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Original Research

Fatherhood during COVID-19: fathers' perspectives on pregnancy and prenatal care

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Abstract

Background and objective: In early 2020, the novel COVID-19 virus arrived in the United States and resulted in broad, sweeping changes to safety procedures within healthcare settings, including prenatal care settings. While implemented to protect both providers and patients, this protocol limited fathers' ability to attend prenatal care appointments. At this time, limited research has been published on the effects of COVID-19 healthcare protocols on fathers' experiences and perceptions of prenatal care and parenting. This study aimed to understand how COVID-19 affected expectant fathers and fathers with newborns perceptions and experiences during pregnancy, prenatal care, and early parenting. **Materials and methods**: Structured interviews were completed with fathers expecting a child and fathers with children born after March 2020. Interviews were completed by video conference and recorded. Audio from each interview was transcribed. Content and thematic analysis was performed. **Results**: In total, 34 fathers were interviewed. Three broad themes were identified from the data including changing prenatal care policies that did not consider fathers, unique stressors associated with COVID-19, and isolation's negative impact on connecting to the pregnancy and support. Fathers reported limited engagement with the prenatal care system due to pandemic-related organizational and systematic changes in healthcare delivery. Results also suggest that fathers experienced elevated feelings of both stress and isolation from the pregnancy and prenatal care. **Conclusions**: Ultimately, this study highlights the need for providers and organizations to develop strategies for transforming prenatal healthcare delivery into inclusive, family centered care during emergency situations, as well as use this opportunity to build family centered care into normal prenatal care operations.

Keywords: Fatherhood; COVID-19; Pregnancy; Parenting; Qualitative research

1. Introduction

In early 2020, the novel COVID-19 virus arrived in the United States and resulted in broad, sweeping changes to safety procedures within healthcare settings, including prenatal care settings. Among these changes, prenatal care providers began limiting or not allowing visitors at appointments. While implemented to protect both providers and patients, this protocol dramatically limited fathers' ability to attend prenatal care appointments. This protocol change could be potentially problematic as healthcare and public health encourages fathers to attend prenatal care appointments because of the documented benefits to the family and child [1–4].

Over the last 20 years, public health research has established significant benefits of paternal involvement in prenatal care for the family. Specifically, research has shown that paternal involvement during pregnancy is associated with increased use of both prenatal care [1] and postnatal care by the mother [2], as well as decreased maternal smoking during pregnancy [1] and reduced odds of postpartum depression [2]. Additional work suggests that father involvement, particularly attendance at prenatal care visits, is associated with greater willingness to improve paternal health behaviors [3], suggesting there are also direct benefits to the father. Finally, increased father involvement has also been associated with lowered risk for infant low birth weight [4].

Given efforts over the last decade to encourage father involvement and attendance during prenatal care appointments [5], it should not be surprising that family health experts are voicing their concerns about the long-term impacts of excluding fathers from prenatal care settings. For example, a recent editorial suggests that these unexpected changes to prenatal care, coupled with the added stress of COVID-19 and lack of support fathers are receiving from prenatal care providers, will have long term consequences for fathers who were expecting during this time and their families [6].

Although limited research has been published on the effects of COVID-19 healthcare protocols on fathers' experiences and perceptions of prenatal care and parenting, two

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recent studies highlight some of the immediate impacts of COVID-19 on fathers. For example, one study among Hispanic fathers pointed to the additional stress COVID-19 has placed on fathers during an already stressful family transition [7]. While another study among partners and support persons in Australia found that fathers reported feelings of isolation and felt detached from the pregnancy because of COVID-19 restrictions [8].

Given the limited research and urgency of understanding the impact of COVID-19 on fatherhood [9], the purpose of this study was to explore fathers' experiences and perspectives on pregnancy and prenatal care during the COVID-19 pandemic. To include the voices of fathers and allow for the rapid changing prenatal care environment, qualitative, structured interviews were used to provide the needed context for understanding fathers' experiences and perspectives of pregnancy and prenatal care. Specifically, this study addressed how COVID-19 shaped expectant fathers (i.e., pregnant partner) and fathers with newborns perceptions and experiences during pregnancy and prenatal care.

2. Methods

2.1 Overview of study framework

This study uses data collected as part of a fatherhood study focused on supporting expectant fathers during pregnancy and early parenting. A central outcome of the fatherhood study was to support the attendance of fathers at prenatal care appointments, yet because of COVID-19 related restrictions on prenatal care appointment attendance, fathers were not able to attend prenatal care appointments. Therefore, this study aimed to understand how father's perceptions of and experiences with prenatal care changed.

