

Supplemental Online Content

Villar J, Ariff S, Gunier RB, et al. Maternal and neonatal morbidity and mortality among pregnant women with and without COVID-19 infection: the INTERCOVID multinational cohort study. *JAMA Pediatr*. Published online April 22, 2021. doi:10.1001/jamapediatrics.2021.1050

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This supplemental material has been provided by the authors to give readers additional information about their work.

eBox. Real Time Polymerase Chain Reaction (antigen) tests and antibody tests for SARS-Cov-2 used in the participating centers

Real time PCR tests	Antibody tests
<ul style="list-style-type: none"> • Abbott realtime SARS-Cov-2 • Altona diagnostics RealStar SARS-CoV-2 RT-PCR • Aptima SARS-COV-2 Assay • Argene SARS-CoV-2 R-gene • BioFire® Respiratory 2.1 Panel with SARS-CoV-2 • Biozym BMS Magnetic induction cycler RT-PCR • Boshpore Novel Coronavirus (2019-NCOV) detection kit • Cepheid Xpert Xpress SARS-COV-2 • Dan Gene RT-PCR • DNA-Technology Research & Production LLC Russia SARS-CoV-2/SARS-CoV Multiplex RT-PCR • EUROIMMUN AG EURORealTime SARS-CoV-2 • GeneFinder COVID-19 Plus RealAmp Kit • Hologic SARS-CoV-2 Real-time RT-PCR assay • Liferiver SARS-CoV-2 E gene, N gene, ORF1ab gene • Roche SARS-CoV-2 RNA PCR • Sansure MA6000 • SD Biosensor Standard Q COVID-19 Antigen • Seegene Allplex 2019-nCoV Assay • Simplexa COVID-19 Direct kit • TaqPath 1-Step RT-qPCR Master Mix 	<ul style="list-style-type: none"> • Abbott SARS-Cov-2 IgG • Canea rapid IgG and IgM antibodies serology kits • DiaSorin Liaison SARS-CoV-2 S1/S2 IgG • EUROIMMUN Anti-SARS-CoV-2 ELISA (IgG) • Healgen COVID-19 Antibody Rapid Detection Kit • Roche COVID-19 antibody test • SD Biosensor Standard Q COVID-19 IgM/IgG Duo • Shenzhen YHLO Biotech Co, Ltd SARS-CoV-2 antibodies IgM and IgG CLIA kits • Vircell ELISA SAR IgM+IgA • Vircell ELISA SARS-CoV-2 IgG • Wondfo One Step COVID-19 rapid test • Zydus Cadila IgG Kit

eTable 1. Baseline characteristics among women with and without Covid-19 diagnosis

	Women with Covid-19 diagnosis (n=706)	Women without Covid-19 diagnosis (n=1424)
<i>Demographic and Socioeconomic Characteristics</i>		
Maternal age, years	30.0 ± 6.1	30.4 ± 6.1
Maternal height, cm	161.3 ± 7.6	161.3 ± 7.8
Maternal weight, kg	67.2 ± 15.8	65.2 ± 16.0
Body mass index, kg/m ²	25.8 ± 5.8	25.0 ± 5.8
Lowest hemoglobin, <27 weeks' gestation (g/dl)	11.3 ± 1.3	11.5 ± 1.4
Years of formal education	12.9 ± 4.0	12.9 ± 4.3
Worked outside the home	51.5%	51.6%
Smoker during index pregnancy	2.9%	3.8%
Alcohol (≥1 units/week)	1.8%	2.1%
Recreational drugs	2.8%	1.4%
Married or cohabiting	87.6%	88.7%
<i>Gynecological and Obstetric History</i>		
Hormonal contraceptives/ breastfeeding (2 months before pregnancy)	4.8%	4.6%
Fertility treatment	6.4%	6.3%
Previous pregnancy	66.8%	70.9%
Previous miscarriage	31.8%	31.1%
Previous birth	59.8%	54.6%
Previous baby <2.5kg or >4.5kg	8.7%	7.5%
Previous baby <37 weeks' gestation	7.2%	5.7%
Previous stillbirth or neonatal death	5.5%	3.3%
<i>Pre-existing medical conditions</i>		
Diabetes	4.7%	1.4%
Overweight (BMI ≥ 25 kg/m ²)	48.6%	40.2%
Thyroid and other endocrine	10.6%	9.2%
Cardiac disease	1.3%	1.9%
Hypertension	3.7%	2.1%
Chronic respiratory disease	3.5%	2.6%
Kidney disease	0.7%	1.1%
Malaria	1.6%	1.5%
Tuberculosis	0.4%	0.2%
Two or more of the above conditions	4.2%	2.1%

