



Experiences of Women Who Gave Birth in US Hospitals During the COVID-19 Pandemic

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Abstract

The purpose of this study was to describe the experiences of women who gave birth in a US hospital during the COVID-19 pandemic. Women who gave birth between March and July 2020 completed a survey on the experience of giving birth during a pandemic. Of this, 885 women were consented and participated in the study; 22.5% of women reported hypertension, 33.8% reported anxiety, 18.6% reported depression, and 1.13% reported testing positive for COVID-19. Of this, 61% of women reported inadequate support for childbirth, and 20.5% reported that they did not feel safe giving birth in the hospital. Women who tested positive for COVID-19 were more likely to be of Asian race, have a cesarean delivery, not have a birth partner present, and discontinue breastfeeding before 6 weeks. Pandemic-related changes to maternity care practices may have impacted birthing women's perceptions of safety and support in the hospital environment and affected symptoms of stress. Health care policy and maternity care practices should promote feelings of safety and control and overall experience for women giving birth in the hospital during a pandemic.

Keywords

COVID-19, pregnant, patient safety, women's health, health care, planning or policy

Introduction

Pregnant women and maternity care practices have been significantly affected by the coronavirus-19 (COVID-19) pandemic. Although the severity of COVID-19 infection in pregnant women is still being determined, pregnant women are considered a high-risk population (1,2) Early in the pandemic, it was unknown whether mothers infected with COVID-19 should be separated from their infants or if they should breastfeed (3). In the United States, the Center for Disease Control (CDC) recommended that infants be temporarily separated from mothers with confirmed or suspected COVID-19 infection and fed with expressed breast milk (4). Alternatively, the World Health Organization (WHO) recommended that infected women be allowed to stay with their infants, rooming in, practicing skin-to-skin contact, and breastfeeding (5,6). Conflicting recommendations led hospitals to create a variety of maternity care policies with varying levels of restrictions on birthing women.

Noninfected pregnant women were also greatly affected by changes to health care and hospital maternity care policies. Women had to face the actual and perceived threats

of contracting COVID-19, while also accepting that their pregnancy and childbirth experiences would be altered. Prenatal visits moved to telehealth (7). Universal masking procedures were enacted as well as, in some areas, universal nasopharyngeal testing for pregnant women (8). Women were uncertain if they would be able to have a birth partner, doula, or preferred provider attend their birth. When arriving at labor and delivery, even minor symptoms could be deemed a presumed positive enacting several policies to prevent infection transmission (9). Typical best maternity care practices such as immediate skin-to-skin contact after delivery, assistance with breastfeeding in the first hour of life, and rooming-in with the infant may have been discontinued or modified (10). Hospital stays were shortened in

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many areas (9). The threat of infection transmission and changes to hospital policies made women uneasy about delivering in a hospital, provoking the professional organizations of obstetric care providers across disciplines to release a joint statement affirming that the hospital is a safe place to give birth, even during a pandemic (11).

Women who were pregnant or giving birth during the early phases of the COVID-19 pandemic faced considerable uncertainty compounded with other common potential physical and mental health comorbidities that can occur in pregnancy. The general population demonstrated a 3-fold increase in affective disorders such as depression during the COVID-19 pandemic (12). Prepandemic research has shown that pregnant women are vulnerable to elevated levels of anxiety, depression, and other health problems exacerbated by stress such as hypertension or diabetes (13–17). Little is known about how being pregnant or delivering a baby during a pandemic, even when not infected with COVID-19, may have affected expecting and new mothers in the United States. The purpose of this study was to describe the experiences of women who gave birth in a hospital during the early phases of the COVID-19 pandemic (March–July 2020).

Methods

We conducted a cross-sectional survey of women 18 years or older who gave birth in a hospital during the COVID-19 pandemic. The primary aim of this study was to describe the experiences of women giving birth during the COVID-19 pandemic. A secondary objective of the study was to identify characteristics correlated with reporting a positive COVID-19 test.

Women were recruited predominantly via social media (Facebook, Instagram) with ad prompts such as, “What was it like to give birth during a pandemic?” that linked to the survey. Additionally, bloggers and social media influencers who have new mothers as an audience were contacted to see whether they would share information about the study (online word of mouth).

To be included in the study, women had to be between 18 and 50 years old, had to be able to read and write in English or provide their own translator to help them complete the survey, and had to have given birth in a hospital in the United States on or after March 1, 2020. Those who were excluded included men, women who gave birth prior to the onset of the COVID-19 pandemic, and women who gave birth outside of a hospital.

