AN ABSTRACT OF THE THESIS OF

Annabel Lofts for the degree of Honors Baccalaureate of Science in Biochemistry and Molecular Biology presented on August 24, 2022. Title: Perinatal Care and The Transition to Telehealth During COVID-19: A Metasynthesis.

Abstract approved:__________________________________________________________

Melissa Cheyney

The emergence of the 2019 coronavirus disease drove the rapid implementation of telehealth in maternal healthcare services in the United States (US) and globally. To protect providers and patients, states across the US incorporated telecommunications technology to substitute traditional in-person care for many aspects of perinatal care, for low- and higher-risk patients. It is important to understand the outcomes of these structural changes by analyzing patient experiences and perceptions of access experiences and quality of care. In this metasynthesis, I analyze seven individual qualitative studies on maternal telehealth experiences during the early surges of the COVID-19 pandemic. In this study, I aim to center patient experiences with perinatal telehealth care, to assess its challenges and benefits from the perspective of birthing people, and to evaluate the potential of perinatal telehealth post-pandemic. Across the seven articles, three cross-cutting themes emerged: 1) questioning the quality and content of traditional, in-person, perinatal care; 2) the benefits of telehealth; and 3) the challenges and unintended consequences of perinatal telehealth.

Keywords: Qualitative, Metasynthesis, Telehealth, COVID-19

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Perinatal Care and The Transition to Telehealth During COVID-19: A Metasynthesis

by
Annabel Lofts

A THESIS

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I understand that my project will become part of the permanent collection of Oregon State University, Honors College. My signature below authorizes release of my project to any reader upon request.

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Abstract

The emergence of the 2019 coronavirus disease drove the rapid implementation of telehealth in maternal healthcare services in the United States (US) and globally. To protect providers and patients, states across the US incorporated telecommunications technology to substitute traditional in-person care for many aspects of perinatal care, for low- and higher-risk patients. It is important to understand the outcomes of these structural changes by analyzing patient experiences and perceptions of access experiences and quality of care. In this metasynthesis, I analyze seven individual qualitative studies on maternal telehealth experiences during the early surges of the COVID-19 pandemic. In this study, I aim to center patient experiences with perinatal telehealth care, to assess its challenges and benefits from the perspective of birthing people, and to evaluate the potential of perinatal telehealth post-pandemic. Across the seven articles, three cross-cutting themes emerged: 1) questioning the quality and content of traditional, in-person, perinatal care; 2) the benefits of telehealth; and 3) the challenges and unintended consequences of perinatal telehealth.
**Introduction:**

The maternal mortality rate in the United States is disproportionately high compared to other high-income countries and continues to rise (Tikkanen et al, 2020). The quality of care for women and their infants needs to be improved and primary care procedures that optimize birthing people’s experiences of pre- and post-partum care need to be prioritized alongside high-quality clinical care (Backes et al, 2020). In 2020, 2,462,904 vaginal births and 11,486,692 cesareans occurred in the United States (CDC, 2020). Paired with an under supply of maternity care providers and a lack of access to care, especially in rural areas, maternal deaths are on the rise (Tikkanen et al, 2020). These deaths are not evenly distributed; they disproportionately affect women of color. Birthing people in the United States should not be subjected to such a high probability of mortality and other poor outcomes.

In 2019, the coronavirus disease pandemic had a profound impact on the medical system of the United States and its patients as a result of the social distancing guidelines enforced by state governments. Providers were encouraged to rapidly integrate telehealth operations as a replacement for consultations, maternal-fetal medicine, and clinical visits (Madded et al. 2020). Proponents of the introduction of perinatal telehealth argued that remote care could potentially improve the accessibility and quality of care nationally, allowing personalization of care services to prioritize the mother’s needs and satisfaction with care, especially for those who lack reliable transportation or need to travel long distances to see a maternity care provider. However, others argued that increased reliance on telehealth might exacerbate existing health inequities in communities where telehealth technology is not easily accessible (Hill et al, 2020). To date, no cumulative metasynthesis of patients’ experiences with perinatal telehealth in the United States has been published. Evaluating maternal experiences across existing studies conducted in diverse communities may help us better understand the challenges and successes birthing people endured.
during COVID-19. Centering these experiences may also inform efforts to improve perinatal care as the US continues to navigate surges of SARS-CoV-2 and other respiratory infections.

While several individual studies have been published on the experiences of perinatal care during COVID-19, there remains a need to systematically analyze cross cutting themes from these existing qualitative studies. Thus, the purpose of this study was to use a metasynthesis approach to explore patient experiences of perinatal telehealth care during COVID-19 and to document the complexity and multiplicity of these experiences. My overarching goal is to provide a comprehensive analysis that can help improve perinatal telehealth care as the United States continues to face ongoing waves of COVID-19. Especially, I aim to answer:

1. To what extent have the structural changes in perinatal care resulting from the COVID-19 pandemic and the introduction of more widespread telehealth altered the maternal experience?

2. What are the key challenges and benefits of telehealth as described by women and birthing people, and how can their experiences be used to improve perinatal care in the United States through ongoing waves of the SARS-CoV-2 pandemic?

**Definition of terms and Acronyms**

<table>
<thead>
<tr>
<th>Term / Acronym</th>
<th>Definition</th>
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<tbody>
<tr>
<td>Telehealth</td>
<td>Telehealth is a broad term that encompasses several telecommunications technologies to provide healthcare services such from one site to a remote or distant site. Examples include video or audio visits and remote patient monitoring of vital signs via wearable devices.</td>
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<tr>
<td>Telemedicine</td>
<td>Telemedicine refers to the remote diagnosis and treatment of patients using telecommunications technology.</td>
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<tr>
<td>Perinatal</td>
<td>The time from the start of pregnancy to up to the first year after</td>
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</table>
Social Determinants of Health (SDOH) refers to the environmental conditions in which a person is born, lives, learns, works, plays, worships and ages, and how these impact a person's well-being and health quality outcomes.

COVID-19 is a disease caused by SAR-CoV-2.

Maternal Mortality is the death rate in pregnant women related to or aggravated by pregnancy or its management.

CDC is the nation’s leading science-based, data-driven, service organization that protects the public’s health.

**Background**

In December of 2019, the Coronavirus disease (COVID-19) rapidly spread across the world, causing a range of symptoms and leading to 5.8 million deaths by the February 20th, 2022 (WHO, 2022) SARS-CoV-2, and its descending mutations inflicted symptoms of mild to severe respiratory illness and was particularly debilitating for the elderly and those with underlying medical conditions. Transmission of this virus occurs via respiratory droplets from close contact with infected individuals. Symptoms can develop within days to weeks of exposure, which further exacerbates the needed adjustments to public health and social measures (PHSM) implemented to suppress the transmission of COVID-19 (CDC, 2020). These measures include educating the affected communities on personal protective measures, environmental measures implemented in public spaces, surveillance and tracing measures of infected persons, physical distancing, and limited international travel. Vaccination development and distribution was eventually prioritized and helped to reduce the number of severe cases requiring hospitalization. The critical transmission rates, mortality, and morbidity of the virus required the affected nations’ health systems to respond by implementing social distancing measures tailored to local
contexts (WHO, 2021). The impact of this unprecedented crisis in global health, nations’ economic stability, and significant hardship for all are unparalleled in recent global history (Shehzad et al, 2021).

As a result of the emergence of the COVID-19 pandemic, non-COVID related healthcare, including maternity care, initially struggled with reduced staffing, essential personal protective equipment (PPE) shortages and the need to socially distance. Hospitals implemented policy measures to protect obstetric providers and patients that disrupted perinatal care plans. In addition, pregnant women and newborns were determined to be at higher risk for severe illness during the pandemic (Javaid et al, 2021), notably because the long-term effects of the virus were, as yet, undetermined. Due to the increased risk and vulnerability among birthing people, alterations to in-person care were instituted. Birthing families across the United States were at risk of being underserved, especially in places where the case rates were high, and many faced uncertainty in their care. While both maintaining high-quality of care and protecting healthcare providers and patients from excessive exposure to SARS-CoV-2 were prioritized, there were no coordinated national healthcare measures in place to ensure effective continuity of perinatal care. The policies implemented varied per assessment of the local community and hospital environment.

