The Impact of the lockdown on ENT services during the COVID-19 Pandemic, a report from the developing world.

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Abstract

The novel coronavirus and accompanying lockdown measures have resulted in the disruption of specialist clinic services. There have been reports of a decrease in the number of clinic attendees and surgical procedures performed in clinics throughout the world

The study period was from the 2 January 2020 until 19 June 2020 which was divided by the lockdown date of the 26 March 2020, into two periods of 85 days for comparative review.

During the pre-lockdown phase (2 January 2020 to 25 March 2020), 2160 patients were booked for the outpatient clinics and 1911 attended in this period (88.5%). In contrast during the post-lockdown period (26 March 2020 to 19 June 2020), 1220 visits were scheduled. Of these, 937 (76.8%) visits were completed. The number of patient visits booked ($p=0.01$) and completed (0.0001) after lockdown declined significantly.

The total number of outpatient procedures performed pre-lockdown was 1892 (0.99/ patient) compared to 937 (1.04/ patient) post-lockdown. This represents an approximate decrease of 50% in the number of procedures completed post-lockdown but the change in the number of procedures/ patient was not significant ($p=0.4$).

During the pre-lockdown phase 228 theatre cases were completed, including 66 emergencies and post-lockdown there were 188 cases together with 48 emergencies. There were no elective cases post-lockdown.

The study illustrates that even during a stringent lockdown period there is an ongoing need for specialist ENT services and health care systems need to be tailored to manage all patients such that care is not shifted away from vulnerable groups and solely focused on Covid19 patients.

Introduction

Coronavirus disease (COVID-19) is caused by a new strain of Coronavirus (SARS-CoV-2) discovered in 2019. On 11 March 2020 the World Health Organization (WHO) declared the current COVID-19 outbreak a public health emergency of global concern and ultimately a pandemic. Given the magnitude of the current coronavirus pandemic and its indeterminate pathogenesis and high rate of transmission, various widespread restrictions were imposed including international travel bans and government-mandated lockdowns in an effort to contain the viral spread. [1]

With the rapid rise in COVID-19 cases, hospitals worldwide are reporting shortages of essential resources namely intensive care unit (ICU) beds, medical equipment and personal protective equipment (PPE) which is placing pressure on the health care system. Many institutions have reduced and/or cancelled elective and non-urgent procedures to conserve resources and limit exposure. [2]

The novel coronavirus and accompanying lockdown measures have resulted in the disruption of specialist clinic services. There have been reports of a decrease in the number of clinic attendees and surgical procedures performed in clinics throughout the world. [3]

In light of this information we reviewed the services provided by our department, an Otorhinolaryngology, Head and Neck Surgery (ENT) unit at a teaching hospital in Johannesburg, South Africa.

On the 5th March 2020, the first known case of coronavirus was confirmed in South Africa.

The subsequent initial increase in the number of cases resulted in a government enforced lockdown to slow the rate of spread and attempt to flatten the curve. Anecdotal reports indicated a changing ENT landscape initiated by the pandemic and subsequent lockdown, however there has not been any documented evidence to confirm or refute this. y centres throughout the world initiated telemedicine during the lockdown period, however this was not always possible in our setting due to constraints in infrastructure and access to technology. [4]

We aimed to review the patient presentations to our department and subsequent management over the first 85 days of lockdown (henceforth post-lockdown) and to compare this to the services rendered in the equivalent time period (85 days) preceding the lockdown (henceforth pre-lockdown).

Methods

The study period was from the 2 January 2020 until 19 June 2020 which was delineated by the lockdown date of 26 March 2020 into two periods of 85 days for comparative review.

This was a retrospective review of secondary data obtained from multiple sources (booking centre, the monthly ward, clinic and theatre statistics and the minutes of the weekly morbidity and mortality meetings). A single institution was studied in an attempt to avoid selection bias and limit the variables in terms of data collection and interpretation.

The ENT Department at the Charlotte Maxeke Johannesburg Academic hospital (CMJAH) affiliated to the University of the Witwatersrand, continued to function as a quaternary referral centre with the specialist clinics and emergency surgery continuing during the lockdown period (March to June 2020).

Data Extracted

The number of patients that were booked for the specialist clinics on a weekly basis, the number of patients that attended and the number of procedures that were performed. These procedures included nasopharyngoscopy, ear syringing, suction of the ear with the use of the microscope, nasal cautery, removal of foreign bodies and stroboscopy.

The outpatient clinics studied included the paediatric clinic, the head and neck oncology clinic, the otology and vestibular clinic, the rhinology and skull base clinic and the general ENT clinic (includes the

combined multi-disciplinary cleft palate clinic ,craniofacial clinic and voice clinic amongst others).