Informed consent and study data from an 80-item mixed methods survey were collected and managed using REDCap electronic data capture tools hosted at the University of Nebraska Medical Center. REDCap (Research Electronic Data Capture) is a secure, web-based software platform designed to support data capture for research studies (18,19). The focus of this study was the initial quantitative instrument within the survey which included information about demographics, pregnancy information, and

self-reported health conditions, including COVID-19 positivity for self and infant. Participants were asked a yes or no question as to whether they had enough support during their childbirth and whether they felt safe giving birth in a hospital during COVID-19.

Data analysis was completed using Stata 16.1 (20). Descriptive maternal and birth characteristics were determined. Univariate χ^2 tests were used to test whether there was a correlation between categorical participant or pregnancy characteristics and COVID-19 positivity. Univariate Student *t* tests were used to test the possible association between continuous variables and COVID-19 positivity. Multivariable analysis was not performed due to the cross-sectional study design and limitations to determining temporal relationship between predictors and outcome as well as the low frequency of COVID-19 in the study population.

Results

A total of $n = 885$ women were included in the study. As displayed in Table 1, women were predominantly white non-Hispanic, married, fully employed, and owned their own home. A slight majority of women (55.7%) were multiparous. Women were 18 to 43 years of age, with an average of 29.8 years old with a standard deviation of 4.9. The majority (70.7%; 626/885) of women had a vaginal delivery with a significant minority (29.3%, 259/885) undergoing cesarean delivery.

In the general sample, 97.5% of participants had a birth partner present, although only 39% of participants reported having adequate support during labor. The majority of women (82.6%) were not separated from their newborns at birth and 89.2% were able to room-in with their infant during their hospital stay. Women reported skin-to-skin post birth 84.4% of the time, 89.9% of women initiated breastfeeding 74.6% were given breastfeeding support within the first hour of life, and 74.3% continued to breastfeed at 6 weeks or greater. Although the majority of participants reported that they felt safe during their hospital stay, 20.5% of mothers reported that they did not feel safe giving birth in the hospital during in pandemic.

The vast majority of mothers in our sample, 98.9% ($n = 875/885$), reported that they either were not tested or tested negative for COVID-19 during pregnancy or delivery, or postpartum. Only 1.13% of mothers ($n = 10/885$) reported testing positive. Other self-reported health conditions experienced included 8.8% diabetes, 22.5% hypertension, 8.1% preeclampsia, 18.6% depression, and 33.8% anxiety. All newborns of participants in our sample reportedly did not test positive for COVID-19. During univariate analysis, potential risk factors for COVID-19 positivity among mothers included Asian race/ethnicity as displayed in Table 2. Other positively correlated birth characteristics ($P < .05$) for women with COVID-19 included cesarean delivery and not having a birth partner present at birth. In addition, it was

Table 1. Characteristics of Sample.

Variable	N (%)
Maternal characteristics	
Participant age	
18-24	132 (14.9%)
25-29	282 (31.9%)
30-34	313 (35.4%)
35-39	133 (15.1%)
≥40	24 (2.7%)
Race/ethnicity	
White, not Hispanic	750 (84.8%)
Asian	26 (2.9%)
Hispanic	81 (9.2%)
Black, not Hispanic	12 (1.4%)
Other	16 (1.8%)
Marital status	
Single	40 (4.5%)
Married	729 (82.3%)
Committed	110 (12.4%)
Divorced/separated/widow	6 (0.7%)
Highest school grade completed	
At least some high school	11 (1.2%)
High school graduate/GED	102 (11.5%)
Vocational/technical	28 (3.2%)
Associate	173 (19.6%)
Bachelor's degree	293 (33.1%)
Advanced degree	270 (30.5%)
Other	8 (0.9%)
Employment status at delivery	
Full time	544 (61.5%)
Part time	79 (8.9%)
Other employed	69 (7.8%)
Unemployed	177 (20.0%)
Other	16 (1.8%)
Living situation	
Own home	529 (59.8%)
Rent home	258 (29.2%)
Live in family housing	91 (10.3%)
Other	7 (0.8%)
Household income (yearly, USD)	
<\$30 000	108 (9.3%)
\$30 001-\$50 000	129 (14.6%)
\$50 001-\$70 000	145 (16.4%)
\$70 001-\$100 000	219 (24.8%)
>\$100 000	284 (32.1%)
Parity	
Nulliparous	392 (44.3%)
Multiparous	493 (55.7%)
Variables related to patient experience	
Length of hospital stay after delivery	
<24 hours	42 (4.8%)
24-48 hours	570 (64.5%)
>48 hours	272 (30.8%)
Neonate status	
Stillbirth	6 (0.7%)
Live birth	879 (99.3%)
Self-reported health conditions	
Asthma	53 (6.0%)
Diabetes	78 (8.8%)

