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Emotionally-centred perinatal care, practices and experiences

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Emotionally-centred perinatal care, practices and experiences

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Editorial: Emotionally-centred perinatal care, practices and experiences

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Editorial on the Research Topic
Emotionally-centred perinatal care, practices and experiences

Childbirth is a biopsychosocial and physiological event; however, it is often framed within a clinical or medical lens with a hyperfocus on physical processes. While it may require coordination, surveillance, and intervention (1), the experience of birth far exceeds this clinical lens. For women and birthing people, childbirth is often experienced as a profound emotional and relational event: one that engages vulnerability and strength, fear and surrender, intimacy and interdependence (2). To focus solely on the physical processes may mask what makes childbirth life affirming, tolerable, or traumatic (3).

For decades, the dominant bio-medical model in obstetrics has focused almost exclusively on morbidity and mortality, long organised around the pervasive mantra that "a healthy mother and a healthy baby" are the paramount outcomes. A framing that reflects what Barbara Katz Rothman (4) describes as the expansion of a "biomedical empire" – a system in which biomedicine functions not only as a clinical enterprise but as an economic, moral, and cultural authority, often reducing complex human experiences to biological metrics and risk management.

This biomedical logic can marginalise women's embodied, relational, and experiential knowledge. However, as contemporary research and voices from the field increasingly demonstrate, physical survival alone is insufficient as a marker of the quality of care. A positive birth experience has been described as

> "a woman's experience of interactions and events directly related to childbirth that made her feel supported, in control, safe, and respected; a positive childbirth can make women feel joy, confident, and/or accomplished and may have short and/or long-term positive impacts on a woman's psychosocial well-being. Leinweber et al. (5)"

A positive birth is not a luxury; it is a critical springboard for the transition to parenthood, positive maternal mental health and family wellbeing (6, 7). With global calls to improve maternal-neonatal outcomes, and to move beyond "survival" towards "thriving" (8), an emotional safety lens becomes paramount to this endeavor (9).

This Research Topic, *Emotionally-centred Perinatal Care, Practices and Experiences*, consolidates and extends this shift through 16 contributions spanning original empirical studies, theoretical analyses, and perspective papers. Taken together, the collection proposes that childbirth can be understood as an *emotional ecology*: a

complex interplay of embodied and neurobiological processes, relational and communicative practices, sensory and environmental cues, and organisational structures that shape safety, agency, wellbeing, and meaning in childbirth.

Psychological wellbeing and positive experiences as outcomes in their own right

One of the key themes from the collection relates to how emotionally-centred care is protective across the perinatal period. Tabib et al.'s longitudinal study of antenatal relaxation education demonstrates that even a single session can significantly enhance childbirth self-efficacy, mental wellbeing, and reduce fear and anxiety, with effects extending into the early postpartum period. Complementing this empirical evidence, Karlsdottir and Leap argue for the recognition and routine measurement of women's childbirth experiences as core quality indicators in maternity care, emphasising that positive birth experiences support empowerment, bonding, and long-term mental health, while negative experiences can contribute to diminished self-esteem and trauma-related outcomes.

From trauma-informed safety to respectful, non-violent care

Another central strand in the collection foregrounds trauma-informed maternity care and respectful practice, emphasising emotional safety as foundational to childbirth. Montgomery and Duckworth highlight how a "failure to listen" is especially consequential for survivors of child sexual abuse, while Cull et al. introduce the EMPATHY framework for routine trauma discussions designed to reduce re-traumatisation. These approaches intersect with explicit engagement with obstetric violence; Reyes-Amargant et al. reveal the epistemic and moral tensions, such as power asymmetries and lack of consent, that sustain non-respectful care. Critically, these contributions argue that preventing obstetric violence and avoiding re-traumatisation are essential components of clinical and emotional safety. As such, "woman-centered care" needs to be operationalised through practices that promote autonomy and agency, helping to mitigate distress, and optimise a care environment with the potential for healing and restoration, particularly for those with histories of trauma. Importantly, this Topic pushes beyond an individualised view of compassion; Redhead's analysis proposes therapeutic jurisprudence as a lens to address the organisational structures that often undermine compassionate care. Together, these works reframe emotionally-centered care as both an ethical necessity and a system-level commitment.

The sensory and environmental field of birth

A third cluster in this collection explores how sensory and environmental conditions modulate emotional states, coping, and labour processes. Rather than seeing the birth environment as a neutral clinical backdrop, contributions here reveal how textures, lighting, and spatial boundaries actively mediate the emotional landscape. For instance, Dahan and Goldberg's comparative study shows that when compared to women who gave birth in hospitals, women who birthed at home reported significantly higher "flow" states- a psychological state where a birthing person is fully immersed, focused, and absorbed. Complementing this, Albo et al. report that dim lighting in hospital settings is associated with higher rates of vaginal birth and fewer perineal tears, pointing to light as a modifiable feature that has both physiological and experiential relevance.

The contributions further illustrate how the environment can be actively reconfigured even within high-surveillance spaces. Clossick's self-analysis of a high-risk labour ward demonstrates how a low-tech intervention – creating a "sanctuary" behind a cloth screen – can support privacy and autonomy, suggesting that micro-spatial changes may generate meaningful cultural shifts. Other papers highlight more sensory-oriented rather than environmental factors; Haslund-Thomsen et al. describe how auricular acupuncture reduces stress for parents in the NICU, while Crowther et al. explore Havening as a psycho-sensory therapy for emotional resilience. Overall, these works point to sensory and environmental features through which safety and physiological processes are either supported or disrupted.

Relational care, collective learning, and childbirth agency

A fourth strand concentrates on the relational fabric of care and the social mechanisms through which agency is enabled. Across diverse settings – labour wards, antenatal groups, and institutional reform efforts – the contributions converge on a shared insight: agency in childbirth is not an individual state but a relational achievement. Skeide's ethnographic work in German midwifery settings and De Quattro's study of antenatal preparation both demonstrate how agency emerges through interactional practices rather than through isolated decision-making. While Skeide analyses how midwifery techniques such as "spooning" and positioning foster "care attachments" that shape bodies-in-labour, De Quattro shows how storytelling, group-led knowledge practices, and even "care-full absences" allow birthing people to interpret and inhabit childbirth as meaningful. In both cases, agency is enacted through attunement, embodied responsiveness, and shared sense-making. This relational dynamic is further extended in McCourt et al.'s evaluation of group antenatal care ("Pregnancy Circles"), where empowerment arises from participatory learning, continuity, and mutual recognition among women and professionals.

Importantly, relational agency also includes staff experience. Brimdyr et al.'s examination of skin-to-skin implementation through Antonovsky's "sense of coherence" framework shows how staff comprehensibility, manageability, and meaningfulness are preconditions for sustaining parent and infant relational care. Redhead's socio-legal analysis also highlights how rigid hierarchies and cultures of blame constrain the emotional capacities of caregivers. Together, these studies highlight how emotional or relational care cannot be sustainably implemented within emotionally depleted systems.

Conceptual horizons: birth as interdependent, embodied, and meaning-bearing

Finally, beyond empirical findings, the Topic includes work that expands the conceptual vocabulary available for thinking about emotionally-centred care. Sadler and Cohen Shabot draw on the "fungal turn", using mycelial networks as a metaphorical and conceptual resource for reframing childbirth as relational, interdependent, and permeable. These insights challenge individualistic models of agency, highlight how trust and safety can enable surrender rather than hypervigilant control. This conceptual reframing challenges dominant liberal and biomedical imaginaries of birth as an individualised event, as well as the epistemological assumptions that privilege control, separability, and risk management, instead positioning childbirth as an emergent relational field in which agency is co-constituted across bodies, environments, and care relations.

Toward an agenda for emotionally-centred perinatal care

Collectively, the 16 contributions in this Research Topic span empirical, theoretical, and experiential contributions across multiple disciplines. They suggest that emotionally-centred perinatal care is a paradigmatic reorientation with implications for research, practice, training, and policy. Seen through a relational ontology, insights from this collection position socio-spatial sanctuaries, sensory ecologies, midwifery care attachments, and group-based knowledge practices not as isolated interventions, but as expressions of an interdependent birth ecology. This collection offers an invitation: to take the emotional dimensions of childbirth seriously – as a core determinant of safety, agency, and wellbeing. Emotionally-centred perinatal care reframes birth as an embodied and relational process shaped by sensory environments, trauma histories, caregiving practices, collective learning, and organisational structures. In doing so, the Topic offers both a consolidated knowledge base and a forward-looking agenda for building more humane, responsive, and respectful perinatal care.

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Protecting emotional wellbeing during childbirth: exploring the role of organisational regulatory processes in promoting compassion

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In this article I consider how legal processes have power to facilitate or impede emotional safety and wellbeing for women and birthing people. I suggest that the use of therapeutic jurisprudence to re-view NHS Foundation Trusts' organisational and regulatory processes can offer new insights. Therapeutic jurisprudence is an approach which pays purposeful attention to the therapeutic (or harmful) consequences of legal processes and how they impact the psychological well-being of those upon whom they act. The report of the Inquiry into maternity and neonatal services at East Kent Hospitals University NHS Foundation Trust was the catalyst for the theoretical suggestions I make in this article. In its response to this report, the Government has acknowledged the importance of a culture of honesty, compassion and safety. However, none of the Government's recommendations considers the impact of organisational regulatory processes on the provision of compassionate care. My argument here is that such processes are neither inert nor benign. Critical socio-legal literature provides clear evidence of the anti-therapeutic potential of hierarchical organisational structures, and this is confirmed by the findings of the East Kent Report. Presenting a brief, therapeutic jurisprudence-informed review of some of the findings of the East Kent report, I suggest that a re-view of NHS Trusts' constitution and governance processes might offer the new means of tackling maternity service failures for which Bill Kirkup called in the East Kent Report, with the ultimate aim of ensuring emotional safety and wellbeing for pregnant and birthing people in childbirth.

KEYWORDS

therapeutic jurisprudence, compassion, maternity services, emotional wellbeing, organisational regulatory processes, organizational hierarchy, NHS constitution

1 Introduction

In this article I consider how legal processes, specifically organisational regulatory processes, have power as social attributes to facilitate or impede emotional safety and wellbeing for women and birthing people during childbirth. I suggest that the use of therapeutic jurisprudence (TJ) as a lens through which to re-view NHS Foundation Trusts' organisational processes can offer new insights into how emotional wellbeing can be preserved and enhanced for maternity service users. TJ is an interdisciplinary school of theory and practice designed to produce scholarship which supports law

reform (1). It is an approach which pays purposeful attention to the therapeutic (or harmful) consequences of legal processes (2) and how they impact the psychological well-being of those upon whom they act (3).

The report of the Inquiry into maternity and neonatal services at East Kent Hospitals University NHS Foundation Trust (the East Kent Report) (4) was the catalyst for the theoretical suggestions I make below and sits at the centre of the discussion and analysis in the article. The East Kent Report was 'somewhat different to the usual when it [came] to recommendations' [(4), v] in that, rather than suggesting detailed changes of policy in specific areas of practice or management, it identified values-based areas for action to improve staff and patient wellbeing: giving care with compassion and kindness, teamworking with a common purpose, and responding to challenge with honesty (4). In an open letter (published as a foreword to the East Kent Report), Bill Kirkup, who led the Inquiry, noted that,

> since the report of the Morecambe Bay Investigation in 2015, maternity services have been the subject of more significant policy initiatives than any other service. Yet, since then, there have been major service failures in Shrewsbury and Telford, in East Kent, and (it seems) in Nottingham. *If we do not begin to tackle this differently, there will be more* [(4), p. v, emphasis added]

I am particularly interested that, among other things, the East Kent Report linked the values-based failures which had been identified to the regulatory and governance framework, suggesting that, in failing to identify shortcomings and encourage clarity, *regulatory processes* were partially responsible for service failings and, thus, *for the harms to patients which sat at the core of the East Kent Report*. [see (4) Chapter 5, my emphasis]. It is specifically the link between organisational regulatory processes and failures of compassion that I interrogate here. I understand 'regulatory processes' as being broadly drawn, to include governance and decision-making practices, and organisational engagement in the interpretation and application of laws, regulation and policy. I am interested in how law manifests itself in the failures of compassion and kindness described in the East Kent Report. My contention, noting the strong correlation between staff support and patient safety [(5), Principle 3], is that emotional safety and wellbeing for women and birthing people during childbirth might better be protected if, acting as agents to promote positive behavioural change, organisational regulatory processes *themselves* promoted compassion.

Investigation into the safety of maternity services in the UK has focused on exploration of underlying problems, such as recurring causes of perinatal mortality (6) or poor communication (7). Law/legal processes have featured, but usually in an acknowledgement of the complexity of the regulatory environment (see, for instance, the East Kent Report, para 1.50). The Government response to the East Kent Report (8) touched on leadership and management (see Recommendation 4) but did not problematise law itself as a potential variable. Thompson and colleagues (9), investigating how to ensure safe routine maternity care, went further in this direction, concluding, among other things, that the *interpretation and application* of law, regulation and governance are key factors (emphasis added). However, no previous investigation, so far as I know, has considered whether a fundamentally different conceptual and theoretical approach to *designing* regulatory processes might better support emotional safety and wellbeing for women and birthing people during childbirth. The contribution I make in this article is to sketch out the theoretical underpinnings of such an approach, linking it specifically to the constitution of NHS Foundation Trusts (10) and to the principles and values set out in the NHS Constitution (8), which underpin the NHS as a whole.

I start by providing a brief summary of the East Kent Report, identifying five key themes for my purposes in this article. I next offer a 'wide angled' introduction to therapeutic jurisprudence, emphasising the work it can do to identify 'the relationship between legal arrangements and therapeutic outcomes' [(11), p.27]. In the next section, I draw on critical corporate law scholarship to support an argument that the 'corporate' nature of the model constitution for NHS Foundation Trusts (10) is, in part, responsible for the gap between the NHS values in theory and in practice. Having described the background and context for my suggestions, I move in the discussion section, to argue that a therapeutic jurisprudence-informed, values-based approach to organisational regulatory processes could (re)'operationalise' the principles and values described in the NHS Constitution in Trusts' organisational processes and practices. Starting from the findings of the East Kent Report, I consider how bringing TJ into the design of organisational regulatory processes might support compassionate care, with the larger aim of facilitating an organisational culture more conducive to the protection of the emotional safety and wellbeing of women and birthing people during childbirth. I conclude by proposing a qualitative, consensus-building socio-legal enquiry to interrogate the link between organisational regulatory processes and failures of compassion in maternity services. Such a project might identify and discuss participants' views and experience of where regulatory processes can cause friction in maternity services. An empirical bioethics methodology (12) would enable integration of empirical findings with normative, TJ-informed suggestions for changes to NHS Foundation Trust governance.

2 The East Kent Report

All women, birthing people and their families expect that they and their baby will be cared for safely and, where tragedies happen, that they will be well supported and treated with compassion. Over the last decade, a series of investigations into failures of NHS maternity services has made visible thousands of circumstances where this has not been the case (4, 13, 14). At the time of writing, Donna Ockenden's review into the quality and safety of maternity services at Nottingham University Hospitals NHS Trust is ongoing (15). The scope of this review, once again, includes management, governance and organisational culture (16).

The panel investigating failures of care at East Kent Hospitals University NHS Foundation Trust, found that failures of teamworking, professionalism, compassion and listening were the origins of the harms identified (4). Some of those harms, attributed to the Trust's regulatory and governance processes, are the focus of this article. In the Table 1 below, I identify five themes of particular relevance to the TJ approach I discuss here.

These indicative themes, with their roots in failures of organisational regulatory processes, underpin the TJ-inspired analysis which follows.

3 Therapeutic jurisprudence

Therapeutic jurisprudence is a legal philosophy which concerns itself with the human effects of law (17). The broad aim of TJ scholarship is to explore ways to implement law as a restorative, remedial and healing instrument, with a view to reducing its potentially harmful, emotional, psychological, relational and economic effects (18). Developed from mental health law in 1970s America (19, 20), TJ is a movement which seeks to establish more humane and psychologically optimal approaches to law and legal issues, with an emphasis on relationality and collaboration (21). The broad aims of TJ scholarship are to use the law to empower and to promote wellbeing (22) without supporting paternalism or coercion (1, 11). TJ asserts that, while they should not trump justice or other relevant legal considerations (1, 11), therapeutic effects are desirable and should generally be an aim of the law, whereas non-therapeutic effects of laws should be avoided or minimised (1). TJ is grounded in dignity (23), and founded upon, the psychology of compassion, understood as a sensitivity to, and a concern for, the suffering of [any person on whom the law acts] and a commitment to alleviating or preventing it' [(24), 107].

TJ has been applied in a number of legal fields [for discussion, see (25)] and there is a variety of theoretical and empirical examples of its use in studies concerning health law and policy in the US (see, for example (2, 3, 26–28). TJ has not to date, however, been explored in the NHS context. This might be because the solidaristic, relational philosophy underpinning the NHS (29–31) and the values-based approach to NHS provision (8) make it a less obvious candidate for a TJ-informed analysis than the consumer/markets-based system within which healthcare services are provided in the US [see (26)]. For instance, Cerminara (26) uses TJ to situate an argument that the patient should be at the heart of US healthcare services, something which is a core principle of NHS provision (8). However, 'market-style' reforms have, among other things, changed the organisational context within which NHS healthcare professionals work [(32), p17]. It is this which (particularly in light of the findings of the East Kent Report) suggests that there is a gap between NHS values in theory and their application in organisational practice. My suggestion is that a TJ-inspired analysis of Trusts' organisational processes might help close this gap. I use the five (only thinly developed) 'East Kent themes' to illustrate how, while organisational processes can themselves be harmful, they might equally be therapeutic (and better promote compassion). To develop this argument, I turn next to the critical corporate law literature, where similar harms have also been identified. Conscious of the limited space for discussion, I focus specifically here on hierarchical organisational structures.

4 Interrogating the 'corporate' trust

Critical corporate law scholars have recognised the damaging effects of the hierarchical 'corporate' model, embedded in an individualistic, profit-seeking philosophy, on the relationships and interdependencies within large corporations (33). In a company, a board of directors exercises all the powers of the company (34). The board's overall aim is (financially) to benefit the company's shareholder members (35). Directors are generally not accountable to a company's less powerful stakeholders (35, 36), including employees, 'human resources' whose interests and wellbeing, it has been argued, are not always respected (36). Lower-level employees might be objectified (37) and denied a voice, leading to the creation of 'a less beneficent culture' [(38), p154]. David Yamada has suggested that, 'the dominance of the markets and management framework has caused many workers to surrender their personhood, at least on the job' [(39) p527]. While not profit-making in the same way as commercial organisations, Trusts are similarly hierarchical in structure, and also driven by market-based targets and output measures (see *targets and hierarchies* themes from East Kent Report findings).

The model constitution for NHS Foundation Trusts [see (10) (the Trust Constitution)] describes an organisational structure

TABLE 1 Harms attributed to the East Kent trust's regulatory and governance processes—themes for a TJ analysis.

Theme (definition)	Example [East Kent Report para number(s)]
Statistical outcomes as the only measure of birthing person/baby wellbeing (*targets*)	Use of statistics (indicating that the majority of births ended with no damage to the birthing person or the baby) to obfuscate/ignore the scale of the problem (1.11–1.13; 5.14)
Hierarchal structures disempower frontline staff (*hierarchies)*	Executive as a '*threatening*' presence (4.202) A concerning divide between senior management and frontline staff (5.29)
Intimidating and coercive behaviour cannot support compassionate care for women/birthing people (*bullying*)	*I am ashamed to say I feel intimidated at work…I feel completely unsupported by our most senior staff. At times I dread going to work* (para 5.45). And see 5.47.
Workplace fosters a 'blame' mindset instead of reflective practices (*blame*)	*Staff are [not] supported by senior management…there is a culture of blame and recrimination* (4.154) *The consultant stormed onto the ward…and demanded to know what I had done to produce [the bad outcome]* (4.155).
Adversarial legal processes erode kind, collaborative, team-based patient care (*adversarial*)	With employment issues, even where patient safety is threatened, '*external support for Trusts is often unhelpful, while defence organisations mobilise their full resources*' (1.444)

closely related to the standard company model. A Trust is run by a board of directors, which is overseen by a council of governors tasked with holding the non-executive directors to account for the performance of the board and to represent the interests of members of the Trust and the wider public (see Trust Constitution). The East Kent Report provides clear evidence that, in that Trust at that time, a 'less beneficent culture' existed (see *hierarchies; bullying; blame*). There was 'a clear disconnect between ward and Board' (para 5.33) (*targets*; *adversarial*). We can suggest, then, that constitutional structure is relevant to the failures of organisational processes identified in the East Kent Report and, thus, that a flattening of Trusts' corporate hierarchy could improve organisational culture and, in turn, the emotional safety and wellbeing of women and birthing people. In the discussion which follows, I use the principles of TJ, and examples from TJ scholarship, to suggest what this might look like in practice.

5 Discussion: restoring the trust?

We have seen that TJ is underpinned by a recognition that legal processes are a powerful social force (17), producing behaviours and consequences (40) and impacting on people's wellbeing, feelings and self-esteem (41). In seeking to harness that power to minimise the potential for *harmful* behaviours and/or consequences, TJ brings a new dimension to, but does not trump, questions of justice (41). TJ emphasises human dignity, compassion (23, 25, 42) and respect (43). Each of these is supported, in the context of organisational decision-making, by processes which mandate the involvement of people from across the organisation in a meaningful way (44). It is interesting, in passing, to note that the conduct of the East Kent Inquiry, informed by a 'families first' principle, adopted an explicitly compassionate, respectful (trauma-informed) process [(4), Appendix B], which, in its specific attention to each of these key values reflects a TJ-style approach [for a TJ-focused discussion of a trauma-informed process see (2)].

My suggestion is that, even within the hierarchical corporate NHS Trust model, a more enlightened organisational approach should be employed, informed by the principles and values around which the NHS Constitution is arranged, particularly compassion, respect and dignity. The NHS Constitution is intended to inform the service provision of all NHS bodies [(8), Introduction] and is currently less influential than it might be in inspiring compassionate organisational practice (31). Second, the model Trust Constitution already anticipates (but does not mandate) the involvement of staff and patients in organisational processes (10). It is therefore already open to Trust boards to ensure that hierarchies are flattened, that stakeholders (staff at all levels *and* patients) are able to engage directly with decision-makers, and to ensure that senior managers and board members are regularly present in the wards and hallways of the hospital. Policies and procedures, together with senior decision-maker education, can move to operationalise a flatter, more compassionate, organisation for the benefit of staff and, in the context of maternity services, women and birthing people in childbirth.

Anna Kawalek's (17) TJ work with magistrates in problem-solving courts offers food for thought in this respect. Kawalek investigated the therapeutic quality of magistrates' behavioural interactions with people appearing before them in court. The TJ values from her study (harnessing therapeutic support; engaging therapeutic dialogue; inspiring therapeutic change) speak directly to the findings of the East Kent Report as regards hierarchical behaviours, bullying and the blame culture described. Translating Kawalek's TJ values into Trusts' organisational practices might see policies reflecting the importance of top-down therapeutic support (e.g., active engagement with team members'/patients' views), engaging therapeutic dialogue (openly sharing information, encouraging participation, treating team members/patients/families as equals) and inspiring therapeutic change (helping team members to develop, fitting birthing processes around patients' wishes to the extent possible). Organisational policies and procedures might be co-created, for example, at routine patient/staff board engagement meetings, or stakeholder 'juries' convened to discuss organisational strategy (e.g., working within guidelines), using inclusive language to maximise effectiveness and ensure wide understanding and engagement.

In terms of *adversarial* (legal) practices, David Yamada's (39) TJ-inspired work in America emphasises the importance of educating lawyers to combine legal expertise with a problem-solving approach to adversarial processes. Hospital legal/governance teams might be encouraged to do the same, to apply a preventive approach, to ask what measures might reduce adversarial practices and to prepare employee handbooks and manage people accordingly. Further, legal advisers to the board might emphasise (as per the NHS Constitution) the importance of collaborative, compassionate management, supportive relationships, staff/patient engagement (39, 45) and mediation (41). These approaches would acknowledge the importance of *relationship*s in healthcare practice, and, as colleagues and I have argued elsewhere, could better support the provision of compassionate care (46), for the benefit of relationships across a Trust's wider community (47, 48).

6 Conclusion

In its response to the East Kent Report (8) the Government has acknowledged the importance of a culture of honesty, compassion and safety [see NHS England (49)]. However, none of the proposed measures addresses the impact of organisational regulatory processes on the provision of compassionate care. My argument here is that such processes are neither inert nor benign. Critical socio-legal literature provides clear evidence of their anti-therapeutic potential, and this is confirmed by the findings of the East Kent Report. The organisational processes embedded in Trusts' constitutional structure appear, thus, to be out of step with the relational, values-based underpinnings of the NHS as an organisation. My

brief TJ-focused review of some of the findings of the East Kent Report suggests that a re-view of Trusts' constitution and governance processes might offer the new means of tackling maternity service failures for which Bill Kirkup called in the East Kent Report. I suggest that empirical research involving midwives, obstetricians and pregnant and birthing people is required to explore in more depth the points of tension in everyday organisational maternity processes and practices, with the ultimate aim of ensuring emotional safety and wellbeing for pregnant and birthing people in childbirth.

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Being in the zone during physiological birth: a comparative study of hospital and home birth environments

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Introduction: A flow experience typically occurs when the challenge of a demanding physical activity aligns with an individual's abilities, resulting in a sense of empowerment and fulfillment. Experiencing flow during physiological childbirth occurs in various birth environments, but quantitative studies comparing home birth and hospital birth in this respect are scarce. Childbirth is a psychological, social, and physiological event; thus, the birthing environment probably crucially affects the mental state of birthing women. We hypothesized that home birth will be positively correlated with a heightened flow state experienced by women during physiological labor, differing significantly from the experience of women birthing in a hospital.
Method: Israeli women with physiological childbirth experience were recruited through social media. Participants ($n = 421$) completed the Flow State Scale (FSS) and a demographic questionnaire.
Results: Comparing hospital births and home births, our research reveals a significant correlation between home birth environment and heightened birthing women's flow state. In physiological childbirth, women birthing at home report higher flow states compared to women in hospitals.
Discussion: The observed differences indicate a compelling connection between the birthing environment and the women's experience during labor. The heightened flow state during home births is explained in measured flow dimensions: challenge-skill balance, action-awareness merging, clear goals, unambiguous feedback, concentration, and joy. By comparing correlations of birthing environments and birthing women's flow state, this research contributes a novel perspective to the ongoing discourse on optimizing childbirth experience.

KEYWORDS

physiological birth, birthing consciousness, birth environment, flow state, home birth, hospital setting

Introduction

Hospital birth is the cultural norm in Western industrialized countries, and the percentage of planned home births, for example, in the US, remains relatively low (1). This study took place in Israel, where maternity care operates within a general healthcare system, ensuring all residents have access to comprehensive prenatal, childbirth, and postnatal services (2). Most births in Israel occur in hospitals, accounting for approximately 99% of all births (3). These hospitals offer a spectrum of childbirth options, ranging from highly medicalized births with interventions like

epidurals to low-intervention births supported by midwives (3, 4). Israeli midwives are registered nurses with specialized midwifery training (3). They provide autonomous care and emotional support, often managing multiple births simultaneously (4). Obstetricians, however, hold ultimate responsibility for birth outcomes and intervention decisions, sometimes influenced by liability issues. Thus, it is a medicalized maternity care system (3).

Planned home births are legal in Israel but remain relatively uncommon, constituting approximately 1% of all births (3, 5). These births are typically attended by certified midwives and are subject to strict regulations to ensure the safety of both mother and baby. Thus, women opting for home births must meet low-risk criteria (6). As for birth centers, in 2017, the Israeli Ministry of Health ordered the closure of all independent, midwife-led birth centers. This decision significantly reduced the options for out-of-hospital births (6, 7). However, in July 2021, the High Court ruled that these closures violated women's freedom of choice, ordering the reopening of these centers. Despite this ruling, free-standing birth centers have not yet resumed operations (7).

Qualitative studies reveal why women choose to plan home birth. Women's past traumatic encounters with hospital births, coupled with a desire for a more natural birthing process, appear to have driven their confident choice to opt for planned home births despite facing criticism and social stigma from both their social circles and certain maternity care providers (8, 9). In this context, an important example of a positive physiological outcome of home birth is reduction in perineum trauma. Perineum trauma severely affects postpartum women's ability to recover both physiologically and psychologically from birth, and planned home births are associated with fewer perineal tears and a reduced risk of third or fourth-degree tears during childbirth (10). Additionally, women who birth at home are less prone to experiencing postpartum depression compared to those who give birth at a hospital or birthing center (11). Women who opt for a planned home birth also report a high level of satisfaction, attributing it to the comfort of their home environment and the sense of increased control over the birthing experience. Qualitative studies consistently highlight feelings of empowerment during home births as a prevalent theme (12).

A positive birth experience is of paramount importance for both the mother and the newborn. It sets the stage for a healthy start to life, fostering immediate bonding and successful breastfeeding (13). A positive experience can also significantly impact the mother's emotional well-being, reducing the risk of postpartum depression and anxiety (14). It empowers women, making them feel confident and in control, which can have long-lasting effects on their self-esteem (15). Research shows that women view a positive birth experience as involving the safe birth of a healthy baby in a supportive environment, with both practical and emotional assistance from birth companions and understanding clinical staff. While many prefer physiological birth, most women recognize the uncertainty of childbirth and are willing to adapt. If intervention is required, women aim to retain a sense of control through active involvement in decision-making. In this sense, both safety and psychosocial wellbeing hold equal importance (14).

Conversely, negative birth experience usually correlates with a more medical birth, particularly instrumental births and unplanned cesarian sections (16), lack of support during childbirth (17), and obstetric violence (18). Negative birth experiences may have severe mental consequences during postpartum, such as childbirth-related PTSD or symptoms of somatization, obsessive compulsion, depression, and anxiety (16); thus, according to the World Health Organization, healthcare providers and support systems should strive to ensure that every birth is a positive, empowering experience (19). While there is a growing emphasis on promoting positive birth experiences, recent research by Kuipers et al. (20) explored women's firsthand accounts of their childbirth experiences across seven European countries – United Kingdom, Netherlands, Belgium, Germany, Austria, Spain, and the Czech Republic. The study specifically examined women's perceptions of their role and treatment within maternity care systems, revealing persistent issues of marginalization. Despite residing in countries often viewed as progressive and woman-centered, participants frequently reported not being treated as equal partners or primary decision-makers during their births (20).

Recent studies have demonstrated that during a physiological birth, women sometimes experience a positive altered state of consciousness (13). This state is referred to as "birthing consciousness," and it resembles the mental flow state that is characterized by complete immersion and focus on an activity (4, 21). In a previous report, we discussed differences identified in an online survey of 766 women regarding the flow state experienced during childbirth. The findings showed that women who underwent physiological childbirth (i.e., without epidural anesthesia or instrumental interventions) had a higher flow state during birth (21). The flow state, often experienced during intense physical activity, involves focused engagement with a task that is both physiologically and psychologically challenging (22). During flow, individuals experience intense concentration, a sense of timelessness, effortless action, and deep enjoyment. Flow often occurs when the challenge of an activity matches the individual's abilities, leading to optimal performance and a feeling of accomplishment (23–27). This description fits fundamental aspects of physiological childbirth, thus labor and birth can induce a profound state of flow (28). It is crucial to note that flow experiences do not necessarily imply superficially cheerful sensations; rather, they involve a profound sense of intrinsic motivation, fulfillment, and positive engagement with the task at hand (29). Thus, experiencing flow during childbirth does not mean women feel explicitly cheerful or conventionally joyful throughout the entire labor, but rather that they experience labor as intrinsically meaningful, rewarding, and empowering.

According to Kirkham (28), while many women experience stressful births in medicalized birth environments, others seek autonomy in their birthing experience. These women often opt for home births with midwife care, valuing continuity, trust, and empowerment. A Flow state can occur in various birth settings, including traditional maternity wards, if women are treated with respect and actively involved. These experiences boost maternal confidence and strength (28). Thus, experiencing flow during physiological childbirth occurs not only in domestic birth

environments – such as birth centers and homes – but also in typical hospital settings, but few studies compare the two. Because childbirth is a psychological, social, and physiological process, the birthing environment probably crucially affects the mental state of birthing women, especially during unmedicated birth (13, 30), we assumed the possibility of different subjective birthing experiences based on environment. The goal of our study was to investigate this potential link between birth environment and the physiological childbirth experience based on the occurrence of a heightened flow state during childbirth. For purposes of the study, we defined physiological birth simply as a vaginal birth with no epidural and no instrumental assistance in the second stage (see also (16).

Research hypothesis

Home birth will be positively correlated with a heightened flow state experienced by women during physiological labor, differing significantly from the experience of women birthing in a hospital environment.

Methods

Procedure

Israeli women were invited through social media to participate in an open online study presented as "Experience during physiological childbirth." The physiological mode of birth was defined simply as vaginal birth without an epidural or instrumental assistance in the second stage of birth. In the current study, we intentionally chose to focus solely on the type of birth – specifically, physiological birth defined as birth without epidural analgesia or instrumental assistance during the second stage – as our primary criterion of interest. We deliberately refrained from collecting additional data regarding other birth interventions, such as the frequency of vaginal examinations or various forms of labor induction. This decision was made to maintain a concise, clear, and accessible online questionnaire, thereby maximizing participant responsiveness and reducing dropout rates.

After signing informed consent forms, each woman received a link and was asked to complete separately the online demographic questionnaire and a flow state questionnaire. Participants were informed that their anonymity would be preserved throughout the study and that they had the right to discontinue participation at any time. There was no financial incentive for participating; we did offer to share the results of the study with the participants. Respondents were able to review and change their answers through a Back button.

Instrument

Demographic questionnaire

We collected information about participants' age, marital status, number of children, education level, number of years since the birth being reported, number of births, birth order of the selected birth (first, second, etc.), and the environment in which their physiological birth took place: hospital or at home.

The Flow State Scale (FSS)

The FSS is a 36-item self-report questionnaire that assesses flow experiential awareness in sports and physical activity settings, which was developed based on Csikszentmihalyi (22) and is well-validated (25). The scale uses nine dimensions to evaluate flow awareness: challenge-skill balance (e.g., "I felt I was competent enough to meet the high demands of giving birth"), action-awareness merging (e.g., "I did things spontaneously and automatically"), clear goals (e.g., "I knew clearly what I wanted to do"), unambiguous feedback (e.g., "I could tell by the way I was performing how well I was doing"), concentration on the task (e.g., "I had total concentration"), sense of control (e.g., " I felt in total control of my body"), loss of self-consciousness (e.g., "I was not worried about what others may have been thinking of me"), transformation of time (e.g., "Time seemed to alter – either slowed down or speeded up"), and autotelic experience (e.g., "I found the birthing experience extremely rewarding"). Each item was rated on a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Mean internal consistency of the sub-scales in the current research was .87–.95.

While the Flow State Scale (FSS) was originally designed to measure flow experiences during demanding physical activities, it was adapted for this study to assess flow during childbirth. The instructions for completing the FFS questionnaire stipulated that the woman should answer the questions regarding the specific physiological childbirth experience she chose for the demographic questionnaire. Minor adjustments were made to certain items to align them more closely with the specific context of childbirth, such as replacing "high demand of the situation" with "high demands of giving birth." This adaptation allowed for the application of the FSS to the unique physiological and psychological aspects of childbirth, providing a more nuanced exploration of flow within this context [see Supplementary Appendix A: Adapted Flow State Scale (FSS) for Childbirth Context].

Ethical considerations

Ethics approval was obtained from the Institutional Review Board (12/2021-7).

Results

Participants

Participants were 421 Israeli women who had experienced physiological childbirth. Of the women, 305 (72.4%) gave birth at the hospital and 116 (27.6%) gave birth at home. Their mean age

TABLE 1 MANOVA analysis: differences between the place of physiological childbirth on Flow State Scale ($N = 421$).

	Home childbirth ($n = 116$)		Hospital childbirth ($n = 305$)		
Flow State Scale	*M*	SD	*M*	SD	*F* (1,407)
Challenge-skill balance	4.60	.53	4.45	.72	4.38*
Action-awareness merging	4.14	.85	3.67	.93	22.65***
Clear goals	4.32	.76	4.07	.93	6.46*
Unambiguous feedback	4.15	.85	3.86	.98	7.88**
Concentration	4.44	.68	4.02	.85	23.25***
Sense of control	3.64	1.14	3.43	1.10	2.66
Loss of self-consciousness	4.37	.75	4.18	.95	4.03*
Transformation of time	3.72	1.09	3.57	1.10	1.41
Autotelic experience	4.22	1.02	3.90	1.05	9.42**

*$p < .05$.
**$p < .01$.
***$p < .0001$.

was 36.42 years ($SD = 7.34$). The mean number of years after the reported birth event was 4.56 ($SD = 3.11$), with 42.5% of the women reporting on their first childbirth, 26.8% their second childbirth, and 30.6% other births. Demographically, 93.1% had a graduate/professional degree; and 64.4% were secular while 35.6% were traditionally religious.[1]

We have posted our invitation to participate in the survey on various women's Facebook groups, such as "Mothers on Maternal Leave" and "Natural Birth & Home Birth." The latter group is a private group of nearly 40,000 women. This can explain the relatively high percentage of women who reported experiencing homebirths (27.6%), while in Israel, only 1% are giving birth at home.

Preliminary results

To test whether the demographic variables correlated with research variables, a series of Pearson correlation tests were conducted between the woman's age, number of years since reported childbirth, number of children and FSS scores. Furthermore, Spearman correlation tests were conducted between education level, number of births, birth order of the selected birth (first, second, etc.), religiosity and FSS. Finally, differences in demographic variables between women who birthed at home vs. women who birthed at hospital were tested. Results demonstrated no significant associations between demographic variables and research variables.

Research hypothesis analyses

To examine the hypothesis on the differences between physiological home childbirth and physiological hospital childbirth, a MANCOVA analysis was conducted with the place of childbirth as the independent variable, flow state level as the dependent variable, and mother's age, child's age, and birth number as covariates. Results demonstrated that the MANCOVA model was significant [F (9,399) = 4.18, $p < .0001$]. ANOVA tests revealed significant differences between the place of childbirth groups for most flow state dimensions, with women who experienced home childbirth reporting higher flow states than women who experienced physiological childbirth at the hospital (Table 1). The results confirmed our hypothesis.

Discussion

We emphasize that childbirth is a complex and multifaceted event characterized by significant individual (31) and cultural (32) variability among birthing women. The findings of this study are limited in scope, focusing specifically on the reported experience of flow during physiological birth in home settings compared to physiological birth in hospital environments. Thus, the results should not be generalized broadly to all births or other birthing contexts.

Women who had physiological births at home reported elevated levels of mental flow state for 7 of the 9 dimensions of flow, indicating a correlation between birthing environment and the birthing woman's experience during labor. Several interconnected factors differentiating between the home and hospital environments explain the connection to each flow dimension. An in-depth explanation of each flow dimension can enrich our understanding of the subjective physiological birth experience – a perspective unexplored in the literature to date.

