Impact of the COVID-19 pandemic on expectant and new parents’ experience of pregnancy, childbirth, breast feeding, parental responsiveness and sensitivity, and bonding and attunement in high-income countries: a systematic review of the evidence

Adenike Motunrayo Adesanya,1,2 Simon Barrett,1 Malcolm Moffat,1 Maria Raisa Jessica Aquino,1,2 Wendy Nicholson, Gillian Turner, Emma Cook, Sarah Tyndall, Judith Rankin

ABSTRACT

Objectives To review the evidence on how pregnancy, birth experience, breast feeding, parental responsiveness and sensitivity, and bonding and attunement were impacted by COVID-19.

Methods We searched eight literature databases and websites of relevant UK-based organisations. The review focused on evidence during pregnancy and the early years (0–5 years). Studies of any study design published in English from 1 March 2020 to 15 March 2021 and conducted in high-income countries were included. Screening and data extraction were undertaken in duplicate. Evidence was synthesised using a narrative approach. Study quality of included studies was assessed using the Mixed Methods Appraisal Tool.

Results The search yielded 9776 publications, of which 26 met our inclusion criteria. Significant knowledge gaps on how COVID-19 affected pregnancy and breast feeding limited healthcare providers’ ability to provide consistent evidence-based information and care at the start of the pandemic. There was an enduring sense of loss about loved ones being restricted from taking part in key moments. Parents were concerned about the limitations of virtual healthcare provision. Some parents reported more opportunities for responsive breast feeding and improved parent–infant bonding due to reduced social and work pressures. Women from minoritised ethnic groups were less likely to continue breast feeding and attributed this to a lack of face-to-face support.

Conclusions The evidence suggests that new and expectant families have been both negatively and positively impacted by the COVID-19 pandemic and the resulting restrictions. The impacts on parents’ opportunities to bond with their young children and to be attuned to their needs were felt unequally. It is important that emergency response policies consider the mother and the partner as a family unit when making changes to the delivery of maternal and child health and care services, so as to mitigate the impact on the family and existing health inequalities.

STRENGTHS AND LIMITATIONS OF THIS STUDY

⇒ This rapid review conducted an extensive search involving four databases (MEDLINE, CINAHL, PsycINFO, EMBASE), four COVID-19-specific databases and websites of relevant UK organisations to systematically identify available literature during the first year of the pandemic.
⇒ This review provided a quality assessment of included studies.
⇒ The scope of this review was constrained due to the specific focus on high-income countries and studies published in the English language.
⇒ This review was limited by the fact that a meta-analysis was not possible due to the methodological heterogeneity of the included studies.

BACKGROUND

The early years of life are a critical period in a child’s development.1 Experiences during this period can have significant, long-lasting impact on a child’s health and well-being.2 It is essential, therefore, to ensure that young children get the best start in life.3 Parent–child interactions at this early stage of development are key to improving a child’s outcomes; developing and sustaining a strong bond between them are vital.4 This is especially the case during periods such as the COVID-19 pandemic, when new and expectant parents faced unprecedented challenges including...
increased stress, anxiety and trauma. There is evidence that depression, stress and anxiety in pregnant women can permanently affect a baby’s response to stress and also disrupt a mother’s ability to be sensitive to her baby, adversely affecting the mother–infant interaction. Poor postnatal mental health and impaired mother–child interactions are highly prevalent among mothers who had antenatal mental health difficulties, and this strongly predicts a disadvantaged trajectory for children in terms of their future social, emotional, cognitive development and health outcomes. The COVID-19 pandemic has changed the ways of living and working for almost everyone. It has been especially challenging for expectant and new parents, who have had to make rapid adjustments at work and at home to protect their own health and that of their children, while providing quality interactions with their children amid lockdown restrictions. At the same time, expectant and new parents have also had to navigate access to evolving health and social care services. Maternal and child health and care professionals (HCPs) also had to implement and cope with real-time service delivery changes, including cancellation of non-urgent activity, staff redeployment, although short term, from community and elective to critical care services, and increased remote consultation.

It is important to acknowledge the complexity of implementing rapidly changing policies to protect the public’s health while still meeting the needs of new and expectant parents. However, these changes occurred within the existing context of increased service demand, existing workforce supply challenges, budget constraints, and scaling back of universal and targeted services. All of which have further highlighted health inequalities, with families facing the highest level of need greatly impacted from the reduction in face-to-face services.

