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Abstract

The COVID-19 pandemic has transformed the health care landscape and shifted individuals' expectations for and interactions with essential health services, including pregnancy-related care. This study explores alterations to individuals' pregnancy and childbirth decisions during an infectious disease pandemic. A convenience sample of 380 pregnant individuals with an expected delivery date between April and December 2020 consented to enroll and complete an online questionnaire on their pregnancy and childbirth expectations during the COVID-19 pandemic; a subset of respondents ($n = 18$) participated in semi-structured phone interviews. Survey data were analyzed quantitatively while interview data were analyzed using a thematic content analysis until a consensus on key themes was achieved. Respondents reported substantial stressors related to shifting policies of health care facilities and rapidly changing information about COVID-19 disease risks. As a result, respondents considered modifying their prenatal and childbirth plans, including the location of their birth (25%), health care provider (19%), and delivery mode (13%). These findings illuminate the concerns and choices pregnant individuals face during the COVID-19 pandemic and offer recommendations to engage in compassionate, supportive, and person-centered care during a time of unprecedented risk and uncertainty.

Keywords

childbirth expectations, COVID-19, pandemic, pregnancy, prenatal care

Introduction

The declaration of the novel coronavirus (severe acute respiratory syndrome-coronavirus-2 (SARS-CoV-2)) as a global pandemic on March 11, 2020, unquestionably altered the landscape of public health and health care services in the United States and across the globe.¹ Pregnant individuals face rapidly changing information about risks of COVID-19 disease during pregnancy, as well as shifting policies from health care facilities. Understanding how these factors have impacted the pregnancy and childbirth expectations among pregnant individuals is a critical effort, especially given that their decisions may be altered under the uncertainty of the COVID-19 pandemic. Most studies that explore the intersection of COVID-19 disease and pregnancy have focused on the clinical treatment of COVID-19 disease and risk factors among pregnant individuals and neonates.²⁻⁶ Prior frameworks recognize the interconnected system of biomedical, psychological, and social needs including

individuals' thoughts, emotions, attitudes, behaviors, social determinants of health, and sociocultural expectations for pregnancy and childbirth that impact perinatal care experiences, and their related outcomes.⁷ A few studies have highlighted how the COVID-19 pandemic has elevated other relevant factors, including pregnant individuals' stress,⁸⁻¹⁰ generalized fear and anxiety,¹¹⁻¹³ and depressive symptoms.^{11,13} Identified risk factors for elevated mental health symptoms include women's abuse history, chronic illness,

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income loss due to the pandemic, concerns about changes to prenatal care, discomfort with hospital visits, having insufficient information about COVID-19 disease, social isolation, and high-risk pregnancy.^{8,11,13} Pregnant individuals have also reported other pandemic-related changes to their care experience including reduced prenatal appointments, changing birth locations and providers, and modifying hospital birth plans to reduce hospital stays and accommodate hospital policy changes.^{9,14} The goals of this study were (1) to understand how the COVID-19 pandemic has altered pregnant individuals' perceived needs and expectations about pregnancy, childbirth, and postpartum stages, based on the patient perspective and (2) to offer emerging information to assist providers in addressing pregnant individuals' needs for informational, structural, and social support while balancing the need for infection prevention strategies that are essential during a major pandemic event.

Methods

This study recruited a convenience sample of individuals of reproductive age (18–45 years) who were pregnant with an expected delivery date (EDD) during the months of April to December 2020. Respondents were targeted through internet fora and public social media groups for pregnant individuals during that period. Recruitment messages and social media posts were made in English and Spanish. The recruitment invitation asked respondents to share the study information with other personal acquaintances who may also qualify for the survey (standard snowball sampling methodology).¹⁵ Survey domains included: respondent demographics, pregnancy intentions and timing, prenatal care experiences, childbirth plans and expectations, and concerns related to COVID-19 disease. The online survey was administered in English and Spanish to participants who met inclusion criteria: (1) at least 18 years of age, (2) pregnant at the time of the survey, (3) EDD between April and December 2020, (4) residing in the United States, and (5) proficient in English or Spanish. Respondents consented to participate in the study by clicking on an electronic button indicating their agreement to participate in the study protocols described on a study information page. Those who enrolled and completed the survey were entered into a raffle for a \$25 gift card incentive. The survey data were analyzed descriptively, using STATA v.12¹⁶ to report frequencies on key variables of interest. In addition, open-ended text-based questions were analyzed using a thematic content analysis¹⁷ to inductively identify key themes related to perceptions of pregnancy and childbirth during the COVID-19 pandemic.

After the survey, participants opted-in to semi-structured phone interviews focused on pregnancy and childbirth expectations, plans, and experiences. A team of interviewers obtained verbal consent, conducted, audio-recorded, and transcribed the in-depth interviews. Through an inductive

thematic content analysis, the team identified key themes that represented the central experiences of participants. Bracketing procedures¹⁸ were used to account for the researchers' identity as an interpretive instrument during the data collection. All study protocols were approved by the Human Subjects Review Council of Central Washington University.

Results

A total of 1,556 individuals responded to the original recruitment invitation. After applying the screening protocol, 609 respondents met the inclusion criteria for the study. Respondents with the majority of the survey completed (51% or more) were included in the final total sample of $n = 380$. A random selection of 42 respondents who agreed to be contacted for follow-up were invited to participate in an in-depth interview during their pregnancy. A total sample of $n = 18$ participants completed qualitative interviews.