Structured interview questions were developed based on two theories: Theory of Planned Behavior and interpersonal communications theory. Questions based on Theory of Planned Behavior [10] focused on perceived norms and expectations of prenatal care and pregnancy, in addition to fathers' intentions around participation in the prenatal care appointments. Questions based on interpersonal communications theories [11] focused on how fathers' interactions with others (pregnant partner, family members, prenatal care providers) changed as a result of COVID-19. For example, if fathers changed how they communicated with their partners who were able to attend prenatal care appointments or if personal interactions changed as a result of COVID-19. The completed interview guide was then reviewed and refined by the research team prior to requesting participation in the study. See Appendix A for Interview Guide.

2.2 Participants

Structured interviews were completed with expectant fathers and fathers of newborns on their experiences during pregnancy and early parenting. To be eligible for this study, participants had to identify as a father, be at least 18 years old, and be an expectant parent (i.e., pregnant partner) or have had a baby after March 2020—the beginning of COVID-19 associated lock downs in the United States. Participants were recruited through convenience sampling from known contacts and snowball sampling via email and social media posts. For participation in the study, all participants received a $50 electronic Amazon.com gift card. A total of 54 fathers were contacted for participation in the study. After completion of 34 interviews, data saturation was achieved, and additional recruitment was stopped.

Overall, 34 interviews were completed. The majority of interviews were completed with participants that had already had their baby (n = 22). The sample was closely split between first-time fathers (n = 18) and fathers with other children (n = 16). Most fathers resided in Texas (n = 22), with the remaining spread across 11 states. Most fathers were employed full time (82%) with some fathers working part-time (6%) or unemployed (12%). Among working fathers, over half (53%) were working from home, with fewer fathers working away from the home (27%) or working from home some days (20%).

2.3 Data collection

Interviews were completed virtually on Zoom, took between 30–45 minutes to complete, and were voice recorded. All interviews were conducted by 3 trained research staff. After interview completion, the voice recording was sent to Rev [12] for transcription. All transcription files were then uploaded into NVIVO 12 [13] for analysis. All study protocols were approved by the University of Texas Health Science Center at Tyler (IRB#21-002).

2.4 Data analysis

This study employed a qualitative descriptive (QD) approach to data collection and analysis; this approach is particularly useful for exploring topics that are not well-researched [14,15]. Interviews were coded using both content and thematic analyses [16,17]. In the first round of coding, responses were grouped by interview questions to code content. An inductive approach was then used to code themes within and across questions [18].

The codebook was developed based on pilot review of five transcripts by all research team members. The codebook was then implemented in NVIVO for the first round of content coding. All transcripts were divided across research team members for content and thematic coding. After initial coding was completed, the research team met to discuss issues that arose during coding, ambiguous codes, or needed codes. The codebook was revised to clarify content code descriptions and include additional thematic codes identified. The same three coders then completed a second round of coding using the updated codebook. After the second round of coding was completed, the research team met a final time to further refine content and thematic codes. Final adjustments were made to the codebook and all interviews were re-coded a third time to reflect the final codebook.

After coding was completed, themes were generated by all authors. To address the primary aim of describing fathers' pregnancy and prenatal care experiences during the COVID-19 pandemic, themes were intentionally developed to provide descriptive context to fathers' experiences.

2.5 Methodological integrity

To ensure inter-rater reliability across the three coders, each transcript was assigned a primary coder and a secondary coder. The primary coder completed the final round of coding. The secondary coder then reviewed all codes within the transcript. Any discrepancy between coding implementation was noted with annotations. All annotations and proposed changes to coding transcripts was discussed between the primary and secondary coder until unanimous agreement was reached.

3. Results

Results from interviews are presented under three thematic categories that captured the impact of COVID-19 on fathers' pregnancy experience: (1) changing prenatal care policies that did not consider fathers, (2) unique stressors associated with COVID-19, and (3) isolation that impacted connecting to the pregnancy and social support systems. Each theme is described in detail below. Additional examples and complete presentation of themes and thematic components with quotes is available in Table 1.

3.1 Changing prenatal care policies did not consider fathers

When asked about the impact of COVID-19 on the father's pregnancy experience, the most common response was related to how COVID-19 policies changed the prenatal care environment. For example, a father said that "[in] just a couple months … everything turned on a head. It affected everything from doctor's visits [and] my ability to participate" (F011). The impact of these policy changes manifested in four ways: (1) by restricting their attendance at prenatal care appointments, (2) through cancelled prenatal or pregnancy classes, (3) with limited use of alternative appointment types, and (4) a lack of family center practice.

