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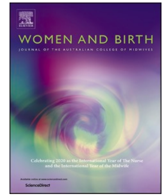

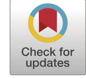

Women's experiences of maternity care in the United Kingdom during the COVID-19 pandemic: A follow-up systematic review and qualitative evidence synthesis

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ABSTRACT

Background: Maternity care services in the United Kingdom have undergone drastic changes due to pandemic-related restrictions. Prior research has shown maternity care during the pandemic was negatively experienced by women and led to poor physical and mental health outcomes in pregnancy. A synthesis is required of published research on women's experiences of maternity care during the latter half of the COVID-19 pandemic.
Aim: To update a previous systematic review of maternity care experiences during the pandemic to June 2021, exploring experiences of maternity care specifically within the United Kingdom and how they may have changed, in order to inform future maternity services.

Abbreviations: CINAHL, Cumulative Index of Nursing and Allied Health Literature; COVID-19, Coronavirus disease 2019 caused by the SARS-CoV-2 virus infection; EMBASE, Excerpta Medica dataBASE; HCP, Health Care Provider; MEDLINE, Online counterpart of MEDLARS MEDical Literature Analysis and Retrieval System; NHS, National Health Service; PRISMA, Preferred Reporting Items for Systematic Reviews and Meta-analyses; RCM, Royal College of Midwives; RCOG, Royal College of Obstetricians and Gynaecologists; RESILIENT, The RESILIENT study, Post pandemic planning for maternity care for local, regional, and national maternity systems across the four nations; SOGC, Society of Obstetricians and Gynaecologists of Canada; SPIDER, Sample, Phenomenon of Interest, Design, Evaluation, and Research; UK, United Kingdom; WHO, World Health Organization.

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Methods: A systematic review of qualitative literature was conducted using comprehensive searches of five electronic databases and the Cochrane COVID Study Register, published between 1 June 2021 and 13 October 2022, and further updated to 30 September 2023. Thematic Synthesis was utilised for data synthesis.
Findings: Of 21,860 records identified, 27 studies were identified for inclusion. Findings included 14 descriptive themes across the five core concepts: (1)Care-seeking and experience; (2)Virtual care; (3)Self-monitoring; (4) COVID-19 vaccination; (5)Ethical future of maternity care.
Discussion: Our findings in the UK are consistent with those globally, and extend those of the previous systematic review, particularly about women's perceptions of the COVID-19 vaccine during pregnancy.
Conclusion: Our findings suggest the following are important to women for future maternity care: personalisation and inclusiveness; clear and evidence-based communication to facilitate informed decision-making; and achieving balance between social commitments and time spent settling into motherhood.

Statement of Significance

Problem or issue

A synthesis is required of published research on women's experiences of maternity care during the latter half of the COVID-19 pandemic.

What is already known?

Maternity care during the early part of the pandemic (March 2020 – June 2021) was negatively experienced by women and led to poor physical and mental health outcomes in pregnancy.

What this paper adds?

This was the first review to synthesise work on women's perceptions of the COVID-19 vaccine during pregnancy. Findings show the need to remove practical barriers to vaccination, build on positive attitudes to existing vaccines, and communicate clinical messages about benefits and risks clearly to address misinformation and mistrust.

Introduction

COVID-19 was initially reported in the UK on 31 January 2020 and classified as a global pandemic by the World Health Organization (WHO) on 11 March 2020 [1]. By 26 March 2020, approximately two months later, the UK government had enforced a national lockdown in all four nations [1]. In the three years since, the UK recorded over 22 million cases of SARS-CoV2 infection and approximately 230,000 deaths [2]. On 5 May 2023, the WHO declassified the pandemic as a global health emergency but highlighted the need for sustained management of COVID-19 [3].

Throughout the pandemic, maternity care continued as an essential provision within the National Health Service (NHS), although patterns of care changed substantially. Initially, pregnant women were identified as particularly vulnerable to SARS-CoV-2 infection, and the joint guidance from the Royal College of Obstetricians and Gynaecologists (RCOG) and the Royal College of Midwives (RCM) recommended 'shielding' – staying at home unless seeking urgent medical care [4]. Subsequently, the NHS, RCOG, and RCM updated COVID-19 guidance for maternity care services frequently, usually weekly [5,6]. A national survey noted changes to maternity care practices during lockdown, including a reduction in antenatal and postnatal care contacts; increased use of virtual care replacing in-person care; restrictions on partners and birth companions accompanying women at visits; and suspension of birthing in both midwifery-led settings and at home [7].

Together, maternity service reconfigurations had profound impacts on women and their mental wellbeing [8], who reported experiencing the highest recorded levels of perinatal mental ill health [9], and great difficulty accessing mental, social, and healthcare support, thereby exacerbating isolation, anxiety, and feelings of abandonment [10,11]. Moreover, mothers with social and economic vulnerability were disproportionately affected by disruptions to in-person care and accessibility of services [12,13].

The rapid development and roll-out of the COVID-19 vaccine offered optimism and mitigated hospitalisation and mortality rates [14]. Whilst vaccination rates were high, many women of reproductive age (including those planning pregnancy, pregnant, or postpartum), particularly those from minority ethnic groups, remain unvaccinated [14,15]. Negative impacts on vaccine uptake have been attributed to unclear government guidance on vaccination in pregnancy, first discouraging pregnant women from receiving the vaccine and then switching to encouragement as further evidence came to light; and misinformation on social media about possible negative impacts of the COVID-19 vaccine on fertility and menstrual cycles [16].

A qualitative evidence synthesis by Flaherty *et al.*, which collated information from 31 global studies published between January 2020-June 2021 of women's maternity care experiences during the pandemic [17], reported the pandemic altered maternity care substantially and rapidly, and women experienced difficulty in synthesising information about the implications of COVID-19 for pregnancy. Many women adhered strictly to infection control measures, feared visiting healthcare settings, changed hospitals, postponed antenatal hospital visits, and considered giving birth outside the system [17]. Virtual care brought some benefits to women (e.g., avoiding travel time and childcare needs, and having more time to establish breastfeeding), but it was not viewed as a replacement for face-to-face care. Pandemic-related restrictions, particularly exclusion of partners at various timepoints throughout antenatal, intrapartum, and postnatal care, was viewed particularly negatively and women reported an array of negative emotions [17].

