thank the Blood Bank and the convalescent plasma donor for their contribution.

CONFLICTS OF INTEREST

The authors have no conflicts of interest.

AUTHOR CONTRIBUTIONS

The patient in this case study was supervised by GM, CV, SC, MM, JC, and SS. DD and SC were involved in recruitment of the convalescent plasma donor. CV, GM, and DD wrote the final manuscript.

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Received: 5 October 2020 | Revised: 19 October 2020 | Accepted: 3 November 2020
DOI: 10.1002/ijgo.13468

Obstetrics

Anxieties and apprehensions among women waiting for fertility treatments during the COVID-19 pandemic

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Keywords Anxiety, COVID-19, Infertility, In vitro fertilization, Pandemic, Stress, Teleconsultation, Triage

While health systems around the world are busy trying to manage the COVID-19 pandemic, many elective services—including fertility services—have been suspended over the last 8–9 months.[1] However, "time" is a crucial factor for infertile couples, and infertility has been shown to have a significant negative impact on the psychological health of women, and has been found to produce a variety of emotional responses.[2]

As a tertiary care referral centre (All India Institute of Medical Sciences (AIIMS), New Delhi, India), our unit was catering between 100 to 200 new registrations per month of infertile couples consulting for various infertility treatments before the pandemic (Figure 1). However, these services were shut down following the sudden declaration of national lockdown in India on March 24, 2020, as manpower and infrastructure were shifted towards management of the pandemic.[3]

Studies from Western countries have shown that infertility remains a high-ranking stressor even during the COVID-19 pandemic.[4,5] In a study from Israel by Kimhy et al., it was found that 72% of couples wished to resume treatment despite the pandemic.[6]

The need to resume fertility treatments needs to be addressed while curtailing COVID-19, which is unlikely to end in next 4–6 months, and delaying treatment is likely to significantly impact infertile patients who are seeking it. There is a need to adopt guidelines and standard operating procedures (SOPs) depending on the facilities available and triaging patients in need of fertility services, depending on age and cause of infertility.

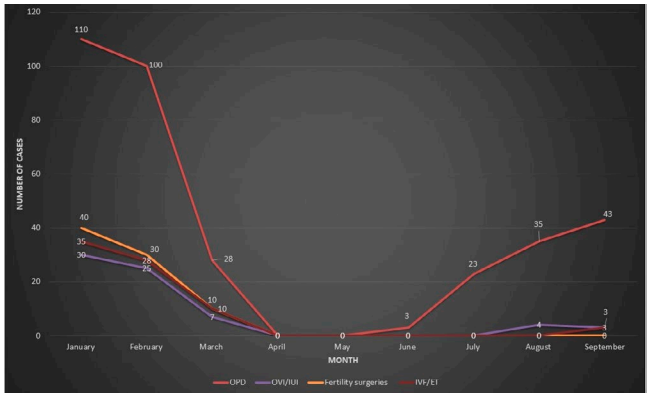

FIGURE 1 Effect of the COVID-19 pandemic on fertility services

Teleconsultation services were started in our hospital in May 2020 to provide online consultations for patients and to identify those in need of in-person appointments from June 2020. But still it has not been possible for complete resumption of fertility treatment due to deviation of health system towards pandemic management (Figure 1).

A cross-sectional study was conducted to evaluate the anxieties and apprehensions among infertile patients waiting for treatments (under evaluation, receiving ovulation inductions or waiting for fertility enhancing surgeries and IVF). An online 20-item questionnaire under six separate headings was structured. After validation (initially trialed by five patients) and receiving ethical approval from Institute (AIIMS) ethics committee

TABLE 1 Proposed plan opted to restart fertility treatment during the COVID-19 pandemic

