and should consist of gowns, specialized face masks, gloves, and goggles or face shields.

There are no universal guidelines on the regulation of maxillofacial surgery or other health services during the Covid-19 pandemic yet due to the novelty of the virus and the continuing change in evidence regarding its characteristics, transmission, and the role of PPE. Hence, these aspects are also limitations of this study.

CONCLUSION

The Novel SARS-Cov-2 affected all health care services at a huge scale which was unprecedent in the history of mankind, including Oral and Maxillofacial surgery worldwide. There was an unrest and delay in decision making and policy making. Timely policy development and plan implementation in case of such an outbreak or any other natural calamity should be done so that early measures are taken to limit the spread of the disease and continue the health care services and academic activities.

DISCLAIMER

None to declare.

CONFLICT OF INTEREST

There is no conflict of interest among the authors.

ETHICAL STATEMENT

An ethical clearance letter was obtained from the Institutional Research Board Shaheed Zulfiqar Ali Bhutto Medical University. (Ref No F.1-1/2015/ERB/SZABMU/672 dated:18/05/2020)

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Revising the manuscript critically for important intellectual content: Z. A. Rana
Approval of the version of the manuscript to be published: M. K. Shar, F. Ahmed, H. H. Mirza, A. A. Bhatti, A. N. Chaudhary, Z. A. Rana

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