



Perspectives of pregnant women during the COVID-19 pandemic: A qualitative study

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ARTICLE INFO

Article history:

Received 13 October 2020

Received in revised form 21 February 2021

Accepted 10 March 2021

Keywords:

COVID-19

Pregnancy

Birth

Australia

Perspectives

Experiences

ABSTRACT

Background: The current COVID-19 pandemic has been shown to have profound effects on pregnant women globally, particularly, on their psycho-social wellbeing. Despite this, there has been limited qualitative inquiry into the experiences of pregnant women during the pandemic.

Aim: This original research aimed to study the perspectives of pregnant women in Australia in relation to the impact of the COVID-19 pandemic on their pregnancy experience.

Methods: A qualitative descriptive study design with semi-structured interviews was adopted. The study was performed in Melbourne, Australia. A total of fifteen interviews were conducted. Data was analysed thematically to develop major themes and subthemes.

Results: A total of four major themes were developed: support for a positive experience, impact on preparedness in pregnancy and beyond, facing uncertainty of a pandemic, and retaining resilience and optimism.

Conclusions: The COVID-19 pandemic has affected the experience of pregnant women with potential to compromise their psycho-social wellbeing. The major themes identified in this study offer insight to organisations to develop woman-centred care during the pandemic and optimise the psycho-social wellbeing of pregnant women.

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Statement of significance

Problem or issue

There is limited qualitative inquiry, particularly in the Australian context, on the impact of the COVID-19 pandemic on the experiences of pregnant women.

What is already known

There is emerging research indicating that the COVID-19 pandemic is having a negative impact on the perinatal mental health and perception of social wellbeing in pregnant women.

What this study adds

This qualitative descriptive study provides insights into the perspectives of pregnant women in regards to their care during the COVID-19 pandemic. Women responded with concerns surrounding support, uncertainty and preparedness, balanced with views of resilience and optimism. This information will assist organisations in continued focus on woman-centred care during the pandemic.

1. Introduction

The coronavirus disease 2019 (COVID-19) pandemic is a public health emergency that is currently active with a global mortality of more than 2.3 million and there continues to be an increase in the number of infections and deaths each day [1]. Our understanding of COVID-19 and its implications to pregnant women continues to evolve. The indirect impacts of the wider COVID-19 pandemic on pregnant women may be substantial [2]. Physical distancing and infection control policies have altered how health care has been provided for pregnant women, such as reduced face-to-face appointments, increased use of telehealth and limitations in support people during pregnancy and the peri-partum period [3]. Learning from past infectious disease outbreaks, healthcare providers propose that these changes in health care delivery may challenge the psychological wellbeing of pregnant women [4–6].

The effects of the COVID-19 pandemic on mental wellbeing may be heightened by existing mental health illness, social isolation, reduced social supports, disruption to normal routines and misinformation [7,8]. Similar findings have been reported during previous infectious disease outbreaks such as severe acute

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respiratory syndrome (SARS), Ebola virus and more recently, Zika [9]. An early COVID-19 study in Italy which used anxiety and stress-related assessments in pregnant women found more than half of pregnant women self-rated the psychological impact of the pandemic as severe and two thirds more anxious than normal [10]. Emerging studies from regions with high case numbers of COVID-19, such as Italy, China and North America, have consolidated these findings and shown that, compared to prior to the pandemic, pregnant women are suffering from significantly increased rates of depressive symptoms and anxiety disorders [10–15]. The psychological effects have been found to be disproportionality affecting women with social vulnerabilities, existing mental health illness and those from minority ethnic groups [7,12]. Despite findings of compromised psychological wellbeing, there is limited understanding of the experiences and needs of pregnant women living through the COVID-19 pandemic.

Understanding people's experience is a complex task. It requires an understanding of how people perceive a certain situation (cognition), how they react under that situation (behaviour) and how they are affected by external influences (environmental effects) [16]. Considering pregnant women's experience, they are not only affected by pregnancy but also by external influences that may have impacted their lives during the pandemic such as restrictions imposed on physical interactions [17]. In turn, these influences may affect women's behaviour on how they respond to the challenges or adapt to situations. In reverse, women's behaviour may further impact their self-perception of wellbeing and their external environment, hence, fitting the dynamic nature of cognition, behaviour and environmental effects [17,18].

Teti et al. [19] advocated for qualitative studies during the COVID-19 pandemic to help capture people's emotional responses to the pandemic and its social implications to help better understand the assumptions in quantitative epidemiology models and improve the management of the pandemic. In 2019, the Australian Department of Health advised utilising woman-reported experiences as a matter of priority to improve the quality of maternity care [20].

