

WOMEN'S EXPERIENCES OF LABOR
AND BIRTH DURING THE
COVID-19 PANDEMIC

by

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WOMEN'S EXPERIENCES OF LABOR AND BIRTH
DURING THE COVID-19 PANDEMIC

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ABSTRACT

Pregnant women during acute crises, like COVID-19, have unique labor and birth experiences. During 2020, research published about COVID-19 and its implications for labor and birth focused on healthcare policies implemented early in the pandemic and vertical transmission to the fetus. This qualitative study analyzed a subset of participants from a larger study, focusing on the labor and birth experiences of women during COVID-19 using rapid analysis. Eligibility criteria for women participating included the following: being 18 years of age or older, speaking and reading English, giving birth to a single baby on or after March 13, 2020, and having no prior fetal loss greater than 20 weeks. The researchers split eligible women into five groups based on their date of delivery and randomly selected three women, one from the first, third, and fifth group. Led by the principal investigator of the larger study, the interviews took place over Zoom, using a scripted interview guide. The student investigator extracted the information specifically regarding labor and birth and identified three main themes of the study: hospital policies and communication, early versus late COVID-19 experiences, and isolation and depersonalization. Based on the information identified regarding women's experiences of labor and birth during COVID-19, the student investigator proposes establishing a database for up-to-date information and policies from providers for expectant mothers. The database would streamline communication, decrease anxiety related to the unknown, and increase mental health care for mothers who deliver during times of crisis.

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Introduction

On March 12, 2020, pregnant mothers and their families excitedly anticipated their child's upcoming arrival, unaware of the dramatic way their lives were about to change. The following day, the president of the United States (US) declared a national emergency due to COVID-19, the coronavirus caused by SARS-CoV-2, throwing our country into quarantine and isolation. Expecting couples could no longer share this exciting time with their families and loved ones, creating added stress for pregnancy and birth (Antoun, 2020). When the time came for birth, the worldwide pandemic significantly impacted labor and birth. Hospitals added precautions, due to the unknown nature of COVID-19, to best care for mothers and neonates, including restricting visitors, limiting frequency and duration of room visits from the staff, and isolating potential COVID-19 positive mothers. Early in the pandemic, medical providers did not know if mothers vertically transmitted the virus to their newborns, an additional stressor. Hospitals have continued to adapt their precautions, ranging from complete lockdown and restrictions to re-adopting pre-COVID practices, based on ever-changing research and Centers for Disease Control and Prevention (CDC) guidelines. This project will investigate the following research question: what were the experiences of women giving birth during the COVID-19 pandemic in the United States?

Literature Review

The student investigator used CINAHL, EMBASE, Medline, and ProQuest to find literature on COVID 19 and pregnancy for this review. Inclusion criteria included articles published after the president of the US declared a national state of emergency on March 13, 2020, articles with both quantitative and qualitative study designs, full text articles, and articles written in English. The student investigator used the following search terms and combinations:

"pregnancy AND pandemic," "pregnancy AND coronavirus," "labor AND delivery AND pandemic," "labor AND delivery AND COVID," pregnancy AND swine AND flu," and "labor AND delivery AND epidemic."

Hospital Guidelines and Practices

COVID-19 has been prevalent in the United States for the past two years. Researchers frequently identify new information due to evolving research on the virus and its impact and implications on society. Researchers have specifically looked at the connection between COVID-19 and pregnancy outcomes and how to provide the best care for pregnant women. Researchers continue to adjust guidelines and protocols to be adjusted to determine the best practices for labor and delivery units during the pandemic in hopes of decreasing the spread of the disease in this vulnerable population (Stephen et al., 2020).

The guidelines became especially relevant during the initial months when the effects of COVID-19 on pregnancy were unknown. The protocols focus on limiting visitors, limiting frequency and duration of room visits, limiting cervical exams by the healthcare team, and discouraging not encouraging active pushing during the second stage of labor (Stephen et al., 2020). Another study, set in New Jersey, recommended the separation of positive mothers from their newborns to benefit the children's outcomes. The New Jersey observational study identified 78 possible COVID-19 positive mothers between April 21, 2020, and May 5, 2020, in a single hospital system. Providers recommended separating 62 of the mothers from their newborns and 54 agreed. After separation, all the infants of mother's who had tested positive had negative COVID-19 test results (Griffin et al., 2020). Other research has identified the consequences of isolation or lack of support for pregnant women during labor and birth: increased maternal, fetal,

and pregnancy risks, increased pain and duration of labor, and increased need for cesarean section (Jago et al., 2020).

Changing maternity practices being utilized during COVID-19 included removal of partners, doulas, and other support persons. The goal of removing doulas/partners is to protect providers and “the public from the highly contagious virus” (Davis-Floyd et al., 2020). A questionnaire sent to midwives, doulas, obstetricians, and members of the Council on Anthropology and Reproduction, sought to address questions regarding the effects of the pandemic on pregnant patients, including the removal of support persons. One prompt from the questionnaire asked if “doulas and partners [are] being excluded from the birthing room,” and one California homebirth obstetrician described how exclusion or limiting of support persons is a “reflex reaction” after decades of effort to include partners and doulas in the labor and delivery room (Davis-Floyd et al., 2020). Another provider described “the tremendous stress and anxiety women face when making the decision about who their one support person will be – and its long-term consequences, which can include postpartum depression (PPD) from being completely alone after birth” (Davis-Floyd et al., 2020).

The questionnaire addressing the effects of COVID-19 on pregnant patients also discusses how the virus has multiplied already present problems in maternity care in the US. Although the results of the questionnaire varied slightly based on region and type of practitioner, midwife vs. doula vs. obstetrician, they agreed on the systemic flaw of “unequal access to safe and high-quality maternity care within the United States” and how it “has only been exacerbated by the Covid-19 virus” (Davis-Floyd et al., 2020). The respondents also described the conflicting expectations regarding testing for women in labor and how this conflict further created a discrepancy in the potential care provided from provider to provider. And without a negative test

result, the public hospitals or entities had to were forced to provide a more depersonalized labor and birth experience. Lastly, patients of obstetricians arriving in active labor, who were COVID-19 positive, delivered by cesarean “so the birth can be more controlled and [fewer] people will potentially be exposed” (Davis-Floyd et al., 2020).

Screening for COVID-19 became a relatively universal guideline for pregnant women admitted to labor and delivery units across the US. One study discussed how the majority of COVID-19 cases spread within asymptomatic, relatively healthy populations, and most pregnant women fall into this category. The study proposed that providers test all admitted obstetrical patients, “allowing for appropriate triage, adequate obstetrical and neonatal management, and safe patient transport within overcrowded hospitals” (Henderson et al., 2020). At the time of the research, hospitals only advised testing for patients with symptoms or with recent close contact. Although the increased screening ultimately increased the use of personal protective equipment (PPE) in 10% of cases, hospitals used it on the correct patients and helped ensure safety for both COVID-19 positive and negative mothers, and their healthcare providers (Henderson et al., 2020).

History

Similar to pregnancy during the West African Ebola epidemic, pregnant women required continued prenatal care during the COVID-19 pandemic. This need concerns hospitals and clinics because of rising infection in hospitals and clinics, causing greater concern for this higher risk population. The effects of an epidemic and stigmatization on pregnancy was researched during the Ebola epidemic in West Africa. During the Ebola epidemic, medical providers and local people stigmatized pregnant women because they had “unpredictable bodily fluids and, upon delivery, Ebola-infected amniotic fluid, hemorrhage, and placental tissue” (Strong &

Schwartz, 2016). Additionally, even women not infected by the Ebola virus suffered the consequence of people's fears of the virus and overall stigmatization. The resources for pregnant women and the routine health care services for them were effectively shut down, exposing a flaw in the system. The research exposes how hospitals put the obstetric population on the back burner time and again during acute epidemics or crises despite the necessity of the population's care and resources, especially regarding prenatal care (Strong & Schwartz, 2016). Strong and Schwartz (2016) exposed the stigma towards health care facilities and health care workers in addition to pregnant women. Despite the necessity of prenatal appointments, pregnant women avoided frequenting clinics and hospitals that served infected patients because of the association between the Ebola and COVID-19 viruses and health care workers (Strong & Schwartz, 2016).

In 2009, when the novel H1N1 influenza virus was first reported, providers included pregnant women in the high-risk population due to increased risk of complications. Research completed after the first wave of the H1N1 virus referenced the increased maternal mortality rates during the influenza pandemics in 1918 and 1957 and noted similar effects during the 2009 pandemic (Satpathy et al., 2009). Because of their high-risk status, epidemiologists classified pregnant women as high priority for the vaccine in 2009. This study's findings support an increased necessity of quality care for this high-risk population, in contrast to the experience of pregnant women during the Ebola outbreak and currently in the COVID 19 pandemic (Satpathy et al., 2009).

Like pandemics, natural disasters also impact the planning and safety for expectant and their infants. From hurricanes to tornados, mothers in these situations are at a loss for information, despite the necessity of continued care. Although natural disasters have lasting implications, they are usually acute events, compared to a pandemic which is chronic. A study

done in the wake of Hurricane Katrina researched the experiences of pregnant women during this natural disaster (Badakhsh et al., 2010). The study used qualitative interviews to “gain insight into the needs of pregnant women during Hurricane Katrina” (Badakhsh et al., 2010). Although the study focused on women’s experiences while pregnant, versus a labor and birth experience, it addressed a recurring theme of reliance on friends and family, which is lacking during the COVID-19 pandemic.

