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Adverse obstetric outcomes during Covid-19: a retrospective case series

Desfechos obstétricos adversos durante a Covid-19: uma série de casos retrospectiva

Resultados obstétricos adversos durante el Covid-19: serie de casos retrospectiva

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ABSTRACT

Objective: to analyze the characteristics and adverse obstetric outcomes in pregnant/puerperal women infected by SARS-CoV-2 at a reference service. **Method:** a retrospective case series conducted among pregnant women with Covid-19 in a university hospital from Minas Gerais, Brazil, treated at the service from 2020 to 2021. The cases were collected in April 2022 employing descriptive statistics for data analysis in the *Statistical Package for the Social Science*. **Results**: a total of 26 pregnant women were included, mostly white-skinned, whose main adverse obstetric outcomes were admission to the ICU (43.5%), premature birth (34.6%) and data restratified from weeks to days to investigate shortening of pregnancy, where a mean of 38.6 potential days of pregnancy were lost out of the ideal 280 days, and 15.4% resulted in maternal death. **Conclusion:** the study provided evidence of the need for surveillance and care for pregnant women with a focus on the main adverse outcomes, enabling timely intervention to reduce adversities.

Descriptors: COVID-19; Pregnancy; Pregnancy Complications; Postpartum Period; Maternal Death.

RESUMO

Objetivo: analisar as características e os desfechos obstétricos adversos em gestantes/puérperas infectadas pelo SARS-CoV-2 em serviço de referência. **Método:** série de casos retrospectiva entre gestantes com Covid-19 em um hospital universitário em Minas Gerais, Brasil, atendidas no serviço de 2020 a 2021, coletados em abril de 2022, empregando-se estatística descritiva para análise dos dados através do *Statistical Package for the Social Science*. **Resultados**: incluídas 26 gestantes, em sua maioria brancas, que tiveram como principais desfechos obstétricos adversos a internação em UTI (43,5%), parto prematuro (34,6%), dado reestratificado de semanas para dias para investigar o encurtamento da gestação, onde constatou-se média de 38,6 dias potenciais de gravidez perdidos dos 280 dias ideais, e ainda 15,4% evoluíram para óbito materno. **Conclusão:** o estudo proporcionou evidenciar a necessidade de vigilância e atenção às gestantes com foco nos principais desfechos adversos, podendo-se intervir em tempo oportuno para diminuir adversidades.

Descritores: COVID-19; Gravidez; Complicações na Gravidez; Período Pós-Parto; Morte Materna.

RESUMEN

Objetivo: analizar las características y resultados obstétricos adversos en gestantes/puérperas infectadas por SARS-CoV-2 en un servicio de referencia. **Método:** serie de casos retrospectiva entre gestantes con Covid-19 en un hospital universitario de Minas Gerais, Brasil, atendidas en el servicio de 2020 a 2021, los datos se recolectaron en abril de 2022, se utilizó estadística descriptiva para analizar los datos mediante el *Statistical Package for the Social Science*. **Resultados:** se incluyeron 26 gestantes, la mayoría de raza blanca, cuyos principales resultados obstétricos adversos fueron ingreso a UCI (43,5%), parto prematuro (34,6%), dato reestratificado de semanas a días para investigar el acortamiento de la gestación, que arrojó como resultado un promedio de 38,6. Se comprobó que se perdieron en promedio 38,6 días potenciales de embarazo de los 280 días ideales, y muerte materna (15,4%). **Conclusión:** la evidencia que proporcionó el estudio indica que es necesario vigilar y atender a las gestantes enfocándose en los principales resultados adversos, lo que permite intervenir de forma oportuna para reducir adversidades.

Descriptores: COVID-19; Embarazo; Complicaciones del Embarazo; Período Posparto; Muerte Materna.

INTRODUCTION

The disease caused by the SARS-Cov-2 (*Severe Acute Respiratory Syndrome Coronavirus 2*), or Covid-19, a respiratory condition similar to pneumonia[1], presents variable manifestations, from mild symptoms to respiratory failure[2].

Given the increase in the number of cases since the virus was discovered at the end of 2019, until it was declared as a pandemic in March 2020, attention was directed to immunologically vulnerable population groups such as immunocompromised people, the elderly and, later on, in mid-September 2020, the inclusion of pregnant and postpartum women included as a risk group is mentioned[3].

