

Effects of Covid-19 on orthopaedic trauma services: early experiences in South Africa and Israel

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Abstract

South Africa and Israel have significantly different health systems. As South Africa is geographically 500 times as large and has a population nearly 7 times as large as the state of Israel, major differences in the challenges and subsequent handling of the pandemic between these countries were to be expected. South Africa's challenges included being under-resourced, particularly related to trauma, and severe and radical measures had to be undertaken that included extended strict lockdowns, bans on alcohol sales, and cancellation of the majority of the elective surgery during this initial period of the pandemic. Although Israel is much smaller and thereby theoretically easier to control, a complex political situation created difficulties and delays in controlling the pandemic after the initial response, leading to a second wave and additional lockdown. Although massively engaged initially, the Israeli trauma systems had continued functioning almost normally throughout the COVID-19 crisis.

Keywords: COVID-19, health systems, Israel, South Africa

1. Introduction

South Africa and Israel are considerably different countries with distinct health systems. Israel joined the Organisation for Economic Co-operation and Development during the past decade, and its health system, which is not without imperfections, is considered advanced. Although underfunded, other support systems, including the national Security Council, can be recruited as necessary. In South Africa, underfunding is more profound with unequal resource distribution. During the initial COVID-19 crisis, different policies adopted by these 2 countries resulted in diverse outcomes. This short review will deal with the preliminary coping strategies of trauma systems working under the threat of a pandemic, first in South Africa and then in Israel.

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2. South Africa

South Africa diagnosed its first COVID-19 patient on March 5, 2020 in a patient who had returned from vacation in Italy. As of July 13, 2020, the number of confirmed cases stood at 276,242 together with 4079 confirmed deaths. This pandemic landed on a pre-existing crisis of under-resourced surgical services, as evidenced by the unacceptably long waiting times for clinic visits, diagnostic procedures, and operations.

South Africans witnessed the buckling of health systems in well-resourced countries in the global north. In its health environment, which is both under-resourced and unequal, the impact of the pandemic has been and is likely to continue to be more severe. The country has fewer health care workers, hospital beds, and critical care beds per 100,000 population than high-income countries. By way of example, Nelson Mandela Metropolitan Municipality hospitals serve a population of almost 2 million people, but they only have a combined 35 adult intensive care unit beds. To compound South Africa's fears, when the pandemic hit and threatened to overwhelm the United States and United Kingdom, those countries responded by actively seeking to recruit foreign-qualified medical professionals by expediting the visa processes.^[1,2] As an upper-middle-income country per the World Bank designation, South Africa contributes a fair amount of its qualified doctors to first world countries. It was a valid concern that the potential poaching of South African physicians would weaken its already fragile health system. Fortunately, there has been no indication of this "brain drain" happening.

2.1. Organizational actions made to trauma services

Soon after community transmissions were confirmed, on March 26, 2020, the country went into a hard lockdown (amongst the most strict and stringent in the world) in an effort to contain the spread and flatten the curve of transmissions. During the highest level (Level 5) of the lockdown, the sale and distribution of

alcohol were banned. In this period, we saw a 60% reduction in the number of trauma presentations to the trauma units. Most of the trauma these units see is intentional interpersonal violence as well and nonintentional high-energy trauma. Approximately 40% of the trauma cases are alcohol-related^[3] and 53% of road traffic fatalities in South Africa have raised alcohol levels beyond the legal limit.^[4] In a risk-adjusted strategy, the lockdown was gradually eased and on June 1, 2020, an intermediate level (Level 3) was reached that allowed for more movement of people as some businesses reopened. At this level, the sale of alcohol was allowed again, which in turn led to an immediate and palpable increase in Emergency Department presentations. This increase in trauma cases threatened to immediately overwhelm an already fragile health service system, just as the COVID-19 numbers were escalating rapidly in some parts of the country. On July 12, 2020, the president announced an immediate ban on the sale of alcohol.