3.1.1 Restricted attendance negatively impacted fathers' ability to connect to the pregnancy or the provider

Restricted attendance to prenatal care appointments was mentioned by almost all fathers; only one father reported that they were able to attend all prenatal care appointments with their partner. Many reported that this change occurred abruptly and was a difficult adjustment. For example, a father said, "I think most immediately, at least for my wife's prenatal care, I am not allowed to be in or attend many of the health provider visits for her prenatal care… because social distancing isn't possible within the various exam rooms at the practice (F012)". Because of the restricted attendance, some fathers reported having a difficult time feeling connected to the pregnancy. For example, "…[because] I'm not actually physically able to be there in the room…it was hard to get as excited and emotional being on FaceTime. It was still very nice to have that option. But it was not the same obviously as actually being there (F015)".

Some fathers that began their pregnancies after March 2020 said that, unless the obstetrician was known from a previous pregnancy or this pregnancy began, they had never met or had contact with the provider that was caring for their partner and expected to deliver their child. For example, a father said, "So she goes and sees the OB-GYN and then they take you to a different place to go do the ultrasound. And so I didn't see the OB-GYN at all. I only came in during the ultrasound portion. I haven't seen the OB-GYN since we delivered our last child (F027)".

3.1.2 Cancelled pregnancy and infant care education classes removed a source of education for fathers

Cancelled education classes focused on pregnancy and infant care were also discussed among fathers. For example, a father said, "We were scheduled for one, I think maybe two weeks before she was expecting, but they canceled it there at the hospital that we were going to give birth that because of the COVID. They ended up canceling it, so we didn't get to attend one of those (F013)".

While some fathers participated in virtual education sessions or watched prerecorded information, they suggested that this experience was qualitatively different from in-person services and that they likely did not retain the same information. For example, a father said, "What we are doing is taking virtual classes, some are self-paced, so it's basically videos with supporting texts and captions to go along with it some exercises, but the hard part about it is knowing it's like, Oh, well, are we practicing these breathing techniques correctly? Or is this exactly how I'm supposed to be like doing the comfort measure? So like in that scenario, like an in-person class where you get someone actually showing you how to do it, would definitely be an advantage (F028)". Fathers also suggested that they wish they had gotten to take classes in person, not only for the information, but to also meet other families attending the classes. Fathers also mentioned that tours of the hospital or labor and delivery units was not offered to them.

3.1.3 Limited use of alternative appointment types by obstetric providers closed the door to a creative way to include fathers

Alternative appointment types were rarely reported by fathers. A small number of fathers suggested that telehealth or telemedicine was available to their partner, yet telehealth was rarely used out of preference for attending in-person appointments. For example, a father suggested that it was likely offered, but his "wife has opted to go in …because either the doctor or she wants, or both, to hear the heartbeat, check the heartbeat, and that sort of thing, of the baby (F012)". Of the few fathers that did report use of telehealth

Table 1. Themes and thematic components from interviews with fathers (n = 32).

Theme/Thematic component	Example quote(s)
Changing Prenatal Care Policies Did Not Consider Fathers	
Restricted attendance negatively impacted fathers' ability to connect to the pregnancy or the provider	"…I'm not actually physically able to be there in the room. And I even told my wife, it was hard to get as excited and emotional being on FaceTime. It was still very nice to have that option. But it was not the same obviously as actually being there." F015
	"kind of like, wow. I missed, I guess, that half of the last experience where they were checking how much the baby weighed, her belly size, all that good stuff. I'm at least grateful I was able to see the sonograms. Yeah, it was different from what our friends in the past who have had the experience of being able to go to all the appointments with their wife or significant other. It was weird, but we kind of adjusted." F013
	"It meant that I couldn't accompany my wife to any of the exams, I could actually go to the first one, because that was in early March, so I got to see the ultrasound and that was great. The rest of them, it was just sort of drop-off duty." F020
	"I think most immediately, at least for my wife's prenatal care, I am not allowed to be in or attend many of the health provider visits for her prenatal care. I was able to go to the one with her initial ultrasound at about eight weeks, but I'm not allowed to go for any of the sort of subsequent visits after that, because social distancing isn't possible within the various exam rooms at the practice." F012
	"...in the sense of by not meeting the doctor in person, I think you miss out on like asking some questions that would come up that you wouldn't know to ask otherwise." F017
Cancelled pregnancy and infant care education classes removed a source of education for fathers	"We were supposed to have a Lamaze class. That one was canceled because of COVID. Well, I guess that answers your past question. So we signed up for a virtual Lamaze class… We had to research different classes to take online because COVID had canceled some of the in-person appointments at the hospital." F004
	"We were scheduled for one, I think maybe two weeks before she was expecting, but they canceled it there at the hospital that we were going to give birth that because of the COVID. They ended up canceling it, so we didn't get to attend one of those." F013
	"There was no classes virtually available. We had planned and scheduled to participate in that in March, April, and May. All of that had been canceled. We looked around and we just found maybe previously recorded videos available on YouTube or some different birthing, recognized quality, birthing on Facebook or group pages or websites." F018
	"What we are doing is taking virtual classes, some are self-paced, so it's basically videos with supporting texts and captions to go along with it some exercises, but the hard part about it is knowing it's like, Oh, well, are we practicing these breathing techniques correctly? Or is this exactly how I'm supposed to be like doing the comfort measure? So like in that scenario, like an in-person class where you get someone actually showing you how to do it, would definitely be an advantage." F028
	"Yeah, the last time we did, and it was great. I think probably the biggest reason why we enjoyed it though was meeting all of the other couples who were having babies and feeling the commiseration at times and the empathy. There were just a lot of social aspects that were beneficial to that. And so not having that piece of it made it less appealing for us to do it again." F019