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The vulnerability of pregnant and puerperal women is explained by a series of factors, such as a physiological immunosuppressive state of adaptive changes[4], widely regulated hormonal expression, which affects the respiratory system[5,6] and prominent regulation of progesterone[7], which eases entry of the virus and hinders its exit due to changes in the respiratory mucosa6, culminating in increased susceptibility to deterioration of infections of any etiology[5,6]. Additionally, the mechanism of coronaviruses involves specific actions on the angiotensin 2 converter enzyme receptor[6], the virus entry receptor[6,8] and which has high expression during pregnancy, resulting in favoring viral invasion[6,8].

The outcomes related to infection in pregnant women include the following: maternal and fetal death; admission to adult and neonatal ICU; need for ventilatory support and blood transfusion; fetal distress; postpartum hemorrhage; emergency cesarean section; and premature birth[9,10]. In addition, prematurity (classified as births before the 37th gestational week[11]) was documented as one of the main outcomes, which aroused interest in clarifying the shortening of pregnancy, considering that each intrauterine day matters for adequate fetal development[12]. To this end, it was necessary to adjust the classification from weeks to days, as a new indicator called "potential days of pregnancy lost" (PDPLs)[12] which, although not directly associated with the virus, can contribute to more precise correlations about the impact of the disease on duration of pregnancy.

In addition to the greater risk in general, the presence of comorbidities such as hypertension, diabetes, high Body Mass Index (BMI), non-white race/skin color and advanced maternal age were configured as additional risk factors for the occurrence of severe Covid-19[13]. At the Brazilian level, there is added concern regarding the high number of black and brown-skinned women[14] in the population, which is an important characteristic due to reduced access to health services during the pandemic[14], the result of what is understood as structural racism.

Even with the increase in scientific publications on the adverse outcomes of Covid-19, gaps remain regarding the involvement of this population group in Brazil, especially considering the speculation that the virus presents discrepancies related to location[15] and, given the existence of regional inequalities, due to the increased incidence of comorbidities in areas with lower socioeconomic development[15] in terms of access to health, making the development of Brazilian studies with this focus essential. Faced with the uncertainties of the manifestations and effects of the disease added to the dissimilar epidemiological profile of death by country, the research problem was based on the following question: “Which are the characteristics and adverse obstetric outcomes of the Covid-19 infection during pregnancy?”.

To this end, the objective was to analyze the characteristics and adverse obstetric outcomes in pregnant/puerperal women infected by SARS-CoV-2 in a reference service.

METHOD

A quantitative case series study conducted with patients that tested positive for Covid-19 and which describes characteristics and outcomes among individuals with a common disease or exposure, assembling aggregated cases that portray the clinical course, with the differential characteristics of cohorts or control cases being non-comparison and the relatively small number of individuals[16].

Data collection took place in April 2022 at a public university hospital, chosen because it is a reference service for medium and high complexity in the Southeast Region, inland of Minas Gerais, Brazil. The study population retrospectively included all 26 pregnant women with a confirmed Covid-19 diagnosis in 2020 and 2021.

As for the sample, no statistical methods were used for predetermination, given that inclusion occurred with all cases of positive women. The inclusion criteria were as follows: pregnant women with a confirmed Covid-19 diagnosis using the RT-PCR Swab test, regardless of the gestational risk classification. The women that received the diagnosis using other laboratory or clinical criteria were excluded.

A review of all medical records of pregnant women treated in the specified time frame who met the eligibility criteria was carried out, when diverse information was collected on their sociodemographic characteristics, in addition to obstetric history and hospitalization due to Covid-19. To reduce the risk of bias, collection took place using a standardized instrument for all instances, created based on tools used in other epidemics[17-19], providing consistency in collection and also enabling selection control.

The instrument was prepared containing data on the participants' profile regarding age, race, schooling, marital status and origin. Of the obstetric variables, obstetric history with prenatal care, number of pregnancies, births and previous miscarriages, gestational risk, presence of comorbidities and details of which comorbidities and diseases developed in the current pregnancy were collected. Of the variables regarding the characterization of clinical data

Research Article
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referring to Covid-19, the following were addressed: presence and description of symptoms; hospitalization need and time; use of ventilatory support; type of support used; and the adverse outcomes that occurred. It is noted that a pilot test was carried out, readjusting ordering of the questions, with no significant changes, keeping the medical records collected during the test in the sample.

For data analysis, descriptive statistics were used in the *Statistical Package for the Social Science* program (IBM SPSS®). The central tendency measures were selected according to the type of variable. The quantitative and continuous demographic variables were expressed as mean and 95% confidence interval. The categorical variables were described with absolute and relative frequencies.