Studies of women's experiences of maternity care during the pandemic continue to be published, at pace. The aim of this current paper is to update the review by Flaherty *et al.*, to inform future development and organisation of maternity services and explore how maternity care experiences might have changed since June 2021. The review forms part of the work of The RESILIENT Study [18,19] of post-pandemic planning for maternity care across the UK; the focus is on the views and experiences of women, particularly those from ethnic minorities or having medical or social complexity, of maternity care during the pandemic as related to five key concepts of care: (1) Care-seeking and care experience, (2) Virtual care, (3) Self-monitoring, (4) COVID-19 vaccination, and (5) Ethical future of maternity services.

Methods

The review is registered with PROSPERO (CRD42022355948; [20]) and adheres to the PRISMA 2020 statement: an updated guideline for reporting systematic reviews [21].

Inclusion criteria

We followed the same SPIDER (Sample, Phenomenon of Interest, Design, Evaluation, and Research Type) framework as the original

review [17].

Our search included studies of women who were pregnant or up to six months postpartum, regardless of parity, and healthcare providers (HCPs) as defined in the original review [17]. Study designs of interest included: descriptive, exploratory, and interpretive qualitative studies; ethnography; observational; or mixed-methods studies, where qualitative data could be extracted separately; survey investigations including open-text questions with substantial qualitative data; linguistic studies; and studies of public discourse. Of interest were maternity care experiences during the pandemic, including all antenatal care, care associated with labour and birth, and postnatal care, inclusive of any vaccinations, monitoring, and assessment which women accessed during the pandemic in relation to pregnancy, childbirth, or the postpartum period. Care settings included hospitals, community, or home. Maternity care experiences related to quality, access, and utilisation of care were included. We sought literature published from any country on or after 1 June 2021, although only studies from the UK were subsequently included in this review (see *'Search Strategy and Selection'* section for further detail). The search strategy was unlimited by language, however, only English language full-texts were included for synthesis.

Search strategy and selection

Electronic databases of Scopus, MEDLINE, EMBASE, CINAHL, and PsycINFO were systematically searched along with the Cochrane COVID Study Register. The search terms and keywords used in the original Flaherty *et al.* review [17], which were subjected to independent peer review, were replicated for use in this review (Table S1). We updated the original review by searching for and including studies published between 1 June 2021 and 13 October 2022, and further updated to 30 September 2023.

Search results were cleaned of duplicates in Endnote Reference Manager and uploaded to Rayyan (web-based systematic reviewing tool). At least two members of the review team (TD, LP, GH, MW, SAS, HDM, PvD, LAM), independently screened each record based on title and abstract, followed by full-text review. Meetings were organised after each stage of screening and/or extraction and were organised to resolve any disagreements through discussion. Given the large number of studies which met inclusion criteria, a decision was subsequently taken prior to data extraction, to divide the review by constituent population groups (i.e., women's or HCPs' experience) and geography based on where the study was conducted (i.e., in the UK [the focus of this paper] or rest of the world) to produce a series of more focused reviews. This decision was taken to manage the volume of retrieved studies, and to align the aims to RESILIENT [18,19].

Data extraction and synthesis

Data were extracted independently by two reviewers (TD, GH), and entered into a pre-designed data extraction form on Microsoft Excel. Extracted information included study reference, aims, description of participants and study setting, dates of study, data collection method, and analytic methodology. Additionally, we recorded the themes identified in the results section of each included paper, so readers could easily appraise the original study findings of each included article. Each paper was imported into NVivo for coding and synthesis of the Discussion sections. Results sections were not coded to avoid replicating code and rendering logic circular.

As in the original review, methodological quality was assessed using an adapted version of a 12-item tool developed for qualitative evidence synthesis by the Evidence for Policy and Practice Information and Coordinating Centre [22]. This captures information on the quality of study reporting, quality of study methods, and reliability and validity of data collection and analysis. Each study was assessed independently by two members of the review team (TD, GH).

Thematic Synthesis [23] was used, with one modification, in that we had an a priori set of five concepts based on the aims of RESILIENT: (1) Care-seeking and care experience, (2) Virtual care, (3) Self-monitoring, (4) COVID-19 vaccination, and (5) Ethical future of maternity services. The extracted data from each included study were initially, and broadly, aligned with one or more of these key areas. The data under each area/topic were then coded. The descriptive themes were subsequently generated inductively from these codes under each area. Data were synthesised independently by two reviewers (TD, GH) to ensure cohesion and congruity in coding, with regular discussion to resolve any conflicts. Fortnightly meetings with the wider review team were held to discuss themes as they were arising and to achieve agreement on these. This process also involved members were our Patient and Public Involvement and Engagement Group (N = 15) who further reviewed, reflected on, and agreed themes.

Results

Search and selection

The literature search yielded 21,860 records, with none identified from searching additional registers. Following removal of duplicates (n = 2,925), records that were ineligible at title or abstract screening (n = 18,935), and records which could not be retrieved (n = 54); 413 records underwent full-text review. Following exclusion of additional ineligible records (n = 199; see Fig. 1 for reasons), 214 records met the review's overall eligibility criteria, of which 27 evaluated women's maternity care experiences during the pandemic in the UK and were included in the current review [24–50]. Fig. 1 [21] illustrates the search and selection process, including the number of studies informing each review category (i.e., population and location).