With a view to help in the development of woman-centred care and minimise the psycho-social impact of the COVID-19 pandemic, this original research was conducted to understand the perspectives of pregnant women in an Australian public health setting. It also aimed to explore how women are responding to challenges presented by COVID-19 in relation to their pregnancy experience and receiving maternity care during the pandemic.

2. Methods

2.1. Design

This study was underpinned by a social constructionist view, which acknowledges multiple interpretations of reality as individuals make sense of their experiences through social interactions and the surrounding environment [21]. Aligning with this view, we employed a qualitative descriptive research design [22]. Qualitative descriptive design is grounded in the principles of naturalistic inquiry representing the view that reality exists within various contexts that are dynamic and perceived differently by people; therefore, reality is multiple and subjective [23]. The goal of qualitative descriptive research is to present a comprehensive descriptive summary of the experiences and perceptions of a group of people, without abstract rendering of data [22]. In the current research, this translates into understanding the experiences of pregnant women in a unique context: the COVID-19 pandemic. Following the dominant tradition of data collection methods being used in qualitative descriptive research [22], we employed

semi-structured interviews to understand the experiences of pregnant women during the pandemic.

2.2. Setting

The study was performed in an outer metropolitan area of Melbourne, Australia. The study was based at a secondary level public hospital where approximately 3000 babies are born each year.

2.3. Participants and recruitment

Participants were women with a pregnancy of any gestation booked and receiving antenatal care at the hospital. The inclusion criterion was being currently pregnant. There were no exclusion criteria for participants. In order to minimise any coercion, the authors were not involved in recruitment of participants; instead, participants were recruited by midwives who were not involved in the other aspects of the research. Midwives who care for women in the outpatient clinic at the hospital were briefed on the project with a verbal presentation and printed information. They recruited women face-to-face through convenience sampling. Potential participants were provided with written information about the research project and a consent form. The participants were contacted by a member of the research team (KA) by telephone to arrange an interview. In total, twenty-four women were approached to participate in the study of which 21 provided written consent. Three women had birthed prior to scheduled interview, one woman withdrew consent to participate and two women were not able to be contacted. Eventually, 15 women took part in the interview. The initial two interviews served as pilot interviews. The socio-demographic details of the participating women are listed in Table 1. Ethnicity, highest qualification, marital status, home ownership and annual household income data was self-reported by women. Overall, the mean age of the participating group of women was 31 years (range, 20–36). There were 10 primigravida and 5 multigravida women. The average gestational age was 30 weeks (range, 19–36). Eleven women identified as Caucasian, 2 women as East Asian and 2 women as South Asian. Twelve women had partners, either married or in de facto relationships, and three women were single. Two of the fifteen women were unemployed.

2.4. Ethics

The study received ethical approval from the hospital Human Research Ethics Committee on May 27, 2020 (HREC ref. number LNR/64473PH-2020) as a low-risk project. Participating women gave informed and free written consent to take part in the study. Confidentiality was assured by following local institutional policy on data management.

2.5. Data collection

Recruitment and interviews with women were completed between 1st June and 19th June, 2020. At the time of data collection, the metropolitan region in the state of Victoria entered stay-at-home restrictions with key mandates being face-covering, closure of all non-essential businesses and limited travel permitted.

Physical distancing restrictions and telehealth models of maternity care required that no face-to-face interaction was permitted apart from necessary clinical care. Accordingly, all interviews were conducted either through telephone or video conference application based on participant preference. All interviews were conducted by the author, KA, who contacted

Table 1
Socio-demographic characteristics of participants.

Initials	Age	Parity	Gestation (weeks)	Ethnicity	Highest qualification	Marital status	Home ownership	Annual household income (AUD)
^a AM	33	Primigravida	29	Caucasian	Certificate	Single	Own	\$50–100,000
^a CL	20	Primigravida	31	Caucasian	High school	Single	Renting	\$50–100,000
EW	39	Multigravida	35	Caucasian	Bachelor	Married	Own	\$150–200,000
JR	33	Primigravida	32	East Asian	High school	Married	Own	\$50–100,000
TB	33	Primigravida	32	Caucasian	Certificate	Single	^b	\$50–100,000
FR	28	Primigravida	36	Caucasian	Masters	Married	Own	\$50–100,000
JD	26	Primigravida	28	Caucasian	Bachelor	De facto	Own	\$150–200,000
KC	36	Primigravida	34	Caucasian	Bachelor	Married	Renting	\$150–200,000
NM	36	Primigravida	36	Caucasian	Masters	Married	Own	\$100–150,000
SS	33	Multigravida	24	South Asian	^b	Married	^b	^b
BS	29	Primigravida	29	Caucasian	Certificate	De facto	Rent	\$100–150,000
MN	26	Multigravida	22	Caucasian	Diploma	De facto	Own	\$150–200,000
FM	29	Primigravida	19	Caucasian	Bachelor	Married	Own	\$200–250,000
CC	23	Multigravida	29	East Asian	Diploma	De facto	Renting	\$100–150,000
VB	35	Multigravida	28	South Asian	Masters	Married	Own	\$50–100,000

