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The Impact of the COVID-19 Pandemic on the Management of Oral and Maxillofacial Patients Under General Anaesthesia at Charlotte Maxeke Johannesburg Academic Hospital

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THE IMPACT OF THE COVID-19 PANDEMIC ON THE MANAGEMENT OF ORAL AND MAXILLOFACIAL PATIENTS UNDER GENERAL ANAESTHESIA AT CHARLOTTE MAXEKE JOHANNESBURG ACADEMIC HOSPITAL

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A research report submitted to the Faculty of Health Sciences, University of the Witwatersrand, Johannesburg, in partial fulfilment of the requirements for the degree Master of Science in Dentistry (Maxillofacial and Oral Surgery).

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Co-supervisors: Dr. Pillay L

Johannesburg, 2025

ABSTRACT

AIM OF THE STUDY

The purpose of the study was to determine the impact of the COVID-19 pandemic on the management of oral and maxillofacial patients at the Charlotte Maxeke Johannesburg Academic Hospital.

OBJECTIVES

1. Determine the type and distribution of MFOS procedures performed under general anesthesia in CMJAH one year before the COVID-19 pandemic.
2. Determine the type and distribution of the MFOS procedures performed at CMJAH during the COVID-19 pandemic.
3. Compare MFOS procedures performed before and during the pandemic.
4. Determine the most common emergency with MFOS during the COVID-19 pandemic.

STUDY DESIGN

This was a retrospective, quantitative study conducted with records of patients who had oral and maxillofacial surgical procedures under general anaesthesia at Charlotte Maxeke Johannesburg Academic Hospital between 23 March 2019 and 23 March 2021.

MAJOR RESULTS

The sample consisted of 853 patients who underwent oral and maxillofacial surgical procedures under general anaesthesia at Charlotte Maxeke Johannesburg Academic Hospital (CMJAH) between 23 March 2019 and 23 March 2021. The most common MFOS procedure performed one year before the COVID-19 pandemic was open reduction and internal fixation (ORIF) (49.9%) and the least common was examination under general anaesthesia (0.2%).

During the COVID-19 pandemic, the most common MFOS procedure performed was also open reduction and internal fixation (58.2%) and the least common procedure was marsupialization (0.5%). More male patients (91.7%) had ORIF performed on them than females (8.3%) before and 88.8% males and 11.2% females during the COVID-19 pandemic. The frequency of MFOS procedures performed before the pandemic was 62%, while 322 (38%) of the procedures were performed after the pandemic. Facial fractures as a result of trauma (68.6%) were the most common emergency for MFOS treated during the COVID-19 pandemic.

CONCLUSION

This study demonstrated that there were more MFOS procedures performed under general anesthesia in CMJAH before the COVID-19 pandemic (62%) than the procedures performed during the pandemic (38%). Additionally, it showed that open reduction was the most common type of MFOS procedure performed both a year before and one year after COVID-19 was declared a pandemic. There was an increase in trauma as an indication for surgery during the pandemic, with 68.6% of traumatology cases treated under general anaesthesia, making trauma the most common MFOS emergency during the COVID-19 pandemic. The study also showed that more men received oral and maxillofacial surgery both before (77.4%) and during (70%) the COVID-19 pandemic.

DECLARATION

I, Dipuo Johanna Malakoane, declare that this Research Report is my own, unaided work. It is being submitted for the Degree of Master of Science in Dentistry (MFOS) at the University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination in any other university.



(Signature of the Candidate)

27th day of April 2025

DEDICATION

This work is dedicated to my daughter Mbali, my younger sister Mamakie, my adoptive mother Dalene Maritz, and the late Dr. Siphiwe Isaac Maaga for their continued support and encouragement from the inception of this course and throughout this study.

ACKNOWLEDGEMENTS

I would like to thank Dr. L Pillay, my co-supervisor, for his assistance with this study, his support gave me strength even when I was about to give up. I also thank Prof Rikhotso RE, my primary supervisor, for all the support and guidance. Thanks to Sister Sue (MFOS theater nurse) and Mpho Makololo (Dental assistant) for their assistance during data collection.

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TABLE OF CONTENTS

TITLE PAGE i

ABSTRACT ii

DECLARATION..... iv

DEDICATION..... v

ACKNOWLEDGEMENTS vi

TABLE OF CONTENTS vii

LIST OF FIGURES ix

LIST OF TABLES x

LIST OF APPENDICES..... xi

CHAPTER 1-INTRODUCTION..... 1

1.1 Introduction and background..... 1

1.2 Problem statement..... 2

CHAPTER 2-LITERATURE REVIEW..... 3

2.1 Definition..... 3

2.2 The impact of the COVID-19 pandemic on the healthcare system..... 4

2.3 Management of dental patients during the pandemic..... 6

CHAPTER 3-AIMS AND OBJECTIVES..... 10

3.1 Aim of the study..... 10

3.2 Objectives of the study..... 10

CHAPTER 4-METHODOLOGY..... 11

4.1 Study design..... 11

4.2 Sampling..... 11

4.3 Inclusion and exclusion criteria..... 11

4.3.1 Inclusion criteria..... 11

4.3.2 Exclusion criteria..... 11

4.4 Data capturing..... 11

4.5 Data analysis..... 12

CHAPTER 5-ETHICAL CONSIDERATIONS..... 13

CHAPTER 6-RESULTS..... 14

6.1 Type and distribution of MFOS procedures one year before the COVID-19 pandemic..... 14

6.2 Type and distribution of MFOS procedures performed one year after COVID-19 was declared a pandemic 15

6.3. MFOS procedures performed before and during the pandemic 16

6.4. Indication for surgery during the pre-COVID and COVID period 17

6.5 Common MFOS emergency during the COVID-19 pandemic 17

CHAPTER 7-DISCUSSION..... 20

CHAPTER 8- CONCLUSION..... 23

REFERENCES..... 24

APPENDICES..... 29

LIST OF FIGURES

Figure 1: Summary of risk – adjusted alert levels in South Africa…… 5

Figure 2: The type of MFOS procedures performed one year before the COVI-19 pandemic 15

