

Factors associated with demand for emergency health services among pregnant and puerperal women with COVID-19

Fatores associados à procura por pronto atendimento entre gestantes e puérperas com COVID-19

Factores asociados a la búsqueda de servicios médicos de urgencia por embarazadas y puérperas con COVID-19

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ABSTRACT

Objective: to identify factors associated with demand for emergency health services from pregnant/puerperal women with COVID-19. **Method:** in this cross-sectional study, data were collected between August 2021 and January 2022 from the responses of 258 women who were pregnant or gave birth during the pandemic, after research ethics committee approval. **Results:** 27.1% of respondents had COVID-19, with loss of smell and fatigue being the most commonly reported symptoms. The highest prevalence of seeking emergency hospital care (30.4%) was accounted for by the more serious cases, who sought emergency care needing hospitalization ($p < 0.001$), patients with asthma ($p < 0.001$) and chronic hypertension ($p < 0.001$). **Conclusion:** the emergency facility was the service most accessed in the presence of symptoms, especially in cases of greater severity and comorbidities, although the results are at variance with the guidelines contained in national and international protocols on care for the obstetric population.

Descriptors: COVID-19; Pregnancy; Postpartum Period; Emergencies.

RESUMO

Objetivo: identificar fatores associados à procura por pronto atendimento entre gestantes e puérperas com infecção pela COVID-19. **Métodos:** estudo transversal, com coleta de dados realizada entre agosto de 2021 e janeiro de 2022, baseado nas respostas de 258 mulheres que estiveram gestantes ou pariram durante a pandemia, após aprovação do Comitê de Ética em Pesquisa da instituição. **Resultados:** entre as entrevistadas, 27,1% tiveram COVID-19, sendo mais comumente relatados os sintomas perda de olfato e fadiga. A prevalência de procura por pronto atendimento foi de 30,4%, explicada por casos de maior gravidade, em que houve necessidade de internação ($p < 0,001$); portadoras de asma ($p < 0,001$) e de hipertensão crônica ($p < 0,001$). **Conclusão:** o Pronto atendimento foi o local de maior procura na presença dos sintomas, principalmente nos casos de maior gravidade e comorbidades, embora os resultados sejam divergentes das orientações constantes nos protocolos nacionais e internacionais voltados para assistência à população obstétrica.

Descritores: COVID-19; Gravidez; Período Pós-Parto; Emergências.

RESUMEN

Objetivo: identificar los factores asociados a la búsqueda de *servicios médicos de urgencia* por embarazadas y puérperas con infección por COVID-19. **Método:** estudio transversal, cuya recolección de datos tuvo lugar entre agosto de 2021 y enero de 2022, a partir de las respuestas de 258 mujeres que estuvieron embarazadas o dieron a luz durante la pandemia, previa aprobación del Comité de Ética en Investigación de la Institución. **Resultados:** entre las encuestadas, el 27,1% tuvo COVID-19, siendo más comunes los síntomas como pérdida del olfato y cansancio. La prevalencia de búsqueda de atención en urgencias fue del 30,4%, explicada por casos de mayor gravedad, en los que hubo necesidad de hospitalización ($p < 0,001$); asma ($p < 0,001$) e hipertensión crónica ($p < 0,001$). **Conclusión:** el Servicio de Urgencias fue el lugar más buscado ante la presencia de síntomas, especialmente en los casos de mayor gravedad y comorbilidades, aunque los resultados sean divergentes de las directrices contenidas en los protocolos nacionales e internacionales dirigidos a la atención de la población obstétrica.

Descriptor: COVID-19; Embarazo; Periodo Posparto; Urgencias Médicas.

INTRODUCTION

Data from the World Health Organization (WHO) published in mid-February 2022 reported nearly 425 million cases of infection by SARS-CoV-2 (the causative agent of COVID-19) and more than 5.8 million deaths due to the disease¹. These are alarming data, as the virus, which was first detected in China in late December 2019 and had rapid spread and global dissemination, generated the COVID-19 pandemic, declared by the WHO² on March 11th, 2020.

The physiological changes inherent to pregnancy predispose pregnant women to viral infections and to more severe forms of COVID-19^{3,4}; they are thus considered a higher risk group for infection and a priority group for health

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care and testing³. This vulnerability results from the fact that the gestational period is a unique and particular immune state, in which pregnant women need to acquire tolerance to the allogenic embryo/fetus and, at the same time, protect themselves and the life to be born from pathogens⁵, which increases their predisposition to contracting diseases.

In addition to the immunological changes, physiological alterations in the respiratory tract during pregnancy, such as edema and increased pulmonary expansion, make pregnant women more susceptible to viral respiratory infections. Therefore, when there is an association between SARS-CoV-2 and pregnancy, increased inflammatory processes are observed, mainly in the first and third trimesters (when important immunological changes occur), intensifying severity of the cases⁶.