Sample Characteristics

Among the survey sample, the average age was 34 years and the mean household size was 3.07. Most respondents were married or in a domestic partnership (93.2%). Nearly all respondents reported having access to health insurance (98.2%) but this varied by employer-sponsored coverage (73.8%), purchased on the individual marketplace (4.9%), and publicly insured (18.9%). Many respondents had some college-level education (55.3%) or advanced degree (37.6%) with 6.3% of respondents reporting that they had a high school degree, general equivalency diploma (GED), or less. Sample characteristics reported in Tables 1 and 2 contain select qualitative quotes organized by key themes on patients' prenatal experiences, childbirth expectations, and priorities for pregnancy-related care during the COVID-19 pandemic.

Prenatal Care Experiences

Most respondents reported navigating significant changes to their experience with prenatal care (Figure 1). Sixty-four percent of respondents felt that their health care provider gave them enough information on how to protect themselves and their baby from COVID-19 disease, while over one-third of respondents did not feel they had sufficient information. A majority of respondents (71%) reported that their prenatal care experience changed noticeably because of the COVID-19 pandemic, and 58% reported having used remote or telemedicine options for prenatal care. One in five respondents (20%) reported postponing or avoiding care related to their pregnancy because of the COVID-19 pandemic. Open-ended and interview responses indicated that prenatal appointments were canceled, shortened, changed in frequency, or modified from in-person to

Table 1. Sample Characteristics ($n = 297$).

	N (or mean)	% (or SD)
Age	33.4 years	0.26
Education		
Less than high school degree	6	1.6%
High school degree/general equivalency diploma (GED)	18	4.7%
Some college	62	16.3%
Vocational or trade school	22	5.8%
Bachelor's degree	126	33.2%
Master's degree	92	24.2%
PhD or doctoral degree	51	13.4%
Relationship status		
Married or partnered	354	93.2%
Single	20	5.3%
Widowed	0	0.0%
Divorced	2	0.5%
Separated	2	0.5%
Mean household size	3.07	0.062
Mean number of children	1.66	0.056
Household income		
Under \$25,000	20	5.4%
\$25,001–\$50,000	52	14.0%
\$50,001–\$75,000	76	20.4%
\$75,001–\$100,000	68	18.3%
\$100,001–\$125,000	47	12.6%
\$125,001–\$150,000	38	10.2%
\$150,001–\$175,000	22	5.9%
\$175,001–\$200,000	19	5.1%
More than \$200,000	30	8.1%
Preferred language		
English	363	95.5%
Something other than English	17	4.5%
Insurance type		
Employer-sponsored	273	73.8%
Individual market	18	4.9%
Publicly insured	70	18.9%
Other	9	2.4%
Uninsured	7	1.8%
Race and ethnicity		
Black and African American	9	2.4%
Asian, Native Hawaiian, and Pacific Islander	9	2.4%
American Indian and Alaska Native	3	0.8%
White	336	88.4%
Other	11	2.9%
More than one race	12	3.2%
Hispanic and Latina	62	16.4%

telemedicine (Table 2). Some participants expressed feeling that prenatal care was inadequate or that appointments, ultrasounds, or lab work were not prioritized.

Others reported declining care to avoid potential viral exposure in health care settings.

Participants also reported dissatisfaction and a sense of loss because partners and family members were no longer permitted to accompany them to prenatal visits due to policy changes in health care settings.

Many respondents (83%) reported that their hospital or birth center facility changed at least one policy related to prenatal care and/or childbirth with 95% of respondents indicating that they were aware of policy changes that limited or restricted visitors and/or support persons during labor.

Childbirth Plans and Expectations

Respondents were asked to report their plans for delivery at the time of the survey. Among the sample, 90% reported they planned to give birth at a hospital facility, 4% at a licensed birth center, 5% at an attended homebirth, and 1% unspecified. Eight-in-10 respondents (84%) planned to deliver vaginally, 12% reported plans to deliver by cesarean section, and 5% of respondents indicated that they had not determined their delivery mode at the time of the survey.

Respondents were asked if they had considered changing their childbirth plans after the onset of the COVID-19 pandemic (Figure 2). Among the sample, 25% ($n = 95$) reported they considered a change in childbirth location or facility. Among those who considered a change, 23% considered switching to a hospital location (or another hospital), 14% considered switching to a freestanding birth center, 63% considered switching to a homebirth with a licensed provider, and 10% considered switching to a home birth without a licensed provider (e.g., unassisted or free birth). Three percent reported considering some other unspecified delivery location or facility. Among those who had considered changing their planned childbirth location or facility, nearly one-third (32%) had already formally made those changes at the time of the survey, representing 8% of the total sample. Almost one-fifth of those who reported considering changes to birth locations (19%) were still undecided on formalizing these changes.

Respondents frequently cited reasons for considering changing birth locations, including a perception that settings with a higher patient volume may present a higher risk of SARS-CoV-2 virus transmission. Several respondents also felt their decisions about birth locations during the COVID-19 pandemic were constrained by other structural barriers, including insurance coverage and facility protocols. The most frequently expressed concern that motivated participants to consider a change in birth setting was related to the perception that some birth facilities would limit or prevent partners, support persons, or family members from attending the birth.

