Original Article

COVID 19 PANDEMIC IMPACT ON VARIATION OF DISEASE PATTERN ON HOSPITALIZATION OF ORAL AND MAXILLOFACIAL SURGERY PATIENTS

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ABSTRACT

Background: Because oral and maxillofacial surgery (OMFS) comprises airway and aerosol-generating operations, this study seeks to demonstrate that OMFS is a high-risk specialty, which may be exacerbated significantly during the coronavirus outbreak in 2019 (COVID-19). This comparative study aimed to investigate whether COVID-19 affected the illness patterns of OMFS inpatients and surgical procedures performed under general anesthesia.

Material and methods: The archival records related to patient's admission and operation theatre of OMFS patients who were admitted between January 2019 and August 2020. It was estimated and compared to the previous year's numbers the number of patients in total, the disease patterns they presented, and the fraction of patients who received imperative and non-imperative medical treatments between 2019 and 2020.

Results: They are based on 98 hospitalizations and 66 general anesthesia surgical operations during the research period. When comparing 2020 to the previous year, hospitalizations and procedures fell significantly ($p = 0.012$ and 0.007, respectively). Contrary to the previous year, cleft lip & palate and TMD, the number of malignancies grew dramatically and significantly. In 2020, the proportion of necessary services to non-essential services increased statistically significantly compared to the same year in 2019.

Conclusion: The findings of this study are among the pioneer in reporting data on the epidemiological effect of the corona pandemic on the OMFS illness pattern in Pakistan. A pandemic's impact on disease patterns and workload. Such pandemics impact patient care, education, and training on a long-term basis. In addition to other applications, health officials could use our findings to analyze resource mobility and optimize medical education and services.

Key Words: Oral Medicine, Oral Surgery, COVID-19

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INTRODUCTION

The coronavirus disease 2019 (COVID-19) has significantly impacted health care delivery.[1] Since the World Health Organization (WHO) declared the COVID-19 epidemic a global public health emergency, many healthcare strategies have been implemented worldwide. Combining the risk of COVID infection with a lack of medical resources has resulted in a drop in the number of elective surgeries performed in recent years.[2]

Medical care must be prioritized during a pandemic to avoid the medical system collapsing. During the 2014–2015 Ebola virus outbreak, systemic shortcomings contributed to an increase in fatalities from several diseases, including measles, malaria, HIV/AIDS, and tuberculosis.[3] To minimize increased morbidity and mortality due to insufficient or improper distribution of medical resources during an outbreak, key medical services must be maintained at all times during the outbreak

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period. According to the World Health Organization's recommendations, elective treatment priorities change with time and vary by nation. When contemplating alternative therapies, the World Health Organization states that the severity & longevity of the pandemic, the time frame of availability, and the non-availability of healthcare facilities in the affected area are some of the most crucial factors to consider.[4]

The citizens, medical professionals, and the government of Pakistan have been making joint efforts to maintain a reasonable level of control over the pandemic, despite the city's significant population mobility and congestion. Between January 1, 2020, and September 19, 2020, the Pakistan Department of Health reported cases of COVID-19. However, (2.1%) of the cases resulted in death, despite the vast majority being discharged following complete recovery. Intending to keep patient numbers under 1,000, the hospital's isolation ward was able to handle the majority of patients admitted or awaiting admission.[5]

Because oral and maxillofacial surgery (OMFS) involves airway and aerosol-generating procedures, this specialty is considered high-risk. In comparison, the effect of COVID-19 on inpatient illness patterns and procedures has not been identified in the OMFS. Even though the pandemic had a substantial impact on OMFS services globally, healthcare facilities in Pakistan have optimistically maintained essential and elective surgical treatments. This is an ideal way of examining OMFS service patterns changes over the COVID-19 timeframe. As suggested by the World Health Organization, health conditions and acute presentations needing time-sensitive care are not currently recognized as essential medical services in the OMFS area, owing to the absence of an acceptable, context-relevant definition.[4] This study aimed to determine the impact of COVID-19 on inpatient admission and the number of surgeries performed under general anesthesia. The researchers also wanted to identify the important OMFS services for future policy development and budget allocation.

MATERIAL AND METHODS

The study was conducted in the Department of Oral and Maxillofacial Surgery, Bakhtawar Amin Trust Teaching Hospital, Multan, after approval from the Institutional Review Board. Written informed consent was taken from each of the study participants. The findings of the research were divided into two categories. In the first segment, the researchers collected the inpatient admission data of the OMFS Unit. After that, the data regarding operating room procedures under general anesthesia by expert surgeons were collected. Apart from exodontia, complete information related to the following 08 variables were noted on specially designed proforma, i.e. (i) Dentofacial deformities (ii) Benign pathologies (iii) Malignancy (iv) Dentoalveolar diseases (v) Infections (vi) Cleft lip and palate (vii) Temporomandibular joint diseases (viii) Others.