(continued)

Table 1. (continued)

Variable	N (%)
Maternal characteristics	
High blood pressure	199 (22.5%)
Preeclampsia	72 (8.1%)
Hemorrhage	36 (4.1%)
Shoulder dystocia	12 (1.4%)
Depression	165 (18.6%)
Anxiety	299 (33.8%)
Other	63 (7.1%)
Birth partner	
None	22 (2.5%)
Present at birth	862 (97.5%)
Desired social support at birth	
Inadequate	540 (61.0%)
Adequate	345 (39.0%)
Newborn-mother separation after delivery	
No	731 (82.6%)
Yes	154 (17.4%)
Newborn in room during hospital stay	
No	95 (10.8%)
Yes	788 (89.2%)
Skin-to-skin contact after birth	
No	138 (15.6%)
Yes	747 (84.4%)
Felt safe in hospital during COVID-19 pandemic	
No	181 (20.5%)
Yes	701 (79.5%)
Breastfed newborn	
No	98 (11.1%)
Yes	787 (88.9%)
Given breastfeeding support within 1 hour of birth	
No	200 (25.5%)
Yes	586 (74.6%)
Length of breastfeeding	
Less than 6 weeks	144 (25.7%)
Six weeks or more	417 (74.3%)
NICU stay	
No	751 (84.9%)
Yes	134 (15.1%)

Abbreviation: NICU, neonatal intensive care unit.

observed that women with a positive coronavirus test tended ($P = .06$) to breastfeed for less than 6 weeks.

Discussion

Our study of 885 women who gave birth in the United States during the COVID-19 pandemic had several interesting findings. Of note regarding overall health, women in our study were more likely to have high blood pressure (22.5%) compared to previous studies which have shown the rate of hypertension in pregnancy to be under 10% (16). Women in our sample showed high levels of anxiety (33.8%) compared to previous studies reporting anxiety prevalence in pregnancy around 20% (13). Women in our study also reported depression at a high rate (18.6%), compared to the 12.7% rate typically accepted, although there are other sources with depression in pregnancy rates consistent with

Table 2. Characteristics Associated With COVID-19 Positivity .

Variable	COVID-19 (–), N (%)	COVID-19 (+), N (%)	P
Birth characteristic			
Route of delivery			.01
Vaginal delivery	623 (99.5%)	3 (0.5%)	
Planned cesarean delivery	104 (97.2%)	3 (2.8%)	
Unplanned cesarean delivery	148 (97.4%)	4 (2.6%)	
Birth partner			.001
None	19 (86.4%)	3 (13.6%)	
Present at birth	855 (99.2%)	7 (0.8%)	
Length of breastfeeding			.06^a
Less than 6 weeks	204 (97.6%)	5 (2.4%)	
Six weeks or more	570 (99.3%)	4 (0.7%)	
Maternal characteristic			
Race/ethnicity			.03
White, not Hispanic	743 (99.1%)	7 (0.9%)	
Asian	24 (92.3%)	2 (7.7%)	
Hispanic	81 (100%)	0 (0%)	
Black, not Hispanic	12 (100%)	0 (0%)	
Other	15 (93.8%)	1 (6.3%)	

^aTrend, not statistically significant at $P < .05$ level.

our sample (14,15,21). These symptoms have potential relationships to stress and were no more prevalent in women who had a diagnosis of COVID-19. One could conjecture that women who gave birth and brought an infant into the world during a pandemic may be vulnerable to physical symptoms of stress, regardless of whether they were personally diagnosed with COVID-19.

Although most women reported they still felt safe giving birth in the hospital during a pandemic, 20.5% of the women reported that they felt unsafe in the hospital. While we don't have an exactly comparable study, in one prepandemic survey on the perceived safety of place of birth in pregnant women in their third trimester, 12.6% of women reported they would feel safest giving birth outside of a hospital, even when not planning an out of hospital birth (22). Adding to this, the majority of our sample (61%) reported that they had inadequate birth support during their delivery. Most women were able to have a birth partner present with them, but many women use multiple sources of support when they are giving birth, which may include doulas, friends, or family members. While hospital birth is considered safe from a health care perspective, and professional organizations have emphatically affirmed this, pandemic-related maternity care practices may not align with a woman's perceptions of safety and control (23). Although following public health directives, health care policy makers should consider ways to improve the experiences of birthing women and ways to help them feel safe and supported.

