Impacts of Covid-19 Pandemic on the Early Trimester Pregnancies

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ABSTRACT
Background and Aim: The COVID-19 pandemic caused by severe acute respiratory syndrome (SAR-CoV-2) had severe consequences and complications on the global health care system. Recent medical studies have been focused on the effect of COVID-19 pandemic on pregnancies outcomes especially early pregnancies. The present study aimed to investigate the impacts of the COVID-19 pandemic early-trimester pregnancies.

Materials and Methods: This retrospective study was carried out on 76 women who visited Obstetrics and Gynecology department for the first and second-trimester viability scan at Government Hospital, Samnabad Lahore from 1st January 2021 to 30th June 2021. Individuals of age between 19 years and 40 years with a diagnosis of spontaneous miscarriage were enrolled in this study. Ethical approval was taken from the respective hospital's ethical review committee. Patients with recurrent pregnancy loss, induced miscarriage, and other co-morbidities were excluded. All the demographic details were taken from the hospital medical record. All the patients underwent routine baseline tests to confirm the COVID-19 history and its impacts on the early trimester of pregnancy. The outcomes of early trimester pregnancy were viable pregnancy, miscarriage, pregnancy loss, and ectopic pregnancy were calculated in terms of frequency and percentage. SPSS version 20 was used for data analysis.

Results: The overall mean age study group patients was 28.72±3.63 years. The control group comprised 57 pregnant women with a gestational age of 5 weeks to 11 weeks, and the mean maternal age was 34.83±4.91 years. Out of total pregnant women, 31 (40.7%) were of age 19-25 years old, 29 (38.2%) had age 25 to 30 years, and 31 to 40 years were 16 (21.1%). Of the total 76 pregnant women, about 41 (54%) had a miscarriage with positive COVID-19 tests and 24 (31.6%) had spouses who had COVID-19 positive tests. History of both spouse and personal positive COVID tests were eleven patients (14.4%). The incidence of miscarriage among control group was 10 (17.5%).

Conclusion: Our study found that the COVID-19 pandemic significantly affects the rate of pregnancy loss during the early trimester (first and second pregnancy). The maternal viremia or vertical transmission caused early trimester pregnancy loss and maternal infection during COVID-19.

Keywords: Pregnancy, Miscarriage, COVID-19 Pandemic

INTRODUCTION
The COVID-19 disease, instigated by severe acute respiratory syndrome coronavirus (SARS-CoV-2), has had worldwide pandemic complications [1, 2]. The virus was discovered in Wuhan, China, and has spread since 2019 globally, infecting over 91 million populations various regions [3–5]. Emerging evidence suggests that the pregnant and non-pregnant women are coarsening the disease generally comparable [6, 7]. However, the physiological variations associated with pregnancy (such as increased stroke volume, decreased volume of functional residual and respiratory tract mucosal edoema) [8] as well as adverse neonatal complications possibility of attentive exertions to thoroughly evaluate the destitute SARS-CoV-2 outcome had potential risk factors for the pregnant population. Previous research has associated with increased risk of viral pneumonia to preterm birth and perinatal mortality in pregnant women [9, 10].

SARS-CoV-2 was associated with an increase in maternal morbidity and mortality, miscarriage, and preterm birth, and intrauterine growth restriction among infected mothers [11, 12]. However, SARS-CoV-2 might affect pregnancy and the risks it poses to the unborn child and mother needs to be determined [13]. More specifically, due to the virus’s novelty and recent spread, there is a scarcity of data on maternal and perinatal outcomes when the infection occurs in the early trimester of pregnancy. The CDC’s frequent report emphasized adverse effects of COVID-19 on pregnancy and prevails on more extensive research to be carried out [14]. Evaluating the liaison of the early gestational trimesters of pregnancy is critical in COVID-19 for an effective counseling and provides vital intuition into pandemic may influence the future pregnancy.

It is thought to be a highly contagious disease spread by infected people’s respiratory droplets, whether symptomatic or asymptomatic. COVID-19 symptoms range from asymptomatic patients to mild upper respiratory tract infection to severe and fatal pneumonia and acute respiratory failure [15]. It is unclear how the virus affects pregnancy, the fetus, and the newborn. Because pregnant women’s immune responses differ from those of non-pregnant women, these women are more likely to experience maternal, fetal, and neonatal complications in addition to the usual course of disease [16, 17] Paternal infection may have an effect on various parameters of sperm, which may play a role in miscarriage.
METHODS
This retrospective study was carried out on 76 women who visited Obstetrics and Gynecology department for the first and second-trimester viability scan at Government Hospital, Samnabad Lahore from 1st January 2021 to 30th June 2021. Individuals of age between 19 years and 40 years with a diagnosis of spontaneous miscarriage were enrolled in this study. Ethical approval was taken from the respective hospital’s ethical review committee. Patients with recurrent pregnancy loss, induced miscarriage, and other co-morbidities were excluded. All the demographic details were taken from the hospital medical record. All the patients underwent routine baseline tests to confirm the COVID-19 history and its impacts on the early trimester of pregnancy. The outcomes of early trimester pregnancy were viable pregnancy, miscarriage, pregnancy loss, and ectopic pregnancy were calculated in terms of frequency and percentage.