Description of included studies

Characteristics of the 27 included studies and their key findings as described by study authors, are presented in detail in Table S2. In brief, studies included > 5,000 women who were either pregnant or postnatal. Three studies analysed data regarding women's and partners' [26,34,36,43,45] experiences; although it was not always possible to discern the views of each distinct group in the discussion, these articles were retained in the review to be inclusive. The RESILIENT foci which most commonly appeared in the included studies were care-seeking and care experience (n = 27) [24–50] and virtual care (n = 22) [24,27–32,34,35–43,45,46–48,50]; fewer studies reported on self-monitoring (n = 1) [50]; COVID-19 vaccination (n = 5) [25,32,41,44,49]; or the ethical future of maternity care (n = 5) [30,31,34,36,41]. Data collection for the studies took place between October 2019 and June 2022, via semi-structured interviews (n = 20) [24,25,27,28–31,35,36–40,42,43,44,46,48–50] or on-line surveys with open ended questions (n = 7) [26,32,34,41,45,47,51]. Most studies utilised a form of thematic analysis (n = 18) [25–27,29,30–36,38,39,40,44,47,49,50]; other methodologies included: content analyses (n = 3) [33,45,46], template analysis (n = 2) [42,43], framework analyses (n = 4) [24,28,41,48], or grounded theory analyses (n = 2) [28,37]. Two studies used more than one methodology: thematic framework analysis with grounded theory analysis [28]; and content analysis with thematic analysis [33].

Quality assessment

Study quality was variable (Table S3). Two studies met fewer than 4/12 criteria [41,45], three met 10/12 criteria [31,32,42], 16 met 11/12 criteria (at least partially, usually failing to provide sufficient detail about patient and public involvement) [24–26,28,29,30,34,35,38–40,44,46,47,50,51]; and six studies met all criteria [27,36,37,43,48,49].

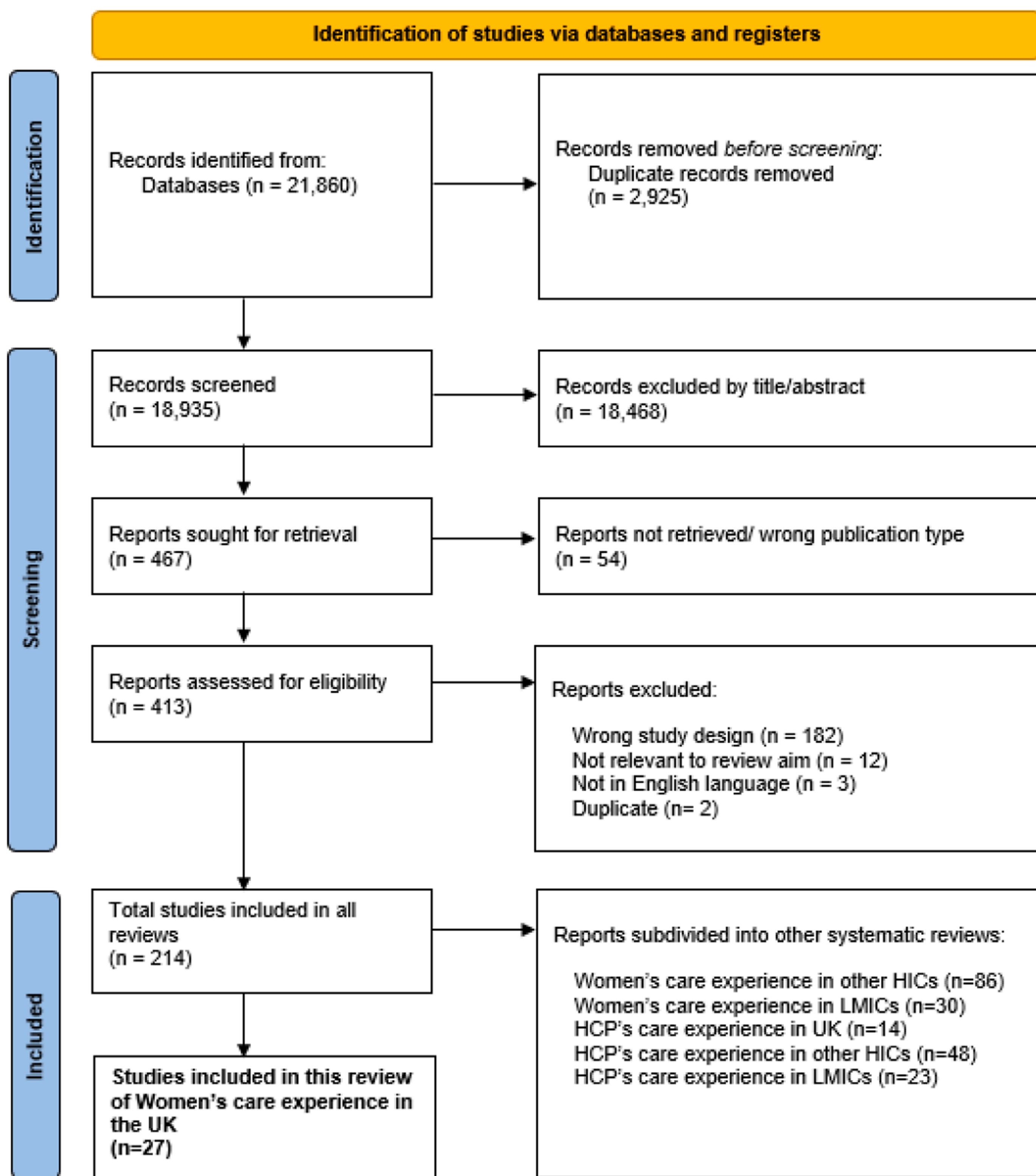

Fig. 1. PRISMA Flow Diagram.

Synthesis and findings

Synthesis of the Discussion sections generated 14 themes, summarised in Table 1. Passages of text from the original discussion sections are presented in Tables 2–6 to support the synthesised findings.

Concept 1: Care-seeking and care experience

Three themes aligned with this concept, supported by data from all included studies. These were: 'Impact of restrictions'; 'Experience of motherhood and mental health'; and 'Information and communication with healthcare providers' (Table 2).

Impact of restrictions. The imposition of guidelines and restrictions

Table 1
Process of theme development.