Figure 3: Types of MFOS procedures performed under general anaesthesia during the COVID-19 pandemic ……. 16

LIST OF TABLES

Table 1: Types of maxillofacial and oral surgery procedures …… 3

Table 2: Maxillofacial and oral surgery emergencies …….. 4

Table 3: Dental procedures which were permitted during lockdown in South Africa …… 7

Table 4: Gender differences in age 1 year before the COVID-19 pandemic …….. 14

Table 5: Gender differences in age during the COVID-19 pandemic…….. 14

Table 6: Differences in the types of surgery between the pre-COVID and COVID periods in females and males combined …….. 17

Table 7: Indication for surgery between male and female in the pre-COVID and COVID periods …….. 19

LIST OF APPENDICES

Appendix A: Data collection tool. 29
Appendix B: Wits ethical clearance 30
Appendix C: Letter to request access to patient records 31
Appendix D: Permission to access records 32

CHAPTER 1: INTRODUCTION

1.1 Introduction and background

The new severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), commonly known as COVID -19, was first identified in a seafood market in Hua nan, Wuhan, China in 2019 (Ather et al. 2020). The virus that belongs to the novel single stranded RNA viruses called Coronaviridae quickly became a public crisis and rampantly spread throughout the world (Dong et al., 2020). The disease was declared a global pandemic in March 2020 by the WHO (2020). During the pandemic, healthcare systems around the world faced a dramatic spread of the disease and faced difficulties on how to halt the spread and reduce deaths, which were also increasing at the time (Siebert et al., 2020). The COVID-19 pandemic weighed on the health care system, including medical and surgical training programmes (Brar et al., 2021).

In a human body, the virus was extensively found in the nasopharyngeal and salivary secretions of infected individuals and was mainly spread through direct contact with respiratory droplets (Ather et al., 2020). Health care professionals, especially dentists, oral and maxillofacial surgeons, otolaryngologists, craniofacial surgeons, and other professionals who performed surgery in the aero-digestive tract had a high risk of exposure to COVID-19 (Brar et al., 2021). Data show that dental professionals were at high risk of acquiring and becoming virus carriers due to the nature of dental interventions such as aerosol generating procedures, sharps handling, and the proximity of the dental provider to the patient's oropharyngeal area. Post-operative care included closely managing symptoms associated with COVID-19 and, if devoid of any danger, patients were discharged according to the hospital protocol (Siebert et al., 2020; Ather et al., 2020).

The use of high-speed turbine hand pieces with irrigation leads to production and inhalation of bio aerosol particles such as saliva and blood, which are commonly contaminated with viruses, bacteria and fungi, and when these particles settle, they contaminate the dental environment, surfaces, and instruments, resulting in an increased risk of transmission (Izzetti et al. 2020). A study by Xu et al. (2020) recognised that the mucosa and contaminated hands were potentially high risk for coronavirus transmission.

1.2 Problem statement

According to WHO 2020 and 2021, the Covid 19 pandemic disrupted general healthcare services severely, causing hospitals and clinics to be overburdened and resources were reallocated almost entirely to the treatment of Covid 19 patients, leading to the cancelation of elective surgeries, delayed diagnoses, and deterioration in chronic disease management. In South Africa, no studies have been reported on the treatment of oral and maxillofacial surgery during the COVID-19 pandemic. Maxillofacial surgeons had to be updated on the types of procedures they could perform during the pandemic to minimise the risk of transmission. On this background, this study was designed to determine the impact of the COVID-19 pandemic on the provision of maxillofacial and oral surgery under general anesthesia at Charlotte Maxeke Johannesburg Academic Hospital (CMJAH).

CHAPTER 2: LITERATURE REVIEW

2.1 Definition

Oral and maxillofacial surgery is a branch of dentistry that encompasses a variety of procedures that involve surgery of the mouth, jaws, and face (Tables 1 & 2). Maxillofacial surgeries are broadly classified as urgent/ emergency and elective surgery. Maxillofacial and oral surgery emergencies are life-threatening conditions that require immediate surgical intervention. Elective surgeries are procedures that can be scheduled in advance for a better quality of life, but not for a life-threatening condition (Akpata, 2018).

Table 1: Types of maxillofacial and oral surgery procedures (adapted from Akpata, 2018).

Types of maxillofacial and oral surgery procedures.
Surgical removal of impacted third molars (extractions).
Excisional and incisional biopsies (biopsy)
Exposing impacted canines to prepare for orthodontic treatment.
Orthognathic surgery.
Removal of cyst from the jaw, mouth or facial region (enucleation or marsupialization).
Surgical removal of tumours from the jaws and mouth (resection).
Facial reconstruction and cosmetic surgery following facial trauma (open reduction and internal fixation or maxillomandibular fixation)
Temporomandibular joint reduction.
Treatment of acute dental abscess (Ludwig's angina) - incision and drainage.
Treatment of dentoalveolar injuries (maxillomandibular fixation).
Treatment of facial soft tissue lacerations.
Treatment of severely displaced jaw fractures (open reduction and internal fixation and/or maxillomandibular fixation).
Treatment of trigeminal neuralgia.
Cleft and craniofacial surgery
Surgical correction of maxillofacial skeletal deformities.

