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Obstetrics

The tragedy of COVID-19 in Brazil: 124 maternal deaths and counting

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1 | INTRODUCTION

Initial reports at the onset of the COVID-19 pandemic indicated that the obstetric population did not appear to be at higher risk of developing severe symptoms of COVID-19 than the general population.[1] However, following recent publications showing that pregnancy and the postpartum period might indeed pose additional risks for both women and babies, these preliminary observations urgently require review.[2] Explanations for heightened risk may include relative immunodeficiency associated with maternal physiological adaptations, as well as organic response to virus infections.

The present study aims to describe outcomes for pregnant and postpartum women with COVID-19 disease from the first documented case in Brazil on February 26, 2020 until June 18, 2020 using the Brazilian Ministry of Health's Acute Respiratory Distress Syndrome (ARDS) Surveillance System. According to Brazilian ethics regulatory requirements, literature search and secondary analysis of publicly available anonymized data do not require ethical approval by an Institutional Review Board.

ARDS caused by COVID-19 was diagnosed in 978 pregnant and postpartum women in Brazil during the study period. Brazil currently has no universal testing policy for the obstetric population. Since only women presenting with severe symptoms are tested, it is certain that the number of COVID-19 infections in this population is underreported. The present study found 124 deaths of pregnant or postpartum women (Table 1), a figure which is 3.4 times higher than the total number of COVID-19-related maternal deaths reported throughout the rest of the world at the time of writing.[3–7] The current mortality rate is 12.7% in the Brazilian obstetric population, which is also higher than rates reported so far in the literature.[3,4,7] Notably, the mortality rate was higher for cases identified in the postpartum period than during pregnancy, likely reflecting the onset timing of COVID-19 symptoms.

Brazil's elevated COVID-19 mortality rate in pregnant women and women in the postpartum period might have several explanations. In Brazil, obstetric care is beset by chronic problems that can affect maternal and perinatal outcomes, such as poor quality antenatal care, insufficient resources to manage emergency and critical care, racial disparities in access maternity services, obstetric violence, and the pandemic poses additional barriers for access to health care. Additionally, the rate of cesarean sections is among the highest in the world and questions remain regarding the increased risk of postoperative morbidity and mortality for patients with COVID-19 undergoing surgery.[8]

Our findings identified diabetes, cardiovascular disease, and obesity as significant conditions associated with mortality in the obstetric population, similar to the general population (Table 1). Of the 978 positive cases, 207 (21.2%) were admitted to ICU (134 recovered cases and 73 fatal cases) It is noteworthy that 22.6% of the women who died were not admitted to the ICU, and only 64.0% had invasive ventilation. No ventilatory support was offered

TABLE 1 Characteristics of Brazilian COVID-19 obstetric cases according to the outcome (recovery or death) (n = 978).

	Recovery		Death		*p*-value[b]
	n	%	n	%	
Total	854	87.3	124	12.7	–
Age—mean (SD)	29.5 (6.9)		31.5 (7.5)		–
Timing in relation to birth (at notification date)					
Pregnancy	680	90.2	74	9.8	<0.001
Postpartum	174	77.7	50	22.3	
Race					
White	212	90.2	23	9.8	0.116
Non-white	440	86.1	71	13.9	
Missing/Unknown	202	87.1	30	12.9	
Region					
North	116	84.7	21	15.3	0.032
Northeast	245	83.9	47	16.1	
Midwest	32	97.0	1	3.0	
Southeast	426	88.6	55	11.4	
South	35	100.0	0	0.0	
Prevalence of selected comorbidities					
Cardiovascular disease					
Yes	41	6.7	13	16.3	0.002
No	573	93.3	67	83.7	
Missing/Unknown (%)[a]	28.1		35.5		
Diabetes (gestational or previous)					
Yes	67	20.8	22	33.8	0.023
No	255	79.2	43	66.2	
Missing/Unknown (%)[a]	62.3		47.6		
Obesity					
Yes	31	10.3	13	21.3	0.016
No	270	89.7	48	78.7	
Missing/Unknown (%)[a]	64.8		50.8		
Asthma					
Yes	18	5.9	5	9.3	0.360
No	285	94.1	49	90.7	
Missing/Unknown (%)[a]	64.5		56.5		
Frequency of supportive care					
ICU admission					
Yes	134	17.5	73	72.3	<0.001
No	630	82.5	28	27.7	
Missing/Unknown (%)[a]	10.5		18.5		
Respiratory support					
Invasive	32	4.4	66	64.0	<0.001
Non-invasive	197	27.1	22	21.4	
None	497	68.5	15	14.6	
Missing/Unknown[a]	15.0		16.9		

