


# The impact of the COVID-19 pandemic on the birth experiences of women attending a postnatal discussion service in the UK

Nadejda Capatina<sup>1</sup>  | Claire Parker-Farthing<sup>2</sup> | Daniella Gillings<sup>2</sup> | Catherine E. Aiken<sup>3</sup>

<sup>1</sup>School of Clinical Medicine, NIHR Cambridge Comprehensive Biomedical Research Centre, University of Cambridge, Cambridge, UK

<sup>2</sup>Department of Obstetrics and Gynaecology, Rosie Hospital, Cambridge University Hospitals, Cambridge, UK

<sup>3</sup>University Department of Obstetrics and Gynaecology, NIHR Cambridge Comprehensive Biomedical Research Centre, University of Cambridge, Cambridge, UK

## Correspondence

Catherine E. Aiken, University Department of Obstetrics and Gynaecology, NIHR Cambridge Comprehensive Biomedical Research Centre, University of Cambridge, Cambridge CB2 2SW, UK.

Email: [cema2@cam.ac.uk](mailto:cema2@cam.ac.uk)

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## Abstract

**Introduction:** The coronavirus disease 2019 (COVID-19) pandemic has had a significant impact on the perinatal mental health of women. The aim of this study is to understand the impact of the COVID-19 pandemic on birth experiences of women attending postnatal discussions.

**Methods:** Retrospective cohort of 434 women attending postnatal discussion appointments at a single obstetrics centre in Cambridge, UK. Data were extracted from electronic medical records. Pre-COVID (January 2019–October 2019) and COVID (January 2021–October 2021) periods were designated.

**Results:** The percentage of women seeking postnatal discussion appointments was not different between the COVID 4.1% vs. 3.9% pre-COVID period (relative risk [RR] = 1.06, 95% confidence interval [95% CI]: 0.88, 1.27), nor was the percentage of women reporting negative birth experiences during COVID 75% vs. 77% pre-COVID (RR = 0.98, 95% CI: 0.88, 1.09). There was a higher rate of mental health issues antenatally during the COVID period 27.1% vs. 16.6% (RR = 1.63, 95% CI: 1.12, 2.37) in the pre-COVID period, but not postnatally COVID 24.9% vs. 30.2% pre-COVID (RR = 0.82, 95% CI: 0.61, 1.12). There was an increase in the number of women giving birth without their partner present during COVID 6.1% vs. 2.4% during pre-COVID (RR = 2.51, 95% CI: 0.92, 6.85) and reduced birth-related trauma rates reported by partners during COVID 4.8% vs. 11.7% pre-COVID (RR = 0.41, 95% CI: 0.21, 0.82).

**Conclusion:** There was no increase in the rate of women attending our service who reported negative birth experiences or postnatal mental health issues. However, there were important impacts of the pandemic on antenatal mental health and partner involvement. Our findings could help guide maintenance of safe and considerate maternity services under exceptional conditions.

## KEYWORDS

antenatal mental health, COVID-19, partners, postnatal discussions

## INTRODUCTION

Difficult experiences during perinatal care and subsequent feelings of trauma are frequently reported in maternity populations.<sup>1</sup> Common risk factors for negative birth experiences include not feeling in control, fear of complications and attitudes of caregivers.<sup>2</sup> A negative

birth experience may impact on wide-ranging aspects of the subsequent postnatal experience and beyond, for example, postnatal mental health, bonding with the baby, family relationships and future plans for pregnancies.<sup>3</sup>

Although evidence is mixed on the efficacy of postnatal debriefing for psychological trauma prevention in women who have given birth,<sup>4</sup> many women who wish to talk about

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their births with a healthcare professional report significant benefit from postnatal discussion and debriefing services.<sup>5</sup> Such services are offered by maternity services in many contexts worldwide<sup>6</sup> and are generally viewed positively by women.<sup>7</sup> Furthermore, postnatal debriefing services are offered by the majority of hospitals in the United Kingdom.<sup>8</sup> In our centre, any woman can self-refer for a postnatal discussion consultation regardless of the circumstances of her birth. Information about the service is freely available and all women who request an appointment are accommodated within weeks of request.