Table 2: Maxillofacial and oral surgery emergencies (adapted from Akpata, 2018)

Maxillofacial and oral surgery emergencies include:
Acute dental abscess (Ludwig's angina)
Facial fractures.
Dentoalveolar injuries.
Lacerations of the facial, maxillary or superficial temporal artery
Dental abscess
Trigeminal neuralgia
Temporomandibular dislocation
Severely displaced jaw fracture
Infected cyst
Infected tumours

2.2 The impact of the covid-19 pandemic on the healthcare system

After coronavirus disease was declared a pandemic; measures were implemented to suppress its transmission. Restricted movement of individuals, reduced contact between people, wearing of face masks, and household isolations were introduced (Coulthard et al., 2020).The South African Government, through the Disaster Management Act of 2002 introduced a state of lockdown (the restriction of movement) and a five-level alert system to manage the gradual alleviation of the lockdown period (Figure 1). This system was implemented as a risk-adjusted approach that was guided by the level of transmissions, infection, the capacity of health facilities, the extent of the implementation of public health intervention, and the socioeconomic impact of continued restrictions (South African Government Gazette, 2020). The nationwide lockdown resulted in the ban on sale of nonessential items, which included the ban on alcohol sale (COGTA, 2020: WHO, 2020). The prohibitions on alcohol sales resulted in fewer social gatherings, empty streets, and a decrease in alcohol-related emergencies and

hospital admissions, whereas before the COVID-19 pandemic 30% of hospital admissions were alcohol-related. The Groote Schuur hospital, on average, recorded 66% fewer trauma cases compared to the period prior to COVID-19 period {Reuter et al., 2020). The ban had negative economic effects in South Africa and was later lifted. The lifting of the alcohol ban resulted in people binge drinking, neglecting the wearing of facemasks, and noncompliance with the social distancing measures that were put in place. This led to a significant increase in COVID-19 cases and infections increased exponentially, putting a strain on the healthcare system, especially in state hospitals {COGTA, 2020).

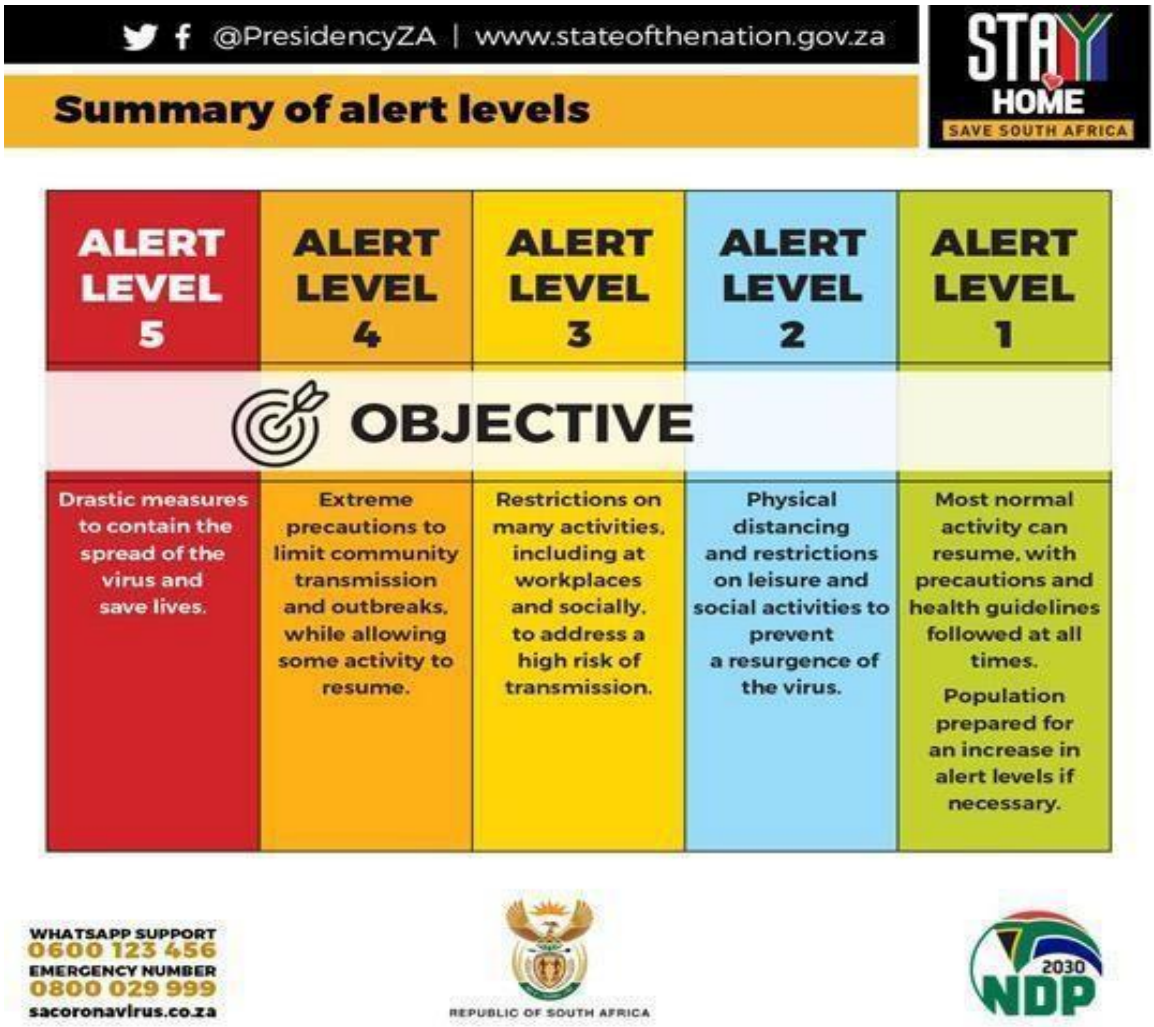


Figure 1: Summary of risk adjusted alert levels in South Africa (adapted from Gazette 43599, 7 August 2020).