Table 1. Continued.

Theme/Thematic component	Example quote(s)
Limited use of alternative care strategies by obstetric providers closed the door to a creative way to include fathers	"I think there might have been one telehealth appointment that I sat in on with that was just a discussion with any questions. But beyond that, no." F018 "Have you ever received information from a doctor and tried to relay it to a family member and you just don't give the same details as a doctor would? I felt like that's how it was when I would just get hearsay from my wife versus going through tele-medicine, actually being there with the doctor, the doctor explaining to me everything that was going along with the pregnancy and how they were testing for this and how they were expecting test results to come back. And it gave me a sense of calm knowing that I could still talk to an actual doctor and not have to get a relayed message from my wife that would sometimes be lacking detail or she would just forget some certain things. It was a godsend." F010 "My wife initially started going to a group OB practice, and some of the wellness checks would just be like curbside. So, a nurse practitioner would come out to the car, take her blood pressure, maybe listen to the baby's heartbeat and then send her on her way. So it felt kind of like, I mean, it felt safe in the sense of not needing to think about being exposed to too many people, but if the whole point of the checkup was to go make sure that we have plenty of time to ask questions and that sort of thing, that aspect was taken away." F028
Family centered care practices were rarely described	"…even just at the doctor's appointments, I think it's clearly, the appointment's for the mom and the baby, and that's 100% clear. I think the majority of us know that." F005 "I felt like my main job is just there for support. I don't... I'm sitting off in the side chair and [my partner] is the one who's getting examed and ultrasounded and all that stuff." F007 "I always felt, not my needs, because I don't want to sound selfish, but I feel like during a pregnancy it's always about the mom and baby. And so I wouldn't say focus was on me whatsoever, I would always have questions for the doctor, just my own curiosity, but do I think the doctor went above and beyond to see how I was feeling about things? No." F004 "I have found that both of our doulas were very inclusive and very thoughtful of the father, they would say, "How's Papa doing?" It almost felt like it was very even balanced, the time, at least respectively, to the care that ... I didn't need a massage obviously, but in terms of checking in emotionally it was very balanced. I certainly appreciated that. It almost feels sometimes you're not deserving to get these kinds of check-ins when it's the mother who's doing so much but it's really thoughtful for someone to acknowledge that you're also dealing with different emotions." F026 "…we ended up getting a small, like a Doppler I think it is, to basically listen to the baby's heart rate at home. And so our midwife would just ask me like, all right, like listen to the baby's heart rate, tell me like what the heart rate is, measure the fundal height. So I guess it made, it helped us feel like a little bit more like we had a bit more involvement with the health care, because it's like, we're the ones measuring the heart rate. We're the ones measuring, basically we're doing a lot of the tests that the midwife or a nurse would do at a standard practice. So I think that helped, definitely helped make me feel more involved in the process because like, I was getting to take part in it." F028
Unique Stressors Associated with COVID-19	
Negotiated health risks while transitioning to parenthood	"Obviously being first-time parents, the unknown of having a kid is intimidating and scary, but then you throw in the mix of having a pandemic on your hands and it's even amplified, right? So it just made planning trips to the doctor more difficult, to make sure that we were taking proper safety measures. It made conversations very difficult with our parents because we had to put up rules and boundaries that maybe they didn't really agree with or thought was too sensitive. So it just made the overall experience more stressful." F004 "During the pregnancy, I worried more about bringing anything home to my wife, my wife contracting COVID because we, of course, we heard stories of the mothers contracting COVID and then COVID transferring through the placenta to the baby. So it was very, very stressful around that time when she was pregnant because her immune system was weakened and I worked outside of the home. So I had to make sure that I was doing my part." F010

Table 1. Continued.