Coronavirus disease 2019 (COVID-19), caused by the severe acute respiratory syndrome coronavirus 2 and first reported in Wuhan, China, in December 2019,<sup>9</sup> has had a profound impact on both clinical and organizational aspects of maternity services. COVID-19 itself has a disproportionately severe impact during pregnancy, with important consequences for mothers and babies including higher rates of stillbirth, premature delivery,<sup>10</sup> intensive care admissions and maternal death.<sup>11</sup> Aside from clinical consequences, it also has profound impacts for maternity service delivery, for example limiting face-to-face visits with doctors and midwives,<sup>12</sup> restrictions on partners and other support people at scans and during delivery, use of personal protective equipment and strict limitations on interpersonal contact. However, the potentially wide-ranging consequences of these factors on pregnancy and birth experience are still being evaluated.<sup>13,14</sup>

We aim to compare the experiences reported by women attending a postnatal discussion service in the pre-COVID and COVID eras, to understand the impacts that COVID-related factors had on their birth experience and subsequent postnatal course. Our cohort provides a particularly important perspective in understanding COVID-related challenges, as it represents a self-selected group of women who specifically sought to discuss their birth experiences with healthcare professionals in detail following delivery. Understanding the impact of COVID-related service changes is a crucial goal for maternity services both in navigating the current ever-changing COVID-19 situation and in future contingency planning.

## MATERIALS AND METHODS

A retrospective cohort of women who attended a postnatal discussion appointment at a single tertiary obstetrics centre was identified from the electronic medical records system. We defined a 'pre-COVID period' between January 2019 and October 2019, and a 'COVID period' between January 2021 and October 2021. All appointments that took place within the designated study timeframes were included in the study. Due to the pressures COVID-19 placed on maternity services, a number of restrictive measures were adopted. Birth partners were restricted from attending with women for ultrasound scans, other routine on-site appointments, induction of labour and had restricted visiting times in

intrapartum and postnatal areas. Once the labour was established, only one COVID-negative birth partner was permitted to attend labour and birth, previously two birth partners were permitted. If the women had special circumstances that warranted additional birthing partners, they were referred to the Consultant Midwife who was able to discuss their individual needs. If appropriate, then a carer's passports could be issued to enable additional birth partners to attend. Such circumstances might include poor mental health, previous birth trauma or birth partners with additional needs. Masks were not required for birthing women, although they were worn by caregivers and birth partners. Neonatal care proceeded as per prepandemic protocols, with the addition of appropriate PPE for all caregivers. Neonates were not separated from mothers for reasons related to COVID. Breast-feeding was supported and encouraged. All women were screened for Covid-19 either on admission, or within 3 days before planned admission.

No additional postnatal counselling services were commenced during the pandemic. All women had a postnatal discussion of their birth with the health professional who delivered their baby before being discharged home. All women were also given information on how to access the postnatal discussion service and encouraged to do so at any stage if they would like to. If women needed ongoing support after discharge to home, the community midwives were able to offer extended support up to day 28 days postpartum.

All appointments were conducted by a small group of trained registered midwives, all of whom had extensive experience in facilitating postnatal discussion appointments. These midwives were not involved in the deliveries, but work specifically in the context of postnatal experience and debriefing. Input from other healthcare professionals (e.g., obstetricians, obstetric anaesthetists) was available on request but not offered routinely. Appointment slots offered were 1 h in length and repeat appointments available on request. During the hour, discussions were open-ended and led by the wishes of the woman accessing the service. If any specific perinatal psychological support was required women were referred or signposted to the perinatal mental health service or psychological wellbeing service. The Patient Advice and Liaison Service (service to deal with complaints and feedback) continued to be available as required.

Data regarding demographic characteristics and delivery circumstances were extracted retrospectively from the electronic medical record. Maternal characteristics included maternal age, maternal body mass index (BMI, measured at first trimester booking), parity (categorized as either 1 or >1), previous caesarean section, antenatal and postnatal mental health conditions, and Index of Multiple Deprivation (IMD) as deciles. IMD was derived from postcode data, using 2019 English indices of deprivation data.<sup>15</sup> Antenatal and postnatal mental health conditions, including anxiety, generalized anxiety, posttraumatic stress

disorder, depression and emotionally unstable personality disorder, were self-reported by women and partners during routine discussion at appointments. If mental health issues were disclosed that were not previously known to health services, then the midwives facilitated appropriate onward referral with prior agreement from the disclosing individual.