Demographic details booked antenatal, and miscarriage patients were taken from the hospital medical record. All the diagnosed miscarriage patients’ obstetric and medical history were recorded especially myalgia, family history, fever, upper/lower respiratory tract infection, and anosmia during COVID-19 with current pregnancy. Polymer Chain reaction of coronavirus and chest X-rays were performed for the diagnosis of early-trimester pregnancy miscarriage. Routine blood tests such as HbsAg, blood complete picture, random blood sugar, blood group, and HCV were performed. SPSS version 20 was used for data analysis.

RESULTS
The overall mean age of study group patients was 28.72±3.63 years. The control group comprised 57 pregnant women with a gestational age of 5 weeks to 11 weeks, and the mean maternal age was 34.83±4.91 years.

Out of total pregnant women, 31 (40.7%) were of age 19-25 years old, 29 (38.2%) had age 25 to 30 years, and 31 to 40 years were 16 (21.1%). Of the total 76 pregnant women, about 41 (54%) had a miscarriage with positive COVID-19 tests and 24 (31.6%) had spouses who had COVID-19 positive tests. History of both spouse and personal positive COVID tests were eleven patients (14.4%). The incidence of miscarriage among control group was 10 (17.5%). Figure-1 showed the age wise distribution of study group 76 patients. Table-1 and Figure-2 demonstrate the prevalence of COVID-19 positive tests with early trimesters of pregnancy complications. Comparison of the incidence of miscarriage among study and control groups as shown in Figure 3.

DISCUSSION
Despite the fact that the majority of symptoms are mild, pregnant women and newborns are a concerning population because of the sarcastic data on the COVID-19 infected outcome and complications in pregnant women [18]. Maternal mortality rate was highly observed during the SARS-CoV-2 outbreak [19]. Infected pregnant women who survived reported miscarriages in the first trimester and intrauterine growth restriction (IUGR) in the second and third trimesters [20]. Considering the emerging challenges of the COVID-19 pandemic, the pregnant population should be placed for identifications of pregnancy outcomes and complications. The recent study is among few advanced studies which evaluate the clinical characteristics of early pregnancy during the COVID-19 pandemic. A study conducted on coronavirus impact on pregnancy reported prevalence of symptoms like cough (33%) and fever (39%)
in early trimester pregnant women [21]. Other studies found similar findings in the third trimester of pregnancy [22, 23]. Another study was carried out on third trimesters pregnancy found a higher prevalence of fever (68%) and cough (34%) among third-trimester pregnant women [24]. Vascular system damage and neuroblast cells might die due to cell migration disruption associated with elevated temperature in pregnant women [25]. The organogenensis period during the first trimesters has potential concern over neonatal and maternal outcomes [26].

Another study reported miscarriage experienced in second trimesters pregnancy with COVID-19. Swabs of meconium, placenta, amniotic fluid, fetal blood, and fetal mouth were taken for the fetal autopsies and histological examination of the placenta. Histopathology results showed infiltrate inflammation on the placenta despite the negative results of Swabs. Negative swabs caused the maternal disease severity level short and mild. Fetal demise caused by maternal positive COVID-19 tests [27]. A Chinese recent investigation revealed various biological samples such as saliva, urine, respiratory tract, lacrimal secretions, and feces in coronavirus-positive tested patients. Maternal to neonatal vertical transmission has been suspected but virus localization in the genital area or tract is under investigation [28].

Another study reported respiratory distress syndrome and the need for a ventilator in confirmed positive tested coronavirus patients. Aspirin, Paracetamol, Azithromycin, and Loratadine were utilized for the treatment of patients with mild to moderate symptoms [29]. Later stage gestation was investigated in early pregnancy by another researcher from China and found possible transmission and clinical investigations in intrapartum and intrauterine. Besides radiological findings in neonates, some neonates had Immunoglobulin G (IgG) and Immunoglobulin M (IgM) [30]. The severe acute respiratory syndrome virus vertical transmission was evaluated through chronic villi and amniotic fluid of COVID-19 in early pregnant women. Invasive technique indications were studied in pregnant women with polymer chain reaction positive results [31]. But in the present study, first and second trimesters pregnancies were investigated with the incidence of miscarriage among positive tested COVID-19 patients. All the patients of induced abortions, pregnancy loss, complications, and maternal age<20 and > 40 years were excluded in the present study.

CONCLUSION

Our study found that the COVID-19 pandemic significantly affects the rate of pregnancy loss during the early trimester (first and second pregnancy). The maternal viremia or vertical transmission caused early trimester pregnancy loss and maternal infection during COVID-19.

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