^a The interviews with the women, AM and CL, served as pilot interviews.

^b Information not provided.

participants one week after initial recruitment to confirm consent and arrange the interview time. This initial contact allowed participants to reconsider participation in the study (if necessary) and become familiar with author KA which helped build initial rapport between the interviewer and interviewees.

As women were in their homes during the stay-at-home restrictions, it was possible that non-participants (e.g. women's family members) were present during the interview. De-identified audio-only recordings were made. To ensure data integrity, the interviews were transcribed verbatim through an independent professional transcription service approved by the University. Author, KA, listened to all recordings and checked the transcripts for accuracy. Personal details were de-identified in the transcripts.

Fifteen interviews were conducted, with a total of 4 hours and 36 minutes of transcribed data. Each interview lasted between 9 min and 28 min (mean 17 min). We felt our sample achieved sufficient information power given our focused aim for this paper (i.e. pregnant women's perspectives on the impact of the COVID-19 pandemic on their pregnancy experience), our tight sample specificity (i.e. pregnant women in Australia), the high-quality dialogue in the interview, and our focused team-based analysis strategy [24].

An interview guide was developed and refined with two pilot interviews. The date and time of the interview was noted at the commencement of recording, together with participants' basic socio-demographic details. The interview started with an open-ended question: "How have you been feeling during this COVID-19 pandemic?". This broad and non-threatening question allowed rapport-building early in the interview. As the interviews were semi-structured, the direction of the interview was guided by the participant's answers. The interview guide covered topics such as the impact of the pandemic on participants' pregnancy experience and birth preferences, concerns in relation to COVID-19, and questions on health care delivery (e.g. impact of changes in care, knowledge of changes in care and precautions taken by the hospital). Finally, participants were invited to express how they could be best supported by the health care service during the pandemic.

2.6. Data analysis

The transcripts were read multiple times to ensure familiarity with, and to develop a deeper understanding of the data. The data was analysed thematically using reflexive inductive coding method following Braun and Clarke [25]. Initially, the authors,

AK and KA, independently coded the data inductively, not pre-determined by any pre-existing theories. After coding, prominent themes and subthemes were identified. The authors, AK and KA, discussed the results to identify themes in agreement; this process took several rounds of analysis and was undertaken by telephone and online meetings. These meetings were used to exercise reflexivity, where the authors examined their positioning within the research. After the initial coding was done and the themes identified, these were all checked by the third author, MS, across all the transcripts. Further online meetings were organised between the three authors to compare, contrast and negotiate our interpretations of the data and discuss the interpretations of the findings in light of the research literature. This approach helped to maximise the credibility of the analysis and enhance the rigor of the study.

2.7. Team reflexivity

Reflexivity is an important aspect of qualitative research, allowing readers to assess the credibility of the data analysis by understanding the positionality of the authors within the research [26]. Our team of four was diverse in terms of research experience, and academic/clinical backgrounds. KA, the primary author, is an obstetrician with two years of experience at the research site. AK is a senior obstetrician and an academic health education researcher with over eight years of experience in qualitative research. MS is an academic health education researcher with over ten years of experience in qualitative research. EO is an obstetrician with over five years of experience at the research site. Both KA and EO are entry-level qualitative researchers and value the role of qualitative approach in understanding complex phenomena. Diversity within the author team supported more rigorous data interpretation and researcher triangulation with team members contributing different perspectives and insights into the data analysis and reporting.

3. Results

Four overarching themes were developed through data analysis. The themes and subthemes are listed in Table 2 and their connections represented diagrammatically in Fig. 1.

3.1. Support for a positive experience

Women described that support during the COVID-19 pandemic was negatively affected by physical-distancing restrictions set by both the community and hospital.

Table 2
Themes and sub-themes.