Neonatal characteristics included infant sex and requirement for neonatal intensive care unit admission. Partner characteristics included attendance at the time of birth and during the postnatal discussion appointment. Birth characteristics included requirement for emergency delivery in theatre, instrumental delivery, blood loss of >1 L, degree of perineal tear and whether it was a preterm delivery (delivered before 37 weeks gestation).

Descriptions given by each woman and partner of their birth experiences were recorded verbatim by the midwife conducting the appointment and extracted verbatim from the electronic medical record by the research team. Key descriptive words were then analysed to determine how many women and partners in each period used these words. These descriptors were categorized into positive and negative groups postcollection of data, according to a pre-agreed analysis schedule. Additionally, any trauma associated with birth was routinely sensitively enquired about and recorded where present. This data was used by the research team to assign the overall birth experience to either positive or negative.

Descriptive summaries ( $n$ , %) of each maternal, delivery, infant and partner characteristic are provided by pre-Covid and Covid time period. Results are expressed as relative risk (RR)  $\pm$  95% confidence intervals (95% CIs). All analyses were conducted using R (R Core Team, v4.1.1; <http://www.r-project.org/index.html>) and RStudio (Rstudio Team, v1.4; <http://www.rstudio.com/>).

The study was approved as a service evaluation by the institution ('Patterns of use of Birth Afterthoughts services'; Project Record Number 100007; Clinical project ID4007).

## RESULTS

In total, 434 postnatal discussion appointments were requested during the study periods. The percentage of postnatal discussion appointments requested was similar COVID 4.1% vs. 3.9% pre-COVID study periods (RR = 1.06, 95% CI: 0.88, 1.27) and was in keeping with previous long-term service usage (Table 1). During our study periods, there was no clinical difference in the number of women who reported having a negative birth experience overall during COVID 75% vs. 77% pre-COVID periods (RR = 0.98, 95% CI: 0.88, 1.09). In the pre-COVID period, almost all postnatal discussion appointments were conducted face-to-face, whereas in the COVID period the majority (160/229; 69.9%) were conducted by telephone or video call (Table 2).

TABLE 1 Number of women accessing postnatal discussion appointments by year (January–October).

Year	2017	2018	2019	2020	2021
Total appointments	210	230	205	183	229
Total births at centre	5309	5448	5235	5105	5525
Total appointments/total births (%), 95% CI	4.0 3.5, 4.5	4.2 3.7, 4.8	3.9 3.4, 4.5	3.6 3.1, 4.1	4.1 3.7, 4.7
Negative birth experience, $n$ (%; 95% CI)			157 (77; 70, 82)		172 (75; 69, 80)

Note: The percentage of women with a negative birth experience was calculated for the specific study periods only (pre-COVID period January 2019–October 2019; COVID period January 2021–October 2021). Ranges given are 95% CI where applicable.

Abbreviation: 95% CI, 95% confidence interval; COVID, coronavirus disease.

The overall demographics of women accessing the service in the pre-COVID and COVID study periods, specifically age, BMI, or socioeconomic status of women who self-referred for postnatal discussion were similar between the two cohorts (Table 2).

The rate of common obstetric complications was not significantly different in the pre-COVID and COVID periods, with the exception of blood loss >1 L, which was significantly higher in the COVID period 36.7% vs. 23.4% in the pre-COVID period (RR = 1.55, 95% CI: 1.15, 2.08; Table 3). Notably, significantly more women reported having experienced antenatal mental health issues during COVID 27.1% vs. 16.6% before COVID (RR = 1.63, 95% CI: 1.12, 2.37); however, there was no difference in the rate of postnatal mental health issues reported during COVID 24.9% vs. 30.2% pre-COVID (RR = 0.82, 95% CI: 0.61, 1.12).