Moreover, recent theoretical advancements in flow research reinforce the significance of studying flow within natural, dynamic settings rather than controlled laboratory environments. Durcan

[1]In the survey, religiosity was assessed by self-report, with participants categorizing themselves as either "secular" or "traditionally religious." In the Israeli context, "traditionally religious" generally refers to women who identify with Jewish religious customs and traditions to varying degrees, ranging from moderate observance to more strictly religious lifestyles, but not explicitly adhering to the stricter Orthodox definitions.

et al. (33) expand the understanding of environmental and perceptual factors shaping flow experiences, emphasizing the role of autonomy, motivation, and personal connection to the activity. Their critique of traditional research approaches, which rely on sterile, short-term tasks in artificial settings, highlights the need for models that capture flow in real-world contexts. Similarly, the ecological dynamics perspective (34) underscores the dynamic interplay between individuals and their environment, proposing that perception, action, and environmental affordances are integral to the emergence of flow. While these studies do not address childbirth specifically, their insights align with our finding that the physical and social birth environment play a central role in shaping flow experiences during birth. The contrast between hospital and home birth provides a unique opportunity to explore how differences in autonomy, privacy, medical interventions, and environmental design influence flow states. Applying this approach to childbirth research strengthens the argument that factors such as physical design, emotional support, and birth setting are not peripheral but central to the flow experience. By investigating flow in birth environments rather than experimental settings, this study contributes to a growing body of literature advocating for a broader valid understanding of flow in high-intensity, real-world experiences.

Home settings offer a sense of comfort and familiarity that can positively impact a woman's experience during labor. Women feel they can have a customized birth experience at home but not in an institutionalized setting (35). Being in a familiar environment reduces stress and anxiety, which are known to hinder the progression of labor. The woman feels more relaxed, which contributes to the process of physiological birth (36). Reducing anxiety and pain during labor can also reduce the length of the first stage of labor (37). Indeed, in a qualitative study on the reasons of Canadian women for planning a home birth, the women outlined that laboring at home provided greater flexibility in pain management and coping strategies (35). Moreover, in a home birth setting, women typically have more autonomy regarding their birthing process (38). They have the freedom to move around, choose positions that feel most comfortable, and make decisions about their care in collaboration with their birth attendants. This sense of autonomy enhances feelings of agency, leading to a more positive childbirth experience (13).

These characteristics of home environment in contrast to the typical hospital environment can explain the flow dimensions of *unambiguous feedback* ("I had a good idea while I was birthing about how well I was doing"), *action-awareness merging* ("I made the correct movements without thinking about trying to do so"), and *challenge-skill balance* ("I felt I was competent enough to meet the high demands of giving birth"). The shared feature of these dimensions is the enhanced mind-body connection. Feeling autonomy to move at will and being free to use any strategies to ease the pain of contractions and feel comfortable in her surroundings allows for more profound connection to her body (13) and, in a way, letting her body to do its job without the mind interfering (36). After all, while childbirth is a demanding physiological process, it is very much affected by psychological factors such as comfort and confidence (15). Indeed, women who planned home birth voiced a preference for home birth not only for its comfort but also for the increased autonomy it offered (35).

The enhanced mind-body connection, expressed through automatic bodily movements and spontaneous actions during physiological birth, aligns with previous findings in the literature. Hrdy (39), xii–xiv) similarly emphasized that labor contractions may be perceived by women as intense yet captivating biological forces, evoking fascination rather than mere distress or pain (see also (40–42). These insights correspond closely to the current study's findings on the flow experience, reinforcing the idea that physiological birth uniquely facilitates embodied awareness and a relinquishment of conscious control, ultimately enriching the overall birth experience.

In this context, choosing a home birth reflects a deep trust in the body's ability to give birth naturally (43). Because having a home birth is not very common in industrialized societies, women who opt to plan for home birth must take ownership of their decision (35). Hence, it could be said that the sense of ownership – belief in the ability to give physiological birth – starts before birth itself. The sense of empowerment of women following physiological birth is a known phenomenon in midwifery literature (15). It is sometimes referred to as "the superwoman syndrome": The euphoric sensation of accomplishment and joy that some women experience post-birth due to the surge of hormones and the sense of empowerment that comes with successfully giving birth (15, 42, 44). This feeling can lead to a heightened sense of confidence and capability, as if the woman can conquer anything, like a superhero. It reflects a deeply positive and empowering experience of childbirth that can leave a woman feeling invincible and capable of taking on any challenge (15). These profound sensations of euphoric pleasure can explain the flow dimension of *autotelic experience* ("I really enjoyed the experience of giving birth"). Thus, the emotional and practical meaning of the differences in the flow state scores can be translated into an enhanced positive peak experience at home.

Home birth settings provide a more intimate and private environment where birthing women can labor surrounded by loved ones and supportive birth attendants. This intimate setting positively impacts the woman's emotional state and overall experience of labor (45). For most people, home is a peaceful and restful place. A hospital setting is much different in environment and culture, and hospital staff have certain routines that can affect the birthing process. It is not uncommon to have different people walk in and out of a laboring woman's room. In one's own home, people who enter are invited guests and are usually individuals who will provide the woman with good support (12). This issue of privacy is highly crucial when it comes to physiological birth and is related to at least two dimensions of flow: *loss of self-consciousness* ("I was not concerned with how I was presenting myself") and *concentration on the task* ("I was completely focused").

During intense contractions, women report that it is helpful to handle the pain by focusing and retreating to a different zone, which also helps to relinquish some social constraints (36). The ability to be unconcerned about what others might think is crucial, especially during intimate and vulnerable events, such as sexual activity or giving birth (13). According to Cohen Shabot

and Korem (18), the bodies of birthing women during physiological unmedicated childbirth are oxymoronic. When women give birth, from a functional point of view they complete one of the most fundamental missions of femininity – to bring new life into the world. However, at the same time, their bodies are the complete opposite of what society views as feminine: birth involves mess, blood, noisy sounds, and pain. A birthing body during physiological birth is a strong, expanding, loud, messy body; it challenges femininity's usual frame. The event of physiological birth is blatantly sexual in its "inappropriate" way. The norms of femininity are not to be overly sexual or exuberant – but to be beautiful and self-controlled, silent, delicate, obedient (18). Thus, when a woman is able to overcome the perceived "lost dignity" in physiological birth (46) she becomes uninhibited and can relax, which, in turn, can promote the birth process that feelings of embarrassment often hinder (13). Privacy and support from people who are not strangers – during one of life's most intimate episodes – can be crucial to focusing and surrendering self-consciousness (21, 44).

Home births involve fewer medical interventions than hospital births because the commonly used interventions in hospitals (oxytocin drips, epidurals, c-sections) cannot be implemented at home births. But as for other interventions, such as routine vaginal examinations, homebirth midwifes hold a philosophy of birth that is woman-centered. This philosophy is also a physiologic care model that emphasizes supporting and advocating for physiological childbirth, employing medical intervention only when necessary (47). As a result, birthing women are less likely to experience unnecessary interventions such as continuous fetal monitoring (48), or routine vaginal examinations (49, 50). Avoiding these interventions, or even the need to refuse to interventions, can contribute to the elevated sense of flow experienced by home birthing women by letting them focus on their goals – on what is important to them, to their specific situation, and not to general, strict hospital protocols. This feature can be related to the flow dimension of *clear goals* ("I knew what I wanted to achieve"), which reflects the strong feeling of confidence of the birthing woman.

In this context, Neerland et al. (45) suggest that midwives' trust in the natural childbirth process and their belief in its normalcy help instill similar confidence in birthing women. Conversely, many hospital settings have a different dynamic, where women report achieving physiological birth despite pressures from medical staff to accept unnecessary interventions (51). Although many midwives in hospitals aim to practice woman-centered care, rigid protocols, and a medicalized hospital philosophy can hinder such care, creating external pressures for interventions that may not always be medically necessary. As a result, women may feel compelled to advocate for their preferences and goals, sometimes facing provider-centered rather than woman-centered approaches. For example, birthing women often express the desire for empowerment, autonomy, and control over their birth experiences rather than being perceived or treated as weak or incapable (35).

As explained in the introduction, this study is about home births and not birth centers because all birth centers in Israel were closed in 2017 by the Israeli Ministry of Health see (52). However, birth centers are like home birth in many respects, such as being domestic birth environments with a women-centered philosophy and a tendency to promote a physiological birth. Thus, our findings here support prior studies of birth centers, which were found to increase feelings of confidence among birthing women (45). Birth centers, with intimate, homelike environments, are calming, fostering feelings of ease and empowerment during childbirth. The welcoming atmosphere of birth centers also contributed to birthing women's satisfaction. The design of birth rooms can affect the birthing experience. For instance, in birth centers, unlike in typical hospital birthing rooms, safety equipment is not prominently displayed. This contributes to the heightened confidence of birthing women (45), perhaps even allowing them to focus on their goals without interruption.

Two dimensions were not found to be elevated for home environments: the *sense of control* ("I felt in total control of what I was doing") and the *transformation of time* ("Time seemed to alter"). A plausible explanation for the absence of differences in the sense of control dimension between home and natural hospital births may lie in the inherent complexity and ambiguity of the notion of control during physiological birth. As previous qualitative syntheses illustrate (53), women's psychological experiences during physiological childbirth are characterized by a paradoxical interplay between actively maintaining control and simultaneously surrendering or relinquishing it. Achieving a physiological birth requires women to feel empowered and in control of their decisions and environment, yet also demands the capacity to let go of conscious control to allow the physiological processes of birth to unfold naturally. This nuanced and ambivalent experience of control might explain why our study did not detect significant differences between home and hospital settings, given that the subjective meaning and control experience transcend straightforward categorizations by birth environment.

The sensation of time alteration is not unique to a positive peak experience; people can experience alterations in time perception (the feeling that time either slowed down or sped up) in relatively negative experiences such as simply being bored, or in the case of childbirth, during highly negative and traumatic experiences (54). Thus, it is reasonable that the event of birth would be experienced with a blurred sense of time, regardless of the mode of birth or the setting in which it took place (see also (21). Qualitative research will be more effective in measuring these more nuanced, specific sensations – i.e., the sense of control and the sensation of time alteration – during the experience of birthing.

Conclusion

In physiological childbirth, women birthing at home report higher flow states than those giving birth in hospitals. Given that the flow experience represents a highly positive and beneficial psychological state, it is important to further understand how it can be facilitated across different birth settings. Considering that the majority of women today give birth in hospital settings, future research should explore how conditions associated with increased flow experiences can be effectively integrated into hospital-based care, enhancing women's overall birth experiences.

Limitations and strengths

It is well established that the birthing environment significantly influences birth outcomes, including the mode of birth and the psycho-physical consequences that impact recovery and postpartum mental health. The current study employed a cross-sectional design; hence, there are limitations to any conclusions regarding causality realtionships between birthing at home and a hightened flow state during physiological childbirth. However, this study's significance lies in its novel perspective on measuring positive physiological birthing experiences. It also lies in being the first to identify a link between the strength of this experience and the domestic setting compared to the experience of the same birthing mode in a typical hospital environment. This is also one of the few studies applying the quantitative method to examine the physiological birth experience in terms of flow.

A potential limitation of this study could be recall bias, given the significant time elapsed (median = 4.56 years) between childbirth and data collection. However, childbirth represents a significant milestone with lasting psychological and emotional implications for women (55). It marks a profound transitional phase in life, carrying potential for both empowerment and trauma, influenced by factors such as personal perceptions of the birth experience, method of birth, and the availability of continuous support (56–58). Research dating back to Simkin (59) illustrates that women retain clear, detailed memories of their childbirth experiences even long after the event. Contemporary studies further validate these findings, demonstrating that due to childbirth's transformative nature, the experiences associated with it remain exceptionally vivid in women's long-term memory (60). Our current study focuses on physiological birth experiences, which are generally perceived as more positive than highly medicated births (13, 61). Therefore, despite the time elapsed since birth, the vividness and emotional intensity of these memories likely mitigate potential bias, reinforcing the reliability of women's retrospective accounts.

Our analysis did not control all labor interventions because we defined physiological birth as non-instrumental vaginal birth without epidural analgesia. This could include a range of interventions that may interrupt the physiological process and that would not occur if the labor and birth were happening spontaneously ("naturally"), including episiotomy (in both settings) or labor induction (via membrane sweep in both settings and by pharmacological means in hospital). This means that the differences found in the flow state could also be about the level of interventions. While this analysis could not be done for the current study, given that labor and birth procedures were not recorded, other explanations for the findings exist, and future studies that collect more information could test these alternatives. Numerous other factors not explored in our study – such as prior expectations, the extent of social and professional support, and previous birth experiences—may significantly influence reported flow experiences. Therefore, caution is warranted in interpreting these findings, acknowledging the phenomenon's complexity and highlighting the need for further research to investigate additional explanatory factors underlying differences in flow experience among birthing populations. Our survey was conducted in Hebrew; thus the sample was limited to Hebrew speaking women. A future study could conduct comparative research across countries with diverse healthcare systems and birth practices to examine the influence of cultural and contextual factors on the flow state experience during childbirth in various physiological birth settings, such as hospitals, birth centers, and homes.

Data availability statement

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

Ethics statement

The studies involving humans were approved by Ethics approval was obtained from the Institutional Review Board (12/2021-7). The studies were conducted in accordance with the local legislation and institutional requirements. The participants provided their written informed consent to participate in this study.

Author contributions

OD: Conceptualization, Methodology, Formal analysis, Investigation, Writing – original draft, Writing – review & editing, Project administration. AG: Conceptualization, Methodology, Formal analysis, Investigation, Writing – original draft, Writing – review & editing, Project administration.

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Supplementary material

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The role of antenatal relaxation practices in enhancing maternal psychological wellbeing and childbirth experiences: an observational study

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Introduction: There is growing qualitative evidence that antenatal education on relaxation practices can enable women to deliberately induce a deep state of emotional calmness. Learning to shift focus from distressing emotions such as anxiety and fear to this altered state of calmness may significantly enhance women's confidence, thereby protecting maternal psychological wellbeing and leading to more positive childbirth experiences. However, the generalisability of these findings remains uncertain. This study aimed to bridge this gap by using quantitative methods to validate and extend the qualitative evidence.
Methods: Through an observational study with a prospective longitudinal cohort design, ninety-one women attending a single antenatal relaxation class at a Scottish NHS maternity service completed online surveys including Childbirth Self-Efficacy Inventory (CBSEI), Warwick Edinburgh Mental Well-Being Scale (WEMWBS), Wijma Delivery Expectancy/Experience Questionnaire (W-DEQ), and Six-item State-Trait Anxiety Inventory (STAI-6) at pre-class, post-class and post-birth.
Results: Findings indicated significant improvements in childbirth self-efficacy expectancy, mental wellbeing, fear of childbirth, and both trait and state anxiety after attending the class, and these improvements remained stable until 4–8 weeks after birth. Women widely reported using relaxation practices, with the majority perceiving a positive influence on their pregnancy and childbirth experiences. The majority also viewed their overall childbirth experiences as positive.
Discussion: Consequently, maternity services should consider reforming current antenatal education to align with these findings.

KEYWORDS

antenatal education, relaxation practices, perinatal psychological wellbeing, childbirth self-efficacy, fear of childbirth, anxiety, childbirth experiences

Introduction

Antenatal education on relaxation practices intends to empower women to deliberately induce a deep state of emotional calmness. Qualitative research suggests that women who engage in these relaxation practices can shift their focus from distressing emotions such as fear and anxiety to an altered state of calmness (1–4). This shift seems to enhance their confidence towards childbirth and promote positive childbirth experiences (1–3, 5). In a recent study conducted by Tabib et al. (4) women reported feeling less fearful and anxious, and more confident towards childbirth after attending a three-hour relaxation

class. Participants also described experiencing a sense of wellness and positivity, which was maintained during pregnancy and childbirth. However, the generalisability of these qualitative findings to larger populations remains to be fully explored.

Although quantitative research studies demonstrate that antenatal education on relaxation practices can effectively reduce fear of childbirth (FOC) (6–9) and antenatal anxiety (10–15), the influence on postnatal anxiety remains under-explored. In addition, despite the existing evidence on the effect of relaxation practices on reducing childbirth related fear and anxiety, a gap in evidence remains regarding their impact on childbirth self-efficacy and maternal mental wellbeing, especially in the context of Western countries. This is largely due to the prevailing pathogenesis paradigm in medical and health sciences, which focuses mainly on identifying the origins of disease and risk factors (16). In contrast, the salutogenesis paradigm, introduced by Antonovsky in 1979, emphasises the origins of health and the assets that promote it. This theory of health promotion shifts the focus from treating disease to the enhancement of overall wellbeing. It considers not only negative emotions like fear and anxiety but also positive psychological constructs such as self-efficacy and mental wellbeing, which are indicators of general wellbeing.

Therefore, this study addresses the identified knowledge gap by adopting a salutogenic approach. It seeks to examine the influence of attending an antenatal education class incorporating relaxation practices, on self-efficacy, mental wellbeing, fear of childbirth, and anxiety over time. In addition, the study aims to evaluate women's perceptions of how receiving education on relaxation practices may influence their childbirth experiences.

Aims

This study examines the influence of a single online Antenatal Relaxation Class (ARC), an established initiative in a Scottish NHS Health Board, on maternal psychological wellbeing and childbirth experiences. It aims to assess changes in childbirth self-efficacy, mental wellbeing, fear of childbirth, and state and trait anxiety over time (pre-class, post-class and post-birth). Further, it explores women's perspectives on the influence of ARC on their pregnancy, labour and birth experiences as well as their perceptions of their overall childbirth experiences.

Method

Design

The study employed a prospective longitudinal cohort design, using online surveys for data collection at pre-class, post-class and post-birth.

Setting

The study setting was a specialist maternity hospital in an NHS Health Board in North-East of Scotland with around 5,000 births per annum. The setting was selected due to its existing provision of this single session of ARC.

Antenatal relaxation class (ARC)

Antenatal educational interventions on relaxation practices, as utilised in previous studies (6, 9, 17, 18) are often too lengthy and costly for implementation in under-pressure national health services. In contrast, some studies with low-cost and brief interventions (11, 19, 20), involved multiple sessions though some participants did not attend all subsequent session. Therefore, a single, low-cost session, as opposed to costly or multiple sessions can facilitate the intended delivery of the education, reduce attrition rates, and make it more affordable for national health services such as the UK NHS maternity services.

ARC is an established initiative within a Scottish NHS Health Board. This single, 3-hour class was delivered online to groups of 4–12 women and facilitated by two midwives, independent of the research team, who were trained in relaxation techniques. ARC was offered to all pregnant women and their birth partners in the third trimester. However, attendance of women expressing anxiety or apprehension of childbirth was actively encouraged by their maternity care providers. Women attended the class from their home. In class, after an introduction to the effect of emotions on childbirth physiology, women practised four relaxation exercises including breathing, visualisation, hypnosis, and relaxation in labour. Women were also given leaflets and audio resources for further practice at home. The class and provided resources were free of charge for women and their partners. Further details about ARC can be found in Tabib et al. (4).

Participants and sampling

Convenience sampling was used to invite all women on the waiting list for an antenatal relaxation class between January and June 2021 (243 women) to participate in the study. The inclusion criteria included being aged 16 or over, and being able to read, write and understand English. Women were excluded if they had significant mental health issue requiring medication or did not meet the inclusion criteria. Based on a G*power calculation, a sample of 57 participants was required to detect treatment effects, assuming power = 0.95, significance set to 0.05, and an effect size of d = 0.4.

Measurements

The Childbirth Self-Efficacy Inventory (CBSEI) (21) was selected to measure self-efficacy expectancy and outcome expectancy in labour based on Bandura's self-efficacy theory (22). The CBSEI is a reliable and valid instrument with Cronbach's alpha scores of 0.90 (23) which has been used in multiple studies of pregnant women. Efficacy expectancy is a personal conviction about one's ability to successfully perform required behaviours in

a given situation, and outcome expectancy is the belief that a given behaviour will lead to a given outcome (24). In this study, a 30-item version of CBSEI was used with the same 15 items measuring efficacy expectance and outcome expectancy. Higher scores indicate a higher degree of CBSE with maximum scores being set to 150.

The Warwick Edinburgh Mental Well-Being Scale (WEMWBS) (25, 26), a psychometrically validated tool, was included to measure subjective well-being (e.g., "I have been feeling useful") and psychological functioning (e.g., "I've been dealing with problems"). WEMWBS demonstrates high content validity with Cronbach's alpha scores of around 0.90 in studies of the general population and pregnant women (25). The minimum scale score is 14 and the maximum is 70, with a higher score indicating a higher level of mental wellbeing.

The Wijma Delivery Expectancy/Experience Questionnaire (W-DEQ) (27), version A (W-DEQ A) and version B (W-DEQ B) were used to measure fear of childbirth. W-DEQ A was administered before and after class to measure fear related to the upcoming childbirth during pregnancy and W-DEQ B was used post-birth to evaluate fear of childbirth after birth (27). Both versions A and B include 33 items with items ranging from 0 (extremely) to 5 (not at all). This instrument is a well-validated tool with Cronbach's alpha of 0.92 (23). Korukcu et al. (28) established CBSEI cut-off scores as follows: a score of 0–60 indicates low fear, 61–84 indicates moderate fear, and a score of 85 or above indicates severe fear of childbirth.

The Six-item State-Trait Anxiety Inventory (STAI-6) (29) was used to measure participants' emotional reactions, assessing anxiety at a specific moment (state anxiety) and the general response to perceived threats (trait anxiety). The STAI is a reliable and valid self-report measure that has obtained scores similar to the full STAI in pregnant women (29). Statements are scored on a 4-point scale of increasing intensity, from "*not at all*" to "*very much so*" (with scores of 1–4 respectively).

Although a threshold point for high anxiety has not been properly defined, most studies consider a score above 12 in 6-item STAI as being highly anxious (30).

The study-specific questionnaire included questions regarding age, gestational age or postnatal days at the time of survey completion, parity, ethnicity, marital status, educational attainment and employment status. It also included 5-point Likert scales ranging from "very negatively" to "very positively" to measure the participants' perspectives on the influence of attending ARC on their pregnancy and labour/birth experiences, and to gauge their perceptions on the quality of their overall childbirth experiences. Table 1 presents the selection of the measurement tools and the time points for data collection.

TABLE 1 Selection of measurement tools.

Measure	Timing
CBSEI (childbirth self-efficacy including outcome expectancy & self-efficacy expectancy)	Pre-class and post- class
WEMWBS (mental wellbeing)	Pre-class, post-class, and post-birth
STAI-6 (state & trait anxiety)	
W-DEQ (fear of Childbirth)	
Likert scale questions on the influence of ARC on experiences of pregnancy, labour, and birth	Post-class and post-birth
Likert scale question on the overall experience of childbirth	Post-birth

The table presents the selection of the measurement tools and the time points for data collection.

Data collection

The data were collected via Novi Online survey. A link to the participant information sheet, consent form and survey was emailed to all women on the waiting list by the midwives facilitating ARC.

Data analysis

The data were analysed using Statistics Package for the Social Sciences (SPSS), Version 25 (31). Descriptive statistics including frequency count, percentage, mean and standard deviation, were conducted to ascertain sample characteristics and address the aims of the study. One-way repeated measures analysis of variance (ANOVA) was used to explore the impact of time (pre-class, post-class, and post-birth) on FOC, state and trait anxiety and mental wellbeing. Bonferroni adjustment to the alpha level 0.05 was made for the comparisons taken place via one-way measured ANOVA. *post-hoc* comparisons were used to explore the differences between the measures at different time points. Since CBSE was only measured at two time points, a paired samples *t*-test was carried out to analyse the difference between CBSE at pre-class and post-class. The authors used a 95% confidence level, and a *p*-value of 0.05 or less was deemed to be significant.

Ethics statement

The participants provided informed written consent, and full ethical approval was granted by the National Research Ethics Service (REC reference number: 17/LO/0666).

Participation in the study was voluntary, and participants could withdraw from the study at any point prior to the completion of data collection, without giving any reason. Participants were assured that their responses would remain confidential unless there was a disclosure of intent to harm themselves or others. There were no breaches of confidentiality.

Results

Sample characteristics

Out of 243 women invited to participate in the study, 91 completed the pre-class survey, resulting in a response rate of 37%. Around two weeks after the class, 85 women (93.4%) returned the post-class survey, and 84 women (92.4%) completed the post-birth survey 4–8 weeks after giving birth. This led to an

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attrition rate of 6.6% for the post-class survey and 7.6% for the post-birth survey.

Participants' age ranged from 21 to 41 years ($M = 31.00$, $SD = 3.6$). Mean gestation was 31.7 weeks ($SD = 3.2$) at pre-class, 34.00 weeks ($SD = 3.3$) at post-class and 5.00 weeks postnatal ($SD = 2.4$) at post-birth. The sample characteristics of the participants are presented in Table 2. The participants were predominantly primigravida ($n = 78$, 85.7%) and from a range of ethnicities with the majority ($n = 70$, 76.9%) being white British. A large proportion of the participants were either married ($n = 56$, 61.5%) or co-habiting ($n = 29$, 32.9%) with the remaining ($n = 6$, 6.6%) identifying themselves as single. In terms of educational attainment, this varied from secondary school to doctorate with 79.1% ($n = 72$) being educated to first level degree of higher education or higher. Most participants ($n = 76$, 83.3%) were in full-time employment, whilst 7.7% ($n = 7$) were in part-time employment and the rest were unemployed, students, or others.

Childbirth self-efficacy

Results from a paired-sample t-test indicated that participants reported significantly higher mean scores of self-efficacy expectancy at post-class than those reported pre-class t (77) = 9.44, $p < .001$, Hedges' g = 1.6 (indicating a large effect size). However, no statically significant difference was found between the mean scores of outcome-expectancy at pre-class and post-class t (78) = −1.51, $p = 0.135$, Hedges' g = 0.17 (indicating a small effect size). Therefore, results indicate although women's beliefs that their coping strategies would lead to positive outcomes did not significantly change, their confidence in their ability to remain in control during labour increased after the class.

TABLE 2 Demographic characteristics.

Characteristic	*n* (%)
Previous births	
No previous birth	78 (85.7%)
One previous birth	11 (12.1%)
Two or more previous birth	2 (2.2%)
Ethnicity	
White British	70 (76.9%)
Other White	10 (10%)
Black	0 (0%)
Asian	7 (7.7%)
Mixed	3 (3.3%)
Others	1 (1.1%)
Marital status	
Married	56 (61.5%)
Domestic partnership	29 (31.9%)
Single	6 (6.6%)
Educational attainment	
Secondary school	4 (4.4%)
College (HNS/HND)	15 (16.5%)
Degree	39 (42.9%)
Master's degree	25 (27.5%)
Doctorate	3 (3.3%)
Others	5 (5.5%)
Employment	
Full-time	76 (83.5%)
Part-time	7 (7.7%)
Unemployed	5 (5.5%)
Student	1 (1.1%)
Others	2 (2.2%)

The table displays demographic characteristics of the study participants, including parity, ethnicity, marital status, educational attainment and employment.

Mental wellbeing

As shown in Table 3, results from one-way ANOVA indicate that the mean score for mental wellbeing significantly increased at post-class and post-birth compared with pre-class with a large effect size [Wilks Lambda = 0.73, F (2, 72) = 12.32, $p < 0.001$, multivariate partial Eta squared = 0.26]. *post hoc* analysis indicated significant increases between pre-class and post-class ($p = .000$), and between pre-class and post-birth ($p = .01$).

Fear of childbirth

As shown in Table 3, results from one-way ANOVA indicate that the mean score for fear of childbirth decreased at post-class and post-birth compared with pre-class with a large effect size [Wilks Lambda = 0.55, F (2, 72) = 27.79, $p < 0.001$, multivariate partial Eta squared = 0.44]. *post hoc* analysis indicates significant decreases in fear of childbirth between pre-class and post-class ($p < 0.001$) and between pre-class and post-birth ($p < 0.001$).

State anxiety

One-way ANOVA results show that the mean score for state anxiety decreased at post-class and post-birth compared with pre-class with a large effect size [Wilks Lambda = 0.60, F (2, 72) = 22.17, $p < 0.001$, multivariate partial Eta squared = 0.39]. *post hoc* analysis indicated significant decreases in state anxiety between pre-class and post-class ($p < 0.001$) and between pre-class and post-birth ($p < 0.001$).

Trait anxiety

One-way ANOVA results show that the mean score for trait anxiety decreased at post-class and post-birth compared with pre-class with a large effect size [Wilks Lambda = 0.70, F (2, 72) = 14.24, $p < 0.001$, multivariate partial Eta squared = 0.29]. *post hoc* analysis indicated significant decreases in trait anxiety between pre-class and post-class ($p < 0.001$) and between pre-class and post-birth ($p = 0.002$).

The results indicate that there is a significant effect of time on childbirth self-efficacy expectancy, mental wellbeing, fear of childbirth, and state and trait anxiety. Significant improvements in these parameters were observed post-class and maintained

TABLE 3 Mean (SD) for efficacy-expectancy, outcome-expectancy, mental wellbeing, FOC, and state and trait anxiety over time.

Measured parameter	Pre-class (n = 91) mean (*SD*)	Post-class (n = 85) mean (*SD*)	Post-birth (n = 84) mean (*SD*)	p Value between pre-class and post-class	p Value between pre-class and post-birth
Efficacy-expectancy	84.63 (28.29)	110.56 (23.36)	————	<.001	————
Outcome-expectancy	127.00 (19.30)	129.58 (19.66)	————	=0.135	————
Mental wellbeing	50.36 (7.96)	53.43 (6.58)	52.86 (6.81)	=.000	=.01
Fear of childbirth	62.19 (20.87)	47.89 (21.04)	46.92 (27.19)	<0.001	<0.001
State anxiety	12.43 (3.79)	10.43 (3.37)	9.70 (3.37)	<0.001	<0.001
Trait anxiety	13.06 (3.54)	11.49 (3.31)	11.59 (3.42)	< 0.001	=0.002

The table presents mean (*SD*) for efficacy-expectancy, outcome-expectancy, mental wellbeing, FOC, and state and trait anxiety over time.

until post-birth. Table 3 presents changes in childbirth self-efficacy, mental wellbeing, fear of childbirth and anxiety over time.

Influence of ARC on pregnancy, labour and birth experiences

The majority of participants reported wide practice of relaxation techniques in pregnancy (95.2%, $n = 80$) and during labour and/or birth (94.0%, $n = 79$). Most participants (97.6%, $n = 82$) perceived the influence of ARC on their experience of pregnancy as either "positive" (63.1%, n = 53) or "very positive" (34.5%, $n = 29$). All women (100%) who had experienced labour (89.3%, $n = 75$) reported using the techniques in labour. Interestingly, some of those who underwent elective caesarean section also reported using the techniques during the procedure. Over 80% ($n = 71$) of them perceived the influence of ARC on their labour and birth experience as "positive" (56.0%, $n = 47$) or "very positive" (28.6%, $n = 24$), whilst 15.5% ($n = 13$) felt attending ARC had "no influence" on their labour and birth experience. None of the participants reported ARC as having a "negative" or "very negative" influence on either their pregnancy or labour and birth.

Overall childbirth experiences

The majority (73.8%, $n = 62$) of those who returned the post-birth survey, perceived their overall labour and birth experience as "positive" or "very positive", 9.5% ($n = 8$) expressed having overall negative experiences and 16.7% ($n = 14$) perceived their experience as "neither positive nor negative". None of the participants reported having a "very negative" labour or birth experience.

However, these findings need to be interpreted in view of the disparity between study participants' expected mode and place of birth (data collected in pregnancy) and their actual mode and place of birth. Results indicated a disparity between the expected (reported post-class) and actual (reported post-birth) mode and place of birth. Despite the majority of women expecting to give birth spontaneously ($n = 75$, 88.2%) in the midwife-led units ($n = 54$, 63.6%) at post-class, only around one-third of these women reported meeting their expectations in terms of mode ($n = 28$, 33.3%) and place ($n = 23$, 27.4%) of birth.

To conclude, whilst around two-thirds of women did not meet their expectations in terms of mode and place of birth, only 9.5% perceived their overall labour and birth experience as "negative" and no one reported having a "very negative" experience.

Discussion

The study aimed to assess changes in women's childbirth self-efficacy, mental wellbeing, fear of childbirth and anxiety after attending ARC, and to evaluate if women perceived ARC's influence and their overall childbirth experiences positively. The findings indicated that attending ARC was associated with significant improvements in childbirth self-efficacy expectancy, mental wellbeing, fear of childbirth and state and trait anxiety. These improvements remained stable until after the birth. Women reported widely using relaxation practices and viewed the influence on their pregnancy and childbirth experiences as positive. The majority reported having an overall positive childbirth experience, even though around two-thirds did not meet their expectations in terms of mode or place of birth. These findings complement the existent qualitative evidence in the field and meet some of the gaps in the literature.

Whilst qualitative evidence consistently suggests that antenatal education incorporating relaxation practices can boost women's confidence in their birthing abilities (1–4), quantitative research supporting the generalisability of this finding is lacking, particularly in Western countries. The two comparative studies that reported the effect of such education on self-efficacy (6, 9) were conducted in Turkey, and similar to our findings, found a significant increase in efficacy expectancy at post-education compared with baseline. In contrast with these two studies, our findings did not show a significant increase in outcome expectancy. In our study, women were already scoring highly on outcome expectancy at baseline. This meant that they already had strong beliefs that their coping behaviours such as using relaxation practices during labour would produce desired outcomes (outcome-expectancy). At baseline, however, they were not confident that they could perform these behaviours during labour (efficacy-expectancy). Bandura (24) argues that although people may believe that a certain behaviour will enable them to cope in a given situation (outcome-expectancy), this may not influence behaviour if they do not believe they can perform it

(efficacy-expectancy). This has significant implications for antenatal education, rather than educating women about the techniques that are useful during labour, women need to build their confidence in using and mastering such techniques.

Finding a significant reduction in mean scores of FOC is congruent with the previous research (6–9). However, all these studies were carried out in Turkey. The only study in the context of the UK was a randomised control trial (RCT) conducted by Downe et al. (11) that compared the expected fear of labour (measured at baseline before attending hypnosis sessions) with the actual levels reported 2 weeks postnatal. The results demonstrated a significant reduction in fear levels. However, a well-validated tool like W-DEQ was not used to measure FOC in the study, which may limit the validity of this finding. Overall, evidence on the influence of education on FOC in the context of Western countries is lacking. Thus, the findings of the present study add new knowledge to this under-investigated area in Western countries.

The reduced levels of antenatal anxiety, following attending ARC, in the present study strengthens existing evidence (10, 12, 15, 32–34). However, a paucity of evidence regarding the effect of such education on postnatal anxiety is evident in the literature and the findings of the current study have made a unique contribution by indicating that improvements seen post-class are maintained post-birth.

This research appears to be the first study to assess the influence of antenatal education incorporating relaxation practices on maternal mental wellbeing, using WEMWBS, both antenatally and postnatally. It is plausible that the prevalent use of relaxation techniques along with highly positive perceptions of their effect, shown in the study, have played a role in the stability of these findings over time.

Previous research in the field appears to be more focused on assessing the influence on negative emotions such as fear and anxiety. In contrast, the current study by reporting the influence of the education on positive emotions of childbirth self-efficacy and mental wellbeing brings new insight to this area of research. The study has adopted a salutogenesis orientation by attending childbirth self-efficacy and mental wellbeing as two positive psychological concepts (35). The inverse relationship between self-efficacy and fear/anxiety is well documented in the literature (21, 23, 36, 37, 46). Understanding this relationship can have significant implications for future research and practice. If childbirth self- efficacy expectancy is such a prominent factor in reducing childbirth fear and anxiety, the focus of future practice and research should indeed be on promoting and examining this positive psychological parameter.

Most participants reported having an overall positive childbirth experience. This aligns with the findings of a recent randomised control study (38) and a systematic review (39), both of which concluded that antenatal hypnosis classes can enhance overall childbirth experience. The percentage of women reporting a negative childbirth experience in the literature varies from 7% to 33.3% (40). Dissatisfaction with childbirth experiences seems to rise when childbirth expectations and outcomes do not match (41–44). As such, the 9.5% of women in this study describing their childbirth experience as negative, appears to be at the lower end of this spectrum, especially given that most did not meet their childbirth expectations.

Evidence suggests that increased childbirth self-efficacy expectancy may have played a role in more satisfaction with childbirth experience (2, 27). Based on the study findings and existing evidence, it is plausible that antenatal education on relaxation practices can enhance women's confidence in their childbirth abilities, improve psychological wellbeing and protect them against experiencing negative emotions like fear and anxiety, leading to more positive childbirth experiences.

Strengths and limitations

This research makes a unique contribution to existing evidence by providing new evidence in areas that have not previously been explored. It appears to be the first to assess the influence of antenatal relaxation education on perinatal mental wellbeing using WEMWBS, a psychometrically validated tool. Additionally, it seems to be the first study in the UK to examine the effects of such education on fear of childbirth (using W-DEQ) and self-efficacy. The study provides new insight into childbirth experiences, enhancing our understanding of how women's learning from ARC can be materialised in the realities of contemporary maternity services and practices. Furthermore, the high retention rate of study participants has strengthened the internal validity of the study, allowing for robust conclusions. Finally, this study is the first in the field that investigates the influence of a single antenatal relaxation class, which prevents attrition, ensures education is delivered as intended, and makes it more affordable for future research replication.

The study has some limitations. Evidence generated by the study due to its observational design can only establish correlation between attending ARC and the reported changes, and not causality (45). To examine causal relationships, large multicentre and well-designed RCTs are needed to compare the changes over time between the intervention and control groups. Conducting the study in diverse countries would enhance cross-cultural validity. Future research should investigate the longer-term impact of the education on the mental wellbeing of childbearing women and their offspring.

Additionally, a few factors limit the generalisability of the findings. For instance, the results may be subject to volunteer bias, given that participants volunteered to participate in the study. Furthermore, the study was conducted in a single area of Scotland, which may not be representative of the broader population in Scotland or the UK. These factors may restrict the transferability and generalisability of the findings to other areas.

Conclusion

Attending a single antenatal relaxation class was associated with improved maternal psychological wellbeing and was

perceived to positively influence childbirth experiences. Thus, offering such classes to childbearing women/people as a preventative and health-promoting educational programme is recommended.

Data availability statement

The datasets presented in this study can be found in online repositories. The names of the repository/repositories and accession number(s) can be found below: Edinburgh Napier University Research Repository.

Ethics Statement

The studies involving humans were approved by National Research Ethics Service. The studies were conducted in accordance with the local legislation and institutional requirements. The participants provided their written informed consent to participate in this study.

Author Contributions

MT: Conceptualization, Data curation, Formal analysis, Funding acquisition, Investigation, Methodology, Project administration, Resources, Software, Supervision, Validation, Visualization, Writing – original draft, Writing – review & editing. TH: Conceptualization, Methodology, Supervision, Writing – review & editing. KF-M: Conceptualization, Formal analysis, Methodology, Supervision, Writing – review & editing.

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Conflict of Interest

The author declares that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Generative AI statement

The author(s) declare that no Generative AI was used in the creation of this manuscript.

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Obstetric violence: perspectives from mothers, midwives, and obstetricians

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Background: According to the World Health Organization (WHO), the majority of the 140 million annual births occur without complications. Women desire a positive birth experience based on respectful care, clear information, and emotional support, which enables them to make informed decisions and maintain control over their reproductive process. However, many women experience disrespectful or abusive treatment during obstetric care, with lasting consequences for both their physical and mental health. This study explores the factors that influence respectful maternal care and the phenomenon of obstetric violence, as perceived by mothers, midwives, and obstetricians.