RESILIENT Concept	Theme	Descriptive code
Care-seeking and experience	Impact of restrictions[a,b]	Loss of control Partners kept away Support network and isolation Positive impact
	Experience of motherhood and mental health[a,d]	Burden and responsibility Mental health concerns
	Information and communication with healthcare providers[d,e]	Information Loss of connection Inequity
Virtual Care	Disruption of care and safety concerns[a,b]	Loss of personal and personalised care Insufficient care and support Loss of information Safety of quality and effectiveness of care
	Access to adequate technology[n]	Need to reduce digital poverty
	Improved access to and participation in care[a,c]	Reducing risk of infection Improved access
Self-monitoring	Control and independence over care[n]	Increase sense of control and confidence Above usual care
	Issues with implementation[n]	Pathways Equipment
Vaccination	Positive attitude to vaccines in pregnancy[n]	Views on other vaccines Benefit of routine vaccination
	Vaccine hesitancy[n]	Comparing risks Inadequate research
	Inequity of vaccine uptake[n]	Lack of clear messaging and information Trust Differing utilisation
Ethical future of maternity care services	Improving routine maternity care delivery[n]	Personalised virtual care Inclusion of partners
	Improved production and dissemination of information[n]	Counselling by healthcare providers Involving users in research
	Prioritising women's choices[n]	Loss of agency Widening disparity

[a]Theme 1: Altered maternity care (women)
[b]Theme 2: COVID related restrictions
[c]Theme 3: Infection prevention and risk
[d]Theme 4: "The lived reality"- navigating support systems
[e]Theme 5: Interactions with maternity services
[n]Not discussed in original review (Flaherty *et al.* 2022)

designed to limit the spread of COVID-19 in the community and in maternity settings, resulted in negative antenatal, intrapartum, and postnatal experiences for women [26]. Loss of agency and control was particularly relevant for women who wished to have a home birth, an option not offered during initial lockdowns when birthing was centralised to hospitals [26].

Exclusion of consented partners had a pervasive, detrimental impact on women's maternity care experience [27]. Exclusions were from ultrasound appointments, the initial stages of labour (such that some non-birthing partners missed their child's birth), and postnatal wards [42]. Women reported feeling anxiety and worry, especially when they needed extra help while recovering from medical procedures and felt uncomfortable asking staff who were reported as overworked [27].

Many women described mixed feelings about their separation from friends and familial networks due to social distancing. Rigid restrictions

Table 2
Concept 1 – Care-seeking and care experience.

Themes	Quotations
Impact of restrictions	"Overwhelmingly, however, women reported negative birthing experiences when discussing (i) restrictions in terms of birthing method (i.e., no access to birthing pool or home births), (ii) no offer of support and communication by medical staff and/or (iii) dismissals of their decision with regard to how they wished to give birth." Aydin et al., *BMC Preg Childbirth,* 2022. "There was an emphasis on in-hospital restrictions placed on birthing mothers, from healthcare providers requesting women delay hospital attendance when in labour, to separation of women from their birthing partners until they were in established labour, and frequently, the non-birthing parent missing the birth of their child." Silverio et al., *Midwifery,* 2021. "The need to comply with social distancing restrictions meant hospital policies usually excluded visitors, including partners, from visiting antenatal and postnatal wards. Early postpartum, women (especially those who had received epidurals or undergone Caesarean births) needed practical help, such as reaching for the baby. As they were conscious of the pressure on staff, they were reluctant to call for help." Gray & Barnett, *Br J Health Psych,* 2022. "This left women feeling incredibly lonely and desperate to go home; however, being at home was also isolating. Visiting friends and family was not permitted during the first lockdown." Anderson et al., *Midwifery,* 2021. "Participants were also frustrated with the inability to share parenthood milestones with friends and family, which was a source of sadness and guilt for participants" Jackson et al., *BMC Preg Childbirth,* 2021. "One of the ways in which decreased social pressure was exemplified as a silver lining was its impact on breastfeeding. Several women discussed a benefit of the pandemic being greater breastfeeding success, which they attributed to an increased amount of time spent with their baby, in conjunction with fewer visitors." Aydin et al., *BMC Preg Childbirth,* 2022.
Experience of motherhood and mental health	"This lack of clear guidance appears to have exacerbated existing feelings of stress and anxiety in women throughout their pregnancy" Aydin et al., *BMC Preg Childbirth,* 2022. "Current findings suggest lack of clarity surrounding face-to-face health checks during initial lockdown restrictions led to ineffective support for mothers and exacerbated feelings of anxiety and frustration" Jackson et al., *BMC Preg Childbirth,* 2021. "There was also evidence of positive reflections and making sense of the situation. This included increased time for caregiving and being present with family and an increased sense of control in the early stages of motherhood" Thomson et al., *Scand J Caring Sci,* 2022.
Information and communication with healthcare providers	"Relational care for women in hospital was disrupted by PPE. The wearing of masks removed facial expression as a form of non-verbal communication. Nevertheless, women appreciated the protection afforded by PPE and found it reassuring." Montgomery et al., *Women and Birth,* 2022.

(*continued on next page*)

Table 2 (*continued*)

Themes	Quotations
	"Limited access to information about the implications of COVID-19 restrictions led to increased fear and anxiety for participants who resorted to non-medical online resources and help and advice from family and friends." Riley et al., *Midwifery,* 2021. "Logistical problems such as inadequate or absent interpretation services or short appointment times negatively impact the relationships formed between minoritised patients and healthcare professionals and represent modifiable factors influencing the holistic nature of maternity care." John et al., *BMJ Open,* 2021.

on socialising with members outside of one's household during the early pandemic deprived women of social networks and support, and they were unable to share their baby's milestones with friends and family [29]. However, women also reported positive outcomes from social distancing. For example, without the 'outside' world demanding their time, women reported having the opportunity to bond more deeply with their baby, and feeling better-supported by their partners who were at home, both of which may have promoted successful breastfeeding [26].

Experience of motherhood and mental health. Maternity services underwent widespread, rapid, and serial reconfigurations during pandemic lockdown, particularly during initial lockdown, when some Trusts updated their guidelines and restrictions weekly. Nevertheless, guidance was often unclear and appeared arbitrary, especially with respect to face-to-face appointments, leading to ineffective support for mothers, frustration, and heightened anxiety [29]. In response, women used a variety of coping strategies which usually focussed on self-care and served to increase their sense of control [46].

Information and communication with healthcare providers. Although pandemic infection control practices were essential and the protection they afforded was appreciated by women, these practices worsened relational care [37]. This was exacerbated for women from ethnic minorities and those in need of interpretation services [31]. Women turned to other sources of information to answer their questions and address their concerns [40]. Resources included family and friends, online support for new parents (both official and unofficial/unregulated), and wellbeing practices [46].