In the month of January 2021 of the COVID period, 41/229 (18%) of women specifically mentioned COVID having impacted on their birth experience. The number mentioning COVID declined as the COVID study period progressed, with a reduced proportion citing COVID as impacting their birth experience in the latter part of the study period (Figure 1). The negative terms that women used during their appointments when describing their birth experiences were broadly similar during the pre- and COVID periods, with 'traumatic' being the most common negative descriptor for both groups (Table 3). However, more women in the COVID period referred to their experience specifically as involving anxiety and stress (Table 3).

Partner involvement with postnatal discussion appointments was reduced in the COVID period, with more women attending their appointment alone during COVID 69.0% vs. 49.3% pre-COVID (RR = 1.4, 95% CI: 1.19, 1.65), despite these appointments being significantly more likely to be remote during COVID 69.9% vs. 0.98% pre-COVID

TABLE 2 Demographics of women accessing postnatal discussion appointments.

Demographic characteristic	Pre-COVID period N = 205 (%)	COVID period N = 229 (%)	RR	95% CI
Type of appointment				
Remote (tel. or video call)	2 (0.98)	160 (69.9)	Ref 71.62	17.99, 285.17
Face-to-face	203 (99.0)	69 (30.1)		
Maternal age				
<20	<5	<5		
20–30	77 (37.6)	90 (39.3)	Ref 1.04	0.82, 1.33
31–40	125 (61.0)	135 (59.0)		
>40	<5	<5		
Maternal BMI				
<25	79 (38.5)	74 (32.3)	Ref	
25–35	44 (21.5)	46 (20.1)	0.96	0.79, 1.16
>35	5 (2.4)	10 (4.4)	2.00	0.71, 5.60
Not available	77 (37.6)	99 (43.2)	1.15	0.94, 1.42
IMD decile				
1–3	12 (5.9)	8 (3.5)	Ref	
4–6	43 (21.0)	51 (22.3)	1.11	0.93, 1.31
7–10	150 (73.2)	170 (74.2)	1.03	0.98, 1.09
Parity				
=1	148 (72.2)	182 (79.5)	Ref 1.1	0.99, 1.23
>1	57 (27.8)	47 (20.5)		
Previous caesarean section				
Yes	14 (6.8)	20 (8.7)	Ref 1.28	0.66, 2.47
No	191 (93.2)	209 (91.3)		
Sex of baby (includes twins)				
Female	87 (42.4)	105 (44.9)	Ref 1.01	0.81, 1.24
Male	108 (52.7)	129 (55.1)		
Not available	10 (4.9)	0 (0.0)		

Note: Data are presented as *n* (%). The pre-COVID period is defined as January 2019–October 2019; the COVID period is defined as January 2021–October 2021. Abbreviations: BMI, body mass index; CI, confidence interval; COVID, coronavirus disease; IMD, index of multiple deprivation; RR, relative risk.

(RR = 71.62, 95% CI: 17.99, 285.17). There was also an increase in the number of women giving birth without their partner present during COVID 6.1% vs. 2.4% during pre-COVID (RR = 2.51, 95% CI: 0.92, 6.85, Table 4). However, fewer partners reported personal trauma associated with the birth experience during COVID 4.8% vs. 11.7% pre-COVID (RR = 0.41, 95% CI: 0.21, 0.82).

TABLE 3 Delivery outcomes for women accessing postnatal discussion appointments.