Abbreviations: BMI, body mass index.

eTable 2. Comparisons of unadjusted and fully adjusted models for maternal and neonatal outcomes

Outcome	Unadjusted		Adjusted ^a	
	N	RR (95% CI)	N	RR (95% CI)
MMMI ^b	2101	1.53 (1.32, 1.78)	1956	1.49 (1.28, 1.74)
SNMI ^c	2131	2.69 (1.72, 4.20)	1983	2.50 (1.57, 3.99)
SPMMI ^d	2156	2.15 (1.67, 2.77)	2007	2.13 (1.64, 2.77)
Preterm birth	2094	1.66 (1.37, 2.01)	1947	1.65 (1.36, 2.01)
Preeclampsia/eclampsia/HELLP	2094	1.89 (1.34, 2.67)	1955	1.80 (1.25, 2.59)

Abbreviations: RR, relative risk; CI, confidence interval; MMMI, Maternal morbidity and mortality index; SPMMI, Severe perinatal morbidity and mortality index; SNMI, Severe neonatal morbidity index.

^aAdjusted models include maternal age, marital status, smoking and drug use during pregnancy, overweight status, and previous history of morbidity (including diabetes, thyroid and other endocrine disorders, cardiac disease, hypertension, chronic respiratory disease, kidney disease, malaria, or tuberculosis).

^bMaternal morbidity and mortality index includes at least one of the following complications during pregnancy: vaginal bleeding, pregnancy-induced hypertension, preeclampsia, eclampsia, HELLP (hemolysis, elevated liver enzymes, low platelet count), preterm labor, or infections requiring antibiotics; or maternal death, admission to intensive care unit, or referral for higher dependency care.

^cSevere neonatal morbidity index includes at least one of the following morbidities: bronchopulmonary dysplasia, hypoxic-ischemic encephalopathy, sepsis, anemia requiring transfusion, patent ductus arteriosus, intraventricular hemorrhage, necrotizing enterocolitis, or retinopathy of prematurity.

^dSevere perinatal morbidity and mortality index includes any of the morbidities listed in the Severe neonatal morbidity index; or intrauterine or neonatal death, or NICU stay ≥ 7 days.

eTable 3. Distribution and duration of symptoms at the time of enrolment among women with Covid-19 diagnosis

	Covid-19 'diagnosed' women (n=706)	Symptom duration (days)
	N (%)	Median (IQR)
Chest pain	20 (2.8%)	2.5 (2 – 6)
Diarrhea/vomiting	48 (6.8%)	2 (1 – 5)
Limb or joint pain	50 (7.1%)	3 (2 – 7)
Sore throat	74 (10.5%)	3 (2 – 5)
Flu-like symptoms	80 (11.3%)	6 (2.5 – 8)
Runny nose	80 (11.3%)	3 (2 – 7)
Breathlessness	89 (12.6%)	3 (2 – 6)
Headache	91 (12.9%)	3 (2 – 5)
Tiredness/lethargy	110 (15.6%)	5 (2 – 8)
Loss of smell	120 (17.0%)	7 (3 – 10)
Fever	199 (28.2%)	3 (1 – 5)
Cough	241 (34.1%)	5 (2 – 7)
One symptom	69 (9.8%)	-
Two symptoms	135 (19.1%)	-
Three or more symptoms	214 (30.3%)	-
Asymptomatic ^a	288 (40.8%)	-

^aAsymptomatic women with Covid-19 diagnosis.

eTable 4. Associations between Covid-19 symptom duration and maternal and neonatal outcomes among women with and without COVID-19 diagnosis and their newborns

