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Assessment Outcomes Effect Covid 19 on Pregnancy

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Abstract: Introduction: Pregnant patients become susceptible when their cell-mediated immunity is compromised. During pregnancy, anatomical and physiological alterations such as diaphragm ascension, changes in lung capacity, vasodilation, mucosal edema, and anemia all contribute to susceptibility to hypoxia. Objective: This paper aims to assess outcomes that affect COVID-19 on pregnancy. Patients and Methods: Data were collected retrospectively through reviews of electronic medical records or electronic hospital records and discharge data for all pregnancy patients in different hospitals in Iraq between 4th July 2021 to 9th January 2022 who were >30 years of age or older. These data were designed with two groups. Where the first group was represented with pregnancy patients, explain the women patients have Covid-19 and struggled during the period of Covid-19, while the second group was represented the control group that, which explains the pregnancy group who have Covid-19 and could treated of it. A statistical study was conducted for pregnancy patients using the SPSS program. Results and Discussions: Effects of SARS infection on mothers and their babies. Research shows pregnant women infected with COVID-19 are more likely to develop serious illnesses, including a higher risk of preterm labor and maternal and/or fetal mortality. As a result, this study showed that the BMI in the group of pregnant patients was higher than that of the control group, and the group of pregnant patients was (31 ± 2.1) while the control group was (30 ± 1.9) with a P-value of 0.0492, while the Parity group of pregnant patients was (2.70 ± 1.34) and the control group (1.67 ± 1.13). As for smoking, most of the patients for both groups did not smoke, which included in the pregnant group, 56 (93.33%), while the control group, 57 (95%), with a P-value of 0.0485. In terms of obstetric problems, we saw an increase in the incidence of caesarean delivery and fetal hypoxia corrected after birth but a decrease in the rate of other disorders mentioned in the literature, such as preeclampsia where Preterm birth <37 weeks got 7 (11.67%) in the pregnancy patients, but 5 (8.33%) for the controls patients. As well as, Iatrogenic (<37 weeks) shown high with 6 (10%) in the pregnancy patients and 3 (5%) in the control patients with a p-value of 0.0344. Conclusion: Yet the effects of COVID-19 on fetal development appear to be considerable, and maternal outcomes for women with COVID-19, as well as for asymptomatic women where COVID-19 has a large influence, making this inconsistent Reassuring for expecting moms and those who care for them. Perinatal mortality has increased in the world because of this epidemic, according to research.

Keywords: COVID-19; Transmission; Gestation; Parity; Diabetes in pregnancy.

INTRODUCTION

We have recently witnessed an exceptionally aggressive infection produced by a novel coronavirus strain, the SARS-CoV-2 virus (severe acute respiratory syndrome coronavirus), the predominant clinical manifestation of which is severe acute respiratory syndrome (WHO, 2020). Transmission was shown to be mostly respiratory, via contaminated secretions or direct touch. Furthermore, it has resulted in a severe public health crisis in the United States (Zhu, N. *et al.*, 2020). Pregnant patients become susceptible when their cell-mediated immunity is compromised (Zhou, P. *et al.*, 2020). During pregnancy, anatomical and physiological alterations such as diaphragm ascension, changes in lung capacity, vasodilation, mucosal edema, and anemia all contribute to susceptibility to hypoxia (Do Dong, E. *et al.*, 2020).

In summary, one of the primary findings of the French study was that pregnant women are more vulnerable to SARS-CoV-2 infection. According to the German literature (Di Mascio, D. *et al.*, 2020; Muyayalo, K. P. *et al.*, 2020), SARS-CoV-2 infection affects the outcome of the pregnant population, resulting in the appearance of severe pneumonia, acute respiratory distress syndrome (ARDS), multiorgan failure, or disseminated intravascular coagulation (DIC), similar to that seen in the general population, with the occurrence of serious obstetric consequences, such as abortions, premature births, intrauterine growth restriction (IUGR), preeclampsia (PE), and fetal hypoxia. As a result, there has been an increase in the number of cesarean sections reported (Abou-Ismail, M. Y. *et al.*, 2020; Jiménez, D. *et al.*, 2021). According to real-time postnatal polymerase chain reaction (RT-PCR) viral

