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GLOBAL SYSTEMATIC REVIEW AND META-ANALYSIS OF FOETAL AND MATERNAL OUTCOMES IN PREGNANT WOMEN INFECTED WITH COVID-19

***Puneet*[1] , Poh Omasyarifa Binti Jamal[2]**

[1,2] Kursk State Medical University, Department of Obstetrics and Gynaecology

Abstract: This study aimed to systematically review the effects of COVID-19 infection on pregnant women and their neonatal outcomes in eight countries: UK, USA, China, France, India, Russia, Italy, and Iran. Data from various registries worldwide were analyzed, focusing on preterm births, maternal and neonatal mortality rates, and mode of delivery. The results showed that all countries experienced a significant increase in preterm birth rates among COVID-19-infected pregnant women compared to non-infected pregnant women. No significant difference was observed in maternal mortality rates across the countries, but India had the highest neonatal mortality rate. The rate of vertical transmission from infected mothers in the third trimester to their infants was estimated at 3.2%. In conclusion, COVID-19 has the most significant impact on the increase of preterm birth rates, with India experiencing the highest neonatal mortality rate compared to the other country.

Relevance: COVID-19 has been centre of attention since 2019 after affecting 758,390,564 lives [13]. How does it reflect on pregnant women. How significant is the impact on prenatal and intrapartum outcomes.

Aim - to systematically review, the effect of COVID-19 infection in pregnant women in the United Kingdom (UK), United States of America (USA), China, France, India, Russia, Italy and Iran. To analyse, compare and evaluate the maternal and neonatal outcomes focusing on preterm births, maternal and neonatal mortality rates and mode of delivery.

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Materials and methods. Multiple databases of various registries worldwide of pregnant women infected with COVID-19, including, UKOSS, AAPSOPM, YIIGLE, PREGCOVID, and ItOSS, France, Russia, and Iran from the time frame of first quarter of the year 2019 and 2023. Comparing it with non-infected pregnant women within the same period. Maternal; comorbidities, signs and symptoms, outcomes, neonatal outcomes; preterm births, stillbirths, and the mode of delivery; vaginal delivery, Caesarean section. (Table 1).

Table 1 – Outcomes comparison

Countries		**UK**	**USA**	**China**	**France**	**India**	**Russia**	**Italy**	**Iran**
Number of cases		651	2399	16	617	4203	8485	47	55
Maternal symptoms	Asymptomatic	0	1820	-	0	3669	2333	4	-
	Fever	134	195	4	285	339	-	31	38
	Cough	130	0	4	384	271	-	30	32
	Dyspnoea	77	0	1	165	110	-	15	22
Maternal mortality		3	4	0	1	34	12	0	-
Pregnancy outcome	Live birth	631	2431	14	-	-	-	47	-
	Intrauterine death/Stillbirth	4	10	0	-	99	31	1	1
Preterm Births	COVID-19 **+ve**	100	382	-	50	528	1553	0	5
		12,0%	15,7%	-	8,1%	12,5%	18,3%	0%	9%
	COVID-19 **-ve**	7.4%	10.2%	6.9%	7.5%	8-18%	5.6%	6.9%	10%
COVID-19 +ve neonates		13	44	10	2	169	148	0	-

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Quality assessment was analysed using random-effects models. The studies' sample sizes ranged from 16 to 8485 participants, and the study designs included retrospective, prospective, and cross-sectional studies.

Results. Maternal mortality: India with the highest maternal mortality of 0,008% [7] among COVID-19 infected pregnant women, followed by UK showed 3 (0,004%) [5], USA 4 (0,0016%) [6], France 1 (0,0016%) mortality [6], Russia 12 (0,0014%) [1], China, Iran and Italy with no maternal mortalities [3,11,12]. The average was 0.0018% ranging from 0 to 0,008%.

Neonatal mortality: India also recorded the highest occurrence of 0,23% [7], UK 4 (0,006%) [5], USA 10 (0,004%) [6], Italy and Iran with 1 incidence each (0,02%) and (0,018%) respectively [11,12], Russia 31 (0,003%) [1], China and France showed no neonatal mortalities [3,6]. The average rate was 0.0098%.

Preterm birth All countries showed a significant increment in the rates comparing non-infected pregnant women (NC) to COVID-19 infected women (C). In the UK from NC 7,4% [5] to C 12%, USA from NC 10,2% [4] to C 15,7%, France from NC 7,5 [8] to C 8,1%, India from NC 8% [10] to C 12%, Russia from NC 5,6% to C 18,3%, Iran from NC 10%[12] to C 9%, and Italy from NC 6,9[11] to 14,8%[14].

Mode of delivery: 60% cases of caesarean section but none were COVID-19 related indication. [5]

Vertical Transmission The evidence to suggest vertical transmission of COVID-19 from mother to foetus is still inconclusive. The reviewed studies reported conflicting results regarding the presence of SARS-CoV-2 virus in the placenta, amniotic fluid, cord blood, and neonatal throat swabs. A study found that the rate of vertical transmission from COVID-19 infected mothers in the third trimester to their infants was 3.2% (95% CI, 2.2-4.3) [2]

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Conclusion: COVID-19 has the most significant impact on increment of preterm birth rates. No significant difference with the maternal mortality rate between the countries. India has the highest neonatal mortality rate compared to the other countries.

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