Theme	Sub-themes
Support for a positive experience	Seeking inclusion of partner or support person Value for peer and intergenerational support Re-assurance from healthcare professionals
Impact on preparedness in pregnancy and beyond	Changes to birthing and parenting education Concerns around early discharge
Facing uncertainty of a pandemic	Disruption to the “normal” pregnancy experience Perceived risk of acquiring infection Timely access to essential goods and health care services Concerns with telehealth
Retaining resilience and optimism	Information seeking and solution focused Unintended positive effects of social restrictions

3.1.1. Seeking inclusion of partner or support person

Women expressed that they valued the role of a partner or support person in antenatal visits and advocated for their inclusion.

“One of my coping mechanisms is having my partner there to hear the same things I am hearing because I kind of shut down sometimes when I get too upset and I don’t listen to everything. So, it’s always good to have that second person listening . . . and walking out with strength of unity.” BS

Women thought that their partner’s experience during pregnancy had been adversely impacted, mainly as they were not able to co-attend hospital appointments.

“I feel like he’s missing out on a lot of the experience as well . . . I can show him the photo, but when I get to see the actual movement and things like that, I know that would affect him. I know he does get upset. I feel like he probably has questions too, like obviously pregnancy’s even more unknown for him as well, and I feel like he’s missing out on being able to ask those questions.” JD

Some women desired a support person beyond their partners during labour and birth, with a few intending on a home birth in

order to access the support they desired for a positive birth environment.

“A support person such as a doula . . . was incredibly important because she supports you through the birth and . . . holds the space for you. It was to the point that we did consider a home birth.” EW

Women expressed concern about having limited support postnally in hospital, particularly, if a difficult recovery was foreseen.

“If I have a birth that requires a bit more intervention . . . that requires a hospital stay, then I do think that would affect us . . . that could have quite a big impact on visitors and support.” EW

3.1.2. Value for peer and intergenerational support

Many women described that they valued peer support from other mothers during pregnancy and post-partum, together with intergenerational support from parents.

“You can’t attend some yoga or birth classes so you can’t meet some other mums as well. You can’t ask advice or experience from them. Because of this, I have to do it by myself.” CC

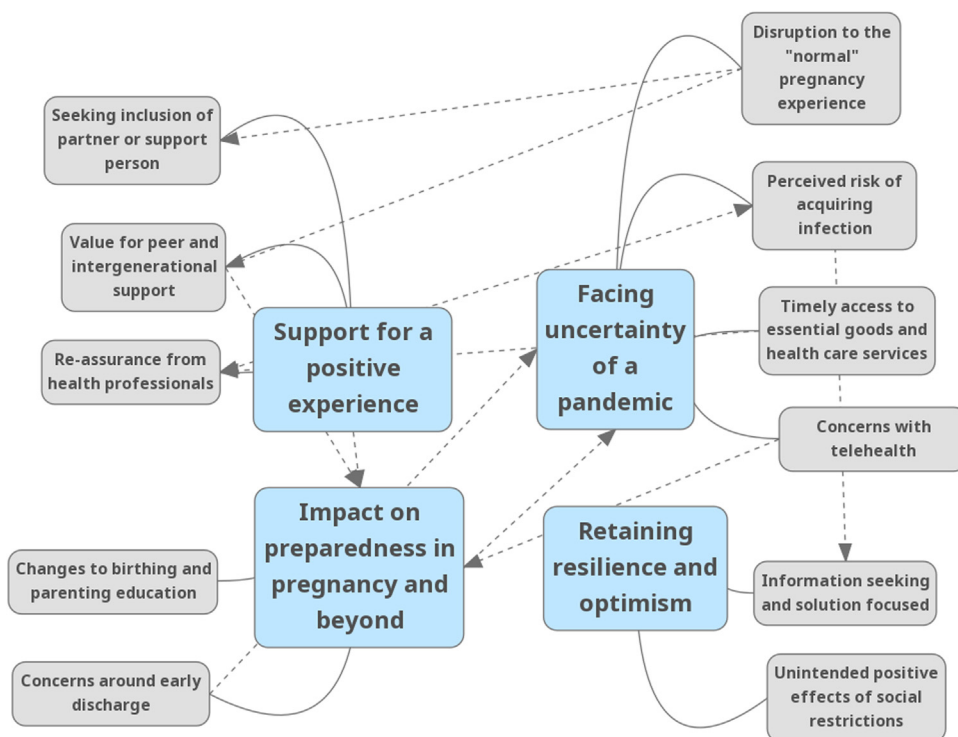


Fig. 1. Connections between themes and sub-themes represented diagrammatically.

