

# Reported information sharing and satisfaction with maternity care providers during the COVID-19 pandemic: Associations with socioeconomic status and shifts to telehealth

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## Abstract

**Background:** The COVID-19 pandemic has dramatically affected pregnant people's prenatal care, labor, and delivery experiences. Given these rapid changes, providers have needed to be proactive in sharing information about COVID-19-related care impacts. The purpose of this study was to investigate: (a) Whether patient demographics or disrupted care (eg, canceled appointments and rapid shift to telehealth) is associated with patient-reported information sharing from the providers; and (b) Whether patient-reported provider information sharing or disruptions to care are associated with patient satisfaction with provider.

**Methods:** Data come from a convenience sample of 1999 pregnant people living in the United States who completed an online survey between April 16 and May 7 2020.

**Results:** Thirty-eight percent of participants said that their provider had not discussed how the pandemic would affect their care during pregnancy, labor, or delivery. Participants with lower education, less income, or whose appointments had been canceled or rescheduled because of the pandemic were significantly less likely to report information sharing. Provider satisfaction was significantly lower among participants who did not report information sharing, those who had appointments by way of telehealth, and those who reported that all their appointments had been rescheduled/canceled.

**Discussion:** At the beginning of the pandemic, there were significant socioeconomic inequities in reported information sharing by the providers, which in turn was negatively associated with provider satisfaction. Providers need to be aware of the role implicit bias may play in information sharing—both generally and during public health crises—and consider ways to reduce the impacts of disrupted care delivery on patient satisfaction. If left unaddressed, perceived poor provider communication and associated low satisfaction with providers could contribute to adverse perinatal outcomes.

## KEYWORDS

birth disparities, coronavirus, patient satisfaction, patient-provider communication, prenatal care, telehealth

## 1 | INTRODUCTION

The COVID-19 pandemic has had a dramatic impact on pregnant women's labor and delivery experiences.<sup>1-3</sup> Changes have included: not being allowed to have support persons attend prenatal appointments, having limited support persons in labor and during recovery, mandatory COVID-19 testing during labor, separation of newborns from COVID-19-positive parents, and early hospital discharge.<sup>3,4</sup> To make matters worse, many policies changed rapidly as SARS-CoV-2 surges ebbed and flowed, making it difficult for pregnant people to know what to expect during labor and delivery.<sup>5</sup> To alleviate patient uncertainty, proactive provider communication regarding the impacts of the pandemic on care during pregnancy, labor, and delivery is critical. Effective provider communication, including the sharing of information with patients, is known to be essential for establishing trust, increasing patient satisfaction, and optimizing perinatal health outcomes, even outside of a pandemic.<sup>6</sup> Clear communication during the current pandemic and similar public health crises is urgently needed to address patient uncertainties, and this includes sharing information on how pregnant people with suspected or confirmed COVID-19 will receive care.<sup>7</sup>

Despite the importance of practitioner information sharing for the establishment of an effective patient-provider relationship and increased patient satisfaction, gaps in communication have been demonstrated even before the COVID-19 pandemic.<sup>8-10</sup> Within the United States, a central issue in most previous patient-provider communication studies has been assessing communication inequities shaped by patient race/ethnicity.<sup>9,11</sup> For example, a pre-pandemic analysis of prenatal care experiences of 22 participants of color found that individuals perceived that their providers had given them deficient or biased information regarding their pregnancy, and perceived this as a major issue with the health care system.<sup>12</sup> Fewer studies have specifically evaluated how lower socioeconomic status affects patient experience and perceived information sharing, but some studies have reported that lower income and education among patients is associated with reduced information sharing by the practitioners.<sup>13-15</sup> Researchers working with the Listening to Mothers III study reported that uninsured individuals were more likely than privately insured participants to experience poor communication during prenatal care.<sup>9</sup> Similarly, a qualitative analysis of the relationship between socioeconomic status and

patient perceptions of care noted that several participants felt they were not listened to and perceived that their quality of treatment was negatively impacted by their socioeconomic status.<sup>16</sup> It therefore seems likely that people of color and individuals from low-resource households may be disproportionately impacted by inadequate provider information sharing during the COVID-19 pandemic.