Respondents were asked if they had considered switching providers for prenatal or obstetric care (Figure 2). Nineteen percent ($n = 72$) of survey respondents reported thinking about seeking a different provider, with 61% of them considering a Certified Nurse Midwife, 46% considering another type of midwife (e.g. Licensed Midwife, Certified Professional Midwife), and 32% considering switching to an obstetrician-gynecologist or other physicians. Many respondents indicated they were weighing

Table 2. Select Illustrative Quotes on Qualitative Themes.

Prenatal experiences	
Alterations in care	<p>“Everything surrounding prenatal care and birth has changed as a result of COVID. I was supposed to be having appointments every two weeks, and lab work every month by this point in the pregnancy. Now, I have an appointment every 6 weeks and no lab work for three months. I feel scared about health conditions that might not be monitored or caught.”—Survey respondent</p> <p>“...My last face-to-face appointment was (3 months ago). Subsequent appointments were cancelled until further notice, as stay-in-place order was enacted in my state.”—Survey respondent</p> <p>“All of my childbirth education classes have been cancelled, and I have been sent a book to read instead.”—Survey respondent</p> <p>“Our childbirth classes got canceled but we really wanted some education so we got into an online birthing class from a labor and delivery nurse. We paid for it [out-of-pocket] when it would have been free at the hospital.”—Interview participant</p> <p>“There have been a lot of changes at my OB’s office. They used to do rotations so you could meet all the doctors, but now I just see the same one. I know my delivery might be with another provider, but I’m okay with that...it’s meant to keep you safe.”—Interview participant</p> <p>“I was asked to change to telehealth appointments until my 36-week appointment. This required me to purchase additional tools (blood pressure monitor, fetal dopplar) that were unexpected expenses.”—Survey respondent</p> <p>“Appointments have been postponed, office hours have been decreased, have to wear a mask everywhere...I had to meet with my high-risk doctor by telehealth.”—Survey respondent</p> <p>“I have had to have my appointments via phone. Being a first-time mom, I feel like I am not getting the quality of care that I deserve and have had to resort to [internet sources] for a lot of my questions regarding pregnancy.”—Survey respondent</p> <p>“My husband has been able to come with me to visits, but we have to wait in the car rather than the waiting room. I also have had some back pain and I was hoping to go to a chiropractor but they’re completely closed.”—Interview participant</p> <p>“My prenatal visits feel cold and impersonal. Not being able to see the doctor’s face is strange, and the office is so empty and sterile. There are not warm feelings and excitement like with my first pregnancy experience.”—Interview participant</p>
Avoidance or delay of care	<p>“I have cancelled appointments at the height of my state shutting down during the pandemic in fear of exposure to the virus.”—Survey respondent</p> <p>“I avoided going to one appointment because I was scared that my midwife clinic did not seem to have any COVID policies in place yet and I didn’t feel comfortable.”—Survey respondent</p> <p>“I couldn’t go to my last OB appointment because I had no one to watch my son and he wasn’t allowed to come with me (totally understandable). My husband is considered essential and wasn’t allowed to take time off.”—Survey respondent</p> <p>“I was forced to skip my bimonthly appointments in attempt to lesson office traffic. My next visit will be telemedicine.”—Survey respondent</p>
Loss of support	<p>“My husband has missed out on ultrasounds and seeing our child and hearing her heartbeat. He wanted to be at every appointment. Now, he can’t. I hate going alone.”—Survey respondent</p> <p>“Visitors, including my partner (the father) are no longer allowed to go to any OB appointments, even if there is any issue with the baby (we had that), and even with appointments that are not routine (ultrasounds). I think this is absurd...mothers are losing the support of their partners during difficult situations and decisions.”—Survey respondent</p> <p>“I have not been physically seen by my doctor in (2 months). Their policy does not allow minors in, and you’re not allowed to bring anyone with you. We have three other children and I have no one to watch them since we are being self-quarantined under our state’s stay-at-home order.”—Survey respondent</p> <p>“I’m no longer able to bring my husband or family members to my ultrasound appointments, which is a disappointment, but I understand why new protocols are in place.”—Survey respondent</p> <p>“Most other pregnant women are lucky to know they will have some support outside of their partner [before the pandemic]. COVID-19 has taken away the ability to have that as an option because women delivering right now are still in a stay-at-home-order. That option for support has been completely removed and it’s heightening what women typically feel.”—Interview participant</p> <p>“When this pandemic broke out my babies father (fiancé) was still allowed to come to our</p>

(continued)

Table 2. (continued)

Prenatal experiences

doctors appointments with me. About 3-4 weeks ago that all changed when I started seeing a specialist since I'm having a high-risk pregnancy with twins. Him not being able to support me during doctor visits affects how I feel about going to them, it makes me not want to go to my scheduled appointments (but I do anyways) because it gives me severe anxiety being alone in this."—Survey respondent

"Because my state reopened non-essential businesses, my partner is considered an essential worker...He is back to work but I'm high risk, so we decided to live separately. I'm staying in [location undisclosed] during the last month before birth in order to self-isolate. I have a one-year old infant I care for and I'm by myself. I am so stressed."—Interview participant

Childbirth plans and expectations

Changes in birth plans: risk of SARS-CoV-2 virus exposure

"My husband has a history of asthma, so being in a hospital setting was an unwelcome exposure because he was so high risk. We transferred to a birth center, and it was a really positive experience and there was less exposure because fewer people were in and out."—Interview participant

"The county hospital I was originally planning to have my baby at has a significantly higher number of COVID-19 cases than the county I live in. I plan on switching hospitals to deliver because I feel safer and will be closer to [home]."—Survey respondent