“The older generation have more experience on what babies need or what they feel . . . with my other two [children] . . . they knew exactly what may make them feel better whereas I have to obviously be on phone and ask, ‘What do you do?’ . . . I don’t know, I will just learn as I go, I guess.” VB

In their responses, women explored the potential impact of social isolation and access to support on their mental wellbeing.

“I hope I won’t be going through with depression because of less people around. Sometimes you just need family support or even a friend’s support, just to help you out a little bit. Because your first time . . . you don’t really have any idea about anything.” CC

Some multigravida women desired access to additional support to help with childcare.

“Last time when my daughter was born, I invited my in-laws and my family from overseas. It’s going to be too hard for me because my daughter she just started at school. My husband, he’s working. I have to look after my daughter and the new baby as well. It’s going to affect my life.” SS

3.1.3. Re-assurance from healthcare professionals

The re-assurance provided by healthcare professionals was valued. Women gave appreciation to the care given by healthcare providers and acknowledged the initiative taken by healthcare organisations with infection control policies. This re-assurance helped address uncertainties for some women, particularly in relation to timely access to health care services and risk of acquiring infection.

“I had an issue at one point and then I called up the maternity ward and they were very comforting in the sense that they were like, come on in . . . They did the full follow through and that was really good, you didn’t feel like you can’t go to your hospital.” FR
“They’re very careful with everything. Like asking where have I been . . . and checking the temperatures. Even if I go to the ultrasound, they always have a social distance . . . It’s actually pretty good. They are taking extra care for their patients. They’re just making everyone safe . . . you know, so this Coronavirus won’t spread. Which is understandable actually.” CC

As a whole, women advocated for increased support during pregnancy, birth and post-partum, both in the hospital and community settings.

3.2. Impact on preparedness in pregnancy and beyond

3.2.1. Changes to birthing and parenting education

Women perceived that their preparedness for birth and motherhood was negatively impacted by the cancellation of face-to-face birth and parenting education. This created a sentiment of uncertainty in women as they reflected on birth and the post-partum period.

“I wish that I knew, had a picture in my head, of what I was going to be walking into . . . I guess there’s a little bit of anxiety about getting lost and just, yeah, the idea of not knowing is a little disappointing” NM
“The birthing classes were cancelled . . . so I have looked up the information online and I don’t know if that’s everything that was there . . . it’s hard to know when you’re doing the research yourself as opposed to in a class.” KC

Cancellation of educational initiatives was seen as a missed learning opportunity for couples. One woman described her concern in relation to parentcraft.

“If I could have my boyfriend there so he could get taught how to do things like bath the baby . . . and swaddle the baby – I think that side of things will affect [us] after pregnancy.” CL

3.2.2. Concerns around early discharge

Some women viewed the potential for early discharge as a risk to confidence in the early post-partum period, particularly, where additional support was limited in the context of community stay-at-home restrictions.

“I was a little bit worried about being sent home early . . . because this is my first baby. I’m also going home on my own . . . I don’t have a partner to help me or to help me look after me or the baby or anything . . . and even just breastfeeding – so that was a bit of a worry.” TB

Some showed forethought and anticipated the implications of needing early unplanned medical assistance at home. A lack of re-assurance surrounding this concern created uncertainty and worry.

“What if something happens with me not straight away but it could be a lot of medical challenges and obviously I don’t want newborn to be exposed to situation where it may get affected.” VB

3.3. Facing uncertainty of a pandemic

Women expressed concerns related to various uncertainties surrounding the COVID-19 pandemic.

3.3.1. Disruption to the “normal” pregnancy experience

Women described the COVID-19 pandemic as having an overall negative impact on the experience of pregnancy, with most describing that they missed out on a “normal” pregnancy experience. Not only did social restrictions limit the valued involvement of partner, family and peer supports, but women also expressed disappointment that they were not able to plan for and engage in traditional pregnancy rituals to share their pregnancy journey with family and friends.

“I don’t think many people have even seen me showing . . . you miss all that part of pregnancy a bit because we’re being locked down. Likewise, with work, we do video conferences, and you can’t really tell I’m pregnant. I guess you kind of miss a bit of the hubbub about being pregnant, the excitement.” KC
“Am I going to have a baby shower? Who knows? The people that I’m catching up with now, it’s the first time I’ve seen them since they found out I was pregnant and now I have a bump.” FM

There was apprehension about the possibility that their partner or support person could be absent at birth or post-partum.