Another important change in prenatal care experience during the COVID-19 pandemic that influenced patient-provider communication was the temporary or intermittent shift to virtual visits using telehealth to reduce both patient and provider exposure to the novel coronavirus. Fewer in-person appointments or sudden changes in the mode of delivery can be confusing, evoke fear, or make it more difficult for patients to effectively communicate with their provider and establish trust.<sup>17</sup> The ongoing nature of the pandemic also contributes to information processing fatigue. Telehealth requires careful planning and discussions with patients about how to balance in-person and virtual appointments according to the stage of pregnancy and individual patient risk, which was difficult in many clinical settings given the rapid onset of the COVID-19 pandemic.<sup>18</sup> A growing body of evidence suggests that there is variation in maternity care delivery preferences among pregnant women, and that these preferences vary according to patient race/ethnicity and income.<sup>19,20</sup>

Both appointment type and perceptions of provider information sharing are expected to influence patient's ratings of provider satisfaction, an important predictor of perinatal outcomes.<sup>21</sup> Patients who felt uncomfortable with their appointment type—either because they feared risking viral exposure by attending in-person appointments or felt they were not receiving sufficient support or forming a personal connection with their provider in remote appointments—may subsequently rate their care and provider satisfaction less favorably. In addition, previous work indicates that good perceived provider communication is associated with positive prenatal care experiences,<sup>22</sup> whereas poor perceived provider communication is associated with negative prenatal care experiences.<sup>15,23</sup> Notably, there can be differences between how a patient perceives their physician's information sharing, objective measures of information sharing, and/or providers' perceptions of the thoroughness of information shared with patients. However, only the former represents effective communication, and perceived information sharing has been more strongly associated with provider satisfaction than

objectively rated information sharing.<sup>24</sup> Perceived provider communication plays a key role in helping patients feel supported in their care, which is particularly important for individuals who are socially disadvantaged with respect to race/ethnicity or socioeconomic status.<sup>12</sup>

Given this background, we conducted an online convenience survey to assess patient-reported provider information sharing about the impacts of the COVID-19 pandemic on prenatal care, and satisfaction with providers during the early waves of the pandemic. Data were collected from pregnant women living in the United States during the COVID-19 pandemic from mid-April 2020 until early May 2020, approximately 1 to 2 months after the pandemic was declared a national emergency (March 13, 2020). We specifically evaluated:

1. Whether patient-reported provider information sharing about COVID-19 pandemic effects on maternity care was significantly lower among participants who: (a) were less educated and had a lower income, and (b) reported care disruptions (eg, canceled appointments or shifts to telehealth).
2. Whether satisfaction with maternity care practitioner was significantly lower among participants who: (a) perceived a lack of provider information sharing about maternity care effects of the COVID-19 pandemic, and (b) reported prenatal care disruptions (eg, rescheduled/canceled appointments or shifts to telehealth).

## 2 | METHODS

The COVID-19 and reproductive effects (CARE) study was an online survey administered to a convenience sample primarily recruited over social media (Facebook and Twitter), and distributed via email to contacts working in maternity care.<sup>3,25</sup> Pregnant people over 18 years of age and living in the United States were eligible to participate. Data presented here were collected over a 3-week period from April 16 to May 7 2020 ( $N = 1999$ ), when uncertainty around care was particularly high. This study received ethical approval from the Dartmouth College Committee for the Protection of Human Subjects.

### 2.1 | Study variables

#### 2.1.1 | Reported provider information sharing

Participants were asked: “Has your provider discussed how the COVID-19 pandemic will impact your care in pregnancy, labor and/or delivery?” (yes/no).

#### 2.1.2 | Provider satisfaction

Participants were asked: “How satisfied are you with your maternity care provider?” and were able to select an option from 0 to 100 using a sliding dial, with 0 representing “Not at all satisfied” and 100 representing “Very Satisfied.”

#### 2.1.3 | COVID-19 effects on appointments

Participants were asked: “How have you been meeting with your maternity care provider since the onset of COVID-19? Select all that apply:

In person (a) Remotely using telehealth (b) I have canceled or rescheduled appointments (c).” Participants who had been met in person but not via telehealth were classified as having met in person, regardless of whether some appointments were also rescheduled or canceled (a); those who met both in person and via telehealth were classified as meeting using both of these appointment types, regardless of whether some appointments were also rescheduled or canceled (b); those who did not meet in person but met remotely using telehealth were classified as telehealth, regardless of whether some appointments were also canceled or rescheduled (c); and those who reported that all appointments had been canceled or rescheduled were classified as appointments canceled or rescheduled (d).