"I planned on giving birth at a hospital, but with COVID being so under-managed in [my region] and so incompetently managed, federally, I decided to switch to a birth center 3 h away. I will not be able to have any pain management which frightens me. But I am doing this to avoid exposure."—Survey respondent

"I switched to a smaller hospital to avoid potential infection."—Survey respondent

"I had been looking into switching from an OB [from previous pregnancy] to a midwife for this pregnancy. The coronavirus outbreak gave me that final push and I switched to a midwife practice I'd been leaning toward. I wanted a birth center option even before the outbreak, but once it began I definitely needed an out-of-hospital birthing option."—Interview participant

"I was planning on having my c-section at the same large hospital I had my first [child] at. I've now changed to a smaller hospital nearby to have my surgery. My OB suggested it because it has less patients with COVID-19 so less chance for something to happen."—Survey respondent

"I've decided to stick with the hospital to make sure I have the very best medical care available. I know staff have great training with PPE and being hygienic and have a greater trust for them in general."—Survey respondent

Changes in birth plans: insurance or financial barriers

"I'm pretty comfortable giving birth in a hospital. I was looking into a birth center, but I was denied my insurance claim because it was out of network. I can appeal it, but it's so uncertain and I don't want to deal with that. The point of [delivering at] a birth center was not to have extra exposure to the virus, but since you have to go see a pediatrician within 48 h of birth, we don't really want to do that. At the hospital, you just get to see the pediatrician there and then you go home, so for me, it outweighs the risks."—Interview participant

"I contemplated switching to a home birth due to no kids allowed in hospital and having a high-risk husband. Insurance wouldn't cover it...so decided against it."

- Survey respondent

"I wanted to have a homebirth with a midwife or birth in a birthing center, but these are not affordable options for me."—Survey respondent

"I did consider changing to a homebirth, but the restrictions in my state are quite extreme as well as the cost associated with it, to do it safely."—Survey respondent

Changes in birth plans: policies

"I recently switched to a birth center about 35 min away but a bit closer to the hospital. Originally, I liked the hospital and I felt safer, but the hospital doesn't allow doulas now, so I've switched to a birth center."—Interview participant

Changes in Birth Plans: Policies

"I was planning on giving birth with a midwife practice in a hospital. As hospitals began imposing restrictions, I decided to switch to a home birth. A major factor is that I want my 3-year-old present for the birth, and children are not allowed in hospitals. I feel so positive about my decision to switch to home birth."—Interview participant

"I was planning on hiring a doula for my birth. But then my hospital changed the visitor policy to only one guest. I considered moving to a home birth to have my doula, but with the nearest midwife over an hour away, it wasn't feasible."

- Survey respondent

"Our hospital has limited visitors/support to one person per hospital stay. We have briefly

(continued)

Table 2. (continued)

Prenatal experiences	
	<p>considered switching to a home birth if my husband isn't allowed to go to the hospital for any reason, but we are both far more comfortable with a hospital birth."—Survey respondent</p> <p>"My hospital I was planning to give birth at shut down to exclusively treat COVID [patients] so my labor and deliver has been moved to a partner hospital further away, with the same OB/midwife care team, at least."—Survey respondent</p>
Priorities related to pregnancy and childbirth during COVID-19	
Exposure to the virus	<p>"I'm terrified of me or my baby being exposed to or getting COVID-19. It is constantly on my mind. My [partner] is still working, so I worry he will get sick or pass it onto me or my kids."—Survey respondent</p> <p>"I worry about exposure after [birth]. Yes, symptoms are not as severe, but we don't know the lasting lung damage this virus can have. We worry about our parents being exposed."—Survey respondent</p> <p>"While I am concerned about myself or my partner being infected with COVID-19, it is a very low concern. It does not affect my behavior any more than if I wasn't pregnant."—Survey respondent</p> <p>"I'm mostly concerned about the idea of either catching the virus right before delivery or my husband catching the virus and being unable to attend the birth."—Interview participant</p> <p>"I would naturally be nervous, but the added pressure if one of us has a fever or is symptomatic...my understanding is that they test us when we go into the hospital and if we test positive, they would take baby away for at least the first week...that is my main concern. I'm worried that could happen to us but we are taking all the precautions to make sure that wouldn't happen."—Interview participant</p> <p>"I've decided to stick with the hospital to make sure I have the very best medical care available. I know staff have great training with PPE and being hygienic and have a greater trust for them in general."—Survey respondent</p>
Hospital or birth center policies	<p>"I'm terrified of being exposed at the hospital. I also fear they will take the baby if we get exposed or if I test positive."—Survey respondent</p> <p>"There is no way they will separate me and my child, and I'm afraid of the ramifications both legally and financially if I were to refuse medical suggestions."—Interview participant</p> <p>"I really fear separation from my infant. Those [early hours] are critical for infant bonding. I don't care about a birth support person, but I don't want to be away from my child at any point."—Interview participant</p> <p>"Thinking about being separated from my baby is traumatic to me, and I'm sure it will have long lasting effects on both myself and my baby."—Survey respondent</p> <p>"I have had recurring nightmares that my baby and I have been separated due to COVID-9 after giving birth. As of right now, my partner will be allowed in the room with me, but that could change and the thought scares me. I'm heartbroken that my family will likely not be able to be there to support us."—Survey respondent</p> <p>"I am worried I can't have anyone in the room and have to do it alone. Not having proper support with me that I want there is huge for me and feel like without them there I feel like a c-section would emotionally help me get through it easier instead of vaginally. I have considered a c-section for this reason."—Survey respondent</p> <p>"My hospital has made a one-visitor only policy. This means that I have to choose between my husband and my doula to accompany me. It is our first birth and I want my husband there so we will be [connecting remotely] to my doula unless the policy changes."—Interview participant</p> <p>"The [hospital] policies are changing every week. First they said you could have only two support people, max, and then it changed to no support people at all...By the time we are there, I have no idea what to expect; it was so up in the air that you just couldn't plan at all."—Interview participant</p> <p>"I am concerned that my partner will become ill and won't be allowed with me during childbirth. I am also feeling very anxious regarding the shortened time before discharge from the hospital."—Survey respondent</p> <p>"I don't disagree with all the [policy] changes but I do grieve the loss of the birth experience I had planned before all this happened."—Survey respondent</p>
Infant feeding, personal products, and supplies	<p>"It's been difficult to find little things like normal strength acetaminophen (since it's one of the few drugs I can take while pregnant to help with some of the natural pains/aches), adult wet wipes, etc. This is my third pregnancy and usually a couple of weeks before my EDD I stock up</p>

