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GENERAL SURGERY

Retrospective observational review comparing pre- and post-COVID-19 surgical services at Mankweng Hospital

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Background: The COVID-19 pandemic disrupted normal activity in the whole world. During the hard lockdown, surgical services were drastically reduced in all South African hospitals. The main objective of the study was to assess the recovery phase of surgical activity in the post-pandemic period at Mankweng Hospital, a tertiary hospital in Limpopo.
Method: A retrospective descriptive study of surgical services was done for three periods, namely pre-COVID-19, during COVID-19 and post-pandemic COVID-19. Data for the study were collected for one year from each group, from April to March, from the general surgery, orthopaedic and gynaecology departments. The pre-COVID-19 period included April 2019 to March 2020, the COVID-19 pandemic period from April 2020 to March 2021, and the post-pandemic COVID-19 period from April 2023 to March 2024.
Result: The total combined operations performed from general surgery, orthopaedic and gynaecology departments during the pre-pandemic period were 2 446, during the COVID-19 pandemic period: 1 969, and during the post-pandemic period: 2 200. Department-wise, the number of operations performed in general surgery during the pre-COVID-19 period was 712, during the COVID-19 period: 657, and during post-pandemic COVID-19 period: 780. In the orthopaedics department, operations performed during the pre-COVID-19 period were 1 031, during the COVID-19 period: 912, and during the post-pandemic COVID-19 period: 752. In the gynaecology department, the number of operations performed during the pre-COVID-19 period was 703, during the COVID-19 period: 400, and during the post-pandemic COVID-19 period: 668.
Conclusion: The recovery phase of the post-pandemic COVID-19 surgical service was not adequate in comparison to the pre-COVID-19 period, particularly for orthopaedic operations. It is of paramount importance that a drastic plan be made to increase theatre utilisation.
Keywords: COVID-19 operation, pandemic, surgical services

Introduction

The COVID-19 pandemic has significantly affected numerous aspects of physical and psychological well-being. According to Worldometers, the total number of COVID-19 cases detected in South Africa was 4 076 463 and of recorded deaths was 102 595. Globally, the total number was 704 753 890 and death occurred in 7 010 681.[1] The first case of COVID-19 was detected on 5 March 2020 in South Africa (SA).[2] Thereafter, a national state of disaster was declared, and lockdown was imposed from 26 March 2020.[3] Initially, hard lockdown level 5 was pronounced until the end of April 2020 and gradually decreased to level 4 in May 2020, then subsequently to level 3 from June 2020. Afterward, soft lockdown was continued until June 2022. During lockdown level 5, people activities and movements were rigorously restricted except for emergency services and shopping for essential foods. In lockdown level 4, some restrictions were withdrawn, social mobility increased, and some business activities were re-established. In lockdown level 3, further increase of businesses activities along with more freedom of movement took place. On 22 June 2022, COVID-19 regulations were repealed. Regulations pertaining to the wearing of masks, limitations on gatherings and entry requirements for foreigners into SA were officially lifted. While these regulations were imposed, employees were required to wear masks to the workplace.[4]

The novel COVID-19 pandemic disrupted normal activity in the whole world. During the hard lockdown, healthcare services became seriously affected in many countries, particularly surgical care.[5-8] In many countries, elective surgical operations were cancelled. A previous study conducted by Bhuiyan reflected that during the 3-month hard lockdown, elective general surgery operations were reduced markedly in Mankweng Hospital.[9] Cancellations of scheduled operations caused a serious problem with undesirable consequences of cost, suffering and psychological trauma. It also had enormous public health implications for hospital cost and an increase in waiting lists for operations. During the hard lockdown, surgical services were drastically reduced in all SA hospitals in an effort to secure beds and critical care for COVID-19 patients. Outpatient clinics were scaled down and many elective operations were cancelled. In Mankweng Hospital, elective operations in all surgical departments (general surgery, orthopaedics, gynaecology, and other surgical services) scaled down; nonetheless, the

hospital continued to perform cancer-related operations and subsequently provided more elective operations after COVID-19 regulations were rescinded.[4]

Those patients whose operation had been postponed during COVID-19 needed to reschedule their elective booking at a later stage, which made the waiting list for operations much longer. The current waiting list for operations at Mankweng Hospital varies from 2 months to one year depending on the surgical discipline and nature of operations. The average waiting list for an operation in general surgery is 3 to 4 months, orthopaedics usually 2 to 3 months for trauma related surgery (hip or knee replacement more than a year), and gynaecology operations up to 6 months. The main objectives of the study were to assess the recovery phase of surgical activity (outpatient surgical service, admission, operation) during the post-pandemic period by comparing it to the pre-COVID-19, and during COVID-19 surgical activity in major surgical departments (general surgery, orthopaedic and gynaecology) in Mankweng Academic Hospital.