Physiological changes can also hinder assessing the patients' conditions, as pregnant women usually present shallow breathing and tachypnea due to increased pulmonary expansion and to fetal growth, as well as maternal hemodilution, which, in addition to increasing the circulating volume, increases the heart rate and can cause hypotension⁷, confounding signs in the evaluation of severe COVID-19 cases.

Although there are already some studies in the literature on the profile of pregnant and postpartum women and neonates infected by COVID-19, the production is still incipient. Such scarcity is even more noticeable, mainly in the national scope. The few published studies used secondary data from the case notification system or are case or review studies, and they oftentimes do not address either access to health services or evolution of the cases.

Pregnant and postpartum women account for more than 20,000 notified COVID-19 cases in the country and represent 1% of all the cases notified. Although the number of cases seems small, considering the magnitude of the disease in the national territory, the mortality rates are extremely high, representing 9.5% of the cases of infection in pregnant and/or postpartum women⁸. These high rates had already been presented in a study that indicated a maternal mortality rate of 12.7% due to COVID-19 in Brazil⁹. Both data are excessively high when compared to international data shown in a review study that pointed to a maternal mortality rate of 1.8% due to COVID-19¹⁰.

The association between the increase in maternal mortality and the COVID-19 pandemic can be justified due to several factors. With regard to access to the services, the following aspects are described: hesitation in seeking care due to fear towards the disease; financial and/or transportation problems that hinder access to health services; and isolation of pregnant women infected in distant regions, which compromises timely health care in severe cases, among others⁹. Consequently, it is verified that, in the infection cases, access to the health services is crucial for satisfactory evolution of the cases.

The courses of action in relation to the infected pregnant and puerperal women depend on the disease risk classification. Cases in which women obtained positive results in the Polymerase Chain Reaction (PCR) test for COVID-19 but did not present any symptoms are classified as asymptomatic. In these cases, isolation and telehealth monitoring are recommended, observing the period from the seventh to the 14th day after onset of the disease, which coincides with the period of infection worsening. Cases in which women present symptoms but have no dyspnea are classified as mild. In these cases, it is recommended to perform a PCR and tests to assess systemic impairment, and the following treatments are indicated: rest, hydration, and symptomatic analgesics and/or antipyretics. Furthermore, the professionals should instruct pregnant/postpartum women both verbally and in writing about signs of disease worsening and where to seek assistance in these cases. Mild cases must be monitored from two to three times during the week and every day from the seventh to the 14th day¹¹.

Moderate severity cases are characterized by persistence of the symptoms and/or by oxygen saturation below 95%. For moderate cases, the indication is to perform a chest tomography and X-ray, as well as hospitalization to treat the infection. In turn, severe cases, which are characterized by saturation below 95% and respiratory distress, the indication corresponds to hospitalization in Intensive Care Centers (ICCs)¹¹. Therefore, for mild to severe cases of COVID-19 infection during pregnancy/postpartum period, the recommendation is to seek Emergency Care (ER) for diagnosis and/or treatment.

The novelty of this study, as well as its potential to produce diverse evidence and innovation in the field of knowledge, lies in its quantitative and cross-sectional design. The production of national and international studies with this design is still incipient in the literature, in which review articles predominate, including international studies. The scarcity of literature is even greater when it comes to studies addressing the access path to the health services in the presence of infection among this population and the associated factors, thus justifying this study.

Therefore, the objective of this study was to identify factors associated with the search for emergency care among pregnant/postpartum women infected by COVID-19.

METHOD

This is a cross-sectional study conducted based on an online survey answered by women who were pregnant and/or gave birth during the pandemic period. Data collection took place from August 2021 to January 2022.

The study included all women who followed a social network on COVID-19 targeted at the obstetric population and those who had been pregnant during the pandemic, as well as those invited by followers (snowball technique), who had access to the Internet, were aged over 18 years old and completed the online form created in *Google Forms*[®], after consenting to participating in the study. Forms that lacked complete information about the variables of interest were excluded from the analysis.

The sample was selected by convenience and 300 pregnant/postpartum women consented to participating in the study; however, 42 did not fill out the obstetric data and were thus excluded from the sample (sample losses). Consequently, the study was based on the answers given by 258 pregnant/postpartum women.