There is a growing literature on the impact of COVID-19 on expectant and new parents. The aim of this rapid review was to identify, synthesise and appraise the available literature on how pregnancy, birth experience, breast feeding, parental responsiveness and sensitivity, bonding and attunement, HCPs’ experience of supporting parent-infant bonding, and access to support have been impacted by the COVID-19 pandemic. Definitions are provided in Table 1.

### METHODS

We undertook a rapid literature review adhering to the Cochrane Rapid Review Guidance. Rapid reviews are recommended by the WHO when resources are limited. They employ a modified version of systematic review methodology to synthesise data from identified literature. This study is reported as per the Preferred Reporting Items for Systematic Reviews and Meta-Analyses, with the checklist provided in online supplemental material 1. This rapid review was registered with the International Prospective Register of Systematic Reviews database (PROSPERO registration number: CRD42021236769).

<table>
<thead>
<tr>
<th>Table 1 Definition of the topic areas: Parental responsiveness and sensitivity, bonding and attunement</th>
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<tbody>
<tr>
<td>Bonding</td>
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<tr>
<td>Attestment</td>
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<tr>
<td>Parental sensitivity</td>
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<td>Parental responsiveness</td>
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<td>Parental sensitive responsiveness</td>
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### Patient and public involvement

Parent partners were included in the steering committee, in the development of our search strategy, and in the interpretation of results and recommendations for practice.

### Search strategy and study selection

We designed a search strategy which was checked for accuracy and scope by an information scientist at Newcastle University. The search strategy (online supplemental material 2) was developed with our clinical and parent partners, and included keywords relating to parental responsiveness and sensitivity, and bonding and attunement. The review focused on evidence during pregnancy and the early years (0–5 years), as well as considered the impact on vulnerable and minoritised ethnic groups.

We searched the following peer-reviewed, preprint and grey electronic literature databases: MEDLINE, CINAHL, PsycINFO, EMBASE, COVID-19: a living systematic map of the evidence, COVID-19 Evidence Reviews, Cochrane COVID-19 Study Register and COVID-19 Living Evidence. We also searched websites of relevant UK-based organisations (Royal College of Midwives, Institute of Health Visiting, Royal College of Obstetricians and Gynaecologists).

We included both peer-reviewed and grey literature of any study design, published from 1 March 2020 to 15 March 2021. Database and grey literature searches were
completed in March 2021. We excluded non-English-language studies, studies conducted in other pandemic contexts, and studies that did not focus on pregnancy and birth, formal and informal care and services, parental responsiveness and sensitivity, and bonding and attunement. Studies were included if they were conducted in high-income countries irrespective of their healthcare systems (ie, including countries with no/limited publicly funded healthcare system).

Title and abstract screening was led by one researcher (AMA), with another member (SB, MM, MRJA) of the team double-screening a proportion (20%) of records identified. Full-text screening of articles against eligibility criteria was led by one researcher (AMA), with another member (MRJA, JR) of the team screening the full text of all excluded records. Any discrepancies in decisions on inclusion were resolved by discussion between two authors.

Data extraction
A tailored data extraction form was developed for this rapid review and piloted before use. Data extracted included study design, study aims, study setting, methods and key findings. Data were extracted from included studies by one researcher (AMA), with a second researcher (SB, MM, MRJA) checking extracted data (70%) for correctness and completeness.

Study quality and bias
Risk of bias/quality assessment was led by one researcher (AMA), with support and input from the wider review team for verification. The Mixed Methods Appraisal Tool (MMAT) (table 2) was used to assess the quality of included studies, as this tool covers studies with qualitative, quantitative or mixed methodologies.

Synthesis
We used a narrative approach to evidence synthesis: describing experiences, identifying issues concerning access to formal/informal care, support and services, parental responsiveness and sensitivity, bonding and attunement, and HCPs’ experiences of needs assessment/care provision. The synthesis was led by one researcher (AMA), with support and input from all members of the research team.