Vertical Transmission

Extensive research confirms that vertical transmission of COVID-19 between mother and fetus does not occur (Antoun et al., 2020). Antoun et al. (2020) reported that of the 23 symptomatic mothers who tested positive for COVID-19, none of their newborns contracted the virus. Despite the lack of effects on the newborns from COVID-19, women experienced a higher prevalence of preterm birth, preeclampsia, and cesarean sections compared to pregnant women who tested negative for COVID-19. Another cohort study, completed at a New York City hospital, from March to May 2020 found that among 120 mothers who gave birth and tested positive for the virus, no newborns tested positive on a nasopharyngeal swab test at 24 hours, 5-7 days, and 14 days of life (Salvatore et al., 2020). The retrospective cohort study found that of the women studied, only 20% of the women and no newborns tested positive for COVID-19 (Henderson et al., 2020).

To date, studies have focused on the transmission of the virus in COVID-19 positive pregnant women, within the labor and delivery setting, and possible implications of transmission in this setting. No studies examine mothers’ personal labor and birth experiences during the COVID-19 pandemic, exposing a gap in literature of research on the added stressor of COVID-19 on their personal birth experiences.

Theoretical Framework

French and Kahn created the Integrative Stress Response (ISR) Model in 1962 and the model has since been adapted. The model illustrates a person's journey as they experience stress. In the model, horizontal arrows show the linear relationships between each step representing the model's center: objective environment, psychological environment, response, mental and physical health, and disease (Appendix A). Each person has an individual reaction to their objective environment, creating a unique perception of the environment. The personal perception of the environment can cause various reactions: physiological, behavioral, and affective. These responses can then lead to different mental and physical health consequences. The ISR model also includes additional variables, such as individual characteristics and interpersonal relations, that impact an individual's reaction and response and movement throughout the model.

The project will use the ISR Stress model as a framework for discovery of how the various steps impact the pregnant woman during the COVID-19 pandemic. COVID-19 is the objective environment for mothers giving birth. Each mother views the external stimuli or stressors differently, and thus each will have individualized physiological, behavioral, or affective responses. The project will also consider the mother's individual characteristics and interpersonal relations, potential variables impacting their experiences.

Methodology

Design

The student investigator conducted a qualitative descriptive study that focused on women's labor and birth experiences during the COVID-19 pandemic, alongside the principal investigating professor Dr. Lisette Saleh. The sample includes a subset of participants (N=3), with data collected between February 18, 2021, and April 12, 2021. The participants completed a

semi-structured interview with the principal investigator and a member of the research team, including the student investigator. The Institutional Review Board of Texas Christian University approved the greater study.

Recruitment

The research team recruited participants for the study by purposeful sampling of women who have been pregnant and given birth during the COVID-19 pandemic. Recruitment occurred through social media posting, known subjects who have delivered a baby during the pandemic (from team members working in the field), and snowball sampling. Mothers interested in joining the study contacted the larger study's principal investigator and provided their contact information, including an email address.

Sample

The principal investigator sent an initial Qualtrics survey to potentially eligible participants, including further information about the study, an electronic informed consent, and the study's eligibility requirements. Eligibility for the participants included that the participants must be 18 years of age or older, must speak and read English, must have given birth to a single baby on or after March 13, 2020, and must have experienced no prior fetal loss greater than 20 weeks. Eighty-nine women initially agreed to participate in the study within the first 24 hours. The research team split the women into five groups depending on their date of delivery, with each group including deliveries over a two-month period, to see differences based upon delivery date and the COVID-19 timeline. The delivery dates for each group were as follows: group 1 delivered March-April 2020, group 2 May-June 2020, group 3 July-August 2020, group 4 September-October 2020, and group 5 November-December 2020. From the initial 89 participants, the researchers created a subset of 45 participants to interview by randomly drawing

9 names from each of the five groups. The entire cohort of 89 participants received a second survey that included specific questions from the Coronavirus Perinatal Experiences (COPE) Impact Survey and Impact Update (Appendix B). Of the subset of 45, nine did not complete the two surveys and four did not set up an interview, resulting in a final subset of 32 participants. The student investigator randomly selected one participant from the first, middle, and last group (N=3) in order to derive different perspectives throughout 2020 to further investigate, for this specific study.

Setting and Data Collection

The research team obtained informed consent before any data collection procedures. A link to the consent was available to potential participants to review and have their questions answered. At the beginning of the interview, the research team asked for each participant's consent again and reminded them of their ability to withdraw at any time. The researchers recorded the interviews using video and audio and stored them on a password encrypted computer. The team also assigned a pseudonym for each participant for confidentiality. All identifying information was removed from the survey data prior to data analysis.

Interviews took place over *Zoom* to allow for social distancing and scheduling convenience for the participants. Using the Zoom platform, the research team recorded and transcribed the interviews. The larger study's principal investigator conducted the interviews and asked the participants the pre-determined questions from an interview script (Appendix C). An additional member of the team sat in on the interviews to take field notes for use during data analysis. The primary investigator maintained an audit trail including the timeline, process, and any thoughts related to the study for use during the team analysis. After each interview, a member of the larger study's team reviewed the transcript along with the interview video to

verify the transcripts were accurate. The student investigator extracted “labor and birth,” “healthcare provider,” and “education” questions for their specific research.

Measures

The participants received an initial survey through *Qualtrics* after expressing interest in participating in the study. The survey collected basic demographics about the participant (age, race, geographical location, education, household income, household composition), their obstetric history (previous pregnancy outcomes), most recent birth plans (due date, delivery date, neonate weight, NICU admission, plans for support and pain management, mode of delivery, available birth options including doula/imagery/nitrous oxide, location of delivery, COVID-19 policies) and asked questions about their personal labor and birth experience. The greater research team collected more information, but the student investigator only discusses a subset of data collected here. The second survey included questions from COPE, regarding support, healthcare provider interaction, and fears related to COVID-19. *Qualtrics* directly captured the second survey’s responses.

All interviews lasted 10-35 minutes in length. In the interview, the researcher asked the participants an open-ended question about their labor and birth experience: "How did coronavirus impact your labor and delivery?" The researcher followed up this question with prompts based on the participants' responses to seek clarification on experiences. Throughout the interviews, a team member took field notes to utilize during analysis. The team removed all personal information from the interview.

Analytical Plan

The *Qualtrics* survey results, including demographics and delivery information, were used to help create a context for the interview answers and were not analyzed specifically (Appendix

D). The research team analyzed the qualitative data from the interviews and follow up surveys using thematic analysis by the members. The research team independently analyzed two interview transcripts using a matrix style template created for this study (Appendix E). The template domains matched interview questions. Independent analysis by the team allowed for determination of the accuracy of the template domains to determine functionality and reliability of the template. After the preliminary analysis, the team met to discuss findings and to agree on the template. The student investigator used the template to analyze the three interviews, specifically in the *labor and delivery* domain, and to compare the experiences of the participants. Although all aspects of the interviews were acknowledged, the student investigator extracted the *labor and birth* information for this research study. After analyzing the three interviews, the student investigator analyzed the *labor and birth* domain of the larger study to compare the results to and to determine accuracy compared to a larger subset.

Results

The student investigator analyzed information, including the COVID-19 policies, pain management, and Coronavirus Perinatal Experiences (COPE) of participants, from the surveys completed by interview participants. Table 1 shows the findings of the surveys (Appendix D).

The analysis identified three major themes: healthcare policies and communication, early versus late COVID-19 experience, and isolation and depersonalization. These themes help to define the experiences of women who gave birth during the COVID-19 crisis.

Healthcare Policies and Communication

Throughout the interviews, the participants emphasized the impact the COVID-19 policies had on their birth experiences. The main policies they discussed included mask wearing, visitors, testing/monitoring, and distribution of information.

The regulations for mask wearing during birth varied for the participants. The participants described how the regulations for mask-wearing became subjective for various hospitals and providers, causing confusion and frustration for participants. Some women had to wear masks during labor while others only had to wear them in the hallways. Testing of the mother prior to coming to the hospital also became a common policy as the pandemic evolved and testing became more readily available. However, the participants described confusion related to testing, as they personally got tested but their significant others did not get tested. Before testing was customary practice, hospitals used other screening tools, including thermometers, to screen for COVID-19, as shown in a group 1 interview: “I mean they were checking our temperatures, which was different. Including my husband's every four hours, which was kind of stressful because you're sitting there waiting like hoping that you're going to be okay and pass the test, and that they weren't going to make him leave” (Group 1).

As for communication regarding COVID-19 and its impacts on labor and birth, the participants described an overall desire for more information, despite understanding that the overall lack of knowledge made such information impossible to provide. In a group 3 interview, a participant said she felt the distribution of information regarding COVID-19 and what to expect with labor and birth was not readily available until asked: “I felt like I had to do a lot of the prompting myself, like I don't feel like it was ingrained in them to do the education first it was almost like it was an afterthought sometimes” (Group 3). Another participant discussed how they had to get information from a variety of sources, and all the sources described different expectations. She confessed a desire for “one educational resource... Like a website, or something with up-to-date information about how it's impacting pregnant women or infants, or

you know people postpartum and just having kind of an aggregated resource of who to call when you've got a question about this” (Group 1).