After consenting to participating in the study, the women were directed to a questionnaire with sociodemographic data (age, skin color, whether they lived with a partner, occupation, state where they lived, and health system used - supplementary health or Unified Health System). Subsequently, the respondents selected the pregnant or puerperal woman option and, in these cases, they continued to answer the questionnaire, indicating clinical and obstetric data (number of pregnancies, previous diseases, or diseases acquired during pregnancy). After the obstetric data, the women were asked whether they had been infected by COVID-19, and those who answered affirmatively were directed to a form about the disease (symptoms, time of diagnosis, where they sought health care, diagnostic method, and whether they had to be hospitalized). The dependent variable was search for emergency care among pregnant/postpartum women with COVID-19 and the independent ones were the sociodemographic, clinical and obstetric variables.

The data collected through *Google Forms*[®] were imported into a *Microsoft Excel*[®] spreadsheet, and then to the *Statistical Package for the Social Sciences* application, version 23.0. A descriptive analysis of the data related to the sociodemographic and obstetric variables was performed (absolute and percentage values, mean, standard deviation, and minimum and maximum values). The Chi-square and Fisher's Exact tests were applied, considering a 5% significance level. Prevalence ratios and their respective 95% confidence intervals were calculated. Multiple analysis was applied by means of Poisson regression with robust variance, including in the model those variables with p -values < 0.20 in the bivariate analysis.

It is noted that the study followed all Recommendations on Quality and Transparency of Research in Health set forth by the Equator Network and complied with all the ethical principles applied in Brazil for research studies in human beings, including the "Guidelines for virtual environment research" established by the CONEP in 2021. The project was approved by opinion No. 4.649.652, dated April 14th, 2021, and is one of the objectives included in its approved parent project entitled "*Inquérito Nascer e COVID-19*" ("Birth and COVID-19 Survey").

RESULTS

The mean age found was 32.1 ± 5.34 years old, varying from 19 to 45. Most of the participants self-declared as white-skinned (70.5%), lived with a partner (86%), were residents of the Brazilian Southeast region (65.1%) and had some paid activity ($n=243$).

The state with the highest number of participants in the survey was São Paulo (35.6%), followed by Minas Gerais (24.8%) and Paraná (5.4%); with 74% of the Brazilian states represented in the current study. Acre, Amapá, Amazonas, Rondônia, Roraima, Sergipe and Tocantins contributed no respondents. However, there were respondents from other countries, such as Portugal, United States and Italy, with one participant each.

Regarding the obstetric data, 70.5% were postpartum women and 29.5% were pregnant at the collection moment. Most of the respondents (55.8%) were primigravidas ($n=144$), did not have previous chronic diseases (75.6%), and did not develop any pregnancy-related disease (79%). The most frequently mentioned chronic diseases were obesity ($n=31$; 12%); asthma ($n=14$; 5.4%) and arterial hypertension (nine; 3.5%). The most frequently mentioned gestational diseases were gestational diabetes ($n=29$; 11.2%); gestational hypertensive syndrome ($n=18$; 7%) and excessive weight gain during pregnancy ($n=5$; 1.9%).

Table 1 presents data related to the COVID-19 cases during pregnancy/postpartum.

When the women were asked if they were infected by COVID-19 during pregnancy/postpartum period, 27.1% ($n=70$) gave affirmative answers. The symptoms most reported by the women were the following: loss of smell ($n=45$; 65.2%); fatigue/tiredness ($n=42$; 60.9%), cephalgia and loss of taste (both with $n=39$; 56.5%). The infections were most frequently detected in the third ($n=17$; 27%) and second ($n=16$; 25.4%) gestational trimesters.

When the symptoms of infection emerged, the women sought the Hospital Emergency Unit ($n=21$; 30.4%) and private clinics ($n=15$; 21.7%) more frequently. The diagnostic method most resorted to was the PCR test ($n=57$; 82.6%); nine underwent a serological test (13.0%); seven performed a rapid test (10.1%); and three underwent chest computed tomography ($n=3$; 4.3%).

Table 1: Distribution of the COVID-19 cases corresponding to the pregnant and puerperal women diagnosed with COVID-19 (n=70). Brazil, 2022.

Variable	n	%
Infection by Coronavirus		
Had COVID-19	70	27.1
Did not have COVID-19	188	72.9
Most frequently reported COVID-19 symptoms		
Loss of smell	45	65.2
Fatigue/Tiredness	42	60.9
Cephalea	39	56.5
Loss of taste	39	56.5
Runny nose	36	52.2
Dry cough	29	42
Fever	28	40.6
Diarrhea	8	11.6
Did not present symptoms	3	4.3
COVID-19 diagnosis period*		
Third trimester of pregnancy	17	27
Second trimester of pregnancy	16	25.4
Postpartum period	11	17.5
Did not answer	10	15.9
First trimester of pregnancy	9	14.3
Care locus**		
Hospital Emergency Unit	21	30.4
Private clinic	15	21.7
Basic Health Unit	9	13
Laboratory	8	11.6
Pharmacy	6	8.7
Did not seek assistance	5	7.2
Maternity hospital where she was going to give birth	4	5.8
Sought an FHS professional	1	1.4
Diagnostic method***		
PCR	57	82.6
Serological test	9	13
Rapid test	7	10.1
CT scan	3	4.3
Diagnosis day after onset of the symptoms****		
Third day	14	22.2
Fifth day	12	19
Fourth day	10	15.9
Seventh day	9	14.3
Second day	6	9.5
First day	2	3.2
Sixth day	2	3.2
Tenth day	2	3.2
Fifteenth day	2	3.2
Contacts	4	6.3