The ward admissions were characterised as either elective or emergency. Inpatient referrals from other disciplines and casualty consultations were included as emergency consultations. Due to the variable nature of telephonic consultations they were excluded from the study Theatre cases were divided into elective and emergency.

Descriptive statistics are presented for scheduled appointments within each period, characterizing the number of completed and cancelled visits. Chi-square tests were performed to analyse the differences in appointment completion rates between the two periods.

Results

During the pre-lockdown phase (2 January 2020 to 25 March 2020), 2160 patients were booked for the outpatient clinics and 1911 attended in this period (88.5%). In contrast during the post-lockdown period (26 March 2020 to 19 June 2020), 1220 visits were scheduled. Of these, 937 (76.8%) visits were completed. The number of patient visits booked and completed after lockdown declined. Despite there being a decrease in the number of clinic days post-lockdown due to public holidays (55 days versus 60 pre-lockdown) the number of patients booked were significantly decreased ($p=0.01$). The decrease in attendance rates after the lockdown commenced was also deemed significant (p value = 0.0001).

Table 1 Monthly Clinic Attendance Pre-and Post-Lockdown

Month	No. of patients	No. of days	Patients/day
January	672	21	32
February	615	20	31
March*	624	18	35
April**	191	19	10
May	423	20	21
June	323	21	15

*March excluded the period 26 March onwards

**April included the period from 26 March

The breakdown per outpatient clinic is represented below, each clinic showing a decrease in attendance. Using Fischers exact test, the only significant decrease in comparison to the overall decrease was noted in the General ENT ($p=0.009$) and Head and Neck clinics ($p=0.017$).

The total number of outpatient procedures performed pre-lockdown was 1892 (0.99/ patient) compared to 937 (1.04/ patient) post-lockdown. This represents an approximate decrease of 50% in the number of procedures completed post-lockdown but the change in the number of procedures/ patient was not significant ($p=0.4$).

Ward admissions during the pre-lockdown phase included both emergency and elective admissions (patients awaiting surgery and those for medical investigation and non-surgical treatment). The total number of ward admissions for the pre-lockdown period was 380 as opposed to the post lockdown period of 262, a decline of almost one third (31%).

A total of 416 theatre cases were performed between January to June 2020. During the pre-lockdown phase (2 January 2020 to 25 March 2020), 228 theatre cases were completed 66 of which were emergencies. There were 46 cancellations. Post-lockdown there were 188 surgical procedures performed, none of which were elective cases. There were 14 cancellations. The association between pre- and post-lockdown in terms of the number of theatre procedures was insignificant (0.67) but the proportion of cancellations was significant ($p=0.001$).

Table 2 Surgical Procedures Pre- and Post-Lockdown

Procedure	Pre-Lockdown (228)	Post-Lockdown (188)	P value
Upper aerodigestive tract endoscopy	50	64	0.04
Surgical drainage of deep neck space infections	46	49	0.30
Mastoid and middle ear surgery	41	19	0.05
Functional endoscopic sinus surgery	36	0	0.0001
Tonsillectomy	23	0	0.0001
Tracheostomy	12	18	0.13
Head and neck oncology (including Parotidectomy)	16	19	0.38
Other	4	19	

*Other cases include amongst others suturing or tongue lesions, removal of foreign bodies, endoscopic ear surgery and endonasal surgery.

Discussion

The functionality of our unit changed markedly especially during the initial phases of the lockdown, which was particularly stringent. There were 2160 visits scheduled in the pre-lockdown period, of which 1911 were completed (88.5%). During the equivalent post-lockdown time period i.e. 85 days there were 1220 scheduled visits and 937 patients attended (76.8%). The data comparisons between the pre- and post-lockdown periods revealed significant decreases in both the number of patients booked ($p=0.01$) and the attendance rates ($p=0.0001$) at our specialist out-patient clinics. The greatest impact was seen in the general ENT ($p=0.009$) and Head and Neck clinics ($p=0.017$). A possible factor in the decrease in

number of scheduled visits was the number of public holidays during the post-lockdown period but even accounting for this the number of scheduled visits was meaningfully decreased. [5]

Our out-patient clinic attendance rate post-lockdown decreased (76.8%) but paled in comparison to published data [1]. Kasle et al (2020) conducted a retrospective review within the Division of Otolaryngology at the Yale School of Medicine to examine the quantitative changes in patient visits, modality of their care and subspecialty practice patterns during a selected period in the COVID-19 pandemic and compared it to the same period in 2019. Of the 5044 scheduled appointments, only 649 (12.9%) were completed in the 2020 period with the majority rescheduled or cancelled due to COVID-19. In addition, the majority (55.8%) of their completed visits were via telehealth, an impractical option in our setting. This discrepancy between our clinic non-attendance rates and that of Kasle et al is consistent with previous suggestions of North American healthcare culture and possibly linked to our service being a government sponsored healthcare system. [6]