Method

This was a retrospective observational descriptive study of surgical services for the three periods of pre-COVID-19, during COVID-19, and post-pandemic COVID-19 at Mankweng Hospital. Data for the study were collected for one-year periods from the general surgery, orthopaedic and gynaecology departments. The pre-COVID-19 period included April 2019 to March 2020, the during COVID-19 pandemic period from April 2020 to March 2021, and the post-pandemic COVID-19 period from April 2023 to March 2024. Data were collected from the Mankweng Hospital Information System (HIS).

Mankweng Hospital is a 500-bed tertiary hospital in Limpopo Province, located 30 km from Polokwane city and serving 5.9 million people. The main theatre complex has four operating rooms serving general surgery, orthopaedic surgery, paediatric surgery, plastic surgery, maxillofacial surgery, and gynaecology. The decision to de-escalate the surgical services was taken after 26 March 2020 when the national state of disaster was declared.[3] Surgical services of admission of patients, surgical outpatient department (SOPD), and operations were compared for the pre-COVID-19, during COVID-19 and post-pandemic COVID-19 periods for general surgery, orthopaedics and gynaecology departments at Mankweng Hospital. Data included: the number of admissions, attendance to the surgical outpatient department and numbers of operations performed. Microsoft Excel 2016 was used for data capturing and analysis. Categorical variables were expressed as frequency and percentage.

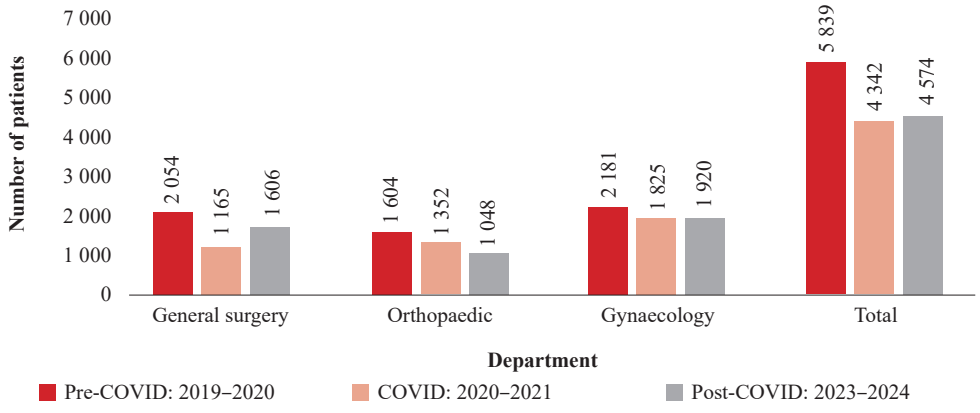

Figure 1: Admission – pre-COVID-19, during COVID-19 and post-pandemic COVID-19 in general surgery, orthopaedics, and gynaecology departments

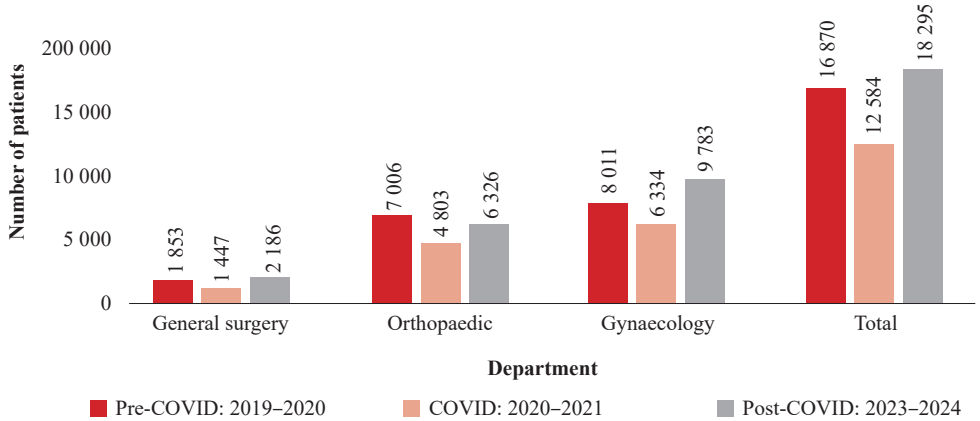

Figure 2: Outpatient Department visit – pre-COVID-19, during COVID-19 and post-pandemic COVID-19 in general surgery, orthopaedics, and gynaecology departments

