



REVIEW ARTICLE

Reproductive Health During the COVID-19 Pandemic

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Abstract

Globally reproductive health services such as contraception and abortion are impacted and are not accessible to a considerable population. The International Planned Parenthood Federation reported anticipated shortage of contraception as the lockdown measures led to reduction in the manufacturing of contraceptives. A recent analysis by the Guttmacher Institute estimated the potential effects of the pandemic. It was found that a 10% decline of sexual and reproductive health services due to COVID-19, would mean an additional 15.4 million unintended pregnancies, over 3.3 million unsafe abortions and 28,000 maternal deaths. The UN Secretary General has issued a call to continue the delivery of sexual and reproductive health services even without prescription. The focus is now to provide vaccines, and therefore, a number of research organizations and pharmaceutical industries are working on their production. One of the reasons for vaccine refusal is the concern that it may affect female and male reproductive functions. However, it is important to correct this misunderstanding as vaccination does not affect fertility. In most cases, vaccination during pregnancy and lactation can be considered safe and effective.

Keywords Reproductive health · COVID-19 · COVID vaccine · Abortions

Introduction

The Indian population is about 1.4 billion and it is estimated that 1 out of 6 people on this planet belong to India [1]. Therefore, population stabilization remains the biggest priority during the COVID-19 pandemic. This pandemic already had a significant impact on our health system and it is important to continue delivering reproductive health, with contraception and safe abortion.

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Incidence

The current global situation as of June 2021 indicates that over 177 million people have been infected with COVID-19, with the highest number of cases in USA, India, Brazil, Russian Federation and Columbia [2]. There have been more than a million deaths. Globally reproductive health services such as contraception and abortion are impacted and are not accessible to a considerable population. The International Planned Parenthood Federation reported anticipated shortage of contraception as the lockdown measures led to reduction in the manufacturing of contraceptives [3]. UNFPA noted that about 47 million couples in 114 low and middle-income countries will not have access to contraception and this would result in over 7 million unintended pregnancies. In Family Planning Association of India, 40 centers made every effort to continue the services through the dedication of doctors and health workers. The following data is from April 2020 to September 2020. In 40 centers, there have been a total of 558,725 clients, 164 male sterilizations, 2735 female sterilizations, 4319 IUD, 229,701 oral pills, 298,317 condoms, 5970 injectables and 17,519 emergency contraception. There have been 10,133 abortion procedures. Besides 983,708—contraception services, 587,360—gynecology services, and 418,062 HIV, AIDS services were available.

Obstetric services were offered to 624,374, pediatric services to 655,837 children and 15,687 sub-fertility services were also available [4].

The services were certainly most exemplary with good leadership. Gwalior, Kalchini and Ahmedabad had more than 100,000 cases of COVID each. A recent analysis by the Guttmacher Institute estimated the potential effects of the pandemic [5]. It was found that a 10% decline of sexual and reproductive health (SRH) services due to COVID-19, would mean an additional 15.4 million unintended pregnancies, over 3.3 million unsafe abortions and 28,000 maternal deaths. In a study by Foundation of Reproductive Health Services India (FRHSI), an estimated 24.5 million couples would not be able to access contraceptives in 2020. Method wise the loss is estimated at 530,737 sterilizations, 709,088 IUCDs, 509,360 injectable contraceptives, 20 million cycles of OCPs, 827,332 ECPs and 342.1 million condoms [6]. This is likely to result in an additional 1.94 million unintended pregnancies, 555,833 live births, 1.18 million abortions (including 681,883 unsafe abortions) and 1,425 maternal deaths. Unsafe abortion is one of the main causes of maternal mortality worldwide, with at least 22,800 deaths and over 7 million hospitalized cases.

During this period, management of health problems has been a difficult task due to several other problems arising due to the pandemic. Migrants walking to their villages, with joblessness, desperation, hunger and malnutrition were particularly vulnerable. The estimated migrants were 139 million in India. The problems of gender-based violence also seemed to have grown. This highly infectious airborne disease is difficult to treat, especially in places like Dharavi, Asia's largest slum. Symptomatic and even asymptomatic patients can test positive for COVID infection. Therefore, testing is most important. There is tremendous variation in the data from various centers and various countries. Every month new information gets updated. RCTPCR is the gold standard test. Antigen antibody tests are cheaper but can have false positive results too [7].

COVID patients can have fever, body ache, cough, cold, respiratory infection, respiratory distress, inability to smell and taste and even mental health and behavioral problems. The new coronavirus ACE3 also affects the kidney and gastrointestinal tract. Besides, it can have a direct effect on the reproductive system (ACE2), which can lead to the impairment of male and female fertility [8]. Elderly patients with poor income with diabetes and hypertension, etc., are more prone to develop complications. Postpartum psychosis and anxiety are also seen.

