

Appendix 3. Characteristics of studies included for meta-analysis

Study	Country	Study Design	Sample size	Population	Exposure	Comparison	Outcome
Adhikari 2020 ¹	United States	Retrospective cohort	3374	Pregnant women	SARS-CoV-2 infection diagnosed by PCR	COVID-19 positive vs negative by PCR; symptomatic vs asymptomatic; severe vs mild	Preeclampsia, gestational diabetes, cesarean delivery, stillbirth, preterm birth, small-for-gestational age
Ahlberg 2020 ²	Sweden	Retrospective cohort	759	Pregnant women	SARS-CoV-2 infection diagnosed by PCR	COVID-19 positive vs negative by PCR	Preeclampsia, gestational diabetes, cesarean delivery, PPH, stillbirth, preterm birth, SGA
Barbero 2020 ³	Spain	Retrospective cohort	91	Pregnant women	SARS-CoV-2 infection diagnosed by PCR	COVID-19 severe vs mild	Preeclampsia, gestational diabetes, cesarean delivery, preterm birth
Brandt 2020 ⁴	United States	Case-control	183	Pregnant women	SARS-CoV-2 infection diagnosed by PCR	COVID-19 vs controls (early pandemic: asymptomatic; later: negative COVID-19 by PCR); severe vs mild COVID-19	Preeclampsia, ICU admission, cesarean delivery, chorioamnionitis, preterm birth, gestational age at delivery, NICU admission
Cunarro-Lopez ⁵	Spain	Retrospective cohort	111	Pregnant women	SARS-CoV-2 infection diagnosed by PCR	COVID-19 positive vs negative by PCR	ICU admission, cesarean delivery, preterm birth, birth weight, NICU admission, neonatal mortality
Delahoy 2020 ⁶	United States	Prospective cohort	598	Pregnant women	SARS-CoV-2 infection diagnosed by PCR	Symptomatic vs asymptomatic	Gestational hypertension, gestational diabetes, ICU admission, cesarean delivery, perinatal death, preterm birth, NICU admission
Diaz-Corvillion 2020 ⁷	Chile	Cross-sectional	583	Pregnant women	SARS-CoV-2 infection diagnosed by PCR	COVID-19 positive vs negative by PCR; severe vs mild COVID-19	Gestational age at delivery, preterm birth, birth weight, small-for-gestational age, cesarean delivery, perinatal death

Di Mascio 2020 ⁸	Italy	Retrospective cohort	388	Pregnant women	SARS-CoV-2 infection diagnosed by PCR	Symptomatic vs asymptomatic; severe vs mild COVID-19	ICU admission, cesarean delivery, miscarriage, stillbirth, neonatal death, perinatal death, IUGR, preterm birth, birth weight, NICU admission
Edlow 2020 ⁹	United States	Prospective cohort	127	Pregnant women	SARS-CoV-2 infection diagnosed by PCR	COVID-19 positive vs negative by PCR	Cesarean delivery, preterm birth, birth weight, gestational age, neonatal sex, neonatal death
Erol 2020 ¹⁰	Turkey	Prospective case-control	96	Pregnant women	SARS-CoV-2 infection diagnosed by PCR	COVID-19 positive vs negative by PCR	Miscarriage, preeclampsia, gestational diabetes, preterm birth
Flaherman 2020 ¹¹	United States	Retrospective cohort	263	Pregnant women	SARS-CoV-2 infection diagnosed by PCR	COVID-19 positive vs negative by PCR	Cesarean delivery, preterm birth, birth weight, NICU admission
Griffin 2020 ¹²	New Jersey	Prospective cohort	62	Pregnant women	SARS-CoV-2 infection diagnosed by PCR	COVID-19 positive vs negative by PCR	Cesarean delivery, newborn sex, gestational age, birth weight
Gulersen 2020 ¹³	United States	Retrospective cohort	100	Pregnant women	SARS-CoV-2 infection diagnosed by PCR	COVID-19 vs controls before pandemic	Preeclampsia, gestational diabetes, IUGR
Hcini 2020 ¹⁴	France	Prospective cohort	507	Pregnant women	SARS-CoV-2 infection diagnosed by PCR	COVID-19 positive vs negative by PCR	Preeclampsia or hypertension in pregnancy, gestational diabetes, stillbirth, ICU admission, PROM, cesarean delivery, postpartum hemorrhage, preterm birth, SGA, gestational age at delivery, birth weight, NICU admission
Jenabi 2021 ¹⁵	Iran	Case-control	90	Pregnant women	SARS-CoV-2 infection diagnosed by PCR	Symptomatic vs asymptomatic COVID-19	Preeclampsia, cesarean delivery, preterm birth, low birth weight, gestational age at delivery, neonatal death