“I always have a slight fear when I go into the hospital . . . that my husband – he’ll get a temperature at delivery and won’t be able to join me.” NM

3.3.2. Perceived risk of acquiring infection

Concern was expressed by women about the COVID-19 infection itself and the potential impact on their unborn baby or newborn, particularly, in the early stages of the pandemic when less was known about the novel virus.

“I think at the start there was so little understanding of how it could affect pregnant women. And I was hearing awful things where it wouldn’t affect the child and then it could affect the child. A lack of understanding around risks was probably a little bit anxious for me.” FM

Women were vigilant about the risk of acquiring infection in either the community, hospital or work settings.

“You do worry. You are concerned that everyone’s doing the right thing, can I go to the shops, am I putting the baby at risk?” FR
“I’m giving birth in a hospital where sick people are. And it’s probably – if people have COVID – they would be in the hospital. Just being in that same environment with a newborn is definitely a bit daunting.” MN

Some women had ceased their jobs or modified workplace duties to reduce the risk of acquiring the infection.

“I actually stopped going to work . . . I’m a kindergarten teacher and it was just recommended that given the limited research on what would happen.” EW

3.3.3. Timely access to newborn goods and healthcare services

Women anticipated the implications of restrictions on access to essential maternity and newborn goods.

“You’ve got people stockpiling stuff . . . and you think am I actually going to be able to get the resources I need . . . I couldn’t sleep so I ended up just going and buying a pack of newborn nappies.” EW

Clarity was sought on whether women could have timely access to healthcare during the pandemic.

“I just want to know, if anything happened to me that I could come to the hospital straightaway and they can treat me straight away.” SS

3.3.4. Concerns with telehealth

Women acknowledged the role of telehealth in minimising the risk of COVID-19 transmission but they did perceive telehealth as a compromise of their pregnancy experience, with some describing it as impersonal due to limited physical connection with clinicians and care feeling rushed.

“Sometimes I’ve walked out and thought, ‘Oh, I meant to ask that’, but I didn’t really get time because I felt a bit of pressure to hurry up.” NM

“You don’t have that physical connection with someone or just being, knowing that they can physically see you and assess you. I had a miscarriage only a few months before I actually fell pregnant again . . . I just feel like that being delayed (the physical) it just made me more anxious.” JD

Re-assurance was sought in relation to telehealth and its ability to maintain safe clinical decision-making.

“I would say, if it was closer towards my due date, it would be very concerning for me . . . am I getting the amount of scans that I need to or the amount of check-ups that I need to in person? Have they seen enough of me or got enough information to be able to make a good call around the stage?” FM

3.4. Retaining resilience and optimism

3.4.1. Information seeking and solution focused

Most women identified gaps in communication and were information seeking. In relation to birthing options, women sought clarification on any limitations to water birth and comfort options such as water immersion.

“I’d like to have a water birth and I don’t know if that’s still possible. I don’t know if water births are allowed again? Or being in the water during labour?” EW

Many women desired official communication from the hospital about the various uncertainties of the pandemic, such as the risk of acquiring the infection and what precautions were being taken to reduce this risk.

“You do feel a little bit stressed in there, and I think probably one thing that maybe could be improved is just that extra information of what you are doing with the COVID stuff in terms of precautions, what it’s going to look like when I come in to have bubs, just what to expect.” TB

With the cancellation of face-to-face education and hospital tours, women sought guidance on alternate sources of information to prepare for birth. They also requested clarification on the impact on delivery of postnatal services in the community.

“What happens when you come in? Because obviously there’s not been hospital tours . . . I wouldn’t even know where to go. A video online on the website or something that you can go on and get a tour may be helpful, starting from outside so you know where you’re going.” TB

“Attending maternal child health appointments – I don’t know if they’re over the phone or face to face . . . As well moving forward I’m really keen for my mental health to be part of a mother’s group and I’m concerned that those mother’s groups might not be happening.” BS

Women were solution focused and proposed greater utilisation of the internet medium for online video hospital tours and support groups.

“Maybe setting up something like a support group, maybe an online support group . . . for mums that have babies in a pandemic that probably do feel isolated.” MN

3.4.2. Unintended positive effects of social restrictions

Some women expressed that there had been unexpected positive benefits arising from the restrictions due to flexible workplace arrangements and the opportunity to physically rest at home.

“It’s been really good, in that, I got to work from home instead of going into the office, so I’ve been able to, yeah, take a rest when I need a rest and pick my own hours.” NM

4. Discussion

The study provides insight into the experiences and narratives of pregnant women during the COVID-19 pandemic. Women responded with concerns surrounding support, preparedness and uncertainty in the pandemic. Yet, women pro-actively sought information and solutions, and acknowledged the unintended benefits of social restrictions. The themes identified in the study indicate that the experiences of pregnant women were framed by not only COVID-19 as an infection but by their responses to physical-distancing and other restrictions.