The reprioritization of medical services toward COVID-19 has also meant reallocation of scarce health resources away from lifesaving services such as surgery. It has been estimated that up to 70% of surgeries in South Africa were cancelled or postponed due to COVID-19 pandemic.^[5] A surgery recovery plan is therefore necessary. At present, the reported 20% mortality following surgery combined with limited availability of theater resources has seen the South African medical community grappling with the use of the MeNTs score to find objective and validated scoring systems that would guide decision making.^[6-8]

When the pandemic struck, the development of virtual fracture clinics was in its infancy. The adoption of these clinics, together with telephonic consultations, had to be expedited and were well received and supported by funders and practitioners alike. These and other changes implemented during the pandemic will leave a lasting legacy for a geographically vast country where access to quality health services is sometimes hampered by the prohibitive cost of travel for the patients.

2.2. Other important/unique experiences and lessons learned

One of the challenges initially encountered was having surgical services work outside of their clinical areas, an act initially met with apprehension. As senior surgeons entering the COVID-19 service from a subspecialized surgical discipline it was not clear initially what, if any, contributions could be made. But despite these apprehensions, subspecialists volunteered to do whatever needed to be done, ranging from drips to nasal swabs, to support the exhausted medical services. Once familiar with the basics, surgeons became a part of the medical response team, adding in expertise won through years of managing the vagaries of the surgical emergencies. Orthopaedic surgeons, who often bear the brunt of medical jokes, were even termed “closet physicians.” Similar experiences were shared with other centers around the world.^[9] With the COVID pandemic likely to persist for a while, surgical disciplines will continue to move fluidly between surgical services and COVID-19 care to collectively weather the storm.

3. Israel

In Israel, the first confirmed COVID-19 case was reported on February 21, 2020. On March 20, the first Israeli citizen death due to COVID-19 was reported. On March 25, the number of people with confirmed infections reached 2500 and a general lockdown was declared by the government. The lockdown was

gradually released on May 3. An unprecedented second wave subsequently occurred, with the average of approximately 2000 new diagnosed cases per day, with overall deaths totaling 674 and confirmed infections reaching over 100,000.^[10] Israel formed an “emergency government” with an ongoing lack of consensus regarding policy. The ministry of health, ministry of defense, a national “project leader,” and a parliamentary committee were placed in charge of managing the crisis. An attempt was made by the government to utilize a controversial mobile phone tracking system for infected individuals administered by the Israel Security Agency.^[11] The spread of COVID-19 infections was monitored carefully initially, with the majority of patients originating from the cities of Jerusalem and Bnei Brak, which are characterized by a dense population of ultra-Orthodox communities, living in crowded conditions.^[12] With the second wave, new “red districts” emerged where limited restrictions and social distancing were enforced locally.

At the lockdown period, (mid-March to early May), most hospitals halted elective procedures and focused on the preparations for the evolving situation and treating current COVID-19 patients. In certain hospitals, dedicated COVID-19 units were prepared, including intensive care units and designated emergency room areas. Due to the lockdown release and increased financial burden on health care providers, hospitals returned to their normal elective and emergency work by the beginning of June, with continued use of general restrictions and precautions. As of July, 2020, health care worker personnel remained in short supply, partially due to the increased burden in specific COVID-19 wards in certain hospitals and to the imposed quarantine of personnel. The Israeli Medical Association subsequently declared a “labour dispute” between the union and the government, demanding more positions for medical personnel.

3.1. Organizational actions made to trauma services

The Israeli Trauma Society published national trauma service health care management guidelines in early March 2020.^[13] These included general guidelines concerning the management of trauma patients during the COVID-19 pandemic. Hospitals were divided into “COVID-19-free” hospitals and those with COVID-19-positive trauma cases, creating different treatment scenarios among hospitals countrywide.