Concept 2: Virtual care

Virtual care usually occurred by telephone, but video-conferencing was also used. Virtual care was covered by 22 of 27 studies, covering three themes: 'Disruption of care and safety concerns'; 'Access to adequate technology'; and 'Improved access to and participation in care' (Table 3).

Disruption of care and safety concerns. Virtual delivery of maternity care had several negative consequences for women, including confusion, distress, and emotional trauma [41]. Women reported impersonal care, and some essential care (e.g., checking caesarean incision sutures to rule out infection and monitor healing) had been missed. Information sent to women online was not necessarily understood – a problem compounded by the lack of opportunity to ask questions and receive responses in real-time [24]. Women lacked confidence in the effectiveness and safety of virtual care [28]. These negative appraisals were also made by women seeking counselling for perinatal bereavement or who were vulnerable and in contact with safeguarding services [43].

Access to adequate technology. Routine antenatal appointments and activities (e.g., parenting classes) moved on-line during the pandemic. Many women felt these were not particularly helpful in alleviating feelings of isolation and frustration [30]. Nevertheless, this change in approach unmasked a lack of NHS infrastructure to fully support virtual care and the additional challenges experienced by individuals with poor

Table 3
Concept 2 – Virtual care.

Themes	Quotations
Disruption of care and safety concerns	"The survey found that the widespread changes to services caused unintended negative consequences including essential clinical care being missed, confusion over advice, and distress and emotional trauma for women. COVID-19 restrictions have resulted in women feeling their antenatal care to be inadequate and has also come at great emotional cost to users, including the separation of parents at miscarriage diagnosis" Sanders & Blaylock, *Midwifery,* 2021. "These points of misunderstanding or not receiving the correct information about the proposed or ongoing neonatal care, in a timely manner, echoes work undertaken in the wider field of maternity care studies during the current pandemic, whereby care – be it planning care or receiving it – was often not discussed or received in a way which could be easily understood or retained due to the increased reliance on virtual communication and the reduction in face-to-face provision of care" Anderson et al., *BMC Public Health,* 2021. "Women were uncertain as to whether they were right to be concerned about issues that were worrying them. They lacked confidence in clinicians conducting remote consultations and remained unconvinced that nothing had been missed during these virtual interactions." Montgomery et al., *Women and Birth,* 2022. "Permeating women's accounts were concerns about safety, effectiveness and person- centredness, linked to the risk that absence of in- person contact might undermine the quality of interactions and hinder safeguarding and recognition of other safety issues." Hinton et al., *BMJ Quality & Safety,* 2022. "We found post-mortem and service investigations in the UK were not regularly explained face-to-face, but through video-calls, telephone, or in worst cases, by letter with no debriefing meeting. Parents also reported seeking support in new, virtual, ways (such as on-line counselling or support networks) which occasionally felt ineffective, especially when access to usual support networks and loved ones was not available." Silverio et al. *BMC Preg Childbirth,* 2021.
Access to adequate technology	"Salience at both timepoints emphasises the ineffectiveness of technology in attenuating maternal feelings of isolation and frustration in response to imposed lockdown restrictions, due to the lack of improvement in thoughts or feelings over time." Jackson et al. *Women and Birth,* 2021. "Barriers due to internet poverty must be urgently addressed to ensure that vulnerable groups are not excluded by a shift towards online care provision." Moltrecht et al., *BMC Public Health,* 2022.
Improved access to and participation in care	"The convenience of receiving a telephone consultation was emphasised; particularly, that it offered flexibility in both timing and location, and reduced the need for travel. This enabled participants to make arrangements that aligned with their personal circumstances, including childcare and working patterns" Boydell et al., *BJOG,* 2021. "Most respondents found attending routine hospital appointments anxiety-provoking. For one respondent, the thought of being transferred to hospital was so anxiety-inducing that labour contractions were slowed." Jackson et al, *Women and Birth,* 2021.

Table 4
Concept 3 – Self-monitoring.

Themes	Quotations
Control and independence over care	"Women in the current study used a range of strategies generally centred around promoting self-care." Thomson et al., *Scand J Caring Sci,* 2022. "Almost all women who responded to the survey felt safe monitoring their own BP during the COVID-19 pandemic and the majority stated that SMBP made them feel more confident. Key benefits for women included more control and independence over their care and an insight into their own BP." Wilson et al., *Pregnancy Hypertens,* 2022.
Issues with implementation	"This appeared to represent a further challenge, particularly under pandemic conditions; setting up new telemonitoring systems at the same time as SMBP required further time and additional local approval." Wilson et al., *Pregnancy Hypertens,* 2022.

BP (blood pressure)
SMBP (Self monitoring of blood pressure)

internet connectivity [36].

Improved access to and participation in care. Beyond avoiding COVID-19 at face-to-face hospital visits [30], women emphasised the flexibility of virtual care. This was, at times, better-aligned with individual circumstances, such as allowing them to work around childcare [48].

Concept 3: Self-monitoring

Self-monitoring was conceptualised broadly, to include monitoring for symptoms of pregnancy complications. However, the exploration of this theme in included publications was limited to self-monitoring using technology. One study reported on self-monitoring of blood pressure, with themes of: 'Control and independence over care' and 'Issues with implementation' (Table 4).

Control and independence over care. During the pandemic in England, blood pressure monitors were provided free-of-charge to high-risk and hypertensive women, with self-readings regarded as supplemental to standard care, rather than replacement [50]. Women reported: having deeper insight into their own care; feeling safe and confident measuring their own blood pressure at home; feeling more in control and independent [50].

Issues with implementation. Several issues were identified which would have to be addressed if self-monitoring of blood pressure were to be scaled-up for routine implementation. These include: initial set-up approvals; embedding self-monitoring into existing care pathways; and maintenance of monitors and their supply [50].

Concept 4: Vaccination

This concept was addressed by five studies with themes of: 'Positive attitude to vaccines in pregnancy'; 'Vaccine hesitancy'; and 'Inequity of vaccine uptake' (Table 5).