Women sought support to achieve a positive experience in pregnancy, birth and post-partum. Support people have been cited as a protective factor against fear in pregnancy during the COVID-19 pandemic [11,27]. For partners, they may have a sense of grief and loss if wanting to participate in the pregnancy and this has the potential to affect how fathers connect to their baby during the pregnancy [4]. Some women were left to choose between partners and doula birth support, who often serve a health advocate role complementary to family support [28]. Some considered home birth to be able to access an additional birth assistant, a trend seen in other countries during the pandemic [29]. Programs that prioritise doula support, such as in-house accredited doulas or “virtual” doulas may help alleviate fear in women [4,30].

Additional support was also desired by multigravida women who have increased caregiving responsibilities. Disruption to childcare is a risk factor for psychological distress; mothers with young children during the current COVID-19 pandemic have been

shown to be at significantly higher risk for developing clinically-relevant anxiety [15,31]. Women desired the support from their peers and their own mothers, which has been shown to transfer confidence, parenting skills and provide re-assurance [32]. Online support groups and telehealth support programs can create group cohesion, and have been shown to reduce isolation and anxiety, feelings of loneliness and increase maternal positive emotions and feelings of calm [14,33].

Women described that the changes in service delivery had negatively affected their preparedness for pregnancy and beyond. A North American study performed during the COVID-19 pandemic coined the term “preparedness stress”, which affected nearly one in three pregnant women and women in this study who perceived alterations in their care were at higher risk of stress [12]. Peer and parental support, the focus of the first theme, was described in the study by women as important for the sense of preparedness. In addition, online resources for women on hospital-specific websites, including virtual tours and online classroom perinatal education, may help offset preparedness stress [14]. Women in our study were solution-focused and searched for such resources. Concern surrounding early discharges could be similarly alleviated through an increase in compensatory earlier virtual, either online or telehealth, follow-up with midwifery, lactation consultants and allied health clinicians after discharge [30].

Women experienced uncertainty in the unfolding pandemic. Women respond positively when care-providers acknowledge that pregnancy in a pandemic is not what was expected and that feelings of anxiety and sadness are normal [5]. Physical distancing has meant that women have had to forgo “normal pregnancy” rituals and baby showers, which can affect a woman’s mental wellbeing as they traditionally strengthen family and support networks, self-efficacy, and a family’s connection to heritage and culture [34]. The distress that these changes can cause has been noted in another Australian thematic analysis, which found that when women have attempted to celebrate their pregnancy during the pandemic, they may experience ‘guilt-tampered happiness’, or a paradox of guilt due to the contrast of happiness of pregnancy and the dire community situation [35]. Women also expressed uncertainty regarding telehealth in our study. Telehealth at the study site did not utilise video-conferencing, a tool that has been shown to improve the patient experience [5]. Traditionally, telehealth is known to be beneficial in reducing travel requirements, overcoming childcare barriers and for accessible psychosocial follow-up [5]. Prior to the pandemic, a successful low-risk antenatal model in North America combined telehealth together with virtual midwifery visits, online portal for queries and an online community forum for women moderated by midwives [36]. Whilst telehealth holds potential, it may not be suitable for women at risk of intimate partner violence and women with English as a second language [30]. The development of a successful telehealth service depends on an internal audit process, such as the Consolidated Framework for Implementation Research (CFIR) rapid cycle evaluation process, which focuses on culture and seeks feedback from key stakeholders [37].

Despite the challenges the pandemic has posed to pregnant women, women in our study identified knowledge gaps, were information seeking and solution focused. Failure to address these needs can amplify feelings of uncertainty, particularly the perceived risk of acquiring the infection and associated concern [8]. A cross-sectional study of pregnant women in Wuhan found that those with higher knowledge scores related to COVID were significantly less likely to have anxiety symptoms [38]. An ongoing North American study has found that 40% of pregnant mothers reported their provider had not spoken to them directly about COVID-19 [4]. Open communication channels with knowledge dissemination can help women identify false information,

particularly, within social media. It is recommended that health organisations first determine the knowledge needs, literacy level and preferred communication medium of their women [5]. Studies have found geographical variation in preferred modes of communication during the pandemic, with women in China trusting information received directly from midwives whilst women in Italy accessed information online and through social media [8]. Our study highlighted areas that could be addressed include infection control and safety policies for women and their partners, analgesia options particularly nitrous gas and water immersion, restrictions for support people in labour and post-partum, and impact to postnatal support services such as home visits by the maternal child health nurse.