Under guidance of the US Centers for Disease Control (CDC), hospitals and care facilities prioritized critical visits, resulting in nonurgent prenatal appointments and consultations being postponed or canceled (CDC, 2020). Collective structural changes to perinatal care included the emergence of telehealth appointments as a replacement for in-facility visits, incorporation of telemedicine technology, and the distribution of at-home vital monitoring equipment (Hill et al, 2020, pg. 2). A wide range of telemedicine approaches with different
modalities designed to serve different functions were implemented nationwide within a few weeks of the initial lockdown in March of 2020. These included visits involving synchronous video or audio “visits” where provider and patient could discuss care in real-time. There were also forms of asynchronous communication with remote specialists that provided condition feedback and information in an online platform. Forms of remote patient monitoring with online instructions for wearable devices to collect patient data were also instituted (ACOG, 2020). The variety of modalities of telehealth perinatal care allowed the US to explore many promising applications that differed from standard in-person perinatal care practices.

The standard perinatal care delivery system provides clinical care for patients before, during and after pregnancy, prioritizing continuity and comprehensiveness of care. Clinical practices depend on the level of care determined necessary by the primary provider based on the medical complexity of the individual birthing person. At a basic level of care, providers perform a physical examination, a routine laboratory assessment, assessment of the gestational age and progress of the pregnancy. They perform risk assessments and, ideally, offer psychosocial support and facilitate childbirth education classes. Diagnostic tests are performed throughout the pregnancy to determine the appropriate care plan for birth (ACOG, 2017). The health of the developing fetus and the mother depend on accurate lab tests and physical exams, conducted according to routine, established care protocols. The inclusion of telehealth services provided an additional form of communication and access.

A study by Madden et al. (2020) performed by two practices in New York reported that in the span of five weeks in 2020, the number of perinatal telehealth appointments increased from 31.8% of general consultations to over 55% of all generalist and maternal-fetal medicine visits, and just over 40% of clinical visits. The rapid and increased reliance on telehealth services
reflects the ingenuity and resourcefulness of health care delivery systems (Hill et al. 2020, pg. 2), yet the quality and accessibility of virtual care differed dramatically across the nation, as did patient experiences as each health system was responsible for implementing their own response to the pandemic. Prior to the pandemic, telehealth and telemedicine programs were designed to mediate inequities in access to obstetric care in underserved communities. Telehealth was also used to reduce indirect costs, streamline support and monitoring for high-risk individuals, and to reduce interruptions to patient livelihoods (Ngo, 2021). However, these benefits to telehealth are only optimal if the implemented telehealth technology has been tailored to the location and conditions of the communities it aims to serve. In addition, those without reliable high-speed internet or devices capable of running secure platforms were at risk of remaining or becoming underserved.

Prenatal care is one of the most prevalent preventative practices within the United States, as approximately four million women give birth each year (Javaid et al, 2021). The importance of prenatal monitoring and the number of lives it impacts cannot be overstated. Even in the absence of a global pandemic, pregnant individuals endure perinatal-related stressors, which contribute to the US having the highest maternal mortality rate among high-resource nations (Barbbosa-Leiker et al, 2021). When compared on a global scale, US pregnant individuals report experiencing increased rates of psychological stress compared to other high resource countries (Barbbosa-Leiker et al.). The health ramifications that result from this induced stress affect both the mother and fetus and increase the likelihood of “adverse birth effects”, contributing to negative effects on the cognitive development of the child (Barbbosa-Leiker et al, 2021). Psychological stress assessments, screening, and prevention are recommended and essential to
maternal wellbeing according to the American College of Obstetricians and Gynecologists (ACOG).

Did the rapid transition of perinatal care to telehealth modalities offer comparable psychosocial support pre- and post-birth? Barbbosa-Leiker et al. (2021) has argued that the sudden changes in pregnancy, labor and delivery care towards telehealth actually increased birth-related anxiety and stress in perinatal women in the US. And how were these changes experiences across different communities with variable levels of social privilege? Socio-economic disparities disproportionately affect minoritized populations, ultimately restricting access to recommended and optimal care advised for perinatal patients. Increased access to high-quality, respectful care is needed to reduce the alarming mortality rates seen in the United States, especially among those made marginal by systems of oppression.

While many were hopeful that the uptake of telehealth would relieve access issues, while helping to prevent the further spread of COVID-19, this may not have been the case for all communities. Understanding the challenges and benefits experienced by patients using telehealth during the pandemic is a critical area of research because it can help inform the development of effective remote care that prioritizes the mother and infant, while helping to relieve the inequities to perinatal care affecting rural communities, as well as overpopulated and underserved urban communities, many of whom are low-income Black, Indigenous, and other people of color. According to Ian Hill and Emmy Burroughs (2020), Black and Indigenous women are two to three times more likely to experience poor maternal health outcomes relative to white women. High-minority-concentrated and rural communities experience higher rates of transportation deficits and low physician densities (Edmiston et al, 2022). Can telehealth help to reduce these health disparities by providing greater access to culturally competent care that may not have been
available in person? Or are the inequities documented for in-person perinatal care also evident in telehealth delivery?

This meta-synthesis was designed to enable a thematic analysis across the existing qualitative literature on the experiences of perinatal telehealth with the ultimate hope of improving the delivery of material care via telehealth. Seven qualitative studies, published between 2020 and the date of the search (Feb 2022), contribute a diverse sample of patient perspectives on their telecare experience during the pandemic. In the next chapter, I describe in detail the methods I used to identify, code, analyze and interpret the qualitative data for this metasynthesis on women and birthing people’s experiences of perinatal telehealth during the early surges of COVID-19 in the United States.

**Methods**

**Methodology**

Qualitative metasynthesis papers engage published qualitative research through aggregating, summarizing, and analyzing reported data, with the ultimate goal of providing a deeper, more nuanced understanding of a particular topic or phenomenon. As several qualitative research methodologies are used in this form of research, its applications and aims cross disciplinary boundaries, generating new information, supporting decision making, and developing theory. The results of a metasynthesis focused on healthcare should assess the quality of a service by analyzing the perceptions of those using the service and should be applied to achieve data driven decision-making for that practice (Korhonen, 2012). By combining and analyzing the comprehensive results of qualitative research, politicians and policymakers in
healthcare can apply evidence-based information to increase the efficacy and meaningfulness of their decisions, while keeping patient experience at the center of decision making.

Qualitative metasyntheses use comparisons of results from qualitative studies to provide interpretations that aid in evidence-based decision making, interpretive translations rely on the researcher experience (Korhonen, 2012). Metasyntheses adhere to a standard protocol with systematic stages designed to reduce variation in application and to increase reliability of the findings. Standard protocols outline the search criteria for qualitative studies related to a predefined question. The predefined question is precisely formulated and defines what results the researcher hopes to achieve, and the processes are typically guided by a team of subject-matter experts who are experienced researchers. The predefined research question guides the search strategy, as well as the inclusion and exclusion criteria. A systematic search of mixed and recognized databases and terms is performed, and the quality of the studies is assessed. This critical evaluation assesses the reliability and validity of the results of each individual study, and ultimately determines the reliability of the metasynthesis. The researchers assess the quality of the individual study designs, presentation of data, reported analysis, and the individual investigators. The data from all included original studies is then extracted, analyzed, and synthesized, while ensuring that the contexts and demographics of the original studies are taken into consideration during analysis.

For this thesis, I employed a metasynthesis approach generating an explanatory model of the impact of COVID-19 on the implementation of telehealth care for perinatal patients. A secondary aim was to identify lessons that can be synthesized for improving virtual pre- and post-natal care in future waves of the COVID-19 pandemic. This metasynthesis is both a systematic review and integration of findings from qualitative studies performed with voluntary
samples of pregnant and birthing people engaging in US perinatal telehealth care models in 2020 and 2021. Individual qualitative research studies were used to summarize patient responses in the last three years, allowing for the identification and analysis of key themes.

Strengths of metasynthetic approaches include larger sample sizes of respondents, which can deepen study findings by capturing greater regional and population-based variation. The reach of this form of study extends the number of organizations and programs involved, number of states and regions, and respondents’ voices providing feedback. The differences in contexts of the respondents are more varied than in a single organizational or regional study. In the context of this metasynthesis, there was a large and diverse breadth of respondent locations, ranging across the United States. The studies analyzed either recruited respondents from online surveys or used single hospital targeted approaches. Combing existing studies allows more voices to share their experience with the implementation of telehealth care during COVID-19 and strengthens the thematic results without requiring the time and expense of new data collection.