2.3 Management of dental patients during the pandemic

Before the COVID-19 pandemic, the management of dental patients and maxillofacial and oral surgery (MFOS) patients operated under normal healthcare systems without restrictions on infectious disease precautions. Routine, preventive, elective and emergency care were accessible without significant delays (WHO, 2016). Infection control adhered to standard universal precautions without specialized pandemic-related protocol (Kohn et al., 2003).

The COVID-19 pandemic required a fundamental transformation in many aspects of health care, including the management of patients who required maxillofacial and oral surgery. Management teams have had to innovate solutions to balance patient care and safety while following strict protocols laid down by the authorities to prevent the spread of the virus.

The use of adequate personnel protective equipment (PPE) was introduced to prevent the spread of the virus (Samaranayake, 2020). Studies during the early stages of the coronavirus outbreak in Wuhan, China, reported that 29% of patients who tested positive for COVID-19 were healthcare professionals, which emphasised the importance of using proper PPE (Brar et al., 2021).

In most developed countries, it was proposed that any elective maxillofacial and oral surgery procedures be postponed and only emergency procedures were performed to prevent and limit exposure and transmission of COVID-19 (Edwards et al., 2020). In Tanzania, patients sought maxillofacial and oral surgical intervention in the advanced stage of the disease when they had unbearable pain. This delayed presentation was due to the belief that other alternative, nonsurgical interventions may help. For these reasons, the types of emergency that were treated in Tanzania during the COVID-19 pandemic included extraction of grossly carious teeth, incision and drainage of abscesses, and incisional biopsies of malignancies

(Sohal et al., 2020). Patients who were scheduled for elective surgery in some hospitals required a polymerase chain reaction test (PCR) for 24 hours prior to the operation. This delayed the scheduled procedure, but mitigated the risk of transmission to patients, staff, and the public (Al-Muharraqi, 2020). The South African Dental Association, in response to the COVID-19 pandemic, authorised procedures to be performed during lockdown (Table 3). Some hospitals around the world had to cancel and postpone elective surgeries, including elective maxillofacial and oral surgical procedures, due to the risk of being exposed to the virus in the hospital (ADA, 2020).

Table 3: Dental procedures which were allowed during lockdown in South Africa (adapted from SADA, 2020).

Dental procedures permitted to be performed during the lockdown in South Africa
Urgent and less invasive procedures with no aerosol production.
Reduction of maxillofacial fractures that are not stable and have the potential to block the airway.
Treatment of (avulsion/luxation) that can be managed without the production of any aerosols and treatment of dental abscesses.
Treatment of severe dental pain of pulpal origin requires tooth extraction.
Management of uncontrollable bleeding, postoperative osteitis, and pericoronitis.

Brar et al, (2021) assessed the primary effects of the COVID-19 pandemic on oral and maxillofacial surgery training programmes in the USA and reported that all programmes involving MFOS had put in place measures to suspend non-urgent and elective procedures. Furthermore, there were controlled in-person consultation protocols for dental and maxillofacial emergency triage to reduce the risk of exposing healthcare professionals to coronavirus disease, while 40% of consultations were conducted by telemedicine at Boston

University, USA (Brar et al., 2021). A study in Brazil on the impact of COVID-19 on oral and maxillofacial surgery services showed a drop in dental surgical procedures performed during the pandemic due to a decrease in the number of consultations performed by oral and maxillofacial surgeons (Bergo et al., 2021).

Studies show that preoperative preparations for emergency oral and maxillofacial surgery included the screening for COVID-19 that guided the type of protocol to follow when treating the patient. Transportation to the hospital for surgery had to be carried out with great care so that the patient was not exposed to the virus just before surgery and extra consideration had to be taken with those patients who exhibited symptoms of COVID-19. Postoperative care included closely managing symptoms associated with COVID-19 and, if without any danger, patients would be discharged according to the hospital protocol (Allevi et al., 2020).

The COVID-19 pandemic has had a significant impact on the treatment of patients requiring maxillofacial and oral surgery under general anaesthesia, the emphasis being on ensuring that patients and healthcare workers were safe from the virus during the performance of surgical procedures and ensuring that there are modifications in place to ensure patient safety during the pandemic (Chinguripati et al., 2020).

In Taiwan, elective procedures were postponed, and only emergency procedures were performed, while in Japan, Poland, Pakistan, and Singapore the maxillofacial and oral surgery clinics performed normal day-to-day woks such as traumatology, orthognathic, head and neck surgery, dental, and oral surgery (Maffia et al., 2020). Furthermore, in the United Kingdom, non-urgent dental care was deferred and aerosol-generating procedures were only performed to provide urgent dental care where patients presented with swelling which caused dysphagia, hindered breathing and caused trismus; facial trauma; haemorrhage and

severe pain (Jones et al., 2020). In a global survey of 54 countries around the world, 82% of maxillofacial and oral surgery (MFOS) clinics were open and functional, with their subspecialties reorganised (Maffia et al., 2020). Traumatology services were mostly maintained because most emergencies involved trauma; thus traumatology, oral surgery and head and neck tumour surgery remained the most active, with orthognathic and temporomandibular surgery being the least active of all procedures (Maffia et al., 2020).