Living in the Pandemic

The UN Secretary General has issued a call to continue the delivery of sexual and reproductive health services even

without prescription. COVID-19 has thrown the world economy into a recession, the likes of which hasn't been seen since the Great Depression (1929–33). Restrictions imposed on the movement of people to curb the spread of the virus, resulted in a huge reduction of employment and capital investment. In 2020, many economies (including the US economy) saw a reduction of over 30% in output. The guidelines for the general population are to stay at home, self-isolate, frequently wash hands, cover nose and mouth with a mask and keep a safe distance of at least six feet from each other. When out of home, refrain from crowds and poorly ventilated areas, use a medical or surgical mask and regularly clean and disinfect surfaces.

Contraception and Induced Abortion

Very special counseling and support is essential as COVID-19 has a devastating effect on women and girls. The recommendation is to prescribe or dispense multi-month refills of the pill to minimize trips to the pharmacy or clinic. Health insurance plans should waive time limitations [9]. The progesterone only pill can safely be started for individuals even without face-to-face consultation, and prescription can be given for 3–6 months. Injection DMPA or insertion of intrauterine contraception or subcutaneous implants are suitable options to LNG IUD and the copper IUD. Emergency contraception should be available without delay in appropriate cases and termination of pregnancy by medical and surgical methods should be available. These facilities supported with telemedicine and self-care should be promoted and explained to women and men. Delivering contraceptives to the doorstep is crucial.

For postpartum contraception, counseling is done even before the delivery and is provided to women before discharge from the hospital. It reduces the need for further contact. Breastfeeding can continue. The use of postpartum IUCD insertion has great potential in this pandemic situation. Institutionalization of immediate postpartum IUCD has been studied in India at 6 hospitals over 3 years [10]. The impact of using nurses to perform postpartum intrauterine device insertions has been excellent. In a FIGO postpartum IUD initiative 2013–2020, it has been reported that a total of 253,629 women were counseled in the antenatal period. Of these 131,425 (52%) delivered at the institution, 28,695 (22%) had a PPIUD insertion, with post-placental insertion in 61% and insertion after cesarean section in 39% [11]. Routine elective services have been delayed by both government and private setups but they need to be revived as the pandemic can last longer.

Health Workers and Health Facilities

During the pandemic, the health of staff has to be monitored and back-up staff should be provided. The provision of contraceptives short term and long acting along with counseling and access to services should be available. It is important to maintain the safety and wellbeing of staff, health workers and program beneficiaries. Besides this, the staff needs assistance for documentation. Prevention and control of infection is essential with vaccination and PPE (personal protective equipment). It is vital to ensure that the health workers have enough family planning supplies and are able to provide counseling and continue training.

Discussion

As the COVID-19 pandemic is a global health emergency, it has caused major disruption in health care services. The pandemic affected mental health and social interaction in a negative manner, which is a major concern. Even after the peak, continuation of sexual reproductive health and contraception are very essential. Permanent contraception like sterilization can be done after cesarean and even after vaginal delivery in appropriate cases where expertise is available. Counselling should be provided about the use of lactational amenorrhea and injection DMPA which can be continued even after 3 months if desired.

UNFPA

UNFPA highlighted 3 things to know during the pandemic.

1. Access to contraceptives is difficult.
2. Interruption in family planning can have long-term adverse effects.
3. The right to plan family planning should not be compromised [12].

Vaccines

The focus is now to provide vaccines, and therefore, a number of research organizations and pharmaceutical industries are working on production. The traditional vaccine has a protective effect against pathogens. DNA vaccine works by introducing a genetic sequence of a viral antigen in the host cells. When most people in a community are vaccinated, the ability of pathogens to spread is limited. After preclinical trials, there are phase 2 and 3, and later post marketing trials. The aim of WHO is to enroll participants from 470 sites in 34 countries for

vaccination. Some vaccines need 2 doses. Serum Institute of India has collaborated with Oxford.

- One of the reasons for vaccine refusal is the concern that it may affect female and male reproductive functions. However, it is important to correct this misunderstanding as vaccination does not affect fertility [13]. There has also been considerable controversy regarding vaccination during pregnancy and lactation. In most cases, vaccination during pregnancy and lactation can be considered safe and effective [14]. COVID-19 causes significant morbidity and mortality, with respiratory illness requiring hospitalization in 5% to 6% of all SARS-CoV-2-infected pregnant women. Given what is known about the COVID-19 vaccines, the limited data regarding COVID-19 vaccines in pregnant and lactating women from those who have been immunized, and use of other vaccines during pregnancy, physicians can empower women to make an informed decision. ACOG strongly recommends that all eligible persons receive a COVID-19 vaccine or vaccine series. Obstetrician–gynecologists and other women’s health care practitioners should lead by example by being vaccinated and encouraging eligible patients to be vaccinated as well.
- ACOG recommends that pregnant individuals be vaccinated against COVID-19.
- ACOG recommends that lactating individuals be vaccinated against COVID-19.

Vaccines can save millions as they work by training and preparing the body’s natural defenses—the immune system.