Sandelowski et al. (1997) detail the limitations of metasynthetic research, indicating that topical similarity of qualitative research studies is subjective to the researcher. They also point out that defining the scope of the work to be included can depend on the researcher’s experience in the related fields and their background. Additionally, the researcher is performing an analysis that is limited by the data and interpretation shared in the original study. This has implications for the interpretation of results, even when researchers strictly adhere to published procedures and parameters for this approach. The researchers' access to participants' data is always partial and limited to what was published, all metasynthetic analyses are also dependent on the description of the methodologies used in the original studies. If those descriptions are insufficient, then bias may result in the analysis (Korhonen, 2012, pg. 6).
Student researcher positionality

My academic career has been centered around the desire to work in health, where I have attributed my college experience to determine which direction of healthcare I want to pursue post-graduation. I am a senior receiving an H.B.S. in Biochemistry and Molecular Biology with an option in Advanced Molecular Biology. Gaining experience in biochemical research focused on ALS treatment and cell culture, becoming an emergency medical technician, and working part-time as a geriatric care provider has also exposed me to the systematic inequality that complicates the provision of care and advances in research. The greatest lesson from these experiences for me has been a focus on forming personal ethical guidelines that I hope will guide me in the provision of care. By performing this metasynthesis, I aimed to enhance my perspective of how to perform ethical research and to develop a greater understanding of patient experience during COVID-19. I chose to attempt to review the healthcare experience of perinatal patients due to my own concern over the systemic inequality that was enhanced during the pandemic. With the implementation of telehealth practices, clinicians and administrators were hoping that these approaches would increase access to quality care in obstetrics and help ameliorate stressors that compromise women’s health during pregnancy, while reducing infections. Given the history of prenatal care in the US and the recent emphasis on inequitable access to respectful care was not so sure (Asefa et al, (2022), Reingold et al, (2020), Vedam et al, (2019)). Engaging in this metasynthesis gave me the opportunity to explore the concerns produced by telehealth as well as the benefits. I aimed to learn from patients’ experiences and to think through how their experiences could inform the delivery of perinatal care going forward.

Methods
To conduct this metasynthesis, I used the following steps. First, key research questions were designed to achieve the goals of the metasynthesis. These questions had to be broad enough to apply to a large sample size and abstract important conclusions, yet specific enough to guide the selection criteria. My research questions are:

- To what extent have the structural changes in perinatal care resulting from the COVID-19 pandemic and the introduction of more widespread telehealth altered the maternal experience?

- What are the key challenges and benefits of telehealth as described by women and birthing people, and how can their experiences be used to improve perinatal care in the United States through ongoing waves of the SARS-CoV-2 pandemic?

Second, I developed selection criteria that would drive screening and selection of the studies. To initiate the preliminary search of qualitative studies related to the question of interest, four keywords were selected to define the parameters of the search that helped to frame the topic of interest (perinatal telehealth during COVID-19), respondents of interest (US, sampled for diversity), and the study design of interest (qualitative research). The terms: “Qualitative,” “COVID-19,” “Prenatal Care,” and “Telehealth” were searched using Google Scholar, limited by English language. More than 6000 study titles related to the key words resulted. To ensure all applicable articles were identified, synonymous words were entered into the search engine, such as using “Pandemic” for Covid-19, and “Telemedicine” for “telehealth.” Google scholar automatically utilized these synonyms to aid in resulting all applicable studies that related to the metasynthesis aims and objectives.

The preliminary literature search was conducted for articles published between 2020 and the time of the search - February 2022. After applying the applicable time range, the number of
articles was reduced by 2833 articles for screening. Acknowledging that the objective of the metasynthesis was to understand the effects of the pandemic on perinatal care, it was important to maintain this inclusion of the date despite a growing transition to telehealth performed prior to the pandemic initiatives.

After reviewing the resulting study titles and abstracts, alterations to the key words were made to further adhere to the objective of the metasynthesis. The term “prenatal care” was replaced with “perinatal care” to encompass the entirety of the pregnancy experience that could be applied to the implementation of telehealth models. Adding a location keyword “United States” limited the studies to one nation’s response method to COVID-19, and further reduced the quantity of applicable studies to a manageable number. The final inclusion and exclusion criteria were: “Qualitative,” “COVID-19/Pandemic,” “Perinatal Care,” “Telehealth/Telemedicine,” and “United States.” Studies that did not include all five key search terms were excluded. This served as an effective strategy for first identifying which articles had applicable participant perspectives relating to the research questions. The new selection criteria were inputted into the search engine Google Scholar and resulted in 2830 studies. Additionally, these selection criteria were repeated with four other electronic databases to search and select applicable studies for the metasynthesis. All five databases used were: Google Scholar, Oregon State 1Search, PubMed, and Science direct. Google scholar was the database where the filter by date of publication was used.

Third, the qualifying articles from the preliminary database search were screened by title and abstract. Articles whose abstracts did not apply sufficiently to the objectives and context of the metasynthesis were discarded from the primary selection process. The resulting articles were then narrowed down by assessment of quality in the context of the criteria. In this second
screening, cited articles in the texts were also analyzed to provide context for the background of this metasynthesis.

After searching five electronic databases and screening all output, 14 references were eligible for further evaluation. The parameters defined to further assess quality were guided by my metasynthesis research objectives. I appraised the richness of the study reporting and judged whether the content was relevant to my research questions (Lachal, 2017, Pg. 4). For each article, the statement of aims, the description of methods, recruitment strategy and possible conflicts of interest were examined as well as the relationship between researcher and respondent and ethical considerations such as ethics board approval for human subjects research were taken into account.

The final selection represented 0.2 % (n=7) of the original literature. The included articles were published between 2020 and the date of the search (Feb 2022). The resulting number of respondents combined from all qualifying studies consisted of self-identified pregnant people recruited through social media platforms, crowdsourcing platforms, email listservs, direct contact via phone and text messages, and word of mouth via care providers. Some studies identified respondents from one facility such as Columbia University Irving Medical Center (CUIMC) facilities, all respondents were 18+ years of age, and all qualitative articles were published in English. See Figure 1 below for a summary of eligibility and selection processes.

**Figure 1. Eligible Study Selection and Refinement**
Qualitative data was extracted from each applicable study and analyzed to isolate crosscutting and novel themes. The identified themes are then examined to identify and describe the key challenges and benefits described by respondents who navigated shifts to perinatal telehealth. Below, in figure 2, I summarize the characteristics of the included studies, including the study design, aims, methodology, samples size, age range and race/ethnicity of participants and the region of the US where data collection occurred.

**Figure 2: Characteristics of included references**

<table>
<thead>
<tr>
<th>Title, Authors, Publication Date, and Link.</th>
<th>Type of Manuscript</th>
<th>Statement of Aims</th>
<th>Appropriate Qualitative Methodology</th>
<th>Number of Participants</th>
<th>Age range of Participants</th>
<th>Race/Ethnicity of Participants (%)</th>
<th>Region of US</th>
</tr>
</thead>
<tbody>
<tr>
<td>“The impact of COVID-19 on Prenatal care in United States: Qualitative Study”</td>
<td>Qualitative Study</td>
<td>Explore responses to changes in prenatal care</td>
<td>Online study of recruited women from</td>
<td>2519</td>
<td>Mean age: 32.7</td>
<td>White - 88%</td>
<td>47 US states</td>
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<tr>
<td>Qualitative Analysis from a Survey of 2519 Women” (Javaid, 2021)</td>
<td>that result from the pandemic online sources</td>
<td>Black - 2.6% Asian - 4.3% Multiracial - 3.2% Other - 1.9% Spanish/Hispanic/Latino - 6.3%</td>
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<tr>
<td>“Stressors, coping, and resources needed during the COVID-19 pandemic in a sample of perinatal women” (Barbosa-Leiker, 2021)</td>
<td>Mixed Methods Study Capture responses to open ended questions regarding stress and sources in covid Social media and crowdsourcing platforms for online surveys</td>
<td>162 19-45 Non-hispanic White - 79% Hispanic/Latino - 7% Black - 5% Asian - 4% Multiracial - 5%</td>
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<tr>
<td>“It's always hard being a mom, but the pandemic has made everything harder”: A qualitative exploration of the experiences of perinatal women during</td>
<td>Qualitative phenomenological study Explore the lived experiences of pregnant and postpartum women in US during pandemic One-on-one structured interviews. Recruitment via social media or phone and listserv</td>
<td>54 Mean age: 34.38 White - 79.6% Black - 5.6% Multiracial - 9.3% Other - 1.9%</td>
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<td>All</td>
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<tr>
<td></td>
<td>Study Title</td>
<td>Study Type</td>
<td>Research Design</td>
<td>Participants</td>
<td>Mean age</td>
<td>Demographics</td>
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<td>4</td>
<td>“Patient and Provider Perspectives of a new prenatal care model introduced in response to the coronavirus disease” (Peahl, 2021)</td>
<td>Retrospective evaluation of designed virtual visit schedule for prenatal patients</td>
<td>Evaluate an institutional-level adoption by assessing patient experiences during covid.</td>
<td>Suburban hospital responses</td>
<td>253</td>
<td>Mean age: 31.2</td>
<td>White - 71.1%</td>
</tr>
<tr>
<td>5</td>
<td>The Successes and Challenges of Implementing Telehealth for Diverse Patient Populations Requiring Prenatal Care During COVID-19: Qualitative Study (Farrell, 2022)</td>
<td>Qualitative Study</td>
<td>Examine patients' prenatal care needs, preferences, and experiences during the COVID-19 pandemic</td>
<td>Qualitative methods to explore pregnant patients’ experiences In-depth interviews with pregnant patients in the first and second trimester of pregnancy who received prenatal care</td>
<td>40</td>
<td>Mean age: 32.25</td>
<td>White - 85%</td>
</tr>
<tr>
<td>6</td>
<td>Patient Access and Attitudes Toward Telehealth for Perinatal Care During and After the COVID-19 Pandemic in</td>
<td>Master’s thesis</td>
<td>Address the gap in knowledge on access and attitudes of telehealth appointments in Georgia.</td>
<td>In-depth interview question</td>
<td>17</td>
<td>18-45</td>
<td>N/A</td>
</tr>
</tbody>
</table>
Each eligible study was analyzed for formal data regarding the number and type of participant, their location and quality of procedure for data collection. Themes generated by the individual researchers were cross-examined, and the data were appraised, and themes identified, extracted, organized, compared, mapped and quotes were selected that illustrated themes. I reviewed each study with the intent of identifying both shared and novel experiences captured in each study. I was conscious of the tendency to oversimplify the experiences, and out of respect to the respondent, I continually referenced back to the context of the original study and questioned my assumptions. Finally, I identified new, composite themes that emerged from my cross-study analysis. In the next chapter, I describe and discuss these, using participant quotes to center the
experiences of pregnant people navigating maternity care during the early surges of COVID-19 in the United States.