Methodology: A qualitative study using a phenomenological approach was conducted in eight public and private hospitals in the Girona Health Region (Catalonia, Spain) between 2021 and 2022. In-depth interviews were conducted with eight mothers and eight healthcare professionals (midwives and obstetricians) selected through purposive sampling. The interviews were transcribed verbatim and analysed using thematic analysis to identify meaningful units and key themes.

Results: The narratives collected allowed for the identification of key elements of non-respectful maternal care. A lack of information during pregnancy and childbirth emerged as a central concern for both mothers and professionals, affecting their sense of control and satisfaction. Poor communication with healthcare providers, particularly with anaesthesiologists and obstetricians, was perceived as a barrier to quality care. Mothers reported experiences of disrespect, the absence of informed consent for procedures such as episiotomies, and paternalistic treatment. Obstetricians showed resistance to the term "obstetric violence," while midwives recognized it as practices and attitudes that negatively affect the maternal experience.

Conclusions: The discrepancy between professional perspectives and mothers' experiences highlights the urgent need for transformation in obstetric care. It is crucial to promote a care model based on evidence, effective communication, and respect for women's rights. Incorporating a gender perspective into healthcare training and strengthening public policies to ensure respectful obstetric care are essential measures to improve the quality of care and prevent obstetric violence.

KEYWORDS

obstetric violence, maternal health, pregnancy, patient-provider communication, informed consent, health care quality, midwifery, qualitative research

1 Introduction

According to the World Health Organization (WHO), approximately 140 million births occur worldwide each year, many of which take place without risk factors or complications for the mothers and their babies (1). Women desire a positive childbirth experience, which refers to interactions and events directly related to childbirth that provide continuous care and emotional support, exceed their personal expectations, ensure a healthy and psychologically safe environment, and allow them to maintain a sense of control and autonomy in making informed decisions even, when medical interventions are required. Additionally, women want to feel respected by healthcare professionals and trust their technical competence (1–3). To enhance the quality of childbirth experiences, it is essential to adopt a woman-centered care approach that integrates a holistic perspective rooted in human rights principles (1, 4).

Unfortunately, many women experience disrespectful and abusive treatment during childbirth in facilities worldwide. Such treatment not only violates the rights of women to respectful care but can also threaten their rights to life, health, bodily integrity, and freedom from discrimination. The lack of standardized definitions, instruments, and research methodologies in studies assessing mistreatment in maternity care has likely led to systematic inaccuracies in reported prevalence rates. As a result, prevalence estimates vary widely, ranging from 15.2% in India (5) to 78.4% in Italy (6). In Spain, 67.4% of women reported experiencing obstetric violence, with physical violence being the most frequently reported form (54.5%) (7). By contrast, another study found that 38% of women perceived themselves as having experienced obstetric violence; however, the authors suggest this figure may be underestimated due to underreporting or lack of awareness among participants (8). While improvements in the quality of care have led to an increase in medical interventions, this has also been recognized as a potential barrier to patient satisfaction (9).

The literature contains many terms to refer to this disrespect towards women during pregnancy, childbirth, and postpartum processes; obstetric violence, institutional violence, disrespectful or offensive treatment, medical authoritarianism, dehumanized treatment, abuse of medicalization and pathologization of physiological processes, lack of respect and abuse, mistreatment of women during childbirth, among others (8, 10–20). Although the concepts are morphologically different, they share the fact of being a form of gender-based violence, stemming from gender inequalities and compromising women's human rights (21).

Disrespect, mistreatment and obstetric violence significantly impact on women, and have been associated with birth trauma, postpartum depression, post-traumatic stress disorder, negative implications on sexuality, exacerbated risks of complications during childbirth, and distrust in the health system, resulting in unwillingness to seek medical care (1, 4, 11, 14, 19, 20, 22).

For these reasons, this study aims to explore the factors that influence respectful maternal care and the phenomenon of obstetric violence, as perceived by mothers, midwives, and obstetricians. With these results, we aim to enhance the existing body of knowledge, given the scarcity of studies in our context that explore respectful maternal care. In this way, the information gathered may contribute to the improvement of clinical guidelines for maternal care.

2 Method

2.1 Study design and setting

This study follows a qualitative design with a phenomenological approach, aiming to explore and understand the lived experiences of mothers and healthcare professionals during childbirth. Phenomenology seeks to capture how individuals make sense of their experiences, emphasizing subjective interpretations (23, 24). The study was conducted between 2021 and 2022 in all eight public and private hospitals of the Health Region in the province of Girona (Northeast Catalonia, Spain), which provide healthcare services to 870,483 inhabitants across 218 municipalities (25). In Spain, all women have access to free public maternal care. Most births occur in public hospitals (81.4%), while 18.6% take place in private facilities. Home births are rare (1.6%) and are not covered by the public healthcare system (26). In public hospitals, midwives primarily manage low-risk births, with obstetricians intervening in cases of complications or when surgical interventions are necessary. Conversely, in private hospitals, obstetricians typically lead childbirth care (27). Due to a national shortage of midwives—currently 6.1 per 10,000 women—achieving a 1:1 midwife-to-woman ratio during labour is unfeasible (28). Our study includes births attended in both public and private hospital settings, where midwives and obstetricians share delivery spaces.

2.2 Sample

Eight mothers and eight professionals were selected through purposive sampling, ensuring diversity in representation across different childbirth care centers in the Health Region. To guarantee the diversity of professionals, factors such as years of experience, type of institution where they work (public or private), and gender were considered. In the case of mothers, to capture a variety of profiles, variables such as age, origin, educational background, type of institution where they gave birth, parity, and type of birth were considered. The inclusion criteria for women were being over 18 years old. The exclusion criterion was a lack of proficiency in Spanish. For healthcare professionals, the inclusion criteria were willingness to participate in the study and signing informed consent. Tables 1, 2 show the sociodemographic characteristics of the participants.

2.3 Procedure

Mothers: Each candidate was invited to participate in the study by a midwife during her hospitalization, usually one day after birth. After signing the informed consent form, one of the researchers contacted the participants by phone to arrange a date and time for the interview. One interview was conducted face-to-face,

TABLE 1 Sociodemographic characteristics of the mother's participants.

Code	Age	Origin	Education	Facility	Parity	Birth
M1	28	Center/South Africa	Primary	Public	Multiparous	Emergent caesarean
M2	33	Spain	University	Private	Nulliparous	Vaginal
M3	20	Brazilian	Secondary	Public	Nulliparous	Vaginal
M4	40	Spain	University	Public	Nulliparous	Caesarean
M5	29	Spain	Primary	Public	Multiparous	Vaginal
M6	31	Spain	University	Public	Nulliparous	Caesarean
M7	31	Spain	Secondary	Public	Multiparous	Urgent Caesarean
M8	42	Spain	University	Public	Nulliparous	Instrumental

TABLE 2 Sociodemographic characteristics of the professional's participants.

Code	Experience (years)	Center	Gender
O1	20	Public	Man
O2	23	Public and Private	Man
O3	9	Public	Woman
O4	6	Public and Private	Woman
Mi1	11	Public	Woman
Mi2	27	Public	Woman
Mi3	4	Public	Woman
Mi4	39	Private	Woman

Code: O, obstetricians; Mi, midwives.

while the remaining seven took place via Microsoft Teams. All interviews lasted approximately 40–60 min and were conducted within the first six months after childbirth.

Professionals: The obstetrics departments of each hospital in the Girona region were contacted, and the participation of one obstetrician or midwife per centre was requested. After signing the informed consent form, a date and time for the interview were arranged. Three interviews were conducted face-to-face, and five were held via Microsoft Teams. The duration of each interview was between 40 and 60 min.

The interviews were conducted by four researchers (one man and three women), three of whom are experts in qualitative research (PhD), and one a PhD student. One of the researchers, a midwife, did not participate as an interviewer or observer to avoid potential bias. Before starting the interviews, the script questions and interview procedures were discussed and reviewed. Each interview was conducted by two researchers: an interviewer and an observer. The observer played a passive role, refraining from participating in the discussion. Instead, they focused on non-verbal aspects and the interview context, aiding in the later analysis of participants' narratives and providing a more comprehensive perspective (24).

The interviews were conducted in Spanish, recorded, and subsequently translated into English. Each translation was reviewed by a professional translator. Data collection continued until theoretical saturation was achieved.

2.4 Instrument

Data were collected through in-depth interviews using a semi-structured guide, which allowed for the exploration of key topics while maintaining flexibility to follow the participants' emerging narratives. Table 3 show the women's interview and Table 4 show the midwives and obstetricians' interview.

The interview scripts were conducted by a research team of six members (four women and two men) with backgrounds in nursing, midwifery, psychology, and anthropology, under the guidance of two psychologists specializing in gender and gender-based violence. A thorough literature review was carried out to identify key areas for exploration regarding maternity care. These areas were discussed by the team in multiple rounds until a consensus was reached.

2.5 Data analysis

A thematic analysis was introduced by Braun and Clarke (29) approach. This process involved the literal transcription of the interviews, repeated readings of the transcripts to familiarize researchers with the data, and the identification of meaning units. These units were then grouped into themes and categories that reflect the participants' essential experiences. Data coding was carried out independently by three researchers, and the results were compared. Any discrepancies were discussed until a consensus was reached, enhancing the reliability of the coding process.

For the analysis of the discourse, each interviewee was assigned a letter and a number: (M) for mothers, (Mi) for midwives, and (O) for obstetricians.

2.6 Ethical considerations

Participation in the interviews was voluntary. Participants signed a written informed consent form, ensuring respect for the principle of autonomy. They were informed about the study's purpose and how their data would be handled. The recordings were transcribed and stored on secure servers at the University of Girona. Once transcription was completed, the recordings were deleted. The study protocol was approved by the Ethics Committee of Research with Medicines (CEIm Girona, reference 2021.043).

All data were treated with absolute confidentiality, and informed consent was obtained in accordance with the provisions of Regulation (EU) 2016/679 of the European Parliament and of the Council of April 27 on Data Protection (GDPR) (30), as well as Organic Law 3/2018 on Data Protection and Guarantee of Digital Rights (Article 6.1.a + 9.2.a GDPR, additional provision 17.2a LOPD-GDD) (31).

TABLE 3 The women's' interview.

Questions
- Are you satisfied overall with the care you received from all the professionals (midwives, obstetricians, administrative staff..) during your pregnancy, delivery and the postpartum period?
- Did the professionals guide you in creating your birth plan? Do you think your birth plan was respected? Do you think you were the protagonist of your labour and delivery? Do you believe you participated in the decision-making process during labour?
- Did you feel that you participated in the decision-making process after the baby was born? For example, were you able to do skin-to-skin contact, decide when you wanted the umbilical cord to be cut, etc.?
- Do you consider that they always asked for your consent and informed you before performing any procedure during childbirth?
- Do you consider that you received the necessary information about pregnancy, labour and postpartum period?
- If an episiotomy (perineal cut) was performed during childbirth, were you asked for consent before carrying it out? Were you informed about why it was necessary, and did you agree to it? How did you experience it?
- Do you consider that there was good communication between you, the person accompanying you, and the healthcare staff?
- Did they ever use words that you didn't understand and left you with doubts during pregnancy, delivery and the postpartum period? At any moment, were disqualifying or ironic tones used regarding your person or your behaviour?
- Do you consider that you received good treatment during labour from the professionals who attended you? If not, do you believe this is due to any specific aspect?
- Were any procedures performed on the new born without your or your partner's presence (such as omissions, heel prick test, etc.)? If so, what justifications did the healthcare staff provide? And how did you experience it? Were any options given to you?
- Have you felt violated by the healthcare professionals at any point during pregnancy, labour or the postpartum period?
- Regarding your pregnancy and childbirth.. Do you think you received individualized care based on your personal needs or characteristics (culture, beliefs, social situation, etc.)?
- Did you feel a lack of privacy at any point? If so, please explain what happened and how you felt.
- Did you feel judged or criticized by any member of the healthcare staff at any point as a result of the decisions made during the process?
- Do you think that, overall, you received respectful maternal care during pregnancy, birth and postpartum?

This study does not involve any high-risk data processing situations: it does not include data profiling or automated decision-making, the use of artificial intelligence tools, data exploitation techniques with Big Data technologies, biometric systems, or geolocation systems.

2.7 Rigor

This study was conducted following the COREQ checklist for study design, data collection, analysis, and publication (24) (Supplementary Material). A pilot interview was conducted beforehand to ensure the proper functioning of the interview process.

3 Results

This section presents the analysis of the discourses of women, midwives, and obstetricians. Three key themes emerged regarding their experiences and perceptions of maternal care: information, communication, and decision-making. Regarding the phenomenon of obstetric violence, we have gathered insights from healthcare professionals (midwives and obstetricians) alongside the experiences of mothers. The findings reveal that many women endure situations that may be classified as obstetric violence.

TABLE 4 The midwives and obstetricians' interview.

Questions
- Do women have expectations and a birth plan? Do they share them with you? How do they communicate their plans, and what challenges do they face?
- Do you think woman's decisions are respected throughout the entire childbirth process?
- Regarding informed consent, are there situations where it is not requested? or do you always request it? When should it not be required?
- If a woman refuses a procedure that you believe it is necessary, how do you handle the situation?
- Do you think professionals provide enough information?
- Do you believe that women come to consultations already informed?
- Do you think there is good communication between the woman and the healthcare staff? Do you encounter any barrier regarding communication?
- Do you use technical jargon?
- Can women express themselves freely during the process of labour, pregnancy, and postpartum? Crying, shouting, communicating uncertainties..
- Do you think that in your facility all the practices carried out are based on the latest scientific evidence? Have you identified any practices used with low levels of evidence?
- Have you ever felt compelled to perform a procedure or pressured by another healthcare professional?
- What does obstetric violence mean to you?
- Have you ever felt that you caused pain or suffering to a woman unintentionally?
- Have you witnessed obstetric violence in your workplace?
- Do you believe that, at any point, you may have committed obstetric violence, even if unintentionally?

3.1 Experiences and perceptions of maternal care

Figure 1 shows themes and subthemes representing experiences and perceptions of maternal care.

3.1.1 The information

3.1.1.1 Mothers call for better information

According to professionals' opinions, women are increasingly requesting more information about childbirth processes. This trend may create expectations about motherhood that can lead to frustration, potentially affecting their satisfaction with and perception of maternal care.

> "Over these years the patients have changed a lot. Women have gone from having no information to being not properly informed. And this often causes unrealistic expectations of childbirth that can lead to frustration" (Obstetrician2_O2_).

Access to information is perceived by mothers as a positive aspect of their childbirth experience. When mothers do not receive enough information from healthcare professionals, they often seek it from unreliable sources.

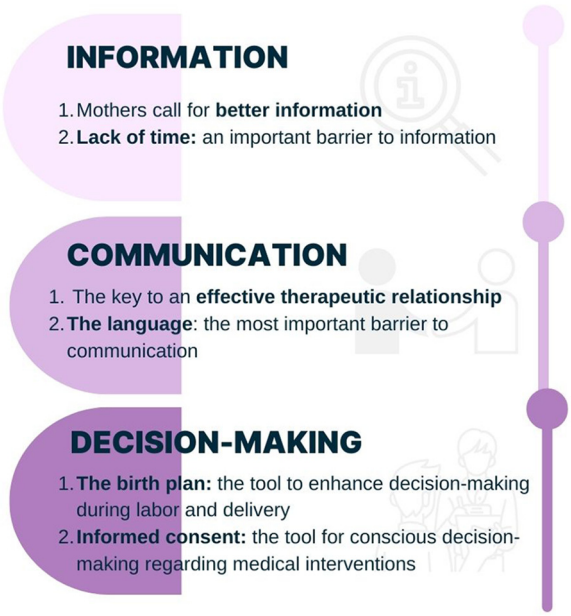

FIGURE 1
Themes and subthemes representing experiences and perceptions of maternal care.

> "As positive memories, I remember a nurse who was like a mother, you know? She explained everything to me, calming me down. I felt very supported" (Mother6_M6_).

> "Yes, most of them misinform themselves. Through forums or Instagram, there's a lot of information but it's not always true" (Midwive3_Mi3_).

3.1.1.2 Lack of time: an important barrier to information

Professionals and mothers agree that limited time during clinics is a barrier to providing accurate information.

> "We strive to provide information, but it's important to remember that in an obstetric consultation, there is often limited time to fully explain everything" (Mi3).

> "I missed a more relaxed approach. With the gyneacologist, I might go in with three questions, but I would only ask one because I always felt she was in a hurry. With the midwife, the visits were more relaxed; we talked more, and she listened more" (M1).

3.1.2 The communication

3.1.2.1 The key to an effective therapeutic relationship

Professionals agree that effective communication enhances patients' confidence in the procedures being performed, leading to a stronger therapeutic relationship between healthcare providers and mothers.

> "When communication between the doctor and patient is strong, and the doctor clearly explains the reasons for proposing a medical intervention, the patient is more likely to understand and feel confident in the procedure" (O2).

In the public health system, mothers are not assigned a specific midwife or obstetrician as their primary caregiver. Instead, they interact with multiple professionals during labour and birth, a time when they are particularly vulnerable. As a result, there is insufficient time to establish a strong, trust-based relationship.

> "Sometimes, the patient has only just met you in the birth room because labour isn't progressing as expected. In that moment, a decision must be made that she may not have wanted, which makes the situation more complicated" (O2).

> "I suppose this is common throughout the public health system — not having a designated gynaecologist that women can always see. This creates a sense of unease for them" (O3).

Mothers and professionals report that communication needs improvement due to the poor communication skills of some midwives and obstetricians.

> "I acknowledge that we can do better. I believe we must significantly improve our communication with them, as it is the key to everything" (O2)."

> "I was already stressed, and the midwife only made it worse. She would tell my mother, "Tell her she needs to push harder," and I felt frustrated. I just wanted to say, "This is my moment—don't talk to my mother, talk to me" (M3).

3.1.2.2 The language: the most important barrier to communication

Some professionals also mention the challenges of communication when there is a language barrier.

> "Of course, we try to explain, but it can be really exhausting when you explain something three times, only for them to ask the same question again because they still don't understand. Eventually, it reaches a point where it tests our patience as well" (Mi1)."

3.1.3 The decision-making

3.1.3.1 The birth plan: the tool to enhance decision-making during labour and birth

Some women report being unaware of the birth plan, while those who created one say it was not taken into consideration.

> "I didn't do the birth plan, in fact, I was never informed about it" (M6).

> "You go to the midwife, and she tells you that you have to make a birth plan. I filled it out but nobody at the hospital asked me for it. Everything happens on the go" (M4).

Professionals believe that birth plans can lead to an idealized view of childbirth or to demands and expectations that cannot always be met in the birth room.

> "They are told that they can't come in with a fixed idea of how the birth will go because it can be totally different, that's how childbirth is. They have quite high expectations to translate this into the birth plan. These plans are becoming increasingly specific, and it's difficult to deal with this because there are things we can't provide at the hospital. For example, not inserting an intravenous line or not allowing anyone into the examination room" (O4).

> "They have idealized expectations of childbirth, envisioning experiences like labouring in the shower, avoiding an epidural, and having a completely natural birth" (Mi2).

Mothers reported having limited decision-making power, as they are subject to healthcare protocols, which leads to a lack of control.

> "You're reliant on the doctor's judgment and the established protocol since they have the expertise. However, when things go wrong… I may not fully understand the protocol, but I believe it should be open to review" (M8).

Professionals affirm that women have the opportunity to make informed decisions, especially during pregnancy. However, during labour, if medical complications arise or disagreements occur, healthcare professionals may need to intervene.

> "During pregnancy, if they don't want to get a vaccine or take vitamins, we explain what we recommend and if they don't want to, it's recorded, and obviously it's respected. There aren't many decisions to make during pregnancy, so we try to respect them, but if there's something that we medically consider it cannot be fulfilled, we tell them. For example, in childbirth, there are more and more people who don't want to have an intravenous line inserted, and now we have developed a protocol for refusing the insertion of the IV line" (O4).

3.1.3.2 Informed consent: the tool for conscious decision-making regarding medical interventions

Written informed consent is mainly obtained for epidural anaesthesia and caesarean sections. For other procedures, consent is generally obtained verbally.

> "We usually do get written informed consent for a caesarean section. In the case of an episiotomy, we just obtain a verbal one. And for epidural anaesthesia, yes, it is also signed" (O2).

Professionals report that informed consent would be needed for procedures such as amniotomies or instrumental deliveries.

> "What I miss is the informed consent for an amniotomy. Which for me is a trivial thing, but for the woman it's not, and she needs to have all the information, the pros and cons" (Mi1).

Additionally, since signatures are obtained during vulnerable and painful moments, many women are unaware of what they are signing.

> "The anaesthesiologist does make you sign the paper that you can't look at anything because you're there in an awkward position and with pain, and you're just wishing for them to give you the epidural, so you sign whatever they put in front of you" (M4).

3.2 The phenomenon of obstetric violence

3.2.1 The midwives and obstetricians' point of view

Figure 2 shows themes representing midwives and obstetrician's point of view of obstetric violence.

3.2.1.1 The term and the definition

Regarding professionals' opinions on obstetric violence, some emphasize that they do not like the term because they find it offensive.

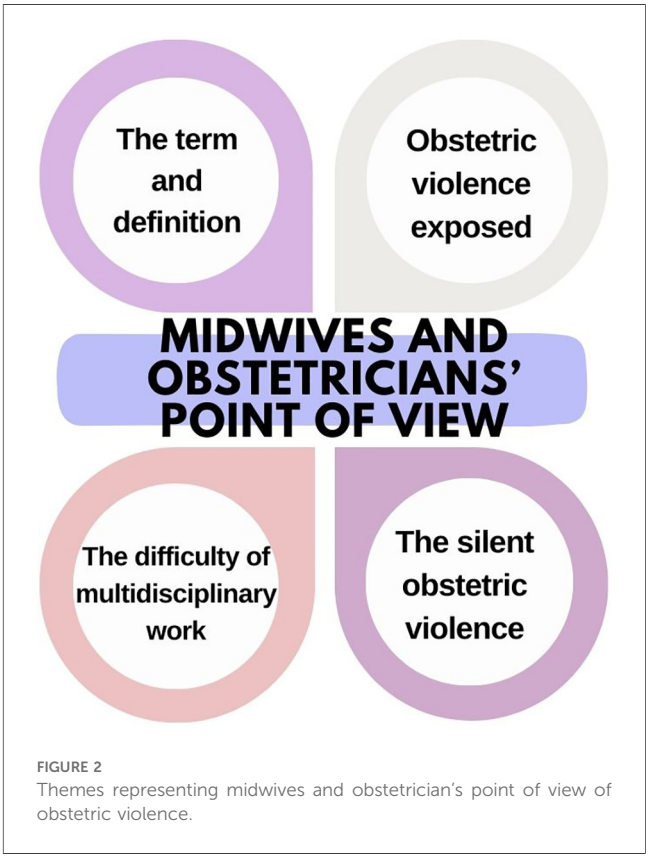

FIGURE 2
Themes representing midwives and obstetrician's point of view of obstetric violence.

> "For us, the term obstetric violence it really annoys us because the word violence is a very hard word, which predisposes that someone is consciously doing something harmful to another person. We have no intention of causing pain or harm to a patient. On the contrary, our job is precisely to help mothers. So, this term obstetric violence, which is very trendy, we don't like it. We must accept that there are things we are not doing entirely right, that we need to improve them, of course" (O2).

Regarding the definitions, opinions vary. However, there is a consensus that when a medical procedure is performed against the mother's wishes, it is done because healthcare professionals deem it medically necessary, and therefore, it is not considered obstetric violence.

> "Obstetric violence includes actions, techniques, and even verbal expressions that can emotionally impact a woman and affect her sensitivity. While the definition of violence can be subjective, it also encompasses subtle elements like words or comments. It's a term open to various interpretations." (Mi2).

> " Obstetric violence involves performing unnecessary procedures, not merely acting against a mother's preferences. For example, while some mothers may not want an episiotomy, there are cases where it is medically necessary. In my view, that does not constitute violence" (Mi4).

> "There is a fine line between medically necessary interventions and obstetric violence, and I believe many people struggle to distinguish between the two. Performing an episiotomy to prevent a severe perineal tear, for example, does not automatically constitute obstetric violence" (O4).

3.2.1.2 Obstetric violence exposed

Although several professionals acknowledge that obstetric violence has occurred in birth rooms, or even that they have been responsible for it at some point, they state that it is becoming less frequent.

> "I believe that obstetric violence was more prevalent in the past, but it has gradually declined over time" (O4).

> "When I started, we performed the Kristeller's manoeuver and conducted vaginal examinations—often without asking—because it was considered normal practice at the time. Now, things have changed; we strive to do everything with respect" (Mi4).

> "Those of us who are of a certain age see it as a professional flaw. Obstetric violence was not only permitted but was the standard practice. The patient's decisions carried very little weight; you had established criteria for what you had to do, and that was it. So, of course, we've had to gradually change our mindset. I think we're on an acceptably good path, but we still have a long way to go" (O2).

Some professionals assert that acts which could be considered obstetric violence may result from a lack of knowledge among healthcare providers or the low level of evidence that is sometimes applied in obstetrics.

> "(Acts that are performed routinely) and that are likewise considered obstetric violence and that they don't know that the woman could avoid these situations.. I don't deny that these situations exist, the only thing that bothers me is that it's labelled as violence, because it seems as if the professional wants to do it on purpose, and many times it's due to lack of knowledge, isn't it?" (O3)".

> "Obstetrics is always based on very soft evidence. Perhaps, if we're being very precise, surely there are quite a few procedures that we do that are not entirely supported by evidence" (O1).

Professionals who have witnessed acts that could be considered obstetric violence:

> "For example, the woman is pushing, everything is going well, and then the doctor arrives in a hurry. We do a kiwi (manual vacuum) and that's it, or an episiotomy, for example. You could have waited a bit, we've been here for an hour with the woman pushing, and it wouldn't have been more than 10 min. The baby was fine, but well, of course." (Mi4).

> "We have seen deliveries being instrumented when it wasn't necessary, just to teach a gynaecology resident." (Mi1).

When directly asked if they have committed obstetric violence, professionals acknowledge instances where they have failed to alleviate pain or where there were an excessive number of professionals present when it was not necessary:

> "When performing the suture and the anaesthesia is not effective, you tell her, "Try to hold on a bit, it's just three stitches" but it hurts her. If you break the waters, the contractions will be more painful. I've done it before, and I know it will hurt her" (Mi1).

> "During the expulsive phase of labour, well, not always, but at specific moments when the gynaecologist, midwife, nursing assistant, and gynaecology resident students are present in the room.. Not in all births, but when it happens, I notice that there are too many people" (O3).

Additionally, they also refer to Kristeller's manoeuver:

> "I committed obstetric violence in an extreme situation where the baby was at risk of being stillborn and the woman refused a caesarean section. There was a language and cultural barrier, and she wanted to give birth vaginally. We performed a Kristeller's manoeuver. Was it obstetric

> violence? Yes. Was it justified? Yes. Would I do it again? I think so" (Mi3).

> "Kristeller's it's a technique that we don't like, and we try not to do it at all, but sometimes you see it as necessary for the woman and the child" (Mi4).

3.2.1.3 The silent obstetric violence

Some professionals report that consent is not always required.

> "With episiotomies, the procedure is often performed first and explained afterward. Consent isn't typically sought, likely because it's assumed the woman would refuse." (Mi3).

> "We don't force her unless it's a matter of life or death, we don't force her" (Mi2).

> "We are a very heterogeneous group of gynaecologists, each with our own approach to practice. That's simply the way it is" (O2).

One professional stated that measures are taken to protect themselves from possible accusations of obstetric violence.

> "For example, written consent is obtained for cesarean sections; however, at present, there is no written consent for instrumental deliveries. Discussions on this matter have begun, primarily from a defensive standpoint, in the context of obstetric violence. Currently, informed consent is obtained for caesarean sections and epidurals at the time of birth, but no other informed consent is provided, and patients sign these documents." (O4).

3.2.1.4 The difficulty of multidisciplinary work

A midwife recounts the difficulty of working with an anaesthesiologist and mentions that women often suffer pain due to delays in administering the epidural.

> "If the resident is in the operating room, the other (senior) anaesthesiologists don't wake up. Therefore, we have the woman screaming for two, three, four hours. Sometimes they say (anaesthesiologists): 'Yes, I'll come up later'. (Women) They go through a terrible experience, and this happens to us quite often. For me, this is obstetric violence" (Mi1).

Some midwives are forced or coerced into performing acts they consider unnecessary by obstetricians, which creates discomfort for them.

> "There was one instance when I was forced to perform an episiotomy, even though I believed it wasn't necessary. It made me feel awful." (Mi2).

> "There was a time when I was asked to perform a Kristeller's manoeuver, and I refused and left the birth room. I thought to myself, "You're the one who might end up in court."" (Mi3).

A mother reports an instance of mistreatment between the anaesthesiologist and the midwife:

> "The anaesthesiologist treated both me and the midwife very poorly.. He attempted to insert the needle three times and blamed us both: me for not positioning myself as he wanted, and the poor midwife for not holding me properly" (M4).

3.2.2 The mothers' point of view

Themes representing the mothers' point of view of obstetric violence are shown in Figure 3.

3.2.2.1 The challenge in articulating what was experienced

When directly asked if they believe they were violated during their birthing process, some women report that the term is too strong and deny it, even though what they subsequently describe aligns with experiences of disrespectful maternal care.

> "No, I don't want to go to this extreme because I didn't feel that way. I felt that they disrespected me, that they violated my privacy, that they didn't take me into account. I felt ignored. I felt bad, that they weren't respecting me" (M1).

> "Respectful maternal care? No, I carry trauma from it. I wouldn't have another child. Pregnancy, childbirth, and breastfeeding, all together, for me was a traumatic experience. I would change the entire birth team. Violated might sound like a strong word, but I felt like they wanted to silence me.

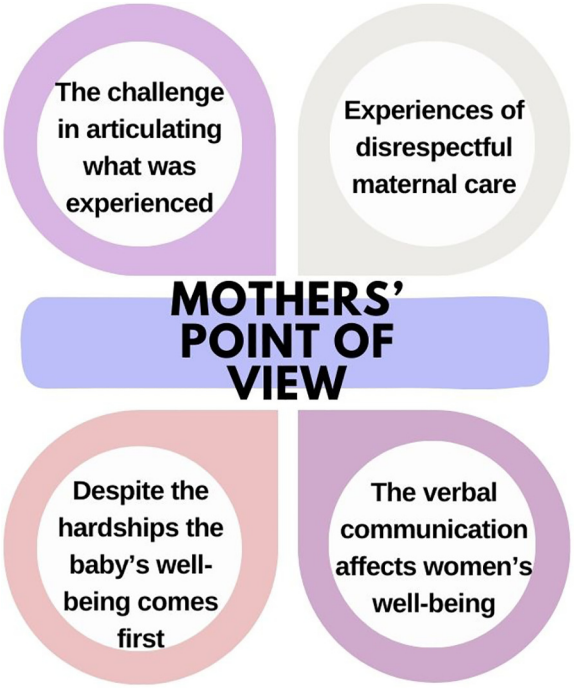

FIGURE 3
Themes representing the mothers' point of view of obstetric violence.

> It seemed like she (the midwife) wasn't willing to have much patience with me, and I felt like insulted" (M3).

3.2.2.2 Experiences of disrespectful maternal care

A woman recounts feeling pressured into receiving an epidural:

> "They did ask me about the epidural, and I told them I wasn't sure. When she noticed I was complaining a bit about pain, she said 'no, no, it's better if we give it to you because you won't be able to handle it'. I think I might have been able to manage without it, but she insisted so much. It was like she was saying (imitating) 'Mommy, we'll just give it to you. Trust me, listen to me" (M5).

Some non-native women reported receiving poor care and believe it may have been due to their skin colour:

> "And they kept spreading my legs, kept doing vaginal examinations, kept leaning on me, and started talking among themselves. I feel that if I had been from here or had lighter skin, they might not have behaved that way" (M1).

Several women agree that the care provided by the anaesthesiologist was poor, and part of their negative memories is related to the anaesthesia administration.

> "The worst moment was the anaesthesiologist who treated you terribly, terribly, terribly, horribly" (M4).

> "The anaesthesiologist's moment was a drama. If the epidural's lady had treated me differently, I wouldn't have been in such nervous and distressed. That woman was incredibly cold and unfeeling" (M8).

Mothers, like professionals, also report that at times, an excessive number of healthcare professionals were present during childbirth.

> "I am very satisfied. I also have to say that I don't know if there were 7 professionals present during the birth " (M6).

3.2.2.3 The verbal communication affects women's well-being

A woman was criticized by some professionals for the number of children she had and was advised not to have any more.

> "The third one already? Let this be the last one, huh?" Look, it's my life, isn't it? You're not coming to support them. Keep those comments to yourself. And then they look at my age: 29? So young! 3? That's enough, huh? No more, huh?" (M1).

Some mothers report being forbidden to scream, while others felt ignored as professionals discussed their concerns during a caesarean section.

> "They did tell me, don't scream. That's how they said it, don't scream" (M3).

> "The girls who were putting in the staples, they were talking about their weekend or something about their boyfriend. And I'm not interested, I'm in a critical moment, this is an operation. The care here wasn't as professional as it should be. I experienced it very negatively during the birth, the way of treating me roughly, the vaginal examinations, the movements" (M1).

Some mothers stated that their sense of respect varied depending on which professionals attended to them.

> "I noticed a big difference depending on which professional attended me" (M6).

Some women were unaware of certain procedures performed on their newborns, while others would have appreciated being asked for consent beforehand.

> "(Administration of vitamin K) I didn't realize they had given that to him. Do they give it when you give birth? I don't know, they don't ask you" (M5).

> "They performed a technique to position the newborn, which is good, right? But I would have liked to be asked first, to be informed.." (M1).

3.2.2.4 Despite the hardships, the baby's well-being comes first

Finally, despite everything the mothers tell us, the most important thing for them is the well-being of their baby.

> "The care before labour and postpartum was great. The birth was terrible. The important thing is the baby's well-being" (M3).

> "For me, the most important thing is the girl, I mean, if she's okay, then perfect" (M7).

4 Discussion

This study explores the experiences and perceptions of maternal care, as well as the phenomenon of obstetric violence.

The results obtained from the analysis of the discourses have allowed us to identify and relate categories that interact to describe respectful maternal care (Figure 4). When women receive accurate and comprehensive information about the entire maternal process, combined with effective communication that fosters a strong therapeutic relationship, they are better equipped to make informed decisions, feel in control of the situation, and, consequently, perceive that they have received respectful maternal care.

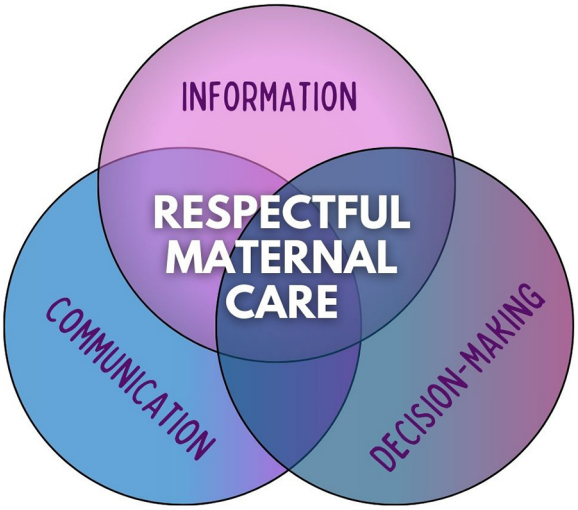

FIGURE 4
Categories that interact to describe respectful maternal care.

Regarding information, healthcare is undergoing a shift in the patient model. In obstetrics, pregnant women are becoming increasingly empowered and informed, while also growing more critical and cautious toward the healthcare system. Our results align with those obtained by Jovell (32) and Fernández-Aranda (33).

In our study, both women and professionals agree that there is a lack of information during healthcare assistance in pregnancy, childbirth, and postpartum according to authors such as Marrero and Brüggemann (11) and Khalil et al. (20) As a result, mothers often seek information from unreliable sources to meet their immediate needs as supported by Sayakhot et al. (34). This information, typically found on the internet, plays a crucial role in decision-making and can raise expectations that, if unmet, may lead to frustration and dissatisfaction. Lagan et al. (35) found same results.

The main reason for the lack of information is the shortage of time during clinics, which both professionals and mothers report. They state that they are attended to in a rush and cannot resolve all their doubts during the clinic. Our results are consistent with those reported by Nagesh et al. (12).

Concerning communication, the mothers in our study are not satisfied with the communication they receive from obstetrics and anaesthesia professionals (19, 36). The WHO recommends effective communication in birth care (1). Good communication reduces anxiety, improves self-care, and increases adherence to treatments (37). Professionals state that without good communication, it is not possible to establish a therapeutic relationship, and this can be affected by the healthcare professional's communication skills. Education on empathetic and respectful communication should be included at university because are not innate skills (38). The patient must perceive the professional as an honest, trustworthy, warm, and attentive person who validates them unconditionally and accepts them to establish a therapeutic relationship (39). Additionally, it allows mothers and professionals to address problems that may arise during labour and birth (40).

Some of the participant mothers in our study report that they did not feel well-treated due to incidents such as the professionals entering in a clinic without introducing themselves, discussing personal matters during critical moments, or making comments about the number of children. In the public healthcare system, particularly in obstetrics, it is difficult to establish this therapeutic relationship due to the absence of a reference professional. The language and cultural barriers also affect communication and quality of care (41) and they hinder the ability to properly convey information and enable the mother to make informed decisions (13).

Related to decision-making, a birth plan is a document that outlines the preferences of pregnant women, facilitates communication with professionals, promotes decision-making, and improves satisfaction (42). Although it is associated with fewer interventions and better health outcomes for both the mother and baby, not all women create one, and it is often disregarded (43). Some professionals believe that the birth plan can raise expectations or idealize childbirth, particularly regarding natural births, which reflects the normalization of medicalization in obstetrics.

In obstetrics, interventions such as episiotomies are often carried out without the prior consent of mothers (11, 20). Both American College of Obstetricians and Gynaecologists (ACOG) and current Spanish regulations require that the clinical indications for interventions be communicated, and that the woman consents to the procedure through written informed consent (44, 45). Mothers have the right to refuse treatment or intervention, even if the professional considers it to be in their best interest (46). It is essential to foster shared clinical decision-making, avoid abuses of power by institutions and professionals, and preserve women's autonomy (47). Increasingly, mothers are rejecting paternalistic relationships and seeking a more horizontal one, based on mutual collaboration (32, 33).

When exploring the term "Obstetric Violence" (OV) and its definition, the obstetricians in our study consider the term to be offensive because it implies intentionally causing pain. Some mothers feel that the term "feeling violated" is too harsh, but they have experienced being ignored, disrespected, having their privacy violated, and being treated with disregard. Other studies use terms such as "*mistreatment during childbirth*" or "*disrespect and abuse during childbirth*" (4, 14, 19, 21).