Positive attitude to vaccines in pregnancy. Women who trusted vaccination in general and/or supported those routinely recommended in pregnancy (e.g., pertussis) appeared to be equally as accepting of COVID-19 vaccination in pregnancy [24,44]. Vaccine uptake appeared to be greater where vaccinations were offered in antenatal clinics, and if they could be accessed without the need to use (additional) public transport.

Vaccine hesitancy. Women perceived pregnancy as a time to be particularly cautious about their health and the potential impact of unknown substances on their unborn baby [24]. Women reported needing more

Table 5
Concept 4 – Vaccination.

Themes	Quotations
Positive attitude to vaccines in pregnancy	"Thematic analysis identified that respondents who trusted vaccination in general expressed confidence in accepting COVID-19 vaccines, and if they were recommended by the NHS for pregnant women" Skirrow et al., *Vaccine,* 2022. "Women in our sample mostly described themselves as 'pro-vaccine' and felt that routine vaccines were very important, and even more so since the pandemic had hit, which aligns with early findings that Covid-19 strengthened positive attitudes towards vaccines in the general population." Anderson et al., *BMC Public Health,* 2021. "We found that more women were vaccinated at hospital antenatal settings during COVID-19 compared to previous pregnancies which supports previous work that antenatal hospital vaccine clinics play a key role in delivering pregnancy vaccines" Skirrow et al., *Vaccine,* 2022.
Vaccine hesitancy	"Risk-aversion characterised participants' responses to all the questions in this study, echoing cultural and medical conceptualisations of pregnancy as a time for women to be vigilant of risks for the health of their baby" Anderson et al., *BMC Public Health,* 2021. "Concerns about the speed of the development of the vaccine in the context of the global pandemic also related to 'mistrust in government' regarding the handling of the COVID-19 pandemic and also 'mistrust in wider pharmaceutical industry" Skirrow et al., *Vaccine,* 2022.
Inequity of vaccine uptake	"Most women expressed unwillingness to be a 'guinea pig' in Covid-19 vaccine trials, voicing fears about unknown effects of a new vaccine." Anderson et al., *BMC Public Health,* 2021. "This suggests that the pandemic may have not made mothers more reluctant to have their infants immunised as a result of pandemic activity. Differences in the proportions of babies receiving their immunisation on time may be due to changes in the maternity and health visitor services because of the pandemic." Jones et al., *PLoS One,* 2022. "The widespread vaccine hesitancy fuelled by the lack of clear messages dispelling any link between COVID-19 vaccination and fertility further highlights how potentially unclear public health messaging can result in unintended negative consequences." Sanders & Blaylock, *Midwifery,* 2021. "Women from ethnic minorities were less likely to have been vaccinated in pregnancy and were also more likely to report feeling less safe attending vaccine appointments and that their access to vaccine appointments had been physically restricted due to the pandemic for them and their babies." Skirrow et al., *BMC Preg Childbirth,* 2022.

information about the safety of COVID-19 vaccines for themselves and their babies before they would be comfortable participating in clinical trials, highlighting that eligibility is necessary, but insufficient to result in trial participation [24]. Uncertainty about vaccination was magnified by the speed with which the COVID-19 vaccine had been developed, highlighting a sense of mistrust in the government and pharmaceutical industry [44]. In contrast, delays seen in neonatal immunisations more generally, may have been due to changes in postnatal care pathways, rather than vaccine hesitancy [32].

Inequity of vaccine uptake. The lack of information about the effectiveness and safety of the COVID-19 vaccine in pregnancy led to widespread fear and anxiety, exacerbated by the lack of clear messaging from the NHS, Royal Colleges, and Government, as well as high-profile misinformation in social and other media [41]. Similarly, there was a lack of guidance specific to marginalised communities who were disproportionately affected by the effects of COVID-19, but also demonstrated

Table 6
Concept 5 – Ethical future of maternity care services.

Theme	Quotations
Improving routine maternity care delivery	"A personalized digital journey and the possibility of a follow-up assessment by an HCP may maintain the positive feelings of privacy while addressing the perceived lack of in-person care." Martin-Key et al., *J Med Internet Res,* 2021. "Optimising remote care for the future will require investment in high quality technology infrastructure, human resources and digital literacy skills and in codesigning pathways, work systems, workflows and processes to support efficiency and convenience for both service users and healthcare professionals" Hinton et al., *BMJ Quality & Safety,* 2022. "This could be addressed by facilitating mothers to record their baby's heartbeat and, where possible, video calls could be used." Moltrecht et al., *BMC Public Health,* 2022.
Improved production and dissemination of information	"maternity services to engage with local communities and stakeholder groups to better understand heterogeneous socio- cultural needs and to augment staff cultural competency" John et al., *BMJ Open,* 2021. "It is important for healthcare professionals to: encourage mothers to reach out about medical and emotional wellbeing concerns, initiate face-to-face conversations about mental health issues, ensure sufficient accessibility to mental health services, and ensure provisions are in place to reassure mothers about attending essential face-to-face appointments" Jackson et al., *BMC Preg Childbirth,* 2021.
Prioritising women's choices	"Many women reported that their decisions with regard to childbirth (e.g., water birth, delayed clamping) were not respected with many reporting their choice was either not considered or disregarded" Anderson et al., *BMC Public Health,* 2021. "Findings suggest that the pandemic has precipitated a concerning extension of a 'two-tier' system within maternity care in the UK. Whilst partners were not permitted to attend NHS scan appointments, women who could afford private scans were able to access a service where their partners were still welcomed. Similarly, those who were able to employ an independent midwife were able to continue with their plans for homebirth." Sanders & Blaylock, *Midwifery,* 2021. "This study provides evidence to support that development of new and innovative strategies is urgently required to guarantee that all ethnic minority women receive culturally acceptable, accessible and equitable maternal healthcare in the UK not only to tackle existing disparities but also to combat the additional detrimental effects of the SARS- CoV-2 pandemic." John et al., *BMJ Open,* 2021.

lower uptake of COVID-19 vaccine, widening disparities. Women from ethnic minorities reported reduced access to vaccine appointments and feeling less safe when attending them [49].