CHAPTER 3: AIM AND OBJECTIVES

3.1 Aim of the study

The aim of the study was to determine the impact of the COVID-19 pandemic on the management of oral and maxillofacial patients under general anesthesia at Charlotte Maxeke Johannesburg Academic Hospital.

3.2 Objectives of the study

3.2.1 To determine the type and distribution of MFOS procedures performed in general in CMJAH one year before the COVID-19 pandemic.

3.2.2 To determine the type and distribution of MFOS procedures performed in CMJAH during the COVID-19 pandemic.

3.2.3 Compare MFOS procedures performed before and during the COVID-19 the pandemic.

3.2.4 Determine the most common MFOS emergency during the COVID-19 pandemic.

CHAPTER 4: METHODOLOGY

4.1 Study design

This was a retrospective, quantitative study of maxillofacial and oral surgical procedures performed at CMJAH for a two-year period (23 March 2019 – 23 March 2021).

4.2 Sampling

A convenience sampling method was used that included all patients who underwent maxillofacial and oral surgery under general anesthesia at CMJAH between 23 March 2019 and 23 March 2021.

4.3 Inclusion and exclusion criteria

4.3.1 Inclusion criteria

Patients who presented for maxillofacial and oral surgical procedures under general anaesthesia during the specified period were included in the study.

4.3.2 Exclusion criteria

Patients with surgical procedures performed before 23 March 2019 and after 23 March 2021, incomplete and missing records were excluded from the study.

4.4 Data capturing

The date of surgery, patients' demographics such as age, gender, indication for surgery and

The type of surgery was assessed and recorded in a data collection sheet (see Appendix A).

Data was handled and stored in Microsoft Office Excel (2024).

4.5 Data analysis

Categorical variables (gender, indication for surgery, and type of surgery) were summarised as frequencies (%). As a continuous variable, the normality of age was assessed using a Shapiro-Wilk test, which differed significantly from a normal distribution. Consequently, the age was summarised as median and interquartile range (IQR). The association between indication for surgery versus gender distribution and period (before COVID-19 and during COVID-19) and type of surgery versus period in both combined genders was assessed using a Pearson chi-square test. Post hoc differences in the prevalence of indications for maxillofacial and oral surgery, selected types of surgery (ORIF, orthognathic surgery, implant surgery, reconstruction and I&D) that were performed between the pre-COVID and COVID-19 periods were evaluated using a z test as proposed by Sharpe (2015). All analyses were performed in Stata version 15 (Stat Corp, USA) at the 5% significance level.

CHAPTER 5: ETHICAL CONSIDERATIONS

An application for ethical clearance was submitted to the Human Research and Ethics Committee of the University of Witwatersrand, and the study was approved; ethics clearance no. M220223 (Appendix C). Permission to access dental records of the maxillofacial and oral surgery patients who had MFOS procedures performed under general anaesthesia between 23 March 2019 and 23 March 2021 was granted by head of the Department of Maxillofacial and Oral Surgery (Appendix E). The principal investigator maintained the anonymity of the participants and the confidentiality of the captured data. Personal identifiers were removed from the data and replaced with numerical codes only accessible to the researcher.

CHAPTER 6: RESULTS

A total of 853 records met the inclusion criteria, 531 in the pre-COVID-19 and 322 during the COVID-19 pandemic {Table 3 and 4). During both time periods, males were treated more frequently than females as shown in Table4 and 5.

Table 4: Gender differences in age one year before the COVID-19 pandemic

Variable	Female	Male	Total	*P- value*
N	120	411	531	***0.139***
Median (Q1-Q3)	28.5(19.0-40.3)	31.0 (24.0-40.0)	30.0 (23.0-40.0)	
Range	1-81	1-87	1-87	

Table 5: Gender differences in age during the COVID-19 pandemic

Variable	Female	Male	Total	*P- value*
N	74	248	322	***0.002***
Median	23.5(13.3 -39.5)	30.5(25.0 – 40.0)	29,5(22.0-40.0)	
Range	1-74	1-71	1-74	

6.1 Type and distribution of MFOS procedures one year before the COVID-19 pandemic

During the pre-COVID period, the most common procedure performed was ORIF (49.9%) followed by debridement (8.5%) and biopsy (6%), respectively (Figure 2). Additional procedures performed under general anaesthesia during the pre-COVID period included incision and drainage (I & D) (5.8%), extractions (5.3%), enucleation (3.2%), closed reduction and fixation of mandible (CRFM) (2.8%), and cleft lip and palate surgery (2.3%). Other procedures, such as placement of a feeding tube placement, impressions, and insertion of osteogenesis distractors in the mandible, accounted for 5.5% of the total procedures performed.

