Impact of coronavirus disease 2019 on obstetrics and gynecology practice: an Egyptian Tertiary Referral University Hospital experience

Hisham Haggag, Mostafa Seleem, Ahmed Mahmoud Ali, Ehab Soliman

Department of Ob/Gyn, Kasr Al-Ainy, Cairo University, Cairo, Egypt

Correspondence to Hisham Haggag, MD, No. 9, Street 151, Horeya Square, Maadi, Cairo, 11431, Egypt. fax +2023594123; e-mail: hmhaggag@kasralainy.edu.eg

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Aim
To calculate the workload and infection rates following the strategies implemented for COVID-19 pandemic.
Background
Since its outbreak in Wuhan China, the ongoing pandemic of coronavirus disease 2019 has become devastating, and despite implementation of extensive control measures, it has rapidly spread all over the world. Till now pregnant women do not appear any more likely to acquire Covid-19 infection than the general population. However, standard care is not enough, and additional measures and strategies should be implemented to prevent disease spread to the healthcare providers or other patients especially in the emergency setting.
Methods
We have conducted a retrospective search for the different strategies implemented by Kasr Al-Ainy Ob/Gyn Department followed by calculation of the workload and infection rates following implementation of such plans of action. We traced and collected the protective strategies implemented to ensure control of disease spread.
Results
There was a 11.7 and 24.6% decrease in the number of attending cases and admitted cases, respectively, during the pandemic as compared with the earlier prepandemic period. We also found a change in the number of service providers as well as a change in the facility settings in the emergency department. Adequate spacing between patients' beds was measured to be at least 3 m and suspected cases were kept in isolation rooms.
Conclusions
The drop in the number of presenting and admitted case was due to lockdown procedures which encouraged the patients to seek nearby health care facilities and avoid going to crowded tertiary centres as ours.

Keywords:
Covid-19, hospital strategies, Obstetrics and Gynecology

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Background

Since its outbreak in Wuhan, China, the ongoing pandemic of coronavirus disease 2019 (COVID-19) has become devastating, and despite implementation of extensive control measures, it has rapidly spread all over the world. It is important to realize the logistical hurdles associated with medical supplies and strategies, and to accelerate, mobilize, and optimize the different healthcare facilities. These measures are crucial for controlling the pandemic, protecting health workers, and alleviating the severity of patient outcomes. Acknowledging such potential association of mortality with healthcare resources and strategies might aid the world to be better prepared [1].

Till now, pregnant women do not appear anymore likely to acquire COVID-19 infection than the general population [2,3]. Even though pregnancy alters the immune response to viral infections, there is no evidence that such women are more at risk to be severely ill nor need admission to ICUs nor die from the disease than nonpregnant adults [4]. Most women will only have mild flu-like symptoms with or without cough, fever, dyspnea, headache and anosmia, or/and loss of taste [5]. Thus, standard care is not enough and additional measures and strategies should be implemented to prevent disease spread to the healthcare providers or other patients, especially in the emergency setting [6].

Egypt announced the first case of COVID-19 to appear on the February 14, 2020, and even before the appearance of the disease, the official bodies

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have had plans and strategies to face this growing worldwide disaster [7]. We have conducted a retrospective search for the different strategies implemented by Kasr Al-Ainy Ob/Gyn Department followed by calculation of the workload and infection rates following implementation of such plans of action.

Patients and methods

We first started collecting the official documents that were issued from the deputy manager of Ob/Gyn Hospital, Kasr Al-Ainy, Cairo University, regarding the implementations and strategies that should be carried out during the pandemic. Then we obtained a departmental approval O20004 to carry out the study. Department ethical approval number O20004. No patients were approached thus no consent forms. We collected the necessary data (during the pandemic) from the period of March 1, 2020 to May 31, 2020 from patients' files and official registries. Rata data include numbers of attending and admitted patients, management to such patients, infection rates among patients and personnel, as well as the number of stepped-down healthcare providers. We compared our data regarding magnitude of work with an earlier period (prepandemic) from December 1, 2019 to February 28, 2020. To ensure data privacy, any personal identification whether to the medical or nonmedical personnel was removed. Staff psychological support/encouragement and staff orientation to infection-control measures was assessed.