Between 2019 and 2020, all the information available on the total number of patients admitted and the distribution of these patients among the categories described above were gathered and analyzed to highlight the heterogeneity of the disease pattern in the population. Since the World Health Organization categorized maxillofacial trauma, infection, and cancer as time-bound treatments, the WHO has advocated for their categorization as "essential medical services."[4]

Within 24 hours of surgery or hospitalization, COVID-19 RANA testing was done using a polymerase chain reaction test to determine positivity and negativity. Several criteria must be met before a patient can be considered for surgery. These include having no recent travel history within 14 days, no close contact with diagnosed cases, no typical symptoms consistent with suspected coronavirus infection, and confirmed negative PCR results. A minimum delay of 14 days was required for patients in close contact with confirmed cases unless they urgently needed life-saving emergency surgery at their admission.

IBM SPSS Statistics Version 26, which can be downloaded from the company's website, was used for all of the statistical analyses in this study. The binomial test was used to compare the proportions of patients who required critical

medical care and those who belonged to different groups of cases in the study. Using the Chi-square test, researchers could examine the proportions of vital medical services and separate case groups in the study population. Using the Bonferroni correction was necessary when there were multiple group comparisons. Two-sided values in all cases were taken. It was determined that the experiment was considered statistically significant if the p-value was ≥0.05.

RESULTS

Throughout the periods specified, a total of 124 people were hospitalized in 2019. A statistically significant decrease in hospital admissions was seen in 2020 (p = 0.012) compared to the previous year. At any point during the patient's hospitalization, there was no sign of COVID-19 infection or positive COVID-19 tests. A COVID-19 infection was not detected in any crew member during the experiment, and no one developed symptoms or tested positive (Figure 1).

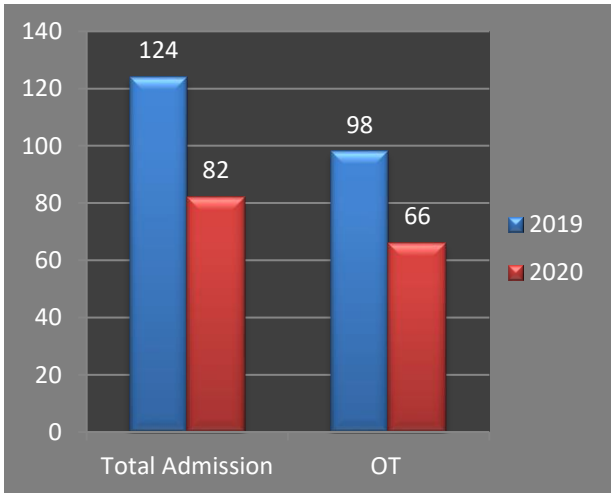

Figure 1: Number of inpatients admissions and surgically treated patients

The table 1 and 2 show the student numbers and percentages admitted to different groups. The proportion of patients hospitalized for cancer in 2020 was significantly higher compared to 2020 and 2019. On the other hand, there have been considerable reductions in admittance for dentoalveolar problems, diaphragm, and temporomandibular articular abnormalities. In addition, the admission rate for the category 'other' has significantly changed, mostly as the number of obstructive sleep apnea patients was reduced in 2020. In terms of patients hospitalized for an infection, benign disease, and dentofacial deformity. The proportions were unchanged between 2019 and 2020. A graph showing the percentage distributions in 2019 and 2020 for different admissions is available here.

Table 1: Frequency of dentofacial diseases presented

Causes	Admissions		p-value
	2019	2020	<0.05
Dental Deformities	27 (21.7%)	20 (20.4%)	<0.05
Benign Pathology	38 (30.6%)	31 (31.6%)	<0.05
Malignancy	13 (10.4%)	11 (11.22%)	<0.05
Dentoalveolar Disease	16 (12.9%)	13 (13.26%)	<0.05
Infections	12 (9.6%)	9 (9.1%)	<0.05
Cleft	5 (4.03%)	6 (6.1%)	<0.05
TMJ diseases	7 (5.6%)	6 (6.1%)	<0.05
Others(OSA, trauma, etc.)	6 (4.8%)	2 (2.04%)	<0.05
Total	124 (100%)	98 (100%)	

Table 2: Number of cases surgically treated during 2019 and 2020

Causes	OT		
	2019	2020	p-value
Dental Deformities	39 (31.45%)	27 (27.55%)	<0.05
Benign Pathology	42 (33.87%)	34 (34.69%)	<0.05
Malignancy	9 (7.25%)	19 (19.38%)	<0.05
Dentoalveolar Disease	14 (11.2%)	7 (7.14%)	<0.05
Infections	4 (3.2%)	9 (9.1%)	<0.05
Cleft	4 (3.2%)	0 (00%)	<0.05
TMJ diseases	7 (5.6%)	1 (1.02%)	<0.05
Others(OSA, trauma, etc.)	5 (4.03%)	1 (1.02%)	<0.05
Total	82 (100%)	66 (100%)	

DISCUSSION

Many patient management guidelines have been published since the discovery of coronavirus disease in the early stages of the pandemic in 2003.[6-8] It should be noted that this is the first comparative study to our knowledge that objectively demonstrates a significant decline in overall patient numbers, an increase in malignancy cases, and a significant loss in key medical services in the OMFS as a result of this pandemic.