(continued)

Table 2. (continued)

Prenatal experiences

on supplies so I won't have to go out for necessities, but that was impossible with the toilet paper, cleaning supply, etc. rushes and hoarding going on."—Survey respondent

"In the past I have used breastfeeding services to help my child learn to latch and troubleshoot things. I don't think I will have that support this time."—Interview participant

"I am concerned about the hoarding of diapers, wipes and formula in local stores. Though I plan to breastfeed, I don't know if I am able and am worried that I will have nothing to feed my baby. I have asked family members to stock up on formula if they are able to get it in the stores. The same goes for diapers and wipes, which have been on backorder and delayed in my area. Every time I am able to buy diapers, I do because I have no idea when I'll be able to get them again."—Interview participant

"It's hard if not impossible to get diapers and wipes locally, and shipments are delayed. I hope we can access the things we need if something unexpected comes up after baby arrives."—Survey respondent

Financial and childcare costs

"I was previously preparing to be financially stable for maternity leave, but COVID-19 caused me to discontinue work earlier than planned and have had no luck through unemployment payments."—Survey respondent

"I had to stop working for 5 weeks [due to the pandemic] so that was an unexpected unemployment period. We had already planned to save up for a house, so those plans have changed now because I had a chunk of time not working and I couldn't contribute to those savings...that has thrown some things off."—Interview participant

"I was already concerned about costs, but now I worry about how and where to access care when childcare is unavailable...I don't anticipate daycare reopening and if it does, it will be so soon before the birth that I'd be concerned about imposing major adjustments on my [older child]."—Interview participant

"Due to COVID-19, I am out of work, so I lost my medical [insurance]. I pay out of pocket for everything."—Survey respondent

"Since my husband lost his job, I will have to shorten my maternity leave and we will have less income to pay for supplies. I was supposed to get some items from baby showers as gifts, but [we aren't] since travel is no longer allowed. We will have to purchase these, so that's more out of pocket for big-ticket items."—Survey respondent

"I lost my job because of the virus and lost my health coverage. My old plan had no out-of-pocket costs, and we had met the deductible. I was able to get on my husband's plan but it only covers [a portion] of the costs and we have to meet a high deductible."—Interview participant

"My mom is supposed to watch my toddler when we go to have this baby. But exposing our house to possible [infection]...she was also going to come stay with us after I had the baby to help me out, but not I do not know if I will have her."—Interview participant

"I am concerned that childcare is closed and I will struggle to care for my toddler and newborn full time."—Survey respondent

Postpartum needs and support

"Finally, my access to social support after childbirth is a big concern as I will not, cannot risk allowing visitors to potentially infect me and my infant once we return home...I will still be healing, barely able to move and will not be able to have friends or family 'drop by' to assist. Calling a friend can help with questions, but it cannot help rock a baby or wash your hair. I am concerned about my mental health and postpartum depression."—Survey respondent

"I'm very concerned about the toll of isolation after the birth and the burden of supporting me being concentrated on my spouse rather than shared among other family and friends."—Survey respondent

"I am concerned about how we will cope with fewer supports in the postpartum period, but I think my family and I will come out okay. We have the tools and resources we need to advocate for ourselves."—Interview participant

"I've actually appreciated the time since we've been home and we can spend time together. You don't get this when you're commuting to work and busy, so we've got more time and more calm that was not expected...I've spent more time connecting with friends that I didn't have the time to do before... 'hey, we're all not busy so let's schedule a virtual chat!' I have increased in reconnection with those who I haven't been in close contact before because we have more opportunity to do that. It's unusual."—Interview participant

"Early in my pregnancy, I was really thinking about things like getting help and having visitors after the birth, but these decisions have been taken away. Sometimes this is a stress relief."—Interview participant

(continued)

Table 2. (continued)