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testing, there was no indication of vertical transmission of this virus, either in amniotic fluid or through breast milk, which is why nursing was encouraged if the mother's health permitted. Many comparative studies focusing on populations of pregnant and nonpregnant individuals have revealed commonalities in non-obstetric symptoms (Wong, Y. P. *et al.*, 2021). Report a mortality rate of roughly 3-4% in the general population, with pregnant women categorized as a high-risk population requiring critical care 50% of the time. Coughing, fever, tachypnea, myalgia, dyspnea, sore throat, chest discomfort, nasal congestion, diarrhea, and nausea are frequent COVID-19 symptoms in nonpregnant individuals (Zhang, P. *et al.*, 2022; Vergara-Merino, L. *et al.*, 2021). Lymphopenia, leukopenia, anemia, increased polymerase chain reaction (PCR), thrombocytopenia, altered ferritin, increased levels of aspartate aminotransferase (AST) and alanine transaminase (ALT), increased levels of lactate dehydrogenase (LDH), increased cytolysis, and specific chest radiography changes were the main changes observed in laboratory tests (Jafari, M. *et al.*, 2021; Mullins, E. *et al.*, 2021). Gabrieli et al. identified another effect of SARS-CoV-2 infection, the development of thromboembolic events, the details of which are unknown (Ashish, K. C. *et al.*, 2020). Because pregnancy causes hypercoagulation, which is most likely an adaptive mechanism to lower the danger of bleeding during and after delivery, fibrinolytic activity is reduced, and venous stasis is prevalent (Vousden, N. *et al.*, 2021).

Furthermore, the extended sedentary lifestyle produced by the confinement and mobility constraints imposed by the caesarean delivery are risk factors for thrombosis, thromboembolism, and thromboembolic risk factors in COVID-19 (Galtier-Dereure, F. *et al.*, 2000). It was fascinating to see how the SARS-CoV-2 infection influenced pregnancy and fetal development (Draper, E. S. *et al.*, 2020). Abortions, early deliveries, fetal distress, stillbirth, preeclampsia (PE), diabetes mellitus (DM), maternal or new-born mortality, and an increase in the caesarean section are among the maternal outcomes associated with SARS-CoV-2 virus infection, according to the previous studies (Li, Y. *et al.*, 2019). A poor APGAR score, low birth weight, preterm, intrauterine growth restriction (IUGR), prolonged hypoxia, and uncommon vertical transmission of SARS-CoV-2 infection were also documented in babies, all with the possibility of recovery (Birrell, P. *et al.*, 2021). Certain neonates, according to Allotey *et al.*, may require critical care services (Kiserud, T. *et al.*, 2017). There have been few significant case reports involving COVID-19 and pregnant women (Kiserud, T. *et al.*, 2017). The investigation of SARS-CoV-2 virus infection during pregnancy remains difficult due to ethical constraints (NHS England. 2019). This paper aims to assess outcomes that affect COVID-19 on pregnancy.

PATIENTS AND METHODS

Data were collected retrospectively through reviews of electronic medical records or electronic hospital records and discharge data for all pregnancy patients in different hospitals in Iraq between 4th July 2021 to 9th January 2022 who were >30 years of age or older. These data were designed with two groups. Where the first group was represented with pregnancy patients, explain the women patients have Covid-19 and struggled during the period of Covid-19, while the second group was represented the control group that, which explains the pregnancy group who have Covid-19 and could, treated of it. A statistical study was conducted for pregnancy patients using the SPSS program. In this study, demographic data were collected for pregnant and control patients' age, BMI, gestation, parity, diabetes in pregnancy, hypertension at booking, and smoking, as shown in Table 1. To follow up, an expansion of the study was carried out according to trimester of diagnosis distribution of pregnancy patients according to trimester of diagnosis, where they were classified into three where the first period was (1-3) months, where the second period was (4-6) months, and the third period was (7-9) months, as shown in Figure 1. For the mode of delivery, it has been added distribution of pregnancy patients according to the mode of

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delivery, which included spontaneous vaginal, forceps, ventouse and emergency CS, elective CS, and gestation at delivery (days) as shown in Table 2. Then it was made the distribution of pregnancy patients was according to preterm birth; this data has been distributed with items such as <37 weeks, <34 weeks, iatrogenic (<37 weeks), placental abruption, stillbirth, neonatal death, NICU admission, length of stay (days), cord arterial PH, cord arterial base deficit where that can be seen in Table 3. Furthermore, this study described of maternal outcomes between pregnancy patients and control patients, where they contain estimated blood loss (ml), maternal length of stay (days), pre-eclampsia, HDU admission, and ICU admission that can be seen in Table 4. Also, this study evaluated variables between pregnancy patients and control patients, where can include the four items, which are smoking, obesity, comorbidities, and diabetes, where can show in Table 5.

