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Evaluation of Maternal COVID-19 Vaccination Status and Associated Demographic and Birth Outcomes

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On March 11, 2020, the World Health Organization declared COVID-19 a pandemic, and as of September 2022 the outbreak has claimed over 6.5 million lives worldwide. The COVID-19 pandemic has posed new risks and obstacles for pregnant women, especially since the original vaccination trials did not include pregnant women. Since their rollout, numerous studies have been completed evaluating vaccination during pregnancy and neonatal outcomes. These consistently demonstrate that vaccination during pregnancy does not lead to adverse outcomes in the perinatal period, and in fact offer substantial protective effect. Disparities in vaccination uptake may exacerbate risk factors in pregnancy. Additional data on this subject will assist with optimal vaccination recommendation strategies in this vulnerable patient population. The purpose of this study was to compare socioeconomic and demographic factors of vaccinated and unvaccinated women during pregnancy and health outcomes of neonates based on maternal vaccination status. An IRB-approved study enrolled 151 mother-infant pairs between December 2020 and July 2022 for collection of medical history and pregnancy outcomes at time of delivery. Women were considered vaccinated if they were partially or fully vaccinated prior to or during pregnancy. Chi Squared tests were used to associate COVID-19 vaccination status with categorical socioeconomic status markers and newborn outcomes. A Mann-Whitney U test compared continuous maternal demographics and infant birth outcomes between maternal COVID-19 vaccination status. A p-value of <0.05 was considered statistically significant. Of the women included in this study, 33.77% were vaccinated and 66.22% were unvaccinated at time of delivery. Vaccinated women were significantly older than unvaccinated women (32 vs 29, $p=0.008$). Vaccinated women had infants with significantly higher birth head circumference percentiles than those of unvaccinated women (80th percentile vs 60th percentile, $p=0.017$). Partial or full COVID-19 vaccination was associated with mothers who had at least a college degree ($\chi2=6.229$, $p=0.013$), mothers who owned their own car for transportation ($\chi2=4.085$, $p= 0.043$), and with white vs non-white race ($\chi2= 4.169$, $p=0.041$). Partial or full vaccination against COVID-19 approached a significant association with term vs preterm birth ($p=0.079$). This study found a consistent association between increased socioeconomic status and higher vaccine uptake, as well as an association between maternal COVID-19 vaccination and increased birth head circumference percentile in the infants of vaccinated women. This demonstrates the need for improved access and increased outreach to underserved populations regarding vaccination during pregnancy.