Vaccine development and approval usually take several years and need strong collaborations with government and academia researchers, health care professionals and peer companies. Scientists around the world identify and share genetic sequences of the new coronavirus to accelerate the vaccine research. The technology is to produce stronger immune responses and design multiple candidates for evaluation. Researchers also looked at multiple ways to shorten time such as combining stages, testing more than one version of the vaccine and sending batches of data to government regulators.

According to the WHO, there are more than 50 vaccine candidates around the world in clinical trials. The makers of three vaccines that are closest to global distribution are Pfizer, Moderna and AstraZeneca [15].

Messenger RNA vaccines are some of the first COVID-19 vaccines that have been recently approved in regulatory agencies. It can protect against infection and teach our cells how to make protein or portion of protein that triggers an effective immune response within the human body. This prevents us from getting infected.

COVID-19 vaccines are under trial in India.

Pfizer USA BioNTech Germany BNT162b2.

- mRNA vaccine—part of the coronavirus genetic code is injected into the body, triggering the body to begin making viral proteins, but not the whole virus, which is enough to train the immune system to attack.
 - 95% effective in clinical trials.
 - arrives at a temperature between $-80\text{ }^{\circ}\text{C}$ and $-60\text{ }^{\circ}\text{C}$ in a container with dry ice (should be stored in an ultra-cold freezer at this temperature).
 - Needs 2 shots, 21 days apart.
 - As of December 23 2020, being used in the US, UK, Canada; deliveries in several European countries are expected by December 26, 2020.
- US price ~ \$20 per dose.

Moderna COVID-19 Vaccine (USA).

- Also, mRNA vaccine like Pfizer-BioNTech.
- 94.1% effective in clinical trials.
- Vaccine will arrive frozen between $-25\text{ }^{\circ}\text{C}$ and $-15\text{ }^{\circ}\text{C}$ and store in the freezer or refrigerator (vials may be stored between $2\text{ }^{\circ}\text{C}$ and $8\text{ }^{\circ}\text{C}$ for up to 30 days) (thawed vaccine cannot be re-frozen).
- 2-dose series, separated by 28 days.
- On December 18, 2020, the US FDA issued an emergency use authorization (EUA) allowing distribution in the US for use in individuals 18 years of age and older.

Johnson & Johnson

Johnson & Johnson has a one dose vaccine and is 76% effective overall. The vaccine is 85% effective in preventing severe COVID-19 complications requiring hospitalization.

Novavax

Novavax COVID-19 shows up to 96% efficacy.

Oxford University—AstraZeneca—AZD1222 (Covishield).

- Viral vector—genetically modified virus contains the genetic material of the SARS-CoV-2 virus spike protein, and the changes to the genetic code seen in this new viral strain do not appear to change the structure of the spike protein.
- An article published in *The Lancet* showed the vaccine candidate had an efficacy of 62% for trial participants given two full doses, but 90% for a smaller subgroup given a half, then a full dose.

- The UK government has ordered 100 million doses of the AstraZeneca and Oxford shot, with 40 million doses available by the end of March 2021. Approval expected just after Christmas, 2020.
- Serum Institute of India (world's largest vaccine maker) is producing 50–60 million doses per month. Production will be scaled up to 100 million doses per month from January–February 2021—with the aim of getting to 300–400 million doses per month by July 2021.
- Could be sold to the Indian government for ~\$3 for two doses, and later \$6–\$8 on the private market. Sinovac (Beijing based pharmaceutical company).
- Works by using killed viral particles.
- The key advantage is that it can be stored in a standard refrigerator at $2-8\text{ }^{\circ}\text{C}$.

Sputnik

Russian vaccine, which is made by Gameleya Research Institute Moscow, is available in India through Dr. Reddy's Lab as a 2-dose vaccine. Efficacy is 91%.

Bharat Bio

- Bharat Bio is working on intra nasal vaccine for COVID-19 under Chairman M. D. Krishna (ELLA).

Covaxin

Covaxin India's indigenous COVID-19 vaccine Bharat Biotech is in collaboration with Indian Council of Medical Research and national virologists. It has received approval from the Drug Controller General of India. Trials for safety and immunogenicity have been conducted.

Research

The National Institute for Research in Reproductive Health (NIRRH of ICMR) in recent weeks has shown that COVID positive mothers can have vertical transmission through the placental barrier. In the 1st trimester, transmission through the syncytial trophoblast cells can occur. In the 2nd trimester, extra villus trophoblasts and endovascular trophoblasts are responsible. Research is still ongoing with a registry of 3000 pregnant patients and follow-up of neonates. Family planning advice should be integrated into COVID-19 messages using channels like social media, TV and radio. Telemedicine should be provided through online screening, education and counseling. The COVID-19 pandemic may last even after its peak, and therefore, contraception and safe abortion should be considered essential and their availability and access ensured and continued. To conclude, health care facilities should continue to provide family planning and

abortion services as essential health services, with telemedicine being a useful counseling method [16].

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Declarations

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