Regarding the definition, obstetricians do not provide a specific one but believe that, in general, people do not distinguish between actions that constitute obstetric violence and those that are considered medical indications. Midwives, however, view OV as acts, techniques, or comments that affect the mother's sensitivity or are unnecessary. It is a concept that holds many interpretations and can be seen as such when techniques are practiced that the mother does not wish to undergo. According to the literature, obstetric violence is defined as the abuse or mistreatment by a healthcare provider of a female engaged in fertility treatment, preconception care, pregnancy, childbirth, or postpartum; or the performance of any invasive or surgical procedure during the full span of the childbearing continuum without informed consent, coerced, or in violation of refusal (22). Some professionals do not

consider performing medical acts without consent to be obstetric violence, as they do so to ensure the safety of the woman and the baby (11). It also encompasses unnecessary but routine medical interventions, such as episiotomies or instrumental births for teaching purposes or to accelerate birth (21).

Our findings align with the feminist conceptualization of obstetric violence as a form of structural and epistemic violence against women's bodies and autonomy (15, 48, 49). Feminist scholars have argued that obstetric violence is not merely the result of individual malpractice but is embedded within broader patriarchal structures that shape obstetric care. For instance, Shabot and Korem (48) emphasizes the phenomenological experience of violation during childbirth, while Pickles (15) highlights the legal and ethical challenges in addressing obstetric violence as a human rights issue. Incorporating these perspectives allows for a deeper understanding of the power dynamics, dehumanization, and systemic inequalities that underpin the participants' experiences reported in this study.

In relation to professionals' experiences, obstetricians and midwives state that OV occurred more frequently in the past but is becoming less common in birth rooms. They agree that many procedures need to be changed because some acts are performed routinely, and the woman's decision carries little weight. As a result, these routine procedures can trivialize actions such as caesarean sections or instrumental deliveries (12). Obstetricians acknowledge that some practices are based on low-quality scientific evidence (50). The main issue is that most obstetricians and midwives have been trained in a system where OV was normalized, making it more difficult for them to detect and reflect upon it (51). The ACOG suggests practicing techniques such as operative vaginal delivery, postpartum haemorrhage management, shoulder dystocia management, perineal laceration repair, conventional laparoscopic procedures, and robotic surgery through simulation rather than in real clinical scenarios (52).

The narratives reveal that, unlike midwives, obstetricians do not identify situations that could be considered obstetric violence (OV). This difference may stem from obstetricians still rejecting the term. Midwives report experiences where pain management has been ineffective, either because anaesthesia was not administered or was given too late (16, 17). This can generate feelings of frustration, as many women associate the quality of care, they received with how pain was relieved (12). On the other hand, some mothers reported feeling coerced into receiving epidural analgesia (53), despite the WHO recommending that maternal preferences be assessed (1).

Both midwives and mothers report an excess of staff during deliveries, as well as unprofessional behaviour, such as engaging in personal conversations. While the literature does not specify the exact number of professionals that should be present during childbirth, the WHO recommends having a sufficient and competent team (1).

Some midwives admit to performing the Kristeller's manoeuver because they considered it necessary, despite the WHO recommending against this technique (1). Kristeller's has been associated with fractures, brain damage, brachial plexus injuries in newborns, as well as 3rd-4th degree vaginal lacerations, rib fractures, uterine rupture, placental abruption, and postpartum haemorrhage in mothers (54).

Regarding non-consensual practices, some professionals exercise their autonomy without considering the woman's will (55). To avoid future lawsuits for obstetric violence, healthcare centers create unnecessary and multiple informed consents as a form of defensive medicine (56). In our study, professionals reported creating a protocol requiring women to sign a form if they refuse the routine insertion of a peripheral intravenous line. When mothers describe mistreatment, they often refer to communication and verbal language rather than specific medical practices. This includes discrimination based on skin colour, comments about fertility, and the restriction of expressing pain freely through screaming (12, 13, 19, 20, 36). The attitudes with which professionals treat women are crucial to mothers' perceptions of the care received (12). The WHO suggests that professionals should treat women kindly for a positive birth experience (1). However, mothers are often treated in a hostile, unempathetic, unprofessional, and authoritarian manner (16, 18). Midwives report occasionally feeling obligated to perform interventions they consider unnecessary. One study noted a midwife stating, "*Sometimes you feel you have to protect women from insensitive healthcare professionals*," referring to obstetricians (8). Another figure mentioned by both mothers and midwives is the anaesthesiologist, due to the verbal mistreatment they sometimes exhibit.

Finally, it is important to highlight that the maternal care received impacts women's autonomy and integrity over their bodies and sexuality (57). The prioritization of optimizing personnel and resources, as well as standardizing childbirth care, could increase the likelihood of experiencing OV (13). Women who have not received respectful maternal care and have experienced OV may exhibit symptoms of anxiety, panic attacks, postpartum depression, suicidal thoughts, marital breakdown, sexual dysfunction, incontinence, emotional disconnection from the baby, among others (2).

Nevertheless, despite having experienced what is considered a traumatic birth, both women and professionals often focus on the well-being of the newborn. A birth is typically regarded as successful if the baby is born healthy, with the mother's well-being often relegated to a secondary concern.

5 Strengths and limitations

This study is the first to compare the narratives of both women and healthcare professionals, ensuring data saturation from two independent sources. Additionally, it features a highly diverse sample of participants. Among the women, two are non-native, and they vary in educational background, parity, and childbirth experiences. Similarly, the healthcare professionals bring diverse perspectives, differing in years of experience, workplace settings, and gender, thus enriching the study with a broad and comprehensive viewpoint.

The most significant limitation of our study is the inability to interview women who face language barriers, despite them representing 30% of those attending our birth rooms. Moreover, we recognize that linguistic and cultural barriers are key factors that may

contribute to obstetric violence. Future studies should include mediators to eliminate this exclusion criterion. Another limitation is that our findings are based on data from a single region in Catalonia, meaning the experiences of women in other regions may differ.

6 Conclusion

The care provided to women during pregnancy, childbirth, and postpartum is undergoing significant changes that highlight the limitations of the traditional obstetric model. The growing demand for more conscious, personalized, and respectful care from women calls for a review and update of current models and protocols to promote evidence-based, respectful assistance, moving away from the pathologization of physiological processes. An obstetric model that guarantees women's autonomy and moves away from defensive medicine not only improves their experience but also contributes to safer and more efficient care.

The difficulty in implementing changes in obstetrics lies, in part, in the controversy and debate surrounding the concept of obstetric violence. The term "violence" is uncomfortable for both mothers and professionals, as it evokes the intention to cause harm. To move towards a model of respectful maternal care, it is crucial to overcome terminological disputes and implement public policies that ensure a more respectful care model. It is essential to incorporate debate and reflection on gender issues in students, rethinking childbirth care from a humanistic approach that focuses on women. We must move away from the old obstetric model and ensure respectful maternal care, not only through public policies but also through training programs that integrate this sensitivity. In the same vein, it is important to ensure a positive birth experience for women, avoiding the subordination of maternal health to fetal well-being.

Achieving this goal is a collective responsibility that must be assumed by institutions and professionals to ensure universal, respectful obstetric care.

Data availability statement

The original contributions presented in the study are included in the article/Supplementary Material, further inquiries can be directed to the corresponding authors.

Ethics statement

The studies involving humans were approved by the study protocol was approved by the Ethics Committee of Research with Medicines (CEIm Girona) (reference 2021.043). The studies were conducted in accordance with the local legislation and institutional requirements. The participants provided their written informed consent to participate in this study. Written informed consent was obtained from the individual(s) for the publication of any potentially identifiable images or data included in this article.

Author contributions

ZR-A: Conceptualization, Data curation, Formal analysis, Investigation, Writing – original draft, Writing – review & editing. CF-P: Formal analysis, Funding acquisition, Project administration, Supervision, Writing – original draft, Writing – review & editing. MR-V: Conceptualization, Data curation, Investigation, Supervision, Writing – review & editing. JG-O: Data curation, Methodology, Software, Writing – review & editing. DB-F: Funding acquisition, Project administration, Resources, Supervision, Writing – review & editing. CR-H: Conceptualization, Data curation, Formal analysis, Investigation, Writing – original draft, Writing – review & editing.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Generative AI statement

The author(s) declare that no Generative AI was used in the creation of this manuscript.

Publisher's note

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Perspectives on trauma-informed maternity care for those with a history of child sexual abuse

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Failure to listen has been a recurrent issue for recent users of maternity services in the UK. The need to listen to women has been recognised in successive reports. Listening is particularly difficult when the population is unheard such as those who have experienced child sexual abuse. Despite its prevalence and lasting impact on physical and mental health, care of women who have experienced child sexual abuse is not usually part of healthcare professional or student education. This paper discusses the benefits of trauma-informed care to meet the needs of survivors of child sexual abuse. It also discusses the co-production of an e-resource on trauma-informed care for women and birthing people who have experienced child sexual abuse. The resource addresses the related educational gap for healthcare professionals and enables the powerful words of this silent, hidden population to be heard.

KEYWORDS

trauma-informed care, child sexual abuse, maternity care, e-resource, co-production

Introduction

This paper explores perspectives on emotionally-centred maternity care for women and birthing people[1] who have experienced child sexual abuse. It considers challenges faced both by survivors[2] receiving care – even when that care is compassionate and responsive – and healthcare professionals providing care to this population. It discusses the need for trauma-informed care and the co-production of an e-resource designed to address the challenges.

In recent years, failure to listen has been a recurrent issue when shortcomings of the UK's maternity services have been investigated. It was a key theme in the report by the All-Party Parliamentary Group on Birth Trauma (1) and prominent in two of the recent high-profile investigations when failings had been uncovered (2, 3). It impacts the maternity service, when lessons from critical incidents are not learned, and service users whose experience can be distressingly poor and result in psychological trauma. An essential action from Ockenden (2) was that maternity services must ensure that the voices of women and their families are heard, something that was reinforced in the response by Renfrew et al. (4). This is clearly an essential aspect of emotionally-centred care, but

[1]We recognise that not all birthing people identify as women. However, when we refer to participants in our studies who do, our language will reflect theirs out of respect for them.

[2]We recognise that not all women who have experienced child sexual abuse find the term 'survivor' relevant or helpful, but we use it as this was the preference of most of the participants in our work.

women and birthing people who have experienced child sexual abuse are a silent, hidden population (5) and therefore are often unheard.

The mental health and health impacts of violence against women and girls is a priority area in the Women's Health Strategy for England (6). Tackling taboos and stigmas and ensuring women are heard were part of the plan. There is recognition in this strategy that new resources may be needed, and it commits to improving accessibility of evidence-based resources for healthcare professionals. This is a welcome commitment as care of those who have experienced sexual abuse has generally not been part of healthcare professional education. How to respond when a history of child sexual abuse is suspected is a cause for concern for many healthcare professionals (7).

As authors of this paper, we come with very different perspectives. LD is a qualified trainer, policy adviser and researcher working for The Survivors Trust. She regularly contributes to legislation changes and research articles. She wrote the "Check with me First" training programme which discusses the importance of trauma informed care within the NHS when working with survivors of sexual violence. LD is also a survivor of childhood sexual abuse and has two young children. The collision of her professional knowledge combined with the re-traumatisation she experienced during pregnancy has meant she is passionate about raising the awareness of trauma informed care for female survivors of sexual abuse during maternity care. EM is a midwifery academic. Her PhD was on the maternity care experiences of women who were sexually abused in childhood and much of her research since has followed on from this. She has learned a lot from the survivors with whom she has worked. She is in awe of the courage of participants in her doctoral work who shared their experiences with her, and the power of their words. Her PhD uncovered multiple layers of silence, and she has felt a responsibility since to ensure the voices of participants in her research are heard.

LD and EM have now been working together for nearly 10 years and have co-produced two resources. One, hosted on The Survivors Trust website, aims to help women and birthing people who have experienced childhood sexual abuse prepare for pregnancy, birth and parenthood (https://thesurvivorstrust.org/research/pregnancy-birth-and-parenthood-after-childhood-sexual-abuse/) (8). The other, discussed in this paper, addresses the gap in maternity care professional education on the subject (7).

The prevalence and impact of child sexual abuse

As child sexual abuse is hidden from view, it is difficult to get accurate statistics for its prevalence. Data are not routinely collected in England and Wales, but the Crime Survey, recognised as an under-estimate as it only considers abuse experienced before the age of 16, estimated that 11.5% of women are affected (9). A meta-analysis of studies from 16 countries reported a pooled prevalence among women of 24%, with a rate across the studies from Europe of 17% (10). In its latest report, the Centre of Expertise on child sexual abuse estimates that almost 500,000 children are sexually abused every year in England (11).

Although child sexual abuse is unlikely to be current for most survivors in the maternity services, its lasting impact will be. Adverse childhood experiences (ACEs), including child sexual abuse, increase the risk of many common physical and mental health conditions (12). Pregnancy complications and adverse outcomes are more common among women and birthing people who had ACEs (13, 14). Despite these factors, those who have experienced child sexual abuse rarely disclose to healthcare professionals (6, 14) as they fear an inadequate response and judgement on their ability to parent. They are often made to feel the abuse was their fault and describe feelings of shame and being disbelieved if they do attempt to disclose. Some worry they will be referred to social services and lose the care of their children or that their case will be referred to the police against their wishes, which is common practice whenever sexual abuse is disclosed, regardless of current risk.

Even if a survivor has disclosed and is receiving sensitive care as a result, many aspects of care can be reminiscent of abuse and may take both the person receiving care and the care giver by surprise. Triggers are manifold and are not necessarily related to the intimate examinations that many find difficult and that are commonly an integral part of maternity care. The following examples are recounted in work by EM (15) and the names are pseudonyms chosen by the research participants.

Sue was admitted to an antenatal ward during pregnancy for hypertension and was in a four bedded bay. She was scared of the dark and kept the curtains pulled round her bed at night and her light on. The footsteps she could hear as staff approached to turn the light off were a trigger for her:

> I'm completely scared of the dark and to lie there with someone walking into your little curtain bit and turn the light off was horrible because you can hear the footsteps coming … and you know, footsteps have a real big meaning when you've been treated not well as a child.

Mia was in labour at home and progressing well, but the actions of the midwife she trusted and to whom she had disclosed, changed that:

> …and I could feel the feeling to push and then she did an internal examination then it gave me like a bit of a problem in my head and she got a torch out, which is what he used to do. He used to get like a torch out to look cos it used to be like in a den, sort of thing, so, so she got a torch out and it was dark and I started thinking I needed to go to the hospital.

It was not the vaginal examination that Mia found most difficult here, but the torch, which the midwife used to sustain the calm, dimly lit environment she had created with Mia and which, unbeknown to her, replicated the abuser's action. Mia was

admitted to hospital and had an epidural which was a relief for her. However, being confined in bed due to an epidural can also be difficult, even when requested by the woman, as Sam's account shows:

> If I'm stuck on a bed, an' I can't get out, that is just like horrible it is, and then people coming in the room all the time and it, it triggers flashbacks.

The review of maternity services at the Shrewsbury and Telford Hospitals NHS Trust (2) reports recollections from women involving loss of power and control, excessive, painful vaginal examinations and not being listened to, all of which could leave someone with lived experience of child sexual abuse feeling unsafe (16).

These experiences highlight the importance of a universal trauma-informed approach which offers choice and empowers service users to say what works for them, rather than expecting healthcare professionals to know what those in their care may find difficult and what they can do to help.

Trauma-informed care

A trauma-informed approach recognises the widespread nature of trauma and the barriers it presents in accessing services. Both service users and staff are impacted. The rates of sexual violence may be as high, if not higher for staff than the general population (17). Throughout delivery of the "Check with me First" programme (https://thesurvivorstrust.org/training/checkwithmefirst/) many professionals disclosed their own abuse to LD and cited it as a reason for joining the profession and wanting to help others. The intersection between professionals' own trauma histories and their ability to deliver trauma-informed care is significant and underexplored in healthcare literature.

The aim of trauma-informed care is to promote feelings of psychological safety, choice, and control, which can be achieved when people feel seen, heard and cared for (18); to prevent re-traumatisation, not to treat the trauma. We know that trauma-informed maternity care can have a positive impact on the experience of women and birthing people (19), but that available education and resources are lacking (20). Renfrew (4) has recognised that education is a key component of effective change. Care of women who have experienced abuse (non-recent and current) was included in the Standards of Proficiency for Midwives for the first time they were updated by the Nursing and Midwifery Council in 2019 (21) so it will now be part of the pre-registration midwifery curriculum in the UK. However, there are many maternity care professionals who have not had education on the subject (6, 22). Our co-produced e-resource on trauma-informed maternity care for women and birthing people who have experienced child sexual abuse recognises this gap. It has been approved for inclusion on the NHS learning hub.

Development of our co-produced e-resource

Care of women and birthing people who have experienced child sexual abuse can be challenging for personal and professional reasons, especially when professionals need to engage empathetically with service-users whose disclosures resonate with their own lived experiences. Our work to inform the development of the resource confirmed the lack of available education on the subject and how unprepared students and staff can feel to care for those who have experienced abuse (7). This can leave healthcare professionals feeling awkward if they suspect a history of abuse and means they may avoid addressing the situation as they do know how they should respond. "What do they want from us?" was an underlying question from practitioners when contemplating care of those who have experienced abuse (7). Having some sort of checklist would have eased their anxiety but would risk disempowering those in their care.

A trauma-informed approach understands the impact of trauma, recognises when someone is feeling uncomfortable, responds to that discomfort and resists re-traumatisation (23). This can be facilitated by ensuring control rests with the service user who is the expert in what they need. Clear guidance was provided by one of our focus group participants:

> I think there as well that's a lack of questioning, you know, it's going back to this "oh we've done our training, we know what you as a survivor want" and actually they need to just ask (7).

Renfrew recognises that "a diversity of voices from women themselves in the education and training of health professionals" is needed (4 p2). This feels particularly important when the population is hard to hear. Our resource is clear from the start that users will not get to the end with a set of rules to apply, but they will have heard powerful words from those with lived experience of child sexual abuse and maternity care. However, there were under-represented voices in our work who also need to be heard. All the women who participated in EM's PhD were white. In the work we have done since, Black women and women of colour were under-represented. The latest MBRRACE report (24) continues to present a stark picture of the inequities faced by these populations in the maternity services. Ahead of making the resource widely available across England, we needed to be sure that it reflects the experiences of these under-represented women.

A number of workshops, co-facilitated by members of the relevant communities were therefore convened, both in person and online. An online workshop was particularly important for Muslim women who did not wish to be identifiable in their communities. In this workshop, women were given the option to leave their cameras off and write in the chat, rather than allowing their spoken voice to be heard. An in-person and an online workshop were convened with Black and People of Colour by "Little Ro", a survivor-led community dedicated to amplifying the voices of Black survivors. During these sessions, the resource was presented, and the voices of those with lived experiences of

abuse were not just heard but valued. Their stories were shared openly, shedding light on the challenges they face. While the participants recognised their experiences reflected in the resource, they expressed that more work is needed. Specifically, there is a crucial need to create a dedicated space where the voices of Black and People of Colour are not only heard but centred, allowing them to speak directly to their unique and often overlooked experiences within the system and how overcoming those experiences can be managed.

The way forward

Discussions between Little Ro and EM on the production of resources to ensure the perspectives of Black and People of Colour are duly respected have started. In NHS trusts in which LD has provided #CheckWithMeFirst training, 100% of delegates said it should be mandatory for all maternity healthcare professionals. This view reflects the report by The All-Party Parliamentary Group on Birth Trauma (1) which recommends mandatory training on trauma-informed care, and that awareness of the causes and impact of birth trauma should be a mandatory part of midwifery and obstetrics education and training. Work to test the implementation of the resource discussed in this paper in the NHS and midwifery pre-registration programmes in England is in preparation.

Discussion

Recurrent reports have highlighted failure to listen as a problem in the maternity services, but the importance of ensuring women's voices are heard is now part of policy. There are particular challenges when working with populations who are hard to hear, such as those who have experienced child sexual abuse. We have suggested that trauma-informed care is an appropriate way to respond to these challenges and have discussed the co-production of an e-resource that addresses the need for maternity care professional education on the subject. Trauma-informed care is a process which is heavily influenced by the professionals' own life experiences and stressors. It recognises that every person, whether professional or service-user has a unique experience and therefore requires a unique response which cannot not be directed in any learning or text. There is no linear response from trauma, and as such there should be no linear treatment of it. We advocate for all professionals being given the tools to offer bespoke care, regardless of whether a disclosure of sexual violence has been made or not, and not to be restricted by guidance which does not recognise previous experiences of the professional or patient.

Data availability statement

The original contributions presented in the study are included in the article, further inquiries can be directed to the corresponding author.

Author contributions

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Midwifery care attachments: shaping childbirth agency through care techniques

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Midwifery care has been shown to effectively enhance birth outcomes and improve childbirth experiences. It has, however, not yet been sufficiently articulated how exactly. This study explores how trustful and empowering relationships are crafted through midwifery birthing care techniques. To do so, it builds on insights derived from feminist science and technology studies' engagements with caring in terms of empirical ethics, namely as situated practices of "doing good". Using reflexive thematic analysis, I examine semi-structured interviews with midwives alongside ethnographic fieldwork conducted across various midwifery care settings in Germany. Setting two birthing stories in dialogue, I illustrate how bodies-in-labor emerge through collective, active, persistent and adaptive engagements with these dynamic entities in midwifery practice to make physiological childbirth happen. Specifically, I argue that through the midwifery care techniques of "spooning" and "labor and birth positioning" midwifery birthing care attachments are fostered. I conceptualize these attachments as co-responsive, active-passive commitments aimed at sustaining endurable or even pleasurable relationships between embodied selves and bodies-in-labor. Investigating situated midwifery care techniques enables a detailed understanding of their specific qualities in particular childbirth situations, extending conventional notions of being-with and non-intervention. This approach allows to articulate, critically engage with, and strengthen midwifery-specific childbirth care practices.

KEYWORDS

midwifery, care, techniques, labor, childbirth, obstetric violence, autonomy, body

1 Introduction

Midwifery, social scientific and public health research alongside related national and global policies, have recognized that "all is not well with birth" [(1), 4]. Quality maternal healthcare aimed at improving maternal and perinatal health outcomes is unevenly distributed worldwide.[1] It has been shown that many people giving birth in different environments are systematically threatened, insulted, denied pain medication or coerced into "consent". The disrespect for and mistreatment of birth givers, which

[1]Inequalities exist between scarcely resourced and well-equipped maternity care environments, with structural, personnel-related and access-related differences. Disparities have also been described across socio-political and demographic categories, such as race, ethnicity, or socio-economic background (99–101).

activist groups in Latin American countries have termed "obstetric violence," has been framed as a global epidemic. Associated with increased maternal morbidity and mortality, obstetric violence is understood as both a public health and a human rights-related issue. It has raised ethico-political concerns about women's health and wellbeing in relation to their autonomy and freedom of choice in childbirth (2–8).[2]

Professional midwifery care has been recognized as the best way to tackle ill-treatment of birth givers, contributing to better health outcomes and positive childbirth experiences (18–21). Midwifery's non-interventionist approach is said to be a humanized counter-program to technocratic, interventionist and obstetric dealings with birthing bodies.[3] It is argued that midwifery-specific birthing care supports women to cope with birth not only in terms of a physical event but also as a transformative biographical and sociocultural rite of passage. Instead of disciplining and objectifying bodies-in-labor and controlling and alienating women's subjective birthing experiences, midwives foster "normal" physiological births and allow for individual choice and control (22–28).

While the effectiveness of midwifery birthing care techniques in improving labor care has been repeatedly demonstrated, it has not yet been sufficiently articulated, in terms of what they consist of in detail and how exactly they contribute to producing "good" childbirth experiences. In this paper, I draw on insights derived from care studies as a branch of science and technology studies and empirical ethics to demonstrate how midwifery birthing care techniques craft trustful and empowering relationships which involve birth givers as active participants, establishing the conditions for "physiological" births to take place.

2 Empirical and theoretical background

Continuity of midwifery care has been shown to provide what matters to "[m]ost healthy childbearing women": "safety and psychosocial wellbeing" [(29), 2], subsumed under a "positive childbirth experience" [(7, 30); see also (31–33)]. This continuity of care is the provision of "care from the same midwife or team of midwives during pregnancy, birth, and the early parenting period in collaboration with obstetric and specialist teams when required" [(34), 3]. Continuous midwifery care has been shown to foster respectful, woman-centered interactions and to provide safety not only in obstetrical but also in emotional terms (35). In order to demonstrate "the power of midwifery" (19), classic maternal health indicators focusing on life-saving interventions and health outcomes such as maternal mortality [(36), 1750; (13), 2] have been extended to include relational qualities and birth givers' experiences of maternity care. On that basis, two characteristics of maternity care practice have been shown to impact positively on maternal and perinatal health: the timely and indicated use of evidence-based obstetric interventions and respectful and supportive maternity care relationships. The midwifery model of maternity care emphasizes the primacy of the midwife–woman relationship. It equips birth givers, including those from vulnerable and marginalized groups, with a sense of personal achievement. This sense of achievement provides them with an "inner" resource for long-term empowerment (15, 22, 32, 37–43).

A wealth of midwifery research has emphasized the importance of developing trustful and responsive midwifery care relationships over time to care "well" for women giving birth (31, 34, 44–53). Despite their significant impact on perinatal health outcomes and childbirth experience, midwifery care relationships together with techniques aimed at crafting, nurturing and sustaining responsiveness, intimacy and trust have been largely invisible in birth scholarship and birth-related discourses. As opposed to obstetric interventions directed at the body-in-labor which figure in birthing care protocols or guidelines, midwifery birthing care techniques are often attributed to not only a physical but also a psychosocial domain. Evading singularization, standardization and measuring, midwifery techniques which instill "a feeling of trust and safety in a woman who then feels confident to go with the flow of her labour" have "no name", are "not recorded," and are "not monitored or accounted for" [(54), 10067]. Traditionally, these techniques have been framed as "expectant management" [(43), 1132], "watching and waiting" [(55), 372], "non-intervention" [(56), 4], or "watchful attendance" (54).

These descriptions of midwifery care techniques have emphasized the relevance of an embodied co-presence of midwives with birth givers. To differentiate them from a medical model of birthing care built on a risk-averse, interventionist approach, these framings have foregrounded a more receptive "non-doing", also suggesting that there is not much happening to talk or to write about. Ideally rather passive and thus unobtrusive (non-/low-interventionist) midwifery care practices have also been argued to foster birth givers' position as active and competent choosers. The position of "'consumers' making choices about birth" has been idealized since the 1970s, especially in contexts located within the Global North and associated with the middle classes [(1), 40]. Care ethical approaches have been introduced by midwifery scholars as a radically relational alternative to positioning birthing women as autonomous agents (57–61). Midwifery scholars have also argued for better articulation of specific midwifery birthing care techniques beyond just watching and waiting. In addition to focusing on what midwives do *not* do, or do *less* of, namely using obstetric interventions, more studies are needed on what midwives do when attending births (including using obstetric interventions), how exactly they do it, and with what effects (54).

In this paper I aim to contribute to these discussions on how to conceive of and to talk about midwifery care practices. My

[2]Framed as "a specific form of violence against women" [(9), 61; see also (10, 11)], obstetric violence affects certain groups of women and people more frequently than others. These are women and people assigned to a different, non-majority identity, relating for example to class, ethnicity, race, religion or age, as well as women giving birth in a hospital (5, 12–17).

[3]Not using particular obstetric interventions such as epidurals or cesarean sections while using others such as fetal heartbeat monitoring is anchored in midwives' legally defined scope of practice.

inspiration comes from feminist science and technology studies' (STS) engagements with caring in terms of empirical ethics, namely as situated practices of "doing good" (62–65). In this tradition, care as a practice is not confined to healthcare alone, even though healthcare studies—particularly nursing theory—were instrumental in drawing academic attention to care as a set of central socio-material activities that shape and constitute daily life (65). Sensitivities informed by Science and Technology Studies (STS) have contributed to decentering human actors and agency by focusing on the relationships between people, technologies, environments, and words. The identities of people, bodies, or things cannot be predefined once and for all; rather, they emerge as effects of the relationships they establish within specific care practices. This approach posits that "everything in the social and natural worlds [is] a continuously generated effect of the webs of relations within which they are located" [(66), 141]. It assumes a "radical relationality" [(67); see also (60)] that serves as both a methodological framework and a methodical tool. This radical relationality also extends to the ways in which care practices are studied and understood in and through research. Researchers, too, establish and cultivate specific relationships with their research "objects." Within this scholarship, research practices are understood as "re-scriptive": the questions researchers ask and the methods they use to answer them actively shape and bring specific research objects into being, rather than "discovering" them as pre-existing or given [(67), 179]. Against this backdrop, it has been emphasized that "if care studies are not carefully attended to, there is a risk that they will be eroded" [(65), 7]. Consequently, research in this field often investigates specific, local care practices—typically through ethnographic or, more precisely, praxiographic methods (68)—with the aim of "improving care in its own terms" [(69), 2]. Both care practices and research practices are inherently normative, as they are "oriented towards achieving something good." Describing—or re-scribing—care practices in terms of empirical ethics involves attending to the "goods," the norms, and the values that midwives, birth givers, or birthing environments implicitly or explicitly strive for or mobilize, as well as "the 'bads' they want to avoid" [(67), 177].

Informed by this approach, I investigate midwifery care as an embodied practice that contributes to restoring, sustaining, or improving birthing situations [(70), 185]. I illustrate how, in birthing care arrangements that strive for "giving birth" well, entities such as bodies-in-labor are brought into being or "enacted" in various ways. For example, they may become both corporeal actors *and* objects of different interventions and assessments (71).

To develop an empirically grounded vocabulary for the specific appreciative and creative forms of midwifery birthing care relationships, I draw on a wide array of literature[4] that shares the theoretical commitments described above. These studies challenge conventional notions of agency as a human property confined within individuals and shaped by external structures, as subjectivity in opposition to objectification, or as activity contrasted with passivity. Instead, they use empirical material to generate relevant and often surprising insights that not only deepen our understanding of the practices being described but also contribute to theoretical developments on selfhood, embodiment, and ethics.

Against that background, (that has not yet been received within midwifery research) I propose a radically relational understanding of midwifery care practices. My contribution introduces a relational and distributed notion of birth givers' agency, emphasizing how agency emerges through the dynamic interplay of birthing care relationships, practices, and environments. To do this, I address the following research questions: How are birthing care relationships configured in midwifery care practices? Which modes of giving birth "well" are enacted through midwifery birthing care techniques?

3 Methods and material

The ethnographic material used in this paper originates from Germany. In Germany, pregnancy, birth, and postpartum care are typically fragmented, occurring in various settings and involving multiple obstetricians and midwives. The common pathway through the contemporary landscape of German maternity healthcare begins with monthly, and later biweekly, prenatal care provided by obstetricians in their practices. This is followed by prenatal classes taught by midwives in designated facilities. Birth takes place in a clinical labor ward, attended by both midwives and medical doctors, with the latter being in charge. During the subsequent days, nurses, midwives, and medical doctors care for women and newborns in the maternity ward. From the third day postpartum, a midwife conducts home visits until twelve weeks after birth. Six weeks after delivery, the woman and child return to the obstetrician for a follow-up examination. I utilize material gathered from both Eastern and Western Germany, as historical, structural, and societal differences have led to variations in the organization of maternity care and working conditions. In the former German Democratic Republic (GDR, 1949–1990), maternity care was centrally and state-organized, with out-of-hospital births being virtually nonexistent, at least officially. In contrast, the Federal Republic of Germany (FRG) has seen a greater variety of care models, including midwife-led birthing centers [Geburtshäuser]. The data supporting my arguments include eleven semi-structured interviews conducted in 2022 and 2023 with midwives working in hospitals, private homes, midwife-led birthing centers and ob-gyn practices in the eastern states of Germany.[5] The aim of these interviews was to gain a deeper understanding of how midwives

[4]In this paper, I use feminist STS inspired research on veterinary, ethological, excreting, amateur but also reproductive medical and maternity care practices (64, 71–75).

[5]I thank Kristin Rammel, Diana Briel and Bettina Staudenmeyer for conducting the interviews.

facilitate, maintain, and restore physiological birth, as well as to clarify what constitutes physiological birth under various conditions. To achieve this, we employed a purposive sampling approach, selecting midwives who have worked in both clinical and extra-clinical environments for at least five years and who chose to become midwives more out of a sense of calling than merely as a job [(76), 93].

In addition, I used ethnographic material from the fieldwork I conducted as a PhD student between February 2015 and March 2016 in various sites where midwives work in northern and eastern Germany, including six observational protocols, eight formal interviews and various informal conversations with midwives and women.[6] In this project I addressed the following research questions: What are midwifery care techniques? What do bodies become in midwifery care arrangements? How can "good" midwifery care practices get strengthened in and through research?

In both research projects, several ethical considerations were meticulously addressed to ensure the well-being of participants and maintain the integrity of the research process. Prior to participation, all individuals were provided with a detailed written and verbal explanation of the respective project, including its procedures and objectives. This approach created transparency and fostered trust between the researcher and the participants. To further protect participants' identities and safeguard their privacy, anonymization and pseudonymization of the data were implemented throughout the study. Informed consent was obtained from all participants regarding their involvement in the research. Participants received a consent form that clearly stated their participation was voluntary and could be withdrawn at any time without any negative consequences. Additionally, I signed a confidentiality agreement to ensure that all information collected during the research would be treated with confidentiality. These ethical measures were crucial in upholding the standards of the research and strengthening participants' trust in the project, thereby ensuring a responsible and ethical approach to data collection and analysis.In order to analyze the data set, I used a reflexive thematic analysis (reflexive TA) approach (80–82) with the aim of developing sensitizing concepts as pointers to "suggest directions along which to look" [(83), 7]. As an alternative to presenting a coherent explanatory theoretical framework that can be "applied", for example, to evaluate midwifery care practices "in general", I seek for contributing to further refining the theoretical concepts that address the qualities and effects of particular midwifery care practices in order to strengthen and to improve them.

In the results section, in which I theorize midwifery care attachments, I introduce the conceptual themes through excerpts from two interviews which form part of the above-mentioned data set. One of the interviews was with a midwife I will call Madeleine[7], who was working in a midwife-led birth center. The other interview was with Saira who had given birth in a hospital. I set Madeleine's and Saira's quotes in dialog to study midwifery care attachments and their techniques *across* environments (hospital and community), models of care (medical and midwifery), genres of knowledge (clinical expertise and "patient" experience) or perspectives (midwife and birth giver).

In keeping with ethnographic practices that prioritize depth and nuance over breadth, I present two cases from a larger dataset comprising 19 interviews, eight observational protocols, and informal conversations. The selection of these two cases is informed by a comprehensive analysis of the entire dataset. This ensures that the cases exemplify the themes identified during the analysis of the full dataset. This approach allows for providing rich, detailed narratives that illuminate the complexities of relationships within midwifery birthing care over time. I have also chosen to set these two cases in dialogue specifically to challenge common juxtapositions often found in discussions of midwifery birthing care. These include (a) the perspectives of the midwife vs. the birth giver, (b) the birthing care environments (midwife-led out-of-hospital settings vs. hospital-based contexts), and (c) the birthing care models (midwifery model of care vs. medical model of care). By examining these cases in conversation with one another, I aim to complicate and move beyond these traditional binaries, offering a more nuanced understanding of midwifery practice and the dynamics of birthing care relationships.

When presenting the results, I draw on literature inspired by Science and Technology Studies (STS) that (re)conceptualizes agency. I cite this literature not only to acknowledge its influence on my thinking but also to emphasize the importance of reflexivity in my research process, including its outcomes. Ethnographic results are not merely raw data; they are interpretive, and literature citations help to make this interpretive nature visible.

4 Results

The interview with midwife Madeleine was held in 2022. Madeleine had worked as a nursery teacher for nearly twenty years before she decided to become a midwife. After the training she started to work on a labor ward at a university hospital. She resigned after a year because she did not appreciate what she described as a rule-based approach, which applied "a specific perspective even though that perspective doesn't apply to everyone," and which followed rules "just because that's the way it always has been." Madeleine instead decided to work at a midwife-led birth center, where she has been working together with six midwives organized in teams for the last eight years. Madeleine and her colleagues provide prenatal, birthing and postpartum care and accompany births both at the birth center and in people's homes. In her work, Madeleine feels that "the situation is more important than the rule" and care is provided based on "a good overall view."

The second interview and set of quotes I use stem from an interview I held with Saira in 2015. Accompanied by her

[6]The following publications document my PhD project: (48, 77–79).

[7]All names used are pseudonyms to protect anonymity.

husband, Saira had given birth to her first child in the hospital where I was doing my ethnographic fieldwork. Saira agreed that I could observationally participate at her birth and conduct an interview with her two days later.

4.1 Embodying labor

Asked how exactly she promotes normal, physiological births in her work, Madeleine describes a "memorable birth attendance [eindrückliche Geburtsbegleitung]" in the birth center:

> Last year I accompanied Lisa and her partner Ole in the birthing place. Lisa was a first-time mother with a completely normal prolonged labor. ((laughing)) That makes you laugh too. Because "prolonged" is technically no longer physiological. ((laughing)) Exactly. So it was actually just a normal, lengthy accompaniment for a first baby. And eventually, of course, the couple were exhausted. And I was also a bit tired because we had been pretty busy here. I think it was the third birth in two days. And then Lisa and Ole called me again and said, "This isn't working at all. The contractions are terrible [furchtbar]. We're considering a transfer to the hospital. We can't go on like this. We need an epidural."

The interviewer Kristin's laughter is nourished by her own experiences of attending hundreds of "normal prolonged labors" in out-of-hospital settings for over thirty years. Both Kristin and Madeleine know that in practice, each labor has its proper dynamics. The duration and "progress" of labor vary considerably while also being reliantly "lengthy […] for a first baby", as Madeleine puts it. Madeleine assesses the situation as a "completely normal prolonged labor" for a "first-time mother" giving birth in the birth center. Just like many times before, the further course of the labor provides evidence for her evaluation: Lisa gives birth to a healthy child without any complications about one and a half hours later. However, in the scene described by Madeleine, Lisa and Ole felt stuck. They were overwhelmed by the length and exhaustion of Lisa's labor. She had been subjected to "terrible" contractions for hours, leaving Ole desperate and eager to help, yet helpless. There seemed to no end in sight as there were few signs that the labor was "progressing" towards that end. Such signs of labor progress could consist of Lisa feeling a different quality, intensity and direction of pressure, of Madeleine palpating a further opening of the cervix, or of Madeleine not leaving the room as a sign that birth is now imminent. As none of this had occurred, Ole and Lisa were left unrewarded and with "terrible contractions." How Lisa's body-in-labor is assessed, be it through physical self-awareness, through obstetric intervention or through the midwife's attentive co-presence, validates or disproves Ole's and Lisa's strategies to handle that body. Also in this out-of-hospital environment, Lisa's body-in-labor is "constituted through extremely varied mediations, among which obstetrical expertise plays a significant role" [(71), 66]. The labor process emerging as "prolonged" renders Ole's and Lisa's labor strategies ineffective and Lisa's body-in-labor inaccessible and expendable. At this point, the efforts they have invested into laboring seem to be in vain. This enactment of her body-in-labor strips Lisa of her agency, nourishing her wish to distance herself further from or to even "get rid" of her body-in-labor, by escaping its "terrible" contractions via an epidural, which would then also be a strategy to regain agency.