RESULTS
Overview of included studies
A total of 9776 records were identified from the electronic database search and 26 studies met our inclusion criteria. Figure 1 illustrates the literature search process, detailing the number of studies included/excluded at each stage as well as the reasons for exclusion at full-text screening. 25

Online supplemental material 3 provides a summary of the characteristics of the 26 studies included in this review. Ten studies used quantitative methods, 27-36 nine studies were qualitative 37-45 and seven were mixed method studies. 46-52 The included studies were conducted in Australia (n=2), 38 41 Belgium (n=1), 28 Canada (n=4), 27 42 43 49 Italy (n=3), 36 37 40 Japan (n=1), 35 the UK (n=4), 32 46 50 52 and the USA (n=11). Three of these studies were conducted across different countries, with the main setting reported here. One study had 1% of participants responding from lower income

<table>
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<tr>
<th>Table 2</th>
<th>Criteria for quality assessment26</th>
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<tbody>
<tr>
<td>Key</td>
<td>Assessment</td>
</tr>
<tr>
<td>S1</td>
<td>Are there clear research questions?</td>
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<tr>
<td>S2</td>
<td>Do the collected data allow to address the research questions?</td>
</tr>
<tr>
<td>1.1</td>
<td>Is the qualitative approach appropriate to answer the research question?</td>
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<tr>
<td>1.2</td>
<td>Are the qualitative data collection methods adequate to address the research question?</td>
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<tr>
<td>1.3</td>
<td>Are the findings adequately derived from the data?</td>
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<tr>
<td>1.4</td>
<td>Is the interpretation of results sufficiently substantiated by data?</td>
</tr>
<tr>
<td>1.5</td>
<td>Is there coherence between qualitative data sources, collection, analysis and interpretation?</td>
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<tr>
<td>2.1</td>
<td>Is randomisation appropriately performed?</td>
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<tr>
<td>2.2</td>
<td>Are the groups comparable at baseline?</td>
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<tr>
<td>2.3</td>
<td>Are there complete outcome data?</td>
</tr>
<tr>
<td>2.4</td>
<td>Are outcome assessors blinded to the intervention provided?</td>
</tr>
<tr>
<td>2.5</td>
<td>Did the participants adhere to the assigned intervention?</td>
</tr>
<tr>
<td>3.1</td>
<td>Are the participants representative of the target population?</td>
</tr>
<tr>
<td>3.2</td>
<td>Are measurements appropriate regarding both the outcome and intervention (or exposure)?</td>
</tr>
<tr>
<td>3.3</td>
<td>Are there complete outcome data?</td>
</tr>
<tr>
<td>3.4</td>
<td>Are the confounders accounted for in the design and analysis?</td>
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<tr>
<td>3.5</td>
<td>During the study period, is the intervention administered (or exposure occurred) as intended?</td>
</tr>
<tr>
<td>4.1</td>
<td>Is the sampling strategy relevant to address the research question?</td>
</tr>
<tr>
<td>4.2</td>
<td>Is the sample representative of the target population?</td>
</tr>
<tr>
<td>4.3</td>
<td>Are the measurements appropriate?</td>
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<tr>
<td>4.4</td>
<td>Is the risk of non-response bias low?</td>
</tr>
<tr>
<td>4.5</td>
<td>Is the statistical analysis appropriate to answer the research question?</td>
</tr>
<tr>
<td>5.1</td>
<td>Is there an adequate rationale for using a mixed methods design to address the research question?</td>
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<tr>
<td>5.2</td>
<td>Are the different components of the study effectively integrated to answer the research question?</td>
</tr>
<tr>
<td>5.3</td>
<td>Are the outputs of the integration of qualitative and quantitative components adequately interpreted?</td>
</tr>
<tr>
<td>5.4</td>
<td>Are divergences and inconsistencies between quantitative and qualitative results adequately addressed?</td>
</tr>
<tr>
<td>5.5</td>
<td>Do the different components of the study adhere to the quality criteria of each tradition of the methods involved?</td>
</tr>
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</table>
countries. The key themes from the synthesis are outlined in figure 2.

Study quality and bias
Study quality ratings are given in full in tables 3–6. The overall quality of included studies was above average, with most of the studies reaching a quality standard which met the MMAT criteria. No study was excluded due to methodological quality.