As a whole, the participants described an inconsistency regarding policies and distribution of information around COVID-19. Because of the unknown in the policies, the women often were left feeling anxious. They described an overall desire for more information related to COVID-19 as the practitioners became aware of it. The lack of distribution of information caused the student investigator to find ways to simplify this distribution for similar situations.

Early versus Late COVID-19 Experience

One major theme found in the participants interviews was that of early versus late COVID-19 experiences. A mother who delivered in group 1 (March to April 2020) had a drastically different experience compared to mothers in group 5 (November to December 2020). The visitor policies, testing and vaccination requirements, and the amount of information known about the pandemic, reflected the differences between early and late experiences.

The amount of information about COVID-19 grew as the pandemic progressed, providing mothers later in 2020 with more resources compared to Spring 2020. Additionally, “practitioners were willing to give... any information that [was] requested” because of the increased knowledge on the virus later in the year as well” (Group 5). Even the participant in group 3 addressed that despite her desire for more information, they likely could not have provided it to her: “I would have liked more um just more information related to pregnancy and COVID. But I don't know if they could have provided that” (Group 3).

The policies and regulations rapidly changed during the pandemic, which was consistent with the literature and was reflected in the interviews. The policies regarding visitors changed

throughout the year 2020 for women and their families. In an interview from group 1, from early in the COVID-19 pandemic, a participant described how she wanted her mom there, but at that time, the hospital allowed only one visitor. In the group 5 interview, the participant described having a doula present at birth in addition to her partner. During the central months of the pandemic, during which group 3 mothers delivered, the policies continued to be stricter with only one visitor for each birth.

Testing and vaccination also differed throughout 2020 and as COVID-19 developed. As previously mentioned from a group 1 interview, the healthcare team resorted to taking temperatures every four hours as the way to screen for COVID-19 because testing for the virus was not common yet. In the group 3 interview, the participant described how she had to be tested before coming to the hospital and the testing for her partner throughout their stay: “we had to be screened, he had to be screened in and out. It was more difficult for him to get in and out” (Group 3). The group 5 participant stated that she got tested via a rapid test before being admitted to the hospital. Although the hospital did give her the option of staying it did not permit her to have visitors until the test came back. The group 5 participant also described the impact of having the vaccine rolled out soon after birth and how the timing of the vaccine has been “kind of a bonus for us as well” (Group 5).

The variation in experiences between early in the pandemic (group 1) and later in the pandemic (group 5) exposed the impacts of increased knowledge on regulations regarding crises and disasters. As researchers attained more information, providers managed to develop their regulations to benefit the mothers while staying safe.

Isolation and Depersonalization

Isolation and depersonalization during the labor and birth experience were common themes. Although some of the interviewed participants welcomed the isolation, as they desired a more intimate experience, others said their partner was the only person present, in a more negative sense. Participants who wore masks – not all did – described a depersonalization through the mask-wearing: “He had to wear a mask the whole time and so that was that was it know that depersonalization thing comes into it again, you know just meeting his daughter, for the first time” (Group 3). The same participant described being unable to bring anything in to personalize the hospital room, including photos.

Another participant described an overall feeling of being “sterile,” enhancing the feeling of depersonalization by the decreased interaction between practitioners and patients (Group 1). The isolation was further pronounced through a feeling of not being touched and with providers wearing PPE: “Sometimes people were just really hesitant, you know and to see to come up close to the baby and see her you know the nurses and stuff like that they just they were all [gowned] and gloved up you know, and they didn't. You just felt like you couldn't be touched” (Group 3).

The participants repeatedly emphasized that the strict limitations on visitors, contributed to a feeling of isolation, and the policies related to the virus, including mask wearing, caused feelings of depersonalization for the women.

Discussion

This study offered a new perspective on the COVID-19 pandemic’s impact on women giving birth; it goes beyond previous research by giving women the opportunity to voice their personal labor and birth experiences. The women described both the positive and negative implications related to delivering a child during the COVID-19 pandemic in 2020. Most new

mothers desire to share their birth story with anyone who will listen, but those who delivered during the pandemic have an increased longing to describe their experience, and this study provided this opportunity. The overall themes, healthcare policies, isolation and depersonalization, early versus late COVID-19 experiences, discovered in this study interrelate to and overlap with one another.

The participants' varied experiences, depending on when they delivered during 2020, showed how the impacts of pandemics and disasters evolve over time, as the former and latter progress. The study depicted increased anxiety and an overall sense of unknown early in COVID-19 pandemic (group 1), and as knowledge increased, the policies and overall sense of understanding of the scenario increased (group 5). As stated in the literature review, epidemics are chronic compared to natural disasters, although both crises have acute and chronic implications. The acute emergency generates higher levels of unknown leading to increased anxiety. Although there are long term effects of natural disasters and epidemics, as time passes, healthcare policies and procedures either return to an old-normal or find a new normal, both of which coincide with more understanding of the entire situation. The women responses reflected this adaptation to the new normal with the COVID-19 pandemic, through their differing experiences based on timing of delivery. For example, the hospital policies and guidelines differed from the beginning of the pandemic (group 1) compared to later in the pandemic (group 5). The changing policies experienced specifically from group 1 and 3 participants, related to increased isolation and an overall depersonalized experience (Stephen et al., 2020).

The COVID-19 policies and procedures in the hospital caused an overall sense of isolation, specifically regarding labor and birth. The isolation often resulted from a lack of interaction between mothers and their caregivers or visitors, as well as lack of visitors. For some

mothers, the isolation implied a more intimate birth in a positive manner, without being overwhelmed by visitors, compared to others relating isolation to depersonalization. This isolation and depersonalization reflected the experiences of some women during the West African Ebola epidemic. The isolation and depersonalization do not reflect best practice in the labor and delivery setting, increasing risk of maternal, fetal, and pregnancy risks (Jago et al., 2020). Additionally, the policies described by the participants in the study reflected the research completed prior to the interviews.

Limitations

Although the student investigator's research focused on three participants experiences, the results were congruent with the larger study (N=32), as seen through a team analysis of the results after all rapid analyses were complete. Another limitation involved the conditions of the mothers, one of whom was primipara while the other two were multipara. This additional variable raises a question for future researchers about comparing primipara and multipara mothers' experiences during the pandemic. The participants also delivered in different states, which as addressed in the research, offered varied expectations in delivery protocol. A participant's fear regarding increased protocols because other states were invoking them, reflects this difference: "New York City had made some calls about not allowing your support person to be in the Labor room and my husband, one of his clients is actually on the board of OB/GYNs here in Arizona, and he was talking about our hospital specifically pulling the plug on letting [in] support people and there had been active um communications about that" (Isabelle). This limitation also addresses a question for further research comparing mothers' varied experiences geographically. Additionally, the investigative research completed prior to the completion of this study about the Ebola outbreak in West Africa and its effects on pregnant women's experiences,

also addressed a stigma towards healthcare providers. The recurring theme of stigma towards health care facilities and providers in epidemics raises a question for future research regarding provider's experiences.

Nursing Implications

This study showed the inconsistency of information dissemination to women regarding regulations for labor and birth during COVID-19. Research from the West Africa Ebola epidemic and early in the COVID-19 pandemic expressed how pregnant women are repeatedly not the priority in the acute phase despite the continued importance of prenatal and obstetric care (Strong, & Schwartz, 2016). This attitude continues despite the continued necessity of labor and birth providers due to pregnancy continuing even during times of disaster or crisis. The results of the study exposed a continued need for a central source of information for women regarding policies around the hospital, specifically regarding labor and birth. From the results comes a recommendation to develop an online database where all providers and public health professionals can provide updates relating to pregnant patients. This central database would allow for consistency amongst providers and an easier passage of information between providers and patients/families. The database would include information by state/region, where women can find information that pertains to their local environment. The database would benefit women delivering children throughout the remainder of the COVID-19 pandemic and would remain in place to help address future pandemics/health crises and natural disasters as well. The pilot database would be accessible in the United States initially, and based on the results, other countries could adapt their it to their needs. The proposed database exposes the lack of information and understanding of women's labor and birth experiences individually.

A common theme throughout the interviews was the overall desire for communication between women and their healthcare team. Even an answer of “I do not know, let me look into that,” would bring the women increased peace about the situation. In addition to a database, clinicians could better serve their patients and to overall reduce the negative impact of COVID-19 experiences on these women by being proactive in providing information to their patients. Providers have intimate relationships with their pregnant and delivering patients throughout the process and have the ability to decrease anxiety for their patients by communicating earlier and more directly with them.

One of the main themes found from the study was the feeling of isolation and depersonalization related to their labor and birth experience. Although this study focused mainly on women’s labor and birth experiences, the interviews included prompts about the effects of COVID-19 on the postpartum period, which contributed to the findings of the larger study. The isolation and depersonalization women felt during the birth experience, often correlated with isolation they felt during the postpartum period. Although some of the mothers enjoyed having more intimate experiences, the depersonalization and isolation also related to an increased need for care of the overall mother’s mental well-being. Another way that providers can better care for their delivering patients during acute disasters, including both endemics/pandemics and natural disasters, is through follow up mental health care for all individuals.