**Results**

This study includes a collection of responses from pregnant individuals experiencing telehealth care during the COVID-19 pandemic. A total of 77 eligible responses were analyzed to construct themes from participants’ experiences. Three cross-cutting themes emerged from the seven selected articles: 1) questioning the quality and content of traditional, in-person, perinatal care; 2) the benefits of telehealth; and 3) the challenges and unintended consequences of perinatal telehealth. I examine these themes, providing commentary on challenges and successes of implementing more widespread telehealth experiences during COVID-19. In the sections that follow, tables one through three provide exemplar quotes from each of the three themes.

**Theme 1: Questioning the Quality and Content of Standard, In-person Perinatal Care**

The primary theme emerging across the respondents’ experiences was questioning the quality and content of standard, in-person perinatal care (see table one). The rapid deployment of different telehealth modalities as substitutions for standard perinatal care approaches lead patients to question the necessity and effectiveness of the in-person care models that physicians and midwives pushed prior to lockdown. The continuation of care during the pandemic demonstrated how resourceful the healthcare system could be in expanding and providing modes of remote health monitoring, communication, and education to support expectant mothers. However, the focus of maternity care shifted to preventing COVID infections, leaving some women feeling uncertain about their healthcare plans and questioning whether they and their
fetuses could be adequately monitored remotely. If they could be, had all the testing and monitoring earlier in their pregnancies really been essential? If it was, how could telehealth be adequate?

**Table 1. Exemplar quotes relevant to theme one**

<table>
<thead>
<tr>
<th>Reference</th>
<th>Exemplar Quotes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Javaid et al. (2021)</td>
<td>“I have had appointments canceled with virtual being the only option, but it (is) not yet available. Phone appointments are the only option at this time.” (30 years old, unknown number of previous pregnancies)</td>
</tr>
<tr>
<td>2. Peahl et al. (2021)</td>
<td>“Instead of going to my most recent monthly check-up, I asked my NP if I could wait a couple of weeks. She said it was no problem to push the visit off a couple more weeks.” (34 years old, 6 previous pregnancies, 5 previous births)</td>
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<td>3. Farrell et al. (2022)</td>
<td>“(It) makes me question if [non-stress tests] were actually necessary, or were the providers just wanting to bill my insurance for more money?” (36 years old, 3 previous pregnancies, 1 previous birth)</td>
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<td>4. Ngo (2021)</td>
<td>“(My) provider is reevaluating if non-stress tests are actually needed (for me) - originally I was told 3x per week after 32 weeks, now they are saying either 1x per week or not at all...” (36 years old, 3 previous pregnancies, 1 previous birth)</td>
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<td>5. Beeson et al. (2021)</td>
<td>“I am definitely not receiving the same quality of care and feel like it’s a risk to my health and well-being to have limited appointments in the third trimester, and with a possible GD [gestational diabetes] diagnosis.” (30 years old, 3 previous pregnancies, 1 previous birth)</td>
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<td></td>
<td>“I like the time savings it brings, especially for appointments that were just a check in and didn’t require an ultrasound or anything additional. Previously, I would need to block 1-2 hours for a 10-15 minute in-person visit.” (32 y/o, multiparous patient)</td>
</tr>
<tr>
<td></td>
<td>“It gives enough in person time while allowing for easy check in and is a better use of time for the in between visits that are mostly dialogue.” (24 y/o, multiparous patient)</td>
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</table>
|                           | “I also did not feel prepared with what to expect from a video visit compared to an in-
person visit.” (30 y/o, multiparous patient)

“I would have appreciated being scheduled with my regular provider.” (33 y/o, multiparous patient)

“I prefer in person. Virtual is a little awkward to me. In person I feel more comfortable talking about everything.” (22 y/o, nulliparous patient)

(3)

“Truthfully, for a lot of the early prenatal visits, you just sat in the waiting room for what felt like 10 hours, you peed in a cup, and you waited in the exam room for 10 hours. Then, it was a quick Doppler belly check, a quick ’How are you doing?’, [a] blood pressure check, [and] ’All good. Great. We’ll see you in a month.’ So that’s it. I can do the blood pressure at home. I could do the Doppler, theoretically. I could do weight at home.”

“Well, I think it is very cool that they’re doing virtual visits. One thing that I thought was really neat is that, at my doctor’s appointment, they gave me a Doppler so I can listen to the baby’s heartbeat at home . . . I was very pleasantly surprised. I felt like, you know, unless there’s something major going on, that a virtual visit every now and then was totally appropriate.”

(4)

“Um, it saves me gas money, saves me time. I’m able to do it from home, comfort of home, and I’m able to multitask. So instead of stopping studying an hour early, you know, I can stop ten minutes early and still be on time.”

“I don’t have to drive down there. Now I don’t have to drive down for my visits. And then from a socio-economic perspective, it benefited me in that, uh for the most part. I didn’t have to request a whole or half day off work.”

“would like a lot for them to do a video when I was doing my blood pressure. That way they could have seen how big my feet and stuff were. I was trying to explain to them, and it was really hard for me to find the explanation about how big my feet were because they were about as big as a softball my ankles.”

(5)

“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.”

“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.”

“I had to meet with my high-risk doctor by telehealth.”
Shared experiences across the 77 respondents raise questions about the efficacy, quality and content of the pre-pandemic perinatal care practice, and proposals for adopting a hybrid model that affords some of the benefits of telehealth such as access, with the warmth and connection of in-person care. The Javaid et al. study (2021) research on the impact of COVID-19 on maternity care experiences elevated a desire described by participants to create structural changes in the US healthcare system and concluded that the myriad of services that can be delivered by telehealth challenge the perception that traditional, pre-COVID forms of care were actually best for patients.

Structural changes that respondents described across all seven articles included fewer prenatal visits, fewer in-person visits, isolated visits that excluded members of the patient’s family, and social isolation and detachment from providers and facility members, as well as their abrupt immersion in telehealth medicine. Patient appointments were reduced from the traditional recommended number of 12-14 visits per expectant mother to the fewest number possible given the risk profile of the person. Canceled face-to-face appointments that were not replaced with telemedicine visits caused participants to question the evidence behind standard perinatal care, and across studies women wondered which approach truly optimized care for pregnant women and newborns. While telehealth was used as a substitute for many canceled appointments, some respondents noted that their number of appointments decreased. Some questioned whether the adjustment of appointments indicated that the frequency of in-person visits may not have been needed prior to the pandemic. Respondents in the Javaid et al. (2021) and Beeson et al. (2021) study said:
“Instead of going to my most recent monthly check-up, I asked my NP if I could wait a couple of weeks. She said it was no problem to push the visit off a couple more weeks.” (34 years old, 6 previous pregnancies, 5 previous births)

“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.”