Delivery outcomes	Pre-COVID period N = 205 (%)	COVID period N = 229 (%)	RR	95% CI
Overall birth experience				
Negative	157 (76.6)	172 (75.1)	Ref 1.27	0.70, 2.33
Positive	16 (7.8)	23 (10.0)		
Neutral	32 (15.6)	34 (14.9)	0.97	0.63, 1.51
Requiring emergency delivery in theatre				
Yes	111 (54.1)	140 (61.1)	Ref 1.13	0.96, 1.33
No	94 (45.6)	89 (38.9)		
Instrumental delivery				
Yes	66 (32.2)	70 (30.6)	Ref 0.95	0.72, 1.25
No	139 (67.8)	159 (69.4)		
Blood loss >1 L				
Yes	48 (23.4)	84 (36.7)	Ref 1.55	1.15, 2.08
No	149 (72.7)	139 (60.7)		
NA	8 (3.9)	6 (2.6)	0.47	0.17, 1.27
Degree of perineal tear				
I–II	104 (87.4)	99 (90.8)	Ref 1.04	0.95, 1.14
III–IV	15 (12.6)	10 (9.2)		
Preterm deliveries				
Pre-term (<37)	15 (7.3)	24 (10.5)	1.55	0.87, 2.75
Term (37–40)	73 (35.6)	67 (29.4)	Ref	
Post-term (>40)	106 (51.7)	132 (57.6)	1.12	0.96, 1.31
NA	11 (5.4)	8 (3.5)	0.81	0.35, 1.92
Requiring NICU				
Yes	52 (25.4)	53 (23.1)	Ref 0.89	Ref 0.64, 1.25
No	149 (72.7)	176 (76.9)		
Antenatal mental health condition				
Yes	34 (16.6)	62 (27.1)	Ref 1.63	1.12, 2.37
No	171 (83.4)	167 (72.9)		
Postnatal mental health condition				
Yes	62 (30.2)	57 (24.9)	Ref 0.82	0.61, 1.12
No	143 (69.8)	172 (75.1)		
Most frequent terms used to describe negative birth experiences				
First	Traumatic	Traumatic		
Second	Painful	Anxiety		
Third	Terrified	Stressful		

TABLE 3 (Continued)

Delivery outcomes	Pre-COVID period N = 205 (%)	COVID period N = 229 (%)	RR	95% CI
Fourth	Death	Painful		
Fifth	Flashbacks	Flashbacks		

Note: Data are presented as N (%). The pre-COVID period is defined as January 2019–October 2019; the COVID period is defined as January 2021–Oct 2021.

Abbreviations: CI, confidence interval; COVID, coronavirus disease; NA, not available; NICU, Neonatal Intensive Care Unit; RR, relative risk.

## DISCUSSION

Clear differences were identified in the experiences of women who delivered during the COVID-19 pandemic, in particular a higher proportion of women reporting antenatal mental health issues. This is concordant with other studies, which report that the pandemic was associated with an increased incidence of antenatal mental health issues, particularly rising levels of maternal anxiety, across different global maternity settings.<sup>14,16</sup>

The observed increase in antenatal mental health issues in our study may be a result of reduced contact with maternity services<sup>12</sup> or other support networks during the COVID-19 pandemic, leading to increased feelings of isolation or unresolved concerns about the pregnancy.<sup>14</sup> Seventy percent of UK maternity units reported that they had reduced in-person antenatal appointments during the pandemic, leading women to seek other sources of support during their pregnancies.<sup>12</sup> There was also an increase in virtual appointments,<sup>12</sup> which may have further reduced the perception of being cared for by a supportive service. Antenatal education services, both NHS and private, were also reduced. Many women were influenced by a strong public health message to avoid social contact during their pregnancies,<sup>14</sup> and thus were also impacted by reduced contact with their usual wider social support networks.<sup>17</sup> Across a variety of global settings, pregnant women reported high levels of loneliness during the COVID-19 pandemic,<sup>18</sup> which may be a significant independent contributor to poor antenatal mental health.

Being unable to access reliable and up-to-date health care information has been identified as a further contributor to antenatal stress and anxiety levels during the COVID pandemic.<sup>19</sup> Regular changes to COVID-related restrictions were perceived by many pregnant women as negatively influencing their antenatal experience. Uncertainty surrounding support that would be available to them during and after birth were also commonly cited as sources of anxiety by women pregnant during the pandemic.<sup>18</sup>