#### 2.1.4 | Age

Participants self-reported their age in years.

#### 2.1.5 | Education

Participants selected their highest completed education from the following options: Some high school, no diploma (a); high school graduate, diploma, or the equivalent (eg, GED) (b); some college credit, no degree (c); trade/technical/vocational training; (d) Associate degree (e) Bachelor’s degree; (f) Master’s degree; (g) Professional degree; and (h) Doctorate degree (i). A composite education variable was created for analysis: less than a bachelor’s degree (a), a bachelor’s degree (b), or a degree beyond a bachelor’s degree (c).

#### 2.1.6 | Household income

Participants indicated their household income from the following options: Less than \$10 000 (a); \$10 000-\$19 999

(b); \$20 000-\$34 999 (c); \$35 000-\$49 999 (d); \$50 000-\$74 999 (e); \$75 000-\$99 999 (f); and \$100 000+ (g). A composite household income variable was created for analysis: <\$49 999 (a), \$50 000-\$99 999 (b), and \$100 000+ (c).

### 2.1.7 | Race/ethnicity

Race/ethnicity was self-reported and measured according to the Office of Management and Budget Standards. Native Hawaiian/Pacific Islander participants were reclassified as “Other” as a result of small sample size ( $N = 3$ ).

### 2.1.8 | Current gestational week

Participants indicated their gestational week at the time of the survey.

### 2.1.9 | Previous birth

Participants were asked whether they had given birth previously (yes/no).

### 2.1.10 | Provider type

Participants were asked whether their primary maternity care practitioner was an Obstetrician/Gynecologist (a), Midwife (b), or Other (c). If participants selected “Other” they were asked to describe the provider type.

### 2.1.11 | Geographic location

Participants self-reported their zip codes. These data were used to generate a map of participant distribution across the United States.

## 2.2 | Statistical analysis

All analyses were completed in STATA 15.1. Conventional statistical thresholds for assessing significance ( $P < 0.05$ ) were used. Skewness and kurtosis of continuous variables were in the acceptable range (skewness:  $\pm 0.5$ , kurtosis  $\pm 3$ ), except for provider satisfaction, which was consequently categorized as a dichotomous variable using a median split (high  $\geq 81$  vs low  $< 81$  satisfaction) for the regression analysis. Multicollinearity was not detected between any variables; all VIF values were in an acceptable range 1.02-1.37.

