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# Quality and satisfaction with care following changes to the structure of obstetric care during the COVID-19 pandemic in a safety-net hospital in Georgia: Results from a mixed-methods study

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**Abstract: Objective:** To understand perceived quality of obstetric care following changes to the structure of care in a safety-net institution during the COVID-19 pandemic.

**Methods:** We conducted a mixed-methods study including a web-based survey ( $n = 67$ ) and in-depth interviews ( $n = 16$ ) between October 2020 and January 2021. We present a descriptive analysis of quantitative results and key qualitative themes on reactions to changes and drivers of perceived quality.

**Results:** Reported quality was high for in-person and phone visits (median subscale responses: 5/5). Respondents were willing to include phone visits in care for a future pregnancy (77.8% (49)) but preferred in-person visits (84.1% (53)). In interviews, provider communication was the key driver of quality. Respondents found changes to care to be inconvenient but acceptable.

**Conclusions:** To improve satisfaction with changes to care, health systems should ensure that relationship building remains a priority and offer patients information about the reason behind changes.

**Keywords:** Telemedicine ■ Qualitative research ■ Perinatal care ■ COVID-19 ■ Quality of health care

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## INTRODUCTION

In response to the COVID-19 pandemic, health systems worldwide rapidly instituted changes to in-person care. While some providers suspended in-person visits entirely for elective or non-urgent procedures,<sup>1</sup> obstet-

ric care providers sought to balance the need to monitor ongoing pregnancies with the uncertain risks of COVID-19 infection.<sup>2</sup> Health systems implemented a wide variety of changes to obstetric care, including the introduction of telehealth, limits on support persons at delivery or prenatal visits, and reduced-frequency prenatal visits.<sup>2,3</sup> Emerging evidence shows that reduced-frequency in-person prenatal care visits during the pandemic were not associated with worse birth or obstetric outcomes.<sup>2,4</sup> One survey conducted in a privately-insured Michigan suburban health system suggests most patients found that virtual visits were lower quality than in-person care (72.9%) but reported satisfaction with the visits (77.5%).<sup>5</sup> Similarly, the majority of patients (86.9%) attending high-risk obstetric care in Long Island, New York reported satisfaction with care following the integration of telehealth visits in response to the pandemic.<sup>6</sup> One global online survey of quality showed that pregnant people who faced limits to support people in labor reported lower overall quality of prenatal care.<sup>3</sup> However, these data are all from majority-white, high socioeconomic status (e.g., privately-insured and/or majority college educated) populations and may not reflect experiences in safety-net hospitals, who serve communities most impacted by the COVID-19 pandemic.

The consequences of the COVID-19 pandemic have disproportionately impacted low-income and communities of color. Pregnant people were at higher risk of severe disease and risk was highest among pregnant people of color.<sup>7,8</sup> In addition, individuals who are already socially vulnerable have been disproportionately impacted by the economic impacts of the pandemic, including increased risk of food and housing insecurity, and job loss.<sup>9,10</sup> Understanding patient experiences receiving obstetric care during this challenging time may yield insights on unmet needs and innovative strategies to address the patient needs in the future. The goal of this study was to understand patient perceptions of quality and satisfaction with care following changes to the structure of obstetric care during the

COVID-19 pandemic in a safety-net hospital in the Southeast.

## METHODS

### *Study design*

We conducted a sequential mixed methods study at Grady Memorial Hospital in Atlanta, Georgia. Potential participants were identified through the medical record and were eligible if they had initiated prenatal care prior to March 2020, gave birth to a live born infant by October 2020, read English fluently, and received at least one phone-based prenatal care visit. This study was approved by the Emory IRB (00001148) and Grady Research Oversight Committee.

### *Changes to care*

In March 2020, leadership at Grady Memorial Hospital rapidly implemented changes to hospital visits. At entry into all clinical sites, individuals were asked about symptoms of and potential exposures to COVID-19 and underwent a temperature-check. For obstetric care, providers implemented a reduced-frequency in-person schedule supplement by phone visits.<sup>11</sup> Visitors were no longer allowed at outpatient visits and laboring people were only allowed one support person.