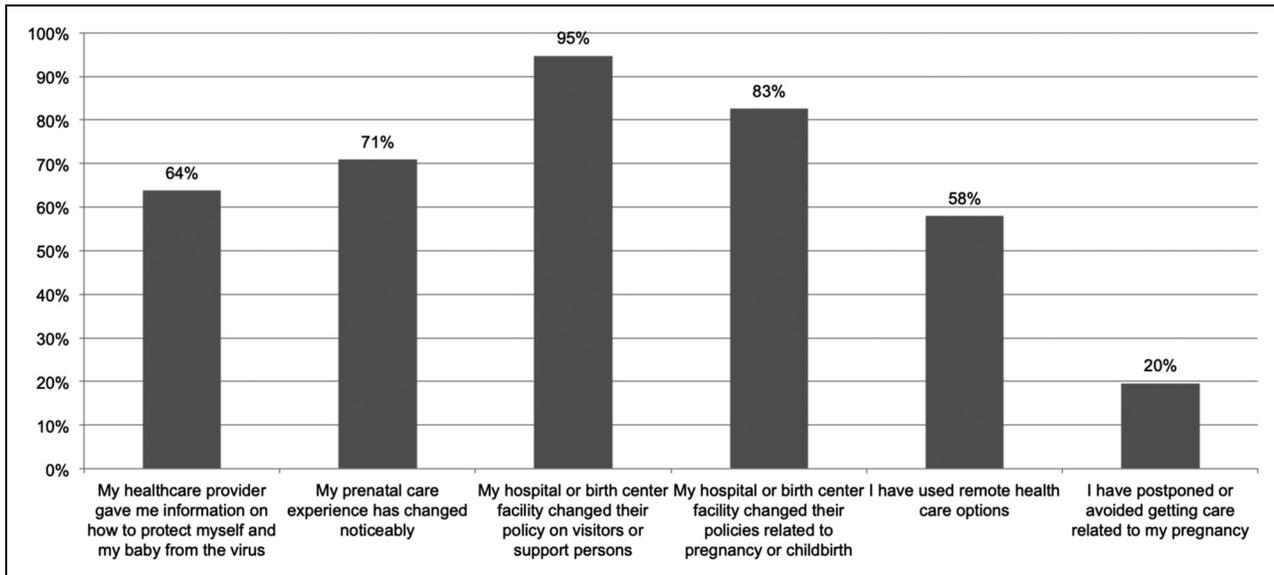
Prenatal experiences

“Not having contact with the outside world for two months has been mentally taxing. There is always a fear that the rules will change at any minute. The certainty that I had with my other births does not exist in this pregnancy.”—Survey respondent

“I fear for postpartum depression and postpartum anxiety because of everything the virus has caused and the lack of support, and isolation that it will bring after delivery. I believe this virus is going to have long lasting effects on many people, both physically and mentally.”—Survey respondent

“One thing that is definitely increasing is virtual support. Your baby shower gets canceled, your childbirth class gets canceled, you’re expecting to get things for baby but now it just got more difficult. So there’s got to be increasing ways to delivery virtual support, childbirth classes, finding ways for expectant parents to connect so they don’t feel isolated. Both before birth and after birth.”—Interview participant

SARS-CoV-2: severe acute respiratory syndrome-coronavirus-2; PPE: personal protection equipment; EDD: expected delivery date; OB: obstetrician.

**Figure 1.** Prenatal care experiences.

options between multiple provider types and could select all provider types that applied to this question. Among those who considered switching providers, 28% had made these formal changes to their provider at the time of the survey, which represents ~5% of the total sample. Twenty-one percent reported still considering decisions about provider changes.

Respondents were asked if they had considered making any changes to their delivery mode (vaginal or elective cesarean section). Thirteen percent of respondents indicated they had considered a change in their preferred type of delivery at some point during their pregnancy, with nearly all (96%) indicating they preferred a vaginal delivery. Respondents cited the perception of being discharged from care earlier after vaginal delivery compared to a

cesarean section as one of the motivating factors for preferring a vaginal birth.

Priorities and Concerns Related to Pregnancy & Childbirth During the COVID-19 Pandemic

Respondents were asked to report their priorities and concerns related to pregnancy, childbirth, and postpartum care during the COVID-19 pandemic (Table 3). Concerns were classified into five categories: exposure to the SARS-CoV-2 virus; hospital or birth center policies; infant feeding, personal products and supplies; financial and child-care costs; and postpartum needs and support. A significant proportion of respondents were concerned about their own exposure (88%), their infant’s exposure (90%), or exposure