These transition to minimal visits delivered remotely serve as a catalyst to rethink the delivery of perinatal care. This can be seen in narratives of two other respondents from the Javaid study (2021) who said:

“(My) provider is reevaluating if non-stress tests are actually needed (for me) - originally I was told 3x per week after 32 weeks, now they are saying either 1x per week or not at all...” (36 years old, 3 previous pregnancies, 1 previous birth)

“(It) makes me question if [non-stress tests] were actually necessary, or were the providers just wanting to bill my insurance for more money?” (36 years old, 3 previous pregnancies, 1 previous birth)

1 Only Javaid et al. (2021) and Peahl et al. (2021) include descriptors for participants. I retained these when citing these two studies’ respondents.
Javaid et al. (2021) also reported that while many women questioned the efficacy of both remote and traditional in-person care, many still felt that although they had experienced structural changes in their care, the quality of their care remained unchanged. However, in some cases, the transition to telehealth care felt sudden and completely disruptive to the patient and their care plans. In the Javaid research, some participants shared negative experiences with the rapid transition of in-person care to telehealth care. For example, one participant lamented:

“I have had appointments canceled with virtual being the only option, but it (is) not yet available. Phone appointments are the only option at this time.” (33 years old, first pregnancy)

While providing a form of care that helped to protect both the provider and patient from exposure to COVID-19, some patients and systems simply did not have the resources to make the transition quickly and effectively. This posed a challenge to successfully implementing telehealth because many telehealth programs were not ready to roll out at the time they were needed. This made some pregnant people question whether their care was being compromised by an infective and unprepared system. Many women did not feel prepared or know what to expect with telehealth services. The transition from all in-person, prenatal consultations to remote practice was a decision made by the health provider, and some described feeling little authority as the patient. As one participant from the Peahl et al. study (2021) described:

“I would have appreciated being scheduled with my regular provider.” (33 y/o, multiparous patient)
These quotes highlight the importance of continuity in care; many noted that having access to a familiar and well-liked provider as everything else seemed to be shifting around them was of vital importance. In addition, clearly explaining which telehealth modalities would be used in which scenario, and having the goals of each appointment explained were described as important by participants. As another participant from the Peahl et al. study (2021) described:

“I also did not feel prepared with what to expect from a video visit compared to an in-person visit.” (30 y/o, multiparous patient)

The incorporation of telehealth services expands past appointments, consultations, and education. Many patients were provided with or paid for personal home monitoring devices, such as blood pressure cuffs, dopplers, and fetal monitors. This coincided with the structural changes to virtual care, as respondents a decreasing the frequency of in-person visits. Patients were instructed to monitor their own vitals, and the state of their pregnancy via online instructions or synchronous telehealth visits. With limited provider-patient interaction, this change and the heightened need for self-reliance was experienced as stressful and participants across the studies questioned the quality of care they were receiving and whether effective self-monitoring was really possible. The Javaid et al. study (2021) identified a theme— “impact on perceived quality of care”— wherein the study reports that some women felt as though the quality of their care was compromised to accommodate social distancing. In relation to limited in-person appointments one respondent stated:
“I am definitely not receiving the same quality of care and feel like it's a risk to my health and well-being to have limited appointments in the third trimester, and with a possible GD [gestational diabetes] diagnosis.” (30 years old, 3 previous pregnancies, 1 previous birth)

Along with the anxiety and fear of contracting COVID-19, the lack of assurance of personal wellness was concerning to many women across the studies. When women’s appointments were canceled, their certainty about their own health and that of the baby faltered; they worried about potential pregnancy complications and whether someone would be available to care for them when they went into labor.

It is important to note that some who described questioning the quality and content of in-person care and reflecting on what was really necessary in terms of prenatal care, were quite happy with the shifts brought on by COVID. Several responses detailed their perceptions of remote visits and monitoring:

“Well, I think it is very cool that they’re doing virtual visits. One thing that I thought was really neat is that, at my doctor’s appointment, they gave me a Doppler so I can listen to the baby’s heartbeat at home . . . I was very pleasantly surprised. I felt like, you know, unless there’s something major going on, that a virtual visit every now and then was totally appropriate.”

“Truthfully, for a lot of the early prenatal visits, you just sat in the waiting room for what felt like 10 hours, you peed in a cup, and you waited in the exam room for 10 hours. Then, it was a quick Doppler belly check, a quick ‘How are you doing?’, [a] blood pressure check, [and] ‘All good. Great. We’ll see you in a month.’ So that’s it. I can do the blood pressure at home. I could
do the Doppler, theoretically. I could do weight at home.”

**Theme 2: The Benefits of Telehealth**

A second emergent theme emphasized the benefits of incorporating telehealth into perinatal care plans (see table 2). Many participants detailed the ease of use and variety of remote communication options for their prenatal, intrapartum, and postpartum care. These reflections highlight the potential of telehealth for improving access to perinatal services and possibly decreasing existing health inequities. The primary benefit of telehealth as described by participants was time saving. Remote visits cut down on the number of clinical appointments recommended for maternal care where patients had to miss work to travel and wait only to be seen for a few minutes. Traditionally, clinical appointments included lab tests and physical examinations to observe and record changes in health of the mother and fetus (Hill et al, 2020). However, they also included education, support, and question and answer sessions. Many respondents praised telehealth formats as a substitute for in person-visits that were focused primarily on education. Participants appreciated not having to drive and endure long waits for visits that did not entail a test such as an ultrasound or blood draw. The following accounts from Peahl et al. (2020) and Ngo (2021), respectively, supports this:

“It (hybrid telehealth with minimal in-person visits) gives enough in-person time while allowing for easy check in and is a better use of time for the in between visits that are mostly dialogue” (24 y/o, multiparous patient)

“I have much more information to give them and being able to directly give stuff from the
telehealth to them to make sure that I have a complete profile that I'm giving them is very..., it relieves a lot of stress. So, I can actually get down to my immediate concerns...”

Table 2. Exemplar quotes relevant to theme two

<table>
<thead>
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<tbody>
<tr>
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<td>“I am very healthy and question whether the risk of going to my appointments in person (and potentially getting the virus) outweighs my risks (if) I didn't have the appointment.”  (30 years old, first pregnancy)</td>
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<tr>
<td>2. Peahl et al. (2021)</td>
<td>“[I like] not having to load up my kid, get a babysitter, plan around my husband's schedule to get to the doctor...”  (26 y/o, multiparous patient)</td>
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<td>3. Farrell et al. (2022)</td>
<td>“It gives enough in person time while allowing for easy check in and is a better use of time for the in between visits that are mostly dialogue.”  (24 y/o, multiparous patient)</td>
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<tr>
<td>4. Ngo (2021)</td>
<td>“It was nice to get the appointments with the doctor to be able to ask questions and not worry about traveling.”  (33 y/o, nulliparous patient)</td>
</tr>
<tr>
<td>5. Kinser et al. (2022)</td>
<td>“I do find it empowering... I can consume information in regards to my pregnancy, labor and delivery at my own pace, and also refer back to it, verses relying solely on the in-person visits.”  (36 y/o, nulliparous patient)</td>
</tr>
</tbody>
</table>

(3) “Virtual visits are a big deal... I was comfortable doing one. Of course, if there was something I was concerned about it, I could come in. I think it is just less enjoyable to come in because, you know, in the back of your head, you are worried about the possibility of being exposed to someone, especially if you are in a medical building.”

(4) “Um, it saves me gas money, saves me time. I'm able to do it from home, comfort of home, and I'm able to multitask. So instead of stopping studying an hour early, you know, I can stop ten minutes early and still be on time.”

“I don't have to drive down there. Now I don't have to drive down for my visits. And then from like, a socio-economic perspective, it benefited me in that, uh for the most part. I didn't have to request a whole or half day off work.”
“I have much more information to give them and, and being able to directly give stuff from the telehealth to them to make sure that I have a complete profile that I’m giving them is very, it relieves a lot of stress. So, I can actually get down to my immediate concerns…”

“And if they said, it could be telehealth, then I knew it was safe for telehealth… I think in the future without COVID being an issue, I would still want to receive the care the same way. Because the benefits [of telehealth] are so huge, and knowing that, you know, I would go in when I really needed to go in, but I didn't have to when it was not necessary.”

(5)
“I love talking to my therapist sitting on my couch in my pajamas.”