	N	MMMI ^a		SNMI ^b		SPMMI ^c		Preterm birth		Pre-eclampsia/ Eclampsia/HELLP	
		RR	95% CI	RR	95% CI	RR	95% CI	RR	95% CI	RR	95% CI
Days with any symptom^d											
No Covid-19 diagnosis	1424 (66.9)	Ref		Ref		Ref		Ref		Ref	
Covid-19 diagnosis, 0 days	288 (13.5)	1.29	(1.04, 1.60)	1.35	(0.65, 2.80)	1.25	(0.82, 1.90)	1.22	(0.91, 1.63)	1.74	(1.09, 2.78)
Covid-19 diagnosis, 1-4 days	130 (6.1)	1.36	(1.01, 1.83)	4.45	(2.40, 8.25)	2.29	(1.49, 3.51)	1.90	(1.37, 2.64)	1.85	(0.97, 3.52)
Covid-19 diagnosis, 5-10 days	103 (4.8)	1.95	(1.51, 2.53)	2.93	(1.33, 6.48)	2.43	(1.57, 3.77)	1.53	(1.03, 2.30)	2.46	(1.34, 4.52)
Covid-19 diagnosis, 11+ days	185 (8.7)	1.80	(1.46, 2.23)	3.39	(1.83, 6.27)	3.29	(2.40, 4.51)	2.27	(1.76, 2.93)	1.84	(1.07, 3.17)
Days with respiratory symptoms^{d,e}											
No Covid-19 diagnosis	1424 (66.9)	Ref		Ref		Ref		Ref		Ref	
Covid-19 diagnosis, 0 days	371 (17.4)	1.26	(1.03, 1.54)	1.88	(1.04, 3.37)	1.38	(0.97, 1.99)	1.26	(0.97, 1.64)	1.80	(1.17, 2.75)
Covid-19 diagnosis, 1-4 days	154 (7.2)	1.61	(1.26, 2.07)	3.95	(2.16, 7.22)	2.61	(1.79, 3.79)	1.82	(1.34, 2.48)	1.54	(0.81, 2.93)
Covid-19 diagnosis, 5-10 days	93 (4.4)	2.01	(1.56, 2.62)	4.49	(2.19, 9.21)	3.91	(2.70, 5.66)	2.41	(1.74, 3.32)	2.43	(1.29, 4.58)
Covid-19 diagnosis, 11+ days	88 (4.1)	2.02	(1.55, 2.64)	1.92	(0.69, 5.30)	2.67	(1.71, 4.16)	2.29	(1.63, 3.22)	2.31	(1.19, 4.50)

Abbreviations: RR, relative risk; CI, confidence interval; MMMI, Maternal morbidity and mortality index; SNMI, Severe neonatal morbidity index; SPMMI, Severe perinatal morbidity and mortality index.

^aMaternal morbidity and mortality index includes at least one of the following complications during pregnancy: vaginal bleeding, pregnancy-induced hypertension, pre-eclampsia, eclampsia, HELLP (hemolysis, elevated liver enzymes, low platelet count), preterm labor, or infections requiring antibiotics; or maternal death, admission to intensive care unit, or referral for higher dependency care.