*Seven of the 70 women diagnosed with COVID-19 did not answer this question. **One of the 70 women diagnosed with COVID-19 did not answer this question. ***One of the 70 women diagnosed with COVID-19 did not answer this question. ****Seven of the 70 women diagnosed with COVID-19 did not answer this question.

Also, regarding diagnosis, the test was most frequently performed three (n=14; 22.2%) and five (n=12; 19%) days after onset of the symptoms. Four women (6.3%) were asymptomatic, contacts of positive cases of the infection. Four (1.6%) of the women diagnosed with COVID-19 had to be hospitalized.

Table 2 presents the bivariate analysis of the association between sociodemographic, clinical and obstetric variables with the search for emergency care among women infected by COVID-19.

Table 2: Association of the sociodemographic, clinical and obstetric variables with the search for emergency care among pregnant/postpartum women infected by COVID-19 who answered the survey. Brazil, 2022.

Variable	Search for ER due to COVID-19		Search for other units		PR	95% CI	p-value
	n	%	n	%			
Age					0.561	(0.201 – 1.569)	0.268
18-35 years old	18	42.8	24	57.2			
35+ years old	8	29.6	19	70.4			
Skin color					1.626	(0.499 – 5.297)	0.418
White	21	40.4	31	59.6			
Non-white	5	29.4	12	70.6			
Marital status					1.752	(0.420 – 7.340)	0.437
Lives with a partner	23	39.7	35	60.3			
Does not live with a partner	3	27.3	8	72.7			
Occupation					5.412	(0.633 – 46.234)	0.090
Paid	23	40.4	34	59.6			
Not paid	1	11.1	8	88.9			
Health plan					0.648	(0.191 – 2.195)	0.484
Has a health plan	20	35.7	36	64.3			
Does not have a health plan	6	46.2	7	53.8			
SUS users					1.238	(0.458 – 3.343)	0.674
SUS user	11	40.7	16	59.3			
Does not use the SUS services	15	35.7	27	64.3			
Number of pregnancies					0.321	(0.114 – 0.907)	0.029
Primigravida	9	24.3	28	75.7			
Multigravida (two or more pregnancies)	15	50.0	15	50.0			
Obesity					0.991	(0.216 – 4.542)	0.991
Obese	3	37.5	5	62.5			
Not obese	23	37.7	38	62.3			
Chronic hypertension					1.650	(1.358 – 2.004)	0.168
Chronic hypertensive patient	0	0	3	100			
Does not have chronic hypertension	26	39.4	40	60.6			
Diabetes Mellitus					1.619	(1.343 – 1.952)	0.433
Diabetic	0	0	1	100			
Does not have diabetes	26	38.2	42	61.8			
Asthma					2.879	(2.063 – 3.991)	0.023
Has asthma	3	100	0	0			
Does not have asthma	23	34.8	43	65.2			
Disease acquired during pregnancy					3.175	(0.690 – 14.598)	0.123
Acquired a disease during pregnancy	5	62.5	3	37.5			
Did not acquire a disease during pregnancy	21	34.4	40	65.6			
Pregnancy hypertensive syndromes					5.478	(0.539 – 55.721)	0.113
Pregnancy hypertensive syndrome	3	75.0	1	25.0			
Did not have pregnancy hypertensive syndrome	23	35.4	42	64.6			
Gestational diabetes					1.708	(0.226 – 12.925)	0.600
Had gestational diabetes	2	50.0	2	50.0			
Did not have gestational diabetes	24	36.9	41	63.1			
Hospitalization					2.955	(2.103 – 4.150)	0.008
Had to be hospitalized	4	100	0	0			
Did not need to be hospitalized	22	33.8	43	66.2			

The being a primigravida ($p=0.029$), having asthma ($p=0.023$) and having to be hospitalized after the examination ($p=0.008$) variables; as well as having a paid occupation ($p=0.090$), having chronic hypertension ($p=0.168$), having acquired a disease during pregnancy ($p=0.123$), and diagnosis of pregnancy hypertensive syndrome ($p=0.113$) were included in the regression model. Table 3 presents the variables included in the Poisson regression model, prevalence ratio, p-value, confidence intervals, and the regression model adjusted for robust variance.