It was noted during the analysis of the data that the monthly patient attendance at the outpatient clinics were fairly consistent in the pre-lockdown phase up to 25th March 2020 (31-35), in terms of patients seen/day. During the immediate period after lockdown which included 4 clinic days in March and the following month of April, the patient attendance reduced drastically (10/ day). At this stage, South Africa was at level 5 lockdown, which entailed a severe curtailment of all activities. The months of May and June, saw a steady increase in the number of patients attending the outpatient clinics (15-21/day), with the lockdown levels becoming more relaxed. The attendance numbers however remain lower than pre-lockdown levels. The rapid initial decline in patient visits mirrors that of Kasle et al. Their subsequent documented increase in completed visits was mainly attributed to telehealth visits, unfeasible in our clinics. [1]

We observed a decrease in attendance at all our clinics with the general ENT and Head and Neck clinics having the most significant declines in their attendance. This finding is consistent with that of Kasle et al. They observed that during the 2020 period, appointment completion rates dropped for all specialities and was highest for head and neck oncology (25.5%). [1] This decline could be due to a fear of accessing the hospital which is rightly considered a risky environment.

As previously mentioned, all purely elective cases were postponed from 24rd March 2020, however, oncology and emergency cases were still prioritised. This postponement led to a one third decline in the ward admission rate during the post-lockdown period. The postponement is in line with measures adopted by comparable departments in Italy, a country which adopted a similar severe lockdown. [5,6] The decrease in the number of surgical procedures performed during the post-lockdown period was deemed insignificant ($p=0.67$). A study by Ralli et al documented a 50.8% decrease in the number of ENT procedures done. [6] Their drastic reduction could possibly be explained by the timing of their study which included the period during which Italy experienced their highest proportion of COVID-19 infections. Our post-lockdown period included only the initial phase of the very high numbers of infections documented to date in South Africa. [7]

There were variations noted in the proportion of the different procedures performed with the most significant changes noted in the numbers of tonsillectomies and sinus surgical procedures. This is readily explained by the departmental policy to cancel scheduled cases. Upper airway endoscopy consisting predominantly of direct laryngoscopy and surgical drainage of deep neck space infections remained the most common procedures performed in both periods. Both procedures were performed more frequently in the post-lockdown period. In the study by Ralli et al a drastic reduction in the number of head and neck infections were noted. [6] It is possible that data from the peak of our pandemic may reflect similar changes.

In this study the surgical procedures performed for the diagnosis and treatment of head and neck oncology did not vary considerably between the 2 periods ($p=0.38$), a finding consistent with that of Ralli et al. [8]

The Covid19 pandemic has resulted in disruption of ENT and head and neck services throughout the world. The head and neck region has one of the highest concentrations of virus particles and thus there has been a trend to postpone all elective surgery and reschedule out-patient clinics where possible.[9] Though at our institution we saw a reduction in the number of booked patients at the outpatient clinics there was still a need for the provision of urgent ENT services throughout the lockdown period with increased numbers in certain areas such as head and neck endoscopy and tracheostomy.

The study illustrates the despite a lockdown period there is still an ongoing need for specialist medical and surgical services and health care systems need to be tailored to manage all patients such that care is not shifted away from vulnerable groups and solely focused on Covid19 patients. Unfortunately clinic non-attendance and rescheduling of elective procedures in a system under constraint as ours is could have long lasting repercussions on patient health which may be difficult to recover from timeously. A possible long-term solution would be the adoption of telehealth, a trend which would require significant commitment both financial and patient and healthcare education.

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Declarations

Ethics: The study was approved by the Wits Human Research Ethics Committee

Consent: The participants consented to participate in the study as per the guidance of the Ethics committee

Availability of supporting data: all data are available on request to the corresponding, Shivesh.maharaj@wits.ac.za

Competing interests: None to declare

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Authors' contributions: SM and KH conceived the study and SM identified the data. SM extracted the data and undertook the analyses, assisted by KH .SM prepared the initial draft the paper which both authors revised. The corresponding author attests that all listed authors meet authorship criteria and that no others meeting the criteria have been omitted.

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Figures

Figure 1

Overall Clinic Attendance Pre- and Post-Lockdown

Figure 2

Individual Clinic Attendance Pre- and Post-Lockdown