Conclusion

Women giving birth during acute crises, including pandemics like COVID-19 and natural disasters, have a unique experience and desire to be heard in order to advocate for future expectant mothers and their families. Research completed before the study about the effects of the COVID-19 pandemic on labor and birth were void of personal accounts from laboring

mothers and instead focused on the varying healthcare policies and the fear of vertical transmission to the fetus. Through the interviews with mother who delivered from March to December 2020, the research team became more aware of the direct implications of the pandemic on the labor and birth experience. The varying healthcare policies and lack of information about the policies led to worry about the unknown. The policies included steps that ultimately led to feelings of isolation and depersonalization for mothers giving birth. Developing a database with up-to-date policies for future crises that could be utilized by both providers and women giving birth, could positively impact women's delivery experiences in times of instability. Enhancing care for mothers' mental health following such experiences could also alter women's experiences in a beneficial well, especially for those directly affected by isolation. Throughout the interviews, the team also found variations in experiences between mothers who gave birth earlier in 2020 compared to those who delivered near the end of the year; mother's experiences who delivered at the beginning of the pandemic reflected the acute crises experienced throughout society and in some manners paralleled the acute emergency of other disasters. Twenty months into the COVID-19 pandemic and society is finding a new normal and learning to live with the chronic pandemic, including women delivering their children, but acute crises will continue to transpire and negatively impact women giving birth if changes are not implemented.

Appendix A

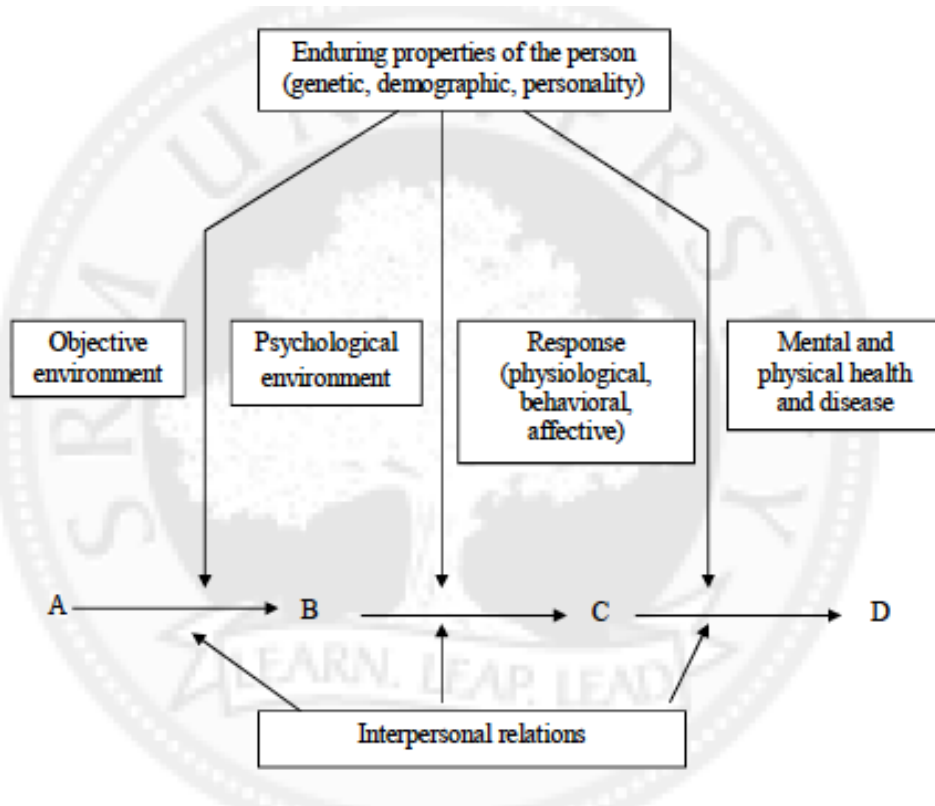


Figure 1: Integrative Stress Response Model adapted from French and Kahn (1962).

Appendix B

**COPE: Coronavirus Perinatal Experiences - Impact Survey (COPE-IS)**

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The Coronavirus Perinatal Experiences Impact Survey (COPE-IS) is a newly developed measure designed to learn about the experiences of new and expectant mothers in the time of the Coronavirus COVID-19 (SARS-CoV-2) pandemic. At present, psychometric properties for the measure have yet to be established and scoring procedures have yet to be determined. In the future, those updates will be available on the Open Science Framework (OSF) at <https://osf.io/uqhcv/>.

This assessment tool arose as a collaborative effort of more than 100 expert scientists and clinicians around that came together to build a tool that could be sensitive both to the events and circumstances of women's lives and also their unique responses to them. While researchers are named above as having organized this effort, the product is a genuine reflection of collaborative work by a much larger international group that developed this tool.

Given that this tool is already in widespread use, we expect that by the Fall of 2020, it will be possible to track the distribution, use, and demographics of an international COVID-19 pandemic perinatal study sample. Language translations of this assessment tool are already available and will continue to be released on OSF at <https://osf.io/uqhcv/>, along with project REDCap/Qualtrics files for ease of implementation.

Given the rapid changes in circumstances experienced by individuals and families across our global community, we have developed and released the *COPE: Coronavirus Perinatal Experiences Scale – Impact Update (COPE-IU)*. COPE-IU is a companion to the COPE-IS assessment tool. The COPE-IU is a shorter assessment (50-items) intended as a standalone instrument, or for brief, repeat longitudinal follow-up assessments, or updates.

All materials associated with this assessment tool are completely open source with no restrictions to their rights or use. For researchers planning to distribute this instrument, we welcome opportunity to join our COPE research collaborative. If you wish to join, please email moriah.thomason@nyulangone.org. We will add you to the distribution list of connected researchers using this instrument.

Suggested citation: Thomason, M.E., Graham, A., VanTieghem, M.R. (2020). The COPE-IS: Coronavirus Perinatal Experiences – Impact Survey.



COPE: Coronavirus Perinatal Experiences - Impact Survey (COPE-IS)

1. Are you currently pregnant?
 - (1) Yes > move to section: pregnant women
 - (0) No > move to section: postpartum women

PREGNANT WOMEN

PART 1: PERINATAL EXPERIENCES RELATED TO THE COVID-19 OUTBREAK

1. When is your due date? (*date field*): _____
2. Is this your first pregnancy?
 - (1) Yes
 - (0) No
3. Have you experienced any of the following during your pregnancy? (check all that apply)
 - (1) Gestational diabetes
 - (2) Hypertension
 - (3) Short cervix
 - (4) Small fetal size
 - (5) Other
 - (6) None
 - (7) Prefer not to answer

If other, please describe here: (*open field*) _____
4. Which of the following best describes your pregnancy?
 - (1) Singleton
 - (2) Twins
 - (3) Multiples
5. How well are you currently being supported by your primary prenatal care provider(s)?
 - (1) Very well supported
 - (2) Somewhat well supported
 - (3) Not very well supported

6. **Has the support you receive from your prenatal care practice changed due to the COVID-19 outbreak?**
- (1) Significantly worsened
 - (1) Somewhat worsened
 - (2) No change
 - (3) Somewhat improved
 - (4) Significantly improved
7. **What resources are currently available to you from your prenatal care practice? (check all that apply)**
- (1) Regular in-person appointments
 - (2) Virtual care appointments
 - (3) Phone call appointments
 - (4) Online messaging portal for questions/concerns
 - (5) Emergency care
 - (6) Home blood pressure monitoring
 - (7) Home fetal heart rate monitoring
 - (8) Don't know
 - (9) Other
- If other, please describe here: *(open field)* _____
8. **Which of the following changes are you experiencing as a result of the COVID-19 outbreak? (Check all that apply)**
- (1) Change in schedule for planned C-section or labor induction
 - (2) Changed from planned vaginal birth to induction or C-section
 - (3) Changed from planned home birth to a hospital birth
 - (4) Changed from plan for hospital delivery to a home birth
 - (5) Change in selected hospital or birthing center
 - (6) Change in prenatal health care provider(s)
 - (7) Cancellation of or reduction in frequency of prenatal visit(s)
 - (8) Changed format of prenatal care (i.e. no group classes)
 - (9) Cancellation of hospital tours
 - (10) Transition from in-person prenatal visits to virtual visits
 - (11) None apply
9. **Are you concerned about possible future changes to your medical care during your baby's birth as a result of the COVID-19 outbreak?**
- (1) Yes
 - (0) No
- a. *If yes, please provide concerns:* _____
- b. **How concerned are you?**
(Likert scale 1-7, 1 = no concern, 7 = highly concerned)
10. **Are you concerned about possible future changes in support and involvement of your family and friends in your baby's birth as a result of the COVID-19 outbreak?**
- (1) Yes
 - (0) No

- a. If yes, please provide concerns: _____
 b. How concerned are you?
(Likert scale 1-7, 1 = no concern, 7 = highly concerned)

11. Do you have any concerns about your child's health as a result of the COVID-19 outbreak?

- (1) Yes
 (0) No

- a. If yes, please provide concerns: _____
 b. How concerned are you?
(Likert scale 1-7, 1 = no concern, 7 = highly concerned)

12. How important are the following to help you and your family during the COVID-19 outbreak? (matrix: (1) not important at all, (2) somewhat important, (3) very important)

- (1) More one-on-one conversations with my prenatal care provider
 (2) Information about how to reduce stress
 (3) Access to a mental health provider
 (4) Online support groups
 (5) Interaction with other pregnant people
 (6) Rapid response to questions and concerns
 (7) Examples of how other women are planning for potential changes in their pregnancy, birth and postpartum care

13. Are there other resources that would be helpful to you and your family during the COVID-19 outbreak? (open field) _____

14. Would you be interested in learning more about an opportunity to participate in a new virtual babies-pregnant moms' social group?