Results

Admissions

A total of 5 839 patients were admitted from the general surgery, orthopaedic and gynaecology departments during the pre-pandemic period, while during the COVID-19 pandemic period 4 342 patients were admitted and during the post-pandemic period 4 574 patients were admitted (Figure 1).

Outpatient visits

Altogether 16 870 patients were seen in the outpatient department (OPD) from the departments of general surgery, orthopaedic and gynaecology during the pre-pandemic period, while during the COVID-19 pandemic period 12 584 patients visited OPD, and during the post-pandemic period 18 295 patients were seen (Figure 2).

Operations

A total of 2 446 operations combined were performed from general surgery, orthopaedic and gynaecology departments during the pre-pandemic period, during the COVID-19 pandemic period 1 969 operations were performed, and during the post-pandemic period 2 200 operations were performed (Figure 3).

Department-wise, the number of operations performed in general surgery during the pre-COVID-19 period was 712, during the COVID-19 period: 657, and in the post-pandemic COVID-19 period: 780. In the orthopaedics department, operations performed during the pre-COVID-19 period were 1 031, during the COVID-19 period: 912, and during the post-pandemic COVID-19 period: 752. In the gynaecology department, operations performed during the pre-COVID-19 period: 703, during the COVID-19 period: 400, and during the post-pandemic COVID-19 period: 668. The above data is summarised in Table I.

Discussion

In the post-pandemic COVID-19 period from April 2023 to March 2024, the most affected department for operations was orthopaedics. Operations performed is one of the most important performance indicators for surgical disciplines. When evaluating the data for the post-pandemic COVID-19 period of one year from April 2023 to March 2024 in comparison with the same period pre-COVID-19 pandemic from April 2019 to March 2020, the number of operations increased by 9% in general surgery, dropped by 27% in orthopaedics and decreased by 5% in gynaecology during the post-pandemic COVID-19 period. It is imperative to reassess operations in the orthopaedics department for the following post-pandemic year from April 2024 to March 2025; if this trend persists as for previous years, it is of paramount importance to make a drastic plan to increase theatre utilisation (theatre operating rooms, operating times) for the orthopaedics department.

There is a big challenge of theatre availability to book many operations during working hours because of a shortage of theatre space. There is another challenge with the patients who need emergency surgery. There is no dedicated emergency theatre in Mankweng Hospital and hence cancelation of elective operations frequently happens to accommodate the emergency surgery. A previous study found that the most common reason of cancellation of elective operations in this institution was the addition of emergency cases during working hours in daytime.[10] This indicates the necessity for more theatre space to accommodate surgical emergency operations in order to reduce the cancelation of elective operations.

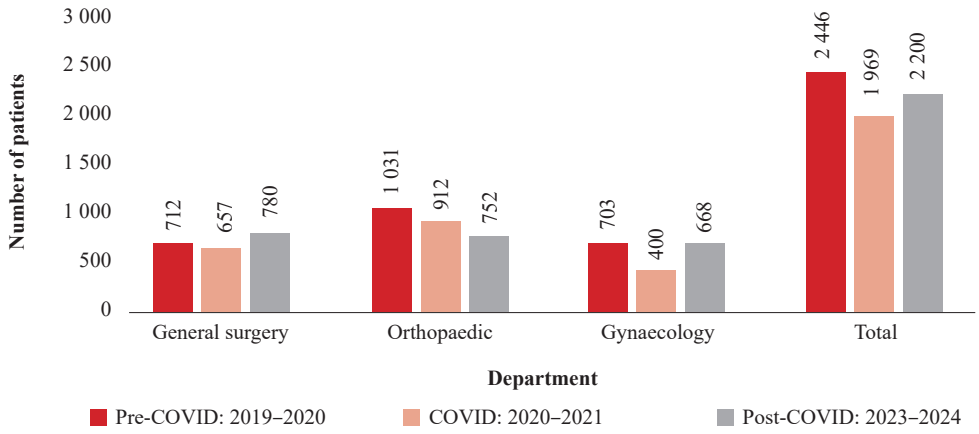

Figure 3: Operation performed – pre-COVID-19, during COVID-19 and post-pandemic COVID-19 in general surgery, orthopaedics and gynaecology departments