### *Survey recruitment*

We selected a sampling frame of 277 potentially eligible patients using the medical record. A researcher called patients up to three times to invite them to participate, ending with a follow-up text if there had been no response. We successfully contacted 162 patients, of whom 141 were eligible (fluent in English), 115 agreed to participate, and 67 completed the survey within a four-week limit (47.5% of women successfully contacted and eligible), with weekly reminder texts until completion. Interested individuals completed written informed consent and a short (~20 min) survey using REDCap (Research Electronic Data Capture) hosted at Emory University.<sup>12</sup>

### *Survey*

We measured prenatal care quality using the Quality of Prenatal Care Questionnaire and adapted demographic questions from the Pregnancy Risk Assessment Monitoring System.<sup>13,14</sup> We assessed preferences for future care modality using a series of Likert scale questions (5 items, ranging from strongly disagree to strongly agree). We adapted language for instruments to ensure all questions were comprehensible at a fifth-grade reading level.<sup>15,16</sup>

### *Statistical analysis*

We conducted descriptive analysis of survey data. We summarized participant characteristics using proportions for categorical variables or medians and interquartile ranges (IQR) for continuous variables. For the calculation of scores for each subscale, we excluded individuals who had marked ‘not applicable’ to any individual item on the subscale. For calculating proportion disagreement with individual items, we grouped the responses ‘somewhat disagree’ and ‘strongly disagree’ for disagreement and ‘somewhat agree’ and ‘strongly agree’ for agreement.

### *Interview recruitment*

At the end of the survey, participants answered whether they would be interested in being contacted for a longer, follow-up interview. Of 30 respondents interested in an interview, we selected a purposive sample of interested women for heterogeneity of parity (primiparous and multiparous women) and ratings of quality of care (positive and negative) and interviewed 16 women.

### *Interviews*

We developed a semi-structured guide covering the following domains: experiences during the COVID-19 pandemic, in-person care, phone-based and home visit care, labor, and follow-up care (See Supplemental Materials, Appendix A). Each individual guide was tailored based on participant survey responses, including probes on responses to the Quality of Prenatal Care Questionnaire and postpartum visit attendance.

A trained member of the research team conducted all interviews remotely via Zoom (14), Google Duo (1), or phone (1) according to participant preference. Interviews lasted between 25 and 90 min (median: 39 min (IQR: 15)). All interviews were audio-recorded and professionally transcribed verbatim. Transcripts were verified for accuracy and de-identified for analysis.

### *Qualitative analysis*

We conducted a thematic analysis of qualitative data.<sup>17</sup> Two members of the research team created a standard codebook by reading and memo-ing the first eight transcripts, creating and applying a set of inductive and deductive codes, and met regularly to discuss and standardize code definitions. Following the development of the codebook, the same two researchers coded each transcript independently and met weekly to iteratively reconcile codes. A third researcher attended weekly meetings and contributed to resolving differences.

## RESULTS AND DISCUSSION

### Demographic characteristics

The majority of respondents were non-Hispanic Black (85.1% (57)), between 20 and 35 years old (85.7% (42)), multiparous (80.6% (54)), and Medicaid-insured (85.1% (57)) (Table 1). Half reported one or more ongoing chronic condition (50.7% (34)), most commonly hypertension (26.9% (18)) and depression (25.4% (17)). Maternal characteristics were similar for interview participants ( $n = 16$ ) and the overall study population ( $n = 67$ ).

### COVID-19 related changes

In the survey, participants were more likely to report one or more barriers to in-person visits compared to phone visits (38.6% (17) vs 26.5% (13)) (Table 2). For both visit types, the most common barrier was scheduling (13.4% (9) for in-person; 15.2% (10) for phone). For in-person visits, transportation (7.9% (5)) and 'having too many things going on' (10.4% (7)) were also common barriers.

Interview participants described a wide range of reactions to COVID-19 related changes. Broadly, changes were considered inconvenient. For example, several participants expressed frustration about the line to get their temperature checked before they could enter the hospital for visits.