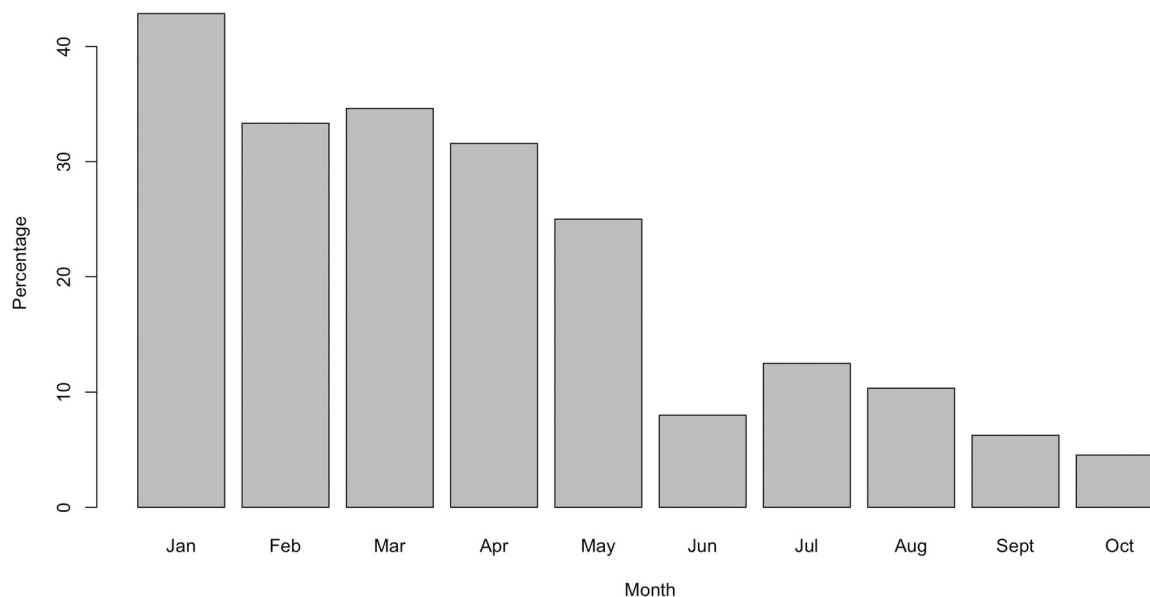
It is also notable that maternity staff report increased pressures and mental load in caring for women and babies during the COVID-19 pandemic.<sup>20</sup> It is likely that the personal experiences and anxiety of maternity staff also impact on the women that they care for, particularly during

the early pandemic phase when healthcare workers were uncertain of their personal level of risk.<sup>21</sup>

The postnatal period is a high-risk time as regards maternal mental health,<sup>22,23</sup> and this is acknowledged within UK maternity services with increased provision for postnatal mental health support in recent years.<sup>24</sup> Despite the significant increase in antenatal mental health issues reported in our cohort during the COVID pandemic, there was no difference in the proportion of postpartum mental health issues. This was encouraging, especially in this vulnerable cohort who were very likely to report negative birth experiences. Postnatal visiting at home by maternity staff was also severely compromised at this time. Global studies on the link between delivery during the COVID-19 pandemic and postpartum depression have shown mixed results, with several studies supporting our findings that rates of postnatal mental health issues remained relatively stable.<sup>25</sup> However, other studies have suggested that, although not necessarily more frequent, when postpartum mental health issues did arise, their severity may be increased. Possible protective factors from postpartum mental health issues during the COVID-19 pandemic may include more immediate family interaction and support at home after birth and reduced social obligations due to lockdown.<sup>26</sup>

Our results suggest a decreasing negative impact of COVID-19 on birth experience as the pandemic progressed. Although it was not possible to evaluate the early pandemic stages, women who attended postnatal discussion appointments throughout 2021 were progressively less likely to mention COVID-19 as a significant factor influencing their birth experience. Possible explanations for this include more knowledge and familiarity with the potential impacts of COVID-19 and therefore less anxiety about its affects. There may also have been an impact of progressively relaxing hospital visiting restrictions making COVID less intrusive in their birth experience.<sup>27</sup> Although our single centre study design did not have sufficient power to interrogate these possibilities in detail, our findings suggest that longitudinal studies in wider populations would be of benefit to further explore this temporal relationship.

Future research should focus on understanding the nuances of partner involvement in births where women have sought postnatal discussions. Fewer partners attended births although COVID restrictions were in place and we report less involvement with subsequent postnatal discussion appointments. This may potentially leave mothers without support from a partner who fully understands her experience.<sup>28</sup> However, partner trauma associated with birthing experience halved during the COVID period in our cohort, a striking finding that merits further qualitative exploration. At least some of this reduction may be due to under-reporting of partner trauma in the COVID period, due to fewer partners being directly involved in discussion



**FIGURE 1** Percentage of women who reported that coronavirus disease (COVID) significantly impacted on their birth experience by month in COVID study period January 2021–October 2021.