Theme/Thematic component	Example quote(s)
	"We've kind of been on our own. A lot of weeks it's like, "Wow. We haven't seen our friends in three weeks." And it's not that we don't want to, it's just because you don't want to put your family at risk health-wise, you don't want to put them at risk health-wise because you got work, you don't know what you've touched when you went to the grocery store." F002
	"I was only able to drive her there and wait for her in the car pretty much. And let me see. Also, I guess the ones that I can remember the most that stick out in my mind is the actual birth that I wasn't able to be. I had a photo from my last daughter. I was with my wife and my daughter right after the C-section happened. We had a photo... I don't know if you've seen those photos where the father is usually in a gown, the mother's on the table and you get to hold the baby right there for the photo. I would really want to get one of those pictures, but I wasn't able to go in there I guess because of the pandemic as well." F031
Coordination of childcare and quarantining of caregivers	"There was just a lot of anxiety, I think, heading up to the delivery because you're going into a hospital situation. You don't know what the precautions are going to be like at the hospital. You don't know how bad the COVID situation was going to be. Like when we were having the baby, is it going to be like in the middle of a spike here in Texas? Or was it going to be in a lull point? So there was a lot of anxiety related to that." F007
	"Probably what will happen is my wife's parents will come from Upstate New York, come down and be with our two kids. That's what happened last time when our second son was born. There's a high chance they'll have to come two weeks early and quarantine beforehand. Which will just be sort of a added layer of stress and sort of hassle for them. It's a bigger time commitment for them to come down longer. So there's some anxiety there." F012
Isolation's Negative Impact on Connecting to the Pregnancy and Support	
Isolated from the pregnancy and prenatal care	"And with my youngest daughter, [I] wasn't there. I have pictures, the sonogram pictures, but none of that because my wife was the only person who could go into the office. And so it was really frustrating to kind of be a part of that, and really feel like my wife was going through that stage alone. And she was getting this new baby, and I wasn't. And so it was really difficult. And that's the least of all of the things that we were dealing with. And so it was extremely stressful, and it was really hard to kind of build up those feelings and to start to form that attachment on my side with my daughter. For most of the nine months, she was somewhat of a nonentity to me. I knew my wife was pregnant and we were dealing with that, but most of my effort was spent watching my other children and keeping them occupied and entertained and moving along in their lives. So it was just kind of... There was a huge disconnect until the point of birth." F032
	"…lack of sort of emotional connection that you start to form, especially during those prenatal visits with the unborn child. So I feel a little bit out of the loop. With my other kids, I attended as many of those prenatal visits with her health provider as possible." F012
Isolated from support networks to protect the family	"Oh, it definitely affected my wife … a lot more, obviously, for obvious reasons. But, it was a really tough experience, because there's that phrase. I'm sure you may have heard this going through interviews and stuff. But, there's this phrase like, "It takes a village to raise a kid," and because of all of the restrictions, and trying to be safe, and not spread, or get the illness, we've really been isolated, all on our own." F014
	"Well, the biggest thing is that I feel like we've had to become extremely self-sufficient when it came to the pregnancy and actually raising him. We had these plans of going into all these birthing classes and parenting classes, and having family really step in when they could. The hardest part has been having to figure it out by ourselves, right? It's been a lot of trial and error." F002
	"With extended family, we've had no contact other than we did a baby shower at one point in June. And then postpartum, typically you would have extra sets of hands with grandparents and aunts and uncles over, and that's not taking place because everybody's being responsible and careful for both the baby as well for others." F018
	"It was hard because obviously our support network was limited. Again, we're very... Right now we see the grandparents outside and not having them come in or anything. I needed to be with my wife in the hospital and we needed to call reinforcements at that point and it was hard just because the reinforcements, the pool of that is much more limited." F020

appointments, they suggest that they were able to be present, but were not strongly included in the appointment. The most common reason for not using telehealth was that it was not recommended by the obstetrician or was not perceived as effective by the family. Few fathers reported availability of curbside appointments. If curbside appointments were offered, fathers were not allowed to be in the car with their pregnant partner.

3.1.4 Family centered care practices were rarely described

Few fathers identified family centered practices during interviews. While fathers said they felt included during the appointments they could attend, they were rarely addressed directly by nurses or doctors. For example, a father suggested "even just at the doctor's appointments, I think it's clearly, the appointment's for the mom and the baby, and that's 100% clear. I think the majority of us know that (F005)". The single example of a family centered practice was described as when a midwife taught the father to take a fundal height and fetal heartbeat using a doppler device so that during telehealth appointments, infant health measures could be recorded. See Table 1 for additional exemplars.

3.2 Unique Stressors Associated with COVID-19

Feelings of stress was commonly discussed by fathers, even though it was not explicitly asked about in the interview. While stress is common in the transition to parenthood, fathers discussed sources of stress that were unique to the COVID-19 pandemic. Stress was primarily related to two unique sources: (1) negotiating risks associated with COVID-19 for the family unit and (2) coordination of care and quarantining of caregivers for existing children during delivery.