Table I: Combined surgical services pre-COVID-19, during COVID-19 and post-pandemic COVID-19 (General Surgery, Orthopaedic and Gynaecology departments)

Period / Surgical service	April 2019 to March 2020 (Pre-COVID-19)	April 2020 to March 2021 (COVID-19)	April 2023 to March 2024 (Post-COVID-19)	Total
Admissions	5 839 (39.6%)	4 342 (29.4%)	4 574 (31%)	14 755
SOPD	16 870 (35.3%)	12 584 (26.4%)	18 295 (38.3%)	47 749
Theatre operations	2 446 (37%)	1 969 (29.8%)	2 200 (33.3%)	6 615

When comparing the post-pandemic period with the pre-pandemic period, SOPD visits increased, however admissions and operations did not increase. This indicates that many patients are still waiting for an operation. The backlog of patients waiting for operations continues to be a problem in many public hospitals in SA.[11] Most of the patients in Limpopo Province are from rural communities and entirely dependent on public hospitals for their healthcare needs. As the population is increasing, there is a need for more surgical services.

COVID-19 substantially affected health services for noncommunicable diseases in many countries.[12] Delaying elective surgery reduces the quality of the patient's life. People who suffer the most are those of low income depending entirely on the public health services. Access to healthcare is worst in low- to middle-income countries and additional surgical procedures are needed in such countries each year to save lives and prevent disability.[13] In some cases, such setbacks in elective operations result in very undesirable clinical outcomes, particularly in cancer patients, where local and distant metastases may progress. It would take several years in SA to work on accumulated backlogs in waiting lists for elective surgery. All surgical disciplines are affected and must improve their effectiveness by increasing the number of operations. This will be difficult for some institutions such as ours, where surgical disciplines are already overwhelmed in their normal routine work. In addition, infrastructure of theatre space cannot be developed currently due to the building of a new academic central hospital in Limpopo which will be commissioned in 2028.[14] Henceforth, other solutions need to be considered to increase the theatre space for elective operations by running operating theatres through extended hours, during evenings and weekends with adequate staff incentives.

However, some studies have found that the weekend effect on mortality is high. Aylin et al.[15] conducted a study at all acute and specialist hospitals in the United Kingdom for elective surgery during 3 financial years from 2008–2011. The risk of death within 30 days of a planned operation increased during weekends compared with a Monday. Zare et al.[16] found a 17% higher mortality for elective major surgery within 30 days of operations performed on a Friday in comparison to those from Monday to Wednesday at all Veterans Affairs hospitals in the United States. However, some other studies did not find increased mortality.[17,18] A study done in Limpopo on performing low risk elective operations on Saturdays showed effectiveness of such an approach and advocated that Saturday elective operations be considered as an approach to maximise theatre efficiency at the Pietersburg Hospital.[19] However, there is a challenge of staff shortage during weekends and after hours. During weekends, staffing is usually lower than normal which may affect capacity to look after postoperative surgical patients. Nonetheless, grade 1, grade 2 and some cases of the grade 3 American Society of Anaesthesiologists (ASA) patients can be selected for elective operation which may not require much additional attention.[20] Those elective operations that take a longer time to perform and operations requiring intensive care unit (ICU) beds should be excluded from weekend operations.

Conclusions

The recovery phase of post-pandemic COVID-19 surgical services at Mankweng Hospital was inadequate, with the number of operations markedly reduced in the orthopaedic department. It is of paramount importance to investigate the reasons for the inadequate recovery of pre-pandemic operative volumes and to make a radical plan to increase theatre utilisation over the extended hours during evenings and weekends.

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Conflict of interest

The authors declare no conflict of interest.

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Ethical approval

Permission was obtained from the Pietersburg Mankweng Research Ethics Committee and approval PROJECT NUMBER: PMREC 26 March UL 2025/B

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