The ease of use reduces stress that surrounds appointment availability and flexibility, time, and has been found to increase attendance (Hill et al, 2020). Telehealth has also been extended to provide more mental health services in some places, which were needed to accommodate additional stressors from the pandemic. While telehealth aids accessibility of consultation during pregnancy for many, access to care and resources was one of the primary concerns of the participants in Barbosa-Leiker's study (2021). In contrast, Peahl and colleagues report in their theme “virtual care is empowering for patients,” that many patients experienced telehealth as a positive shift because they could consume information at their own pace as they referred to on-line resources rather than trying to remember everything they were told during a prenatal visit. As one respondent from the Peahl study states:

“I do find it empowering... I can consume information in regards to my pregnancy, labor, and delivery at my own pace, and also refer back to it, verses relying solely on the in-person visits”
Many respondents expressed the necessity of “person-to-person connection” and “real-time support” during their appointments. Telehealth allowed them to be more comfortable during visits because they were in the privacy and comfort of their own home. A respondent in the Kinser et al. study (2021) commented:

“I love talking to my therapist sitting on my couch in my pajamas”

One of the greatest benefits to telehealth was that it became a way of personalizing the healthcare experience to the lifestyle of the mother, which is apparent in respondent data from Ngo (2021) and the Peahl et al. (2020) studies respectively:

“Um, it saves me gas money, saves me time. I'm able to do it from home, comfort of home, and I'm able to multitask. So instead of stopping studying an hour early, you know, I can stop ten minutes early and still be on time.”

“[I like] not having to load up my kid, get a babysitter, plan around my husband's schedule to get to the doctor...” (26 y/o, multiparous patient)

Respondents described the socio-economic advantage to telehealth care was that they did not have to request large amounts of time-off from their jobs. From participants’ narratives, we can see that telehealth has the potential to increase ease and efficiency of appointments for mothers, and this theme is emphasized by Farrell et al. (2022) whose findings focused on the convenience that some patients perceived monitoring their own vitals at home. Yet, Farrell et al.
specifically distinguishes between trimesters and argues that first trimester pregnant people are ideal for telehealth appointments but encourages in-person visits in later stages of pregnancy. Farrell et al.’s interpretations differ from the experiences recorded in the other studies where authors encouraged virtual healthcare options in late pregnancy stages.

While many participants from Farell et al. appreciated the ease of telehealth, it should be noted that their satisfaction was tied directly to the “degree of safety and reassurance” they received from being able to avoid exposure to COVID-19. A great advantage of telehealth during the pandemic was that it allowed the continuation of routine perinatal care while adhering to the social distancing guidelines. Responses indicated that safety during the pandemic increased overall satisfaction with perinatal telehealth care, as the following respondents from the Javaid (2021) and Farrell (2022) studies explain respectively:

“I am very healthy and question whether the risk of going to my appointments in person (and potentially getting the virus) outweighs my risks (if) I didn't have the appointment.” (30 years old, first pregnancy)

“Virtual visits are a big deal . . . I was comfortable doing one. Of course, if there was something I was concerned about it, I could come in. I think it is just less enjoyable to come in because, you know, in the back of your head, you are worried about the possibility of being exposed to someone, especially if you are in a medical building.”

This aspect of care is a central consideration in assessing the advantages to telehealth. However, another important factor to consider is whether telehealth affected any existing barriers
to care. Furthermore, the ability to replace in-person consultations or assessments with telehealth practices might also reduce maternal stress by respecting time and work constraints and economic barriers related to missed work. The success of telehealth models for increasing access is tied to smartphone and stable internet access, which many have noted is not a given for some communities in the United States. Furthermore, the Peahl study (2021) discusses some additional limitations of telehealth in their theme “barriers may disproportionately affect vulnerable patients,” where two respondents said:

“Many people may not be able to afford monitoring devices to have at home” (32 yo, nulliparous patient)

“I was asked to change to telehealth appointments until my 36-week appointment. This required me to purchase additional tools (blood pressure monitor, fetal doppler) that were unexpected expenses”

Additional barriers to telemedicine and its structural changes are reported by the Barbosa-Leiker study (2021) whose qualitative data indicate telemedicine “decreased waiting times and risk of infection by greatly limiting in-person clinic visits,” yet was not accessible to all. Some patients struggled with the use of the video platform not having a reliable high-speed internet. These barriers increased remote patients’ stress levels (Barbosa-Leiker et al, 2021). As such, while the potential for telehealth is immense, those who would benefit the most from it currently have the least access to it.
Theme 3: Challenges and Unintended Consequences of Telehealth

Challenges and unintended consequences of perinatal telehealth care during the pandemic surfaced as a third key theme across studies (see table 3). Participants described patient-provider disconnect, emotional burnout, and uncertainty related to fetal development as specific negative aspects of the transition to primarily remote health care delivery. The negative psychosocial consequences of telehealth implementation was the most common theme discussed across the articles. Anxiety and fear were induced by the health crisis itself, but respondents also worried about how disruptions to the continuity of their care would impact their pregnancy and the health of their child. Telehealth also felt like one more contributor to the already strong and growing sense of isolation many felt as they began to realize how the pandemic would affect the support they could expect from family and friends. Many noted that it was not a great time to be pregnant. Javaid et al. (2021) identified, “emotional consequences for pregnant women” as a key theme and discussed how their participants felt a lack of support that stemmed from the providers’ “lack of guidance and information.” One respondent stated:

“Care has become disjointed and care providers seem rushed and distracted. It feels a bit like I’ve been thrown into the deep end and told to figure it out.” (37 years old, 7 previous pregnancies, 2 previous births)

Feelings of abandonment were common with another respondent saying:

“I am forced to continually fight to be seen and have to reiterate my situation and reasoning over and over to each new person that answers the phone. I understand that they want as few
people as possible in their office, but I don't want to be out and about any more than they want me there. I got pregnant before this pandemic arrived, and now I have no choice but to advocate for myself, but it has been very difficult.” (33 years old, 1 previous pregnancy, 0 previous births)

Table 3: Exemplar quotes relevant to theme three

<table>
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<td>2. Kinser et al. (2022)</td>
<td>“I'm a first-time mom and don't have another full-term pregnancy to compare it to but, I worry an issue or problem could be missed due to appointments being spaced out, etc.” (32 years old, 1 previous pregnancy, 0 previous births)</td>
</tr>
<tr>
<td>3. Beeson et al. (2021)</td>
<td>“I mostly feel a huge sense of fear, loss, and anxiety related to this pregnancy during a time when I wanted to feel excitement, joy, expectation....” (37 years old, first pregnancy)</td>
</tr>
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<td>4. Peahl et al. (2021)</td>
<td>“I am forced to continually fight to be seen and have to reiterate my situation and reasoning over and over to each new person that answers the phone. I understand that they want as few people as possible in their office, but I don't want to be out and about any more than they want me there. I got pregnant before this pandemic arrived, and now I have no choice but to advocate for myself, but it has been very difficult.” (33 years old, 1 previous pregnancy, 0 previous births)</td>
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<td>5. Farrell et al. (2022)</td>
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</tr>
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<td>6. Barbosa-Leiker et al. (2021)</td>
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<td></td>
<td>“Telehealth changes everything. It changes the way you express yourself. It changes the way that you are physically experienced, even the practice of looking into someone's eyes is different.”</td>
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<td></td>
<td>“I was extremely stressed out because I wanted to hear his heartbeat, still wanted to make sure he was measuring okay [but I couldn't because there were only phone call visits]. I was freaking out. I had no idea what was going on and that was very stressful.”</td>
</tr>
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</table>
“I'm really glad that this is my second pregnancy and not my first, because I can only imagine being the first and not even knowing what you're supposed to see and feel, and then being responsible to relay those symptoms via some virtual visit.

“The reality is, they have more data than I do as a sleep-deprived, non-medical mom.”

(3) My prenatal visit felt 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.”

“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.”

“I prefer in person. Virtual is a little awkward to me. In person I feel more comfortable talking about everything.”

(4) “I don’t necessarily feel a virtual visit with my provider offers the same thing that an in-person appointment would.”

“I feel like not having my blood pressure, baby’s heart heartbeat, or stomach growth monitored leaves me feeling extremely unsettled and then results in increased stress.” (36 y/o, nulliparous patient)

“I dealt with high blood pressure and preeclampsia with my last pregnancy. With the [new prenatal care model] I feel like this could be missed.” (34 y/o, multiparous patient)

(5) “She [her provider] said she’d send us home with Dopplers to listen to the baby’s heart at home, which is like, ‘Woah. I’m supposed to sit there and try to find it?’ I can’t even think about that. So, it’s definitely weird and different and not what I expected at all. It makes me nervous that the doctor won’t be right there to do it for me, like someone who went to school for this and is trained in this.”

“I don’t necessarily feel a virtual visit with my provider offers the same thing that an in-person appointment would, for example, with measuring your fundal height or making sure the heart rate is good. Unless you have the tools at home or the knowledge, you wouldn’t have the ability to make sure you’re on track compared to your provider doing that in person.”

“I went home, and I tried to use it, and it was a couple days later, and I couldn’t get it to work, and I was worried it was because there was nothing there to listen to.”