3.2.1 Negotiating health risks while transitioning to parenthood

The changing information regarding COVID-19 safety protocols during delivery was one of the most discussed stressors among fathers, as many fathers feared they would not be allowed to attend the birth of their child. For example, a father reiterated, "there was a time maybe a month before … that not even [a support person] was guaranteed for delivery, and so we were pretty worried about that I wouldn't even be able to be there when she was born (F019)".

Father's also discussed needing the balance risks associated with COVID-19 and their needs as new parents. For example, a father said, "We've kind of been on our own. A lot of weeks it's like, 'Wow. We haven't seen our friends in three weeks.' And it's not that we don't want to, it's just because you don't want to put your family at risk health-wise, you don't want to put them at risk health-wise because you got work, you don't know what you've touched when you went to the grocery store (F002)". Additionally, needing to learn to parent without the ability to take prenatal and parenting classes and without a support network were also discussed as an unexpected stressor for most fathers.

3.2.2 Coordination of childcare and quarantining of caregivers

When fathers had existing children, they also discussed the stress of needing to plan for the delivery of their infant while simultaneously needing to coordinate care for existing children. Some mentioned they had coordinated with parents or friends to quarantine for 14 days prior to the due date to provide care for other children. For example, a father said, "[W]hat will happen is my wife's parents will come from Upstate New York, come down and be with our two kids. That's what happened last time when our second son was born. There's a high chance they'll have to come two weeks early and quarantine beforehand. Which will just be sort of a added layer of stress and sort of hassle for them (F012)". Yet, fathers also realized that if the due date was not accurate, they would be needing to make decisions they were not completely comfortable with. See Table 1 for additional exemplars.

3.3 Isolation's negative impact on connecting to the pregnancy and support

Isolation was a frequent theme discussed among fathers when describing their pregnancy and early parenting experience. This isolation was discussed in two primary ways: (1) feeling separated or distant from the pregnancy and prenatal care and (2) feeling isolated from their social networks.

3.3.1 Isolation from the pregnancy and prenatal care

Fathers discussed how they felt isolated from the pregnancy because of their mandatory separation from the prenatal care environment. For example, a father mentioned that they felt a "lack of sort of emotional connection that you start to form, especially during those prenatal visits with the unborn child (F012)". Another father continued to express feeling disconnected from the pregnancy and prenatal care when they said, "[S]he was getting this new baby, and I wasn't (F032)". For some fathers this disconnect from the pregnancy translated into a fear that they would not bond with their baby. However, most fathers in the sample already had their baby so dismissed this fear.

Results also suggest that the most memorable moments of prenatal care for fathers are the confirmation ultrasound (occurs in 7–8 weeks of pregnancy) and/or the anatomy ultrasound (20 weeks of pregnancy)—yet not all fathers were able to attend those appointments because of varying visitor policies. For example, a father said, "For the anatomy scan and stuff we FaceTimed, so that way our kids could see it too, the baby's brother and sister could see and find out and everything. And so we tried our best, but it's just completely different from being there. So that was strange (F034)".

3.3.2 Isolation from social networks to protect the family

Fathers also reported that they often felt isolated from their support networks, out of concern of contracting COVID-19 and passing it on to their child. A father suggested that they did not have their "village" of support (F014). Even further, fathers were often the person that had to enforce distancing boundaries with family and friends, which led to an added discomfort and social stress. For example, a father said, "It was hard because obviously our support network was limited. Again, we're very... Right now we see the grandparents outside and not having them come in or anything. I needed to be with my wife in the hospital and we needed to call reinforcements at that point, and it was hard just because the reinforcements, the pool of that is much more limited (F020)". See Table 1 for additional exemplars.

4. Discussion

Fathers who experienced pregnancy during the COVID-19 pandemic have had limited to no interaction with prenatal care. Fathers were largely excluded from prenatal care appointments and often did not meet the prenatal care provider until the delivery of the infant, yet often reported that they felt 'included' during visits. This reinforces the common, and untrue, notion that fathers see themselves as secondary to mother and infant during prenatal care [19,20]. On occasion, fathers could attend the ultrasound appointments to see their infant, yet these ultrasound appointments were with the ultrasound technician and did not include the obstetrician.