Because personal protective equipment (PPE) reduced availability and a low number of training sessions provided to the OMFS staff, the overall number of patients operated on in the outpatient department declined from the period before to COVID-19, according to the study. Because of fewer surgeries and a drop in elective inpatient and outpatient treatments during the COVID-19 outbreak, admissions declined during the epidemic.

As a result of the COVID-19 epidemic, the number of persons in need of life-saving medical treatment increased significantly, with the proportion of people suffering from malignancies rising to an all-time high, particularly among the elderly. OMFS was first identified in China, where physicians divided patients into four severity levels based on their amount of disease progression. Injury to the upper respiratory tract, such as blood loss or obstruction of the upper respiratory system caused by tumors or infections, is a life-threatening illness that necessitates immediate medical attention.

Even though their vital signs are stable, some individuals require emergency surgery to resurrect them. An example of an emergency patient requiring immediate surgery is a fractured bone that has been closed. Patients with malignant tumors or recurrent infections are reviewed, followed by those requiring elective surgery for conditions such as cleft lip and palate, dentofacial abnormalities, or benign tumors.[9] As a result of our classification system, we discovered that cancer, infection, and trauma cases fell into the first three categories. In contrast, cases requiring "non-essential medical services" fell into the fourth category of elective surgery. A large number of people argued for assessing the risk of postponed surgery against the rehabilitative resources that would be necessary, as well as for prioritizing surgical procedures over non-surgical alternatives.[10,11]

Generally, when resources are limited, it is common to prioritize the most critical services first. The long-term consequences of this evolution will damage patient care, as will the education and training of surgeons and other medical professionals. It is anticipated that our data will be utilized to inform future policy decisions and resource allocation decisions, among other things.

Throughout the COVID-19 period, we employed patient care techniques comparable to those recommended by the OMFS and OMVID-19 in Spain.[12] In the OMFS Department's COVID-19-negative theatre, which the hospital had cleared before the surgery, the procedures were carried out at our hospital. Individuals were required to wear personal protection equipment (PPE) on the ward and in the outpatient department (OT) in accordance with World Health Organization (WHO) standards.[13,14] Therefore, according to Barca and colleagues, all instances treated in Italy between February 29 and April 16, 2020, were caused by cancer or trauma, in contrast to previous findings that all instances were caused by infection.[15] Beginning April 15, 2020, all elective non-emergency procedures in the United Kingdom will be suspended for three months, after which they will be reinstated on April 15, 2020.[16] According to the results of Maffia and colleagues' survey of OMFS surgeons, just 5.8 percent of OMFS physicians continue to conduct orthognathic surgery.[17]

Recognize and accept the limitations of a single-center study as they are presented here. Because of the small number of trauma patients at our center and in Pakistan, we have had trouble conducting statistical analyses on traumatology as a distinct category. Unexpectedly, the COVID-19 test returned a negative result in our study group, which was a disappointment. It will be more favorable to acquire more extensive and broadly applicable experience in managing OMFS patients if future multicenter research can be undertaken.

This will be especially true if future multicenter research can be conducted. We were solely interested in hospitalizations and procedures because those were the only things piqued our interest during our investigation. Suppose an outbreak persists for an extended period. In that case, outpatient management data will be required to guide outpatient therapies, which, if delivered promptly, may be essential in saving lives administered quickly.

CONCLUSION

COVID-19 data show that hospital hospitalizations and surgeries reduced dramatically between the COVID-19 and preCOVID-19 time periods. OMFS patients saw an increase in the number of malignancies and the need for further care, suggesting a statistically significant difference in the disease patterns of the two groups of patients. Furthermore, our findings suggest that adequate preparations can maintain non-essential medical services during a pandemic. Aside from the implications for patient treatment, education, and training, our findings have implications for OMFS policy and practice in various sectors, according to the authors.

AUTHOR'S CONTRIBUTION

MAK: Study conception, design, and data collection

MG: Design, data collection, and results interpretation

MRZ: Data Collection, Analysis, and manuscript writing

SA: Study conception, data analysis, writing, and review of the manuscript

MS: Study design, data collection, data analysis, review of the final draft

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