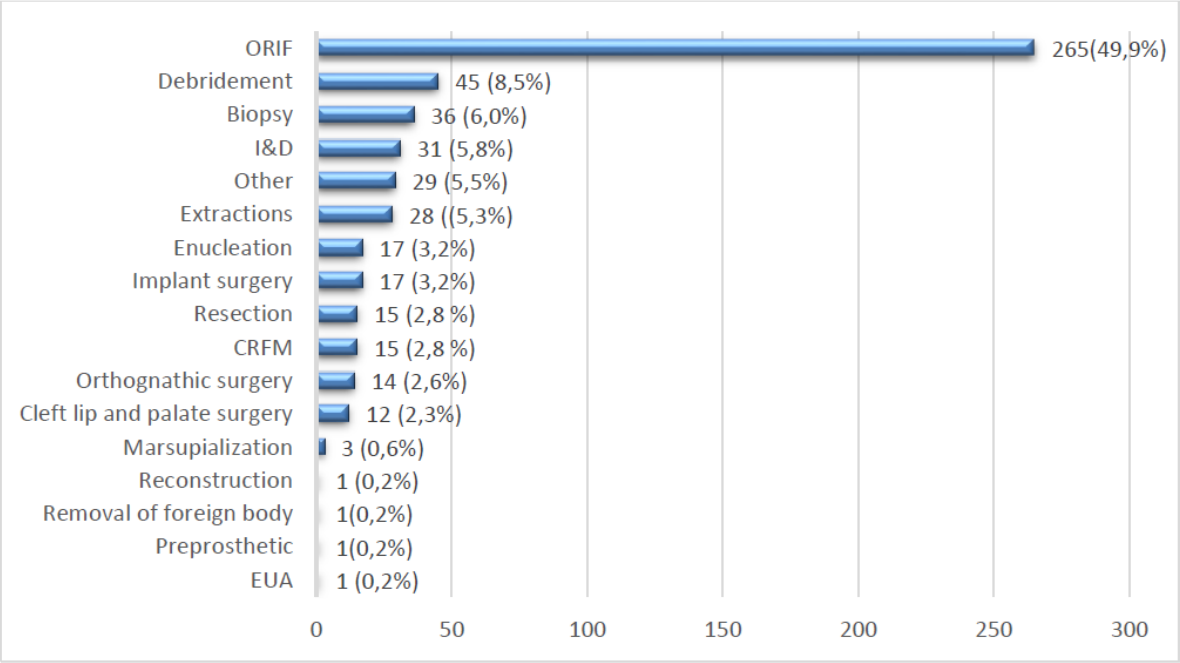


Figure 2: Type of MFOS procedures performed under general anaesthesia one year before the COVID-19 pandemic

6.2 Type and distribution of MFOS procedures performed at CMJAH during the COVID-pandemic.

The most common type of MFOS procedure performed during the COVID period was ORIF (52.8%) followed by orthognathic surgery (5.9%) and extractions (5.4%) (Figure 3). Other procedures (5.9%) included unspecified procedures such as removal of foreign bodies, cryotherapy and lingual frenectomy.

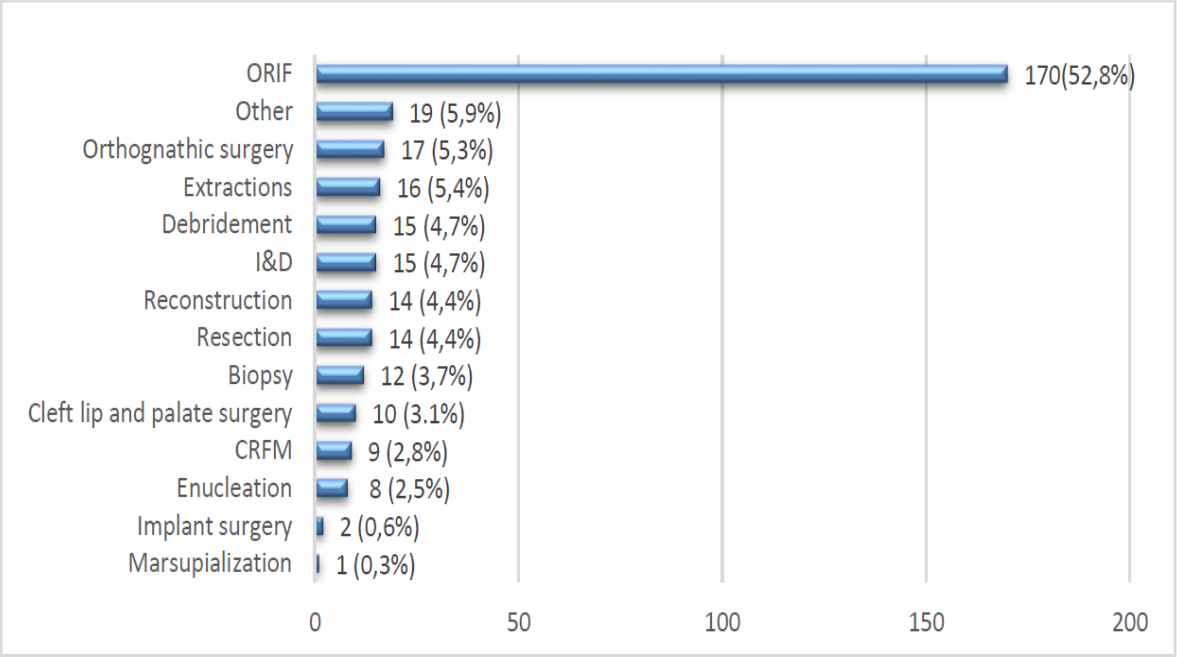


Figure 3: Type of procedures performed under general anaesthesia during the COVID-19 pandemic.

6.3 MFOS procedures performed before and during the pandemic

In general, there was a significant reduction in the number of procedures performed during the COVID-19 period as compared to the pre-COVID (322 versus 531: P-value <0.001), with ORIF being the most common type of procedure performed in both periods (49,9% & 52,8%). Despite the higher frequency of ORIF in both periods, there were no significant differences in the type of procedures perform (Table 6).

Table 6: Differences in types of surgery between the pre-COVID and COVID periods in combined females and males.