To describe the data, the absolute and relative frequencies of the data obtained were considered, considering the number of medical records completed for each variable of interest. For the missing data, the calculation of percentages was adjusted, accounting for missing data, with a total equivalent to 100% according to the number of data filled in for each variable.

The sociodemographic variables were age, race/ethnicity, schooling, marital status and origin. Regarding the obstetric variables, the following were considered: prenatal (PN) care; parity; gestational risk; comorbidities and diseases developed. The data regarding hospitalization included symptoms, hospitalization need for and time (routine or prolonged) and use of ventilatory support; in turn, for the “symptoms” and “type of ventilatory support used” variables, the number of filled-in data was counted for each of the levels, as there were cases of participants presenting more than one symptom during course of the disease and requiring more than one type of ventilatory support.

The variables concerning adverse outcomes were the following: need for ICU admission; septic shock; need for blood transfusion; respiratory sequelae; pre-eclampsia; emergency Cesarean section; and maternal, fetal and dyad death, as well as discharge and its conditions. In addition to that, childbirth was considered as an outcome, in contrast to the cases of emergency Cesarean section and its relationship with shortening of pregnancy.

To calculate the PDPLs, the Gestational Age (GA) at birth of the premature newborns was collected, considering the mean of 40 weeks as expected, corresponding to 280 complete days. With stratification of the indicator, the terms, which were previously called “early term” (from 37 0/7 to 38 6/7 weeks), “full term” (from 39 0/7 to 40 6/7 weeks) and “late or post-term” (from 41 0/7 to 41 6/7 weeks), are rearranged into term fractions with the following subdivisions: “pre-term (238 days)”; “late preterm” (from 245 to 259 days); “early term” (from 259 to 273 days); “term” (273 days); “full term” (280 days); “late term” (from 287 to 294 days); and “post-term” (after 294 days). This new stratification allowed for greater data granularity, as the greater the subdivision, the greater the detail of the data[12].

Regarding the ethical aspects, the research protocol was approved in 2021 by the Committee of Ethics in Research with Human Beings of the institution involved.

RESULTS

A total of 26 pregnant women positive for Covid-19 were identified, as chacacteristics described in Tables 1 and 2.

Table 1: Characterization of the sociodemographic profile of the pregnant women reported with Covid-19 at a reference hospital in 2021 and 2022. Minas Gerais, MG, Brazil, 2022.

Variables		n	f(%)
Age	Less than 35 years old	18	69.2
	More than 35 years old	8	30.8
Race	White	9	39.1
	Non-white	14	60.9
Schooling	Up to Incomplete High School	16	84.2
	Complete High School and higher	3	15.8
Marital status	With a partner	15	62.5
	Withou t a partner	9	37.5
Origin	From the city	11	42.3
	From outside the city	15	57.7

Research Article
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Table 2: Characterization of the obstetric profile of the pregnant women reported with Covid-19 at a reference hospital in 2021 and 2022. Minas Gerais, MG, Brazil, 2022.

Variables		n	f(%)
Attended prenatal care	Yes	23	88.5
	No	3	11.5
Parity	Primigravida	9	34.6
Pregnancies	Multigravida	17	65.4
Deliveries	Primiparous	10	55.6
	Multiparous	8	44.4
Miscarriages	With history of miscarriage	1	3.8
	Without history of miscarriage	25	96.2
Gestational risk	High	17	81
	Usual	4	19
Comorbidities	With comorbidities	9	50
	Without comorbidities	9	50
Comorbidities found	Diabetes	2	10.5
	Hypertension	3	17.6
	Others	4	22.2
Diseases developed	No	12	50.0
in pregnancy	Yes	12	50.0
Diseases developed	Hypertension	7	50.0
	Diabetes	4	28.6

The mean age was 30.69 years old (95% CI), varying from 19 to 43. Of the 23 women who had a record on race/skin color, we dichotomized the variable between “white” and “non-white” based on the analysis carried out, which resulted in 14 (60.9%) women considering themselves as non-white. In terms of schooling, of the 19 pregnant women with this information filled-in, 16 (84.2%) had Incomplete High School. In relation to marital status, of the 24 completed medical records, 15 (62.5%) reported living with a partner. As for their origin, this information was included in all the records studied, where 15 (57.7%) were from outside the municipality.