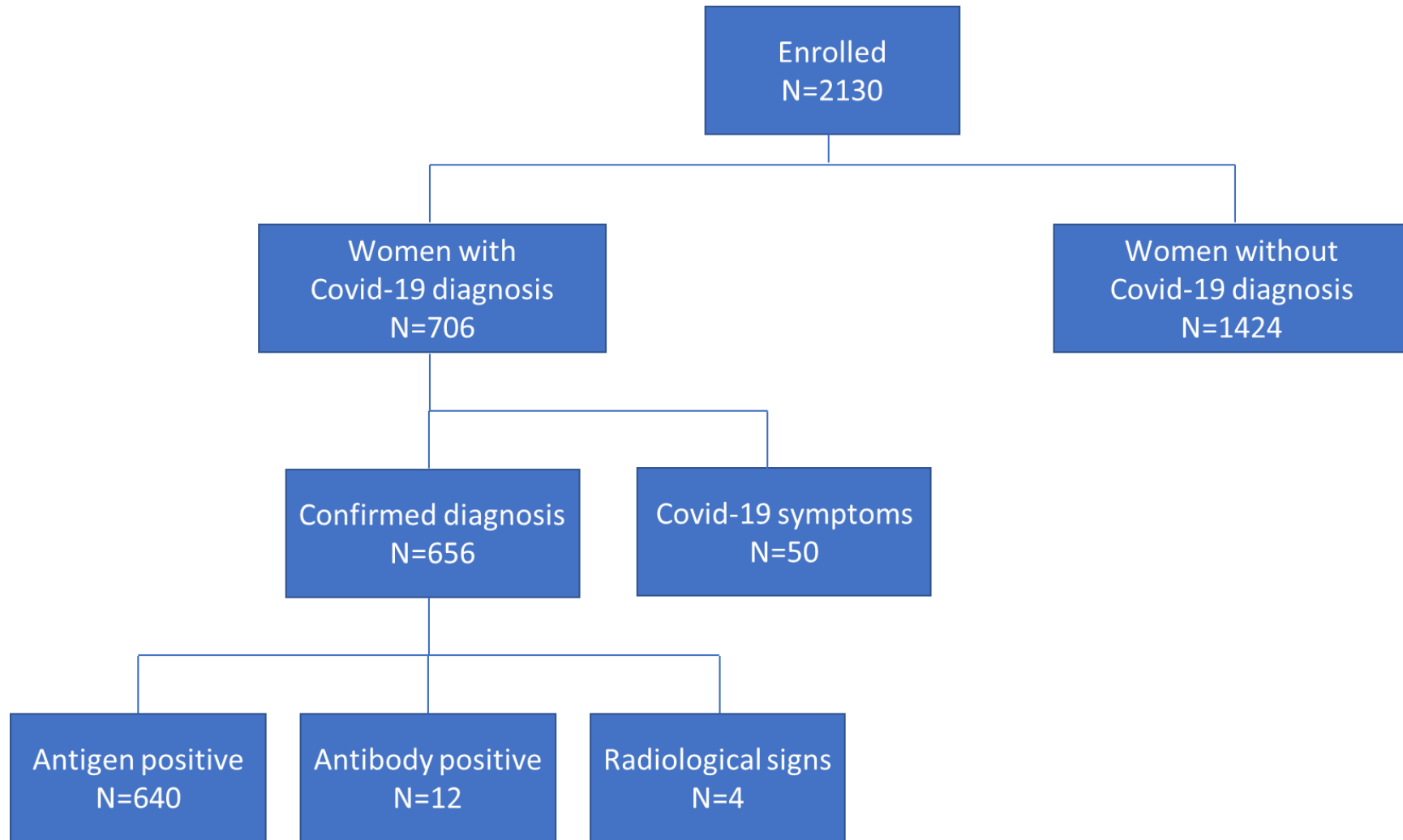
^bSevere neonatal morbidity index includes at least one of the following morbidities: bronchopulmonary dysplasia, hypoxic-ischemic encephalopathy, sepsis, anemia requiring transfusion, patent ductus arteriosus, intraventricular hemorrhage, necrotizing enterocolitis, or retinopathy of prematurity.

^cSevere perinatal morbidity and mortality index includes any of the morbidities listed in the Severe neonatal morbidity index; or intrauterine or neonatal death, or neonatal intensive care unit stay of ≥ 7 days.

^dNumber of days with symptoms estimated by summing the number of days mothers had each symptom.

^eRespiratory symptoms include fever, shortness of breath, chest pain, and cough.

eFigure. Enrollment and Covid-19 ‘exposure’ status for women participating in the INTERCOVID Study



Covid-19 diagnosis was defined as a) a positive test for Covid-19 antigens or antibodies, b) radiological signs suggestive of Covid-19, or c) displaying ≥ 2 symptoms. The country contribution ranged from 20.4% (Italy, n=434) to 0.14% (Northern Macedonia, n=3, and Switzerland, n=3). The other sites contributed 10.4% USA (n=222), 9.8% Pakistan (n=210), 8.5% Argentina (n=180), 8.2% Mexico (n=174), 6.9% India (n=147), 6.9% France (n=146), 5.5% UK (n=116), 5.1% Russia (n=108), 4.8% Spain (n=102), 4.4% Brazil (n=93), 3.7% Nigeria (n=78), 2.7% Indonesia (n=57), 1.7% Ghana (n=36), 0.6% Japan (n=12), and 0.4% Egypt (n=9), respectively. The median gestational age at the first ultrasound evaluation was 12 weeks (interquartile range (IQR) 10.1-16.3).

eAppendix 1. Non-Author Contributors

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Adele Winsey and Rachel Craik were supported by the Covid-19 Research Response Fund from the University of Oxford (Ref 0009083). Other contributors listed above did not receive any compensation.

eAppendix 2. Contributors and Members of the International Study on the Effects of Covid-19 in pregnancy on maternal and newborn outcomes in the INTERGROWTH-21st global network (The INTERCOVID Study)

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