*It was more so the hard part was getting up to your appointment area because where you come into Grady you had to stop in that line, get temperature checked, and then you had to wait for the nurses ...to call to you and examine you and stuff like that. Then you were able to go to your appointment. -P13*

One patient described frustration with this as the new process resulted in her missing a prenatal appointment.

*One day I went up there and they took me to the emergency room. I'm missing my appointment because they made me go to the emergency room, they said I had a temperature only for me to sit there over an hour and they said I do not have a temperature....They took me to the emergency room, they made me sit there. Like the emergency room was already crowded with people... So it was just crazy. -P14*

However, some participants noticed advantages to the changes such as faster visits and reduced wait times. Additionally, some patients appreciated that the phone visits kept them from having to go into the hospital.

*Like the phone visits are more convenient because like I said, if you're not a high-risk pregnancy I do not think that you should have to go to the hospital for every visit, for everything. I mean if you feel there's something*

*wrong there's always an emergency room, or you could just call your doctor and ask before you come in. Especially during the pandemic, I do not feel like every visit should be I have to come into the hospital. -P4*

Participants also expressed acceptance of COVID-19 related changes. As one participant described aggravation at having to wait at the temperature checks, she also accepted and understood why.

*I would get there [to the hospital]. You know, you had to check in before you made it upstairs so, that was a little aggy [aggravating]. I did not want to stand in that line and then, have to go upstairs and stand in another line. But it was okay. I understood why they were doing it. -P7*

Another described missing the reassurance of ultrasounds.

*So the ultrasounds were the biggest thing for me. Everything else is fine because you know they ask the same questions if you go into the doctor versus it's just on the phone. Nothing else about the visit is really that different other than of course...But when you do miss it, it's like dang, ... I really wanted to see her today. But you get over it because you know it's an unsafe environment. They're trying to keep you out of there... So it's okay. -P5*

### Quality of care

On the survey, across all subscales (Table 2), median responses to the Quality of Prenatal Care Questionnaire were at the highest level (5/5). However, for individual indicators, slightly higher numbers of respondents endorsed negative responses at in-person visits. For example, at in-person visits, respondents were more likely to disagree that they had been told enough information about tests (16.7% (11) in-person compared to 10.8% (7) phone) or that test results were explained in a way they could understand (15.4% (10) compared to 9.5% (6)) compared to phone visits. However, more respondents agreed that the doctor made them feel that they were wasting his/her time on phone visits compared to in-person (22.4% (15) phone vs. 16.4% (11) in-person).

Interview results showed more nuance regarding quality. Whether on the phone, in the clinic, or during labor, elements of provider-patient communication were critical determinants of perceived quality, including listening (or not listening) to patient concerns, engaged and active education, and overall warmth and manner. Participants liked being treated with warmth and compassion and when providers demonstrated caring by asking about participants' lives and supporting their decisions (e.g., regard-

**Table 1.** Table 1 summarizes patient clinical and demographic characteristics and differences between the total population of 67 women who gave birth to a live born infant at Grady Memorial Hospital and received prenatal care before changes due to the COVID-19 pandemic (February 2020) and after (March–October 2020) and the subsample of participant who completed an in-depth interview.

	Total Population N = 67	Interview Subsample N = 16
Maternal Race/Ethnicity	% (n)	% (n)
Non-Hispanic black	85.1 (57)	87.5 (14)
Hispanic	9 (6)	12.5 (2)
Non-Hispanic other	6 (4)	
Maternal Age (Median (IQR))	25 (10)	25 (7.8)
Maternal Age Categories		
<20		
20-35	85.7 (42)	92.9 (13)
35+	14.3 (7)	7.1 (1)
Parity (Median (IQR))	2 (3)	2.5 (2)
Primiparous	19.4 (13)	12.5 (2)
Number of individuals in the household (Median (IQR))	3 (2)	3 (2.25)
Lives with partner	47.8 (32)	43.8 (7)
Lives with parents or non-child family member	37.3 (25)	43.8 (7)
Education		
< High School Diploma	7.5 (5)	0 (0)
High School Diploma	70.1 (47)	68.8 (11)
2-year or 4-year College Degree	22.4 (15)	31.3 (5)
Health Insurance		
Private	7.5 (5)	6.3 (1)
Medicaid/Medicare	85.1 (57)	87.5 (14)
Uninsured	7.5 (5)	6.3 (1)
Chronic Conditions		
Any Chronic Condition	50.7 (34)	43.8 (7)
Diabetes	9 (6)	0 (0)
Depression	25.4 (17)	18.8 (3)
Hypertension	26.9 (18)	31.3 (5)
Other <sup>a</sup>	22.4 (15)	3 (2)
Do you have regular access to any of the following devices?		
Computer	55.2 (37)	50 (8)
Tablet	31.3 (21)	50 (8)
Smartphone	97 (65)	100 (16)
Text/voice only phone	19.4 (13)	31.3 (5)