(6)
The shift to telehealth and cancellation of non-urgent procedures and appointments contributed to a change in respondents' outlooks on their pregnancy; many described moving “from joy to fear.” Javaid et al. (2021) found that the shift away from face-to-face care was linked to increases in pregnancy-related anxiety. This was due, in part, to feeling unprepared for their birth due to fewer prenatal tests and appointments and the lack of additional support that resulted from social distancing. In addition to the feeling of being overlooked by the system, one respondent from Javaid’s study commented on the information provided during her prenatal visits as the focus shifted away from her pregnancy concerns to address the pandemic. While COVID issues were relevant to the pregnancy, concerns about other issues went unaddressed. This contributed to feelings of abandonment and a breakdown in the relationship and trust she had felt with her provider. The following response from Beeson et al. (2021) study describes a similar experience.

“My prenatal visit felt 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”

Barbosa-Leiker et al. (2021) found that respondents felt like even as the number of in-person appointments decreased, supplemental online resources were not always supplied by providers to compensate for canceled or delayed appointments. Across all studies, respondents noted that they attempted independently and online to make up for feeling unprepared as a result
of the telehealth visits. One of Barbosa-Leiker’s respondents described a few of the resources she felt she needed but did not receive.

“Resources for online classes that used to be in person - birth classes, hypnobirthing, breastfeeding – were no longer available.”

The theme from Beeson et al. (2021) “alterations in care” also addresses this perceived lack of resources, noting that additional financial concerns came with the lack of access to testing and resources originally offered in-hospital. One participant said:

“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.”

Preferences for in-person appointments to help alleviate uncertainty were expressed in Farrell et al. (2022) work through terms such as “safer,” “reassurance,” and “confirmation.” Some felt these could not be achieved adequately via telehealth services. The determination of the well-being of the pregnancy that came from having someone palpate the belly or listen to fetal heart tones could not be accomplished on-line and some felt this absence exacerbated the already intense fear they felt over the possibility of contracting COVID-19. Many respondents looked to health professionals to help alleviate the uncertainty and fear they felt, but the reduced number of appointments worried participants. This exemplified by a respondent from Javaid et al. (2021):
“I'm a first-time mom and don't have another full-term pregnancy to compare it to but, I worry an issue or problem could be missed due to appointments being spaced out, etc.” (32 years old, 1 previous pregnancy, 0 previous births)

Participants across studies were concerned about their lack of knowledge in performing evaluations of their pregnancy by themselves, especially if it was their first term pregnancy. Despite being provided with the appropriate equipment, Farrell et al. (2022) state that participants “noted some concern over whether they had the skills and competence to use the equipment” (Farrell et al, 2022” page 5). In standard perinatal care, patients placed trust in their trained providers to perform physicals and measurements regularly to monitor the development of their fetus and their own health. With telehealth, pregnant people explained their symptoms verbally and used their own monitoring devices. Many shared concerns that they would misinterpret the results or miss a potential health concern. Many women reported feeling worried their individual needs and preferences during pregnancy would not be adequately attended to as their appointments shifted to telehealth (Farell et al, 2022). Whether or not patients were encouraged to purchase self-monitoring equipment, respondents from Kinser et al. (2021) study reported feeling “uncared for when appointments were canceled or switched to telehealth.” This source of anxiety was exacerbated when participants only had access to phone visits. As participants from Kinser et al. (2021) explain:
“I was extremely stressed out because I wanted to hear his heartbeat, still wanted to make sure he was measuring okay [but I couldn't because there were only phone call visits]. I was freaking out. I had no idea what was going on and that was very stressful.”

“I'm really glad that this is my second pregnancy and not my first, because I can only imagine being the first and not even knowing what you're supposed to see and feel, and then being responsible to relay those symptoms via some virtual visit.”

“The reality is, they have more data than I do as a sleep-deprived, non-medical mom.”

Based on these responses, Kinser et al. (2021) connect fears of being ill prepared or under-monitored to the theme of “fragmented relationships with healthcare providers.” The communication and instructions given to patients to monitor their own health frustrated many mothers, as it was described as distant, ambiguous, and potentially unreliable. Patients described not wanting more self-accountability; the lack of guidance, with minimal input from the providers made pandemic stressors worse in the eyes of some. The findings from Kinser et al. (2022) are similar to Ngo’s (2021) who note that patients desired increased ability to visualize their providers through online platforms. Where patients could not accurately describe their symptoms - for example, swelling ankles – they wanted to be able to show their physician or midwife what they were experiencing. The options for guidance and support via telehealth consultations, even when easily accessible for some, were still felt to influence the interaction between provider and patient. One of the respondents from Kinser et al. (2022) discusses the way telehealth influenced her thoughts during a consultation, stating:
“Telehealth changes everything. It changes the way you express yourself. It changes the way that you are physically experienced, even the practice of looking into someone's eyes is different.”

This perception of telehealth was echoed by participants in the Peahl et al. (2021) study. As a participant stated:

“I prefer in person. Virtual is a little awkward to me. In person I feel more comfortable talking about everything” (22 y./o, nulliparous patient)

The analysis from Farrell et al. similarly drew attention to the difficulties patients sometimes felt interpreting nonverbal communication, gestures, body posture, and facial expressions during telehealth visits (2022). While telehealth offered a solution to contagion of the SARS-CoV-2 virus, participants across all studies found that limiting in-person visits meant they had limited reassurance of the state of their pregnancy due to reduced access to testing and monitoring, and thus, reassurances that all was well. Participants in the Farrell et al. study emphasized that perinatal telehealth visits were different from general telehealth care because of the need for additional care and sensitivity in discussions pertaining to reproductive health, pregnancy, parenthood, and family (2022).

**Discussion and Conclusion**

This metasynthesis reflects 77 responses from birthing individuals in the United States who received perinatal telehealth during the early surges of COVID-19 pandemic. Participants’
narratives highlight the profound impact that the rapid structural changes of telehealth delivery had on patients’ care experiences, and especially on their sense of security and trust in the quality of their care. Additionally, it reveals the key challenges and benefits of telehealth as described by birthing individuals. Three composite themes emerged from analysis of data and findings across the seven studies; these center patients’ perspectives on remote maternity care during COVID-19 and also offer areas for reflection on how telehealth may continue to be used in ongoing surges of the pandemic. Across the seven articles, three cross-cutting themes emerged: 1) questioning the quality and content of traditional, in-person, perinatal care; 2) the benefits of telehealth, and 3) the challenges and unintended consequences of perinatal telehealth.

These themes highlight a wide range of experiences and perspectives among respondents and elevate the importance of tailoring care to individuals. The implementation of telehealth nationally lacked cohesiveness in protocols, guidelines, and standards for provision of care due to the lack of an integrated maternity care system in the United States and the urgent nature of the pandemic. Each respondent was subjected to unique pregnancy-related care that depended on a variety of both individual- and hospital-level factors. This analysis makes evident that there can be no one recommended universal model of telehealth delivery, as diversity and complexity of care make it difficult to establish “one-size-fits-all” guidelines even in relatively homogenous communities. Findings from this metasynthesis suggest that there are several key factors around which variations in response to perinatal telehealth implementation pivot. In this section, I argue that reliable access to on-line telehealth service with a visual component (i.e., not simply phone calls), gestational age at which the telehealth use was implemented, continuity of carer and relationship status with the primary provider, parity, and level of risk all influence women’s experiences of perinatal telehealth care. These complexities are demonstrated in figure 3 below.
These factors should be taken into consideration when implementing telehealth options during continued surges of SARS-CoV-2.

**Figure 3. Complexities of Telehealth Perinatal Care**

The diverse sample of respondents in this metasynthesis reveals the extent of the variation in telehealth modalities available to patients; these ranged from dialogue-based appointments on the phone to Zoom meetings with a visual connection, to increased home monitoring with devices and reporting via on-line charting systems. Virtual care with a visual component and access to monitoring devices, and the confidence to use them were not equitably distributed during the roll-out phase of perinatal telehealth programs in 2020. Across all seven studies, satisfaction with access to care services was inconsistent. Participants’ attitudes towards integrating telehealth into their perinatal care depended on convenience and access to telehealth technology and devices. Access to technology in hybrid care models depended on availability of home devices and high-speed, broadband internet.