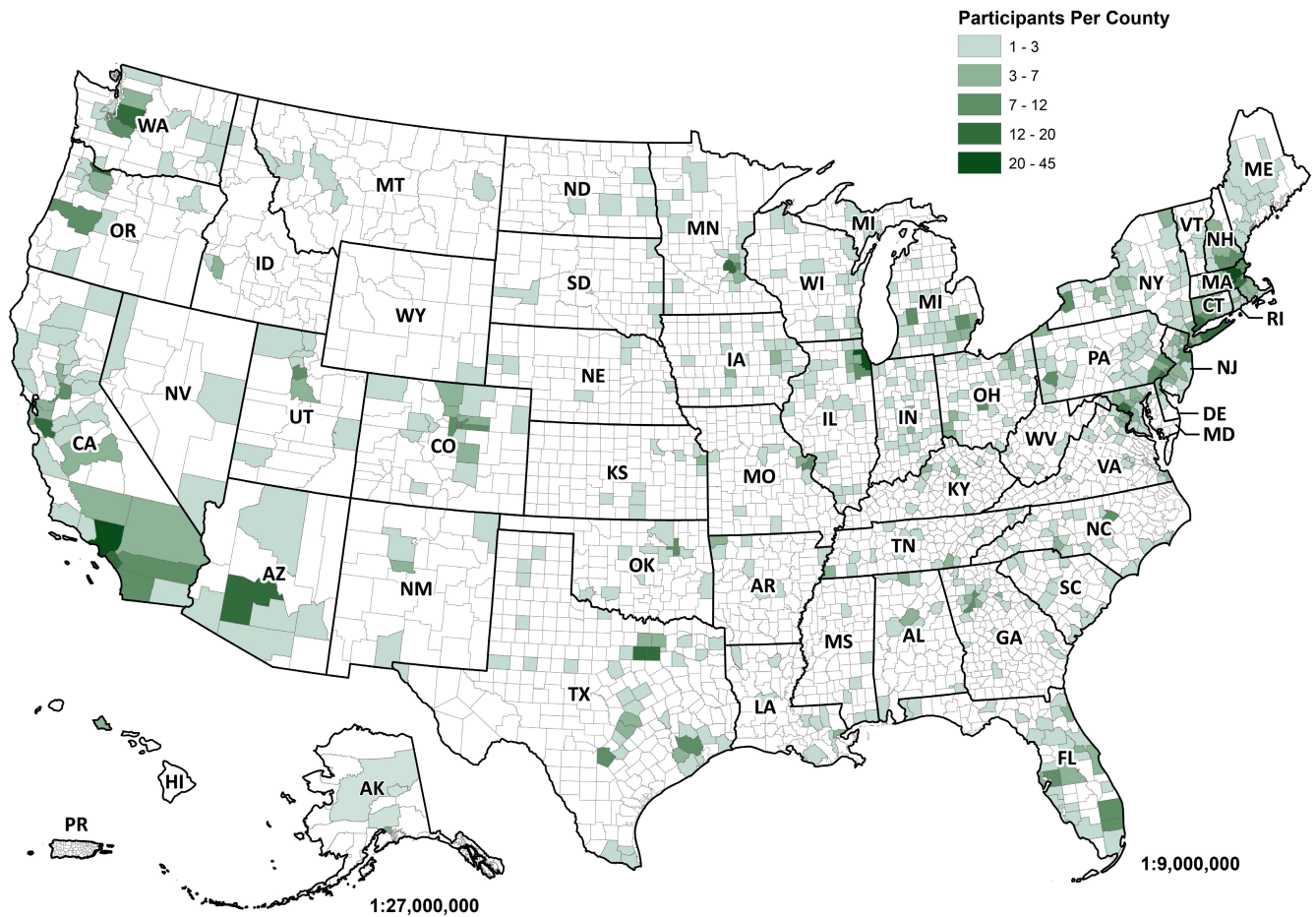
Descriptive statistics were generated for the study sample. Multivariate logistic regression was used to evaluate which factors were associated with the likelihood of patient-reported provider information sharing about the COVID-19 pandemic. Multivariate logistic regression was then used to evaluate which factors were associated with the likelihood of high provider satisfaction (satisfaction score  $\geq 81$ ). Both analyses adjusted for maternal age, gestational week at survey collection, income, education, previous pregnancy, provider type, and race/ethnicity. Analyses were replicated to only include participants in the second and third trimesters of pregnancy ( $N = 1845$ , 92.3% of study sample), to assess whether the inclusion of first trimester pregnancies biased the results; excluding first trimester pregnancies did not alter any statistical findings, so the entire sample was retained.

## 3 | RESULTS

Participants were located in all 50 U.S. states and Puerto Rico (Figure 1). The mean participant age was 31.2 years and the mean number of weeks pregnant was 26.5 (Table 1). Most of the participants self-identified as white (1731, 86.6%), were highly educated (833, 41.7% “degree beyond bachelor’s”), and most had a household income of  $> \$100 000$  per year (1073, 53.7%). Most of the participants (1619, 81%) were under the care of an Obstetrician/Gynecologist, whereas 342 (17.1%) were receiving care from a midwife, and 38 (1.9%) listed “Other.” Individuals who listed “Other” were receiving care from family physicians, reproductive endocrinologists, perinatologists, or were attending practices that included both midwives and obstetricians. In the time between pandemic onset and survey participation, 1238 (61.9%) reported having met in person with their provider, 460 (23.0%) had met in person and using telehealth, 209 (10.5%) had met using telehealth, and 92 (4.6%) had all their appointments canceled or rescheduled.