<sup>a</sup>Includes heart disease, HIV/AIDS, lung disease, kidney disease, cancer, deep vein thrombosis

**Table 2.** Table 2 presents quality indicators for in-person and phone based visits as reported by 67 postpartum patients who gave birth to a live born infant at Grady Memorial Hospital and received prenatal care before changes due to the COVID-19 pandemic (February 2020) and after (March–October 2020).

Barriers to In-Person PNC	In-Person% (n)	Phone% (n)		
I could not get an appointment when I wanted one.	13.4 (9)	15.2 (10)		
I did not have enough money or insurance to pay for my visits.	3 (3)	3 (2)		
I did not have any transportation to get to the clinic or doctor's office.	7.9 (5)	NA		
I did not have access to technology needed for the phone appointment.	NA	4.5 (3)		
I had too many other things going on.	10.4 (7)	6.1 (4)		
I could not take time off from work or school.	3.0 (2)	1.5 (1)		
I did not have my insurance/Medicaid card.	6.0 (4)	1.5 (1)		
I did not have anyone to take care of my children.	4.5 (3)	1.5 (1)		
Any Barrier to In-person PNC	38.6 (17)	26.5 (13)		
<b>Quality of Prenatal Care</b>				
<b>Information Subscale</b>	<b>Disagree<sup>a</sup> % (n)</b>	<b>NA</b>	<b>Disagree % (n)</b>	<b>NA</b>
I was told enough information about tests during my visit.	16.7 (11)	1	10.8 (7)	2
I was checked for problems that could happen during my pregnancy.	14.1 (9)	3	11.1 (7)	4
The results of tests were explained to me in a way I could understand.	15.4 (10)	2	9.5 (6)	4
The doctor (or midwife) answered my questions.	10.9 (7)	3	9 (6)	0
The doctor gave me enough information to make my own decisions.	9.2 (6)	2	7.6 (5)	1
The doctor kept my information private.	4.6 (3)	2	9.1 (6)	1
Information Subscale Total Score (Median (IQR))	5 (0.667)	5	5 (0.5)	6
<b>Sufficient Time Subscale</b>				
I had as much time with the doctor as I needed.	9.1 (6)	1	9.1 (6)	1
The doctor was in a hurry (Percent Agree Shown)	22.4 (15)	1	21.2 (14)	1

(continued on next page)



**Table 2** (continued)

Barriers to In-Person PNC	In-Person% (n)	Phone% (n)		
The doctor gave me time to talk.	7.6 (5)	1	4.5 (3)	1
The doctor listened when I talked.	7.6 (5)	1	6 (4)	0
Time Total Score (Median (IQR))	5 (0.75)	2	5 (1)	2
<b>Approachability Subscale</b>				
The doctor was rude (Percent Agree Shown)	10.4 (7)	0	13.4 (9)	0
I was rushed during my visit (Percent Agree Shown)	16.4 (11)	0	17.9 (12)	0
The doctor made me feel like I was wasting their time (Percent Agree Shown)	16.4 (11)	0	22.4 (15)	0
I was afraid to ask questions (Percent Agree Shown)	10.4 (7)	0	13.4 (9)	0
Approachability Total (Median (IQR))	5 (0.875)	0	5 (1.75)	0
<b>Support and Respect Subscale</b>				
The doctor respected my knowledge and experience.	4.7 (3)	3	4.7 (3)	3
The doctor respected my decisions.	3.1 (2)	2	3.1 (2)	3
The doctor was patient.	6.3 (4)	3	4.8 (3)	4
The doctor helped me do what I felt was right for me.	4.5 (3)	1	3.1 (2)	3
The doctor supported me.	6.1 (4)	1	4.5 (3)	1
The doctor paid close attention when I was speaking.	6.1 (4)	1	3.1 (2)	2
The doctor took my worries seriously.	6.1 (4)	1	6.3 (4)	3
I was in control of the decisions being made about my prenatal care.	4.5 (3)	1	3 (2)	1
The doctor supported my decisions.	4.5 (3)	1	4.5 (3)	0
I was at ease with the doctor.	4.6 (3)	2	7.6 (5)	1
Support and Respect Total (Median (IQR))	5 (0.1)	5	5 (0)	10