TYPE OF SURGERY	Pre-COVID (n=532)	COVID(n=322)
Biopsy	36 (6,8)	12 (3,7)
Cleft lip and palate	12 (2,3)	10 (3,1)
Closed reduction and maxillomandibular fixation (CRMMF)	15 (2,8)	9 (2,8)
Debridement	45 (8,5)	15 (4,7)
Enucleation	17 (3,2)	8 (2,5)
EUA	1 (0,2)	0 (0,0)
Extractions	28 (5,3)	16 (5,0)
I&D	31 (5,8)	15 (4,7)
Implant surgery	17 (3,2)	2 (0,6)
Marsupialization	3 (0,6)	1 (0,3)
ORIF	265 (49,9)	170 (52,8)
Orthognathic surgery	14 (2,6)	17 (5,3)
Other	29(5,5)	19(5,9)
Preprosthetic	1(0,2)	0(0,0)
Reconstruction	1(0,2)	14(4,4)
Removal of foreign body	1(0,2)	0(0,0)
Resection	15(2,8)	14(4,4)

Pearson chi-square = 42.3580 P-value <0.001

6.4 Indication for surgery during the pre-COVID and COVID period

A comparison of the indication for surgery pre-COVID and COVID periods between men and women, as indicated in Table 6, showed that trauma is a significantly prevalent indication for surgery among men, with 70.6% of cases treated during the pre-COVID period and 77.4% in the COVID-19 period. Sepsis was most common indication for surgery in women during the pre-COVID period, attributing to 50.8% of all treated cases, while trauma (39.2%) was the leading indication for surgery in females during the COVID-19 period. There were significant gender differences in the indications for surgery in both the pre-COVID and COVID periods. In the pre-COVID period, the prevalence of all indications for surgery was higher in men (n=411) than in women (n=120).

During COVID-19, sepsis and trauma remained the most common indications for surgery in men, while elective surgeries were more prevalent in women. When compared within each gender and in both combined genders, there were no differences in surgical indications between the pre-COVID and during the COVID periods, as demonstrated in Table 6. However, post hoc tests showed a significant difference in the prevalence of trauma between the pre-COVID and COVID periods. An absolute z-value of 6.699 was obtained, compared to the chi-square value of 3.96.

6.5 Common MFOS emergency during the COVID-19 pandemic

Trauma was the most common indication for surgery during the COVID period, accounting for 68.6% of all indications for surgery, therefore making it the most common emergency MFOS treated as shown in Table 7

Table 7: Indication for surgery between men and women in the pre-COVID and COVID periods.

Gender		N	Elective	Sepsis	Trauma
	Female				
	Pre-COVID	120	19 (15,8)	61 (50,8)	40 (33,3)
	COVID	74	18 (24,3)	27 (36,5)	29 (39,2)
	Total	194	37 (19,1)	88 (45.4)	69 (35,6)
	Pearson chi-square= 4.2487 P-value = 0.120				
	Male				
	Pre-COVID	411	29 (7,1)	92 (22,4)	290 (70,2)
	COVID	248	9 (3,6)	47 (19,0)	192 (77,4)
	Total	659	38 (5,8)	139 (21,1)	482 (73,1)
	Pearson chi-square = 5.0093 P-value = 0.082				
	Overall				
Pre-COVID		531	48 (9,0)	153 (28,8)	330 (62,2)
COVID		322	27 (8,4)	74 (23,0)	221 (68,6)
Total		853	75 (8,8)	227 (26,6)	551 (64,6)

CHAPTER 7: DISCUSSION

This retrospective study was designed to determine the impact of the COVID-19 pandemic on the management of oral and maxillofacial surgery patients. The study also compared the type and distribution of maxillofacial procedures performed before and during the COVID-19 periods.

There was a decrease in the number of MFOS procedures performed during the pandemic, accounting for 38% of the total study population (Table 6). This decline was due to postponement of non-urgent aerosol generating procedures and prioritizing the treatment of emergency cases. Studies conducted in South Africa, Australia, Brazil, England and China, showed a similar decline in the provision of elective dental procedures and prioritizing emergency services only during the pandemic (Pillay and Rikhotso, 2024; Stennett and Tsakos, 2022; Bergo et al., 2021; Hop craft and Farmer, 2022; Legalamitloa et al., 2021). Furthermore, a study by Pillay et al., (2024) at Wits Oral Health Centre, showed that more patients were treated with antibiotics entirely rather than with antibiotics as an adjunct to surgical interventions, partially contributing to the decline in oral and maxillofacial surgery during the pandemic.

In the pre-COVID period, 49.9% of patients treated underwent ORIF. During the COVID-19 period, although the total number of ORIF decreased, the proportion of patients requiring ORIF increased to 52.8%. This indicates that during the pandemic, a higher percentage of patients needed ORIF as treatment. The increase in the COVID-19 period may partly be attributed to the observed rise in interpersonal violence and trauma -related injuries during lockdown as reported in several studies (Hatchimonji et al., 2020; WHO, 2020; Gorbien et al., 2021).

Notably, despite the overall decline in MFOS procedures, the performance of open reduction and internal fixation (ORIF) increased by 2.9% during the COVID period. This increase in proportion of ORIF during COVID-19 may be attributed to the prioritization of trauma over other elective dental and surgical procedures. In our study trauma represented 68.6% of all indications for surgery during the COVID-19 period (Table 6). Similarly, a worldwide study by Maffia et al, (2020) reported that traumatology services were mostly maintained during the COVID-19. Furthermore, there was a higher proportion of male patients (77.4%) compared to women. This is in line with a study by Zhou et al. 2015, on accessing the gender distribution of oral and maxillofacial fractures between men and females in China, whereby males exhibited a higher incidence of facial fractures compared to female patients.