Jering 2021 ¹⁶	United States	Retrospective cohort	406,446	Pregnant women	SARS-CoV-2 infection was identified by ICD-10 code	COVID-19 vs no COVID-19 by ICD-10 code	Preeclampsia, gestational diabetes, cesarean delivery, preterm birth, stillbirth, ICU admission
Kayem 2020 ¹⁷	France	Retrospective cohort	617	Pregnant women	SARS-CoV-2 infection diagnosed by PCR	Severe vs mild	Pregnancy loss, cesarean delivery, preterm birth, NICU admission
Khoury 2020 ¹⁸	United States	Prospective cohort	241	Pregnant women	SARS-CoV-2 infection diagnosed by PCR	Symptomatic vs asymptomatic; severe vs mild	Cesarean delivery, preterm birth
Knight 2020 ¹⁹	United Kingdom	Prospective cohort	1,121	Pregnant women	SARS-CoV-2 infection diagnosed by PCR	COVID-19 vs control before pandemic	Pregnancy loss, stillbirth, neonatal death, gestational diabetes, cesarean delivery, preterm birth, NICU admission
Li 2020 ²⁰	China	Case-control	137	Pregnant women	SARS-CoV-2 infection diagnosed by PCR	COVID-19 vs control before pandemic	Cesarean delivery, fetal distress, preterm birth, gestational age at birth, low birth weight, birth weight
Liu 2020 ²¹	China	Retrospective cohort	31	Pregnant women	SARS-CoV-2 infection diagnosed by PCR	COVID-19 vs healthy control	Gestational diabetes, gestational hypertension, chorioamnionitis, cesarean delivery, SGA, birth weight
London 2020 ²²	United States	Retrospective cohort	88	Pregnant women	SARS-CoV-2 infection diagnosed by PCR	COVID-19 symptomatic vs asymptomatic	Preeclampsia, cesarean delivery, preterm birth, postpartum hemorrhage
Maraschini 2020 ²³	Italy	Prospective cohort	146	Pregnant women	SARS-CoV-2 infection diagnosed by PCR	COVID-19 pneumonia vs no pneumonia	Cesarean delivery, preterm premature rupture of membranes, gestational age, ICU admission, respiratory support, low birth weight, NICU admission
Martinez-Perez 2020 ^{24*}	Spain	Prospective cohort	1,009	Pregnant women	SARS-CoV-2 infection	COVID-19 positive vs negative by PCR	Preeclampsia, stillbirth, cesarean delivery, ICU admission, preterm

					diagnosed by PCR		birth, gestational age, NICU admission
Martinez-Perez 2020 ²⁵	Spain	Prospective cohort	82	Pregnant women	SARS-CoV-2 infection diagnosed by PCR	Severe vs mild	Preterm birth, premature rupture of membranes, NICU, birth weight
Mendoza 2020 ²⁶	Spain	Prospective cohort	42	Pregnant women	SARS-CoV-2 infection diagnosed by PCR	Severe vs mild	Preeclampsia, gestational age
Nayak 2020 ²⁷	India	Retrospective cohort	977	Pregnant women	SARS-CoV-2 infection diagnosed by PCR	COVID-19 positive vs negative by PCR	Pregnancy loss, maternal death, hemorrhage, gestational age, cesarean delivery, maternal death, NICU admission
Panagiotakopoulos 2020 ²⁸	United States	Prospective cohort	105	Pregnant women	SARS-CoV-2 infection identified by ICD-10	COVID-19 hospitalization vs obstetric hospitalization	Gestational hypertension, gestational diabetes, ICU admission, mechanical ventilation
Patberg 2020 ²⁹	United States	Retrospective cohort	133	Pregnant women	SARS-CoV-2 infection diagnosed by PCR	COVID-19 positive vs negative by PCR	Preeclampsia, gestational diabetes, cesarean delivery, NICU admission
Pineles 2020 ³⁰	United States	Retrospective cohort	935	Pregnant women	SARS-CoV-2 infection diagnosed by PCR	COVID-19 positive vs negative by PCR	Cesarean delivery, preterm birth admission, birth weight, ICU or NICU admission
Pirjani 2020 ³¹	Iran	Prospective cohort	199	Pregnant women	SARS-CoV-2 infection diagnosed by PCR	COVID-19 vs control	Stillbirth, preeclampsia, gestational diabetes, PROM, cesarean delivery, postpartum hemorrhage, IUGR, preterm birth, low birth weight, birth weight, NICU admission
Prabhu 2020 ³²	United States	Prospective cohort	675	Pregnant women	SARS-CoV-2 infection diagnosed by PCR	COVID-19 positive vs negative by PCR; symptomatic vs asymptomatic	Gestational hypertension, gestational diabetes, ICU admission, cesarean delivery, preterm birth, postpartum hemorrhage