Saira's childbirth takes place under different conditions. Saira's ob-gyn referred her to the hospital three weeks before her due date, suggesting that labor may need to be induced. After four days in the maternity ward on misoprostol treatment to induce labor, Saira was finally admitted to the labor ward where she spent another twenty hours, walking, bathing, lying, sitting, and, eventually, "doing a circus there", as she described it, adopting various uncomfortable birthing positions to facilitate birth. Saira explains:

> I did not demand anything [hatte keine Ansprüche an irgendwas]. I just wanted to bring a healthy child into the world and preferably by my own strength. Because my diagnosis was macrosomia. That means, the child could be bigger than the mother could tolerate, and it could lead to complications. And my wish was to not get a c-section. That's why I was induced. But I reached a point at which I thought: "Okay, this is it. I can't do this anymore." It was progressing, but everything was sooo slow, you know. They [the midwives and obstetricians, A.S.] said: "We're pretty much on track with the birth. It can drag on, especially with the first child and the induction and all."

The midwives working on the labor ward were skeptical about both the accuracy of the diagnosis, fetal macrosomia, and the resulting intervention, the induction of childbirth, prescribed by their medical colleagues in the hospital. The midwives argued that the sonographic measurements on which such a diagnosis is based are often imprecise and that the fetus did not feel overly big when they palpated Saira's belly. They also pointed out that the cesarean section Saira wanted to avoid had been a common result of attempted labor inductions on their ward. When talking to me or to their medical colleagues, the midwives made clear that they would have favored an expectant management. However, they did not share their skepticism and preferences with Saira. That was because Saira, for her part, felt relieved that something was being done. Accepting "her diagnosis" as an indisputable fact, she shares the goal the induction is aimed at: to avoid the dangers arising from that diagnosis and to work with its challenges, and to bring "a healthy child into the world and preferably by [her] own strength." Saira aligns her interests with those suggested by the obstetrical definitions and procedures in the hospital. This requires her active engagement in guiding and managing her body-in-labor, as Saira explains in more detail below. Being exhausted makes fragile the subject position enacted by and for Saira, marked by a sovereign distance towards her body-in-labor. A sovereign distance towards her body-in-labor maintains Saira's connection and authority,

rather than creating alienation and disconnection. Saira's body-in-labor is, however, not at her exclusive disposition and her sole responsibility; her relational agency is distributed over obstetric procedures, technologies, practitioners and the medical setting with which Saira shares responsibilities and activities directed at her body-in-labor.

Obstetrical knowledge, instruments and gestures are rarely explicated and marked as such in the birth center, but rather incorporated into conversations and interactions. This is different in the hospital, tasked with and relying on monitoring, diagnosing, and treating. Nevertheless, obstetrical descriptions are crucial for both Saira's and Lisa's bodies-in-labor to emerge as acting corporeal entities in their own right [(71), 81]. Saira feeling that she "can't do it anymore," Lisa and Ole stating that they "can't go on like that," provide turning points for re-evaluating situations in which their bodies-in-labor stubbornly do not live up to the ideals of a "clockwork birth," a "'textbook' medical version of 'normal birth'," [(1), 52] – despite the efforts invested into aligning both. These embodiments challenge Saira's and Lisa's "integrities" as embodied selves: their bodies-in-labor seem dissociated and inaccessible yet powerful, potentially overwhelming actors [(71), 73]. Imposing themselves upon Saira and Lisa, their bodies-in-labor make them react but seem to resist their labor strategies. Midwifery birthing care techniques aimed at developing alternatives to these threatening constellations are oriented towards embodied selves and bodies-in-labor "getting in sync", as I discuss below.

4.2 Making birthing happen

Madeleine continues:

> I said I thought it would be great if Lisa could get some rest at this point. She immediately responded, "I can't sleep, it's just not possible." And I replied, "Okay, here's the plan: you're going to try to rest one more time. We'll make it dark here, help you get into it." And that worked for about 20 min ((laughter)) – well, it didn't really work because I could hear during the contractions that she was jumping up again. I went back into the birthing room. By then, Lisa had become really, really hysterical: "This is just impossible! I can't take it anymore! I don't have any breaks at all!" And she really didn't have any breaks between contractions – it was one after another. Ole was also completely desperate because he couldn't help her. We had a quick discussion, and I sent him to sleep, telling Lisa, "You know what? What you need now is someone to breathe with you and to get actively involved. We need calm now. You can feel it yourself – you're completely overwhelmed and don't have control over what's happening anymore.

When Lisa and Ole state: "We need an epidural," Madeleine could have responded to this request. Backed up by the irrefutable truth of Lisa's labor pains, her physical and emotional exhaustion and by the indication of "prolonged labor," a transfer to the hospital might have seemed a reasonable way to "go forward". No one would have been surprised: in Germany, prolonged or obstructed labor and maternal requests for extended pain management are the two most frequent reasons for a transfer from home or a birthing place to the hospital during the first stage of labor [(84), 41].

But Madeleine tells a different story: as they prepared for Lisa's birth in the birth center together with Madeleine during the last months, Lisa and Ole also had a longer conversation with her about possible scenarios involving a transfer to the hospital. Such a transfer emerged as a last resort, necessary and urgent in case of emergency situations which are rare. In the course of Lisa's pregnancy, Lisa, Ole and Madeleine prepared well to make giving birth in this environment work. To prepare, they had become acquainted with each other *in this environment*, the birth center. Lisa and Ole also attended yoga classes and birth preparation courses, read through blogs, forums and books, or chatted with friends, parents and strangers in order to learn a vast repertoire of practical labor knowledge. Madeleine interpreted Lisa and Ole "considering a transfer to the hospital" as them needing support in order to continue laboring in the birth center. As a first supportive mediation, Madeleine prepares the room for inviting Lisa and Ole "to try to rest one more time." Lisa and her body-in-labour are indeed affected by the dark and calm surroundings, however, not in the way Madeleine had intended, nor how Lisa and Ole had hoped for. Lisa gets "completely overwhelmed" by her body-in-labor responding with more frequent and unbearable contractions.

Madeleine observes that at that point, Lisa does not "have control over what is happening [Kontrolle über das Geschehen]." What exactly does "control over what is happening" during Lisa's labor, which Madeleine refers to, encompass? "Being in control" is a dominant ideal in scientific, policy-related and activist childbirth discourses. However, giving birth complicates classic understandings of human agency as Madeleine's as well as Saira's birthing stories show: to give birth is neither "an external power that forces itself upon" Lisa and Saira as passive and manipulated subjects, but nor is it purely the result of Lisa's and Saira's capacities to act as willful subjects. Birthing (significantly called) spontaneously "just happens" *and* is prepared to happen in specific ways [(73), 112]. It is thus not possible to be fully prepared for birthing's unavoidable 'spontaneity'. But it is possible to approach unpredictable bodies-in-labor in ways that render their handling easier and more enjoyable. The birthing care technique mobilized in response to Lisa's exhaustion is an engagement in creating the conditions for improving the birthing situation (69). This is done through actively, perseveringly and adaptively *working with* the body-in-labor.

Saira emphasizes how strenuous the work necessary to make spontaneous childbirth happen for her was:

> It had to be stimulated even more, the baby had to be in a position so that it could slide through the birth canal, and it didn't really want to, and I had to go along with it exactly in order to reach my goal. I had to take on such strange positions! I really had to do a circus there! If I had just laid

> there completely calmly and acted like in a movie: pressed three times and the baby is there – that would never have worked. I really had to go through everything. And I did it blindly. I just functioned. I would now say the mind was switched off, and I just did what I was told because I trusted and knew I was in good hands. And in the end, the baby would come.

Saira, who had taken part in a labor and delivery tour in the hospital and in a birthing preparatory course to prepare for giving birth in the hospital, describes the many hours preceding the actual birth of "the baby" filled with active, arduous and painful birthing work, but with the labor usually being omitted in fictional birthing scenes in movies. "Behind the scenes", Saira's body-in-labor is worked upon and with to make giving birth happen. Equipped with a walking epidural, guided and supported by the midwife accompanying Saira during the last hours of labor, Saira has "to do a circus," exerting a vast repertoire of "strange" labor positions to, eventually, give birth. In the midwifery birthing care technique of labor and birth positioning, Saira's body-in-labor is turned into as an instrument and object of giving birth in the positional techniques Saira describes. Objectifying and instrumentalizing Saira's body-in-labor by using these birthing care techniques could result in a dissociation between embodied self and body-in-labor. These dissociative relationships have been described as (at least potentially) alienating (85–89). However, as Saira's story demonstrates, that is not necessarily the case. Saira "go[es] along with" working with her body-in-labor "under the authority and expertise of others" [(75), 567], in order to achieve "her goals". Her strategy of actively subordinating herself to objectifying procedures and strategies in order to realize her goal "to bring a healthy child into the world" by her "own strength" is a way to exercise agency [(75), 595]. Saira engages active-passively in being guided and in realizing the instructions for "strange" and potentially shameful labor positions. As mentioned before, the interventions and activities directed at Saira's body-in-labor, together with their accountabilities, are distributed over a heterogenous birthing care collective, involving healthcare staff, obstetrical technologies and standards, or the clinical labor ward. As part of this collective, Saira is allowed "just to be functioning", which is to actively participate in making birth happen by following external guidance. Sharing accountabilities does not only facilitate Saira to "go through everything" but is also a condition for *building* trust, for Saira to *become familiar with* being "in good hands."

4.3 Creating birthing care attachments

Creating a calm environment did not help to improve Ole's and Lisa's situation. Lisa needed someone "to get actively involved", as midwife Madeleine explains further:

> Then I actually lay down with Lisa in a spooning position on the bed. We held each other tightly, and I breathed through every contraction with her. Suddenly, small breaks [in-between contractions] started to appear. And I think the warmth at her back and the calm, active participation helped her find her footing again [zur Ruhe zu finden]. Before we lay down, Lisa was at three centimeters, and three-quarters of an hour later, she started pushing ((laughter)) and was suddenly fully dilated. It was such a striking moment! There was absolutely no indication that a transfer [to the hospital] was needed, except that they were just completely exhausted and had no strength left. And, of course, I could have just said, "I'll step out for a bit – you can handle this." But then, I probably would have ended up transferring her at some point.

Lying together on the bed, holding each other tightly and breathing together is part of a repertoire of midwifery care techniques specific to out-of-hospital birth attendances. The spooning Madeleine describes is enabled by and illuminates what characterizes midwifery care practices in these sites: a comfortable bed big enough for hosting two people instead of a delivery table, the absence of hospital hygiene rules prohibiting close bodily proximities, but the surrounding's invitation to come close to each other, the continuous co-presence of a familiar midwife in an equally familiar, undisturbed environment, and a trustful relationship crafted through the continuity of care of prenatal encounters, which were occasions for getting to know each other. "Spooning", a midwifery birthing care technique of "being-with" (47) or "working-with" (46) seeks, I argue, to foster *attachments*. Cultivating attachments is a collective endeavor distributed over several different agents, including Lisa, the homely atmosphere, Madeleine's "warmth at her back and the calm, active participation," and the cozy bed. Gathered together with Lisa, they invite her to engage with her body-in-labor through "trust and interest" [(72), 115], to let herself be moved and affected by her body-in-labor but also to effectively move and affect her body-in-labor [(72), 113]. Through collectively embodying trust and interest, attachments are formed which help Lisa "to re-incorporate" her body-in-labor. These relationships are "a strange mixture of active and passive" [(74), 12]: in order to come to rest, Lisa holds Madeleine and breathes with her, she makes herself available to the invitation of her midwife and her surroundings to "find her footing again". But Lisa is also being held and breathed with and invited to respond to the offers. Through spooning Lisa co-guides and co-manages her body-in-labor *in order to* let go of striving for complete control of her apprehensions and management of her labor, and to avoid a complete loss of control. As Madeleine describes, this technique helps Lisa to "find her footing again"; her body-in-labor responds with "small breaks" in between the contractions. Lisa starts to push "three-quarters of an hour later". Lisa's appreciation of holding and being held by Madeleine and of synchronizing their breathing is an embodied enactment of "safety and psychosocial wellbeing" [(29), 2; see also (90)], as Madeleine's description above suggests.

The midwifery birthing care technique of "labor and birth positioning" mobilized in the hospital under clinical conditions

shows more similarities with the 'spooning' seen in the birth center than it may seem at first sight. Saira continues:

> "And, yes, I realized that she [the midwife] was really interested in finally reaching the goal. She really wanted to take this burden off me. She wanted to get through this birth with me. And if it hadn't been for her, if she hadn't been the one to push me so much yesterday, I don't know what would have happened. She said that I was being really brave. And I saw in her eyes that she meant it seriously. Not that standard: 'You've got this,' which she has to say to every woman. I saw it, that she thought: 'Wow, this one is really strong.' I saw it in her eyes. And, you know what, she even thanked me for this beautiful birth."

Just as Madeleine had done, Saira's midwife had prepared an environment suitable for the exigencies of "doing circus", installing a mattress, a gymnastics ball as well as cushions in order to provide support for Saira to take "strange positions." Saira's midwife is also co-present to engage in working with Saira's body-in-labor through demonstrating body postures, massaging, or, as Saira emphasizes, through motivating and "pushing". Both techniques, "spooning" and "labor and birth positioning", are aimed at forging attachments, trustful and interested relationships, expecting that the efforts invested in handling bodies-in-labor are going to be successful and responsive to a body-in-labor's idiosyncrasies and exigencies. Just like Lisa, Saira makes herself available to "the expectations of someone who cares, of someone who trusts, moreover, of someone who was interested, someone it interests" [(72), 124]. Saira emphasizes the importance of her deep engagement, efforts and success being validated by the midwife – while the latter hid her own contribution. According to her midwife, the "circus" Saira "had to do" was a "beautiful birth." This aesthetic qualification is important for preventing Saira becoming alienated or even traumatized, as it values Saira's strenuous and creative efforts in making birth happen "spontaneously" (and avoiding a c-section). Saira and her midwife's goals of "giving birth to a healthy child by one's own strength" were aligned, as were those of Lisa and Madeleine, which facilitates the creation and cultivation of attachments, allowing combined efforts for working with Lisa's and Saira's bodies-in-labor.

Both birthing trajectories ended well, rewarding the efforts invested. Saira sets these efforts in a causal relationship to the outcome, retrospectively validating her investments, guided and supported by her midwife, to make birth happen. Madeleine is more hesitant to do so. She describes Lisa's birth as a "remarkable" case because she knows that midwifery care techniques such as "spooning" or "labor and birth positioning" may also fail – even if birth givers engage as responsively as Lisa and Saira. These techniques are both, adaptions to and explorations of continuously evolving labor situations. However, even if the techniques I presented would have failed to eventually make "spontaneous" birth happen, they create empowering attachments as conditions for giving birth "well".

5 Discussion

I have described midwifery birthing care relationships that go beyond the often focused-upon dyadic relationship between women and midwives, understood as midwifery's primary ethical relationship. Giving birth happens and is made to happen through social and material midwifery care collectives of not only birth givers, their companions, midwives and medical doctors, but also birthing care surroundings and their material and emotional affordances, their standards, goals and ideals. Two care collectives were analyzed in this paper: one situated in a midwife-led birth center and the other in a hospital. In these care collectives, bodies-in-labor are configured as central actors also through obstetrical articulations. That means that in both environments how bodies-in-labor are and can be inhabited is also mediated by obstetrical descriptions and interventions. Through the midwifery care techniques of "spooning" and "labor and birth positioning" Lisa and Saira are invited to actively participate in working with their bodies-in-labor. They learn to become sensitive to their bodies-in-labor in ways that allow them to affect their bodies-in-labor instead of being overwhelmed or alienated. These techniques aim at cultivating midwifery birthing care attachments that I understand as collective, co-responsive, active-passive commitments aimed at sustaining endurable or even pleasurable relationships between embodied selves and bodies-in-labor. These midwifery care attachments are brought about through highly organized activities – and passivities – extending co-presence or non-intervention.

I argued that instead of the midwives striving for Lisa and Saira to control themselves, their bodies-in-labor and what happens to them or to surrender to their bodies and the events, Lisa and Saira are caringly invited to engage with their bodies-in-labor, trustfully and interestedly, in order to give birth "spontaneously" in both the out-of-hospital and the medical environment. Lisa's and Saira's capacity to act is distributed over and mediated by various other actors or participants which are interrelated and interdependent: their midwives, the birthing care surroundings, obstetrical definitions and procedures, even motivational words and caresses. In practice, their positions stand thus in stark contrast with consumerist agendas presupposing liberal subjects being in control and making choices. Promoting a "logic of care" instead of a logic of choice and control (69) makes it possible to articulate the collective creative techniques mobilized in midwifery care practices. These midwifery birthing care techniques grapple relentlessly and adaptively with more-than-medical uncertainties and fragilities as part of giving birth. These techniques act speculatively upon what might be "good" for this particular person and body-in-labor in their particular circumstances, without any participant, however, knowing *for sure* what exactly this "good" might entail.

Being "with woman" is not just an ideal or ethical obligation, especially important in continuous midwifery care constellations, but a laborious, shared and hands-on endeavour. It necessitates cultivating particular responsivities towards the offerings of the environment, the midwifery care relationship or the body-in-labor in order to make giving birth work (48, 52, 91). By

understanding and articulating the relationalities of physiological birth through midwifery birthing care attachments, as situated, dynamic and collective endeavors, we may also present alternatives to two challenging trends in birthing: the relentless expansion of repertoires of risk avoidance because of the unpredictability of giving birth; and the "blame culture" associated with these strategies, pinning adverse outcomes systematically down to wrong decisions made by individuals, be it birth attendants or birth givers [(92), 209].

While my findings are specific to the environments in which the events occurred, they can still be relevant in other contexts. Instead of generalizing the insights presented here, they can be utilized as a methodological and conceptual lens for exploring midwifery care techniques that foster supportive attachments, such as "spooning" or "labor and birth positioning", in various settings and times.

6 Conclusion

Obstetric violence has often been framed as a public health and human rights-related concern but less attention has been given to studying the concrete social and material conditions through which birth givers "can claim and recognise selfhood in their actions" [(93), 34]. While depictions of obstetric violence and humane counterprograms do not leave much space to examine the more nuanced and "broad spectrum that lies between complete lack of connection, on the one hand, and actual "intersubjectivity," on the other hand" [(94), 244], my suggestion is to lay open and analyze that space through studying midwifery care relationships *in practice*. This approach helps to carve out surprising and important nuances. While one might assume that obstetric violence "has much in common with the more general experience of alienation and objectification within medicalization" [(95), 241], with alienation being "at the kernel of birth trauma narratives" [(96), 496], my investigation of concrete and situated midwifery care practices shows that birth givers may actively take part in objectifying their body-in-labor in order to "reach their goals", thereby exercising agency and avoiding alienation. Approaching agency in childbirths through a logic of care instead of a logic of control allows acknowledgement of "interdependency as the ontological state in which humans and countless other beings unavoidably live" [(97), 4] and an avoidance of "maternal separation" (60).

In one of the cases presented in this paper, I have demonstrated that decisions not (yet) to give pain relief cannot be necessarily understood as a "failure to meet professional standards of care" [(2), 11] but may also constitute an act of caring. My analysis suggests that defining what "bad" or "good" maternity care consists of in terms of singular (non-)interventions may not be sufficient. The concrete and particular socio-material contexts have to be considered to understand better how "goods" and "bads" in maternity care are constituted.

Investigating situated midwifery care techniques allows to capture the specific and detailed qualities of what is done in particular childbirth situations. Thus, this contribution demonstrates how "investigating local minutiae might actually be crucial to provide general insight" [(98), 158]. This facilitates tracing midwifery care relationships as "the hidden threads in the tapestry of maternity care" (44), so they can be seen, meaningfully engaged with and further strengthened.

Data availability statement

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

Ethics statement

Written informed consent for participation in this study was provided by the participants.

Author contributions

AS: Writing – original draft, Writing – review & editing.

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Antenatal preparation as care: birth stories and collective learning at work

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Distressing and harmful birth experiences are the norm even in well-resourced countries, and conventional antenatal education struggles to adequately prepare birthing people. Drawing on previous research in support of participant-led antenatal education, a recent UK-based ethnographic study asks how birthing people use collective practices to produce birth knowledge. Data comes from participant observation at 24 antenatal sessions ($n = 201$) including conventional classes and community-based groups, plus 5 interviews with session leaders. The researcher analysed data using a novel application of template analysis, framed by feminist technoscience, ethnography and socio-narratology. Findings show how group-led sessions, storytelling and other collective knowledge practices *take care* of birthing people. Several facets of care emerge from this inquiry, such as materiality, emotionality, working athwart dominant narratives and creating "care-full" absences or spaces. Excerpts from antenatal preparation sessions specifically demonstrate various approaches to knowledge working – and caring – in practice. A focus on real-life examples and implications ensures findings are useful and relevant for birthing women, midwives, antenatal educators, institutions, policymakers and more.

KEYWORDS

birth stories, antenatal preparation, childbirth education, care, collective knowledge, socio-narratology, group-led, feminist science and technology studies

Introduction

Distressing and harmful birth experiences are the norm even in well-resourced countries like the UK (1, 2), and poor outcomes are significantly more likely for black women and other people of colour (3, 4). Meanwhile, conventional antenatal education struggles to adequately prepare birthing people, as seen in surveys of mothers who felt uninformed or unprepared for birth (5, 6), especially minoritised communities and younger mothers (7). In this paper, I present findings from *Knowing Childbirth*, a UK-based ethnographic study that explores collective learning as a potential solution to worsening birth experiences (6) and wider maternity care crises (1, 2, 8).

Contemporary antenatal education

Childbirth preparation is commonplace is modern Britain. However, a recent Care Quality Commission survey suggests only one-third of pregnant mothers attended classes (9), and most studies were inconclusive as to benefits (10–15). Still, many women speak positively about antenatal classes (9, 15–18), with two key benefits—support (5, 15, 16, 19) and information (5, 20, 21)—repeatedly featuring in previous research.

Inconsistencies in existing literature prompt questions about shortcomings in standard childbirth education. In part, busy lives and funding cuts may mean shorter classes, with less time available for building communities or engaging in complex learning (16, 21, 22). Information was also a fraught concept, as classes either reinforced or challenged biomedical norms (10, 22, 23), tended to promote institutional compliance (10, 21, 23), offered too much or too little information (12, 18, 21), or presented content that did not match lived realities (24, 25). Lower uptake and satisfaction with antenatal classes among black women and women of colour (26) may relate to transport, cost, language, time and other practical obstacles (18, 26, 27), as well as culturally inappropriate information (15, 26), negative stereotyping (18, 27), and hegemonic norms promoted in classes (20, 22, 26–28).

Collective learning and birth storytelling

Despite some studies' tentative findings, the National Institute for Clinical Excellence clearly recommends "participant-led" antenatal preparation (12). Several studies suggest that collective approaches (e.g., group-led discussion, storytelling) help birthing people by broadening expectations and building relationships (10, 29–32), although this research is scarce and at times ambiguous (33, 34). However, *Knowing Childbirth* found little evidence of this format in standard NHS or NCT classes.

Birth storytelling is a key component of collective antenatal learning, and appears in many studies about antenatal preparation [e.g., (5, 10, 16, 20)]. Other studies engage with birth stories to learn about childbirth generally [e.g., (11, 19, 20, 23)]. Another significant area of research is the impact of birth storytelling on the teller [e.g., (35–37)], which includes mixed reviews on the efficacy of postnatal "debriefing" alongside calls for better postnatal listening services [e.g., (38, 39)]. Only very few studies [(31, 34, 35)] specifically investigated the educational impacts of birth stories, and this research addresses that gap.

Previous research emphasises that effective birth knowledge requires people to navigate conflicts and complexities (13, 16, 20) without undermining individuals or relationships (40, 41). *Knowing Childbirth* engaged understudied birthing subjects and antenatal settings to explore how storytelling, group-led discussion and other collective knowledge practices help to meet this call. This study defined collective learning as drawn from lay knowledge, personal histories or group discussion. These practices contrast more formal or top-down practices, such as evidence-based "authoritative knowledge" or guideline-based "procedural knowledge". While all knowledge is collective to some extent due to the role of listener interpretation (42, 43), this research distinguishes between knowledge that inclines toward collectivity and practices that reinforce hierarchy.

Care, birth and knowledge

Notions of care permeated the study due to links among birth, mothering (44), midwifery and other birth-related caregiving (45). Care—like mothering and midwifery—is vital, undervalued, joyful, mundane, radical, oppressive, physical and deeply affective (44). *The Care Manifesto* defines care as physical, emotional and social practices that nurture "the welfare and flourishing of life" in part by embracing interdependence (46). Birth knowledge is one of these practices.

Much academic and activist literature on care relates to birth. Decades of feminist science and technology studies scholarship reinforce the materiality, emotionality, relationality and multiplicity of care (47–49). Good care is "persistent tinkering" (50)—with the word "tinkering" emphasising a responsive and material practice, rather than a homogeneous or ethical ideal. For a labouring woman, tinkering could include offering food, a hot bath, an epidural or supportive silence; in an antenatal group, it may be discussing what to bring to hospital or how to hire a birth pool. Other scholars elaborate the affective-effective nature of care, as simultaneously a physical practice *and* an emotional, symbolic labour (47, 49). The results and discussion section demonstrates positive examples of encouragement from caregivers during labour and pregnancy—as well as the reverse, when inadequate emotional support manifested poor care.

Another well-recognised aspect of care in birth and beyond—even when carers mean well—is a "dark side" that reinforces norms or demands compliance (46, 51). For example, birth knowledge often evokes essentialising and patriarchal natural birth narratives (52) or "guideline-centred" rather than person-centred medical care (41). Scholars also note the variability of care due to differences in ethnicity, geography or other factors (51). Discrepancies in birth care and knowledge emerge in differential rates of childbirth injury and death among racialised women and children (3), or the underrepresentation of people of colour in British antenatal education (7). To enact good care, caregivers must recognise the potential downsides and inequities of some care.

Understanding the multiplicity of care enables a rich analysis of collective birth knowledge practices. Following a brief introduction to study design and data, this paper explores how birthing people engaged with collective knowledge. Drawing on materiality, emotionality and other facets of care that emerged during analysis, the results and discussion section interrogates the work of specific knowledge practices. Findings establish a strong foundation for the idea that collective birth knowledge *takes care of* birthgivers, birth workers and beyond.

Methodology

Theory and methods, alongside a novel, manifold approach to thematic analysis, mirror the subject of research with a commitment to multiplicity, context and co-construction. *Knowing Childbirth* occupies a posthumanist feminist ethnographic stance, embedded in its geo-socio-temporal position, as well as a partisan focus on reducing inequities and improving lives. This situated, holistic approach enables credible and useful findings for birthing people and those who care for them.

Data collection took place in two stages, a pilot study (2016) and the main study (2019–2020), which formed the basis of ESRC-funded MSc and PhD (53) dissertations, and related articles (32, 54). All research received ethical approval from the university or the NHS, and all participants gave signed, informed consent.

Theoretical framework

In form, as in content, this project utilised posthumanist feminist and critical theories that challenge assumptions about "objective" knowledge and individual subjectivity, as found in feminist science and technology studies. Feminist posthumanism acknowledges that physiological, emotional, social, economic, geographical, technological and other contexts co-constitute reality (47–49, 55). This multiplicity renders all knowledge as partial and situated, and human subjects as complex, dynamic and relational —albeit still grounded in specific bodies (47–49, 55). Similarly, feminist ethnography positions qualitative research as an active process where researcher and participants co-construct meaning, all perspectives are partial—including insiders, researchers and participants—and truth is fluid, incomplete and polyphonic (56). This contingency and multiplicity is not weakness, but a source of richness, depth and meaning (55, 56). Socio-narratology builds on this approach, again emphasising polyphony in the form of multiple, contradictory meanings and overlapping contexts (43). As a mother learning about the experiences of childbearing women, I explored ethnographic conundrums around body knowledge (57), feminist solidarity (56, 58) and insider research (56, 58). Awareness of researcher reflexivity corresponds with the wider theoretical approach, centred on interdependencies among knowledges, participants and wider contexts.

Recruitment and data collection

The theoretical framework justified participant observation at antenatal sessions as the primary method of data collection, as a context-rich, polyphonic and grounded approach in keeping with collective learning (56, 58). Other data sources included a handful of semi-structured interviews with session leaders, and a participant questionnaire to collect demographic information. Note, the importance of demographic detail emerged during pilot study analysis, and thus only the main study included the questionnaire. In addition, I kept a log to monitor my own partial perspectives, including initial ideas from antenatal sessions and interviews, reflections just after data collection and thoughts that arose during analysis.

Knowing Childbirth relied on purposive sampling, as participants joined the study by virtue of the fact they attended or delivered the relevant antenatal preparation sessions. I recruited participants by first seeking approval from gatekeepers to attend antenatal preparation sessions, or to conduct interviews with midwives and educators. All participants received study information and consent materials in advance and in person, with chances to ask questions and decline participation. Eligible participants were at least 18 years of age, proficient in English, and attended an observed antenatal session, including pregnant women, postnatal mothers, partners, midwives, teachers and facilitators. Interviewees were professionals or volunteers who delivered observed sessions.

At each antenatal session and interview, I collected as much verbal and non-verbal data as possible by audio-recording where permitted, in addition to hand-written notes for nonverbal observations (e.g., setting details, props, gesture, tone). During antenatal sessions, I only spoke when engaged by other participants, namely two sessions when I was visibly pregnant during the pilot study, and two NHS Homebirth classes where the midwife-teacher invited me to tell a birth story and answer attendee questions. For the interviews, I used a broad topic guide to gather organisational information and other practical details, as well as professional perspectives on antenatal sessions. Additional questions developed from ongoing participant observations, secondary research and interviewee input. Recording and data handling took place in accordance with ethical guidelines and university policies, including pseudonymisation of all participants and removing identifying characteristics.

Coding and data analysis

To analyse 50 h and nearly 300,000 words of transcripts, I first organised the data according to template analysis, a form of thematic analysis (59). Beginning with themes related to the research questions, I read and re-read the transcripts, coding and re-coding, adding, discarding, consolidating and rearranging themes and subthemes to build a clear, concise and comprehensive template (59). I coded transcripts comprehensively, in order to clearly see and compare macro-level prevalence and interactions among themes using a technique developed during the study. Utilising NVIVO matrix queries, I generated tables depicting the prevalence of themes by word count, usually by format (teacher-led or group-led). After converting these tables to percentages (of the total word count) in Microsoft Excel, "heat map" formatting emphasised higher and lower numbers. By the same process, I constructed tables to visualise overlaps among themes, and compared to overall prevalence of a given theme, or in a different setting. Notably, these thematic tables were not research findings, but rather tools to focus the gaze for subsequent qualitative analysis. By illuminating some of the clearest correlations and absences, this initial stage indicated trends worthy of further investigation, decreased the influence of researcher interpretation and made findings more meaningful.

Next, I sought to complicate and locate trends in the thematic tables within specific excerpts, geo-socio-temporal contexts and existing literature. Some techniques from conversation analysis proved useful, including attention to small verbal and nonverbal details, and explicit or implied assumptions (60). However, analysis more often took a content-focused, relational stance that prioritised insider knowledge, while continually considering contexts (e.g., audience, settings, socio-economic structures),

silences and polyphony (e.g., multiple voices and meanings), as in feminist technoscience (55), feminist ethnography (56) and socio-narratology (43). This manifold analytic approach continually switched perspectives—"zooming in and out" from the data—developing critical and robust findings.

Results and discussion

Antenatal session transcripts demonstrated how attendees engaged with storytelling, group-led sessions, other collective practices and birth knowledges in general. Interviews with midwife-teachers and group facilitators added contextual information and practice-based perspectives. Collective learning appeared in all antenatal preparation settings as storytelling, intuition, comparing, questioning, humour, group-led interpretations of formal knowledge, and more. To contextualise the discussion below regarding how people used collective learning to learn about childbirth, this section first summarises research settings, participants and the thematic template.

Research settings

Across the entire study, I carried out participant observation at 24 antenatal sessions, plus 5 interviews with midwife-teachers and other facilitators. Observed sessions included 6 National Health Service (NHS) standard classes, 3 NHS homebirth classes, 6 National Childbirth Trust (NCT) classes, 5 community-based Positive Birth Movement (PBM) groups and 4 community-based homebirth groups.

Antenatal settings differed significantly in format, time of day, setting, duration, number of participants and themes. Research took place in a number of locations in cities in the north of England, according to existing arrangements or interviewee convenience, and including maternity hospitals, SureStart centres, libraries, community centres, cafés, churches and homes. Antenatal preparation sessions lasted from one to three hours and included between 4 and 33 participants, excluding the researcher.

The NHS delivers the most commonly attended antenatal classes in the UK (19). Standard NHS classes tended to cover similar curricula (i.e., physiological birth, pain relief, labour "complications" and life with baby). NHS midwife-teachers used standardised teaching aids, a fairly consistent curriculum and a hospital-specific film about pain relief options. NHS Homebirth classes formed part of an effort to increase homebirth rates, taught by willing community midwives alongside their normal workload. These sessions followed a looser format, including an overview of the *Birthplace Cohort Study* (2020), a description of procedures regarding homebirth, a homebirth story where possible, and answering questions from attendees.

Previous studies have suggested that the NCT offers the most second most-popular antenatal education option, at a cost (20). In observations, NCT course materials and curricula appeared standardised, with similar topics to standard NHS classes. However, NCT classes typically involve more sessions, postnatal information, and partner involvement (5). During research, teacher Frances developed an air of informality in her classes, which included telling personal stories and encouraging attendee input. While the NCT originally promoted nonmedicalised birth, today's organisation relies on promotion of parental choice and scientific evidence to build brand identity, educational programmes and campaign messages (61).

Group-led Homebirth and PBM sessions varied significantly in format and content depending on attendee input. However, almost all sessions shared a focus on attendee birth stories and questions, and most included some discussion of homebirth and reducing medical interventions. Regular groups usually developed as individual initiatives, with PBM groups affiliated with the wider PBM. The PBM works to empower birthing people and resist patriarchal medical practices and obstetric violence, also sometimes reinforcing hegemonic ideas of happy, gender-normative, white, middle-class birth [e.g., PBM Welcome Pack imagery (62)].

Participants

The entire study engaged a total of 201 participants, including the researcher, 43 participants from the pilot study and 157 participants from the main study (Table 1). Around two-thirds joined the study via NHS or NCT classes, and one-third contributed as part of a community-based group. Participants were two-thirds female—of which two-thirds were pregnant—and one-third male. Two-thirds of participants were first-time parents and one-third already had children.

As noted above, only participants in the main study gave other demographic details (Table 2). Just over half of main study participants were 25–34 years of age, one-quarter were 35–44, and the remainder under 25 or over 45. Almost all participants were married or cohabiting, spoke English as a main language, did not have a disability and had a current occupation. Regarding race/ethnicity, 76% identified as white, 9% as Asian/Asian-British, 7% as mixed and 6% as black/black British. As for education, participants split roughly into one-third with postgraduate degrees, one-third with university Bachelor degrees and one-third with A-level, GCSE, Diploma or Entry-level qualifications.

Thematic template

During the coding stage of template analysis, several groups of themes arose from the transcripts: topics (content or "what" people talked about), types and techniques of knowledge (form or "how"

TABLE 1 Summary of all participant attributes ($n = 201$).

Attribute	Proportion of responses
Type of session	34% group-led, 66% teacher-led
Sex	66% female, 34% male
Previous children	35% yes, 63% no
Pregnant	66% yes, 33% no (of females)

TABLE 2 Details of main study participant attributes ($n = 158$), excluding "no answer".

Attribute	Percentage of responses			
Session type	72% teacher-led	49% NHS standard	23% NHS homebirth	28% group-led
Sex	67% female	33% male		
Previous children	66% no	31% yes		
Pregnant	31% no	68% yes	(% of females)	
Age	7% under 25	60% 25–34	26% 35–44	7% over 45
Partnership	46% married	44% cohabiting	9% single	
Ethnicity	76% white	9% Asian/ British	7% mixed	6% black/ British
Main language	91% English	8% other		
Disability	97% no	1% yes		
Occupation	88% employed	6% student	3% unemployed	
Qualification	35% Bachelors	32% Postgrad	16% A-level, Dip	9% GCSE, Entry

people presented information), and integrative themes that acted multiply as topics and knowledge practices (Table 3). Examples of topics included stages of labour, labour techniques, other people (e.g., partners, midwives) and experiences of selfhood (e.g., emotions, pain). Knowledge types roughly divided into formal (e.g., evidence-based "authoritative knowledge", guideline-based "procedural knowledge") and informal knowledge (e.g., different types of stories, intuition). Many techniques for navigating knowledge also appeared, such as humour, "comparing" or emphasising difference, "normalising" or emphasising similarity and silence. Variations on control (e.g., choice, compromise, uncertainty, chaos) and dis/trust served as crucial integrative themes, running throughout the data.

A summary of knowledge practices in antenatal settings

This discussion next summarises how knowledge practices appeared in the data, and how collective approaches demonstrated care. Subsequent sections elaborate how particular collective knowledges performed care in practice, including less common collective approaches (i.e., stories in classes, second-hand and more distant stories, intuition), and more pervasive techniques (i.e., comparing, normalising, humour, silencing). Finally, a single story demonstrates how in-depth storytelling utilised a range of collective knowledges to care for birthing people and more. A brief summary of how knowledge practices appeared in the data contextualises the results and discussion (Table 4). Group transcripts primarily comprised informal knowledges, with lots of first-hand stories, some second-hand stories and occasional distant stories or intuition. Group participants also used a small but significant proportion of less collective, formal knowledges, including authoritative, procedural and quantitative knowledges. Main techniques for navigating knowledges in groups included comparing, humour and explaining; normalising, questioning, demonstrating and silencing were less typical.

Teacher-led sessions showed the reverse trend: Formal knowledges dominated classes (mainly procedural, often authoritative and sometimes quantitative) along with less collective techniques for navigating knowledge (i.e., demonstrating, normalising and explaining). However, informal knowledges and more collective knowledge techniques (e.g., story, intuition, humour, comparing, silencing) also featured in classes. Regarding control and trust, classes usually reinforced control, choice and trust, while group-led sessions presented a much wider variation on these themes.

Collective knowledge as care

Well-recognised attributes of care repeatedly arose with relation to collective knowledge, as group-led discussion and storytelling attended to physical *and* emotional realities, and sometimes worked to remedy "dark sides" of conventional birth knowledge. Stories, intuition and comparing "tinkered" by adding experiential nuance and materially grounded detail to formal knowledges. Emotional resonances, usually via stories or humour, amplified non-normative experiences and ambivalence. In-depth storytelling proved a particularly care-full form of knowledge. Stories, especially when told in group-led settings and enriched by listener and teller interaction, included a wide range of collective practices—humour, comparing, normalising, silences, and bits of intuition as well as authoritative knowledge.

TABLE 3 Thematic template with main themes and abridged subthemes.

Topics of discussion	Knowledge types	Knowledge techniques	Integrative themes
Labour stages	Formal – Authoritative – Procedural – Quantitative	Questioning	Variable trust – Trust – Distrust
Logistics		Explaining	
Risk		Demonstrating	
Other actors (e.g., baby, midwife, partner)		Comparing	
		Normalising	
Self-experience (e.g., body, pain, emotion)	Informal – Intuition – Stories: First-hand, second-hand, distant (e.g., media, third-hand)	Humour	Variable control – Control (e.g., agency, choice, resistance) – Compromise (e.g., interpersonal, change) – Chaos (positive or negative)
Labour techniques – Non-medical (e.g., active, relaxation, support) – Medical normal (e.g., Monitoring, Entonox) – Medical complex (e.g., pharmaceutical, Caesarean)		Silencing	

TABLE 4 Summary of differences between groups and classes.