<sup>a</sup> Includes responses 'strongly disagree' and 'somewhat disagree' Abbreviations: NA, not applicable; IQR, interquartile range

ing birth preferences). In contrast, experiences wherein providers dismissed participant concerns were perceived as poor quality.

One patient described feeling supported by her midwife after she shared her hopes to have a vaginal birth,

and noted that this support was particularly important during the pandemic, when the patient’s partner could not be present.

*So since I had a cesarean the first time before, there were options as far as we may not be able to do a vagi-*

*nal delivery even though that was the goal... she was like, "Hey, vaginal is what you want to do. We're going to plan for that and that's what we're going to do. We're going to plan for it." So she made me feel really, really good in a time where it's hard to get through it. She was awesome." Participant 5 (P5)*

In contrast, another patient described frustration after coming to her doctor with pain and being assumed to have a sexually transmitted disease (STD).

*I was pregnant and I was in a lot of pain and they were like – the first thing a doctor would say, "How many sexual partners have you had?" and "Do you suspect your partner cheating? Do you think you have an STD?" and I'm like, "No, that's not what it is." But that's the first thing that they think it is. And I understand a lot of women lie about – a lot of young girls anyway, I understand they lie, but, you know, I was telling the doctor that I did not have it. And when the tests came back they came back negative, but it still did not explain the pain that I was having. –P8*

Patients did not like when concerns were brushed off or they were not offered a potential solution. For example, one participant had a history of seizures in a prior pregnancy and, on a phone visit, reported high blood pressure and feeling dizzy. The provider did not offer her any advice.

*And when I feel dizzy like that, what should I do? Should I do this, take Tylenol, lay down? I'm not sure what should I do. And they was like okay, we're writing all this down. We're making your next visit for such and such date. I'm like you still have not solved what I'm telling you now. It's like okay, we'll see you next time basically. –P9*

Patients valued the ability to ask questions and receive complete answers free of judgement. As one first-time mom explained,

*If you have any questions you can call in, you can come in, you feel anything even... It was like, no questions are wrong, the way you feel is not wrong. They understood that I was a first-time mother, so I was going to have questions and stuff. They were just very supportive and informative. –P12*

Across in-person and phone settings, patient perception of provider manner and caring was essential. One first time mom described switching from another clinic because she felt that the provider did not care about her.

*Well he asked me about myself, about where I was living, about my family and my background and that made*

*me feel a lot better. I think he actually got to know me a little bit before he treated me and I do not know, I like that a lot that he asked those questions and every time I went in, he knew my name and everything, as opposed to the other doctor who was just very rude and he did not really care, he was just checking me. –P10*

Another participant described how the provider's manner made her appreciate both in-person and phone visits.

*Because during the whole pandemic that we're still going under, I was just at home just like I am right now with my family. And I was able to just let them know my wellbeing, whether if it was via Zoom [video] or just on the phone, and they would actually call to check up on me. And I actually felt grateful for that. I do not think a lot of medical facilities would do that, pandemic or not. –P15*

Similarly, patients who felt that their provider did not care felt like they had a worse experience. One multiparous woman experienced pain throughout her pregnancy that the provider continually brushed off.