All the data were recorded, anonymized, and verified by the first author for their accuracy. χ^2 test was used for statistical significance, defined as P value less than or equal to 0.05.

Results

We traced and collected the protective strategies implemented to ensure control of disease spread and they could be summarized as follows:

(1) No more than six patients (three in the examination rooms and three in the waiting area) will be allowed to be present in the emergency triage at any given time.
(2) A scoring system, developed by the Egyptian Ministry of Health, was used to spot suspected and/or infected cases.
(3) Different tracks were developed for confirmed, suspected, or unsuspected cases.
(4) Allocation of five more halls to ensure adequate spacing between the patients in antepartum and postpartum wards.
(5) Different halls were allocated for unsuspected, suspected, or infected cases.
(6) Using different operation theaters with different operation rooms for nonsuspected cases and suspected or confirmed cases.
(7) Transfer of high-risk-infected patients to a separate ward to be managed by the specialized high-risk unit team.
(8) Developing a notification system to the infection-control officer, the hospital manager, and the Ministry of Health.
(9) Use of personal protection equipment (PPE), including surgical and N95 masks, face shields, gowns, coveralls, as well as PPE training directly by infection-control teams as well as virtual and social media.
(10) No change in admission criteria and regulations for emergency cases, however, there was a change in discharge policies to decrease hospital stays (e.g. 4 h instead of 12 for uncomplicated vaginal deliveries and 6 h instead of 24 for uncomplicated laparotomies).
(11) Screening by PCR test for patients if suspicious and by antibodies and PCR for the working staff with adequate healthcare support for infected staff members.
(12) Implementations to new teaching and training activities:
    (a) Department website upgrading.
    (b) Undergraduate lectures' recording and uploading.
    (c) Online postgraduate online courses.
    (d) Webinars.
    (e) Online department council meetings.

As regards workload in the emergency department, there was a 11.7 and 24.6% decrease in the number of attending cases and admitted cases, respectively, during the pandemic as compared with the earlier prepandemic period. However, there was no significant change in the percentages of patients undergoing different procedures (Table 1).

This difference was much more profound in the elective outpatient unit where there was 64 and 75% decrease in the number of attending cases and admitted cases, respectively. Similarly, a 76% decline in elective gynecological operational procedures (Table 2).

We also found a change in the number of service providers, as well as a change in the facility settings in the emergency department. Adequate spacing between patients' beds was measured to be at least 3 m and suspected cases were kept in isolation rooms. These changes can be summarized in Table 3.

Table 1 Emergency workload during the pandemic and the prepandemic period

	Pandemic	Prepandemic	*P* value
Attending cases (daily average/total)	70/6321	79/7153	<0.0001
Admitted cases (daily average/total)	42/3821	56/5053	<0.0001
Vaginal deliveries %	35.5	37.4	
Cesarean deliveries %	42.8	41.4	
Cesarean hysterectomy %	0.7	0.4	
Ectopic pregnancy %	1	1.2	0.241
Postpartum hemorrhage %	0.2	0.2	
Miscarriages %	8.1	8.3	
Other indications %	11.7	11.1	

Table 2 Outpatient and elective workload during the pandemic and the prepandemic period

	Pandemic	Prepandemic	*P* value
Attending cases (daily average/total)	68/6148	190/17 098	<0.0001
Admitted cases (daily average/total)	3/291	13/1156	<0.0001
Ob/gyn ratio (%)	0.7	1.7	<0.0001
Elective gynecology procedures	175	716	<0.0001

Finally, with the above-mentioned implementations, we recorded 82 stepped-down personnel whether due to established infections or going on open leaves following the primeministerial decree (two residents, nine staff members, 54 nurses, and 17 workers). There were only eight cases admitted with confirmed COVID-19 infection, two of which were admitted to the ICU and one of which passed away sadly. Only one recorded neonatal mortality. We also recorded 38 hospital staff infections, four residents, one house officer, seven staff members, 21 nurses, two workers, and three administrative clerks.