	Similar in groups and classes	More in groups/less in classes	Less in groups/more in classes
Knowledge types	Intuition rare	Informal, especially story (esp. first-hand)	Formal, esp. procedural
Knowledge techniques	Questioning and silencing rare	Comparing, humour	Normalising, explaining, demonstrating
Integrative themes	Chaos rare, usually negative	Control (incl. resistance), compromise and chaos Trust and distrust	Choice

Other aspects of care—less well-represented in previous literature—arose in creative responses to conflict, complexity or distress. Many birth stories include moments of care where midwives and mothers trod a path between compliance and noncompliance [e.g., (41)], in order to "work athwart" (63)—meaning sideways, rather than contrary or parallel—standard procedure. Collective knowledge practices also worked athwart people, institutions, expectations or other knowledges, presenting care-full alternatives to acquiescence or opposition. As shown below, intuition could accommodate the unexpected, humour disrupted taboos, and stories and group-led discussion situated formal knowledges in the birthing person's subjective experience.

Transcripts also revealed the existence of important, care-full gaps in maternity care and birth knowledge. Care literature focuses on attentiveness [e.g., "tinkering" (50)], but many participants preferred a hands-off approach from midwives or avoided hearing about certain birth outcomes. In observations during research and personal life as a parent, good care often included stepping back, giving space and a perceived—or actual—inattention. The caring gaze, or too much information, might oppress, limit or undermine (47, 48). I explore below how absences in care and knowledge could be productive, as space afforded chances to perform self-care, consolidate knowledge, build trust, deprioritise control or level caring relationships. Silences in birth knowledge could also reinforce taboos or compliance, or express uncertainty, and some birthing people chose disengagement—intentional silencing—as a protective technique.

Useful antenatal preparation must navigate conflicts and complexities (13) without undermining individuals or relationships (41). *Knowing Childbirth* found that collective learning meets this complexity with care and connection, tinkering with and grounding abstract knowledges, attending to emotional resonances, building alternatives by working athwart norms, and even producing care-full spaces around certain topics.

Uncommon collective practices: complementing standard knowledges

Informal group-led settings engaged more collective learning overall, and formal teacher-led classes utilised fewer collective practices. This section investigates more exceptional collective practices, namely stories in classes, non-first-hand stories and intuition.

Class stories: materiality, affect and disrupting expectations

Some stories complicated the binarised picture of storied groups vs. formal knowledge-based classes. Storytelling did occur in classes, with main topical associations including transition, antenatal preparation, relaxation techniques or partners. These overlaps seemed to reflect lay accessibility, less biomedical relevance, and also perhaps that certain topics not only allowed for storytelling, but called for it. In a storied description of transition, midwife-teacher Justine tinkered with broad-brush understandings by explaining in detail what a birthing woman might experience, and why:

> ¨Justine: When you suddenly get contractions, and pressure in your back passage, you don't like it. Okay? And for about 5 min, a lot of women, lose it. Just because, they, they are not used to the sensation of both together … And if you're a birth partner within punching distance you'll get hit. <Laughter>" … It's very scary for the woman, but after a couple of minutes, it's over … And then you suddenly go, <clicks fingers> push! … You're so focused on pushing, it takes over your whole body and you forget about all the pain.

Her holistic, affective-effective account acknowledged both physical and emotional concerns, using humour to evoke laughter that mediated the hypothetical woman's distress.

Another example appeared in a crowded NHS class with over two dozen attendees, as a pregnant woman and the midwife-teacher exchanged anecdotes about pain relief:

> Cassie: So that'd be the one where they say, they can't really remember? Because they're drowsy? (Olivia: Ahh –) Well just, after it, I've just heard people saying that, they had, pethidine, that it's all a bit fuzzy, that, during the, baby's born, and everything after it's all a bit fuzzy with –

> ¨Olivia: All a bit fuzzy? Ah, maybe. I'd say more so with pethidine than with diamorphine and that's the reason it changed, actually, so. Eh, generally we find that we prefer diamorphine, pethidine made everybody a bit woozy. But I had it with my, my first is a bit older and em, I enjoyed pethidine, I have to say <Laughs> I really like it! But, you know, everybody's different.

This excerpt features different stories, facilitated by knowledge techniques of comparing and humour, which grounded generalised knowledge about diamorphine. Cassie's second-hand story converted an earlier comment that diamorphine could make you feel "a bit out of it" into amore embodied reality: New mothers might not remember much about the first moments with their baby. Midwife-teacher Olivia confirmed that for that reason, standard practice had changed from offering one opioid

(pethidine) to another (diamorphine). However, she did not limit her reply to a procedural point, but introduced her own story that emphasised a very different possibility ["enjoyed", "really like(d)"] regarding opioid analgesia and childbirth. As she performed her recollection of pleasure for the class, with laughter adding an affective lightness, Olivia's story challenged predominantly negative expectations about birth and heavy pain medication. Her humour might have buoyed attendees in an otherwise fairly difficult bit of the class that included serious faces, loaded silences, muttering between couples and only a few spoken concerns. At the same time, as explored later, this moment of humour silenced or diverted residual concerns about pharmacological intervention.

Participant stories could present more care-full knowledges regarding difficult or complex aspects of childbirth, as hinted at in previous research (29, 30, 31, 36). Storytelling is a flexible, entangled mode of communication that inherently tinkers—adds grounded nuance—as tellers, audience and settings co-construct accounts (42, 43). By incorporating a range of narrative devices and other knowledge techniques as needed, stories offered holistic and multiple approaches to information, although humour bypassed as well as mitigated concerns. In its attention to material and affective gaps in formal knowledge practices, class-based storytelling could disrupt dominant discourses, diversify expectations and increase engagement.

Further removed stories and distancing concerns

Like stories in classes, second-hand and more distant stories in all settings helped to address problematic topics. These stories associated more than normal with complex medical interventions, negative emotions and chaos. This distance constituted a care-full, protective space while engaging with negative expectations. Second-hand and more distant stories enabled participants to acknowledge difficult aspects of birth without uncomfortably close engagement. The affective impact of second-hand and distant stories was central: Claire drew reassurance from a second-hand story of induction, Jade felt distress at stories of unwanted Caesarean births, and Naomi responded negatively to a hypothetical medical emergency. Where formal knowledges or first-hand stories might be scarce, insufficient or uncomfortable, further removed stories provided additional resources to manage participants' affective concerns—not ignoring nor dwelling on difficult topics, but taking an oblique approach.

One example arose at a PBM session from Noelle, a midwife and attendee at the group. She recalled a woman she supported whose chaotic-sounding birth included a scheduled and cancelled Caesarean, an attempted and failed induction, and an eventual Caesarean birth. In part, this tale enabled a double vision of hospital induction, situating abstract procedure in one woman's specific reality. Perhaps more importantly, Noelle's account worked athwart negative expectations (the painfulness of induction, or distress amid escalating hospital interventions) by underlining how the woman participated in her care decisions, and the positive affective result ("She was, delighted"). Sharing this story offered listeners a similar emotional buoyancy regarding less desirable birth experiences, with practical suggestions around the importance of good communication and compromise. By enabling people to engage with difficult topics—but not so closely as to cause discomfort—further removed stories played an important function in antenatal preparation sessions. Often performing a negative affective role observed in other studies (33, 34), more distant stories also overcame taboos and broadened expectations.

Intuiting labour: embodied, oblique knowledges

Intuition bears close consideration as a collective, informal knowledge practice that only appeared rarely in the antenatal sessions. This lay-accessible, subjective, embodied knowledge type interacted with multiple knowledge practices in group-led settings, often disrupting formal knowledges. Intuition in groups linked thematically to dis/trust and variations on control, while classes tended to associate intuition more narrowly to trust and letting go of control. Intuition in classes also seemed topically limited to pushing, active birth techniques and bodies. Groups much more broadly engaged intuition regarding different stages of labour (antenatal preparation, early labour, established labour, pushing), non-medical (relaxation, active birth, interpersonal support) and medical (monitoring, diamorphine) labour techniques, risk, other actors (baby, midwife, hospital/doctor) and self-experiences (mostly body but also negative and positive emotion).

References to intuition strongly evoked care in all settings. Even within the narrow remit afforded to intuition in classes—when midwife-teachers encouraged pregnant attendees to listen to their own bodies, let go, and push their babies out how and when it felt right—these comments care-fully departed from conventional narratives. Justine offered this guidance about pushing to her NHS antenatal class:

> Justine: So, em, a lot of women feel they have to be told? When to push, in labour? But that's not true. What we encourage you to do, is just breathe and breathe and breathe, until the point where you physically can't stop yourself from pushing, and your body will just take over, and it'll make you push. You don't need to push to deliver your baby, your body will do it for you.

Justine's description both welcomed and carefully boundaried the role of intuition. She began by revaluing innate knowledge, stating unequivocally that it is "not true" that women "have to be told" to push. After a brief caveat where she asked listeners to ignore their intuitive desire to push by breathing instead, like midwives in other research (40), she reaffirmed bodily intuition as trustworthy and correct. As in other excerpts that attempted to verbalise the physical intensity of childbirth, Justine conflated the birthing person and her body, and switched between third-person "your body will do it for you" and more active "you'll just, push". However she presented birthing subjectivity, intuition emerged as clearly—yet contingently—important.

The use of intuition regarding pushing seemed to respond to a gap in formal knowledges, which did not satisfactorily attend to the powerful corporeality experienced by birthing women in this

research and other studies [e.g., (28, 29, 31)]. Justine curated space for this knowledge practice, describing in detail how people might experience or trust their intuitive sense to push. Intuition worked athwart dominant assumptions in institutional settings—that professionals provide the most credible childbirth knowledges (10, 22, 23)—not by undermining formal discourses but offering an addition. Within boundaries that reinforced institutional knowledge even as she challenged it, Justine care-fully presented intuition as a trustworthy source.

While some teacher-midwives encouraged partial confidence in intuition, many group excerpts placed intuition at odds with medical caregivers. Kath told the following story at a PBM group that she facilitated:

> ¨Kath: [My friend] said to me, one thing I'll say to you now, "Don't let them tell you not to push." She said, "I'm sure the reason I had a good back-to-back birth was because I didn't have some dickhead midwife telling me not to push." <Laughs> <Sounds of assent> And as soon as my midwife walked in for my birth, and it was a midwife I'd met prior, I went, don't tell me not to push! Because I'm going to push! And I've been told I'm not allowed to - you know, straight off, I'm gonna push, I'm gonna push. Because you can't not if that urge is there.¨

Kath's story corresponded and deviated from Justine's approach to intuition and pushing, although both women's comments drew on their expertise as trained midwives *and* birthgivers. Like Justine, Kath offered grounded information about the importance of intuition in facilitating birth. However, Kath rejected professional boundaries on intuition and prioritised subjective knowledge in communication with caregivers. Her privileged status as a midwife enhanced her critique of standard practice in this and other excerpts; she wielded lay and professional authority. Within her story, the affective power of humour and colourful language took the sting out of her obstinacy and made her resistance to professional instruction more permissible. Similarly, many other group examples of intuition added real-life nuance, variability and contingency to people's behaviour during childbirth and disrupting medical knowledges.

Intuition appeared at both ends of the spectrum of control in groups—from reclaiming control by resisting authority, to letting go of control—and both associations worked athwart hegemonic notions of control and knowledge. As a form of resistance, excerpts about intuition often presented the embodied self as an alternative source of control and knowledge. For example, Tanya, Sue, Mandy and Esther valued innate knowledge of labour over quantitative, procedural measures of cervical dilation. Nikita's pleasure at vocalising intuitively during labour disputed prevailing ideas about childbirth as suffering, and of docile patienthood and femininity: "I like let out this orgasmic sound … really in contrast with the like, deep roaring … But it is good just to be able to let go, and like, go with it". Where intuition linked to letting go of control, it upset norms of subjective control. Several homebirth stories emphasised the contingency of knowledge and agency during birth: Sana plaintively recalled "I didn't know, what to do … where is my inner wisdom?"; Rosa claimed, "I didn't feel like I pushed at all. He just was born". Intuition contested dominant notions of subjectivity, decentring the birthing subject and/or engaging "the body" as the primary active agent.

Altogether, intuition offered a useful, care-full collective resource in antenatal preparation sessions, and other research supports the importance of this knowledge practice (28, 31, 40). Intuition adjusted authoritative or procedural perspectives by attending to the lived reality of childbirth. Especially in group settings where intuition implicated a wider range of topics, this knowledge practice offered additional information to formal knowledges, mainstream birth narratives, behavioural norms and notions of subjectivity. Intuition often associated with techniques such as humour or normalising in its knowledge-as-care work, explored further in the next section.

Less common collective knowledge practices—unexpected stories, intuition and lay use of formal knowledges—performed important care work in antenatal preparation sessions. Excerpts demonstrate how class stories added materiality to diversify and ground abstract formal knowledges, as well as emotionality to encourage engagement. More distant stories engaged difficult aspects of childbirth by acknowledging without approaching too closely, keeping concerns at a distance. Intuition operated an embodied practice that provided nuance and alternatives to normative knowledges and other sociocultural narratives. Alongside more typical collective knowledges explored in the next section, these unusual collective practices cared for birthing people and knowledge.

Navigating with care: comparing, normalising, humour and silencing

Techniques for navigating knowledge care-fully permeated the antenatal preparation sessions, mediating, elaborating and responding to various claims. While groups mainly used more collective techniques (e.g., comparing, humour) and classes tended towards less collective approaches (e.g., explaining, demonstrating), all these knowledge techniques appeared in all types of sessions. This section focuses the most common collective knowledges: comparing, normalising in group settings, humour and silencing. These practices not only amended other birth knowledges, but affectively entangled birthing people, disrupted prevailing or conflicting discourses, and created care-full epistemic spaces. I also considers dark sides to this knowledge-as-care, as some techniques could bolster dominant ideologies, encourage compliance or suppress deviation from sociocultural norms.

Comparing: tinkering, working athwart and individualising

Comparing emerged as the most utilised knowledge technique in groups, foregrounding contrasting maternity experiences, opinions, claims or practices that appear throughout existing literature (17, 18, 22, 26, 29). Although teacher-led settings tended toward normalising (i.e., reinforcing similarity),

comparing also arose frequently in classes. Through the lens of care, comparing signified a crucial technique for adding materiality and nuance to birth knowledges by highlighting differences. Compounding this impression, comparing associated with the theme of logistics, the topical epitome of care-full tinkering in its attention to seemingly trivial, practical details: Kerry detailed different approaches to routine heartbeat monitoring, Mel and Sue compared their signatures on consent forms (below), and PBM participants discussed who, when, where and how to perform vaginal seeding after a planned Caesarean. Against a backdrop of normative, broad or abstract narratives about labour, comparing—especially alongside logistics—engaged with the physical reality of childbirth.

In classes, comparing often linked to early labour. All observed midwife-teachers elaborated how people would know when to go to hospital or call their midwife. They gave examples of various bodily events, such as diarrhoea and vomiting, frequency and quality of early contractions, different feelings based on baby's position, passing the cervical mucous plug, the timing and appearance of amniotic fluid, and more. This section of the class underscored the normal range and boundaries of early labour, summarised here by midwife-teacher Maria:

> ¨Maria: Did you notice that I said, you might, you might get that, you might you might you might you might you might. <Pause> All of you will start off labour differently. There is no set pattern. It'd be dead simple if there was. But there isn't. You'll all start off differently. Some of you! Won't go into labour at all! But that's for week three. This week, we are gonna go into labour. Yeah? You'll all start differently. You might get a show, you might not. Your waters might break, they might not! <Pause> The waters can break before labour, in labour, halfway through, at the end, or not at all! A baby can come out, in the bag of water. You might get a bit of D and V, and it's nothing to do with labour starting, it might be something you've eaten! <Laughs> So you'll all start off differently.¨

These comparisons performed several types of care. Firstly, conveying range in normal experiences of early labour could help people stay home and avoid repeated or too-early trips to hospital, which may impede labour and negatively impact birthing people and families. Further, keeping labouring women out of hospital as long as possible cared for other hospital staff and institutional structures by reducing strain on resources. Emphasis on non-attendance constituted a care-full absence that encouraged nonengagement with maternity services. At the same time, Maria's contrasting examples of specific bodily events could help parents (to help midwives) to recognise potential dangers. Early labour may not seem like the most critical part of childbirth, but extensive details by midwife-teachers highlighted the implications of this stage for mothers, babies, midwives and institutions.

Other notable thematic associations occurred between comparing and medical professionals, suggesting care-full knowledges around midwives, doctors and hospitals in all antenatal settings. In the next excerpt, PBM women discussed interactions with midwives around the routine practice of "fundus measurement", which monitors baby's growth by measuring the pregnancy bump at each appointment. This example incorporates comparing along with story, quantitative knowledge, compromise and other knowledges:

> Rosa: Yeah, I felt that. Like I was measuring fine and then someone else did it and suddenly I was measuring small, and they wanted to book me in for a growth scan, And I just said, like, I just feel like all your measurements are complete nonsense. And they said, "Ah, okay we'll get back to you". And they called back and had the first midwife re-measure me and she was like, "Oh it's fine!" But if I hadn't questioned that, I could have gone in for growth scans and then they could have found something else and then –

> Sofia: And it depends how your baby is lying, its position, and it can change all the time. Or it depends on you –

> Kylie: I've had the same because I'm short, they're like, "Oh your baby is small"…

This exchange describes maternity care practices in detail. The women discussed the fundus measurement practice itself, which relies on physical details like who does it, the mother's body and the baby's position. Interpersonal compromise emerged as the first midwife re-measured Rosa in response to her query, offering a care-full alternative to binary rejection/compliance of the growth scan. By attending to the significant emotional—affective—effect of the fundus measurements and growth scans, Rosa, Sofia and Kylie also implied its "dark sides", such as unnecessary intervention, emotional distress or loss of trust in carers.

Midwifery care aside, the act of sharing this knowledge composed another form of care work, which offered nuance, emotional and practical impacts, and broader expectations. Normalising worked alongside comparing, as Rosa contrasted interactions and practices of different midwives, while Sofia and Kylie corroborated her experience. By depicting a shifting range of material factors regarding fundus measurement in an antenatal group, participants provided credible information about variability, plus affective reassurance and validation. A collective explanation of "measuring small"—that it depends on baby, mother, midwife, etc.—worked athwart standard quantitative practices of fundus measurement or growth scans, not fully complying or rejecting, but contextualising these interventions.

The previous excerpts demonstrate how other practices overlapped with the knowledge technique of comparing. Rosa's comment relied on first-hand storytelling, like most instances of comparing, although more distant stories frequently also used contrast to encompass range in experiences. Comparing not only grounded broad or abstract narratives, it also complicated and diversified expectations. Quantitative knowledges correlated with comparing to highlight variation, such as how long labour might last (Maria: "10 to 18 h, would be normal … it could be 24") or how other knowledge practices complicated quantitative information (e.g., in observed discussions regarding due dates,

centimetres of dilation). Rosa's story also foregrounds how "comparing" and "compromise" often acted together, as differences often characterised interpersonal negotiations or changes of plan—common facets of maternity care and experience (31, 41, 45). Compromise offered an oblique response to contradictory information, which disputed dominant notions of control or subjectivity, rejecting subject/object binarism and (re)constructing a more entangled, fluid decision-making agent.

Potential dark sides to the knowledge-and-care practice of comparing arose in its associations with the theme of choice, foregrounding not just variation but also individualism. The ideal of the autonomous subject can empower *and* discipline people [e.g., (48, 61, 64)], especially as contrasting choices in classes limited to topics of pain relief and placenta delivery. Further, these moments obscured choices that caregivers did not readily offer, such as declining monitoring or induction. When comparing amplified some differential choices, it could deflect or silence others, simultaneously protecting against perceived risks, encouraging compliance and disempowering birthing people.

Altogether, the knowledge technique of comparing acted especially care-fully in the observed antenatal sessions. By emphasising details and differences among births—using story, logistics, other actors, quantitative knowledges, etc.—participants adjusted abstract expectations and grounded information in lived realities. Comparing also creatively engaged formal knowledges and narratives, not rejecting or reiterating, but adding complexity and context. Similarly, compromise often arose alongside comparing, as relational fluidity disrupted subject/object binaries and negotiated control provided alternative paths. At other times, comparing reinforced normative individualism in association with choice, which could empower, protect, normalise and oppress. Comparing cared multiply for birthing people, babies, birth knowledges and—especially in classes—medical care providers, institutional structures and sociocultural norms. In its ability to tinker and work athwart, to expand and delimit, comparing exemplifies how knowledge practices perform powerful care work.

Normalising collective alternatives

Comparing often worked in conversation with the knowledge technique of normalising, where participants reinforced sameness or gave supporting examples. Normalising marked one of the most common practices in teacher-led settings, and also appeared significantly in groups. In classes, this technique tended to strengthen formal knowledges, with midwife-teacher phrases such as "all women do this", "this is what happens" or the frequent use of second-person ("you") imperatives in descriptions of labour. These examples demonstrate the darker, protective/suppressive aspects of this care-full knowledge, making some lives easier by silencing deviance. In more collective contexts, normalising often disrupted dominant discourses. Midwife-teachers strongly normalised intuition in the rare occasions they discussed that lay knowledge practice, as seen in universalising comments regarding pushing (Justine: "Your body will just take over"; Olivia: "When the baby's, there, and, and the body's ready to push, you'll just do it, whatever the midwife says"). Groups also normalised intuition regarding pushing [Kath: "You can't not (push) if that urge is there"] and in general (Ada: "You know your body more than anybody"). Normalising intuition built credibility around this alternative, collective knowledge practice all settings, by care-fully grounding and contesting formal knowledges.

Another interesting link occurred in the data between normalising and loss of control. Chaos rarely emerged in teacher-led settings, and its boundaried, normalised framing—often with intuition—stood out regarding pushing or transition. In one NHS Homebirth class, midwife-teacher Kerry addressed the all-important issue of when to engage maternity services in early labour:

> ¨Kerry: Basically ring us when you're in labour? Or, you know, give us a heads up as well, if, you know, if you think actually, second baby. Is it anybody's second baby? <A few hands raised> Yeah, they can come really quickly. <Laughs> Very quickly. So yeah, you know, once you start to regularly contract, give us a ring. Don't think I'll wait and wait. One of our midwives, second baby, eh, she was like, "No, I can't go in, no, I'm a midwife, I can't go in, I can't go in." And then she had the baby in the car park! <Laughs> Because it can happen, quickly!¨

By preparing women for the likelihood of a fast second birth, Kerry revised mainstream assumptions about labour lasting a long time. She also normalised the chaos inherent in a fast labour; even a midwife might end up birthing her baby in the car park. Other participants also correlated a fast labour with feelings of chaos, including Joanna's accidental unassisted birth ("It went from nought to 60 and I was like, oh my … I am not coping"), and my second birth described at a Homebirth group ("She was out in like 45 min … it was just bonkers"). Apart from offering practically useful preparation, expectations about loss of control could be affectively reassuring, for example as Claire's story helped others stay calm in the face of copious vomiting and diarrhoea. Normalising chaos accommodated this otherwise-taboo carnality (28), adding real-life details and alternative ideas about birth or feeling in control.

Compromise emerged as another association with normalising, including subthemes of interpersonal negotiation, change of plan and uncertainty (i.e., negotiated knowledge). Most midwife-teachers discussed how women should expect changes in behaviour, sensations, preferences and circumstances during labour: Maria noted, "Women change, in labour" regarding what they want from partners; Olivia described "a change in your mood" as a key feature of transition; Justine talked about changing sensations during transition and pushing; Sheila acknowledged the impact of the hospital environment on labour, as a "shift change … changes everything again". Similarly in groups, facilitator Kate noted that going to hospital "affects a lot of women more than they realise", and Ada suggested that change in baby's heartbeat "probably happens all the time but we're just not listening in constantly". As with chaos, normalising negotiated control felt like an attempt to accept the

contingency and uncertainty that characterises childbirth (65), complicating hegemonic ideals and providing affective reassurance.

Normalising cared multiply for birthing women, babies, midwives and more. Midwife-led normalising of formal top-down knowledges could encourage compliance with guidelines, silence deviant perspectives and experiences, and protect midwives and intuitions. However, participants also normalised intuition, chaos and compromise. Reinforcing these aspects of childbirth built space for collectivity, alternatives and taboos, while tinkering with and working athwart formal knowledges and expectations. Further, normalising engaged affective-effective care by emotionally and epistemically supporting unconventional birth experiences.

Laughter: mediating, lightening, bypassing and making space

The role of humour in all antenatal settings appears time and again in this project, although it does not significantly feature in previous literature on antenatal preparation. This section analyses how this pervasive and powerful knowledge technique operates as a care practice. Thematic associations with humour included transition, pushing, chaos and selfhood, pointing to humour's ability to navigate tricky knowledges, concerns, embarrassment, psychophysical intensity and other taboos. Humour affectively lightened certain topics, helping tellers and listeners to express and bypass the inadequacy of speech and feelings of embarrassment, discomfort or ambivalence. Such emotional buoyancy did not feel disingenuous, as humour helped to convey tellers' unspeakable and multiple physical and emotional sensations during climactic moments.

Even in less extreme instances, humour tended to work alongside self-experiences. In excerpts evoking pleasure, humour conveyed unexpected, uncomfortable or difficult-to-express subjectivities. Other examples include midwife-teacher stories about hallucinating on Entonox as "brilliant" or "enjoy[ing]" pethidine, and a group story about vocalising "*feeling so-o good*". In one PBM anecdote about unexpected breastmilk let-down after a particularly good haircut, the room's laughter felt particularly poignant after the teller Monica's tearful story of her second baby in neonatal intensive care. The humour did not simply reinforce positivity, it also reflected and managed embarrassment at feeling self-love, and implicit taboos around carnality and pleasure—specifically in physiological links between sex, birth and breastfeeding. This excerpt and other instances emphasised the ability of humour to care-fully present embodied depictions of childbirth, encompass emotional dimensions and disrupt taboos and assumptions.

¨Humour performed a similarly multiple and care–full function regarding pain and negative emotions. Tellers and listeners constructed distressing interludes as humorous: E.g., Ella's dishevelled state due to uncontrolled vomiting, Claire's similar incident ("Everything's coming out of every orifice, at once <Laughter>"), Cherline's parody of her excruciating afterpains, distress at slow dilation from Sana and Mel, discussions about the potential trauma of vaginal examinations or epidural consent forms, and even anger at the patriarchy. Humour helped to mitigate negativity, allowing tellers and listeners to express the inexpressible and/or bypass the uncomfortable. A fairly typical class–based example follows, as attendees introduced themselves by stating one thing they worried about, and one thing they looked forward to about birth:

> ¨Susanna: What are we afraid of, mainly everything, a little bit. <Laughs> Em, how it starts, how long it takes, you know. (Maria: Exactly what we're gonna cover this week! So that's gonna be one worry dealt with Susanna) Yeah, well, probably gonna get more worries! <Laughter> Yeah, it is, we don't know what to expect. (Maria: Yes there's no, there's no handbook is there) Yeah, no, no.¨

Susanna's initial laughter bespoke self-deprecation and embarrassment about being "afraid" about "everything". The fact that laughter spread when she expected "more worries" suggested that other attendees shared negative feelings about the uncertainty of childbirth *and* anxiety around those feelings. Many passages coded for uncertainty overlapped with humour, but only in classes, where uncertainty more directly contradicted normative, institutional knowledges (42). This excerpt reaffirms the role of humour in (effectively) addressing and (affectively) responding to taboo subjects. As elsewhere, laughter offered reassurance and protection, as well as deflection or partial silencing of concerns. In its links with self-experience, humour enables collective impulses to make light of subjectivity, navigate discomfort around psychophysical intensity, deflect and make space for taboo topics.

Humour and partners: working athwart gendered power dynamics and more

This analysis of humour as knowledge-and-care work gives special consideration to one of the most striking thematic intersections in the data: humour and partners. Across the transcripts, people used humour around half the time they spoke about romantic partners. Concerns abounded for many antenatal participants, and (usually male) partners were an easy target for jokes to lighten the mood. Previous research suggests other reasons. Mainly women ran and attended all the observed antenatal preparation sessions, with men as outsiders in the metaphorical and physical birth room (28). The fact that almost all participants expected and spoke positively about the presence of male partners during labour marks a sea change in the UK since the mid-twentieth century, when men—especially in working-class communities—almost never attended births (65). Despite UK-wide contemporary acceptance in the UK (25), male birth partners have expressed feelings of anxiety, fear, disappointment, isolation or uselessness (65), and some midwives note they can inhibit labour or reinforce gendered power dynamics (66). The sociocultural context is fraught: Male outsiders recently accepted into female spaces amid unexpressed ambivalence (31, 65), all within a patriarchal medical system and society (28, 29, 51). In this context, partner-oriented humour in

the data care-fully both disputes and soothes gendered power relations.

Many jokes about partners decreased male power in the female birth space, bolstering and challenging gendered norms. Postnatal women often laughed at their male partner's confusion in group-based birth stories, for example as Rosa comically depicted her male partner using a high, panicky voice, and recalled how he apparently forget to catch the baby. Class participants laughed at Sandra's "poor man … pale as anything" during her Entonox hallucination, Justine's suggestion that partners might "get hit" during transition and Maria's comment that a labouring women might say "Stop touching me! It's really annoying". The affective position of these examples seemed crucial, putting worried people at ease, especially in class settings, and attending to the emotional dimensions of labour. At the same time, laughing at partners care-fully broached awkward truths about birth in a patriarchal society, the usefulness of some men during labour and whether male partners wanted to be there.

¨A delightful and indicative example of how humour cared for knowledge, birthing women, male partners and gender dynamics took place at a PBM group, where Arun gave "his version" of his partner's birth story. Laughter frequently arose, as his externally-focused telling elicited humorous and expressive details from Sana. When Arun observed that gas and air "seemed to work", Sana added depth and humour, exclaiming "thank god!" and miming herself desperately inhaling Entonox. He spoke in detail about her appearance and his part during pushing, and Sana's comical interjections confirmed his account as well as the inadequacy of this telling: When Arun referred to Sana's pain as "intensity," Sana elaborated: "I thought, I'm gonna share, this, I'm gonna share this experience with Arun, so I bit him, into his thigh, twice <Laughter>." His deadpan rejoinder that the pain he felt confirmed that her contractions "were strong, feelings" brought more laughter, as did Sana's nonapology ("In the back of my mind I was like, I should probably say sorry. <Laughter>"). Humour tinkered with Arun's description, communicating strong physical sensations, emotions and other verbally inexpressible details of Sana's birth. At the same time, her jokes conveyed scepticism around Arun's role amid her vocal appreciation of his support, and staunch affirmation of her epistemic authority on this topic.¨

Despite its absence from previous antenatal learning literature, humour emerged as one of the most care-full knowledge practices, creatively addressing complicated yet crucial aspects of birth like chaos, self-experience and partners. This latter topic engaged several facets of humour's knowledge-and-care work, as jokes clarified what men (should) practically do in the birth room, worked athwart expectations around their presence during labour, and exposed potential dark sides of male caregivers amid gendered power relations. Humour performed affective-effective work in many contexts, revealing emotional dimensions and non-normative physical sensations. By turning a fringe position, contradiction, worry or extreme experience into a joke, participants could approach a difficult topic without fully confronting it. This indirect tactic helped build new narratives, including multiplicity or ambivalence. The emotional effects of humour could reassure and uplift, and also—often simultaneously—increase compliance or deflect attention from concerns. Humour exhibits how collective practices care with complexity for birth knowledges, parents, partners, practitioners and power dynamics.

The careful ambivalence of silencing: resistance and protection (for whom?)

Intentional and enforced silences in birth knowledge demonstrate how absences care productively while potentially reinforcing norms and taboos. Excerpts coded for 'silencing' marked where participants bypassed concerns or disengaged from a session, sometimes linking to birthgiver control or resistance to authority. Additional silencing emerged during analysis, where topics, knowledges or patterns occurred in one setting but not another. I also identified absences by comparing information in sessions with stories from non-research settings, my own births and norms in literature (28, 29, 31). Scholars identify longstanding taboos around birth, such as silencing of carnality, sex, pleasure or pain (29, 31, 51). Western medicine also treats loss of control or "the unknown" as taboo (28, 29, 51, 67), and essentialised notions of motherhood can exclude feelings of negativity (18, 29, 44, 68). This investigation into silence relies on participant observation, personal experience and wider literature, although previous research does not specifically interrogate the complex role of intentional silencing in antenatal settings.

¨Some silences appeared in the rare coding of certain topics in certain settings. Absences in teacher-led classes reflected social and institutional norms (28, 41, 65), with a dearth of references to chaos, subjective resistance or emotionality. Groups rarely addressed risk or complex interventions, suggesting an impulse to bypass biomedical facets of birth. Care-full silences protected (some) people from (some) harm by reproducing setting-specific dominant discourses [e.g., (22, 61, 62)]. However, collective approaches more often broke normative taboos [e.g., (51, 65)], as themes of uncertainty, unknown and chaos emerged in group-led settings. Taboo negative emotions toward baby arose in groups, as Ada talked about difficulty bonding with her second baby (below), Sana described her first postnatal hours as "pure stress" due to difficulty feeding and lack of sleep, and Claire recalled thinking, "It's a good job you're, so gorgeous, because you'd be in the bin otherwise <Laughter>¨. Group discussions more often represented intense carnality, such as diarrhoea and vomiting, comparing a baby to "a three kilogram heavy poop!", vaginal microbiomes or pushing sensations that included sensory pleasure. These examples creatively engaged taboos by emphasising material and affective realities, while classes more care-fully maintained silences, perhaps to avoid psychosocial discomfort and protect biomedical norms.¨

Regarding pain and negative emotion, transcripts included a dearth of references and explicit silencing. Some group participants avoided naming pain as such, as in Sana and Arun's story, reinforcing "natural" birth narratives that seek to denaturalise notions of childbirth pain (29, 68). However, this care-full silence accompanied storied and other in-depth descriptions of pain that made space for extreme and varied

corporeality in groups. Class-based silences around pain appeared when participants implied without explicitly recognising pain or harm. Midwife-teachers tended to normalise multiple complex interventions by focusing on clinical procedure rather than decision-making opportunities or potential side effects; one diminutively described a Caesarean scar "like a smile". Some participants dismissed explicit concerns, as in this NHS class example on how to administer the analgesia Remifentanil:

> Cassie: That sounds horrendous. (Olivia: Yeah?) So you're on oxygen. You're stuck to the bed, you're on a catheter.
>
> Anna: Works very well though apparently? <Big laughter>
>
> Olivia: It's very effective pain relief.

Midwife Olivia's interjection ("Yeah?") immediately questioned Cassie's negative evaluation of Remifentanil as a highly invasive intervention. Laughter seemed to further deflect her concern, as other attendees re-focused on the drug's ability to relieve pain. Cassie did not appear reassured, but the class moved on to discuss another intervention, silencing Cassie's distress about side effects as unworthy compared to overriding concerns about pain. This care-full deflection could help some birthing people, invalidating one cause for concern (side effects) to offer a solution for another (pain). More clearly, silenced pain in classes cared for biomedicalised birth norms, encouraging compliance, strengthening taboos about pain, devaluing physiological labour and decentring birthing subjects.

The suppressive/protective aspect of silencing also existed in gaps in teacher-led classes, such as the sparse use of collective knowledges regarding more invasive medical interventions. Regarding nonmedical and simpler techniques, collective practices—stories, intuition, comparing, humour—afforded space to ground, add nuance, evoke emotions and disrupt standardised expectations. Midwife-teachers compared personal observations of TENS machines, told jokes about Entonox and linked intuition to active birth techniques (e.g., Justine above). However, more complex interventions (e.g., diamorphine, epidural, induction, instrumental or Caesarean births) rarely involved collective knowledges, relying on procedural knowledge with some explaining and demonstrating. Presenting complex medical interventions as unproblematic or non-negotiable could help birthing parents avoid the burden of decision-making (22, 61, 64), while compliant patienthood almost certainly protects midwives, doctors and institutions (10, 23). At the same time, by rendering certain topics as inaccessible to lay engagement, this epistemic silence could reinforce medicalisation and suppress alternative preferences or experiences.

Some silencing emphasised the protective capacity of care-full absences. When participants disengaged in teacher-led settings, they accessed one of the few knowledge practices available to them. The refusal of knowledge-as-care on biomedical terms [e.g., (61, 64)], in part, may be a form of resistance. Class attendees rarely responded verbally to descriptions of complex medical interventions, and sometimes admitted intentional ignorance:

> ¨Maria: Em, any worries? <Pause> Anything you're anxious about?
>
> Isaiah: <Pause> Just.
>
> Maisie: The labour I suppose. We try not to think about that too much though. <Laughs>
>
> Maria: So that's what we're going to make you think about tonight. <Laughter>¨

This excerpt typifies many participants' professed perspective on childbirth. Interacting with birth knowledges often meant thinking about unwanted outcomes; avoiding this information could be protective. Social maxims include "knowledge is power", but also "ignorance is bliss" and "what we don't know, can't hurt us". Wilful, care-full silences reflect a protective/suppressive impulse toward birth knowledges.

Groups displayed more intentional associations between silence and resistance. Jade muted her social media to avoid negative stories, Esther told other participants not to watch *One Born Every Minute*, and Nikita justified her decision to free-birth (birthing without professional medical assistance). Humour often featured in stories of silence and resistance, as in this PBM exchange:

> ¨Mel: I ended up having an epidural … after I'd say 50 h … And then I have to sign away, my life on this sheet … Yeah, "It can paralyse you, you might have seizures because if they drain too much fluid, spinal fluid off, you are going to crash", all this stuff. And you're thinking, oh my god, it's got to this, all these things are going to now happen as well? Sue: I just didn't read it. <Laughter> (What!?) I couldn't handle, I can't say that I didn't sign it, my signature will be on it somewhere. It must be, because I had it! But.
>
> Esther: But you didn't have capacity.
>
> Sue: <Laughs> It wouldn't look like mine, it would just be like squiggles.¨

In the full transcript, the women spoke at length about difficulty managing consent processes in the middle of labour. This discussion revealed the affective impact and potential dark side—recognised in other research (64)—of a seemingly benign institutional detail (signing a form). Elaborating the ramifications of this logistical act was a moment of affective tinkering, where people offered concrete solutions to help others avoid Mel's distress. Sue's nonengagement marked a careful absence in her knowledge; her act of not-reading and—even more so—telling other women about it, disrupted and resisted idealised notions of choice and informed consent [e.g., (61, 64, 65)]. She challenged expected behaviour, and advocated something rarely voiced but often implied by participants regarding birth knowledge: Sometimes it felt better not to know, or impossible to understand. Using story, silencing and humour, this exchange care-fully embodied and disputed expectations around informed

consent, including acknowledging the value of disengagement, and offering emotional buoyancy at an upsetting time.

Intentional and enforced silences appeared as important collective knowledge practices that downplayed, ignored and resisted potentially distressing aspects of birth. Most care-full absences also had dark sides that could reinforce dominant discourses or deny people beneficial knowledges. Ambivalent gaps in knowledge cared for some birthing people, and especially for medical professionals, institutions and sociocultural norms. Group-led settings and storytelling maintained some silences, but also worked athwart conventional taboos, grounding and obliquely addressing difficult topics like chaos, negative emotion or pain.