*I was getting little sharp pains. I was like this never happened before. What is it? Is it something I need to do? Is it something I need to stop doing? I do not know...Okay, what do I need to do? I'm like kind of shocked. Because I'm getting the same answer.... It was not like, I was not even feeling like she cared. –P9*

**Preference for future care.** The majority of survey respondents would participate in phone prenatal visits during a future pregnancy (77.8% (49); [Table 3](#)). However, the majority of respondents preferred in-person visits (84.1% (53)). Results regarding home visits or postpartum phone visits were similar. Fewer than half of respondents (45.3% (29)) would prefer video visits to phone visits in a future pregnancy.

This was mirrored in the interviews. Despite the noted convenience of phone visits and noted inconveniences of in-person visits, the majority of women preferred in-person visits for the opportunity to be physically checked. As one patient who did not want phone visits to be part of care for a future pregnancy said,

*Yeah, because they do not do nothing. Like I told you, he just said, "How are you. How are you feeling?" That's it. And more so when it's in-person you might [get] a fetal checkup, they might measure your stomach, hear the baby's heart. –P13*



**Table 3.** Table 3 presents the proportion of respondents who agreed or strongly agreed with each item regarding preferences for care in a future pregnancy among 67 postpartum patients who gave birth to a live born infant at Grady Memorial Hospital and received prenatal care before changes due to the COVID-19 pandemic (February 2020) and after (March–October 2020).

Scale Items	Agree/Strongly Agree***% (n)	Median (IQR)	NA
I would participate in prenatal care visits over the phone again in the future	77.8 (49)	5 (1)	4
I would prefer in-person prenatal care appointments in the future.	84.1 (53)	5 (0)	4
I would participate in prenatal care home-visits in the future	75.0 (45)	5 (1.25)	7
I would participate in postpartum care follow-up over the phone in the future.	76.2 (48)	5 (1)	4
I would prefer in-person postpartum care follow-up in the future.	82.5 (52)	5 (0)	4
I would participate in postpartum care home-visits in the future.	73.0 (46)	5 (2)	4
I would prefer videoconference (e.g., Zoom) visits to phone visits in the future.	45.3 (29)	3 (3)	3
I would prefer videoconference (e.g., Zoom) visits to in-person visits in the future.	46.9 (30)	3 (3)	3

Abbreviations: NA, not applicable; IQR, interquartile range

### Labor

Experiences during labor emerged as a critical driver of perceived quality and overall satisfaction. Unlike the overall acceptance of changes to prenatal care, many participants were frustrated with the limits to support people during and following labor implemented during the COVID-19 pandemic. For multiparous women, only having one person made their experience much worse compared to previous deliveries. One women’s husband had to leave immediately after the delivery (due to a family emergency).

*It [COVID pandemic] was not that bad being pregnant. It was more so when it was time to deliver the baby, that’s when it felt ... Because I did not have... I did not have the support at the hospital that I did when I had my toddler. I was not able to have all my family there to cheer me up and stuff like that, so that was tough about that. -P13*

This was particularly challenging early in the pandemic, when communication and policies were changing rapidly. For example, one participant described how her sister stayed for one night, then went home and was not allowed back in the hospital.

*Yeah. They told me she’s not allowed. And I talked to somebody upstairs and I said, "My sister was just here, how is she not allowed here?" And they were saying that*

*nobody but [fiancé] was allowed and he was not coming, he was at home with the kids. I sent him home... That felt bad because I needed help, I really need help. -P14*

Potentially because of limits to support persons, provider communication and perceived warmth stood out. Warmth was particularly important to positive perceptions of staff and providers during the participants’ labor experience.