Regarding the obstetric history, 23 women (88.5%) underwent PN care. As for parity, pregnancy and miscarriage, they were dichotomized, obtaining that, of the 26 pregnant women: 17 (65.4%) were multigravida, with two or more previous pregnancies; 8 (44.4%) were multiparous; and 1 (3.8%) had a history of previous miscarriage. Regarding stratification of the gestational risk, of the 21 medical records filled out with this information, 17 pregnant women (81%) were classified as high risk and 4 (19%) as usual risk.

In relation to general health, presence or absence of previous comorbidities and diseases developed during pregnancy were considered. Regarding comorbidities, there were 18 completed medical records, with nine pregnant women (50%) not presenting comorbidities. Among those who had them, 3 (17.6%) were hypertensive, 2 (10.5%) diabetic and 4 (22.2%) had other diseases, of which there were three cases of obesity and one of Systemic Lupus Erythematosus. In relation to the diseases developed during pregnancy, 24 medical records were filled out, 7 (50%) of which were pregnant women with gestational hypertension and 5 (28.6%) with gestational diabetes.

The “symptoms” variable was identified as present in 20 (95.2%) medical records, where the most prevalent were cough (15 [71.4%]), dyspnea (10 [45.5%]), fever (8 [38.1%]), respiratory discomfort (6 [23.1%]); anosmia (5 [20.8%]), runny nose (4 [18.2%]), headache (3 [13.6%]), low saturation (3 [4.3%]), ageusia (2 [7.7%]), odynophagia (2 [7.7%]) and vomiting (2 [9.5%]). It is noted that there were cases of associations of more than one symptom and that a pregnant woman was asymptomatic.

Regarding hospitalization time, it is worth clarifying that pregnant women treated but discharged before 48 hours were considered “not admitted”, that those with a mean hospitalization of 48 hours were classified as “routine hospitalization” and that women who remained hospitalized for more than 48 hours were

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categorized as “prolonged hospitalization”. From this perspective, of the 23 completed medical records, 17 were hospitalized, of which 8 (47.1%) had prolonged hospitalization and 9 (52.9%) had routine hospitalization.

Concerning the care aspects during hospitalization, of 24 completed medical records, 17 (70.8%) used ventilatory support and 7 (29.2%) did not. The prevalent type of support was nasal catheter (10 [41.7%]), followed by non-invasive pressure-controlled ventilation (5 [20.8%]), oxygen (O_2) mask (4 [16.7%]), orotracheal intubation (4 [16.7%]) and tracheostomy (1 [4.2%]). Of these 17 pregnant women, there were cases of associations of more than one type of support; therefore, this variable included the type of support regardless of the number of participants.

Childbirth was considered an outcome that occurred in 21 (80.8%) pregnant women, of which 3 (11.5%) were discharged while pregnant and 2 (7.7%) did not have this information filled in because they evolved to death during pregnancy. Regarding the birth method, the most prevalent was Cesarean section with 16 (76.2%), 12 (75%) of which were emergency, which was the case in 9 (34.6%) premature newborns. Regarding GA at the time of birth, a mean of 226.16 complete days of pregnancy (95% CI) was identified.

As for the adverse outcomes, the most reported was ICU admission with 10 (43.5%) cases, followed by premature birth in 9 (34.6%), of which three were classified as extremely premature (before 28 weeks), which, corrected for days, showed a mean of 38.6 PDPLs (95% CI) of the 280 ideal days. Furthermore, the following were evidenced: 5 (19.2%) records of pre-eclampsia; 1 (3.8%) with a need for blood transfusion; 1 (3.8%) with septic shock; and 1 (3.8%) occurrence of respiratory sequelae.

Referring the most serious outcome, it was found that, by the end of hospitalization, 4 women (15.4%) had evolved to maternal death, there were 5 (19.2%) neonatal deaths and, of the total, two cases (7.7%) resulted in maternal and neonatal death. Most of the hospitalized patients were discharged (22 [84.6%]), of which one (3.8%) was discharged with a permanent tracheostomy; the hospitalization final outcome was death for the remaining participants.

DISCUSSION

In addition to contamination, the sociodemographic characteristics and history are relevant to clarify associations between Covid-19 and vulnerable situations. In this sense, infected pregnant women and those with comorbidities were prone to serious conditions, as well as those aged at least 35 years old and non-white women[13]. Of these characteristics, although they have lower and upper limits different from other studies, the mean age is close to the findings of surveys that investigated maternal age during the pandemic, with 29.7[20] and 31.2[21] years old.