Table 3: Poisson regression model between search for emergency care among pregnant/postpartum women with COVID-19 and sociodemographic, clinical and obstetric variables in pregnant and puerperal women who answered the survey. Brazil, 2022.

Variable	PR	95% CI		p value
Need to be hospitalized	0.586	0.533	0.645	0.000
Pregnancy hypertensive syndrome	0.848	0.635	0.848	0.262
Disease acquired during pregnancy	0.796	0.597	1.059	0.118
Asthma	0.571	0.526	0.620	0.000
Chronic hypertension	1.349	1.071	1.700	0.011
Primigravida	1.084	0.954	1.232	0.217
Paid occupation	0.919	0.800	1.054	0.227
Poisson Regression with Robust Variance				
Need to be hospitalized	0.585	0.545	0.628	0.000
Asthma	0.585	0.545	0.628	0.000
Chronic hypertension	1.170	1.091	1.255	0.000

The need to be hospitalized after examination ($p=0.000$), having asthma ($p=0.000$) and having chronic hypertension ($p=0.011$) variables explained the search for emergency care among pregnant/postpartum women with COVID-19, through the regression model.

After adjustment for robust variance, the search for emergency care among pregnant/postpartum women with COVID-19 remained explained by more severe cases, which required hospitalization; women with asthma and chronic hypertension.

DISCUSSION

Emergency Care units were the most sought care loci among pregnant/postpartum women infected by COVID-19, although the search prevalence was 30.4%. This prevalence can be considered low, as the current protocol adopted in the country suggests at least an initial evaluation of the pregnant/postpartum women in these ER units and in cases of worsening of the symptoms¹¹. It is also worth noting that only three respondents were asymptomatic, with the infection being diagnosed through the test.

Despite differences in their care protocols, both the Royal College of Obstetrics and the American College of Obstetrics, which are reference institutions in the field, recommend this initial evaluation. The Royal College recommends assessing pregnant and puerperal women for risk factors, such as comorbidities, and management should be based on the oxygen saturation level of the infected women. Moderate and severe cases, based on the presence of pneumonia and respiratory impairment, indicate need for hospitalization, whereas in mild or asymptomatic cases it is advised to monitor oxygen saturation at home¹². The American College indicate initial evaluation by a health service or professional and home monitoring. In case of dyspnea, chest heaviness or pain and mental confusion, the emergency service should be sought¹³.

Prevalence of COVID-19 in the sample was 27.1%. This percentage was similar to data found in a study conducted in France, which obtained the same value¹⁴; however, it diverged from results of studies conducted in the United States^{15,16} and France¹⁷, in which the percentage varied from 0.6% to 3.7%, as well as from a study conducted in Mexico, in which 48% of the symptomatic pregnant/puerperal women tested positive for COVID-19 infection¹⁸, indicating significant heterogeneity in relation to this value.

The infected and symptomatic pregnant/postpartum women reported loss of smell, followed by fatigue/tiredness more frequently. These data are contrary to those found in other studies which showed that cough and fever¹⁹⁻²² were the most frequent symptoms in this population segment. A multi-center study indicated that only 19.6% of the infected women presented symptoms, and fever was the symptom associated with greater severity²². In addition, a study with secondary data pointed to an association between occurrence of respiratory symptoms and higher mortality rates²¹.

The infection was most frequently detected in the third trimester of pregnancy, similarly to other studies on the disease in the obstetric population^{19,23-28}; and primigravidas were the ones who most sought emergency care, as was the case in other studies^{16,19-20,29}.

Among the variables that explained the search for emergency care, we highlight chronic hypertension, which affected 3.5% of the pregnant/postpartum women. This condition was also associated with the infection in other studies^{14,15,17}, although with lower frequency than the data reported (0.9%–2.3%)^{14,15,17}. Another condition associated with greater search for emergency care was asthma, with 5.4% of the participants stating having this chronic disease. The rate for

asthma and the association with COVID-19 were exactly the same as those presented in a study with Brazilian data about the infection²². Asthma was associated with the infection in more severe cases of the disease, with a similar distribution across the studies (from 2.2% to 5.4% of the women infected)^{15,18,19,21,30,31}. Obesity was cited as the most frequent comorbidity (12%), although it was not associated to the search for emergency care. Obesity was associated with COVID-19 in several studies on the disease among pregnant/postpartum women^{9,14,15,17,18,21,22,30,31}; however, it was more frequently detected among the positive cases (from 16.3% to 48.6% of the infected women)^{14,15,18,22}.