There was an increase in the frequency of orthognathic surgery (5.3%) performed during the COVID-19 period compared to 2.6% of orthognathic surgery performed before COVID-19, as demonstrated in Table 6. This finding suggests that certain elective procedures, like orthognathic surgery, may have continued during the pandemic. This is in line with a global research report by Maffia et al, (2020) where even though most countries had deferred elective MFOS procedures, Japan, Poland, Pakistan, and Singapore continued with day-to-day work such as traumatology, orthognathic, head and neck surgery, dental and oral surgery. These results have implications for MFOS practice during the pandemics, highlighting the need for flexible treatment protocols and effective resource allocation. These protocols include surgical triage systems that will prioritize emergency and urgent cases, while elective procedures can be dynamically adjusted based on healthcare system capacity. Day-case surgery models, telemedicine consultations and dynamic rescheduling of surgical lists can help minimize patient exposure and maintain essential services. Additionally, dedicated infection-free surgical pathways, PPE stockpiling, flexible theatre scheduling and strategic

staff reallocation are crucial in preserving service delivery. Investing in pandemic-specific training and simulation exercises for MFOS teams will further enhance resilience, ensuring that patient care continues safely and efficiently during any future public health crises. These recommendations are supported by international surgical guidelines and experiences during COVID-19 pandemic (Al-Jabir et al., 2020; Zimmermann and Nkeke, 2020; WHO, 2020).

CHAPTER 8: CONCLUSION

The study provides valuable data on the impact of the COVID-19 on the provision of oral and maxillofacial surgery. From the findings of the present study, which have revealed a reduction in number MFOS procedures performed during the pandemic a conclusion might be drawn that more flexible treatment protocols and effective resource allocation should be employed, should a similar situation arise in future. Since trauma is a significant indication for emergency surgical intervention in South Africa, more protocols may need to be developed on the management of oral and maxillofacial trauma patients during a state of disaster like the COVID-19 pandemic.

Study limitations include the retrospective design and single healthcare-centre setting. Future research should investigate the long-term impact of pandemic-related changes on MFOS patient outcomes and healthcare systems. In this instance, further studies are recommended to determine the outcomes of patients treated and those not treated during the COVID-19 pandemic to better understand the impact of the limited access to healthcare.

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APPENDECES

Appendix A: Data collection tool

Study No: _____

Age: _____

Gender: _____

Period: _____

Indication for surgery	Elective	Trauma	Sepsis	
Type of surgery	CRFM	ORIF	I&D	Debridement
	Extractions	Biopsy	EUA	Resection
	Enucleation			Marsupialization

Other:

Appendix B: Wits ethical clearance

UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG	HUMAN RESEARCH ETHICS COMMITTEE (MEDICAL)

Office of the Deputy Vice-Chancellor (Research and Innovation)

TO: Dr D Malakoane
School of Oral Health Sciences
Department of Maxillofacial and Oral Surgery
Dental School
University

E-mail: dipuojohanna@gmail.com

CC: Supervisor: Dr L Pillay and Professor R Rikhotso
<Lingeswara.Pillay@wits.ac.za>
and <HREC-Medical Research Office@wits.ac.za>

FROM: Mr Iain Burns
Human Research Ethics Committee (Medical)
Tel: 011 717 1252

E-mail: Iain.Burns@wits.ac.za

DATE: 2022/11/11

REF: R14/49

PROTOCOL NO: **M220235** (This is your ethics application reference number. Please quote it in all enquiries, oral or written, relating to this study.)

PROJECT TITLE: *The impact of the COVID-19 pandemic on the management of oral and maxillofacial patients under general anaesthesia at Charlotte Maxeke Johannesburg Academic Hospital*

Please find attached the Clearance Certificate for the above project. I hope it goes well and that an article in a recognized publication comes out of it. This will reflect well on your professional standing and contribute to Government funding of the University.



MSWorks2000/Iain0007/Clearscan.wps

Appendix C: Letter to request access to patients' records

Dr Malakoane DJ
P.O. Box 1248
Faerie Glen
0059

29 November 2021

Head of Department
Maxillofacial and Oral Surgery
Prof Rikhotso RE

Re: **APPLICATION FOR ACCESS TO MAXILLOFACIAL AND ORAL SURGERY PATIENT RECORDS**

I am currently studying MSc Dent (MFOS) coursework and research. The title of the research I plan to do is ***The impact COVID-19 had on the management of oral and maxillofacial patients at Charlotte Maxeke Johannesburg Academic Hospital.***

The planned study is a retrospective descriptive, record-based research. I am kindly requesting for your permission to access patient records for maxillofacial and oral surgery patients that were attended to between 23 March 2019 and 23 March 2021. The names of the patients will not be noted in the study and all data which is of clinical nature will be used with the greatest confidentiality and discretion. No patient files will leave the hospital premises.

I hope you find the above in order

Sincerely

Dr Dipuo Johanna Malakoane

BDS (MEDUNSA)

Appendix D: Letter to request access to patients' records

: **APPENDIX D: Permission to access to records**

7 York Road, Parktown, 2193 South Africa • Telegrams "Witsmed" • Telephone (011) 717-2000 • Fax (011) 484-2717

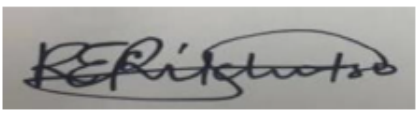
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13 May 2022

Office of the CEO
Charlotte Maxeke Johannesburg Academic Hospital
Parktown

RE: Dr Malakoane's research

This serves to confirm that Dr Malakoane (student number 1281383), an MSc postgraduate student in the department of Maxillofacial and Oral Surgery, is undertaking a research project entitled ***"The impact of the COVID-19 pandemic on the management of oral and maxillofacial patients under general anaesthesia at CMJAH"*** under my supervision. Her protocol has been assessed and approved by the PG assessor group on the 21st of December 2021. Permission has been granted for her to conduct research in the Oral and Maxillofacial Surgery department.

Thanking you in anticipation



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WITS UNIVERSITY FACULTY OF HEALTH SCIENCES