RESULTS

Table-1: The demographic results of pregnancy patients.

Items	**Pregnancy Group (N=60)**	**Control Group (N=60)**	**P-value**
Age (Mean±SD)	35±4.4	31±2.9	0.0464
BMI	31±2.1	30±1.9	0.0492
Gestation	4.77±1.77	3.55±2.15	0.0483
Parity	2.70 ± 1.34	1.67 ± 1.13	0.0487
Diabetes in pregnancy	13 (21.67%)	9 (15%)	0.0446
Hypertension at booking	21 (35%)	17 (28.33%)	0.0425
Smoking			
Yes	4 (6.67%)	3 (5%)	0.0491
No	56 (93.33%)	57 (95%)	0.0485

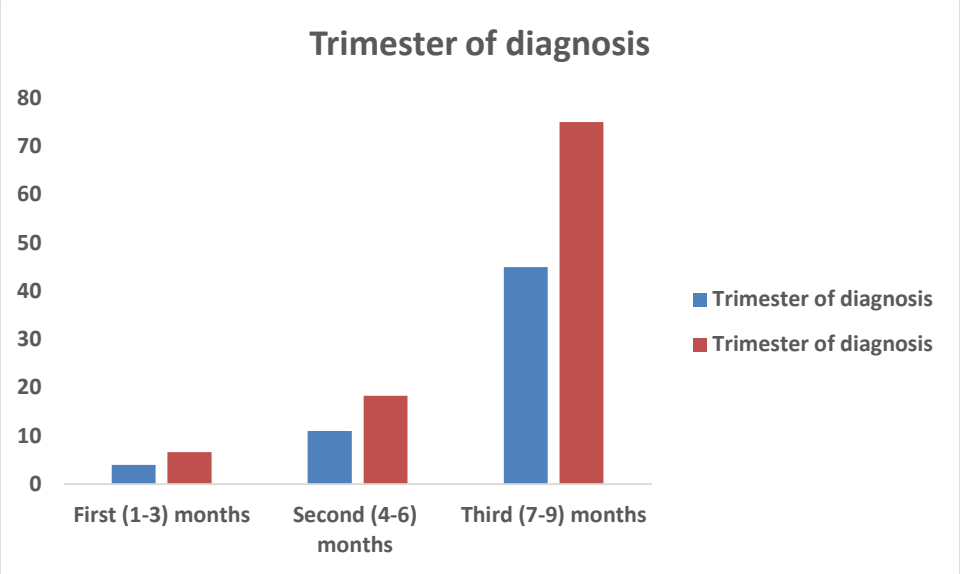

Figure-1: Distribution of pregnancy patients according to Trimester of diagnosis.

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Table-2: Distribution of pregnancy patients according to Mode of delivery.

Mode of delivery	Pregnancy Group (N=60)	Control Group (N=60)	P-value
Spontaneous vaginal	20 (33%)	18 (30%)	0.0476
Forceps	9 (15%)	7 (11.67%)	0.0452
Ventouse	5 (8.33%)	3 (5%)	0.0466
Emergency CS	14 (23.33%)	13 (21.67%)	0.0486
Elective CS	12 (20%)	19 (31.57%)	0.0436
Gestation at delivery (days)	277 (270-283)	279 (272-285)	0.0491

Table-3: Distribution of pregnancy patients according to Preterm birth.

Preterm birth	Pregnancy Group (N=60)	Control Group (N=60)	P-value
<37 weeks	7 (11.67%)	5 (8.33%)	0.0467
<34 weeks	4 (6.67%)	2 (3.33%)	0.0452
Iatrogenic (<37 weeks)	6 (10%)	3 (5%)	0.0344
Placental abruption	1 (1.67%)	1 (1.67%)	0.05
Stillbirth	1 (1.67%)	1 (1.67%)	0.05
Neonatal death	1 (1.67%)	1 (1.67%)	0.05
NICU admission	7 (11.67%)	4 (6.67%)	0.0366
Length of stay (days)	5 (2-11)	3.3 (2.3-9.4)	0.0426
Cord arterial pH	5.21±0.03	4.67±0.035	0.0482
Cord arterial base deficit	6.42±4.4	6.3±4.2	0.0483

Table-4: Describe of maternal outcomes between pregnancy patients and control patients.