Finally, hospitalization was associated with the search for emergency care in all the cases. This research was ratified by a Brazilian study, which indicated that most of the Brazilian infected pregnant/postpartum women were hospitalized²². However, for being a survey based on the respondents' answers, one of its limitations consisted in the impossibility of classifying severity of the cases. A French study pointed out that 32.8% of the cases in pregnant women were considered as mild and only 3.6%, as severe¹⁴; whereas a study conducted in Peru observed that, of the positive cases, 4.8% were classified as severe and 7.3% as moderate²⁰.

The search explained by need to be hospitalized reinforces that Emergency Care units are indeed the gateways to health actions and services in the Health Care Network (HCN) and also that the outpatient care services are fundamental in the health regions³².

COVID-19 is a disease that is still being elucidated, thus presenting diffuse characteristics, which need to be clarified through further studies. Women in the pregnancy- puerperal cycle undergo physiological and immune changes typical of the period, which leave vulnerable to the occurrence of health problems and diseases. In the presence of symptoms, it is recommended that pregnant/postpartum women seek a health unit, preferably ER, for a thorough evaluation and subsequent referrals. However, we noticed that the search fell short to the expectations and that, in symptomatic cases, the pregnant/postpartum women sought other paths, such as self-testing and self-medication, not recommended in these cases. Thus, it becomes necessary to reinforce the need for this evaluation for better evolution of the cases.

Study Limitations

One of the study limitations consists in the possibility of biases: recall bias, as the data were based on the participants' answers; and prevalence bias, as the pregnant/postpartum women who died due to the disease were not included in the sample.

Another already mentioned limitation was due to the study being an online survey, thus precluding classification of severity of the cases. However, this research emerges as with potential for further studies with new designs. It is also noted that the study will be replicated with the same sample, from the cohort of infected pregnant/postpartum women, which may unveil new results that help elucidate the theme.

CONCLUSION

Emergency Care units were the loci most frequently sought in the presence of symptoms, a finding explained by more severe cases, which required hospitalization; and by women with asthma and chronic arterial hypertension.

The low prevalence of search for health care diverges from the guidelines set forth in the national and international protocols directed to the assistance to be provided to the obstetric population, which may have a direct or indirect impact on greater severity and lethality of the cases.

REFERENCES

1. World Health Organization (WHO). WHO Coronavirus (COVID-19) Dashboard. 2022 [cited 2022 Jun 10]. Available from: World Health Organization. WHO Coronavirus (COVID-19) Dashboard [internet]. 2022 [cited 2022 Feb 24]. Available from: <https://covid19.who.int/>.
2. Choi KR, Jeffers KS, Logsdon MC. Nursing and the novel coronavirus: risks and responsibilities in a global outbreak. *J Adv Nurs* [Internet]. 2020 [cited 2022 Feb 24]; 76:1486-87. DOI: <https://dx.doi.org/10.1111/jan.14369>.
3. Poon LC, Yang H, Kapur A, Melamed N, Dao B, Divakar H, et al. Global interim guidance on coronavirus diseases 2019 (COVID-19) during pregnancy and puerperium from FIGO and allied partners: information for healthcare professionals. *Int J Gynecol Obstet* [Internet]. 2020 [cited 2022 Feb 24]; 149:273-86. DOI: <https://dx.doi.org/10.1002/ijgo.13156>.
4. Whitehead CL, Walker SP. Consider pregnancy in COVID-19 therapeutic drug and vaccine trials. *The Lancet* [Internet]. 2020 [cited 2022 Feb 24]; 395:e92. DOI: [https://doi.org/10.1016/S0140-6736\(20\)31029-1](https://doi.org/10.1016/S0140-6736(20)31029-1).
5. Mor G, Aldo P, Alvero AB. The unique immunological and microbial aspects of pregnancy. *Nat Rev Immunol* [Internet]. 2017 [cited 2022 Feb 24]; 17:469-82. DOI: <https://doi.org/10.1038/nri.2017.64>.
6. Liu H, Wang L, Zhao S, Kwak-Kim J, Mor G, Liao A. Why are pregnant women susceptible to COVID-19? An immunological viewpoint. *J Reprod Immunol* [Internet]. 2020 [cited 2022 Feb 24]; 139:1-4. DOI: <https://dx.doi.org/10.1016/j.jri.2020.103122>.
7. Montenegro CAB, Rezende Filho J. Modificações do Organismo Materno. In: Montenegro CAB, Rezende Filho J. *Rezende obstetrícia*. Rio de Janeiro: Guanabara Koogan; 2017. p. 139-173.