The ethnic/racial issue is relevant, as it makes it possible to relate racial inequality to social and economic vulnerability, explained by issues that reflect structural racism[14]. At the same time, it is considered that, for the most part, the non-white population lives in outskirts and popular neighborhoods, places where there are barriers in access to health services, provision of tests and qualified care[14]. Corroborating this, death in Brazil was strongly associated with the ethnic/racial profile, where the rate of maternal deaths was almost twice as high among non-white women and, before death, black-skinned women were hospitalized in worse health conditions, with higher low oxygen saturation levels and need for assisted mechanical ventilation and ICU admission rate[22].

As for schooling, maternal death was associated with the pregnant women who had between eight and 11 years of study, corresponding to High School, followed by 4 to 7 years of study, equivalent to Elementary School[23]. In other words, years of incomplete studies were related to worse outcomes, as found in this research. The same reference[23] corroborates failures in filling out information, as in the current study.

Marital status is an impact factor, given that there was predominance of deaths recorded among single women during the pandemic[23]. Although in this study the sample stands out for "with a partner", another one relates absence of a partner (single, widowed or separated women) to breaking of the bond during pregnancy, and is believed to be considered a vulnerable group[23] due to psychological vulnerability[24] as a result of bond break or absence, which can become a problem when concomitant with other issues that increase inherent difficulties, such as care and financial burden.

As for the participants' origin, most of them were from other municipalities and, as this is a reference hospital, a percentage from other municipalities is expected.

Considering that it is already documented that the overload of health systems in all spheres indicates that roles have been modified and adapted to provide care[25], the hypothesis is formulated that the number of cases referred to the service has undergone changes and encompassed more patients because it is a reference service for medium- and

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high-complexity cases for the municipalities included in the agreement and which remained a back-up service for dealing with Covid-19 cases during the pandemic.

Throughout the Covid-19 pandemic, with physical and social isolation, closure of non-essential services and overload of health infrastructures, sexual and reproductive health care was impacted, when many women experienced difficulties accessing services and/or avoided attending them[26], culminating in a reduction[27], delays or cancellations[28]. In line with these findings widely disseminated in other studies[26-29], most of the women that made up the sample of the current research had a record of undergoing PN care; however, considering that the number of consultations was not completed in full, it was not possible to establish any correlation between this information with contamination by SARS-CoV-2 and the obstetric outcome.

Regarding obstetric history, there was prevalence of previous parity in the sample, as found in the literature, varying from 52.4% to 100% of the cases. However, to date, there is no relationship between the predominance of Covid-19 contamination cases and the pregnant women's parity[21].

Surveying women's involvement with diseases during pregnancy was important, as the literature highlighted that pregnant women with Covid-19 were five times more likely to suffer from hypertensive syndromes[29], with a potential for developing other adverse outcomes[30], such as a greater risk of ICU admission. In addition, a meta-analysis showed that this association between Covid-19 and hypertensive syndromes is independent of any pre-existing risk factor, which precludes a real prior stratification of which ones would be at additional risk[31], as so far it is only known that history or presence of hypertensive syndromes and gestational diabetes are associated and are confirmed risk factors for the serious form of the disease[13]. Thus, having Covid-19 without any pre-existing risk factors is a risk for developing hypertensive syndromes, which in turn leads to the risk of more serious Covid-19 conditions.

In addition to the health history directly related to obstetric issues, the general history is in line with the literature, where diabetes and hypertension were the main comorbidities[20]. Additionally, presence or absence of comorbidities is an important health indicator, given that having any comorbidity associated with the infection is related to a higher risk of progressing to serious conditions[33,13]. There is also an increased likelihood of infected hypertensive and diabetic pregnant women undergoing emergency cesarean sections or premature birth[32], which also increases the risk of maternal and neonatal death[34,13]. In the pandemic context, data similar to this series of cases were found, with an almost equal distribution between pregnant women with and without comorbidities[34].

Regarding the symptoms, the findings differ from the results of other studies, which show that up to one third of the patients were asymptomatic[35,20]. As for distribution, despite the heterogeneous presentation, it is similar to the most commonly reported, regardless of the isolated prevalence of each one, with fever and cough as the most common[13].