Feelings of stress and isolation were common across most fathers in this study. Stress primarily stemmed out of the unknowns of COVID-19 safety protocols, disease risk, and long-term effects on health, similar to previous research that suggested fathers often had ongoing fears associated with inadequate information about COVID-19 [7]. Further, fathers reported compounded stress of trying to plan for childcare for existing children during a time when support was limited because of their efforts to decrease risk of disease for their family. Isolation from pregnancy and prenatal care, as well as social networks was also common across all fathers. The poor inclusion in prenatal care appointments and feeling secondary to mother and baby may also further contribute to the stress and isolation that father's felt during the pregnancy. This aligns with previous research which suggests that support persons (e.g., fathers) felt increased isolation and psychological distress because of the changes to prenatal care [8]. Although fathers in this study focused on the stress and isolation they felt because of COVID-19, stress and lack of support are themes that were also identified in a recent systematic review [21], suggesting that feelings of stress are not unique to pregnancies during a pandemic. Nevertheless, these feelings of stress and isolation likely contribute to the problematic mental health outcomes often experienced during the transition to fatherhood including increased postpartum depression [22]. However, with fathers effectively removed from the families' most consistent source of healthcare (the prenatal care visits), it is clear that there was a missed chance to address and mitigate this stress by health care.

Descriptions of family focused practices during prenatal appointments and telehealth as alternative appointment methods were missing from our results. Only one father mentioned true family focused practices during prenatal care. This is notable given that the experience was inclusive, impactful, and low-cost, yet also rare in fatherhood experiences identified through this study. It is clear from this finding that many prenatal care providers had not included the father during appointments in a meaningful way—particularly during a time of heightened disease risk. Across the healthcare field, telehealth rapidly expanded to provide needed healthcare while also minimizing disease risk, yet few fathers reported use of telehealth appointments. Lack of use of telehealth technologies appears to be a missed opportunity for prenatal care providers. Telehealth appointments could have engaged both father and mother and provided critical support they needed during pregnancy.

This study had many strengths and limitations to consider. First, this study was among a relatively large sample of expecting or recent fathers for qualitative interview studies with representation across multiple geographic areas. Fathers also represented a mix of first time and existing fathers, as well as employment status. However, the sample represented relatively high socioeconomic status men with close relationships with their partner, therefore it is important to consider these impacts for fathers in other family and socioeconomic contexts. For example, fathers that do not share residence with the baby or have a strained relationship with the mother during prenatal period, would likely benefit the strongest from additional supports for father involvement to strengthen long-term relationships with the baby and mother. Therefore, it is important that future work focus on this subset of fathers.

5. Conclusions

This study was among the first to gather qualitative data on father's prenatal care experience during COVID-19 protocols. While this data represents a unique window into father's prenatal care experience during a global pandemic it is not generalizable to "normal" times. Additional research is needed to understand what fathers typically experience during prenatal care and pregnancy and among more economically and ethnically diverse samples. While it was clear that there was a lack of family centered care described by fathers, this study cannot determine whether that is because of COVID-19 protocols or whether family-centered care is rare.

Most fathers interviewed here were completely excluded from the prenatal care appointments although al-

ternative strategies could have been readily deployed and likely effectively utilized. Some fathers mentioned the use of telemedicine or, in one instance, curbside appointments as alternative methods for attending prenatal appointments. However, these solutions were not widely reported by fathers in this study. The lack of use of these technologies excluded them from prenatal care and may have also further exasperated father stress and decreased father preparedness for the arrival of the infant. Given this finding, along with the evidence highlighting the benefit of engaging fathers in prenatal care [1–4]; there is a need for prenatal care providers and organizations to develop comprehensive plans that center on preserving the tenets of family centered and inclusive practice through disasters. Many technologies that could preserve this practice are readily available, such as telehealth technologies. These comprehensive plans should not only focus on pandemic and emergency preparedness, but also use this as an opportunity to build family centered care into normal operations as prenatal care settings return to pre-pandemic care practices.

Author contributions

NSP, MHG, and LB preformed data collection and coded interviews. MM and DJM reviewed and analyzed the data. All authors designed the research study. All authors contributed to editorial changes in the manuscript. All authors read and approved the final manuscript.

Ethics approval and consent to participate

All study methods were approved by the University of Texas Health Sciences Center at Tyler (IRB#21-002). Participants were asked for verbal consent prior to participation in the study.

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Conflict of interest

The authors declare no conflict of interest.

Appendix

Father's Playbook: Structured Interview Guide.

Structured Interview Guide Introduction

Hello. Thank you for taking the time to talk with me today. We are conducting this study to gain a better understanding of what it means to be a new or expectant father, particularly during the current COVID-19 pandemic. To do this, we are interviewing expectant and new fathers about their experiences during pregnancy.

Anything in this interview will be confidential, not discussed outside of the research team. Any published results will not include names of participants or identify individuals' responses to any of these questions. There are no right or wrong answers to these questions. The objective of this interview is to gain a better understanding of your experiences during pregnancy and what being a father means to you. To allow the research team to revisit this conversation, I will be taking notes and voice recording this interview.

Structured Interview Questions

1. *Demographics*.

a. Are you currently over the age of 18? Yes. No.

b. Has your baby been born? Yes/No.

i. If Yes, was the baby born before March 2020?