Synthesis
Impact of COVID-19 on experiences of pregnancy
Seven studies examined how pregnancy had been impacted by COVID-19. Over half of pregnant women surveyed in Belgium reported the pandemic had affected their pregnancy follow-up to some degree (53%, n=1326), and respondents felt they had received fewer follow-up appointments from midwives and other HCPs. Pregnant respondents in the UK, while acknowledging that virtual appointments reduced their risk of coronavirus infection, reported concern and disappointment at receiving what they saw as suboptimal antenatal care. These included rushed and stressful face-to-face appointments (where available), and lack of continuity of care and reduced support from midwives. Pregnancy was filled with uncertainty for women in the USA, Northern Italy and the UK, who reported receiving confusing information from healthcare providers about hospital protocols and how COVID-19 infection may impact on pregnancy-related outcomes.
A UK study identified increased levels of anxiety related to the potential impacts of their unborn baby contracting the virus and staying safe at antenatal appointments and during birth; these anxieties were more acute and prolonged for those who identified as being from minoritised ethnic groups due to their susceptibility to more severe illness. Many women reported feelings of guilt around experiencing happiness during pregnancy, as well as grief, anger and loss due to family members being unable to attend antenatal appointments and births. Respondents expressed worry about how disruptions due to the pandemic adversely affected their physical health and the development of the baby in the womb. In Italy, pregnant women reported being unable to return home after routine antenatal appointments on testing positive for COVID-19 and being transferred to an unfamiliar hospital with no personal belongings; this placed unnecessary stress on them, especially in terms of care for their other children, as well as the overall loss of control they felt in a rapidly changing and uncertain context.

Majority of the respondents in a US study (96.4%, n=251) felt their antenatal care was safe, with 86.3% (n=215) reporting antenatal care to be adequate during the pandemic. Nine studies described how birth experiences had been affected by COVID-19. Of the respondents in a US study, 75% (n=85) who had planned to attend childbirth classes prior to COVID-19 reported that their classes were cancelled, but only 54% (n=60) were offered virtual classes as replacement. In the UK, while the mode of delivery did not differ between women who gave birth before and during the first lockdown (March–May 2020), the latter spent fewer nights in hospital, reflecting reduced long stays. Women who reported that their birth plan had changed due to the pandemic cited the following reasons: change in delivery setting and limited choice of support from birth partners. They were less worried when later

Table 3: Quality assessment of included studies (quantitative–descriptive)

<table>
<thead>
<tr>
<th>Study</th>
<th>Country</th>
<th>Year</th>
<th>S1</th>
<th>S2</th>
<th>4.1</th>
<th>4.2</th>
<th>4.3</th>
<th>4.4</th>
<th>4.5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ceulemans et al.28</td>
<td>Belgium</td>
<td>2020</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Cannot tell</td>
<td>Yes</td>
</tr>
<tr>
<td>Darcy Mahoney et al.29</td>
<td>USA</td>
<td>2020</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Cannot tell</td>
<td>Yes</td>
</tr>
<tr>
<td>Perrine et al.30</td>
<td>USA</td>
<td>2020</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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</table>
in the pandemic there were reports of good birth experiences and partners being allowed to visit.50

In a US study assessing the acute stress response to childbirth using the Peritraumatic Distress Inventory (PDI), women giving birth during the pandemic had significantly higher stress response to childbirth, with a higher prevalence of clinically significant acute stress levels than women giving birth before the pandemic (OR=1.38, 95% CI 1.01 to 1.89).31 This acute stress response to childbirth was associated (p<0.001) with childbirth-related post-traumatic stress.34

A lack of reliable information in mass media and uncertainty from HCPs amplified confusion surrounding symptoms, transmission, treatment and outcomes for mothers and their babies.40 In the USA, fear of interventions such as early labour induction meant some respondents refrained from sharing their COVID-19 symptoms with healthcare providers.48

Impact of COVID-19 on breast feeding

Sixteen studies described how breast feeding had been impacted by COVID-19.

There was little evidence to suggest the COVID-19 pandemic had significant impacts on women’s intentions and plans regarding breast feeding.28 47 32 There was no significant difference (p=0.268) in the predelivery feeding plan of mothers who were separated from their baby due to a positive COVID-19 test when compared with unseparated dyads.34

There was, however, mixed evidence that the actual rates of breast feeding had been affected by the pandemic. Popofsky et al34 found that asymptomatic unseparated mothers had higher rates of breast feeding while in hospital (22.6%) and at home (22.6%). Conversely, mothers who had symptoms of COVID-19 and were separated from their baby were more likely to subsequently formula-feed. While separated and unseparated dyads received similar rates of lactation consultation (40.4% vs 40.6%, p<0.98), women in the separated dyad were significantly (49% vs 16.7%, p<0.001) more likely to suggest COVID-19 influenced their deviation from the predelivery feeding plan. Although in a US survey of birth hospitals 68.9% (n=924) of women reported that rates of exclusive breast feeding had stayed the same since the start of the pandemic,33 there was a significantly higher prevalence (40 (26.3%) vs 18 (12.2%), p=0.002) of complementary feeding practices in new births during the quarantine period in Italy compared with 2019 births.36