### 3.1 | Patient-reported information sharing by the provider

Thirty-eight percent of the sample (761) reported that their practitioner had not shared information about how the COVID-19 pandemic would affect their maternity care. Individuals who were further along in their pregnancy (adjusted odds ratio [AOR]: 1.09,  $P < 0.001$ ), who had a degree beyond a bachelor’s (reference: degree less than bachelor’s, AOR = 1.63,  $P = 0.001$ ), or who had an income over \$100 000 (reference: income  $< \$49 999$ , AOR: 1.87,  $P < 0.001$ ) were significantly more likely to report that their practitioner had shared information (Table 2).



**FIGURE 1** Study participant locations across the United States. The number of participants in each zip code is summarized across United States counties and displayed as a percentage of county population, with darker colors representing areas where participants make up a higher percentage of the county population. Map reprinted under a CC BY license, with permission from the U.S. Census Bureau, original copyright 2017, and the U.S. Department of Agriculture, original copyright 2013

Individuals who attended both in-person and telehealth appointments were significantly more likely to say that their providers had shared information about the impact of the pandemic (reference: in-person appointments only, AOR: 1.55,  $P = 0.001$ ), whereas those whose appointments had been canceled or rescheduled were significantly less likely to report information sharing by the provider (reference: in-person appointments only, AOR: 0.29,  $P < 0.001$ ). Participant age, race/ethnicity, previous birth, and provider type were not significantly associated with reported information sharing by the provider.

### 3.2 | Patient satisfaction with the provider

High provider satisfaction was significantly more likely among participants reporting that their provider had

discussed the impacts of the pandemic on their care (reference: no reported information sharing, AOR: 3.37,  $P < 0.001$ ) (Table 3). Relative to having only in-person appointments, participants who had conducted appointments both in-person and using telehealth (AOR: 0.69,  $P = 0.002$ ), using telehealth only (AOR: 0.36,  $P < 0.001$ ), or who had only canceled or rescheduled appointments (AOR: 0.24,  $P < 0.001$ ) had significantly lower satisfaction with their provider. Having a midwife as a primary care provider was associated with an increased likelihood of high provider satisfaction (reference: obstetrician, AOR: 1.61,  $P < 0.001$ ), whereas participants for whom this was their first birth had significantly lower provider satisfaction (reference: previous birth, AOR: 0.75,  $P = 0.005$ ). Income, education, patient race/ethnicity, age, and gestational week during data collection were not significantly associated with the likelihood of high provider satisfaction.

TABLE 1 Descriptive statistics of study sample (N = 1999)

Variable	Mean (SD) N (%)
Age (years)	31.3 (4.3)
Previous birth (no)	1021 (51.1%)
Gestational week during the survey (weeks)	26.6 (8.8)
Race/ethnicity	
White	1731 (86.6%)
Hispanic/Latino/Spanish origin	119 (6.0%)
Black/African American	28 (1.4%)
Asian	70 (3.5%)
American Indian/Alaska Native	13 (0.7%)
Other	38 (1.9%)
Yearly household Income (U.S. dollars)	
<\$49999	254 (12.7%)
\$50000-\$99999	672 (33.6%)
\$100000+	1073 (53.7%)
Highest level of education completed	
No bachelor's degree	470 (23.5%)
Bachelor's degree	696 (34.8%)
Degree beyond Bachelor's	833 (41.7%)
Provider type	
Obstetrician/Gynecologist	1619 (81.0%)
Midwife	342 (17.1%)
Other	38 (1.9%)
Patient satisfaction with provider <sup>a</sup> (0 = Not at all satisfied, 100 = Very satisfied)	76.9 (22.2)
Reported patient-provider communication	
Participant reports that provider has not discussed impacts of COVID-19 on pregnancy, labor, and delivery care	761 (38.0%)
Appointment type since the onset of COVID-19 pandemic	
In person	1238 (61.9%)
In person and remotely using telehealth	460 (23.0%)
Remotely using telehealth	209 (10.5%)
No in-person or telehealth appointments because appointments have been canceled or rescheduled as a result of COVID-19	92 (4.6%)

<sup>a</sup>N = 1892.