Respondents noted that they were either provided with or reimbursed for additional monitoring devices such as blood pressure cuffs, dopplers, or fetal monitors. Respondents also paid for educational information and services that were not provided in their telehealth services. During the pandemic, Medicaid programs from all 50 states expanded their coverage for
telehealth services (Hill et al, 2020)—a critical move towards improving access to this modality of care. However, access to telehealth care also depended on additional expenses such as laptops or smartphones needed for communication, access to WIFI and data plans. Hill and Burroughs (2020) add that many urban and rural communities across the United States lacked access to broadband internet. Additionally, Reisinger et al. (2021) suggest that telehealth may increase socioeconomic and racial/ethnic inequities in healthcare due to lack of access to telehealth technology as lack of access is not random. Communities of color are more likely to be reliant on public WIFI and computers (at public libraries, for example), and to lack basic access.

However, as highlighted in theme two, some respondents also noted that saving on transportation expenses associated with frequent, in-person appointments was welcome. In these instances, virtual visits reduced childcare costs and needed time off work. Additionally, virtual care was seen as beneficial by respondents who lacked reliable transportation or had to travel long distances for in-person care. The time-saving aspect of telehealth was especially appreciated by respondents. Convenience of telehealth accessibility was often favored by respondents with healthy, low-risk pregnancies who experienced the reduction in visits as an easing of burdens. Perinatal telehealth can be experienced as a “mixed bag” of benefits and barriers to equitable quality care.

Perceptions of, and satisfaction with, telehealth care can also depend on the gestational age of the pregnant individual. Respondents introduced to telehealth in the beginning of their pregnancy appreciated it since those early appointments were “dialog driven” “without much to do or monitor yet.” However, as women approached their due date, and the reality of labor loomed close, many did not feel telehealth in later stages of pregnancy was adequate. The quality of care provision over telehealth was questioned as respondents noticed a reduction of
appointments in later stages of pregnancy. Some patients received telehealth services primarily until their third trimester and then transitioned to in-person. Such an approach aligned well with many women’s needs and expectations for closer monitoring. Some responses revealed that telehealth services could not be as effective as in-person visits when performing physical examinations for late-stage pregnancy symptoms and concerns. Patients also reported feeling uncertain about being responsible for measurements and monitoring during later stages of pregnancy, indicating a desire for more traditional, in-person care as gestation progressed.

Respondents noted that the reduced quantity of both virtual and in-person appointments further in the pregnancy induced anxiety regarding their health and enhanced feelings of being unprepared for birth. Barbossa-Leiker et al. (2021) found that changes in care delivery modalities elevated levels of anxiety and stress as birth became eminent. Likewise, Kinser et al. (2022) comment that the intensified stress that resulted from late pregnancy distancing from providers could lead to avoidance of decision-making and lower perceived wellbeing. These findings suggest that more support in later stages of pregnancy via hybrid telehealth and in-person appointments could be critical to the experience of care for many. However, the ideal number and mode of appointments should be tailored to the individual patient. In navigating pregnancy during COVID-19 remotely, many women revealed that the limited patient-provider interactions compromised the certainty and stability they felt as they approached birth. Moyer et al. (2020) confirms that shifting away from “face-to-face” care is linked to increased pregnancy-related anxiety. Some respondents lost their primary providers, and some fought to be seen in person. Yet Javaid et al. (2021) found that despite structural changes to their care, some women felt that their high quality of care continued.
Additionally, many respondents expressed that they did not feel confident in their ability to measure their own vital signs. Fear of missing major health issues due to remote monitoring and lack of preparedness for birth drove negative perceptions of telehealth models. Furthermore, many women were frustrated by the lack of guidance on what to expect from telehealth appointments. The rapid transition to telehealth meant women who had previously experienced perinatal care in-person had to quickly adapt to receiving their care in a different format. While some patients preferred the ability to self-monitor their pregnancy and make informed decisions about their health, during the transition to telehealth, increased communication with patients and ensuring that patients felt confident with monitoring procedures was essential to perceptions of care quality. When patients were able to meet with a provider they were familiar with, trusted and knew well, the transition to telehealth was smoother. Looking back at participants’ experiences across the seven studies, the psychosocial needs of pregnant and birthing people were often underappreciated and under addressed as reducing infections was prioritized. Those who were not able to maintain a relationship with a stable and well-known provider often did not get their holistic needs met. Going forward, recognizing the need for continuity of care is critical.

The parity of the pregnant individual also affected the experience of perinatal telehealth care in many instances. Multiparous women often experienced telehealth differently from nulliparous mothers. This was seen in studies performed by Javaid et al. (2021) and Peahl et al. (2021) where experiences were connected to parity and described by each respondent. More multiparous mothers felt comfortable with scheduling flexibility and missed appointments than did those having their first baby. They also could refer to experiences in previous pregnancies and knew how to communicate their needs to providers. Primiparous participants often noted that they did not know what to expect and so missing visits was concerning. However, both
Multiparous and nulliparous patients commented on the long wait times and short visits of traditional in-person care and could see the value of less missed work and more respect for their time.

Multiparous parents were able to draw comparisons between the two forms of care and were better able to make sense of the conflicting messages they felt they were receiving: “Prenatal monitoring is absolutely essential, and no tests should be missed or declined,” versus “This care is not essential, and so it is ok to delay or cancel or to just talk by phone or zoom.” Those having their first baby often found this more perplexing and unnerving, though regardless of parity, participants were apt to discuss the confusion and questioning this induced. Some multiparous mothers commented on their confidence in their medical team and anticipated a successful full-term delivery, especially when that had been their previous experience. However, other respondents, and particularly nulliparous people, also described stark differences between their two perinatal experiences, stating they no longer experienced “happiness and joy” associated with expecting a baby as they transitioned to remote care (Javaid et al, 2021). First time mothers often expressed a variety of emotional consequences surrounding changes in care. The theme “first-time moms are less comfortable with new models” identified by Peahl et al. (2021) argues that no single model of perinatal care can serve everyone, and that first time parents may feel more vulnerable when care is disrupted.

Finally, the level of risk is an additional complexity that impacts the experience of telehealth. Healthy birthing individuals at low risk for complications described less uncertainty and worry despite structural changes in their care plan. Patients with more medically complex pregnancies continued to meet with specialists by telehealth. The reduced number of appointments and limited tests and physical assessments worried patients that were classified as
high risk. Many lamented that their quality of care declined because the additional attention needed for their pregnancy was shifted to concerns over infection prevention. Some higher risk patients brought up concerns over symptom assessment and the difficulty of managing them over telehealth, where they struggled to relay the extent of their condition to the provider. As a result, patients with different risk classifications reflected different levels of satisfaction in their care.

Complexities in the form of risk, parity, access to technology, gestational age, and connection to providers all contribute to a range of disparate experiences for patients across the United States. Findings from this metasynthesis highlight diverse experiences and demonstrate the need to expand access to high quality perinatal care through innovative technologies, as well as the warmth and compassion of in-person care. This diversity is evident even though all seven of the studies disproportionately centered the voices of white participants. How much more varied might responses have been if a more representative sample of people giving birth in the US had participated? Findings suggest a need to move away from a one-size-fits-all model of perinatal care to personalize access to each birthing individual using a flexible hybrid form of care that takes a range of factors into consideration, including availability of technology, financial disparities, patient-provider trust, parity, distance to care, the health of the patient, individualized preferences, and changes in needs across the pregnancy. Ultimately, this form of personalized care could reduce the variety of stressors pregnant and birthing people in the United States must navigate, thus improving the experience of care (Barbossa-Leiker et al, 2021).

Strength and Limitations

The strengths of this cross-study design are that it provides a broader range of perspectives on telehealth care during the early acceleration phase of the COVID-19 pandemic.
than do single studies alone. Because the total sample is larger and more diverse across age, parity and region of the US, the findings may be more reliable and applicable. Furthermore, this work highlights the complexities that influence perinatal care plans. Nonetheless, this study also has several limitations. It does not provide adequate representation of patients, as the samples of the original studies are skewed toward white women. The implications of this are that populations made most vulnerable by systemic oppression are excluded. Additionally, the individual studies included exhibit recruitment selection bias, as online surveys require WIFI and devices to complete and submit their responses. Finally, I am a novice researcher, and my knowledge of assessing the quality of articles is minimal. This was also my first attempt at qualitative research. Finally, I was not able to ask the original authors of the individual studies for clarification on methods, data analysis or findings.

In conclusion, understanding lived experiences of perinatal telehealth care during COVID-19 across seven studies highlights the potential for health systems and providers to work towards more individualized, patient-centered, hybrid models of care. Analysis of qualitative data incorporating 77 patients’ perspectives across the United States emphasizes the wide range of variation in how people experienced shifts in care during the early surges of the SARS-CoV-2 pandemic. These findings bring to light the benefits and shortcomings of both traditional, in-person and telehealth care practices, elevating the factors that contribute to diverse experiences. Additional research is needed to further develop optimal approaches to personalizing perinatal healthcare via telehealth, as well as in-person.
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