- (1) Yes
 (0) No

if yes, Do you have a preference that your moms group be local versus national (moms across the US or in your region preferred)?

- (1) Local
 (2) National
 (3) Both
 (4) No preference

(End of section; pregnant moms skip postpartum section and move to section: perinatal experiences)

POSTPARTUM WOMEN

PART 1: PERINATAL EXPERIENCES RELATED TO THE COVID-19 OUTBREAK

[OPTIONAL]

(screening question, only relevant if excluding mothers of infants > 6 months old...)

Are you the mother of an infant under 6 months of age?

- (1) Yes > *move forward*

(0) No > "Thank you for your willingness to respond to our survey asking about experiences and feeling associated with the COVID-19 outbreak. This survey is intended only for pregnant women and women with children younger than 6 months, and therefore, you need not continue with this survey".

1. **What date was your most recent child born?**
2. **Was this your first pregnancy?**
 - (1) Yes
 - (0) No
3. **During pregnancy, did you experience any of the following? (check all that apply)**
 - (1) Gestational diabetes
 - (2) Hypertension
 - (3) Short cervix
 - (4) Small fetal size
 - (5) Low birth weight
 - (6) Delivery <37 weeks gestation
 - (7) Delivery <32 weeks gestation
 - (8) Other (open field)
 - (9) None of these apply
If other, please describe here: (open field) _____
4. **Where did you give birth? (choose one)**
 - (1) Hospital
 - (2) Birth center
 - (3) Home birth
 - (4) Other not listed
If 1, 2 or 4, What is the name of the hospital or birth center where your baby was born? (open field) _____
5. **Where was your baby born? (City, State, Country) (open field) _____**
6. **Has your baby received treatment in the NICU or PICU?**
 - (1) Yes
 - (0) No
7. **Which of the following best describes your pregnancy?**
 - (1) Singleton
 - (2) Twins
 - (3) Multiples
8. **How well have you been supported by your pre- and postnatal care provider(s)?**
 - (1) Very well supported
 - (2) Somewhat well supported
 - (3) Not very well supported

9. Did the support you received from your pre- and postnatal care provider(s) change due to the COVID-19 outbreak?

- (1) Significantly worsened
- (2) Somewhat worsened
- (3) No change
- (4) Not relevant (e.g., COVID related events happened after my delivery)
- (5) Somewhat improved
- (6) Significantly improved

10. How important are the following to help you and your family during the COVID-19 outbreak
(matrix: (1) not important at all, (2) somewhat important, (3) very important)

- (1) More one-on-one conversations with my medical provider
- (2) More one-on-one conversations with my child's medical provider
- (3) Information about COVID-19 and infant/child health
- (4) Information about how to reduce stress
- (5) Access to a mental health provider
- (6) Online support groups
- (7) Interaction with other parents
- (8) Rapid response to questions and concerns
- (9) Examples of how other women are planning for potential changes in their postpartum and baby caregiving plans

11. Are there other resources that would be helpful to you and your family during the COVID-19 outbreak? (open field) _____

12. Are you currently breastfeeding?

- (1) Yes
- (0) No
- a. *If yes, Are you exclusively breastfeeding?*
 - (1) Yes
 - (0) No

13. Did any of your birth plans change as a result of the COVID-19 outbreak? (check all that apply)

- (1) Reduced access to preferred medications before or after delivery (i.e. nitrous oxide, epidural)
- (2) Change to planned delivery location
- (3) My elective induction or C-section was not permitted as planned
- (4) My elective vaginal birth changed to induction or C-section
- (5) My health care provider (e.g., doctor, doula, midwife) was not available for my baby's birth as planned
- (6) Support people (e.g. partner, family) were not permitted to attend baby's delivery
- (7) I was separated from baby immediately after delivery
- (8) I was separated from baby for a long period after delivery (e.g., my baby was quarantined in the hospital nursery)
- (9) No change

(10) Other

If other, please describe here: *(open field)* _____

**14. Did any of your postnatal experiences change as a result of the COVID-19 outbreak?
(check all that apply)**

- (1) Family and friends were not able to visit me and my baby after birth (e.g., due to social distancing or travel restrictions)
- (2) I did not have access to lactation or other antenatal support following discharge from the hospital
- (3) My post-partum visit was cancelled
- (4) My post-partum visit was a virtual visit
- (5) I was unable to get the type of contraception that I wanted
- (6) I was unable to discuss "baby blues" or issues related to my mood
- (7) My baby's well visits were made virtual
- (8) My baby's well visits were canceled
- (9) My baby's immunizations were postponed
- (10) No change
- (11) Other

If other, please describe here: *(open field)* _____

15. In general, what is the level of distress you have experienced about changes to your birth and postnatal experiences due to COVID-19?

(Likert scale 1-7, 1 = No distress, 7 = Highly distressed)

16. Are you concerned about any possible future changes to how you will care for your baby as a result of the COVID-19 outbreak?

(1) Yes

(0) No

a. If yes, please provide concerns: _____

b. How concerned are you?

(Likert scale 1-7, 1 = No concern, 7 = Highly concerning)

17. Do you have any concerns about your child's health as a result of the COVID-19 outbreak?

(1) Yes

(0) No

c. If yes, please provide concerns: _____

d. How concerned are you?

(Likert scale 1-7, 1 = No concerns, 7 = Highly concerning)

18. Are you currently involved in virtual support groups (e.g., virtual mom group, virtual lactation support, etc.)?

(1) Yes

(0) No

If yes, what kind of group(s) are you involved with? *(open field)* _____

19. Would you be interested in learning more about an opportunity to participate in a new virtual babies-moms social group?

- (1) Yes
- (0) No

If yes, Do you have a preference that your moms group be local versus national (moms across the US or in your region preferred)?

- (5) Local
- (6) National
- (7) Both
- (8) No preference

(End of section, postpartum moms; advance to next section: perinatal experiences)

ALL RESPONDENTS

PART 2: COVID-19 EXPOSURES AND SYMPTOMS (SELF AND FAMILY)

We are interested in whether you and your family have been exposed to or are experiencing any symptoms like those seen in COVID-19.

Major symptoms: fever or chill, cough, shortness of breath.

Minor symptoms: sore throat, headache, muscle or body aches, runny nose, fatigue, diarrhea/nausea, vomiting, loss of smell or taste, itchy/red eyes.

1. **For all of the following people, please indicate which has occurred. Check all that apply.**
ROWS (self, partner, newborn, other children, other living in home)
Section i. COLUMN: (1) No symptoms, (2) currently have symptoms, (3) symptoms in the past
Section ii. COLUMN: (1) Never tested, (2) Tested positive for COVID-19, (3) Tested negative for COVID-19, (4) Tested and waiting for results
 If click (self) tested, conditional response: **Date of test:** _____

2. **Have any of the following individuals been in contact with someone who has tested positive for COVID-19? (within 14 days before or after a positive test date) (check all that apply)**
 - (1) Self
 - (2) Partner
 - (3) Newborn
 - (4) Other children
 - (5) Other living in home
 - (6) Your parents
 - (7) Close friends/neighbors
 - (8) Other
 - (9) None known
 If other, please specify: *(open field)* _____

3. **Do any if the following individuals have higher risk of contracting COVID-19 due to existing medical condition(s) or advanced age? (check all that apply)**
 - (1) Self
 - (2) Partner
 - (3) Newborn
 - (4) Other children

- (5) Other living in home
- (6) Your parents
- (7) Close friends/neighbor
- (8) Other
- (9) None known

If other, please describe: *(open field)* _____

- 4. **Would you like to be tested for COVID-19 but have not been able to get tested?**
 - (1) Yes
 - (0) No

- 5. **How many people do you know personally (have met in person) who have become ill with COVID-19? (count individual people only once in fields below)**
 - (1) Confirmed case number? _____
 - (2) Suspected case number? _____

- 6. **In general, how distressed are you about your own COVID-19 related symptoms or potential illness?**
(Likert scale 1-7, 1 = No distress, 7 = Highly distressed)

- 7. **In general, how distressed are you about COVID-19 related symptoms or potential illness in friends and family?**
(Likert scale 1-7, 1 = No distress, 7 = Highly distressed)

PART 3: COVID-19 FINANCIAL CONSIDERATIONS (CURRENT AND EXPECTED FUTURE)

- 8. **What type of employment do you have? (Please check all that apply)**
 - (1) Working full-time
 - (2) Working part-time
 - (3) On maternity leave
 - (4) On other form of temporary leave
 - (5) Looking for a job
 - (6) Student
 - (7) Unemployed
 - (8) Stay at home caregiver
 - (9) Retired
 - (10) Other
 - (11) Prefer not to answer

If other, please describe: _____

- 9. **CURRENT employment and financial impacts of the COVID-19 outbreak**
 - a. **Which of the following changes in employment have already occurred due to the COVID-19 outbreak? (check all that apply; leave blank if not relevant) (matrix with columns: (1) Self, (2) Partner)**
 - (1) Move to remote work
 - (2) Loss of hours
 - (3) Decreased pay
 - (4) Loss of job

- (5) Decreased job security
- (6) Disruptions due to childcare challenges
- (7) Increased hours
- (8) Increased responsibilities
- (9) Increased monitoring and reporting
- (10) Loss of health insurance
- (11) Reduced ability to afford childcare
- (12) Reduced ability to afford rent/mortgage
- (13) Having to fire or furlough employees
- (14) Decrease in value of your retirement, investments or savings

10. In general, what is the level of distress you have experienced relating to employment and financial impacts due to the COVID-19 outbreak?