1. Yes. **Excluded**.

a. Thank you for your interest in this study. Given that a primary goal of this study is to determine how COVID-19 has impacted prenatal care among fathers, you are not eligible.

2. No. What month was the baby born?

a. March, April, May, June, July.

c. What is your current working status?

i. Are you working from in the home or out of the home?

ii. Did you lose your job or were furloughed because of the COVID-19 pandemic?

iii. If No, what month of pregnancy partner is?

d. Do you have other children?

i. If Yes, how many children do you have and what are the ages of your other children?

2. *COVID-19*.

a. How do you think the ongoing coronavirus/COVID-19 pandemic has affected your pregnancy experience?

3. *Prenatal Care*.

a. Did this pregnancy start with standard prenatal care visits and then shift to prenatal care visits with restricted attendance, telehealth, or curbside appointments because of COVID-19 restrictions?

i. If Yes:

1. How did prenatal care change during this pregnancy because of COVID-19?

2. Did you attend any prenatal appointments before the restrictions?

a. Can you describe your experiences during prenatal care appointments?

b. How were you included in appointment(s)?

c. What is the most memorable experience you had at a prenatal appointment?

d. How has your involvement with prenatal care changed since attendance restrictions by prenatal care providers?

3. Since restrictions, has telehealth been offered as an option for prenatal care?

a. *Yes*. Were you invited to telehealth prenatal visits during the pregnancy?

i. What were your experiences like during the telehealth visit?

ii. How did the prenatal care provider include you in telehealth appointments?

iii. How did this telehealth experience compare to in-person prenatal care appointments (*if applicable*)?

1. Ease of attending visit?

2. Information discussed?

b. *No*. Have you been able to attend any prenatal appointments since the restrictions were put in place?

i. *No*. How have you been getting information about the health of your partner and baby?

ii. *Yes*. Please describe your experiences during prenatal care visits during the pregnancy.

1. How were you included in the prenatal care visits?

2. Did the appointment meet your expectations?

ii. If No, have you attended any prenatal care visits in person or virtually during the since the shutdown (March 2020-current)?

a. *Yes*. Please describe your experiences during prenatal care visits during the pregnancy.

i. How were you included in the prenatal care visits?

ii. Did the appointment meet your expectations?

b. *No*. How have you been getting information about the health of your partner and baby?

i. Were than any barriers for you attending prenatal care appointments?

2. During this pregnancy, have telehealth prenatal visits been offered to you and your partner?

a. *Yes*. Please describe your experience with telehealth during this pregnancy.

i. Were you able to be a part of these visits?

1. Yes.

a. Describe your experience.

b. Describe the visit.

b. No. Would you be interested in joining a telehealth prenatal visit if it were offered?

4. *Education and Information*. Let's talk about how and where you found pregnancy and parent information during pregnancy.

a. How has the current coronavirus/COVID-19 pandemic changed how or where you look for pregnancy and parenting information?

b. Have you attended any pregnancy and prenatal care classes either in person or during pregnancy? (*If explanation of classes needed: These are classes that are optional and focus on topics such as labor and delivery, breastfeeding, and parenting*.)

a. If Yes, please describe these pregnancy or prenatal care classes.

b. If No, what were barriers to do attending prenatal care classes?

c. Did you use *online sources* to find information during the pregnancy?

iii. *Yes*: What were the online sources?

a. Possible prompts: [if needed]

i. parenting or pregnancy related groups or blogs?

ii. follow social media hashtags or specific accounts?

iv. *No*: Can you tell me about why you did not use online sources?

d. What sources did you find the most useful?

v. What was good about them?

vi. What was not so good about them?

e. What types of information have you been looking for?

a. Possible prompts: [if needed]

i. Parenting?

ii. COVID-19 related information or advice?

iii. Safety in and around the house?

f. Were you more interested in finding information about pregnancy or parenting?

5. *Social and Emotional Changes*. Next, we are going to talk about your social and emotional changes during pregnancy.

a. At any point during the pregnancy since the COVID pandemic, did someone ask how you were feeling?

vii. *Yes*: Who asked how you were feeling?

viii. *No*: Would you have liked to have been asked? Why (not)?

b. What kind of support did you receive during the pregnancy?

a. Prompts: [if needed]

i. Friends, Family, or Professionals

c. What sort of support do you think should be available to fathers?

6. *Fatherhood*. What are you most looking forward to during fatherhood?

7. *Follow Up*. Was there something else you were expecting that we might talk about today during this interview?

Closing. Thank you again for being willing to complete this interview with us about your experiences during pregnancy. If you have any questions or would like to follow up with us, please do not hesitate to reach out to anyone on our team.

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