First-hand storytelling: engaging multiplicity and performing care

Even without explicitly focusing on storytelling—the primary collective practice observed in antenatal sessions—stories have appeared throughout this analysis. The final section explores the most compelling story heard during observations, and by some definitions perhaps one of the least "careful". Facilitator Kath later referred to it as "pretty, harrowing", saying, "If it had been a different group I probably would have <mimes cutting motion> shut that down". But Ada's story was full of care—tinkering, working athwart, effecting and affecting, creating absences and attending to darkness—for herself, pregnant and postnatal people, midwives, birth, birth knowledges and more. Like many in-depth first-hand stories, this tale employed the other collective knowledges considered here, including intuition, formal knowledges, comparing, normalising, humour and silencing. Ada's story offered a rich summary of how women used collective knowledges in antenatal sessions to care-fully construct birth knowledges.

The story emerged as part of an extended round of introductions, in which each woman described her previous birth (s) and reasons for attending the PBM group. Ada described how her four births were all "exactly, the same", and all outside expected norms as once she reached five centimetres, "it took me 20 min to have a baby". This unconventional claim surprised other attendees, demonstrating how stories often normalised difference—i.e., using comparing alongside normalising—to adjust assumptions about the normal progress of labour. At this point Ada elaborated the details of her traumatic second birth, relying primarily on story, comparing and a bit of humour. She began by contextualising her own behaviour as "dead chilled …. I love giving birth", in laughable contrast to the midwife who was shouting "No, no, no … going a bit mad". As elsewhere in the data, comparing worked to add materiality, emotionality and nuance, emphasising range in lived psychophysical experiences.

Sadly, the story turned from a light-hearted account of an obstinate "old … matron type" midwife to a dark tale of obstetric violence. Listeners gasped as Ada recalled the midwife's command ("Give her pethidine!") and opiate injection without knowledge or consent, and Ada questioned whether she should continue her telling ("Do you want to know horrible –?"). Kath encouraged the story, rejecting and sidestepping its depiction as "horrible" by asking Ada to focus on "what is actually helpful". When Ada replied "it does come out a nice story in the end", she seemed to decide to recount her entire birthing history, with the intention to demonstrate the (affective-effective power) of intuition ("It's good to be aware of, you know your body more than anybody"). Unfortunately, no one listened to Ada or her intuition during her second birth, and she conveyed extreme distress at the disconnect between her intuition ("I can't help but pushing") and her caregiver's commands ("I couldn't push"). Birthing her baby in a traumatised, unknowingly drugged state, Ada hallucinated the death of her child, serious organ damage, the death of the woman in the next bay, and a conspiracy to give her that woman's child. Procedural understandings of labour overruled the knowledge-and-care practice of intuition to devastating effect.

The impacts of this segment of the story relied heavily on context, including the safety and supportiveness of the PBM group, Ada's longer narrative and broader sociocultural norms. Non-consent and ignorance are familiar for too many birthing people, and some scholars characterise these epistemic injustices as obstetric violence (69). Ada's distressing account also included an affective pressure valve at one point, as other attendees laughed at her joking summary of her hallucinations: "I figured all this out". Otherwise humour was nowhere to be seen in this section of the story, although it arose strongly later in the tale. Storytelling enacted the main knowledge-and-care effort, as Ada conveyed the holistic physical, emotional and epistemic trauma of obstetric violence through her detailed, situated recounting.

Ada performed some affective repair as she continued. She explained one source of her trauma as the mismatch between intuition and professional instruction. Her personal recovery also relied on speaking with a trusted midwife, reinforcing relationality of care and contrast in caregivers, and input from her clinical notes and awareness of side effects of pethidine facilitated understanding. Some silence and uncertainty remained over whether she had healed from this trauma, as her professed "little bit of, post-natal depression" felt like an understatement. Ada incorporated multiple knowledge practices to care for herself and listeners, including affective support from caregivers, uncertainty about the effects of her trauma, and intuition as an alternative to biomedical maternity care.

However, Ada's primary repair—and care—work appeared in her telling of subsequent births, whose joyful recounting formed a counterpoint to her previous experience. The brief account of her third birth emphasised how she created gaps in her care to avoid conflicting messages or other unwanted input. She kept midwives out of the room ("Go out! I'm fine") although she did not fully refuse to engage ("I'll shout ya if I need ya"). This absence made space for her to attend to her intuition, which brought real affective delight ("It were beautiful"). Ada's fourth birth utilised humour, contrast and silences to further heal and disrupt the negativity of her tale. She evoked shocked laughter at her first reference to sexual pleasure ("the fourth birth, I was like, we can take this a step further. And we did

the orgasm thing"), especially with proximity to birth and her father's presence on the ward ("…and my dad was there. <Big laughter> Not for the orgasm bit!"). More humour arose as she imitated her father and partner using a deep voice and broad regional accent, and dramatic contrasts between her labour and their focus on sports news inspired renewed laughter:

> ¨Ada: I'm like, ohh, let's just go home, it's wind, it's got to be wind! <Laughter> It's not happening, is it? It's just, and then I go, <inhales> it's coming again. <Exhales, whispers> Oh, I don't know. It's not, it's, wind. <Deep voice> Come on, we'll go home. And then we went to t' television room, they were like, "Um, well, Match o't' Day's starting now. We'll, watch Match o't' Day and then we'll go home." So I'm sat there thinking, I'm not watching Match o't' Day, I'm gonna go in this room on my own, and do this orgasm thing. <Laughter>¨

Uncertainty emerged around intuition, but Ada ultimately found space for her intuition, "did the orgasm thing" and, with some surprise, quickly birthed her baby. Silences, humour, comparing and intuition all featured in Ada's story-based resolution, performing complex care for teller and listeners.

Ada's first-hand, face-to-face story, told in a supportive context, depicts how even an apparent horror story of obstetric violence provided care-full birth knowledge. Empirically grounded details adjusted assumptions and depicted contrasting, fluid engagements with formal knowledges, intuition and care providers during childbirth. By turning a "horrible" story into "something helpful", Ada worked athwart binarist birth discourses [e.g., (28, 29, 65)] and offered a holistic, integrated, diverse portrayal. Storied drama and humour affectively mediated the pain and pleasure in her story, and reflected crucial emotional resonances of the knowledge practices and physical sensations she described. Absences in her narrative held care-full spaces for uncertainty and unfinished healing from trauma, while the gaps she built in her maternity care provision offered her space for self-care and engagement with intuition. (If her previous midwife had been able to maintain such a care-full gap in her attentions, Ada may have avoided much trauma!) Another telling of this story might reinforce disempowerment, conflict, violence and enact a darker sort of care, but embedded in a group-led antenatal preparation session, Ada's account cared deeply and multiply for herself, those of us privileged to hear her tale, and—if we are care-full—those to whom we might pass her story.

Conclusion

Public crises in maternity care call for better antenatal preparation (1, 24, 25) and for institutions to listen to birthing people (1–4, 8). *Knowing Childbirth* proposes care-full, collective learning as potential solution, elaborating on long-standing recommendations for participant-led antenatal preparation (12). Storytelling, group-led discussion and other collective birth knowledge practices address some of the shortcomings of conventional antenatal classes identified in previous research (12, 15, 16, 18, 21, 22, 24–26), building peer relationships while sharing knowledge that is more culturally appropriate, accessible, wide-ranging, grounded in lived experiences and centred on the birthgiver.

Framed by feminist critical literature on care (47–49), this paper demonstrates how unusual collective practices such as storytelling in classes, "distant" stories and intuition attended to gaps in conventional antenatal preparation. Techniques for navigating knowledges—namely, comparing, normalising, humour and silencing—also cared flexibly in groups and classes. Finally, one in-depth first-hand story depicts how the powerful and commonplace collective practice of storytelling utilises other knowledge practices and enacts complex knowledge-and-care work.

Recalling notions of radical mothering (44), collective birth knowledges perform grounded, creative and revolutionary care that resists disciplining conventional discourses. Stories, intuition and contrast emphasise nuance in lived experiences and tinker with abstract expectations. Sociomaterial contexts adjust the epistemic meanings of birth stories and other collective practices, and affective-effective resonances depend on tellers, audience or setting. Humour and stories evoke emotional dimensions to birth and knowledge, including space for psychosocial differences and ambivalences. All practices explored here work athwart dominant narratives that discipline birthing people, adding empirical information, re-valuing intuition, contextualising formal knowledges, using humour to disrupt assumptions or disengaging. Care-full gaps appeared in telling stories at a distance, exposing uncertainties, silencing concerns or resisting biomedicalisation. These absences could also indicate a dark side to knowledge-as-care, bolstering taboos, silencing undesirable outcomes or encouraging intuitional compliance. Through embodiment, emotional resonance, indirect involvement, meaningful absences and ambivalent multiplicities, collective antenatal learning has the power to care for birthing people, midwives, families and more.

Data availability statement

The datasets presented in this article are not readily available, however anonymised transcripts may be provided to other researchers from universities, NHS organisations or companies involved in health and care research in the UK or abroad. Research must concern maternity services or knowledge production, and be in accordance with the UK Policy Framework for Health and Social Care Research. Requests to access the datasets should be directed to leah.dequattro@manchester.ac.uk.

Ethics statement

All research received ethical approval from NHS Research Ethics Committee (REC) and the Health Research Authority (HRA) [IRAS 255833, Ref: 19/NW/0015], and all participants gave signed, informed consent. Recording and data handling took place in accordance with ethical guidelines and university

policies, including pseudonymisation of all participants and removing identifying characteristics from transcripts.

Author contributions

LD: Conceptualization, Data curation, Formal analysis, Funding acquisition, Investigation, Methodology, Project administration, Resources, Software, Supervision, Validation, Visualization, Writing – original draft, Writing – review & editing.

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Conflict of interest

The author declares that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Correction Note

A correction has been made to this article. Details can be found at: 10.3389/fgwh.2025.1708942.

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Havening: a psycho-sensory therapy for enhancing emotional resilience and psycho-emotional wellbeing across the perinatal period

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Havening, a psycho-sensory therapy, is increasingly recognized for its potential in supporting perinatal psycho-spiritual and emotional health. By employing gentle touch and guided imagery, Havening aims to reduce distressing emotions and enhance well-being. This article explores its application on emotional processing in perinatal care, with a particular focus on its impact on the amygdala, the brain's emotional processing center. The theoretical foundations proposed by Dr. Ronald Ruden regarding Havening's neurobiological effects are discussed, followed by the presentation of four case studies and respective outcomes that demonstrate the potential of Havening in perinatal mental health.

KEYWORDS

psycho-sensory, havening, perinatal mental health, childbirth, trauma

1 Introduction

The perinatal period, which consists of pregnancy and up to one year postpartum, is a time of significant psychological, social, and emotional transformation (1–5). Women are more likely to develop a mental health disorder during this period than at any other time in their lives, which can have significant associated morbidities for the woman, baby, and family (6). Many women experience heightened vulnerability to stress, anxiety, and trauma-related responses across the childbirth year (7). The global prevalence of perinatal mental health disorders is concerning (8). The WHO estimates 10%–13% of women will develop mental health disorders postnatally (9), which is considerably higher in LMIC countries (10). However, a wide regional variance is acknowledged in these estimates due to reporting, health service infrastructure and socio-cultural contexts. For example, an estimated ten to twenty percent of birthing women/parents in Aotearoa New Zealand, a bicultural country, experience perinatal distress that is significant enough to meet clinical mental health definitions (11). Investing in emotional wellbeing during this period is therefore critically important. Yet equity of investment in this area is not evident globally (8). In Aotearoa New Zealand, where two of the authors reside, there is a "disparity between needs and service provision (12 p.30)" in relation to women with perinatal mental health distress considered to be mild/moderate in nature and appropriate maternal mental health services.

Maternal brain plasticity, including changes in the maternal amygdala, have been noted in the postpartum period (13–15). For example, during pregnancy and

postpartum, hormonal shifts increase amygdala sensitivity, contributing to heightened emotional reactivity and susceptibility to stress (16). This dysregulation of the amygdala is being linked to conditions such as perinatal anxiety, depression, and post-traumatic stress disorder (PTSD) (17). Furthermore, functional impacts on the neonate have been noted in the context of maternal stress and anxiety (18, 19). Significantly, studies looking at maternal mental health provide evidence for subtle but long-lasting alterations to amygdala morphology associated with differences in maternal anxiety in early development of offspring (20–22). This could be linked to the intrauterine environment and the etiology of neuropsychiatric disorders in offspring (23). This highlights the importance of attending to maternal amygdala health in the perinatal period because of potential intergenerational impact of maternal stress, fear and trauma on the next generation's amygdales (24). Although some of this neurobiological science is still theoretical, there is an emerging understanding about the centrality of amygdala health.

Whilst there are psychological and pharmacological treatments that have been shown to be effective in treating perinatal distress (25), many women prefer a non-medicated approach due to concerns about medication transmission to their baby during pregnancy or lactation (26). In this article, we consider an innovative approach, called Havening Techniques (HT), that is theoretically based on neurobiological mechanisms. Case studies are presented that highlight the potential positive impact of HT on women experiencing mild to moderate perinatal mental distress. Havening Techniques, a relatively new therapeutic approach, integrates touch with cognitive interventions to gently and effectively regulate emotional responses (27). Havening Techniques comes under the umbrella of psychosensory therapies (2) that do not use any pharmaceutical agents and are distinct from talk therapies like counseling and psychotherapy where clients need to talk through their concerns with a therapist. On the contrary, HT does not require the client to repeatedly talk about their trauma and distress (14). Thus, HT provides a non-pharmacological alternative, or an alongside modality to these therapies, broadening the scope of available services and increasing choice for women and families.

According to Ruden's theoretical reasoning Havening Techniques (HT) has a direct physiological effect on the brain, specifically the amygdala (Figure 1) (14). However, this direct effect on the amygdala requires further empirical examination. What is empirically established is that the amygdala is a key region involved in emotional memory and threat perception and is central to processing emotions, particularly fear and stress responses (29–31), and that responses are individually unique (32). There is an emergent body of empirical work being carried out into the effectiveness of HT. Interestingly, there is some evidence that personality types, specifically type D personality,

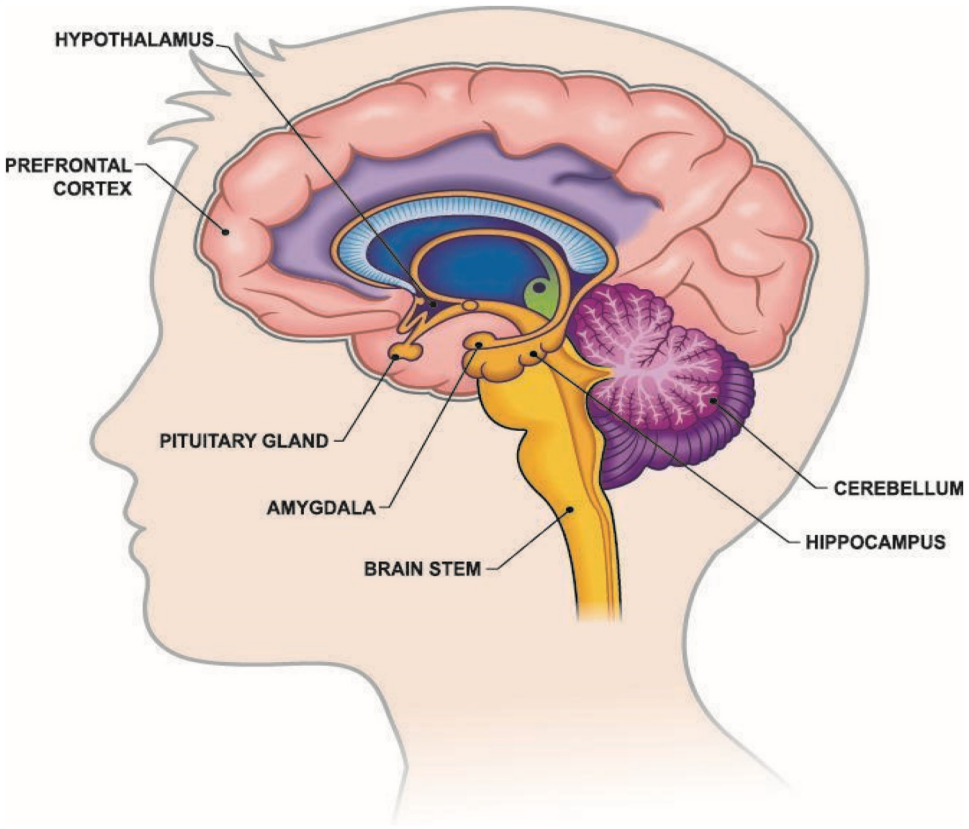

FIGURE 1
Brain anatomy showing location of the Amygdala: image public 25/3/25 IStockPhoto.

may be more sensitive and impacted by HT (33). Likewise, the effectiveness of HT for physical pain, specifically surgical pain, has been explored although this remains inconclusive (34).

The proposed theoretical considerations provided by Ruden's work, and the underlying neuroscience about the functions of the amygdala, provide insight into how HT's therapeutic benefits for perinatal mental health could be possible. Dr. Ronald Ruden, the creator of HT, posits that traumatic memories become encoded in the amygdala through heightened electrochemical activity, and that HT can depotentiate these pathways, reducing emotional distress (14). In this article we present a theoretical proposition that hypothesizes that HT, a psycho-sensory therapy, has a place in the lexicon of helpful approaches in perinatal psycho-emotional wellbeing, and deserves further examination.

The first part of this article describes what Havening is and what HTs are, including the bioelectrical-biochemical processes, and the actions of potentiation and depotentiation in the amygdala. The types of techniques are then described along with a typical HT session. Four case studies are then presented to demonstrate the impact that HT can have on perinatal mental health. This is not a formal research project, and women's case studies are drawn from previous practice experiences. All women have agreed and consented, prior to this article, to their stories being used anonymously as case studies for this article. The case studies are purely illustrative of HT potential in this domain and are not formally analyzed.

2 What is havening?

To understand the mechanisms of HTs we begin with an explanation of how traumatisation becomes encoded and potentiated in the body (1). It is hypothesized that traumatization occurs when four specific requirements for encoding trauma are present. In Table 1 a consolidated synopsis of these requirements and components are provided and are then referred to in the four case studies described and discussed in section 7.

When a traumatic or distressing experience occurs, the amygdala encodes the memory by laying down new synaptic connections through a process called potentiation. This occurs via a surge of calcium ions into neurons, activating NMDA receptors and reinforcing the neural circuitry associated with the traumatic event. This potentiation results in the persistent reactivation of distressing emotions when triggered by similar stimuli in the future. This involves pathways to the amygdala shown in Figure 2, illustrating the sensory input required for the encoding of trauma to occur.

Havening Touch is believed to release the established specific neural connections to the traumatic memory; in other words, de-encode the memory (32). By permanently delinking the amygdala to negative emotional responses, HT allows individuals to process perinatal challenges with greater resilience and emotional balance. For example, imagine a woman is experiencing a massive postpartum bleed; she "sees" the blood on the bed, floor and midwife's uniform. She hears the emergency buzzer calling for help, her newborn crying, noise of metal instruments and people entering the room talking quickly and loudly. She feels the physical touch of others as they insert needles in her arm quickly and attach a blood pressure cuff and suddenly notices a metallic and bitter taste developing in her already dry mouth. She is also aware of smelling antiseptics, toast, coffee, and body odors. She feels trapped, alone, exhausted, terrified and believes she will die. It can be construed in this scenario that she is experiencing all the requirements of encoding trauma, and all four components for encoding a traumatic memory (Table 1). She may be undergoing a potentiating event, perhaps leaving her triggered each time she smells coffee or sees blood. This of course would also be dependent on the landscape of her brain (level of vulnerability/resilience because of past experiences) which influences how present experiences are perceived and how traumatizing they may be to the individual. Likewise, previous related or unrelated traumatic experiences tend to be a predisposing factor to further traumatization (14).

Havening Touch involves the application of slow, rhythmic touch on the face, arms, and hands while engaging in guided mental exercises. The skin has receptors called C-tactile fibers, a class of unmyelinated, mechanosensitive nerve fibre (36, 37). These fibers can transmit sensory information from touch on the skin to the brain. There are different ways of experiencing touch: e.g., fast touch, harsh touch, pinch, and slow, gentle and nurturing touch. Havening Touch employs a soothing comfortable touch akin to a tear being wiped away. This quality of gentle touch transmits information up to the insula, a region of the brain which has a crucial role in various functions, e.g., sensory processing, emotional regulation, and decision-making, as well as influencing different areas in our prefrontal cortex to shift how the brain interacts with the present moment.

It is known that social touch stimulates the release of serotonin and oxytocin, which counteract stress hormones like cortisol (38).

TABLE 1 Requirements of encoding and components of traumatization [consolidated from ruden (32)].

Requirements of encoding: EMLI		Components of traumatic memory: CASE	
Event	The traumatic event e.g., difficult out of control birth experience. (Actual or perceived)	Cognitive component	Non-emotional content of traumatic memory, may include adverse childhood events (ACE), e.g., an unspecified threat stimulus (UTS) such as being abandoned
Meaning	The event generates an emotional response, e.g., fear.	Autonomic reactions	e.g., shaking, sweating, blushing,
Landscape	History of current and life circumstances, level of resilience, coping; vulnerability, e.g., in marriage breakup at time of a birth trauma	Somatosensory aspects	e.g., pain, headache,
Inescapability (perceived or actual)	Unable to get away e.g., feeling trapped on the hospital bed in stirrups	Emotional content	e.g., fear, terror, confusion, loneliness

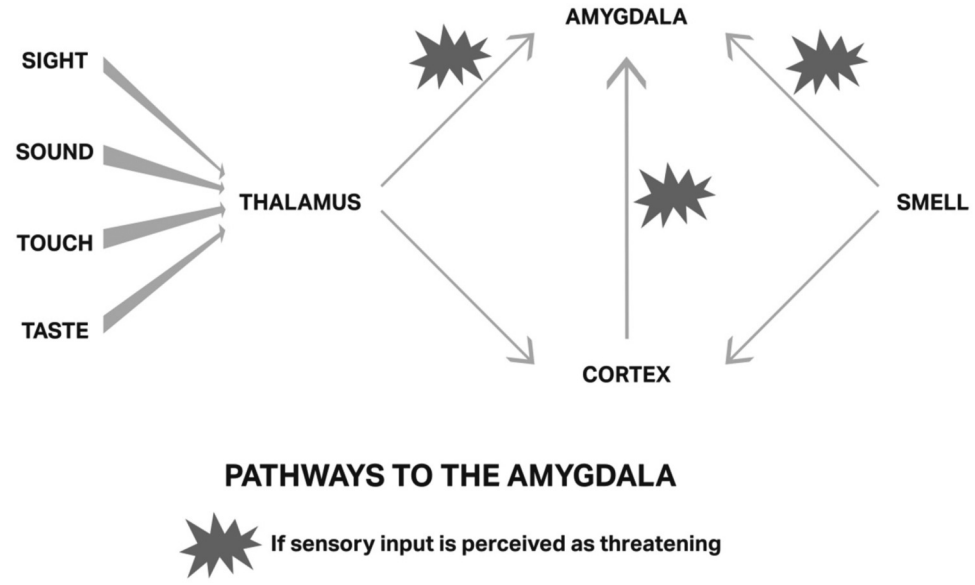

FIGURE 2
Pathways through the Amygdala: taken with permission from Ruden, Primer (32).

Repetitive touch applied in HT sessions is proposed to have a similar effect. Oxytocin, a nanopeptide that has several functions throughout the brain and body, is associated with a sense of safety and psychosocial connectedness (39). Moreover, nurturing touch can also reduce blood pressure, and enhance heart rate variability (40). Touch performed in the right manner creates connection to and engagement with self and others (41). The type and quality of touch is a crucial element in HT. Empirical work focusing on touch in HT found that a downward change in SUDs and change in brain function, measured shortly after the session, occurred within a single Havening session (42). Further analysis of Sumich's research suggests a reduction in anterior temporal lobe activity following a single 20-min session of HT (in Press, 2025). Whilst Sumich acknowledges that the EEG methods used in the study do not directly assess the amygdala function, they suggest that the reduction in anterior temporal lobe activity reflects activity downstream from the amygdala.

Ruden coins the term "electroceuticals", which refers to various biological processes proposed to mitigate the stress response and disconnect the distressing memory from its physiologically encoded components. That is, dissociating the memory from the individual's physiological/emotional response to it (2). In the following section, three key concepts in HT are unpacked related to delta wave electrical activity, biochemical processes, and depotentiation.

3 Delta wave electrical activity, biochemical processes, and depotentiation

Evidence from neuroscience suggests that the electrical activity in the body, or oscillatory activity, is connected with a variety of perceptual, sensorimotor, and cognitive processes (43). For example, there are suggestions that delta oscillations in memory reactivation occur, although this requires further empirical work to verify (44). These slow-frequency waves (0.5–4 Hz) are typically predominant during deep non-REM sleep but can also be induced during certain meditative and therapeutic states (45, 46), and potentially occur in a session of HT. However, we need to be cautious in making proven associations and acknowledge this is a theoretical proposition requiring further empirical examination. [For a more nuanced neuroscience review on Delta oscillations/waves see a review by Knyazec (42)].

Figure 3 shows the different brain waves or oscillations in the delta frequency, and how Delta waves induce a profound relaxed state akin to deep sleep.

The key effects of these Delta waves are summarized in Table 2.

In the context of HT, delta waves play a theoretically crucial role in emotional processing and neural depotentiation. In the context of perinatal mental health, delta waves generated through HT may help reduce anxiety, process birth trauma, and enhance maternal well-being by fostering a deeper sense of relaxation and emotional balance; in effect improving the person's landscape, that is, increasing resilience and capacity to meet the stressors of the world without or at least minimally being triggered.

When a distressing or traumatic event occurs, synaptic potentiation takes place in the amygdala, strengthening neural pathways that reinforce the emotional intensity of the memory. Table 3 shows the key electrical, biochemical and hormonal processes involved in potentiation, and highlights how a traumatic encoding event produces an actual physiological alteration in our neurological structures permanently. The original event, such as the woman described previously who experienced the massive postpartum haemorrhage, would,

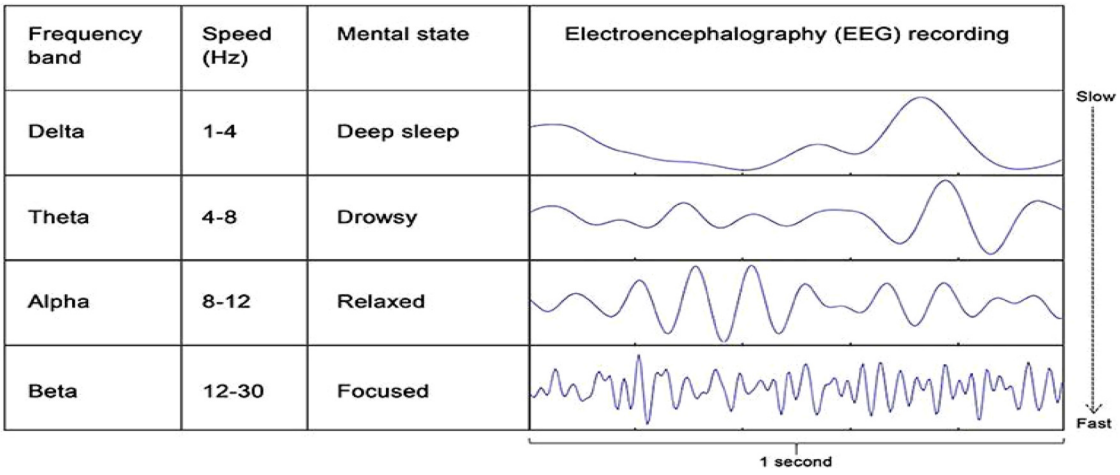

FIGURE 3
Brain waves: https://kids.frontiersin.org/articles/10.3389/frym.2020.00096 accessed 25/3/25.

TABLE 2 Four key effects of delta waves.

Delta waves	Effect
Emotional regulation	Delta waves are associated with reduced activity in the amygdala, promoting a state of calm and decreasing the intensity of emotional reactivity.
Neurochemical modulation	Delta wave activity increases the release of serotonin and oxytocin, which counteract stress hormones like cortisol and norepinephrine, enhancing emotional stability.
Memory reconsolidation and depotentiation	The presence of delta waves facilitates synaptic depotentiation, a process in which AMPA receptors are removed from synaptic connections, weakening the neural pathways that encode distressing memories. The AMPA receptor or AMPAR is an ionotropic glutamate receptor (iGluR) mediating excitatory neurotransmission in the central nervous system (CNS).
Increased neuroplasticity	By inducing a relaxed, receptive state, delta waves promote neuroplastic changes, allowing the brain to reprocess past experiences in a less distressing way.

TABLE 3 Electrical, biochemical and hormonal processes involved in potentiation.

Potentiation process	Action of the processes
Calcium influx	In response to emotional distress, calcium ions enter neurons through NMDA receptors, initiating intracellular signaling cascades.
AMPA receptor upregulation	The presence of calcium activates protein kinases, leading to the recruitment of additional AMPA receptors to the synaptic membrane. This strengthens the synapse, making it more responsive to future triggers.
Neurotransmitter release	Glutamate, the primary excitatory neurotransmitter, is released in greater quantities, further reinforcing synaptic strength and increasing emotional reactivity.
Stress hormones	Cortisol and norepinephrine enhance memory encoding, solidifying the distressing experience in long-term storage.

according to Ruden, become permanently encoded through synaptically connecting any of the four components. Ruden (14) explains how any one of the components of a traumatizing memory when recalled, consciously or unconsciously, can cause an individual to re-experience the traumatic event as if it was occurring for the first time.

Initiation of a potentiation process can therefore have short- and long-term consequences for women experiencing traumatic childbirth events. Yet this process can be reversed through HT enabling depotentiation. Ruden describes depotentiation as the key mechanism by which HT facilitates emotional healing (14, 32). HT, Ruden theorizes, disrupts this process of potentiation by generating oscillations in the delta frequency, triggering a neurochemical shift that ultimately reduces the excitability and strength of these synaptic connections that maintain distressing emotional memories. Ruden suggests that this cascade of events causes depotentiation of the AMPA receptors at the synaptic membrane, which are activated when the distressing memory is recalled. It is theorized that an enzyme called calcineurin removes the phosphorous molecule that anchors the AMPA receptors, and the receptors are then removed from the surface membrane by a process of endocytosis (1).

Gentle touch used in HT also sends signals to the brainstem, promoting the release of serotonin and oxytocin, counteracting stress responses. GABA, a primary inhibitory neurotransmitter, also has a calming influence on the nervous system that helps reduce anxiety (47). This effect may lead to lowering stress by potentially desensitizing traumatic memories, creating a sense of well-being and inducing relaxation.

In sum, Ruden suggests that the Havening touch signals safety, and the cascade of events at the synapse effectively weakens the encoded traumatic memory. Theoretically, this depotentiation, and the emotional charge associated with distressing memories is reduced, allowing individuals to recall past experiences without experiencing the same level of stress, fear, anxiety, or anger (2). Further empirical studies are required to confirm these physiological effects in HT.

In the context of perinatal mental health, it is presently proposed that delta waves activated through HT would help reduce anxiety, process birth trauma, and enhance maternal well-being by fostering a deeper sense of relaxation and emotional balance. This would be expected to strengthen resilience and capacity to meet the stressors of the world, whilst reducing the risk of being triggered during therapy. Returning to the woman who experienced childbirth trauma who is subsequently triggered into emotionally charged responses to the smell of coffee and blood, those emotional responses can be fully or partially diminished through the depotentiation of the AMPA receptors. This does not mean that the recall memory is removed. After the depotentiation, the recall is no longer accompanied by an emotionally charged response.

The following five steps summarize the theoretical impact of HT:

1. Delta Wave Induction: The gentle touch and rhythmic nature of Havening generates oscillations in the delta frequency, which have a calming effect on the nervous system.
2. AMPA receptor Removal/depotentiation: Delta waves trigger the internalization of AMPA receptors, reducing synaptic responsiveness to stress-related triggers.
3. GABAergic Modulation: The production of gamma-aminobutyric acid (GABA) is increased, inhibiting excessive excitatory signaling and restoring emotional balance.
4. Serotonin and Oxytocin Release: These neurochemicals promote relaxation, bonding, and resilience, counteracting the effects of cortisol and norepinephrine.
5. Electrophysiological Stabilization: By reducing hyperactive electrical activity in the amygdala, Havening helps shift neural networks toward a more adaptive state, preventing automatic emotional reactivation.

These biochemical and electrical changes may explain why individuals who receive HT often report feeling detached from previously distressing memories, experiencing them as less emotionally charged. In the perinatal context, this mechanism has been observed by midwives trained in HT who apply this modality to help alleviate trauma associated with childbirth, postpartum distress, or perinatal anxiety, exemplified through four case studies in section 7.

3.1 Havening techniques sessions

The HT practitioner works with five basic Havening techniques (see Table 4). There are other techniques used, but these are the foundational ones. Several techniques can be used in a single session, according to the situation.

Havening Techniques sessions are usually 60–90 min in length, with the Havening touch typically lasting 20–40 min. Sessions begin with time for connection between the woman and the Havening practitioner, laying foundations for feeling safe and calm. The science behind HT and the process are both fully explained, and if the woman feels able, she shares the experience, emotion, or self-belief that she would like to resolve. The woman is then guided to express what her needs are, and how the trauma has manifested; cognitive, autonomic, somatosensory, and emotional effects are explored. A careful history is essential, as there may be other life experiences or events that are significant; this makes up what is called the landscape of the client in HT. For example, the woman may describe a fear of giving birth, but beneath this may be first-hand experience of a traumatic birth, a traumatic birth that she has been present at, or/and a significant life event where she felt vulnerable, exposed, or under threat. It is important to note that the benefits of HT still occur even if a traumatic event is not shared verbally in detail with the Havening practitioner; the event only requires it to be recalled. The Havening practitioner decides which of the Havening Techniques would be most appropriate to start with, and sometimes more than one technique is used.

To illustrate, one of the five foundations techniques, Event Havening (EH), is described here within a session. The woman and practitioner sit facing each other and alongside, having ascertained whether the practitioner will apply the Havening touch, or the woman would prefer to do this herself. The woman closes her eyes and for a moment, recalls the part of the memory that represents the peak of her distress. As mentioned previously she may describe verbally, or not, the memory of the event. She is asked to remember what she saw, heard, smelt, and felt, recalling all the sensory information, and to report a Subjective Unit of Distress (SUD) score where zero reflects calm and no distress, and ten

TABLE 4 Five foundational havening techniques.

Type of havening technique	Therapeutic description
EH - Event Havening	This is the main technique at the core of Havening techniques (HT). In this technique the client is asked to recall a distressing event and provide SUDs (see Table 1: Abbreviations and acronyms). HT is applied while distractions are used. Distractions are simple mental tasks such as counting, humming, naming different countries, etc.
TH - Transpiration Havening	Clients are asked to identify difficult emotions, such as anger, guilt, or abandonment. Each emotion is repeated as touch is applied until the emotion is no longer felt or has shifted to a different emotion. TH is repeated until the identified emotions have been released, i.e., transpired. TH is not recommended during pregnancy due to the potential for emotional flooding. Instead, a hybrid of TH/EH is used. Once the emotion is identified, a SUDs is taken, and distractions are used. TTH - Talk Transpirational Havening, where client is speaking freely while HT is applied, is a gentler version that is less likely to trigger emotional flooding.
OH – Outcome Havening	Clients are asked to imagine a different outcome from the traumatic event while HT is applied. For example, if the event happened during childhood, the client could be asked: "Can an adult come and save you from this situation?" Likewise, this can be used for future events such as preparation regarding fear of going to a hospital appointment.
RH – Role Havening	The Haveners take on the role of the "antagonist" and provide the opportunity for the client to have a conversation with said antagonist. For example, the Havener would invite the client to speak to an abusive or neglectful parent and express feelings that would otherwise not be possible. They can also ask for the abuser to say something specific in response.
AF - Affirmational Havening	Normally used once the SUDs are three or less. Clients are asked for their own affirmations, such as "Calm," "Light," "Peaceful," or "Hopeful."

There are other techniques too depending on client needs. For example, Metaphorical Havening, Photostat, Mantra Havening, and Colour Havening.

represents extreme distress. The woman then clears her mind of these thoughts, and Havening Touch begins, alongside distractions.

Distractions are used to interrupt the continuous activation of the amygdala, preventing distressing thoughts from persistently resurfacing in the session by replacing the working memory (located in the prefrontal cortex) with simple mental tasks. Distractions can be cognitive, visual or auditory, and are often light-hearted and playful, for example, naming as many dog breeds as she can, counting backwards in 3s from 30, describing the stages in making a cake, or humming a tune, spelling a word backwards or walking on a beach counting each step. These mental distractions steer the woman away from thinking about the distressing memories, emotions and beliefs whilst the electrochemical process takes place to delink the neural pathway towards a fight or flight, or other sympathetic nervous system response. The overall aim of the session is to depotentiate the AMPA receptors in the Amygdala as described above.

Each round of HT with distractions (e.g., EH) is done for 5–7 min, corresponding with the length of time the calcium channels remain open between synapses. The woman then returns to the memory/emotion/belief and considers her SUD score and how the memory is presenting itself. The SUD score almost always reduces, and the memory tends to become more distant. Often the woman will feel an emotional disconnection from the memory, sometimes feeling that she is no longer present within the event. Additional HT may be used to reduce any negative emotions or self-belief remaining, and to strengthen resolve. The woman usually reports feeling "light" and relaxed on completion of the session, and the therapeutic effects are immediate. Each HT session ends with a debrief; the woman is asked to recall the memory again and CASE (Cognitive, Autonomic, Somatosensory, Emotional) is again considered to ensure that depotentiation has occurred. Figure 4 presents a series of four pictures demonstrating Havening Touch within a session; notice the self-havening touch and the practitioner provided havening touch. Written informed consent for this publication was obtained from the individuals in these images.

FIGURE 4
Demonstration of havening touch. Taken with permission from https://www.willowtherapy.co.nz.

6 Impact of havening on perinatal mental health

As has been shown through the process of depotentiation, the emotional charge associated with distressing memories, such as a traumatic birth, can be reduced, allowing individuals to recall past experiences without experiencing the same level of stress, fear, anxiety, or anger. In the context of perinatal mental health, this means that individuals who have experienced birth trauma, anxiety, perinatal depression, or fear of birth can process these emotions in a way that diminishes their intensity, fostering greater emotional stability and resilience without impairing the mother-baby bond. As described in the introduction, traumatic birth experiences can result in morbidity. This can manifest as fear of subsequent births, anxiety and depression, a disruption in breastfeeding and the mother-infant relationship, and may even result in intergenerational trauma (48). Furthermore, a traumatic birth is also associated with an increased risk of self-harm, particularly for women experiencing postnatal depression (49, 50). Therefore, we contend that depotentiating AMPA receptor coded trauma is crucial for perinatal mental wellbeing and resilience.