When the major themes are considered together, it is evident that the mental wellbeing of pregnant women is at risk during the COVID-19 pandemic. Experiencing deficits in support, feeling unprepared and dealing with emotions associated with uncertainty present as challenges to the resilience of mothers. This is consistent with other studies exploring the responses of pregnant women to the pandemic which have similarly found a dominance in negative emotions and psychological constructs [7,35]. Previous epidemics have proven unfavourable psychological outcomes, and anxiety symptoms are an independent risk factor for abnormal obstetric and developmental outcomes, such as impaired bonding and pre-term birth [6]. Some women may even start to develop negative feelings about their own pregnancies [9]. A study of women giving birth in Italy during the pandemic found that almost a third of women described post-traumatic stress symptoms [39]. Following from this, some advocate for a “trauma-informed approach” to maternity care during the pandemic, with advocacy for support persons, preservation of shared-decision making and choice, and exploring women’s pregnancy experiences [5]. Health-care organisations should endeavour to assess the mental health status of their pregnant women to help initiate appropriate care. New pandemic-relevant assessment tools are being developed and validated such as COVID-ASSESS which incorporates existing mental health tools [40]. Women identified as high-risk may be chosen for intensified telehealth follow-up post-partum and to connect them to virtual communities and support programs [32,35].

The findings of this study may provide health care providers with information on the social, cognitive, and emotional constructs associated with pregnant women’s experiences and their behavioural response to the COVID-19 pandemic. This understanding may assist maternity care providers in ensuring changes to the delivery of health care maintain a positive pregnancy experience for women. Acknowledgement of women’s perspectives in official health communications may help strengthen relationships between maternity units and their pregnant women. During the COVID-19 pandemic, women’s experiences in pregnancy were shaped by not only their personal factors but also by external influences such as community and hospital-level restrictions. Women continued to be self-reflecting, self-regulating and proactive.

The strength of this study is in its design capturing the experiences of pregnant women as described by themselves. However, the study does have limitations. Convenience sampling limits the extrapolation of the findings to wider populations. The community environment at the research location site may influence interviewee’s attitudes. At the time of the study, the region was witnessing a steady rise in community transmissions and a plan to increase physical distancing restrictions. This may have an influence on the participants’ communicating anxiety, uncertainty and to some extent a feeling of negativism. A dominance of negative constructs has been similarly found in other studies assessing the impact of the pandemic on pregnant

women [10,12,40]. Commentary regarding the partner's perspectives were not from partner's themselves which limits its generalisability. The women were from a Western setting and a predominantly Caucasian background; the findings may vary in other settings. Psycho-social effects of a pandemic have the potential to disproportionately harm women with social vulnerabilities and women from minority and under-resourced communities [12]. Exploring this was considered beyond the scope of our study.

5. Conclusion

This study adds to our deeper understanding of the perspectives of pregnant women during the current COVID-19 pandemic. As we grapple with the COVID-19 infection itself, the learnings from the study can be applied by organisations to deliver woman-centred care. The findings of this study highlight women's experiences are centred around concerns regarding support, preparedness, and uncertainty, balanced with a positive introspection and desire for solutions. Directly addressing the concerns expressed by women may not only have a positive influence on their pregnancy experience but also enhance long-term psycho-social wellbeing.

Conflicts of interest

None declared.

Ethical statement

This study received ethical approval and support from the Peninsula Health Human Research Ethics Committee on May 27, 2020 (HREC ref. number LNR/64473PH-2020).

Funding

None declared.

Author agreement

In line with the Author Agreement, the authors confirm that:

- The article is our original work.
- Has not received prior publication and is not under consideration for publication elsewhere.
- All authors have seen and approved the manuscript being submitted.
- The authors abide by the copyright terms and conditions of Elsevier and the Australian College of Midwives.

CRedit authorship contribution statement

Kiran Atmuri: Conceptualization, Methodology, Formal analysis, Investigation, Data curation, Writing - original draft, Writing - review & editing. **Mahbub Sarkar:** Methodology, Formal analysis, Investigation, Data curation, Writing - review & editing. **Efe Obudu:** Conceptualization, Project administration. **Arunaz Kumar:** Conceptualization, Methodology, Formal analysis, Investigation, Data curation, Writing - original draft, Writing - review & editing, Supervision, Project administration.

Acknowledgements

We are grateful to the midwifery staff for recruitment and to women for sharing their experiences.

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