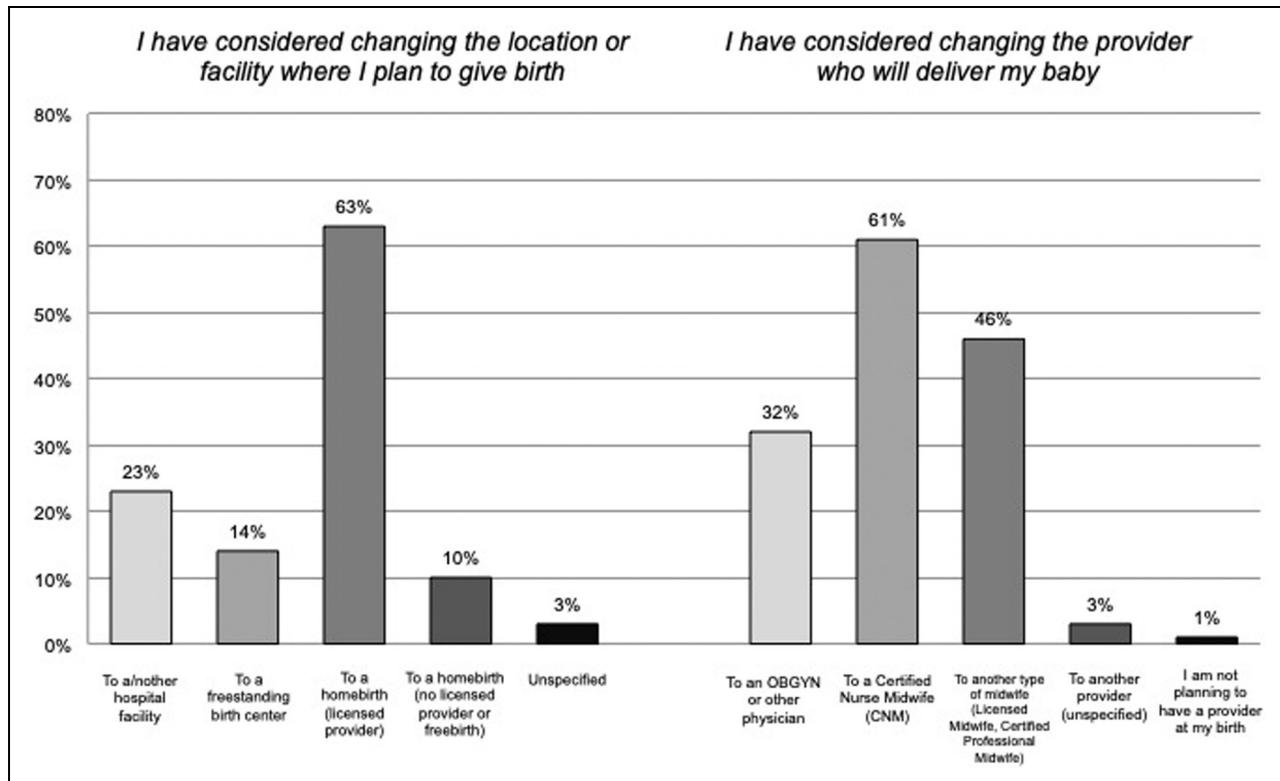


Figure 2. Considered change in birth location or provider.

of a family member to the SARS-CoV-2 virus (91%). The most frequent concern related to hospital or birth center policies, reported by 88% of respondents, was the possibility of being separated from their infant, if either mother or infant tested positive for the SARS-CoV-2 virus. Participants expressed a range of reactions to this possibility, including fear, uncertainty, and resistance.

A high proportion of respondents (85%) had serious concerns about hospital policies and restrictions on visitors or labor support, with 73% of respondents being worried that their partner would not be able to be present for childbirth, and 67% being worried about having their childbirth choices limited, generally. These new policies and protocols, and their perceived impact on the birth experience elicited emotional responses from participants that ranged from fear, distress, lack of confidence, to grief, and disappointment.

Respondents shared concerns about accessing resources and support after birth. Over one-third of respondents reported financial concerns, including being able to pay for childbirth-related costs (37%) and postpartum needs (36%) while half of the respondents expressed concerns over accessing childcare (52%). Respondents were concerned about having enough medical supplies, equipment, or personal products for childbirth (46%) and postpartum needs (50%), and concerns over being able to feed their baby in the way they desired (51%). Over 80% of respondents indicated they were concerned about having enough social

support after childbirth, and 58% felt concerned with their ability to access postpartum care. One-third of respondents (34%) were concerned about where to go for information or questions about complications related to childbirth and postpartum. For many participants, these barriers represented a source of unexpected stress, while for others, the lack of options simplified their decisions.

Discussion

This study highlights critical patterns in the expectations, behaviors, and experiences of a convenience sample of pregnant individuals during a major public health crisis. In particular, the COVID-19 pandemic reflects a high degree of uncertainty, to which many pregnant individuals have responded by reconsidering certain prenatal and childbirth decisions. Virtually all respondents reported having to navigate a change in one or more policies affecting their pregnancy-related care. Under these conditions, many respondents considered different options for the location of their birth and health care provider. This study revealed patterns in emerging priorities and needs related to navigating pregnancy, childbirth, and postpartum experiences during the COVID-19 pandemic; most notably, pregnant individuals' concerns about protecting themselves and their loved ones from the SARS-CoV-2 virus, health system policies that might limit their partner or birth support person present for the birth, fears about being separated from their infant

Table 3. Concerns Related to Pregnancy and Childbirth During COVID-19 (*n* = 379).

As a result of the COVID-19 pandemic, I have concerns about:	<i>n</i>	%
My spouse/partner or family member being exposed	345	91
My baby being exposed during or after childbirth	340	90
Being exposed to the virus (self)	334	88
The possibility of being separated from my baby (if either mother or newborn tests positive for COVID-19)	334	88
My hospital or birth center facility limiting visitors	323	85
Having social support after childbirth	308	81
My hospital or birth center facility changing other policies	307	81
My partner or spouse being present for childbirth	276	73
My baby being exposed in utero	258	68
Having my childbirth choices or preferences limited	255	67
Being discharged from the hospital or birth location before I am ready	221	58
Having access to postpartum care after childbirth	221	58
Being able to access childcare if I need it	196	52
Being able to give birth with my preferred care team	198	52
Being able to feed my baby the way I want to	191	51
Having enough medical supplies or personal products for postpartum	190	50
Having enough medical supplies and equipment for childbirth	173	46
Being able to give birth in my preferred location	145	38
Being able to pay for childbirth costs	138	37
Being able to pay for postpartum needs	136	36
Knowing where to go if I have questions or complications after childbirth	130	34
My home being a safe environment during my pregnancy or after birth	122	32

in the event of exposure, and resources and support during the postpartum phase. These results echo other findings from a survey of pregnant women in April 2020 that indicated a large number of pregnant individuals considered changes to their birth location and provider.¹⁴ Other frequently cited concerns reflected the resource and support needs of expecting families that weigh heavily on individuals preparing to give birth during a pandemic; namely financial stressors, access to childcare, the safety of their environment, and anticipated needs for supplies, equipment, or personal products for the postpartum stage. While these concerns often exist outside of the traditional health care settings, health and social service providers must acknowledge the entirety of a birth person's needs for such supports to appropriately deliver high-quality person-centered care.