Understanding childbirth as an outcome for women who have completed the full pregnancy cycle, in the Covid-19 context, being affected by the disease proved to be a predisposing factor to shortening of pregnancy due to premature birth, reported in 88% of the cases during course of the disease[36]. When it comes to the birth method, high prevalence of Cesarean section was found in 94% of the cases during the pandemic period, although there is no justification for obstetric indication due to the isolated cause of contamination by the virus[37]. Even if unjustified by the association by primary indication with infection, this increase is a worrying fact, as it is associated with the adverse outcome of premature birth[38], which we also observed in this study, with a coincidence between occurrence of Cesarean sections and premature births.

Throughout the pandemic, an association was revealed with higher risk of adverse outcomes in pregnant women[37]. From stratification, the following outcomes were considered as directly related to the disease: admission to an adult ICU; use of ventilatory support; premature birth; emergency Cesarean section; fetal distress; postpartum hemorrhage; need for blood transfusion; and fetal and maternal death, which corroborates two studies[9,37].

The prevalence of the need for ICU admission was reported throughout the Covid-19 pandemic context, as well as in our sample, hospitalization cases that have several associations, such as 100% association with emergency Cesarean sections[37], and even a strong association of those who passed through the ICU and evolved to death[39]. A Brazilian survey found the need for ICU admission as an outcome in 21.2% of the cases, of which 17.5% recovered and were discharged and 72.3% were fatal cases[39]. Regarding death as the worst expected outcome, it was recorded in 12.7% of the Brazilian pregnant women with some comorbidity, such as obesity, diabetes and cardiovascular diseases, revealing the association with maternal death[40].

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Although of low incidence, other outcomes such as need for ventilatory support, blood transfusion and respiratory sequelae, are undeniably notorious, as evidenced in other studies[9,3]; and, when investigating these outcomes, it was observed that they had an association between ICU admission and progression to death. Furthermore, attention should be paid to the occurrence of these findings as related to increased morbidity and the need for prolonged hospitalization, given that prolonged hospitalization was found in the sample.

An increase in the premature birth rates among infected pregnant women, when compared to those with the same characteristics without the disease, was observed and it is hypothesized that these births are not related to the disease or originate from it, but were obstetric indications resulting from pre-existing maternal diseases or fetal distress, as the analysis of the general rates of premature births, when spontaneous, showed no discrepancy in relation to the pre-pandemic period[13]. Therefore, although the findings of the studies compiled (as well as ours) have detected this fact, there is no direct cause and effect comparison.

In the case of prematurity, stratification into days showed a mean of 38.6 days lost (approximately 5 weeks and 5 days), which, in terms of classification, allowed confirming shortening of pregnancy as an outcome beyond the rounding of 37 weeks[11]. The association of this indicator is important when we think that each day of pregnancy matters for development and, although it is a new indicator and we have little to associate it with the literature, indicating the number of days that were lost provides another dimension beyond merely saying that they were premature.

Study limitations

The limitations refer to weaknesses in adequate filling out of the medical records and also to the fact that, due to the recent theme, there is scarce literature with in-depth research on outcomes and associations; therefore, research studies are suggested regarding filling out of notifications to provide opportunities for continuing studies.

However, the science of outcomes highlights challenges in obstetric care during the pandemic, which was characterized by lack of knowledge about the effects on the mother's body and led to making decisions to reorganize care. Therefore, producing and disseminating this knowledge is fundamental to support public policies and the development of clinical-obstetric protocols for monitoring pregnant women for possible future epidemics and pandemics.

CONCLUSION

Researching in a reference hospital made it possible to uncover the sociodemographic and obstetric characteristics of the pregnant women that were affected by SARS-CoV-2, enabling the analysis and description of cases, which showed the need to provide assistance to pregnant women starting from prenatal care, especially in terms of surveillance of diseases developed during pregnancy, such as hypertensive syndromes, identified as an aspect that deteriorates the clinical condition. The impact of Covid-19 on the health of women and newborns was evident, given the adverse outcomes identified, such as: high number of ICU admissions; increase in Cesarean sections; need for ventilatory support, even in those with regular hospitalization; maternal, fetal and dyad deaths; and an increase in the rate of premature births evidenced by the PDPLs, which exert an impact on fetal maturation and development times that are shorter than necessary.

A more detailed analysis of the division of PDPLs can guide more precise care and highlights the need for an adequate structure in health services, required for prematurity care. Uncovering the occurrence of these outcomes corroborates the clarification of the scenario of adverse outcomes in the Brazilian reality, which has its own population and care characteristics.

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Research Article
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