## 4 | DISCUSSION

Maternity care providers and patients have been under increased strain during the COVID-19 pandemic as they try to respond to pandemic-related care challenges with limited and rapidly changing information. This uncertainty could contribute to the elevated psychological strain and anxiety reported among pregnant mothers during

the pandemic.<sup>26,27</sup> Strong patient-provider communication helps to establish trust and optimize outcomes, even when patients are receiving negative information.<sup>21</sup> In our sample, 38% of participants reported that their providers had not provided information about how the COVID-19 pandemic would affect their care during the first 1 to 2 months of the pandemic. This included 22.6% of participants (229/1014) in their third trimester of pregnancy.

Interestingly, reported information sharing was higher among patients reporting a combination of in-person and telehealth appointments since the start of the pandemic. This could be because having appointments in multiple formats meant that participants perceived information sharing from their provider as more effective because one of those formats represented the patient's preferred format.<sup>19,28</sup> Unsurprisingly, participants who had only experienced canceled or rescheduled appointments since the start of the pandemic reported significantly less information sharing by their providers. This finding highlights how disruptions in care during the pandemic created barriers to information access, despite the fact that other means of information sharing (eg, digital or telephone calls) could also be used.

The finding that participants from lower education and income levels were less likely to report receiving information from their provider was consistent with prior research suggesting that actual and perceived information sharing is less for patients of lower socioeconomic status.<sup>13,14</sup> These findings are raising concern since lower socioeconomic status is also linked with higher odds of developing adverse outcomes, including postpartum depression.<sup>29</sup> However, lower socioeconomic status (including income and education level) is less commonly investigated as a factor that negatively influences patient-provider communication within the United States relative to racial/ethnic inequities. Socioeconomic inequities in information sharing should be investigated more systematically in the future and could potentially overlap with racial/ethnic inequities in complex ways not captured here because of, for example, low subsample sizes. One study found that Black individuals with higher education reported more communication problems in prenatal care, whereas the same was not found to be true of Hispanic or white individuals.<sup>9</sup> More ethnically diverse samples are needed to understand the ways in which socioeconomic status and race/ethnicity interact to shape patient-provider communication.

The median participant satisfaction with provider score in the present study (81) was similar to previous studies assessing maternity care satisfaction<sup>30,31</sup> and nonmaternity care satisfaction for studies using a similar 0-100 scale.<sup>32,33</sup> That said, our results indicated that a lack of perceived provider information sharing was associated with reduced satisfaction with providers. The relationship between

**TABLE 2** Results of logistic regression model evaluating associations between demographic factors and appointment type in relation to the likelihood of women reporting that providers had discussed the impacts of COVID-19 pandemic on prenatal care, labor, and delivery (N = 1999)

	Adjusted odds ratio	Standard Error	95% CI	P-value
Age (years)	1.02	0.01	0.99, 1.05	0.13
Previous birth (yes)	0.88	0.09	0.72, 1.09	0.23
Gestational week during the survey (weeks)	1.09	0.006	1.08, 1.10	<b>&lt;0.001</b>
Race/ethnicity				
White	Reference			
Hispanic/Latino/Spanish origin	0.75	0.16	0.50, 1.14	0.18
Black/African American	0.71	0.30	0.31, 1.61	0.41
Asian	1.30	0.38	0.74, 2.30	0.36
American Indian/Alaska Native	0.84	0.51	0.25, 2.77	0.77
Other	1.02	0.39	0.48, 2.18	0.95
Primary maternity care provider type				
Obstetrician/Gynecologist	Reference			
Midwife	1.25	0.18	0.95, 1.64	0.12
Other	0.50	0.19	0.24, 1.06	0.07
Yearly household income (U.S. dollars)				
<\$49 999	Reference			
\$50 000-\$99 999		0.23	0.99, 1.91	0.06
\$100 000+	1.37	0.33	1.32, 2.66	<b>&lt;0.001</b>
	1.87			
Highest level of education completed				
No bachelor's degree	Reference	0.19		
Bachelor's degree	1.31	0.25	0.99, 1.73	0.06
Degree beyond Bachelor's	1.63		1.21, 2.19	<b>0.001</b>
Appointment type				
In person	Reference			
In person and remotely using telehealth	1.56	0.21	1.20, 2.01	<b>0.001</b>
Remotely using telehealth	0.98	0.16	0.70, 1.36	0.88
No in-person or telehealth appointments because appointments have been canceled or rescheduled as a result of COVID-19	0.29	0.07	0.17, 0.47	<b>&lt;0.001</b>
Adjusted model R <sup>2</sup>	0.15			