8. Rodrigues A, Lacerda L, Francisco RPV. Brazilian Obstetric Observatory [internet]. 2022 [cited 2022 Feb 24]. Available from: https://observatorioobstetrico.shinyapps.io/covid_gesta_puerp_br/.
9. Takemoto MLS, Menezes MO, Andreucci CB, Nakamura-Pereira M, Amorim MMR, Ketz L, et al. The tragedy of COVID-19 in Brazil: 124 maternal deaths and counting. *Int J Gynecol obstet* [Internet]. 2020 [cited 2022 Feb 24]; 151(1):154-56. DOI: <https://doi.org/10.1002/ijgo.13300>.
10. Oliveira KF, Oliveira JF, Wernet M, Paschoini MC, Ruiz MT. COVID-19 and pregnancy: a scoping review on pregnancy characteristics and outcomes. *Int J Nurs Pract* [Internet]. 2021 [cited 2022 Feb 24]; 16:e12956. DOI: <https://doi.org/10.1111%2Fijn.12956>.
11. Brasil. Ministério da Saúde. Fluxo de manejo clínico de gestantes na atenção especializada. [Internet]. 2020 [cited 2021 Nov 17]. Available from: <https://www.saude.ms.gov.br/wp-content/uploads/2020/03/Fluxo-de-manejo-clinico-de-gestantes.pdf>.
12. Royal College of Obstetricians & Gynaecologists. Coronavirus (COVID-19) infection in pregnancy. [Internet]. 2022 [cited 2022 Feb 24]. Available from: <https://www.rcog.org.uk/globalassets/documents/guidelines/2022-01-11-coronavirus-covid-19-infection-in-pregnancy-v14.3.pdf>.
13. The American College of Obstetricians and Gynecologists. Coronavirus (COVID-19), pregnancy, and breastfeeding: a message for patients [Internet]. 2022 [cited 2022 Feb 24]. Available from: <https://www.acog.org/womens-health/faqs/coronavirus-covid-19-pregnancy-andbreastfeeding#:~:text=ACOG%20strongly%20recommends%20that%20all,COVID%2D19%20than%20nonpregnant%20wome n.>
14. Hcini N, Maamri F, Picone O, Carod J, Lambert V, Mathieu M, et al. Maternal, fetal and neonatal outcomes of large series of SARS-CoV-2 positive pregnancies in peripartum period: a single-center prospective comparative study. *Eur J Obstet Gynecol Reprod Biol* [Internet]. 2021 [cited 2022 Feb 24]; 257:11-18. DOI: <https://doi.org/10.1016/j.ejogrb.2020.11.068>.
15. Ko JY, De Sisto CL, Simeone RM, Ellington S, Galang RR, Oduyebo T, et al. Adverse pregnancy outcomes, maternal complications, and severe illness among US delivery hospitalizations with and without a Coronavirus Disease 2019 (COVID-19) diagnosis. *Clin Infect Dis* [Internet]. 2021 [cited 2022 Feb 24]; 73(Suppl 1):s24-s31. DOI: <http://dx.doi.org/10.1093/cid/ciab344>.
16. Karasek D, Baer RJ, McLemore MR, Bell AJ, Blebu BE, Casey JA, et al. The association of COVID-19 infection in pregnancy with preterm birth: a retrospective cohort study in California. *The Lancet Regional Health Americas* [Internet]. 2021 [cited 2022 Feb 24]; 2(100027):1-8. DOI: <https://doi.org/10.1016/j.lana.2021.100027>.
17. Epelboin S, Labrosse J, De Mouzon J, Fouque P, Gervoise-Boyer MJ, Levy R, et al. Obstetric outcomes and maternal morbidities associated with COVID-19 in pregnant women in France: a national retrospective cohort study. *Plos Med* [Internet]. 2021 [cited 2022 Feb 24]; 18(11):e1003857. DOI: <https://doi.org/10.1371/journal.pmed.1003857>.
18. Ríos-Silva M, Murillo-Zamora E, Mendoza-Cano O, Trujillo X, Huerta M. COVID-19 mortality among pregnant women in Mexico: a retrospective cohort study. *J Global Health* [Internet]. 2020 [cited 2022 Feb 24]; 10(2):1-8. DOI: <https://doi.org/10.7189/jogh.10.020512>.
19. Ayed A, Embaireeg A, Benawadh A, Al-Fouzan W, Hammoud M, Al-Hathal M, et al. Maternal and perinatal characteristics and outcomes of pregnancies complicated with COVID-19 in Kuwait. *BMC Pregnancy Childbirth* [Internet]. 2020 [cited 2022 Feb 24]; 20(754):1-9. DOI: <https://doi.org/10.1186/s12884-020-03461-2>.