Maternal Outcomes	Pregnancy Group (N=60)	Control Group (N=60)	P-value
Estimated blood loss (ml)	422 (300–700)	530 (300–700)	0.0455
Maternal length of stay (days)	2.6 (1–4)	3.55 (1–4)	0.0485
Pre-eclampsia	5 (8.33%)	3 (5%)	0.0442
HDU admission	2 (3.33%)	2 (3.33%)	0.05
ICU admission	7 (11.67%)	5 (8.33%)	0.0422

Table-5: Evaluation of variables between pregnancy patients and control patients.

Items	Pregnancy Group (N=60)	Control Group (N=60)	P-value
Smoking	4 (6.67%)	2 (3.33%)	0.0466
Obesity	3 (5%)	1 (1.67%)	0.0421
Comorbidities	5 (8.33%)	3 (5%)	0.0437
Diabetes	3 (5%)	2 (3.33%)	0.0472

DISCUSSION

In March 2020, the World Health Organization declared a pandemic Coronavirus 2019 (COVID-19) caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) (Ormesher, L. *et al.*, 2020). As of August 2021, the total number of cases has passed 200 million, with more than 4 million deaths (Chmielewska, B. *et al.*, 2021). As a result, this study presented a cross-sectional study of pregnant patients with COVID-19, where it was divided into two groups, the group of pregnant patients who contracted COVID-19 and the second group, which represented the group of pregnant patients who contracted COVID-19 and were

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treated. This study correlated with the elements in the demographic study and showed that the BMI in the group of pregnant patients was higher than that of the control group, and the group of pregnant patients was (31 ± 2.1) while the control group was (30 ± 1.9) with a P-value of 0.0492, while the Parity group of pregnant patients was (2.70 ± 1.34) and the control group (1.67 ± 1.13). As for smoking, most of the patients for both groups did not smoke, which included in the pregnant group, 56 (93.33%), while the control group, 57 (95%), with a P-value of 0.0485. Effects of SARS infection on mothers and their babies (Yates, T. *et al.*, 2021; Sutton, D. *et al.*, 2020; Khalil, A. *et al.*, 2020). Research shows pregnant women infected with COVID-19 are more likely to develop serious illnesses, including a higher risk of preterm labor and maternal and/or fetal mortality. Where i found this study. Besides to that, this study was showed that the trimester of diagnosis has different, where the third period was higher, above 70 than the second period, which was between (4-6) months. In terms of obstetric problems, we saw an increase in the incidence of caesarean delivery and fetal hypoxia corrected after birth but a decrease in the rate of other disorders mentioned in the literature, such as preeclampsia (hemolysis, increased liver enzymes, and low platelets). As a result, our study proof, as related with previous others studies, that most neonates born to SARS-CoV-2 positive mothers test negative and do not present with virus-induced disease (Gale, C. *et al.*, 2021; Romero, R. *et al.*, 2018); there have been some cases of new-borns testing positive and presenting with early-onset symptoms where Preterm birth <37 weeks got 7 (11.67%) in the pregnancy patients, but 5 (8.33%) for the controls patients. As well as, Iatrogenic (<37 weeks) shown high with 6 (10%) in the pregnancy patients and 3 (5%) in the control patients with a p-value of 0.0344. According to maternal outcomes, estimated blood loss (ml) was shown 422 (300-700) in the pregnancy patients and 530 (300–700) in the control patients as well as Pre-eclampsia was 5 (8.33%) in the pregnancy patients and 3 (5%) in the control patients with p-value 0.0442 which this study noticed that Comorbidities high in the pregnancy patients 5 (8.33%) more than control patients 3 (5%). (Morris, K. *et al.*, 2020).

CONCLUSION

Premature delivery relates to postpartum COVID-19, which may be attributable to an iatrogenic increase in maternal indications. Yet, the effects of COVID-19 on fetal development appear to be considerable and maternal outcomes for women with COVID-19, as well as for asymptomatic women where COVID-19 has a large influence, making this inconsistent Reassuring for expecting moms and those who care for them. Given this knowledge, it may be feasible to avoid certain iatrogenic preterm. Perinatal mortality has increased in the United States because of this epidemic, according to research. The Tese findings support continued attempts to avoid COVID-19 throughout pregnancy, although further fetal growth monitoring following COVID-19 may be unnecessary.

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