Rios-Silva 2020 ³³	Mexico	Retrospective cohort	1664	Pregnant women	SARS-CoV-2 infection diagnosed by PCR	COVID-19 positive vs negative by PCR	ICU admission, maternal mortality
Sakowicz 2020 ³⁴	United States	Retrospective cohort	1,418	Pregnant women	SARS-CoV-2 infection diagnosed by PCR	COVID-19 positive vs negative by PCR; symptomatic vs asymptomatic	Gestational diabetes, living neonates
Savasi 2020 ³⁵	Italy	Prospective cohort	77	Pregnant women	SARS-CoV-2 infection diagnosed by PCR	Severe vs mild	Cesarean delivery, preterm birth, postpartum hemorrhage
Smithgall 2020 ³⁶	United States	Retrospective cohort	76	Pregnant women	SARS-CoV-2 infection diagnosed by PCR	COVID-19 positive vs negative by PCR; symptomatic vs asymptomatic	Cesarean delivery, gestational age at delivery, preterm birth
Verma 2020 ³⁷	United States	Retrospective cohort	149	Pregnant women	SARS-CoV-2 infection diagnosed by PCR	COVID-19 symptomatic vs asymptomatic	Gestational hypertension, gestational diabetes, cesarean delivery, preterm delivery
Vivanti 2020 ³⁸	France	Retrospective cohort	100	Pregnant women	SARS-CoV-2 infection diagnosed by PCR	COVID-19, severe vs mild	Miscarriage, stillbirth, induced labor, preeclampsia, cesarean delivery, gestational age, NICU
Wang 2020 ³⁹	United States	Retrospective cohort	813	Pregnant women	SARS-CoV-2 infection diagnosed by PCR	COVID-19 positive vs negative	Preeclampsia, intraamniotic infection, cesarean delivery, preterm birth, ICU admission
Woodworth 2020 ⁴⁰	United States	Prospective cohort	2,691	Pregnant women	SARS-CoV-2 infection diagnosed by PCR	COVID-19 positive vs negative by PCR; Symptomatic vs asymptomatic COVID-19	Pregnancy induced hypertension, gestational diabetes, ICU admission, cesarean delivery, pregnancy loss, preterm birth, NICU admission
Yang 2020 ⁴¹	China	Retrospective cohort	11,078	Pregnant women	SARS-CoV-2 infection	COVID-19 positive vs control (early pandemic:	Preeclampsia, gestational diabetes, miscarriage, cesarean delivery, preterm birth

					diagnosed by PCR	asymptomatic; after Feb 04, negative by PCR)	
Yazihan 2020 ⁴²	Turkey	Case-control	187	Pregnant women	SARS-CoV-2 infection diagnosed by PCR	COVID-19 positive vs healthy control	Preeclampsia, gestational diabetes, miscarriage, preterm birth
Zhang 2020 ⁴³	China	Retrospective cohort	61	Pregnant women	SARS-CoV-2 infection diagnosed by PCR	COVID-19 vs no COVID-19	Preeclampsia, gestational diabetes, preterm premature rupture of membranes, fetal distress, preterm birth, neonatal respiratory distress

Note: ICU = intensive care unit, IUGR = intrauterine growth restriction, NICU = neonatal intensive care unit, PPH = postpartum

hemorrhage, PROM = premature rupture of membranes, PCR = polymerase chain reaction.

*Martinez Perez 2020²⁴ was preprint study.

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