Adverse impacts on breast feeding (p=0.01)31 32 were associated with high acute stress response to childbirth reported in US women who gave birth during the pandemic, and the strict restrictive visitation policies in neonatal intensive care units (NICUs) in the USA and UK also resulted in stress.

The availability of breastfeeding support during the pandemic was also demonstrated to be an important factor in rates of breast feeding. Vazquez-Vazquez et al52

<table>
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<tr>
<th>Table 4</th>
<th>Quality assessment of included studies (quantitative–non-randomised)</th>
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<tbody>
<tr>
<td>Quantitative–non-randomised</td>
<td>S1</td>
</tr>
<tr>
<td>Bérubé et al27 (2020), Canada</td>
<td>Yes</td>
</tr>
<tr>
<td>Muniraman et al32 (2020), UK and USA</td>
<td>Yes</td>
</tr>
<tr>
<td>Suzuki35 (2020), Japan</td>
<td>Yes</td>
</tr>
<tr>
<td>Popofsky et al34 (2020), USA</td>
<td>Yes</td>
</tr>
<tr>
<td>Cojocaru et al29 (2020), USA</td>
<td>Yes</td>
</tr>
<tr>
<td>Mayopoulos et al31 (2020), USA</td>
<td>Yes</td>
</tr>
<tr>
<td>Zanardo et al36 (2020), Italy</td>
<td>Yes</td>
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<tr>
<th>Table 5</th>
<th>Quality assessment of included studies (qualitative)</th>
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<tbody>
<tr>
<td>Qualitative</td>
<td>S1</td>
</tr>
<tr>
<td>Duff et al39 (2020), USA</td>
<td>Yes</td>
</tr>
<tr>
<td>Joy et al42 (2020), Canada</td>
<td>Yes</td>
</tr>
<tr>
<td>Spatz and Froh45 (2021), USA</td>
<td>Yes</td>
</tr>
<tr>
<td>Chivers et al38 (2020), Australia</td>
<td>Yes</td>
</tr>
<tr>
<td>Ollivier et al43 (2021), Canada</td>
<td>Yes</td>
</tr>
<tr>
<td>Snyder and Worlton44 (2021), USA</td>
<td>Yes</td>
</tr>
<tr>
<td>Hull et al41 (2021), Australia</td>
<td>Yes</td>
</tr>
<tr>
<td>Rizzi et al37 (2020), Italy</td>
<td>No</td>
</tr>
<tr>
<td>Fumagalli et al40 (2021), Italy</td>
<td>Yes</td>
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found that over half (57%, n=601) of women who gave birth before lockdown in the UK reported that the support they received for infant feeding had decreased since the first lockdown. In a separate study, those who reported that they were still breast feeding were significantly more likely to report that they had enough practical (t-test; t(1177)=6.66, p=0.000) and emotional (t(1177)=7.198, p=0.000) support.46 Mothers who were still breast feeding were more likely to be highly educated ($\chi^2=60.935$, p=0.000) and have other children ($\chi^2=14.456$, p=0.000) when compared with those who had stopped.46 Women who felt their social support had been impacted by the pandemic were more likely to stop breast feeding early (≤6 weeks: 73%; 6 weeks–6 months: 52%; >6 months: 12%).28 Mothers from minoritised ethnic groups were less likely to still be breast feeding ($\chi^2=10.770$, p=0.001) and more likely to attribute this to a lack of face-to-face support (t(227)=2.161, p=0.032) compared with white mothers.46 Participants who had stopped breast feeding were more likely to have been told breast feeding was not safe by an HCP ($\chi^2=18.84$, p=0.000) or friends and family ($\chi^2=5.327$, p=0.011), or that breast feeding was not allowed with symptoms of COVID-19 ($\chi^2=3.788$, p=0.047). Mothers who reported their breastfeeding experience being least affected by the pandemic were more likely to have a baby over 6 months old, with well-established breast feeding alongside solid foods, had pre-existing support groups which continued via social media, and tended to have no issues with breast feeding that required specialist support.46 Hull et al41 reported that mothers in Australia sought support to continue or restart breast feeding and increase their supply during the pandemic because they viewed breast feeding as protective. In several studies, mothers were concerned that infant formula may become inaccessible.28 44 45 49 There was a concern that COVID-19-related anxiety and lack of access to specialist breastfeeding support may negatively affect their milk supply and ability to breast feed, resulting in complementary formula feeding.28 34 41 44–46 48–50