Concept 5: Ethical future of maternity care services

RESILIENT's final concept looks to the future. In five studies, three themes aligned with this concept: 'Improving routine maternity care delivery'; 'Improved production and dissemination of information'; and 'Prioritising women's choices' (Table 6).

Improving routine maternity care delivery. Women identified personalised care as key to a positive pregnancy experience and suggested changes to virtual care delivery to include follow-up assessments with HCPs as part of a personalised digital care pathway [34]. It was noted this would require investments in technological infrastructure and digital literacy training [28]. Emphasis was placed on avoiding any future exclusion of partners from maternity care services, and using learnings to extend access to video-calling with partners when unable to be physically present at maternity care encounters [36].

Improved production and dissemination of information. To ensure that information reaches and meets the needs of all women, including those in marginalised groups, it was considered essential that work be done with local communities and service-users, in planning and implementing service reconfigurations [31]. Also, HCPs must provide opportunity for informed choice amongst women and encourage self-advocacy, and an openness to raise concerns about medical or emotional wellbeing and accessing relevant services [29].

Prioritising women's choices. Women emphasised the importance of a return to negotiated care preferences with respect to the birth plan [24]. It was noted that some women with financial resources continued to exercise choice by paying for private ultrasound scans which partners could attend in person (in contrast to most NHS Hospital Trusts) or by employing independent midwives for homebirth (which was suspended, at least during initial lockdown) [31]. As such, innovative strategies are needed to tackle such widening disparities and inequalities.

Discussion

Comparison with the literature

To our knowledge, this is the only systematic review of women's maternity care experiences during the pandemic which focussed solely on the UK [20]. Such studies have represented the minority of publications in other reviews, which have been broader in scope, in terms of inclusion of mixed-methods (rather than just qualitative) publications [52,53] or those from a broader geography (e.g., LMICs) [17,52]; or additional interest in parenting experiences [53] or views of healthcare providers [17,53]. No previous review has reported women's views about COVID-19 vaccination, which we were able to do with our extended inclusion of publications to October 2022 (compared with Flaherty *et al.* [17] to June 2021).

We add 27 UK publications to the seven included by Flaherty *et al.* [17], deepening our understanding of the impact of the COVID-19 pandemic specifically on maternity care experiences in the UK, and providing reflections on how to build a post-pandemic maternity service that is fairer and better-placed to withstand future health system shocks without compromise. The review by Flaherty *et al.* found five themes about women's experiences of maternity care during the pandemic: Altered maternity care; COVID-related restrictions; Infection prevention and risk; "The lived reality" – navigating support systems; and Interactions with maternity services. The similarity between narratives was emphasised, despite different contexts, and our findings support this conclusion for the UK specifically, as mapped from our results to the Flaherty *et al.*'s [17] in Table 1.

Considering care-seeking and experience, studies from Ireland and Australia report women describing feeling isolated, anxious, and navigating pregnancy alone [54,55]. While our review highlighted the particular impact of partner exclusion on mothers during maternity care, other authors have shown reciprocally that partners report being similarly, deeply and negatively affected by this policy, reporting psychological distress and reduced bonding time with their new baby [52,56,8]. However, as reported in both the original review [17] and in Australia [55], women found having fewer visitors postnatally (particularly in hospital) provided greater opportunity to bond more deeply with their babies and partners, and to establish breastfeeding.

Considering virtual care, our findings are similar to a nationwide

survey conducted in the United States, which found that people who received telemedicine (vs. usual face-to-face care) perceived their care to be worse [57]. Removal of face-to-face care resulted in many women reporting 'falling through the cracks', especially new mothers who did not know what to expect or when to approach an HCP with concerns [52]. However, whilst our findings indicate women did not feel that virtual care alleviated feelings of isolation [30], others have reported that a support programme of social media-based antenatal care may be effective in the UK in providing a platform for peers sharing information and reducing feelings of isolation [58]. For those with higher levels of social complexity or living in remote areas, virtual care may remove structural barriers to care-seeking, such as the need for transport and childcare [12,57]. However, importantly, the pandemic resulted in an increase in reports of domestic abuse and child neglect [59], and face-to-face maternity care is often an essential point of contact to identify such issues – meaning a balance must be struck.

The paucity of qualitative studies published on self-monitoring of symptoms raises an interesting question about how women, clinicians, and researchers conceptualise self-monitoring during pregnancy. While we considered self-monitoring broadly, such as monitoring of symptoms, foetal movements, or mental wellbeing, the literature has focussed on use of medical devices for self-assessment at home. Nevertheless, in support of our finding of women's positive views of self-monitoring (of blood pressure), a survey of UK obstetricians, conducted after the first pandemic lockdown, found most supported self-monitoring as a part of regular management of pregnancy hypertension in the future, as was practiced during the pandemic [60].

Our findings on women's views of COVID-19 vaccination were heavily focussed on communication of information and addressing misinformation, circulated widely by social media [16]. The UK was slow to advise COVID-19 vaccination in pregnancy, with the RCOG and RCM only doing so in August 2021 [6] and the UK Joint Committee on Vaccination and Immunisation doing so on 16 December 2021 when it was clear that unvaccinated pregnant women were disproportionately represented among critically ill patients with COVID-19 [61,62]. Other learned bodies took a different approach; for example, the Society of Obstetricians and Gynaecologists of Canada (SOGC) published a statement on 18 December 2020, recommending offering COVID-19 vaccination upon its availability, stating: *"…the risk of infection and/or morbidity from COVID-19 outweighs the theorized and undescribed risk of being vaccinated during pregnancy or while breastfeeding"*, and citing the precedent of decades of experience with other vaccines administered in pregnancy [63]. Presenting vaccination as a social norm has been found to be key in increasing vaccination rates, strategically much more effective than directly confronting scepticism, even when based on misinformation [64]. This may address concerns expressed by minority ethnic groups, with potential to improve lower uptake of COVID-19 vaccination in these groups [14], as systemic racism and historical negligence have eroded trust in healthcare [57]. Future collaborative working with local community leaders may build back understanding and trust and dispel common misconceptions [57].

Finally, in looking towards future maternity services, our findings emphasise a need for: co-designed, flexible, and agentic personalised care; virtual care to be incorporated into routine care pathways; and investment in digital infrastructure, which has been echoed in work comparing different models of telemedicine in the United States [65].