*But the nurses I liked. They were wonderful. They were the best, best, best, best, best...I mean every question I had – some of them even held my hand when I was having contractions. They rubbed my back. Anything they could possibly do to help me alleviate the pain they did, and they were wonderful. I mean like they were wonderful. -P4*

### DISCUSSION

In this primarily non-Hispanic Black, Medicaid-insured sample, most women saw pandemic-related changes to care as inconvenient and preferred pre-pandemic obstetric care (in-person prenatal and postpartum visits, unlimited numbers of delivery support people). However, interview responses show that participants accepted changes when they understood the reasons behind the changes. Provider-patient communication, including listening and warmth, was the key driver in perceived quality of care

regardless of whether care was delivered in-person or remotely. This is consistent with previous quantitative work that shows positive provider-patient communication positively predicts positive perceptions of obstetric and gynecologic care quality.<sup>18,19</sup>

In the survey, most participants perceived their care as high quality whether it was delivered through the phone or in-person. This was consistent with two surveys from single health systems on perceptions of quality of obstetric care following changes during the COVID-19 pandemic.<sup>5,6</sup> However, it is higher than responses found by Brislane et al. in an online, global survey, where mean subscale responses on the same instrument (Quality of Prenatal Care Questionnaire) ranged from 3.4 to 4.1.<sup>3</sup> It is possible that respondents in single health system studies tended to rate their quality higher compared to respondents recruited online from a general population. Population average responses remained high (~5) for all subscales in our study; however, several participants endorsed poor quality indicators including feeling rushed, that the provider was rude, and that test results were not explained in a way they could understand. While most survey respondents were willing to include phone visits in future prenatal or postpartum care, most preferred in-person visits. This was consistent with interview responses where women described phone visits as not useful. This result is also consistent with research from a majority white, privately insured population that showed, while most patients were at least moderately satisfied with remote prenatal care (71.4%), 89.9% would prefer in-person care for a future pregnancy.<sup>20</sup>

This study has at least three important limitations. First, the survey completion rate was low (47.5%) and it is unlikely that the respondents represent the entire obstetric population. Specifically, participation was limited to individuals who read English and could access the internet. Twenty percent of obstetric patients at our institution are non-English speaking; rates of internet access are unknown. In addition, we conducted recruitment between October 2020 and January 2021, in the middle of 2020 election and US Senate run-off in Georgia, when many Georgia residents may have been fatigued by frequent phone calls and texts related to the election and therefore less likely to answer their phone for an unknown number. However, this response rate is similar to other recent surveys conducted with obstetric populations (27%; 15%).<sup>5,21</sup> Second, the Quality of Prenatal Care Questionnaire, while validated, may not have been a good fit for this teaching hospital. As patients at our study site see multiple providers across their pregnancy, they may not have known which individual to think about when responding to scale items, defaulting to the highest level of quality or marking not applicable (NA). Not applicable was a commonly

marked response, even for widely applicable scale items like “The doctor was patient” (3 marked NA for in-person and 4 for phone). Finally, while labor experiences emerged as key to qualitative themes, we did not ask about labor in the survey. The primary strength of this study is the integration of qualitative research. Interviews allowed us to explore the reasoning behind participant care preferences and quality responses.

## IMPLICATIONS

In this sample, most participants found COVID-19-related changes acceptable despite the inconvenience of many changes. However, critical quality gaps emerged during qualitative interviews, primarily in communication and supportiveness. In implementing future changes to care, communicating the reason for changes to patients and taking steps to build relationships regardless of the format may promote satisfaction with care. Telehealth models that include additional supports for physical monitoring patients remotely (e.g., blood pressure cuffs, fetal dopplers) and remote opportunities for social support (e.g., remote Centering groups) may be more appealing (e.g., the OB Nest model).<sup>22</sup> Engaging patients in their care plans by listening to their concerns, providing adequate information on options and diagnoses, and involving them in decision making are key elements of satisfaction and quality. Ensuring that providers are trained to do this regardless of setting will improve pregnancy and birth experiences.

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## SUPPORTING INFORMATION

Supplemental Material

Appendix A- In-depth interview guide used for 16 qualitative interviews

## DECLARATION OF COMPETING INTEREST

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

The authors declare the following financial interests/personal relationships which may be considered as potential competing interests:

There are no conflicts of interest to declare.

## SUPPLEMENTARY MATERIALS

Supplementary material associated with this article can be found, in the online version, at doi:[10.1016/j.jnma.2021.12.017](https://doi.org/10.1016/j.jnma.2021.12.017).

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