Positive reports of the impact of the pandemic on breast feeding included more privacy and time to focus on responsively feeding their infant, reduced distraction and stress from hosting visitors, absence of unwanted comments, and increased support from partners who were more present at home.42 44–46 Conversely, perceived negative impacts included feeling overwhelmed, an intense focus on breast feeding, fatigue and concerns over a lack of experience breast feeding in public. For those who had returned to work, the main concerns included work pressures affecting their milk supply, the complexity of pumping at work with risks of contamination, potential breast engorgement and the stress of childcare responsibilities.28 44 46
Impact of COVID-19 on bonding and attunement

Ten studies described how bonding and attunement between parents and young children had been impacted by COVID-19. Vázquez-Vázquez et al.27 found no difference in the timing or duration of skin-to-skin contact when comparing UK births before and during lockdown.

Of the respondents across four NICUs in England and Wales and two in the USA, 50% (n=94) reported concerns about visitation policies. 41% (n=78) felt unable to bond adequately with their infant and 27% (n=51) reported being unable to participate in their baby’s daily care.32 Parents described inflexible and restrictive visitation policies, such as scenarios where they had to choose between bonding and medical activities such as learning how to tube-feed, where the health of their baby declined significantly but parents had already used their visiting time, and the lack of opportunity to emotionally support each other in the NICU and prepare for discharge.32

Balancing work and childcare,42 not being able to go to social/fun activities that encourage bonding, such as baby classes,48 50 52 and partners and loved ones missing out on bonding opportunities due to pandemic-related restrictions were cited as barriers to bonding.38 50 52 Conversely, some mothers reported that the absence of externally focused social pressure contributed to a better quality and quantity of bonding and attunement opportunities for them and their partner.42 45 50

In a US study, some respondents indicated that to protect bonding opportunities with their infant, COVID-19 symptoms were not disclosed to healthcare providers.46 Where separation did occur, women reported strong and enduring negative emotions such as guilt, emptiness and feelings of inadequacy.40 Mayopoulos et al.31 found that US women who gave birth during the pandemic had a higher acute stress response to childbirth as measured by the PDI when compared with women who gave birth before the pandemic, which was also associated with problems with maternal bonding (β=0.24, p<0.001; β=0.26, p<0.001). The same was reported in Japan, with a significant increase in the positive screening rate (OR 2.56, p<0.01).35

Impact of COVID-19 on parental responsiveness and sensitivity

Five studies reported on how parental responsiveness and sensitivity were impacted by COVID-19. Bérubé et al.19 examined parents’ reports on how they responded to their young children’s cognitive and affective, security, and basic care needs during the pandemic in Canada. Those reporting high levels of parental stress also reported being less responsive to their child’s cognitive and affective needs.27 Additionally, parents of children aged 0–5 years felt they were more able to respond to their child’s cognitive and affective, security, and basic care needs than parents of children in the 6–17 years old age group.27

Parents in a Canadian study felt the pandemic provided opportunities to learn and grow in their new parental roles and focus on their babies without distractions.42 Parents in the UK and Canada reported feeling sensitive to the needs of their children and felt able to identify the potential current and long-term impacts of the pandemic they may face. Concerns of parents included children missing out on experiences and activities that contribute to healthy social, emotional and psychological development,42 45 49 50 changes to routines caused by isolation and social distancing measures,50 and a lack of access to healthcare services for their children.49 50

Impact of COVID-19 on access to postnatal support

Eleven studies explored access to postnatal health and care/support. Mothers spoke of how a lack of informal support groups denied them opportunities to share experiences and learn from each other.42 45 50 52 Respondents in the UK felt that the loss of informal support was detrimental58 44 45 48 50 and resulted in fewer opportunities to improve their physical and mental well-being, pursue employment,50 52 56 and continue breast feeding.36 Mothers highlighted how remote consultation had limitations and was not appropriate for issues, for example, with latching or assessing a healing perineum.44 45 50 A US survey of birth hospitals reported decreasing access to inperson lactation support,33 while in a Canadian study respondents experienced challenges in accessing lactation support due to emergency restrictions.49

Impact of COVID-19 on HCPs’ experience of providing support

Five studies described HCPs’ experiences of providing support around breast feeding, bonding and attunement, and parental responsiveness and sensitivity.