Organizational changes were made as the pandemic evolved. One example of such a change was the instruction by the Israeli Ministry of Health to split departments into constantly rotating teams (“capsules”) to prevent the mass shortage of medical staff. This was enacted after 3030 medical personnel (814 of whom were physicians) were forced into quarantine following exposure^[10] that included severe incidents such as the one that occurred at Baruch Padeh Medical Center in March, 2020. In some medical centers, entire Orthopaedic departments were shut down after exposure of surgeons to COVID-19 patients.^[14]

The Israeli Trauma Society published guidelines which included protocols for the initial management of patients arriving into emergency departments.^[13] The recommendation was for a rapid first assessment for COVID-19 through questioning the patients and their escorts to triage them appropriately. Patients were classified into 3 groups. The first group was comprised of patients with positive COVID-19 tests. These patients as well as any patient who required interventions (intubation, insertion of tubes and lines, open wounds, and burns management) were treated with full precautions that included the limitation of staff to the minimum number necessary at a distance as far as possible, and the use of full

personal protection equipment, that is, face shields, N-95 equivalent masks, fluid-resistant gowns, double gloves, and shoe covers. The second group consisted of patients with suspected COVID-19, including those patients with symptoms of COVID-19 or exposure to confirmed COVID-19 patients. These patients were treated with full precautions. The third group of patients were those who tested negative and were treated in the emergency departments with general precautions. Institutions were instructed not to delay emergency treatment and evaluation.

There was no consensus regarding the delay of elective surgical procedures during the pandemic. The American College of Surgeons supported the deferment of all elective procedures and published a guide for triage of orthopaedic surgeries for different phases of the COVID-19 pandemic.^[15] Most of the governmental owned hospitals followed these recommendations and postponed all nonemergent surgical procedures and outpatient clinics. Certain private hospitals that performed only elective surgeries attempted a normal work schedule, while other private hospitals even reported an increase in the number of cases treated. However, even in these centers, many patients decided to defer their own elective procedures.^[16,17]

3.2. Other important/unique experiences and lessons learned

National data regarding the treatment of trauma patients during the period of the pandemic has still not been published. For illustrative purposes, data from a single major Level I trauma will be reviewed. Data was collected on trauma patients admitted between the dates March 1 to May 31, 2020 at Hadassah Medical Center, the largest Level I trauma center in the Jerusalem district, and was compared with equivalent data from 2018 and 2019. The data included number of patients, Injury Severity Score and the mechanisms of injury (Table 1). During the period corresponding with the COVID-19 crisis, the number of trauma patients admitted was similar to previous years and no difference in the severity of the trauma according to Injury Severity Score groups was found. A significant difference, however, was seen in the number of attempted suicides, which rose in this period perhaps as a result of increased psychological stress due to the pandemic, social isolation, and economic crisis.^[18,19]

In conclusion, Israel has coped with several national state of emergencies in the past, yet the COVID-19 pandemic showed a lack of uniform national and hospital-specific guidelines for the management of an infectious pandemic. The development of

trauma room guidelines for the COVID-19 pandemic has maintained the ability to resuscitate the severely injured trauma patients without unnecessarily exposing health care personnel and medical supplies. The crisis has demonstrated the need for each trauma unit to have a policy specific for its own needs and capacities to meet this type of medical challenge.

4. Conclusion

The COVID-19 crisis arrived abruptly to the 2 countries of Israel and South Africa. The latter, due to its much larger geographical area and paucity of medical personnel, responded initially more drastically and for a longer period of time, while significantly reprioritizing medical care. Although Israel is smaller and relatively underfunded compared with the rest of the Organisation for Economic Co-operation and Development members, it had managed to resume to normal or near-normal medical and surgical activities throughout the initial period of the pandemic, but faced potentially significant financial and medical crises. In both countries, contingency plans to address long-term COVID-19-related issues are necessary as there is no end to the pandemic in the near future.

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Table 1

Comparison of Injury Severity Scores (ISS) and mechanisms of injury for trauma patients admitted in the period of March 1, 2020 to May 20, 2020 relative to that period in previous consecutive years at a single level 1 trauma center in Israel

	2020	2019	2018
Number of patients	599	496	534
ISS 1–8	267	179	196
ISS 9–14	245	224	246
ISS 16–24	48	55	60
25+	38	38	32
Mechanism of injury			
MVA (motor vehicle accidents)	139	123	141
Falls	314	263	267
Burns	38	31	40
Suicide attempts	13	3	1

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