**TABLE 4** Partner involvement for women accessing postnatal discussion appointments.

Characteristic	Pre-COVID period N = 205 (%)	COVID period N = 229 (%)	RR	95% CI
<b>Partner presence at birth</b>				
Absent	5 (2.4)	14 (6.1)	Ref	0.92, 6.85
Present	195 (95.2)	209 (91.3)	2.51	
Not stated	5 (2.4)	6 (2.6)		
<b>Partner presence at appointment</b>				
Absent	101 (49.3)	158 (69.0)	Ref	1.19, 1.65
Present	104 (50.7)	71 (31.0)	1.40	
<b>Partner felt traumatized</b>				
Yes	24 (11.7)	11 (4.8)	Ref	0.21, 0.82
No	181 (88.3)	218 (95.2)	0.41	

Note: Data are presented as N (%). The pre-COVID period is defined as January 2019–October 2019; the COVID period is defined as January 2021–October 2021. Abbreviations: CI, confidence interval; COVID, coronavirus disease; RR, relative risk.

appointments and thus able to personally explain their experience. However, previous studies show that partners who witness complex births may perceive the experience as highly traumatic.<sup>29</sup> Particularly in our cohort, where maternal birth experience was very commonly negative, there may have been a degree of partner protection from not being present for some or all of the birth experience. Further research on partner experience of birth will improve our understanding of these complex issues.

Key advantages of our study design include the ability to analyse each woman's experiences in their own words.

Detailed contemporaneous records of how each woman described her birth experience allow us to establish a detailed synthesis of the issues involved. We utilized case records from a well-established postnatal discussion service that is run by a small number of highly experienced midwives, thus reducing the inter-appointment variability in format and record-keeping despite significant challenges including resource allocation and staff redeployment during the study period.

Limitations of our study include the self-selection of the group of women studied, which may impact on the generalizability of the results. Although the postnatal discussion service is open and advertised to all women who deliver at the centre, regardless of birth experience, there is likely to be a group of women with significant negative experiences who chose not to or feel disempowered to access this support. This may be the case in particular for women who have struggled to engage with maternity services or healthcare professionals during pregnancy. It is thus possible that our data capture misses the experiences of an important demographic of women whose voices are crucial to improvements in maternity care. We were also unable to assess the degree of negative impact associated with birth experiences using the current methodology.

A further potential limitation is the decision to exclude appointments that occurred in the early phase of the pandemic (March–December 2020). In our maternity service, as with many others, nonessential care including the postnatal discussion service was significantly disrupted during this period of uncertainty early in the pandemic. We chose not to include this time period due to concerns that data from this period would be potentially sparse, unrepresentative and difficult to interpret.

## CONCLUSION

There are significant lessons to be learnt from our data about how women and their partners can be best served even during times of immense strain on maternity service providers. In particular, every effort should be made to continue services that support antenatal mental health and to encourage pregnant women to continue to access support networks. Encouragingly, we did not see an increase in the rate of women attending our service who either reported a negative birth experience or postnatal mental health issues during the COVID-19 pandemic. The insights from our findings will be important in reimagining how safe and considerate maternity services can still be maintained under exceptional conditions.

## AUTHOR CONTRIBUTIONS

Catherine E. Aiken designed the study. Claire Parker, Daniella Gillings and Nadejda Capatina collated the data. Catherine E. Aiken and Nadejda Capatina analysed the data. Catherine E. Aiken and Nadejda Capatina drafted the manuscript, which was edited and approved by all authors.

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## CONFLICT OF INTEREST STATEMENT

The authors declare no conflict of interest.

## DATA AVAILABILITY STATEMENT

Data available on request from the authors.

## ETHICS STATEMENT

The study was approved as a service evaluation by the Cambridge University Hospitals institution ('Patterns of use of Birth Afterthoughts services'; Project Record Number 100007; Clinical project ID4007).

## ORCID

Nadejda Capatina  <http://orcid.org/0000-0001-9492-9491>

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