Bonding

In a US survey of maternity practices in infant nutrition and care, 4.8% (n=64) of birth hospitals reported separating mothers and newborns until the mother received a negative COVID-19 test, 28.6% (n=378) separated dyads where the mother had symptoms or was awaiting a test result, and 24.2% (n=320) separated dyads only if the mother tested positive.38 Skin-to-skin contact immediately after birth, between mothers with suspected or confirmed COVID-19 and their newborns, was prohibited by 6.5% (n=87) of birth hospitals. It was discouraged by 14% (n=187), encouraged by 13.3% (n=178), while 66.1% (n=883) decided on a case-by-case basis.53 HCPs discussed the risks and benefits of temporary separation from their baby, but mothers were given the option to choose or refuse this and were provided appropriate safety and care measures for either option.29

Darcy Mahoney et al.80 reported that NICUs in the USA and other countries allowing 24-hour parental presence decreased significantly during the pandemic, from 83% to 53% (p<0.001), and those allowing parental participation during rounds also decreased from 71.1% to 32.1% (p<0.001). Virtual visits, opportunities for parents to join medical rounds virtually and online parent peer support groups were offered by some NICUs with more restrictive visitation policies.39
Breastfeeding support

For mothers with suspected or confirmed COVID-19, 66.9% (n=893) of birth hospitals surveyed in the USA supported direct breast feeding with precautions, while 20.1% (n=268) discouraged breast feeding but would allow it according to the mother’s choice, and 12.7% (n=170) did not support direct breast feeding but encouraged breastmilk feeding by a healthy caregiver.\(^\text{33}\)

Parental responsiveness and sensitivity

In the USA, majority (77.4%, n=188) of SafeCare practitioners who provide home-visiting programmes aimed at enhancing parent–child relationships reported difficulty in delivering the parent–child interaction component remotely, as this required active skill modelling and observation. While nearly half (45.3%, n=115) of the SafeCare providers felt that parents were less engaged during a virtual delivery compared with a home visit delivery, 15.3% (n=39) indicated that parents engaged better in virtual delivery. Providers felt this was because parents had more opportunities to implement the parent–child interaction skills once children were home all day and parents felt the virtual sessions were less intrusive with providers not in the home.\(^\text{51}\)

DISCUSSION

This rapid review synthesised the available literature on how pregnancy, birth experience, breast feeding, parental responsiveness and sensitivity, and bonding and attunement were impacted by COVID-19. Significant knowledge gaps on how COVID-19 affected pregnancy and breast feeding limited healthcare providers’ ability to provide consistent evidence-based information and care at the start of the pandemic. In the UK, as the pandemic progressed and evidence increased, guidance was developed and policies were changed to inform HCPs’ decisions around continuity of care, reprioritisation of face-to-face support and partners being present for appointments.\(^\text{15, 16, 53}\) However, policy implementation was subject to local discretion, and service delivery may have varied between local authorities subject to staffing and resources and COVID-19 case incidence.\(^\text{53}\)

Mothers who gave birth during the pandemic were significantly more likely to have problems with maternal bonding and attachment brought on by acute stress than mothers who gave birth before the pandemic, and these parents also felt that they were less responsive to their children’s cognitive and affective needs, consistent with evidence from other high-stress settings.\(^\text{34-36}\) In a time of great uncertainty, pregnant women often experienced challenging situations alone. Women generally wanted their partners to be present, and there was an enduring sense of loss about loved ones being unable to take part in key moments. Paternal mental health and the inclusion of fathers in maternal and child health service delivery, although an emerging research area, are also linked to child health and stability of the family environment.\(^\text{57}\)

As such, parents’ worries about the lasting effects of missed opportunities on paternal–infant bonding are not unfounded.