The small number of women who were diagnosed with COVID-19 in our study were more likely to undergo

cesarean delivery compared to women not diagnosed with COVID-19. Although vaginal delivery is not contraindicated in COVID-19 infection, this outcome may be related to early uncertainties about the safety of vaginal birth, or that these women were more critically ill and too unstable to undergo vaginal delivery (2,24). Another possibility is that some of these women contracted COVID-19 while hospitalized for childbirth and having a cesarean may have been a risk factor for contracting COVID-19.

Women with COVID-19 were less likely to report having a birth partner present with them at delivery compared to women without COVID-19, which is consistent with common "no visitor" policies for COVID-19 patients. Additionally, women with COVID-19 tended to breastfeed for less than 6 weeks. Although numerous factors can contribute to breastfeeding length of time, such as illness, milk supply, breast infection, anemia, and so on, we found it interesting that women with COVID-19 were just as likely to initiate breastfeeding as their non-COVID-19-infected counterparts. Despite conflicting recommendations between the WHO and CDC, women in our sample who were COVID-19 positive were not separated from their infants, held their infants skin-to-skin after birth, and roomed in with their infants. These behaviors are consistent with the most up-to-date CDC and WHO recommendations, which have wavered and changed throughout the pandemic (4–6). Infants in the non-COVID-19 groups showed no difference in term delivery. Although it was statistically significant that women with COVID-19 were more likely to be of Asian race compared to the general sample, less than 3% of our sample ($n = 2$) was Asian, making this finding possibly random chance.

Despite that healthcare institutions changed maternity care practices to adapt to a pandemic, many practices related to patient quality and positive patient experience remained intact. For example, most women still received breastfeeding support, held their babies skin-to-skin immediately after delivery, and roomed in with their infant whether or not they had COVID-19. Since many maternity care policies were at their most restrictive early in the pandemic, these practices remaining in place make a hopeful statement that women could have a positive birth experience in the hospital through the remainder of the pandemic.

Limitations

There were several limitations in this study. First, our sample was recruited through social media and online word of mouth, resulting in a sample not representative of the general population. This study collected self-reported data, which is naturally biased, including reports on retrospective experiences, some provided days after giving birth and others several months later. The length of time since giving birth and when a participant completed the study also affected how they reported the length of time they breastfed. The outcomes on women who reported testing positive for COVID-19, even when statistically significant, are

unreliable due to the small sample size and not specifically separating COVID-19 positivity into during pregnancy, childbirth, or postpartum.

Recommendations

Just as the COVID-19 virus is novel, the experiences of giving birth in the United States during a pandemic of this magnitude are novel. Further research should be conducted prospectively on all women giving birth during a pandemic, focusing on both biological and psychosocial variables. The elevated levels of anxiety, depression, and hypertension in our sample deserve closer study. Future research should also focus on race, ethnicity, and socioeconomic variables and how those may affect health and psychosocial outcomes in birthing mothers during a pandemic.

Several registries of women positive with COVID-19 have been created and will hopefully begin addressing many health outcome questions in large samples of infected women (25–27). Since we can't determine causation in our study, future research should look at the relationships between cesarean delivery, breastfeeding, race, and COVID-19 infection in pregnant women.

Health care policy and maternity care practices should focus not only on keeping women safe from COVID-19 infection but also on increasing women's overall feelings of safety and control in their birthing environment. As professional organizations affirm that the hospital is safe for labor and delivery even during a pandemic (11), the definition of safety should be broadened to include psychological safety. A positive health care maternity care experience for a woman giving birth in a hospital, even during an unprecedented pandemic, can have a lasting impact on how she and her family interact with health care for the rest of their lives.

Conclusion

Our study of 885 women who gave birth during the early phase of the COVID-19 pandemic showed that the women reported high levels of anxiety, depression, and hypertension. The majority of women reported inadequate support in labor, and a relatively high number reported they did not feel safe giving birth in a hospital.

A small portion of our sample reported testing positive for COVID-19 during pregnancy, during childbirth, or postpartum. Women who tested positive for COVID-19 were more likely to be of Asian race, have a cesarean, and discontinue breastfeeding before 6 weeks than non-COVID-infected women.

Future research should focus on the biological and psychosocial variables surrounding giving birth during a pandemic. Health care policy and maternity care practices should focus on improving the feelings of safety and control and overall experience for women giving birth in the hospital during a pandemic.

Authors' Note

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Declaration of Conflicting Interests

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