(Likert scale 1-7, 1 = No distress, 7 = High distress)

11. FUTURE (expected) employment and financial impacts of the COVID-19 outbreak

a. Which of the following changes in employment do you expect will occur in the future?

(check all that apply; leave blank if not relevant) (matrix with columns: (1) Self, (2) Partner)

- (1) Move to remote work
- (2) Loss of hours
- (3) Decreased pay
- (4) Loss of job
- (5) Decreased job security
- (6) Disruptions due to childcare challenges
- (7) Increased hours
- (8) Increased responsibilities
- (9) Increased monitoring and reporting
- (10) Loss of health insurance
- (11) Reduced ability to afford childcare
- (12) Reduced ability to afford rent/mortgage
- (13) Having to fire or furlough employees
- (14) Decrease in value of your retirement, investments or savings

12. In general, what is the level of distress you have about FUTURE employment and financial impacts of the COVID-19 outbreak?

(Likert scale 1-7, 1 = No distress 7 = Highly distressed)

PART 4: COVID-19 SOCIAL SUPPORT ACTIVITIES

13. How are you currently trying to meet your needs for social support? (Check all that apply)

- (1) Phone calls
- (2) Electronic communication (e.g. email, text)
- (3) Virtual (e.g. video call such as FaceTime)
- (4) In-person
- (5) Social Media (Facebook, Instagram)
- (6) Other

14. Who are you receiving social support from? (Check all that apply)

- (1) Family
- (2) Friends
- (3) Religious community
- (4) Mental health care provider
- (5) Health care provider
- (6) Nonprofit and community organizations
- (7) Other

15. Prior to the COVID-19 outbreak, how supported did you feel by your social network?
*(Likert scale 1-7, 1 = not supported, 7 = very supported)***16. Currently, how supported do you feel by your social network?**
*(Likert scale 1-7; 1 = not supported, 7 = very supported)***17. In general, what is the level of distress you have experienced with disruptions to your social support due to the COVID-19 outbreak?**
*(Likert scale 1-7, 1 = no distress, 7 = high distress)***PART 5: COVID-19 OUTBREAK – RESTRICTED ACTIVITIES****18. Which of the following situations apply to you and your family? (check all that apply)**

- (1) No restrictions currently
- (2) Voluntary quarantine due to fear of exposure
- (3) Voluntary quarantine due to confirmed/suspected case in household
- (4) Mandated self-isolation/quarantine by medical professional due to confirmed/suspected case (not allowed to go out for any reason including groceries)
- (5) Stay-at-home order by local government and/or employer urging people to stay home (e.g., can still take walks and socialize outdoors while maintaining social distancing)
- (6) Shelter-in-place order by local government (i.e., only permitted outdoors for essential purposes)

19. Do you agree with the restrictions that have been recommended or required by your local and national government?

- (1) I think the restrictions are too lax
- (2) I think the restrictions are too strict
- (3) I think the restrictions are good

20. In your home do have access to...

- (1) An internet connected phone?
 - (1) Yes
 - (0) No
- (2) An internet connected computer?
 - (1) Yes
 - (0) No

(3) A quiet place for private calls, work or individual activities?

(1) Yes

(0) No

(4) Private outdoor space (i.e. yard)?

(1) Yes

(0) No

(5) Public outdoor space(s)?

(1) Yes

(0) No

21. Which of the following behaviors are you restricting on purpose (you have decided to do these things less)? (check all that apply; leave blank if none apply)

- (1) In-person contact with family inside the home (i.e. you have decided to stay separate from one or more members of your household)
- (2) In-person contact with family who live outside the home
- (3) In-person contact with friends
- (4) In-person contact with other pregnant women or parents
- (5) In-person contact with colleagues at work
- (6) Regular childcare by outside care provider
- (7) Family or personal travel
- (8) Family activities in outdoor spaces (e.g., beaches, forests, national parks)
- (9) Family activities in public spaces (e.g., museums, playgrounds, theatres)
- (10) Going to restaurants or stores
- (11) Indoor exercise classes or recreational sports
- (12) In-person events in the community
- (13) In-person religious services

22. Which activity do you miss the most? (choose one)

- (1) In-person contact with family and/or friends
- (2) In-person contact with colleagues at work
- (3) In-person contact with other pregnant women or parents
- (4) Breaks from childcare duties
- (5) Family or personal travel
- (6) Family activities in public spaces (e.g., museums, playgrounds, theatres)
- (7) Outdoor recreational activities
- (8) Going to restaurants or stores
- (9) Indoor exercise classes or recreational sports
- (10) In-person events in the community
- (11) In-person religious services
- (12) Other

If other, please list: _____

23. Do you have any of the following concerns for your family? For items of concern, please indicate your feelings ...

(matrix: (1) not of concern, (2) mildly distressing, (3) moderately distressing, (4) highly distressing)

- (1) Reduced access to foods or goods in the future
- (2) Reduced access to medicine and hygiene supplies in the future

- (3) Reduced access to baby supplies (e.g. Formula, diapers, wipes) in the future
- (4) Reduced access to mental health care in the future
- (5) Reduced access to general health care in the future
- (6) Reduced access to positive social interactions due to social distancing and/or quarantine

24. Which one of these sources do you find the most useful for receiving information about the COVID-19 outbreak? (select all that apply)

- (1) Prenatal or postpartum medical care providers
- (2) Child's pediatrician
- (3) Other pregnant women/new moms
- (4) Family or friends
- (5) International health organizations (e.g. WHO)
- (6) Centers for Disease Control and Prevention (CDC)
- (7) Federal government
- (8) State health department
- (9) Local government (city or county)
- (10) Social network sites (e.g. Facebook)
- (11) National news
- (12) Local news
- (13) Websites about pregnancy
- (14) Other community organization
- (15) Other

If other, please list: _____

PART 6: COVID-19 OUTBREAK – COPING AND ADJUSTMENT

25. What are you doing to cope with your stress related to the COVID-19 outbreak? (check all that apply)

- (1) Getting a good night's sleep
- (2) Meditation and/or mindfulness practices
- (3) Talking with friends and family
- (4) Engaging in more family activities (e.g., games, sports)
- (5) Talking to people who are pregnant or parenting
- (6) Increased screen time (i.e. gaming, binge watching shows)
- (7) Increased time on social media (Facebook, Instagram and other)
- (8) Decreased time on social media (Facebook, Instagram and other)
- (9) Increased time following news coverage
- (10) Decreased time following news coverage
- (11) Eating comfort foods (e.g., candy and chips)
- (12) Eating healthier
- (13) Increased self-care (e.g., taking baths, giving self a facial)
- (14) Increased time reading books, or doing activities like puzzles and crosswords
- (15) Exercising
- (16) Drinking alcohol
- (17) Using tobacco (i.e. smoking, vaping)
- (18) Using marijuana (i.e. smoking, vaping, eating)
- (19) Using CBD only

- (20) Using other recreational drugs
 - (21) Using new prescription drugs
 - (22) Using over the counter sleep aids
 - (23) Talking to my health providers more frequently
 - (24) Talking with a mental health care provider (e.g. therapist, psychologist, counselor)
 - (25) Helping others
 - (26) None
 - (27) Other
- If other, please list: _____

PART 7: COVID-19 OUTBREAK – EMOTIONS AND FEELINGS

[Sources for question 24, below: (items 1-17): Derogatis, L.R.(1993). BSI Brief Symptom Inventory: Administration, Scoring, and Procedure Manual (4th Ed.). Minneapolis, MN: National Computer Systems; (items 18-27) Weathers, F.W., Litz, B.T., Keane, T.M., Palmieri, P.A., Marx, B.P., & Schnurr, P.P. (2013). The PTSD Checklist for DSM-5 (PCL-5). Scale available from the National Center for PTSD at www.ptsd.va.gov.]