Significant *p*-values (<0.05) are bolded.

reported information sharing and patient satisfaction remained after accounting for canceled appointments and telehealth appointments, suggesting that satisfaction is independent of these potentially disruptive effects on care. Increased satisfaction with prenatal care is an important goal, as it has been found to predict less pain medication in labor, higher Apgar scores, lower postpartum depression, and more successful breastfeeding.<sup>21</sup> The strength of the association between reported information sharing and provider satisfaction suggests that this could be an

efficient target for improving both patient's satisfaction with their provider and associated perinatal outcomes.

## 5 | STUDY LIMITATIONS

Relative to the overall U.S. birthing population, this sample is slightly older, contains fewer underrepresented minorities, is more highly educated, and has fewer low-income individuals.<sup>34</sup> Given that perceived lack of

**TABLE 3** Results of logistic regression model evaluating the likelihood of high patient satisfaction with providers according to reported provider information sharing and prenatal appointment type (N = 1892). High patient satisfaction was calculated as  $\geq 81$ ; the median satisfaction score on a scale from 0 (not at all satisfied) to 100 (very satisfied)

	Adjusted Odds Ratio	Standard Error	95% CI	P-value
Reported information sharing from provider about COVID-19	3.37	0.38	2.70, 4.21	<0.001
Appointment type				
In person	Reference			
In person and remotely using telehealth	0.69	0.08	0.58, 0.88	<b>0.002</b>
Remotely using telehealth	0.36	0.06	0.26, 0.51	<b>&lt;0.001</b>
No in-person or telehealth appointments because appointments have been canceled or rescheduled as a result of COVID-19	0.24	0.07	0.14, 0.43	<b>&lt;0.001</b>
Maternal age	1.00	0.01	0.97, 1.03	0.94
Education				
No Bachelor's degree	Reference			
Bachelor's degree	0.84	0.12	0.63, 1.11	0.22
Degree beyond Bachelor's	0.77	0.12	0.58, 1.03	0.08
Yearly household income (U.S. dollars)				
<\$49 999	Reference			
\$50 000-\$99 999	1.12	0.19	0.80, 1.57	0.50
\$100 000+	1.03	0.19	0.73, 1.48	0.84
Gestational week at survey	0.99	0.006	0.99, 1.01	0.68
Previous birth				
Yes	Reference			
No	0.75	0.08	0.62, 0.92	<b>0.005</b>
Provider type				
Obstetrician/Gynecologist	Reference			
Midwife	1.61	0.22	1.23, 2.10	<0.001
Other	1.38	0.52	0.66, 2.86	0.39
Race/ethnicity				
White	Reference			
Hispanic/Latino/Spanish origin	0.98	0.21	0.65, 1.49	0.94
Black/African American	1.71	0.76	0.72, 4.08	0.23
Asian	1.00	0.28	0.59, 1.72	0.99
American Indian/Alaska Native	0.54	0.35	0.15, 1.90	0.34
Other	0.87	0.32	0.42, 1.80	0.71
Adjusted model $R^2$	0.09			

provider information sharing about the pandemic is more common among less educated and lower-income individuals, the estimate of 38% of participants not reporting information sharing within our relatively economically privileged sample suggests that the actual prevalence was likely much higher. In addition, the lack of ethnic diversity in our sample meant that we could not adequately assess whether there were differences in information sharing according to patient ethnicity; given established

racial inequities in patient mistreatment<sup>15</sup> and perceived communication quality,<sup>9</sup> this should be investigated in future studies.