Women who received timely and clear information, for example, about virtual antenatal and postnatal resources from their healthcare providers, however, felt better able to cope with the uncertainties around their pregnancy, childbirth and postnatal care. This finding is supported by the National Institute for Health and Care Excellence guideline on improving the experience of care for people using adult services of the National Health Service.\(^\text{58}\) For pregnant women and new mothers who found their antenatal care to be safe and adequate,\(^\text{47}\) a possible explanation may be that they understood the rationale for a move to remote consultation to protect their health and that of HCPs.\(^\text{50}\)

It is important to note that remote consultation has existed pre-pandemic and has its usefulness.\(^\text{59}\) However, in line with the research on remote consultation for maternal health,\(^\text{60}\) many expectant and new mothers felt that this medium was suboptimal and they would have preferred face-to-face options.\(^\text{50}\) A global study has shown that, although HCPs considered remote consultation an important alternative to in-person consultations for maternal and child health, they also highlighted the lower quality of care and the risk of increasing the already existing inequalities in access to healthcare.\(^\text{61}\) It is no surprise then that new parents were concerned about the increased expectation placed on mothers to monitor both their health and that of the newborn, including the child’s development, in the absence of home visits by HCPs and the lack of access to child health services.\(^\text{43, 50}\) Mothers were also significantly impacted by reduced access to formal and informal in-person support and social networks, with virtual support often felt to be a poor substitute for practical help.

Women from minoritised ethnic groups were less likely to continue breast feeding and attributed this to a lack of professional face-to-face support and reduced practical support at home. One study suggested that perhaps the increase in perinatal support for minoritised ethnic groups\(^\text{62}\) may need to be extended to breast feeding.\(^\text{46}\)

Interpretation

The findings of this rapid review demonstrate that the pandemic experience for new and expectant mothers has not been homogenous—sudden and drastic changes to services provided benefits and opportunities to some, but challenges to others. The pandemic-associated harms experienced by these groups appear to fall on a socioeconomic gradient, raising the possibility that health inequalities have been widened and that the ambition to give all infants the ‘best start in life’ is likely to be more challenging than ever, as services and policymakers look to ‘build back better’ in the post-pandemic landscape.

As services adapt to new ways of working in the longer term, those families in greatest need of support and those already facing challenges and lack of resources,
with limited or no access to digital technology, risk being further left behind by changes in healthcare practices and provision. Further research is also needed around which aspects of maternal and child healthcare both expectant and new parents and HCPs consider appropriate to be delivered by remote consultation.

Strengths
This rapid review was conducted using Cochrane guidelines. Major strengths include a comprehensive literature search using a rigorous search strategy and multiple databases. Our systematic search strategy was informed by the research protocol registered in the PROSPERO database with clear inclusion/exclusion criteria and reviewed by an information scientist at Newcastle University. We piloted the search strategy using MEDLINE, then refined and retested to ensure we captured relevant literature. We supplemented searches of academic databases with websites of relevant UK-based organisations to identify grey literature. Majority (70%) of the data were extracted in duplicate by two independent reviewers to ensure accuracy in the reported results and to minimise subjectivity. We also used an established quality assessment tool to critically appraise the evidence. We examined a range of experiences among expectant and new parents and HCPs’ perspectives.

Limitations
This review included many studies which relied on online surveys for data collection due to the restrictions of the COVID-19 pandemic. It should be noted that this method of data collection may have influenced participant recruitment and involvement, which may limit the generalisability of these findings given the risk that certain population subgroups were digitally excluded. Some of the studies did not collect enough data or explore the findings in depth enough to explain the specific impacts of the COVID-19 pandemic and the resulting restrictions, contrast with the pre-pandemic situation or identify best practice. We only included studies in the English language due to time constraints of the funding, and studies set in high-income countries to inform policy and healthcare commissioning within the UK. We acknowledge that this will include countries with varying healthcare systems and pandemic-related restrictions; therefore, transferability of findings will be context-dependent. Due to the heterogeneity of studies, we were not able to undertake a meta-analysis.

CONCLUSION
New and expectant families have been both negatively and positively impacted by the COVID-19 pandemic and the resulting restrictions, but there is limited evidence considering how families from vulnerable and minority ethnic groups were impacted at the start of the pandemic. Policies which do not holistically consider the mother and the partner as a parent unit in the delivery of maternal and child health and care services can negatively impact the family and further widen health inequalities. This may have long-term implications on bonding/attachment and in turn on child development, as well as implications for the child’s health and well-being across the lifespan.

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