26. In the past 7 days, including today, how often were you distressed by:

Each Q is given response options:

- (1) Not at all
 - (2) A little bit
 - (3) Moderate
 - (4) Quite often
 - (5) Extremely
1. Faintness or dizziness
 2. Feeling no interest in things
 3. Nervousness or shakiness inside
 4. Pains in the heart or chest
 5. Feeling lonely
 6. Feeling tense or keyed up
 7. Nausea or upset stomach
 8. Feeling blue
 9. Suddenly scared for no reason
 10. Trouble getting your breath
 11. Feeling of worthlessness
 12. Spells of terror or panic
 13. Numbness or tingling in parts of your body
 14. Feeling hopeless about the future
 15. Feeling so restless you couldn't sit still
 16. Feeling weak in parts of your body
 17. Feeling fearful
 18. Feeling super alert or watchful or on guard
 19. Feeling jumpy or easily startled
 20. Having difficulty concentrating
 21. Trouble experiencing positive feelings
 22. Feeling guilty or blaming yourself

- 23. Feeling irritable, angry or aggressive
- 24. Repeated disturbing and unwanted thoughts about the COVID-19 outbreak
- 25. Repeated disturbing dreams about the COVID-19 outbreak
- 26. Trying to avoid information or reminders about the COVID-19 outbreak
- 27. Taking too many risks or doing things that could cause you harm

27. How has the COVID-19 outbreak changed your stress levels or mental health?

- (1) Worsened them significantly
- (2) Worsened them moderately
- (3) No change
- (4) Improved them moderately
- (5) Improved them significantly

28. How has the COVID-19 outbreak changed your sleep?

- (1) Worsened my sleep significantly
- (2) Worsened my sleep moderately
- (3) No change
- (4) Improved my sleep moderately
- (5) Improved my sleep significantly

29. How has the COVID-19 outbreak changed your daily energy levels?

- (1) Worsened my energy significantly
- (2) Worsened my energy moderately
- (3) No change
- (4) Improved my energy moderately
- (5) Improved my energy significantly

30. How much has the COVID-19 outbreak disrupted your ability to engage in...

- a. Social activities
 - i. Extreme disruption
 - ii. Moderate disruption
 - iii. Some disruption
 - iv. No disruption
- b. Work activities
 - i. Extreme disruption
 - ii. Moderate disruption
 - iii. Some disruption
 - iv. No disruption
- c. Physical activities (any form of exercise, including walking, running, playing on sports teams and exercise classes)
 - i. Extreme disruption
 - ii. Moderate disruption
 - iii. Some disruption
 - iv. No disruption
- d. Access to healthy meals

- i. Extreme disruption
- ii. Moderate disruption
- iii. Some disruption
- iv. No disruption

31. Overall level of impact to your daily life due to the COVID-19 outbreak.

Likert scale (1-7, 1 = nothing, 7 = extreme)

32. Overall level of stress related to the COVID-19 outbreak.

Likert scale (1-7, 1 = nothing, 7 = extreme)

33. Please indicate the extent to which you view the COVID-19 outbreak as having either a positive or negative impact on your life.

- (1) Extremely Negative
- (2) Moderate Negative
- (3) Somewhat Negative
- (4) No Impact
- (5) Slightly Positive
- (6) Moderately Positive
- (7) Extremely Positive

34. How long do you think it will be before things “go back to normal”?

- (1) <1 month
- (2) 2-3 months
- (3) 3-6 months
- (4) 6-12 months
- (5) 12 months +
- (6) never

35. What is the single greatest source of stress due to the COVID-19 outbreak right now? (check only one)

- (1) Health concerns
- (2) Financial concerns
- (3) Impact on your child
- (4) Impact on your partner
- (5) Impact on your community
- (6) Impact on family members (e.g. elderly parents)
- (7) Impact on close friends
- (8) Impact on society
- (9) Access to food
- (10) Access to baby supplies (e.g. formula, diapers, wipes)
- (11) Access to mental health care
- (12) General well-being due to social distancing and/or quarantine
- (13) Stress about other (open field)
- (14) I am not stressed

Other sources of stress: _____

PART 8: COVID-19 OUTBREAK – HEALTH BACKGROUND, MENTAL HEALTH, AND SUBSTANCE USE

An important area for researchers is to understand the experiences of people that may be more vulnerable to stress associated with the COVID-19 outbreak. The results of this survey are private. This means that responses to this survey shared anywhere outside of the research team are anonymous and not linked to you.

36. Do you have history of any of the following medical conditions? (check all that apply)

- (1) Respiratory problems (e.g., Asthma, Tuberculosis)
- (2) Diabetes
- (3) Heart disease or hypertension
- (4) Lung disease
- (5) Liver disease
- (6) Cancer
- (7) A disease compromising the immune system
- (8) Mood and/or anxiety disorder
- (9) None apply

37. Do members of your household have history of any of the following medical conditions? (check all that apply) (matrix: (1) partner, (2) child, (3) other member of household)

- (1) Respiratory problems (e.g., Asthma, Tuberculosis)
- (2) Diabetes
- (3) Heart disease or hypertension
- (4) Lung disease
- (5) Liver disease
- (6) Cancer
- (7) A disease compromising the immune system
- (8) Mood and/or anxiety disorder
- (9) None apply

38. Are you currently receiving treatment for mental health concerns (for example, depression, anxiety, stress, ADHD, bipolar disorder, eating disorder, or PTSD)?

- (1) Yes
- (2) No
- (3) I decline to answer

(if yes...)

Has your mental health treatment changed due to the COVID-19 outbreak?

- (1) Significantly worsened
- (2) Somewhat worsened
- (3) No change
- (4) Somewhat improved
- (5) Significantly improved

39. Are you currently receiving treatment for substance abuse (problems with illicit drugs, prescription drugs or alcohol)?

- (1) Yes

(0) No

(1) I decline to answer

(if yes...)

Has your mental health/substance abuse treatment changed due to the COVID-19 outbreak?

(1) Significantly worsened

(2) Somewhat worsened

(3) No change

(4) Somewhat improved

(5) Significantly improved

40. At any time in your past have you received treatment for any of the following? (check all that apply)

(1) Mental health

(2) Substance abuse (including problems with prescription drugs, illegal drugs or alcohol)

(3) I decline to answer

(4) I have had mental health concerns but have not been treated

(5) I have had substance abuse concerns but have not been treated

(6) None apply

41. Please indicate which of the drugs and medications you have used at any time in your past: (matrix: (1) Yes, (2) No, (3) Prefer not to answer)

(1) Marijuana or hashish

(2) Nicotine products (including cigarettes, cigars, vaping)

(3) Prescription stimulants (Ritalin, Concerta, Dexedrine, Adderall, diet pills, etc.)

(4) Prescription antidepressants (e.g., Prozac, Zoloft, Celexa)

(5) Methamphetamine (speed, crystal meth, ice, etc.)

(6) Cocaine (coke, crack, etc.)

(7) Inhalants (nitrous oxide, glue, gas, paint thinner, etc.)

(8) Sedatives or sleeping pills (Valium, Serepax, Ativan, Librium, Xanax, Rohypnol, Ghb, etc.)

(9) Street opioids (heroin, opium, etc.)

(10) Prescribed opioids (fentanyl, oxycodone [OxyContin, Percocet], hydrocodone [Vicodin], methadone, buprenorphine, etc.)

(11) Hallucinogens (LSD, acid, mushrooms, PCP, Special K, ecstasy, etc.)

PART 9: DEMOGRAPHIC BACKGROUND

42. What is your date of birth? (date field): _____

43. What is the highest level of education that you have completed?

(1) Less than 10th Grade

(2) 10th – 12th Grade

(3) High School Degree/GED

(4) Trade school/apprenticeship

(5) Partial College

- (6) 2-year College Degree
- (7) 4-year College Degree
- (8) Graduate Degree
- (9) Unknown/Unsure

44. Which best describes you? Are you...

- (1) Single
 - (2) Partnered/Married
 - (3) Divorced/Separated
 - (4) Widowed
 - (5) Other
- If other, please list: _____

45. Do you currently cohabit with a partner?

- (1) Yes
- (0) No

If yes, How long have you lived with this partner?

- (1) Less than a year
- (2) 1-3 years
- (3) 3-6 years
- (4) 6-9 years
- (5) 9 or more years

46. Which best describes where you currently live:

- (1) A studio dwelling
- (2) A 1-bedroom dwelling
- (3) A multi-bedroom dwelling
- (4) I do not have a stable housing arrangement
- (5) I decline to answer

47. Has your living environment changed since the beginning of the pandemic?

- (1) Yes
- (0) No

If yes, Has the change to your living environment had a positive or negative impact?

- (1) Very positive
- (2) Somewhat positive
- (3) Somewhat Negative
- (4) Very Negative
- (5) No impact

48. Do you currently own or rent your residence?

- (1) Owned by you or someone in the household
- (2) Rented
- (3) Occupied without payment of rent
- (4) Transitional or supportive housing
- (5) Emergency shelter
- (6) Temporarily living with others
- (7) Car, van, truck, or other vehicle

- (8) Tent, encampment, or tiny house village
- (9) Other
- (10) I decline to answer

49. How many people currently live in your home (including self)?

Number of children _____
 Number of adults _____

50. Where were you born?

City (open field): _____
 State (open field): _____
 Country (open field): _____

51. How would you describe your ethnicity?

- (1) Hispanic or Latino: A person of Cuban, Mexican, Puerto Rican, South or Central American, or other Spanish culture or origin, regardless of race.
- (2) Not of Hispanic, Latino or Spanish Origin.
- (3) I don't know
- (4) Prefer not to answer

52. What is your RACE/ETHNICITY? Please select all that apply. Please select other if you do not identify with any of these.