A second limitation is that these analyses were cross-sectional. It is possible that dissatisfaction with one's health care provider may influence perceptions and memory of information sharing by the provider, thus leading to reverse causality. This is particularly relevant for our findings of lower income and education being associated



with reduced likelihood of reported information sharing since lower-income and less educated participants could perceive discrimination from their providers that could then influence their subsequent perception of information sharing.<sup>9,12</sup> In addition, there could be socioeconomic differences in the preferred mode of information sharing (eg, telehealth, in person, paper document, and verbal discussion) that could lead to differences in perceived information sharing. This would suggest that standardized “one-size-fits-all” informational material may not be equally useful to all patients and that materials should instead be intentionally designed to meet the needs of different communities.<sup>35,36</sup>

Finally, information sharing about the effects of COVID-19 could also be associated with more general aspects of information sharing and communication quality, which could also affect overall satisfaction with the provider. For example, a Canadian study found that quality of prenatal care and provider interpersonal style together explained 80% of the variance in provider satisfaction.<sup>37</sup> The fact that a large portion of the variance in satisfaction with provider is unexplained in our analysis suggests that it is important to understand how additional factors, including mode of information transmission (verbal, paper handouts, electronic material, etc.), could affect both perceived information sharing and overall satisfaction with provider.

## 5.1 | Policy implications

Birth facilities and/or practitioners should recognize that under pandemic conditions, some subpopulations could be at greater risk of receiving inadequate information than others. The sharing of information related to patient decision-making could be facilitated through the creation and promotion of decision aids.<sup>38,39</sup> Decision aids could outline requirements for support persons in labor or for newborn care in the case that a patient tests positive for COVID-19 during delivery. The WHO, for example, created a decision aid for breastfeeding guidance in the context of COVID-19 during the first months of the pandemic.<sup>40</sup> Such aids allow individuals to learn about hospital and provider policies from the comfort of their homes, thereby providing the opportunity to discuss this information with others who help in decision-making, including friends and family members. Providers can then proactively ask if patients need further clarification on COVID-19 policies or the use of decision aids during appointments.

Providers could also implement a satisfaction survey after appointments that explicitly asks what pandemic-related concerns or questions patients would like addressed. Providers within a practice can then discuss and

share concerns that have been raised, potentially incorporating responses to these concerns into future appointments. In addition, providers could implement changes to their standard visit protocols to directly ask what concerns patients have. Such efforts will likely improve both perceived patient-provider communication and patient satisfaction with providers.

Finally, efforts could be made to provide pregnant women with a greater range of care options to meet their specific needs. Work conducted as part of the CARE study suggests that maternal care experiences during the pandemic have led some participants to reconsider their care preferences.<sup>41</sup> Specifically, approximately 6% of CARE participants surveyed exhibited a novel preference for community birth (ie, home and birth center birth) following the onset of the COVID-19 pandemic. Although seemingly small, this represents over 200% increase in preference for community care in this sample. Many participants cited a desire for more person-centered care models, including more effective provider communication, as a key reason for this novel preference. Expanding access to various care models and provider types across the United States will help facilitate these shifts, allowing pregnant women to find care that enhances their perception of provider communication and increases overall provider satisfaction, with implications for healthy birth outcomes.

## 5.2 | Conclusions

Effective patient-provider communication is essential for optimizing perinatal health outcomes and appears to have been even more important during the COVID-19 pandemic when maternity care was severely disrupted and policies fluctuated with regional surges.<sup>5</sup> Effective communication will continue to be important throughout the pandemic and must be kept up to date to reflect new developments. For example, information sharing now needs to include accurate information about COVID-19 vaccination during pregnancy and lactation.<sup>42</sup>

In our analysis of patient-reported provider information sharing during the COVID-19 pandemic, a high proportion (38%) of the sample reported insufficient provider information sharing, including many participants in their third trimester (22.6%). Reported information sharing by providers was significantly lower among participants with lower incomes and less education. If left unaddressed, the inequities in reported information sharing described here, and other COVID-19-related changes in health care delivery that differentially affect socially disadvantaged groups, may further exacerbate existing health inequities.<sup>43</sup>

Although recognizing that maternity care providers have also been under incredible strain during the COVID-19 pandemic,<sup>7</sup> these findings suggest that providers should be proactive in addressing the care-related impacts of COVID-19, especially in cases where patients have lower education or income or if they have experienced disruptions in care. Further research is needed to investigate additional aspects of patient-provider communication in maternity care during the COVID-19 pandemic to understand the full range of pandemic effects on communication, and ultimately patient satisfaction and perinatal outcomes. Studies investigating the most effective means of information sharing (eg, verbal, with physical handouts, and online) among diverse populations would be particularly beneficial for reducing demonstrated sociodemographic inequities in reported provider communication.

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### DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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