20. Saenz IHH, Estrada JCE, Castillo KCD, Taya RM, Coronado JC. Maternal and perinatal characteristics of pregnant women with COVID-19 in a national hospital in Lima, Peru. *Rev Peru Ginecol Obstet* [Internet]. 2020 [cited 2022 Feb 24]; 66(2):1-6. DOI: <https://doi.org/10.31403/rpgo.v66i2245>.
21. Bonatti AT, Miller N, Carvalhaes MABL, Jensen R, Parada CMGL. Factors associated with death among postpartum women with COVID-19: a Brazilian population-based study. *Rev Latino-Am Enfermagem* [Internet]. 2021 [cited 2022 Feb 24]; 29:e3507. DOI: <http://dx.doi.org/10.1590/1518-8345.5446.3507>.
22. Villar J, Ariff S, Gunier RB, Thiruvengadam R, Rauch S, Kholin A, et al. Maternal and neonatal morbidity and mortality among pregnant women with and without COVID-19 infection: the inter COVID multinational cohort study. *JAMA Pediatr* [Internet]. 2021 [cited 2022 Feb 24]; 175(8):817-26. DOI: <http://dx.doi.org/10.1001/jamapediatrics.2021.1050>.
23. Quiancheng X, Jian S, Lingling P, Lei H, Xiaogan J, Weihua L, et al. Coronavirus disease 2019 in pregnancy. *Int J Infect Dis* [Internet]. 2020 [cited 2022 Feb 24]; 95:376-383. DOI: <https://doi.org/10.1016/j.ijid.2020.04.065>.
24. Dashraat P, Wong JLL, Lim MXK, Lim LM, Li S, Biswas A, et al. Coronavirus disease 2019 (COVID-19) pandemic and pregnancy. *Am J Obstet Gynecol* [Internet]. 2020 [cited 2022 Feb 24]; 222(6):521-31. DOI: <https://doi.org/10.1016/j.ajog.2020.03.021>.
25. Mullins E, Evans D, Viner RM, O'Brien P, Morris E. Coronavirus in pregnancy and delivery: rapid review. *Ultrasound Obstet Gynecol* [Internet]. 2020 [cited 2022 Feb 24]; 55(5):586-92. DOI: <https://doi.org/10.1002/uog.22014>.
26. Zaigham M, Andersson O. Maternal and perinatal outcomes with COVID-19: a systematic review of 108 pregnancies. *Acta Obstet Gynecol Scand* [Internet]. 2020 [cited 2022 Feb 24]; 99(7):823-9. DOI: <https://doi.org/10.1111/aogs.13867>.
27. Stumpfe FM, Titzmann A, Schneider MO, Stelzl P, Kehl S, Fasching PA, et al. SARS-CoV-2 infection in pregnancy: a review of the current literature and possible impact on maternal and neonatal outcome. *Ge Fra* [Internet]. 2020 [cited 2022 Feb 24]; 80:380-90. DOI: <https://doi.org/10.1055/a-1134-5951>.
28. Sahin D, Tanacan A, Erol SA, Anuk AT, Yetinskin FDY, Keskin HL, et al. Update experience of a tertiary pandemic center on 533 pregnant women with COVID-19 infection: a prospective cohort study from Turkey. *Int J Gynecol Obst* [Internet]. 2021 [cited 2022 Feb 24]; 152:328-34. DOI: <https://doi.org/10.1002/ijgo.13460>.
29. Chen H, Guo J, Wang C, Lou F, Yu X, Zhang W, et al. Clinical characteristics and intrauterine vertical transmission potential of COVID-19 infection in nine pregnant women: a retrospective review of medical records. *The Lancet* [Internet]. 2020 [cited 2022 Feb 24]; 395:809-15. DOI: [https://doi.org/10.1016/s0140-6736\(20\)30360-3](https://doi.org/10.1016/s0140-6736(20)30360-3).



30. Koumoutsea EV, Vivanti AJ, Shehata N, Benachi A, Gouez AL, Desconclois C. COVID-19 and acute coagulopathy in pregnancy. *J Thromb Haemost* [Internet]. 2020 [cited 2022 Feb 24]; 18:1648–52. DOI: <https://doi.org/10.1111/jth.14856>.
31. Blauvelt CA, Chiu C, Donovan AL, Prah M, Shimotake TK, George RB, et al. Acute respiratory distress syndrome in a preterm pregnant patient with coronavirus disease 2019 (COVID-19). *Obstet Gynecol* [Internet]. 2020 [cited 2022 Feb 24]; 136 (1): 46-51. DOI: <https://doi.org/10.1097/aog.0000000000003949>.
32. Ministério da Saúde (BR). Manual instrutivo da rede de atenção às urgências no Sistema Único de Saúde. Brasília, DF: MS; 2013.