- (1) Black or African American
 - (2) Native American/ Alaska Native
 - (3) Native Hawaiian/ Pacific Islander
 - (4) Asian
 - (5) Hispanic/Latin
 - (6) White
 - (7) Other
 - (8) Decline to answer
- If other, please describe here: _____

53. During the LAST year, what was the total income of your household from all sources before taxes and other deductions? Your best guess is fine. (NOTE: This is confidential information and your name is not connected to this data.)

- | | |
|---------------------------|-----------------------------|
| (1) Less than \$10,000 | (8) \$100,000 to \$120,000 |
| (2) \$10,000 to \$20,000 | (9) \$120,000 to \$140,000 |
| (3) \$20,000 to \$30,000 | (10) \$140,000 to \$160,000 |
| (16) \$30,000 to \$40,000 | (11) \$160,000 to \$180,000 |
| (4) \$40,000 to \$50,000 | (12) \$180,000 to \$200,000 |
| (5) \$50,000 to \$60,000 | (13) \$200,000 to \$220,000 |
| (6) \$60,000 to \$80,000 | (14) \$220,000 to \$250,000 |
| (7) \$80,000 to \$100,000 | (15) Greater than \$250,000 |

PART 10: CLOSING AND THANKS

1. People are affected by this pandemic in many ways, please share any of your personal experiences or ways in which your life has been changed, including possible positive changes. (Optional) *(open field)*
2. If you were to give advice to other pregnant or new mom's during the COVID-19 outbreak, what would it be? (Optional) *(open field)*
3. Are there any other questions or comments you have for our research team? (Optional) *(open field)*

Thank you for helping us to learn about pregnancy and postpartum experiences during the COVID-19 pandemic.

Appendix C

Interview Guide

Thank you for agreeing to participate in our study. As a reminder you have agreed to participate but may withdraw at any point. I/We are here today to have a conversation about your experiences of pregnancy/labor and birth/postpartum and motherhood during the Coronavirus pandemic. I/We want to better understand how Coronavirus impacted you and how healthcare providers can positively impact women's experiences during times of crisis such as the Coronavirus.

I/We want you to know that there are no wrong answers. I/We will be recording this discussion with our cell phones so I/we can review later what we have discussed today. As you saw in the consent form, everything you tell me/us will be kept confidential. At any time if you have any questions or concerns feel free to stop the interview and ask. I/We are going to ask you a series of questions, feel free to answer them any way that is fitting for your experience.

1. How did Coronavirus/Covid impact your pregnancy?
 - a. Cues – Did it change any of your plans, gathers, or expectations
2. How did Coronavirus/Covid impact your labor and birth?
 - a. Cues – examples of this could be expectations of the hospital or birthing center, who has allowed present, or your birth plan
3. How has Coronavirus/Covid impacted you postpartum?

- a. Cues – Examples of this could include family that can't visit, postpartum visits that are different, how are you managing being a new mom?
4. How has Coronavirus/Covid impacted your initial parenting experience?
 - a. Cues – Examples could include who you allow around the baby, how safe you feel baby is, your fears or worries related to your newborns health.
5. What would be helpful for improving messaging/education to you?
 - a. Cues – examples include any confusion you experienced with what to do to protect yourself, the method you received your information such as social media, email, at the facility.
6. Given the limitations imposed by COVID at your place of birth (only 1 family members, no group meetings, masks etc.), what could the healthcare providers/health care system, have done to make your experience better?
7. Is there anything else that you feel would be helpful for us to know about your experience?

Appendix D

Table 1: Demographic Information and Survey Responses

Participant Pseudonym	Isabelle	Nora	Willow
Group #	1	3	5
Where did you give birth?	Hospital	Hospital	Hospital
What type of healthcare providers did you encounter or receive care from during your pregnancy/labor and birth?	Labor and Delivery Nurse, Mother Baby/Postpartum Nurse, Ob/Gyn, Anesthesiologist	Labor and Delivery Nurse, Mother Baby/Postpartum Nurse, Ob/Gyn	Labor and Delivery Nurse, Midwife, Doula
How well were you supported by your primary prenatal care provider(s) during pregnancy?	Very well supported	Very well supported	Very well supported
Did the support you received from your prenatal care practice	No change	Somewhat worsened	Somewhat worsened

change due to the COVID-19 outbreak?			
What resources were available to you from your prenatal care practice during your pregnancy?	Regular in-person appointments, Emergency care, other (frequent ultrasounds and fetal heart rate monitoring)	Regular in-person appointments, Online messaging portal for questions/concerns, Emergency care, Home blood pressure monitoring	Regular in-person appointments, Virtual care appointments, Online messaging portal for questions/concerns
Which of the following changes did you experience as a result of the COVID-19 outbreak?	Changed format of prenatal care (i.e. no group classes), Cancellation of hospital tours	Cancellation of or reduction in frequency of prenatal visit(s), Changed format of prenatal care (i.e. no group classes), Cancellation of hospital tours	Cancellation of or reduction in frequency of prenatal visit(s), Changed format of prenatal care (i.e. no group classes), Cancellation of hospital tours
How much did the support and involvement of your family and friends in your baby's birth change as a result of	A great deal	A moderate amount	A little

the COVID-19 outbreak?			
How concerned are you about your child's health as a result of the COVID-19 outbreak? (0-10)	Very concerned – 7	4	No concern – 1
How important were the following in helping you and your family during the COVID-19 outbreak? - More one-on-one conversations with my prenatal care provider	Very important	Very important	Somewhat important
How important were the following in helping you and your family during the COVID-19 outbreak? - Information about how to reduce stress	Very important	Somewhat important	Not important at all

<p>How important were the following in helping you and your family during the COVID-19 outbreak?</p> <p>- Access to a mental health provider</p>	<p>Somewhat important</p>	<p>Not important at all</p>	<p>Not important at all</p>
<p>How important were the following in helping you and your family during the COVID-19 outbreak?</p> <p>- Online support groups</p>	<p>Very important</p>	<p>Not important at all</p>	<p>Not important at all</p>
<p>How important were the following in helping you and your family during the COVID-19 outbreak?</p> <p>- Interaction with other pregnant people</p>	<p>Very important</p>	<p>Somewhat important</p>	<p>Not important at all</p>
<p>How important were the following in</p>	<p>Very important</p>	<p>Somewhat important</p>	<p>Somewhat important</p>

<p>helping you and your family during the COVID-19 outbreak? - Rapid response to questions about concerns</p>			
<p>How important were the following in helping you and your family during the COVID-19 outbreak? - Examples of how other women are planning for potential changes in their pregnancy, birth and postpartum care</p>	Somewhat important	Somewhat important	Somewhat important
<p>Are there any other resources that would have been helpful to you and your family during the COVID-19 outbreak?</p>		None	N/a we had everything we needed

<p>Did any of your postnatal experiences change as a result of the COVID-19 outbreak?</p>	<p>Family and friends were not able to visit me and my baby after birth (e.g. Due to social distancing or travel restrictions), I did not have access to lactation or other antenatal support following discharge from the hospital, My postpartum visit was a virtual visit</p>	<p>Family and friends were not able to visit me and my baby after birth (e.g. Due to social distancing or travel restrictions), I was unable to get the type of contraception that I wanted</p>	<p>I did not have access to lactation or other antenatal support following discharge from the hospital, I was unable to discuss "baby blues" or issues related to my mood</p>
<p>In general, what is the level of distress you have experienced about changes to your birth and postnatal experiences due to COVID-19?</p>	<p>6</p>	<p>3</p>	<p>No distress</p>
<p>How concerned are you about any possible future</p>	<p>5</p>	<p>2</p>	<p>2</p>

<p>changes to how you will care for your baby as a result of the COVID-19 outbreak?</p>			
<p>In general, how distressed are you about your own COVID-19 related symptoms or potential illness?</p>	<p>5</p>	<p>3</p>	<p>4</p>
<p>Which one of these sources did you find the most useful for receiving information about the COVID-19 outbreak?</p>	<p>Prenatal or postnatal medical care providers, Child's Pediatrician, International health organizations (e.g. WHO), Centers for Disease Control and Prevention (CDC), Federal government, National news</p>	<p>Prenatal or postnatal medical care providers, Child's Pediatrician, Other pregnant women/new moms, Centers for Disease Control and Prevention (CDC), Social network sites (e.g. Facebook)</p>	<p>Prenatal or postnatal medical care providers, Child's Pediatrician, Other pregnant women/new moms, Family or friends, International health organizations (e.g. WHO), Centers for Disease Control and Prevention (CDC)</p>

<p>Please indicate the extent to which you view the COVID-19 outbreak as having either a positive or negative impact on your life.</p>	<p>Somewhat negative</p>	<p>Somewhat negative</p>	<p>Moderately negative</p>
<p>Are there any other questions or comments you have for our research team?</p>	<p>“I had my baby right as our state was shutting down for the first round of quarantine. The uncertainty of whether my spouse was going to be able to be with me during labor and after was almost debilitating. I also feel like we were forced to have unadulterated time with our infant immediately</p>	<p>None</p>	

	<p>following birth and the days to follow that would not normally happen. That was equal parts a blessing and a stressor.”</p>		
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Appendix E

Analyzation Template

Transcript Summary

Prepared by:
Where delivered:
Date of delivery:
Pseudonym:
Pregnancy:

Labor and Birth:

Postpartum:

Parenting:

Education:

Other:

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