[a]Missing/unknown percentages refers to the number of cases with missing values or coded as unknown among the total number of cases in each row (854 cure and 124 death cases).
[b]Chi-square test.

to 14.6% of all fatal cases, while the remaining 21,4% received non-invasive ventilation only. Failure to adequately report these variables in the surveillance system cannot be ruled out due to its retrospective nature. The data seem to reflect that obstetric patients may face barriers to access ventilators and intensive care. This is not a novel issue within the Brazilian healthcare system and it is aggravated by the COVID-19 pandemic; shortage of healthcare providers and lack of intensive care resources are well-described chronic challenges in Brazilian maternity services.[9] A similar observation was described in Mexico: of seven reported maternal deaths, only two were admitted to an ICU and one received mechanical ventilation.[5] So far, the number of maternal deaths due to COVID-19 represents almost 10% of overall annual maternal deaths in Brazil. Contingency actions focused on maternal health are urgently needed to improve both antenatal care and access to intensive care for pregnant and postpartum women.

AUTHOR CONTRIBUTIONS

MLST, MOM, CBA, MNP, MMRA, LK, and RK equally contributed to study conception and design, data collection, analysis, and interpretation. MLST, MOM, RK, and CBA wrote the first draft of the paper. All authors reviewed and approved the final manuscript.

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CONFLICTS OF INTEREST

The authors have no conflicts of interest.

REFERENCES

1. Chen N, Zhou M, Dong X, Qu J, Gong F, Han Y, et al. Epidemiological and clinical characteristics of 99 cases of 2019 novel coronavirus pneumonia in Wuhan, China: a descriptive study. *Lancet*. 2020;395:507–13.
2. Westgren M, Pettersson K, Hagberg H, Acharya G. Severe maternal morbidity and mortality associated with COVID-19: The risk should not be downplayed. *Acta Obstet Gynecol Scand*. 2020;99:815–6.
3. Knight M, Bunch K, Vousden N, et al. Characteristics and outcomes of pregnant women hospitalised with confirmed SARS-CoV-2 infection in the UK a national cohort study using the UK Obstetric Surveillance System (UKOSS). *BMJ*. 2020;369:m2107.
4. Kayem G, Alessandrini V, Azria E, et al. A snapshot of the Covid-19 pandemic among pregnant women in, France. *J Gynecol Obstet Hum Reprod*. 2020:1–5.
5. Lumbreras-Marquez MI, Campos-Zamora M, Lizaola-Diaz de Leon H, Farber MK. Maternal mortality from COVID-19 in Mexico. *Int J Gynecol Obstet*. 2020;150:266–267.
6. Hantoushzadeh S, Shamshirsaz AA, Aleyasin A, et al. maternal death due to COVID-19 disease. *Am J Obstet Gynecol*. 2020;223:109.e1–109.e16.
7. Ellington S, Strid P, Tong VT, et al. Characteristics of women of reproductive age with laboratory-confirmed SARS-CoV-2 infection by Pregnancy Status — United States, January 22–June 7, 2020. *MMWR Morb Mortal Wkly Rep*. 2020;69:769–775.
8. Nahshon C, Bitterman A, Haddad R, Hazzan D, Lavie O. Hazardous postoperative outcomes of unexpected COVID-19 infected patients: A call for global consideration of sampling all asymptomatic patients before surgical treatment. *World J Surg*. 2020;44:2477–2481.
9. De Azevedo Bittencourt SD, Domingues RMSM, Da Costa Reis LG, Ramos MM, Do Leal C. Adequacy of public maternal care services in Brazil. *Reprod Health*. 2016;13:120.