Providers should assess their patients' priorities and acknowledge the complexity of the decisions that are laid before pregnant individuals, recognizing that the shared decision-making approach toward optimal perinatal outcomes may be even more complex during a pandemic event. Pregnant individuals may experience heightened vulnerability during the COVID-19 pandemic because of added financial, psychological, or social constraints. For this reason, individuals'

decisions and behaviors may be influenced by a different set of interconnected factors than would otherwise affect their decision-making about pregnancy and childbirth in the absence of COVID-19 disease. Providers may consider implementing screening protocols for assessing patients' social and mental health needs at regular intervals during pregnancy, especially for those who transfer care prior to birth.^{19–22} Referrals to appropriate services and supports during the perinatal period are critical; careful attention should be paid to the accessibility of such care under the conditions presented by the COVID-19 pandemic.

Understanding how pregnant individuals and their families perceive their options for pregnancy and childbirth, and their intended behaviors with respect to maternity care are critical to ensuring that health systems and providers have the capacity to meet individuals' needs with compassionate, person-centered care that supports pregnant individuals during the unprecedented risk and uncertainty of the COVID-19 pandemic. Accounting for the collective lived experiences of individuals undergoing pregnancy and birth during a pandemic event through qualitative data is an effort that has not been readily incorporated in other COVID-19 disease studies. Hearing directly from the voices of individuals is a vital component to fully understanding their experiences and to developing protocols, policies, and interventions to support person-centered pregnancy and birth care during times of public health crisis.

Despite these important contributions, some key limitations of this study should be noted. First, the study recruited subjects using convenience sampling methods and did not achieve representation as the sample skewed toward predominantly White, middle-high income, and highly educated participants. The findings of this study are best framed as a preliminary study toward building an understanding of the impact of the COVID-19 pandemic on pregnancy and childbirth experiences, and generalizations about the larger population of pregnant individuals should not be made. It is important to note the experiences of pregnant individuals who face vulnerability due to socioeconomic status; minority racial, ethnic, or linguistic identity, or other forms of marginalization that constrain their ability to access high-quality care and support during pregnancy, are only minimally included in this convenience sample. The respondents in this study, although mostly White, well-educated, and higher-resourced, still expressed significant pandemic-related distresses and needs for support in navigating the uncertainty of being pregnant and giving birth during a pandemic event, despite their fair degree of social capital and relative advantage. It is, therefore, a fundamental imperative that future studies investigate the collective experience of populations who are not adequately represented in this and other similar studies, especially when the COVID-19 pandemic may compound negative maternal health outcomes.^{23–27} Future efforts must reflect the representation of these individuals to provide the most comprehensive description of the realities faced by vulnerable populations.

Furthermore, the sample reflected a high proportion of pregnant individuals who reported planning an out-of-hospital birth (nearly 10%), where population estimates reflect that ~1.5% of births in the United States occur outside of hospital facilities.²⁸ Whether this difference is due to sampling bias or the impact of the COVID-19 pandemic on pregnancy and childbirth decision-making is unclear, but these findings suggest the COVID-19 pandemic may play a discernable role. In addition, time effects were not accounted for in this study, as the survey asked pregnant individuals to report their point-in-time prenatal experiences and to project their childbirth expectations during a rapidly changing public health crisis. Similarly, the survey only captures the perceptions of respondents during their third trimester, but does not estimate further their gestational age. Most notably, the evolution of the COVID-19 pandemic and response efforts at the community, state, and federal level has significantly changed, and would assuredly be reflected in respondents' experiences if they were expressed longitudinally.

Conclusion

The purpose of this study was to gather preliminary information on pregnancy and childbirth expectations, decisions, and experiences during the COVID-19 pandemic in the United States. The findings illustrate the concerns, priorities, and decision-making factors that lead pregnant individuals toward or away from certain experiences during their pregnancy in the context of a major pandemic event that carries emerging, yet significant risk for pregnant individuals. This effort is vital to ensuring that the US health system is prepared to meet pregnant individuals' unique needs and to adequately extend support and services in a person-centered model, in the context of community-mitigation strategies against an infectious disease pandemic event.

Authors' Note

This study was approved by the Human Subjects Review Council at Central Washington University. All of the procedures involving human subjects were conducted in accordance with the Human Subjects Review Council's (2020-085) approved protocols. This article does not contain any studies with animal subjects. Informed consent was obtained from the patient(s) for their anonymized information to be published in this article. Respondents documented their informed consent by clicking an electronic button indicating they agree to participate in the online survey as it was described on the study information page. For procedures involving qualitative interviews, participants gave verbal consent.

Declaration of Conflicting Interests

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