Strengths and Limitations

This review benefits from robust data extraction and synthesis, with all studies having been screened for inclusion and quality assessed independently by two authors (TD, GH). Given the sheer volume of literature published on the impact of the pandemic on maternity care experience over the past three years, we limited the scope of this review to women's experiences in the UK, a high-income country with a healthcare system that is free at point-of-contact, limiting its generalisability to other contexts. However, we aim to complete the other systematic reviews, describing women's experiences in the rest of the world, comparing subsequent findings with this work. We included only English language papers, but our focus in this publication was on studies of the UK population which are highly likely to be published in English. In support of this, no studies for this review were excluded based on language. While we included two studies which did not meet most of the criteria of the quality assessment tool, the tool is an assessment of the methodological quality only, in particular of reporting and transparency. As we synthesised the Discussion sections of included papers, we hypothesised that poor reporting practice in these papers, would not greatly impact our study results. We assessed these papers to ensure that integrity of derived themes is not affected by their inclusion, which was found to be true. Data from these studies do not solely contribute to any of our themes or concepts, and as such inclusion of them has not altered the results, regardless of study quality. Lastly, views of partners were included by proxy, through women's narratives of the impact on their partners, rather than direct review of the partner population *per se.* Such a review is ongoing and would expand the evidence-base (CRD42022328040; [66]).

Conclusion

Recommendations to HCPs and policymakers

The findings of this qualitative synthesis have the following implications for HCPs and policymakers:

1. Personalisation of maternity care: Women desire broader consideration of their specific needs, such as capacity to engage with care, and social and cultural context. This is exemplified by women's mixed experiences of virtual care, which some would choose as a routine component of their care and others would not.
2. Inclusiveness of maternity care: This applies to minority ethnic groups, and those who women wish to have involved in their care (e.g., partners). Our rapid transition to using digital health technology during the pandemic leaves a legacy on which to build inclusiveness, and highlights the need for further development of infrastructure, policy, and legal/security provisions.
3. Presentation of evidence to facilitate pragmatic, informed decision-making: The approach to COVID-19 vaccination in pregnancy has provided us with important learning that is generalisable to maternity care more broadly. Where evidence is lacking, as it so often is when counselling pregnant women about their care options, we can draw on precedent (e.g., experience with other vaccines in pregnancy), the *balance* of benefits and risks (e.g., disease prevention in a pandemic vs. unknown and only theoretical risks with no hypothesised mechanism), and the value of creating a social norm in pregnancy (e.g., that increases vaccination uptake), applicable to all, including minority ethnic groups and those influenced by misinformation.
4. Discussion of the importance of achieving balance: Women are invited to complete birth plans, but our findings suggest that planning beyond birth, with respect to time alone and time with family and friends, may promote valuable well-being and infant bonding, for both parents. Women may benefit from a postnatal plan which considers their priorities, sets realistic goals specifically with respect to social plans, and prepares them to adjust as might be needed.

CRediT authorship contributions statement

Tisha Dasgupta: Conceptualization, Project administration, Resources, Methodology, Software, Investigation, Data curation, Formal analysis, Visualization, Writing – original draft. **Gillian Horgan:** Project administration, Resources, Methodology, Software, Investigation, Data

curation, Formal analysis, Writing – review & editing. **Lili Peterson:** Conceptualization, Project administration, Software, Data curation, Investigation, Writing – review & editing. **Hiten D. Mistry:** Conceptualization, Project administration, Resources, Software, Investigation, Validation, Writing – review & editing. **Emily Balls:** Validation, Writing – review & editing. **Milly Wilson:** Investigation, Writing – review & editing. **Valerie Smith:** Conceptualization, Resources, Methodology, Writing – review & editing. **Harriet Boulding:** Conceptualization, Funding acquisition, Validation, Writing – review & editing. **Kayleigh S. Sheen:** Conceptualization, Validation, Writing – review & editing. **Aricca Van Citters:** Conceptualization, Funding acquisition, Validation, Writing – review & editing. **Eugene C. Nelson:** Conceptualization, Validation, Writing – review & editing. **Emma L. Duncan:** Funding acquisition, Validation, Writing – review & editing. **Peter von Dadelszen:** Conceptualization, Funding acquisition, Investigation, Validation, Writing – review & editing. **Hannah Rayment-Jones:** Supervision, Validation, Writing – review & editing. **Sergio A. Silverio:** Conceptualization, Funding acquisition, Project administration, Resources, Supervision, Methodology, Investigation, Validation, Visualization, Writing – review & editing. **Laura A. Magee:** Conceptualization, Funding acquisition, Project administration, Resources, Supervision, Investigation, Validation, Visualization, Writing – review & editing.

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Patient and public involvement and engagement

This systematic review was periodically reviewed by the Patient and Public Involvement and Engagement (PPIE) group of the wider RESILIENT Study which comprises of 15 participants in total. The group were involved throughout, from conception of the project and research questions, through to checking findings for relevance. Meetings were held three times a year, was well attended with at least 8/15 members present at each, and had good representation of parents, healthcare workers, and community support, from multiple ethnic backgrounds, birth histories, and living in different parts of the UK. Each meeting allowed for in-depth discussion and reflection of the work by the wider PPIE team, with suggested changes incorporated into the study protocol and manuscript. Additionally, one member of the PPIE team was part of the smaller authorship team of this paper and reviewed and edited this manuscript in detail.

Ethical statement

Not applicable.

Declaration of Competing Interest

Six studies included in the qualitative evidence synthesis were authored by at least one member of the review team (SAS, LAM, PvD, or the wider RESILIENT Study Group). However, data extraction, quality assessment, and synthesis of these papers were not conducted by any of these authors, rather by TD and GH who have no competing interests. The RESILIENT Study has been adopted by the National Institute for Health and Care Research Applied Research Collaboration South London [NIHR ARC South London] at King's College Hospital NHS Foundation Trust. The views expressed are those of the authors and not necessarily those of the NIHR or the Department of Health and Social Care.

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Appendix A. Supporting information

Supplementary data associated with this article can be found in the online version at doi:10.1016/j.wombi.2024.02.004.

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