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COVID-19 (VIRAL INFECTIONS) IMPACT ON PREGNANCY

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ABSTRACT: This article provides a scientific analysis of the impact of SARS-CoV-2 on clinical and perinatal outcomes in pregnant women during the COVID-19 pandemic. Complications of COVID-19 infection in pregnancy, fetal development, neonatal outcomes, disease severity, and preventive measures were reviewed. Changes in the immune system of pregnancy physiology and the impact of viral infection, as well as the results of epidemiological studies, were analyzed. The study was based on Uzbek and international scientific literature. This article proposes risk factors for pregnant women, clinical recommendations, and directions for future scientific research.

Keywords: COVID-19, SARS-CoV-2, pregnancy, preterm birth, neonatal outcomes, viral infection, perinatal complications, immune system.

INTRODUCTION: The COVID-19 pandemic has dramatically impacted healthcare systems worldwide, and the impact of the virus on the health of pregnant women remains a highly relevant topic. Pregnancy is a unique physiological state characterized by modulation of the immune system, changes in the respiratory system, and activation of blood coagulation mechanisms. These changes may increase susceptibility to viral infections, including SARS-CoV-2. Several studies have reported that COVID-19 infection in pregnant women is associated with severe clinical outcomes, including preterm birth, preeclampsia, neonatal complications, and placental abruption. Specific modulation of the immune system during pregnancy alters the defense against viral infection, which may lead to severe clinical outcomes. Anatomical changes in the respiratory system during pregnancy, including decreased lung capacity and elevation of the diaphragm, may exacerbate respiratory infections. Pregnant women with COVID-19 are also at increased risk of thrombosis because of the hypercoagulable state of pregnancy, which, when combined with viral infection, can lead to thrombotic complications. This article provides an in-depth analysis of the complex relationship between COVID-19 and pregnancy, highlighting the epidemiological, clinical, and biochemical mechanisms, and providing practical recommendations.

RESEARCH METHODOLOGY: The data used in this article were based on systematic literature reviews, retrospective and prospective studies, meta-analyses, and epidemiological analyses. Articles from world health organizations, PubMed, Medline, Springer, and other scientific publications were analyzed when writing the article. Publications on the impact of COVID-19 on pregnancy on scientific platforms in Uzbekistan and Central Asia were also reviewed. When writing the article, scientific research was critically evaluated, the results were compared, and the conclusions were summarized.

MAIN PART: Although the clinical presentation of COVID-19 infection in pregnant women may be similar to that in the general population, the unique physiology of pregnancy may increase the severity of the disease. Modulation of the immune system in pregnant women increases susceptibility to viral infections. Due to limited airway capacity, severe respiratory symptoms develop rapidly, which can lead to severe outcomes in pregnancy, as well as an increased risk of complications such as hypoxia and preeclampsia. Pregnant women with COVID-19: Preeclampsia and preterm birth have been observed more frequently. According to a meta-analysis including 42 studies, COVID-19 increases the risk of preeclampsia and preterm

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birth in pregnancy. The risk of placental dysfunction and embryo/fetal complications is significantly increased. Neonatal outcomes, including low birth weight, need for NICU admission, and low Apgar scores, have also been reported. Pregnant women infected with SARS-CoV-2 often require hospitalization, intensive care unit admission, and respiratory support. Retrospective analyses have shown an increased risk of mortality and severe complications in pregnant women with COVID-19. Placental abnormalities and preterm birth were more common in pregnant women with COVID-19 in all three trimesters. Not only SARS-CoV-2 positivity, but also severe clinical course increases the risk of preeclampsia, hypertension, and other obstetric complications. Although studies on vertical transmission of COVID-19 in pregnancy are very limited, it has been shown that transplacental transmission of the virus is relatively low. Neonatal complications are manifested by increased preterm birth, low birth weight, and the need for additional care in the NICU. Other viral infections that accompany COVID-19, such as influenza, RSV, and others, also increase complications in pregnancy. Changes in the immune system, the synergistic effect of both viral infections, weaken fetal development. Therefore, it is important to prevent viral infections, strengthen vaccines, and preventive measures.

ANALYSIS AND RESULTS: Studies related to COVID-19 show: Increased risk of preeclampsia and preterm birth. Pregnant women are more likely to present with severe respiratory symptoms and need for ICU admission. Neonatal complications, including low birth weight and need for NICU admission, have been epidemiologically more common. These results are explained by the immunomodulatory effect of the virus during pregnancy, changes in the respiratory system, and impaired placental function.

CONCLUSION: The COVID-19 pandemic has a significant impact on the course of pregnancy. Viral infections increase the risk of severe clinical course, preeclampsia, preterm birth, and neonatal complications in pregnant women. For pregnant women, viral infections, especially SARS-CoV-2, directly affect the immune system, physiological changes, and placental function. Therefore, it is necessary to take preventive measures, vaccinate, and strengthen the system of monitoring pregnant women.

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