Current status of couples waiting for fertility treatment	Proposed treatment plan
Infertile couples under evaluation	• Teleconsultation • History (rule out polycystic ovary syndrome (PCOS), tuberculosis, abdominal surgery, previous treatment taken) • Baseline hormonal profile, ultrasound pelvis and husband semen analysis • Treat hypothyroidism/ hyperprolactinemia if detected • May be advised for timed intercourse/ovulation induction with letrozole (after ruling out risk factors for ectopic pregnancy) • Periconceptional folic acid • Patients with fibroids/endometriosis or any other condition requiring surgical intervention, may be called once for physical appointment to discuss the plan • Counselling of couples about precautions while ensuring social distancing • A senior resident (SR): to attend all the calls of these patients so that appropriate advice may be given and be discussed with consultant in charge
Couples undergoing ovulation induction/intrauterine insemination (OVI/IUI)	• Ensure complete work-up and number of previous OVI/IUI cycles • Response of previous OVI cycles. • If required, tab letrozole should be preferred over clomiphene citrate and gonadotrophins • Couples may try for natural conception after ovulation trigger • IUI to be planned after explaining all the possible risks and written informed consent about COVID-19 infection in semen
PCOS patients	• Baseline hormonal and metabolic profile • Lifestyle modification measures including weight reduction and diet modification • Insulin sensitizers for 2–3 months, along with timed intercourse • Before considering any couple for OVI, rule out risk factors of ovarian hyperstimulation syndrome • Letrozole to be considered for ovulation induction and addition of gonadotrophins should be avoided
Waiting for fertility enhancing surgeries	• Women with PCOS awaiting drilling to consider insulin sensitizers while waiting for surgery • Women with endometriosis to consider GnRh analogues/ Dienogest for 2–3 months while waiting • Women with unexplained infertility to consider 2–3 OVI cycles and timed intercourse • Creation of a priority list according to age, factors involved and duration of infertility, and to counsel the patients for any future surgery plans
Couples waiting for IVF cycles	• Teleconsultation and prioritizing the list • Recruiting women with decreased ovarian reserve (DOR) and oncofertility procedures on priority on resumption of services • Couples to be informed about the need to follow social distancing norms • COVID-19 testing before recruitment and also before oocyte retrieval • Consent regarding the need to cancel the procedure if the patient tests positive for COVID-19 during controlled ovarian stimulation
General considerations	• Triaging of couples before starting any type of fertility treatment • Patients with systemic illness (liver, lung disorders) and immunocompromised conditions, should be counselled either to refrain from treatment or to get clearance from the treating physicians before starting any treatment during pandemic • Consenting from couples about possible risks about COVID-19 infection while receiving treatment or after conceiving during pandemic

(IEC-459/22.5.2020, RP-10/2020), a Google link to the validated questionnaire was prepared and sent to patients who were consulting us through the teleconsultation service (June 15, 2020 to August 31, 2020).

Information requested included demographic characteristics, status of fertility treatment at the time of suspension, anxiety and apprehension regarding delays to treatment due to the pandemic, money constraints and any other concerns of patients awaiting IVF. A modified Kuppuswamy scale was used to stratify patients by socioeconomic status (SES) and responses were compared among different age groups and SES classes.[7] Data analysis was carried out using STATA version 14.0 (StataCorp., College Station, TX, USA).

In total, 198 patients agreed to participate during the study period and, after excluding incomplete entries, 170 (86%) of the responses were analyzed. Mean age of patients was 30.23 ± 3.74 years and of spouses was 33.46 ± 4.18 years. The majority (112, 65.9%) were within class II/III (upper middle and middle) SES.

Despite the anxiety about the higher risk of COVID-19 infection if they were to conceive during pandemic (100; 59%), and money constraints (97; 57%) due to lockdown, almost 90% of those in the study (154/170) were worried about the delays to fertility treatment and wanted immediate resumption of their treatment. The stress of losing one egg per month and failing to conceive with each cycle was a major area of concern for 83.5% (142/170) of participants, and especially in those over 30 years of age (P = 0.39). More than half of patients (88; 52%) reported increasing their coital frequency because of a desire to conceive and almost 64% (n = 109) stated that they were not avoiding conception during the pandemic. The proportion of women who reported that they were not avoiding conception despite the pandemic was significantly higher (80%; 12/15) among women over 35 years compared to those under 25 years (5/16) (P = 0.023).

Among women waiting for IVF, 86% (56/65) were more worried about declining chances of IVF with advancing age. The most common reason reported for resuming IVF during the pandemic was concern of advancing age (61.5%), followed by emotional disturbance. All the participants opted for resumption of IVF treatment and the majority (84.6%) reported they would opt for embryo transfer in the same cycle despite the pandemic.

Similar to studies from other countries, the present study also showed that infertility and forced delays in treatment were more stressful for women than contracting the COVID-19 infection.[4-6] This reflects many of the societal pressures and social stigmas associated with infertility, and thus the pressing need to resume treatment for those seeking it, despite the pandemic.

Due to the national lockdown, India has witnessed massive transmigration, which has led to widespread job losses and subsequent money constraints. Despite these challenges, the majority of our participants wished to resume infertility treatments. Apart from significant differences in opinion about avoiding conception among different age groups, other responses were comparable among age groups and SES classes, although this may be limited due to the small sample size of our study.

This study has helped us to develop a proposed plan for management of infertile patients waiting for resumption of treatment over the last 6 months. Table 1 describes the proposed plan to triage these patients at our centre according to age and cause of infertility.

To conclude, despite the unprecedented pandemic, infertility and delays to treatment remain a major stressor for infertile women seeking treatment, and thus highlights the need to triage these couples while ensuring the safety of patients and health care workers. More data is needed to address the specific needs of these women and to make guidelines according to local facilities and national guidelines in order to clear the backlog.

CONFLICTS OF INTEREST

The authors have no conflicts of interest.

AUTHOR CONTRIBUTIONS

RM, PJ and MG planned the questionnaire; PJ and RB communicated the patients and got the questionnaires filled. PV provided the statistical guidance to the study. GK, RK, AS have given inputs for finalizing the results and formulating the manuscript. RM and PJ and MG have written the manuscript. All authors have contributed in proof reading and final approval of manuscript.

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