Discussion

Cairo University hospitals comprise more than 5200 beds, being the largest medical institution in the Middle East and probably one of the largest centers worldwide. Ever since its foundation on March 11, 1827, Kasr Al-Ainy has been considered a 'stronghold of science and culture.' The Ob/Gyn Department is one of the main departments in this university hospital serving more than 100 000 patients yearly with an average of 15 000 deliveries and almost 3000 gynecological procedures yearly.

According to the CDC guidelines, each healthcare facility should consider their space and staffing needs to prevent transmission of COVID-19. Considerations include proper isolation of parturients who are suspected or confirmed to have COVID-19, as well as proper training for all healthcare personnel. The working staff should correctly adhere to infection-control measures and proper PPE usage and disposal in addition to having access to sufficient PPE supplies in every point of care [8]. By comparing what was done to such a guideline we found that there was a good initiative to decrease crowding and ensure proper spacing to prevent disease spread, as well as good management of human resources to avoid overworking and exhaustion during the pandemic period, which is not uncommon [9]. Till now, there is no report on how obstetrical practices should adapt to the pandemic and no key performance indicators have been described to objectively measure or demonstrate success in disease control. Yet, our infection rate is comparable to that described by Peña *et al.* [10], who described similar infection rates in four hospitals in New York City. As for infection-control measures and mode of delivery, we were in accordance with the Cochrane review published last month [11].

Table 3 Service providers in the emergency obstetric department facility during the pandemic and the prepandemic period

	Pandemic	Prepandemic
Number of residents/shift	4	5
Number of assistant lecturers/shift	2	2
Number of lecturers/shift	1	1
Number of nurses/shift	20	30
Number of workers	6	8
Allocated beds	109	72
Number of halls/rooms	9/7	5/4
Operating theaters/tables	2/4	5/7
Isolation rooms (ICU)	9	7
Isolation rooms (non-ICU)	23	2

Availability of PPEs is one of the main lines of protection of the healthcare workers and limiting the number of visitors and avoiding overcrowding in waiting areas is important to control disease spread [12–14]. This was also implemented in our hospital with an additional assigned person to follow up and report any breach-in conduct or defect in supply.As far as we know, changes in numbers of admissions in emergency Ob/gyn facilities or elective procedures have not been reported. Only one report was found for orthopedic trauma and it showed a decline in admission rates [15]. We found a drop in the number of presenting and admitted cases and we assume this is due to lockdown procedures that encourage the patients to seek nearby healthcare facilities and avoid going to crowded tertiary centers as ours.

We believe our study has several strengths. We documented the practices put into action for caring

for COVID-19 patients coming to the Ob/Gyn department. We calculated the workload and compared it with a further period, so that it can be used in future studies to optimize current practices. Finally, we were able to identify the infection rates not only among personnel but among healthcare providers in addition to demonstrating the stepped-down numbers. However, we acknowledge some limitations that might lead to bias. This report included only one large center with access to robust physical and human resources that might not be available to other places. This might make our protocols less generalizable and inapplicable to other centers. Additionally, we compared our numbers to numbers from the preceding 3 months, which differed not only in season but in the presence of the holy month of Ramadan. Finally, we did not focus on specific treatment protocols for the infection. We have already initiated a multicenter study, including five university hospitals to try to measure the reproducibility of our protocols and objectively measure the change in workloads.

Ultimately, we sincerely hope that by sharing such policies will help simplify and objectively direct optimal care for COVID-19 obstetrics patients.

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Conflicts of interest
There are no conflicts of interest.

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