Youngson (13) conducted a pilot research trial using HT with 29 participants who had experienced birth as traumatic and were experiencing intrusive symptoms of traumatic stress, some up to 20 years following birth. Youngson used the Impact of Events Scale (IES) to measure the severity of traumatic stress symptoms and found that 22 out of the 29 participants had an IES score indicating post-traumatic stress disorder (a score of 33 or above). Participants received individualised programmes of HT tailored to meet their needs. Findings show a 75% reduction in Post Traumatic Stress Disorder (PTSD) symptoms, with the average IES score reducing from 40 prior to Havening, to a score of 13 seven days after, and to a score of only 10, thirty days after Havening. Remarkably, 80% of the 21 participants with an IES score of 45 or less experienced rapid relief of PTSD symptoms after only a single HT session. Similarly, the impact of a single HT session on feelings of distress have been found in other empirical work on HT (42). Although Youngson's pilot study provides some encouraging evidence of how HT have a psycho-emotional health benefit during the perinatal period, more empirical research is needed.

In the following section we present four case studies to illustrate the impact HT can have on perinatal psycho-emotional health. Written informed consent was obtained from the individuals providing these case studies for use in this publication. Pseudonyms have been used to protect anonymity. See Table 5 for abbreviations and acronyms.

TABLE 5 Abbreviations and acronyms.

Abbreviations and Acronyms	Description and meaning
SUDs	Subjective Units of Distress Scale
CASE	Cognitive, Autonomic, Somatosensory, Emotions
EMLI	Event, Meaning, Landscape, Inescapability
ACEs	Adverse Childhood Events
HT	Havening Techniques
GABA	Gamma-aminobutyric acid (an amino acid)
AMPA(R)	α-amino-3-hydroxy-5-methyl-4-isoxazolepropionic acid (receptor)
NMDA	N-methyl-D-aspartate: a type of glutamate receptor, a ligand-gated ion channel in the brain activated by the neurotransmitter glutamate
G (number) P (number)	Gravida (number of pregnancies) Parity (number of births)

7 Case studies

7.1 CASE STUDY one: birth trauma. (Three HT sessions.)

Daisy was a 30-year-old woman, 25 weeks pregnant with her second baby, who presented with episodes of frequently recalling and crying over her first birth, a C-section. The most vivid and traumatic moment for her was when the doctor refused to honour her request to place the baby on her chest. Daisy was asked to recall the distressing moment and SUDs were calibrated at 9. Several rounds of distractions were used until SUDs was 2. Then RH was applied, where the midwife/Havener took the role of the doctor and asked for forgiveness for her lack of compassion, explaining that it was unintended. Daisy accepted her apology. Then OH was applied, where Daisy was invited to reimagine exactly how she would have liked the scene to have played out. Daisy sees the doctor kindly speaking to her and placing the baby on her chest. She was asked to imagine the feel of the warm and wet baby against her skin and to imagine smelling her baby. Daisy expressed feeling incredibly happy and was asked to repeat the word "happy" several times.

When asked to recall her C-section experience, she said: "Every time I think of my first birth, the experience is the opposite. All I can see is myself enjoying holding my baby." Daisy had a successful VBAC that she described as empowering and everything she hoped for.

7.2 CASE STUDY two: prenatal depression and birth trauma (Three HT sessions.)

Megan was a 36-year-old woman, 12 weeks pregnant with her third baby. She presented with severe prenatal depression with intrusive thoughts and suicidal ideation. She was unable to get out of bed and described a constant feeling of incredible sadness and "heaviness." Although this was a carefully planned and wanted pregnancy, she couldn't help having negative thoughts, such as: "This is the dumbest idea. You can't even take care of two kids, how are you going to take care of a third?" She often thought that if she died, it would "save everyone the trouble", as she put it. As a social worker herself, she was able to recognize herself as clinically depressed.

Megan's first birth was very traumatic for her, and never sought therapy around her experience. Her son was born prematurely, and was given a slim chance of survival. She recalled the several months that she and her husband took turns watching over him in the hospital, often not knowing if he would make it. Her SUDs score

when recalling that period was a 10, and several rounds of distractions were applied until the SUDs were 2. The word "safe" was used as an AF. Megan began to reveal that even though her second birth was uneventful and even powerful, she had suppressed the memory of the first birth until now, and believed that this prenatal depression might be linked to that first birth. She was surprised but also relieved by this revelation.

In subsequent HT sessions, Havening touch was applied while she explored her feelings around her first birth. When she recalled fear, distractions were used until SUDs went down to zero. When sadness came up, she was asked what the opposite of sadness would be. She said "happy," and she was asked to alternately repeat the words "sad" and "happy." (Opposite Havening). Although she was feeling a little skeptical, she followed the instructions. To her surprise, Megan eventually felt what she described as light and joyful. As AF, she was invited to repeat "light and joyful."

Megan's mental state remained positive during her pregnancy and six weeks postpartum. A referral to other forms of therapy was deemed unnecessary. As Megan was approached for permission to use her case 6 years later, she reported that her depression did not return after her HT sessions.

7.3 CASE STUDY three: birth trauma and tokophobia

Sunny was a 31-year-old woman at seven months postpartum and presented with birth trauma after a c-section. She found herself constantly crying and feeling on "high alert". She had also been unable to drive past the hospital where the birth took place. She expressed feelings of guilt, anxiety, and lacking in confidence as a mother. In addition, she recently found out that she was pregnant and was experiencing feelings of dread around her pregnancy and birth.

Sunny experienced a panic attack as she was wheeled into the theatre for her c-section. She connected it to a similar childhood event that was incredibly traumatic, where she was also being wheeled into surgery alone, separated from her mother, and felt terrified as she saw the surgical instruments in the theatre and the mask was pressed down on her face. She was put under general anesthesia for the c-section because of her emotional state. On waking up, she felt emotionally numb and was "detached" when she first met her baby. The numbness lasted a few weeks, followed by feelings of anxiety and flashbacks to the moments before the c-section. As she was speaking, her SUDs were calibrated at 10. Event Havening was immediately performed with four rounds of distractions until SUDs went down to 0. In the debrief, Sunny expressed feeling relaxed and calm and able to recall her birth experience without distress.

Transpirational Havening (HT) was done on her remaining feelings of anger and guilt, after which she described a dense fog being lifted from her. When asked to recall her childhood surgical experience, Sunny was surprised that some of the "emotional heat" had already gone from this. Outcome Havening was used to help her change the outcome of the childhood surgery into a more positive experience. She imagined her mother taking her into the theatre and holding her hand, instead of being taken in alone feeling vulnerable and scared. In the debrief, Sunny expressed a feeling of peace and safety in place of vulnerability and panic. Sunny reported post Havening that she finally bonded with her baby and felt more confident in her mothering and believed that her son was more relaxed because of her new inner calm. She also reported feeling more positive in her current pregnancy.

7.4 CASE STUDY four: tokophobia

Mia was a 27-year-old woman at 33 weeks, pregnant for the first time, who presented with anxiety about her upcoming birth. She was concerned she might feel out of control; her personal agency potentially being compromised during childbirth. She felt so vulnerable and powerless to the labour and birth process that she considered having an elective c-section, but was also worried that surgery would create its own problems.

When asked if there had been experiences in her past where she may have felt similarly vulnerable and powerless, Mia disclosed that although she had a relatively happy childhood, her parents had been very strict. As a punishment, she was often shut in her wardrobe for what felt like a long period of time. One distressful memory stood out when she heard the front door of the house close and thought her parents were leaving. As Mia was speaking, SUDs were calibrated at 7. Event Havening (EH) applied using four rounds of distraction until SUDs was at 0. Following that session, Mia expressed feeling "emotionally light" and that when she recalled her experiences, she felt she was "a distance away, and the picture was blurred". It was as though the event was happening to another girl, not her.

Next, Mia wanted to work on her low self-esteem, especially when it came to successfully completing something. As a child, she frequently doubted her abilities and worried about failing. Aspirational Havening (AH) was applied, asking her to focus on the emotions that she wanted to feel about herself. Outcome Havening was used to visualize the labour and birth that Mia wanted, paying particular attention to her ability to make decisions for herself, and her own inner strength. She also visualized having her midwife for support, as well as the people she chose to be present. Mia was taught to self-haven to continue this work daily to strengthen her resolve at home. Post havening, Mia reported feeling much less anxious about her upcoming birth and feeling confident about birthing physiologically. Subsequently, Mia birthed physiologically reporting that her birth was a positive and empowering experience.

7 Discussion

In the case studies we have shown how Havening reduces the emotional impact of distressing experiences, allowing the woman to recall past challenges without being overwhelmed by fear, anxiety, or distress. Moreover, by reinforcing her adaptive coping mechanisms, HT helps the woman to reprocess past experiences in a way that fosters new perspectives, releasing her from the cycle of

fear or distress. She is then able to develop a more empowered and constructive outlook on her past and current childbirth experiences. Ultimately, HT can help to release the woman from the weight of her past traumatic experiences or emotions, along with the ripple effects of this trauma. The simplicity and accessibility of HT enable a woman to practice self-care techniques independently, reinforcing a sense of control over her emotional state and experience, empowering self-healing through the self-directed ability for ongoing self-havening. The four anecdotal case studies from practice support possible benefits that Havening can have during the perinatal period, illuminating the ripple effects that unresolved trauma and fear can have on maternal wellbeing, birth outcomes, and the transition to parenthood.

The case studies show that there is often more depth to the trauma/emotion/belief than is initially presented and understood, the unfolding nature of this therapeutic process, and how Havening practitioners safely support this exploration and resolve. Havening practitioners are trained to listen very carefully not just to the words that are spoken but are highly attuned to what is evident within the person's words, and what is expressed physiologically. Using CASE (Cognitive, Autonomic, Somatosensory, Emotions) in addition to SUDs helps practitioners to holistically assess the effects of the trauma on the person's emotional and physiological wellbeing. CASE is assessed at the start of the HT session, used as it unfolds, and is also assessed on completion of the session to ensure that depotentiation has occurred.

The case studies provide some appreciation of the careful history taking required, an incredibly important part of Havening. It is crucial that practitioners are always attuned to what could be underpinning or influencing the person's traumatic experience/emotions. This is particularly relevant in perinatal Havening, due to the significance that trauma – past and present, could have for the woman as she travels along the childbirth continuum. According to the founders of Havening Techniques, Ruden and Ruden "history taking is the key to removing the unwanted traumatically encoded pathway" (51 p. 128). Adverse Childhood Events (ACEs) increase a person's vulnerability for traumatization (14). Ruden (14) advocates for always looking beyond the trauma that is initially presented and seeking earlier life events that may have predisposed the landscape of the brain to vulnerability. In our Havening practices we, the three authors, have found that ACEs are a common occurrence with women presenting with trauma during the perinatal period, both representing trauma in themselves, and underpinning later traumatization.

The case studies reveal how HT sessions provide relief in psycho-emotional distress in the perinatal domain, yet it remains unclear if HT would as be effective for perinatal related physical pain. A 2018 study explored surgical pain and the use of HT, the findings did not indicate reduced surgical pain or less use of pain relief medication in the short term (34). This study was not focused on perinatal surgical pain and further empirical work is required to establish if HT can be a useful adjunct to care in the context of perinatal related physical pain. Hypothetically, researchers have suggested that HT stimulation of the brain's intrinsic potential to enable psychophysiological resilience and improve wellbeing with a non-pharmaceutical intervention with no known side-effects is intriguing (33). This would be a welcome addition to therapeutic approaches in the perinatal context wherein pharmaceutical use could be reduced. The authors have certainly encountered relief of physical perinatal related physical pain in HT sessions when addressing psycho-emotional distress. Therefore, the link between psychological distress and physical pain in the context of perinatal HT necessitates further examination.

Reflecting on the four case studies, three areas are evident and are important to emphasise in terms of HT sessions: (a) Havening is relational and the comportment of the Havening practitioner is crucial, (b) Havening is intimate, it involves touch, and (c) Havening works on events that are personally challenging.

It is important to highlight the therapeutic relationship between the Havening practitioner and the client. Creating, being, and holding a safe place for people to be and feel nurtured, seen, heard, and understood is fundamental to HT being efficacious. People must feel safe to share their experiences and to freely and authentically express their emotions. During the HT process the person moves into a very relaxed state, and many come to HT sessions having been traumatized by others including health care providers, so feeling safe to revisit their thoughts and experiences, and to relax into the evolving therapeutic process whilst feeling metaphorically held, is incredibly important.

Not all people having Havening feel comfortable, or able, to verbally share the details of their traumatic experiences/emotions/beliefs. This is by no means a barrier to Havening being efficacious provided that the events/feelings/beliefs can be brought to the forefront of the mind and silently revisited by the person at the start of the Havening session, and when required as the session unfolds. This is known as content-free Havening. Not having to share these details can be of significant benefit if the person feels so traumatized that they simply cannot verbalize their experiences or feelings, or they feel embarrassment, guilt, or shame. This can be particularly helpful when working with teenagers.

Similarly, not all people having Havening are comfortable with touch. However, Havening touch can be done by the practitioner, through self-havening, or a support person whilst the Havening practitioner facilitates the session. These options are always offered at the start of each session, and a check-in is done to ensure that the person is comfortable with the practitioner applying the touch if this was the option chosen (see images in Figure 4). All options effectively generate the desired electroceutical changes (i.e., oscillations in the delta frequency and neurochemicals). Should the person apply havening touch themselves they need to be able to do this continually, and this can sometimes be challenging and requires lots of encouragement when they begin to feel intense relaxation. In our practices most women prefer Havening practitioners to apply the touch. If the woman feels comfortable with this, feeling physically held can be therapeutic and this can help them to relax into the process.

8 Conclusion

The etiology of the word trauma from the Ancient Greek word "*τράυμα*" means "wound" or "hurt". Although associated with

physical injuries does encompass emotional and psychological wounding. Furthermore, it can be construed that the physiological impact of psycho-emotional trauma on the amygdala is akin to physical wounding. This article has focused on this wounding in the perinatal mental health domain highlighting the psycho-emotional wounding or deep hurting (past and present), and spiritual distress (i.e., loss of meaning and purpose) of some women as they traverse the perinatal period. The modality of HT has been presented as a potential healing balm to this wounding.

In this theoretical discussion and case study presentation we have shown how in the perinatal period, the psycho-sensory therapy of HT has benefits which anecdotally translate into improved maternal well-being, reduced vulnerability to stress and anxiety, and a greater capacity to bond with the baby in a calm, connected manner. By addressing amygdala-driven emotional dysregulation, HT has the potential to alleviate symptoms of perinatal anxiety, depression, PTSD, and phobias. Women who experience traumatic births or fear surrounding childbirth may find relief through HT's ability to reframe distressing memories, discover new meanings related to traumatic experiences and reduce physiological stress responses. Additionally, its purported capacity to enhance oxytocin release supports maternal-infant bonding, fostering a more positive postpartum experience for the mother-baby dyad. As either a stand-alone modality or an adjunct to traditional mental health treatments, HT offers a gentle, empowering, and non-invasive accessible healing method to enhance emotional and spiritual well-being during the perinatal period.

Havening Technique's ability to modulate amygdala function and reduce distressing emotional memories presents a promising adjunct to traditional perinatal mental health interventions. Dr. Ruden's theoretical framework highlights the neurobiological basis for its effectiveness, emphasizing the role of delta waves in depotentiating traumatic memories. Whilst theoretical reasoning and anecdotal practice-based experiences are compelling, it is important that the use of and impact of HT during the perinatal period is supported with more empirical studies. Further research is needed to establish HT's long-term efficacy and integration into perinatal care frameworks. Nonetheless, preliminary evidence and anecdotal experiences suggest that HT may serve as a valuable tool in fostering mental and spiritual wellbeing, and psycho-emotional resilience during the perinatal journey.

Data availability statement

The original contributions presented in the study are included in the article/Supplementary Material, further inquiries can be directed to the corresponding author.

Ethics statement

Written informed consent was obtained from the individuals within the four case studies as well as the images used, for the publication of any potentially identifiable images or data included in this article.

Author contributions

SC: Writing – original draft, Writing – review & editing, Project administration, Methodology, Conceptualization. CM: Writing – review & editing, Methodology, Resources. KS: Resources, Data curation, Writing – review & editing.

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Conflict of interest

The authors declare that the content of this article was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest. Positionality of authors. Kimm practices Midwifery in the USA and is a Havening Trainer specializing in Perinatal Havening. Susan and Christine have Havening practices in New Zealand that focus primarily on women and perinatal mental health. All three are midwives with a keen interest in psycho-emotional and spiritual health across the perinatal period.

Susan and Christine have conducted research and taught at tertiary level in subjects related to this domain.

Generative AI statement

The author(s) declare that no Generative AI was used in the creation of this manuscript.

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Illuminating birth: exploring the impact of birthing environment lighting on labor

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Introduction: Numerous factors influence the birth experience and outcomes, both positively and negatively. We aimed to investigate the relationship between the birth room environment and light condition during birth and their effects on birth method, perineal health, and birth experience.
Method: A longitudinal cohort study was conducted in a medical center in Northern Israel. Participants completed self-report questionnaires during the third trimester of their pregnancy and again 72 h post-birth (T1 and T2, $n = 126$). Initially sociodemographic data and reproductive history were collected, as well as preparation and plans for birth. Data about birth outcomes and birth complications were gathered from electronic records. Perception of the birth environment and the state of consciousness during birth (T2) was assessed using a valid questionnaire that includes 36 statements indicating the state of flow.
Results: Our study demonstrated a significant positive correlation between birth type and birth room light conditions. Vaginal births predominantly occured under dim light (86.36% vs. 68.3%). Moreover, a negative correlation was observed between perineal tears and dim light levels ($p = 0.0033$). Regarding maternal mental state during birth, dimmer lighting correlated with heightened experiences of Unambiguous feedback flow state ($p = 0.003$).
Discussion: Dim light was correlated with higher rates of vaginal birth, fewer perineal tears, and enhanced maternal immersion during birth. Although promising, these associations are correlational and require further exploration. Our findings suggest that the birth room is not merely a physical setting but a dynamic environment where sensory cues and psychological states interact.

KEYWORDS

natural childbirth, birth setting, perineal injuries, flow mental state, birth experience

Introduction

In recent years, there has been a surge in research examining the impact of the birthing room environment and design on birth outcomes and maternal experience (1–3). Ensuring a positive birth experience is vital for mothers and newborns, laying the groundwork for a healthy start. It not only encourages bonding and facilitates successful breastfeeding (4), but also impacts the mother's emotional well-being, potentially lowering the risk of postpartum depression and anxiety (5). Conversely, negative birth experiences often involve more medical interventions like instrumental births and unplanned caesarean sections, which may lead to adverse mental effects postpartum (6).

Goldkuhl et al. (3) found that the birthing room environment (i.e., physical space, human interaction, and institutional context) plays an important role in birth outcome and women's "sense of agency". A sense of agency in childbirth refers to a woman's feeling of being in control and able to make informed decisions throughout the birthing process. It is one of the crucial factors leading to a positive birth experience (7). Balabanoff et al. (2) observed that birth room design and the type of lighting might affect melatonin production, which acts together with oxytocin to trigger birth. On the other hand, Ayerle et al. (1) could not prove that alternatively designed birthing rooms (including specific lighting types) affected the type of birth, analgesia or perineal health but found a positive effect on women's birth experience.

Women seeking a more physiologic birth sometimes opt for home births, where familiar surroundings can foster relaxation and reduce time-related stress. This environment may facilitate adherence to a natural birth process, potentially decreasing perineal injuries (8). Home births may be associated with increased maternal confidence, personalized support, and a serene environment. Greater control over the birth process, including choice of position, could contribute to improved perineal health and overall birth experience (7–9). The subjective birth experience, particularly during an unanesthetized physiologic birth, can be described by the phenomenon of flow during an intense and demanding psycho-physiological experience (10, 11). Experiencing flow means being focused on one's acts and goals, being absorbed in the moment, feeling highly confident in one's ability to succeed, and feeling accomplishment and joy during the event—even though strong pain is part of the experience (12). Usually, the extraordinary experience of flow is discussed in connection with experiences such as running a marathon (13–15) or engaging in other intense sports activities (16). A recent study demonstrate that the unique sensations and feelings of the flow mental state can successfully capture the event of childbirth, a unique, demanding psycho-physiological activity experienced by birthing women (17). Experiencing flow is perceived highly positive, psychologically and physiologically, thus considered a positive peak experience, which is empowering and might contribute to well-being (18, 19).

Aligned with the World Health Organization guidelines, healthcare providers should prioritize a positive and empowering birth experience for all women. Key recommendations include limiting episiotomies, promoting upright positions for low-risk births, and fostering a supportive environment through continuous companionship. Empowering women with choices, providing encouragement, and building confidence in their ability to give birth—are essential for a positive birth outcome (20).

The birth environment, whether at home or in a hospital, influences birth outcomes. Research suggests that hospital births result in fewer physiological births and more perineal tears (9, 21). Given that most women in industrialized societies opt for hospital births (22), it is crucial to explore whether introducing simple changes in the typical hospital birth environment could lead to better outcomes.

Given the inconclusive findings of studies on the effect of birth room design on birth outcomes, we conducted this study to investigate the potential link between the perception of birthing environment lighting and birth outcomes such as birth mode, perineal health, and maternal mental state. By examining both objective and subjective aspects of childbirth within a standard hospital setting, we sought to contribute to a deeper understanding of factors influencing birth outcomes.

Methods

Study setting and participants

Participants were women who gave birth at Ziv Medical Center between January 2023 and September 2023. Women were recruited during the third trimester at routine antenatal care visits, the obstetric emergency room, or the post-date clinic.

Inclusion and exclusion criteria

Eligible participants were women aged 18–45 with a singleton pregnancy at ≥34 weeks gestation, who completed the initial T1 questionnaire before the onset of labor. Women were excluded from the analysis if they: (a) had an elective (planned) caesarean section, (b) did not complete the postpartum T2 questionnaire, (c) had missing or incomplete data on lighting perception, birth outcomes, or flow score. Only births with available data from both self-reports and medical records were included in the final analysis.

Ethical considerations

All participants provided written informed consent before entering the study. Ethical approval was granted by the Helsinki Committee at Ziv Medical Center (approval number ZIV-0125-22).

Measures

Lighting conditions

Information regarding the parturient perception of birth room lighting was collected in the T2 questionnaire. Women were asked to "mark the correct statement" regarding the lighting in the birth room during most of the birth process. The options were I. The room was dark/dim II. The room was bright.

Flow state

The 36-item Flow State Scale (12) was used to measure subjective birth experience within 72 h from birth (T2). It assessed flow as a positive peak experience—a state of complete

immersion and focus, where physical and mental efforts align– on a 5-point Likert scale. The sum score ranges between 36 and 180, with higher scores indicating higher levels of experienced flow. The Cronbach's alpha reliability in the present study was 0.944.

Birth outcomes and background variables

Information on the birth process and birth outcomes was obtained from the electronic birth records, including vaginal birth (i.e., vaginal birth with or without epidural analgesia), vacuum extraction, unplanned cesarean surgery, or planned cesarean surgery. We included information about perineal tears, including the specific tear degree. Women self-reported their ethnicity, years of education, childbirth intentions (preferred mode of birth), and childbirth preparations (courses, online forums, birth instruction books, etc.).

Statistical analysis

For the statistical analysis, SPSS version 27 was used. A Chi-Square test investigated the relationship between birth mode and lighting conditions. The impact of lighting conditions on the severity of vaginal tears was assessed using the Kruskal–Wallis test due to the ordinal nature of the vaginal tears data and the non-normality of the distribution. Finally, the self-reported Flow State Scale scores were compared between lighting conditions using the Mann–Whitney *U* test.

Results

In total, 157 women consented to participate. Nineteen were excluded due to incomplete T2 questionnaires, and twelve additional participants underwent planned caesarean sections. The final sample comprised 126 women who completed both questionnaires and met all eligibility criteria (see Figure 1).

The mean age of participants was 30.62 years (±4.69); the majority having an academic education (64.7%). Most participants were Jewish (70.48%). The average gravidity was 2.72 (±1.91), and the average parity was 2.32 (±1.66). A third of the study population were nulliparous (33.33%). The analysis of potential correlations between demographic variables identified no statistically significant associations. Thus, demographics were not considered possible confounders in further analyses (Table 1). In contrast, significant differences were found for two obstetrics characteristics (i.e., type of birth and vaginal tears). These variables were further examined in the statistical analysis (Table 2).

Our study identified a significant association between birth mode and light perception ($p = 0.033$). *post-hoc* comparisons showed that vaginal births predominantly occurred under dark/dim lighting (86.36%, $p = 0.001$), while assisted vaginal (vacuum) births were more frequent in bright room conditions. Specifically, 21.7% of women delivering in bright rooms had vacuum deliveries compared to only 3.33% of those giving birth in dim lit rooms ($p = 0.031$). Unplanned Cesarean section rates did not differ between the rooms (Table 2).

In our cohort, there were no 4th-degree tears. The analysis revealed a statistically significant difference in the degree of vaginal tears under the different lighting conditions during birth (dim or bright, $p = 0.003$). *post-hoc* comparisons showed that women who gave birth in dark/dim lighting predominantly did not have vaginal tears (57.0%, $p = 0.006$), while those giving birth in bright room conditions predominantly had 1st and 2nd tears degree (50.0%, $p = 0.003$). No differences were found for 3rd tears degree (Table 2).

Evaluating differences in self-reported flow during childbirth based on lighting conditions in the birth room showed that women in dimly lit rooms reported higher flow levels ($p = 0.033$). Simply, women in dimly lit rooms experienced greater flow

TABLE 1 Baseline demographics and clinical characteristics.

Characteristic	Bright room (*N* = 60)	Dark/Dim room (*N* = 66)	*P* value
Age (y)	30.5 ± 3.9 (23–37)	30.7 ± 5.4 (21–42)	$p = 0.09$[a]
Educational Level			$p = 0.29$[b]
Non-Academic	26 (43.3)	18 (27.3)	
Academic	35 (56.7)	48 (72.7)	
Gravidity	2.6 ± 1.7 (1–6)	2.7 ± 2.1 (1–8)	$p = 0.07$[a]
Parity	2.2 ± 1.5 (1–6)	2.4 ± 1.8 (1–8)	$p = 0.08$[a]
Nulliparity	20 (33.33)	22 (33.33)	$p = 0.16$[b]

Values are presented as *n* (%) or mean ± SD (range).
[a]Mann–Whitney Test.
[b]Chi-square Test.

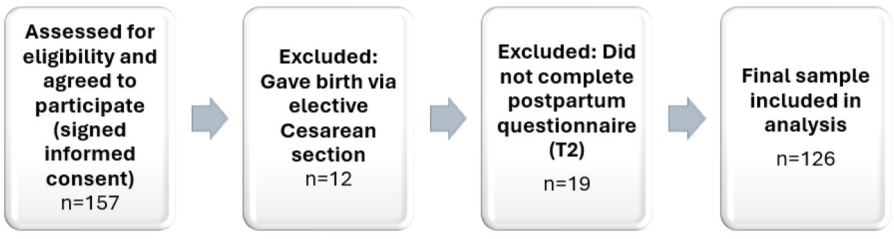

FIGURE 1
Participant recruitment and inclusion process.

TABLE 2 Labor parameters and interventions.

Characteristic	Bright room (*N* = 60)	Dark/Dim room (*N* = 66)	*P* value
Analgesia			0.23[b]
Without	12 (20.0)	20 (30.3)	
N_2O[a]	2 (3.3)	3 (4.5)	
Epidural	40 (66.7)	42 (63.7)	
Spinal	3 (5.0)	1 (1.5)	
General anesthesia	3 (5.0)	-	
IOL[b]			0.64[b]
No induction	31 (51.7)	37 (56.0)	
Induction of labor	29 (48.3)	29 (44.0)	
Type of birth			0.04[b]
Vaginal birth	41 (68.3)	57 (86.36)	
Vacuum	13 (21.7)	2 (3.33)	
Unplanned Cesarean section	6 (10)	7 (11.67)	
Birth weight (g)	3,392.2 ± 375.7	3,473.5 ± 375.3	0.99[a]
Episiotomy	11 (18.33)	10 (15.15)	0.63[b]
Vaginal tear			0.01[b]
0	24 (46.0)	43 (57.0)	
1–2	34 (50.0)	23 (43.0)	
3–4	2 (4.0)	0 (0.0)	
Flow[d]	104.9 ± 29.2	116.2 ± 25.0	0.03[c]

N_2O, Nitros Oxide; IOL, induction of labor.
Values are presented as *n* (%) or mean ± SD (range).
[a]Mann–Whitney Test.
[b]Chi-square Test.
[c]Student Independent *T*-test.
[d]Flow measured with the Flow state scale (FSS), Jackson & Marsh, 1996.

(116.18 ± 25.02) than those in well-lit rooms (104.93 ± 29.23, $p = 0.029$—Table 2).

Discussion

Our study combined self-reported experiences and data collected from clinical records to explore the relationship between birth environment, birth outcomes, and maternal states of consciousness. We found a high correlation coefficient between parturient 's report of dim light in the birth room and an increased likelihood of a successful vaginal birth, fewer perineal tears, fewer episiotomies, and a heightened tendency to experience the flow mental state.

The association between a dimly lit room and vaginal birth

Given the impact of the birth method on postpartum mental health, it's necessary to explore avenues that promote physiological births (23). Recent research highlights the impact of dimmed lights in birth rooms as directly associated with fewer emergency medical interventions (24). Our research demonstrated a significant positive association between vaginal birth and dim light in the birth room. As caesarean section rates rise globally, there is growing concern about the health implications for both mothers and infants (1). Optimal birth environments are characterized by dim light, minimal noise, limited medical intervention, and professional continued support. These factors lead to low stress, privacy, safety and calmness (2). Dimly lighted birth rooms contribute to privacy; empowering birthing women by fostering feelings of control and autonomy. This intimate environment promotes maternal confidence in her ability to have a natural birth (8). From a hormonal perspective, the relationship between circadian rhythm and birth time has been called "the biorhythm of birth," suggesting that myometrial activity is maximal at night, when melatonin levels are higher (25). Previous studies suggest that melatonin may act in synergism with oxytocin on myometrial receptors to enhance uterine contractility (26, 27). Moreover, it has been suggested that low, dim light may stimulate oxytocin production and influence melatonin levels, further contributing to the hormonal conditions favorable for labor progression (2). While this pathway is biologically plausible, it was not directly examined in our study and remains hypothetical in our context.

Creating a birth environment reminiscent of a private home with dim lighting helps birthing women focus, feel comfortable, and experience fewer disruptions (8). By promoting such conditions, it may be possible to support higher rates of vaginal birth and reduce the likelihood of unplanned caesarean sections.

A link between a dimly lit room and perineal tears

Perineal trauma affects 53%–79% of women after vaginal birth (28, 29). First and second-degree lacerations are common, but severe tears (3rd and 4th degree) are more prevalent in nulliparous women (29). Risk factors include maternal position, operative birth, epidural analgesia (21, 30), ethnicity, nulliparity, maternal age, fetal weight, perineal edema, birth stage, and hospital birth (9, 21, 29). Lithotomy position, common in hospitals, increases risk (30). Episiotomy, once routine, is now less common due to a lack of proven benefits. Its prevalence is 12% in the US (31) and 14.3% in Israel in 2022. The rate of 3rd and 4th-degree lacerations that year was 0.57%, while at the study site the rate was 10% and 0.95%, respectively (Data presented by the Israeli Society of Maternal-Fetal Medicine—March 2024-personal communication).

Perineal injuries and anal sphincter tears, common complications of vaginal birth, can result in pain, discomfort, incontinence, and long-term psychological distress. Approximately one-third of women report a traumatic childbirth experience (6). Tears are less common among women giving birth at home when compared to those giving birth in the hospital (8, 9) and the prevalence of perineal tears and trauma has increased in correlation with an increase in hospital births (8).

Various perineal management strategies, including massage, support, warm compresses, positioning, and delayed pushing, have been implemented to prevent perineal trauma during and before childbirth (31). This study investigated the potential of a

darkened birthing environment to reduce perineal trauma, perhaps by promoting muscle relaxation.

Although the connection between a dark birth room and less severe perineal tears during childbirth is a topic with limited research, there are some potential explanations for possible existing correlation. A relaxed birthing environment might allow for more natural positioning and activation of birthing reflexes, potentially reducing the need for interventions that could contribute to vaginal or perineal tears (32).

Fear and pain are integral parts of birth. Melatonin has been proposed to influence pain regulation and may reduce the need for pharmacological analgesia during birth (33). In a qualitative study, midwives noted a correlation between feelings of fear during childbirth and the occurrence of tears, suggesting that maintaining maternal sense of security, autonomy and feeling in control of the birthing process, may help reduce the likelihood of such complications (8, 9, 34). Women also want to avoid pain by pushing as much as they can. This study suggests that a dimmed birth room scenery is similar to a private room or home. It helps create an intimate environment inside the hospital. It thus improves the likelihood of achieving an ideal outcome for the birthing woman, both emotionally and physically, characterized by a reduced frequency of perineal trauma (8). During a spontaneous birth process, the hormones that start and maintain birth also sustain the instinctive emotions and behavior of the birthing women (10). The biochemical processes of normal birth promote pain reduction as birth progresses (10, 11). The simultaneous increase of brain levels of oxytocin, which act synergistically with melatonin (for initiation of contraction), prolactin, and endorphins, modify women's pain experience during physiological birth and enables the birthing woman to focus and retreat (11).

A link between a dimly lit room and the flow mental state

The application of flow theory to childbirth warrants clarification. While flow is traditionally studied in the context of goal-directed skilled activities such as sports or music (12), its core phenomenological features—intense focus, altered time perception, loss of self-consciousness, and deep embodiment—can also emerge in internally guided processes like physiological birth (4, 5, 10, 11). Women often describe labor as involving strong bodily cues, diminished awareness of external stimuli, and immersion in the rhythm of contractions (10, 11). These experiential elements parallel to key components of the flow state (12), even when volitional control is limited. Thus, childbirth may evoke a unique form of embodied flow worthy of empirical exploration.

Other studies have identified associations between the flow state and physiological birth (17). Our study found a similar association between experiencing the flow state and giving birth in a dimly lit room. This may stem from a stronger mind-body connection facilitated by the darker environment. During childbirth, the body provides natural feedback through contractions and birthing urges. In a dark environment, the birthing person might rely more on internal cues and sensations to guide their actions, further strengthening the mind-body connection. One proposed explanation from a neurofunctional perspective is the transient hypofrontality mechanism, which is the reduced activity in the frontal cortex that correlates with sensations of calm, less pain, less anxiety, and being in inner focus (13, 14). This theoretical model suggests that reduced frontal cortical activity may correlate with sensations of calm, reduced pain, and inward focus (35).

In relation to the darker environment, the transient hypofrontality mechanism, and the experience of flow, additional contributing factors may include reduced external distractions and enhanced feelings of safety. Darkness minimizes visual stimuli; thus, in the natural birth process context, it can also reduce distractions (11, 23, 35). Perhaps allowing the birthing woman to focus inward on their body's sensations and natural birthing urges. This can lead to heightened awareness and connection with their body.

As discussed before, a dark environment might promote melatonin production, potentially working with oxytocin to enhance its effects. Oxytocin is crucial for contractions but can also contribute to a feeling of focus (10, 11, 35). Moreover, the feeling of safety and privacy associated with a dark environment can promote relaxation and reduce stress hormones (35, 36). In the context of the flow sensation, it is reasonable that a calmer state of mind may allow for a better connection with one's bodily sensations during the challenging birth process.

While our study did not directly assess hormonal or neural activity, previous research has linked dim lighting with increased melatonin production and hypothesized synergy with oxytocin in facilitating labor. In our study, these pathways remain theoretical and were not empirically tested. Similarly, the proposed link between dim environments and the transient hypofrontality mechanism—associated with inward focus and pain modulation—was not evaluated. Future studies incorporating hormonal assays or neuroimaging could help clarify these mechanisms.

Strengths, limitations, and directions for future research

Like all observational studies, our findings must be interpreted with caution due to several methodological limitations, including issues related to sampling, measurement, and generalizability, as discussed below. Nonetheless, the study also has notable strengths: it integrated subjective and clinical data, employed a validated flow scale with high internal consistency, and addressed an underexplored yet modifiable environmental factor—birth room lighting.

A key limitation of this study concerns the absence of objective contextual and environmental measures. For example, lighting conditions were assessed solely through subjective maternal reports and not corroborated by external observations or digital sensors (e.g., lux meters). Similarly, a range of contextual birth-related variables—such as birth position, primary caregiver (e.g., midwife vs. obstetrician), use of analgesia, and labor interventions—were not systematically measured or controlled for. These unmeasured variables may have contributed to both birth outcomes and flow experiences, thereby confounding the

observed associations. Future research would benefit from more comprehensive, multi-source data collection to better account for the complex interplay between environment, provider behavior, and maternal experience.

In addition, the measurement of the flow state relied entirely on self-reported retrospective evaluations. Although the Flow State Scale is a validated tool and was administered within 72 h postpartum, it remains sensitive to outcome-dependent reporting bias. Women who experienced less physically or emotionally demanding births may have been more inclined to interpret their experience as immersive, harmonious, or optimal. This poses a potential confounding bias, as positive birth outcomes may influence how women retrospectively evaluate their cognitive-emotional state during labor. Future studies could improve reliability by incorporating real-time assessments or complementary observational data.

Beyond methodological limitations, childbirth itself involves an intricate interplay between neurohormonal, physiological, cognitive, and emotional factors. This system exhibits a sensitive feedback loop (37), making it difficult to isolate the causal influence of any single variable. In light of this complexity, exploring correlations and interactions—rather than seeking singular cause-and-effect explanations—may offer more ecologically valid insights.

Some of the subgroup analyses conducted in this study involved relatively small cell sizes, particularly in cases of vacuum-assisted deliveries and third-degree perineal tears. As a result, these comparisons may be underpowered and carry a greater risk of both Type I and Type II statistical errors. These findings should therefore be interpreted with caution, and future research with larger sample sizes is recommended to confirm these associations.

Finally, the generalizability of the findings is constrained by the sample composition. The study was conducted in a single hospital in northern Israel with a relatively homogenous population—primarily academically educated, Jewish women. It is possible that women with higher education or cultural familiarity with research were more likely to consent to participation. These demographic and cultural characteristics may limit the applicability of results to more diverse or multinational populations. Replication in varied clinical and cultural contexts is needed to establish the broader relevance of the observed associations.

Conclusion

In this cohort observational study, we identified associations between birthing room lighting, mode of birth, perineal tears, and the mental state of women during childbirth. Dimmer lighting was linked to higher rates of vaginal birth, fewer perineal tears, and a greater likelihood of experiencing a flow mental state.

While preliminary, these results support the notion that the birthing room environment — particularly lighting — may subtly influence both physiological outcomes and mental states during labor. Clarifying the mechanisms behind these associations requires further multidisciplinary and experimental research.

By examining environmental factors such as light alongside neurohormonal and psychological processes, we may gain deeper insight into how to optimize childbirth experiences and outcomes. Importantly, these associations remain correlational, and causal links must be explored in future studies.

Data availability statement

The datasets presented in this article are not readily available because the data sets are to be used by the research group members. Personal info was annonimized before shared with the statistician for evaluation. The identifiers of the participants is saved on a secure file in our hospital server. We did not receive agreement from patients to share this data. Requests to access the datasets should be directed to yael.st@ziv.gov.il

Ethics statement

The studies involving humans were approved by Ziv Medical center Helsinli committee for human research. The studies were conducted in accordance with the local legislation and institutional requirements. The participants provided their written informed consent to participate in this study.

Author contributions

SA: Data curation, Project administration, Conceptualization, Writing – original draft, Writing – review & editing, Investigation. OD: Writing – review & editing, Methodology, Writing – original draft, Supervision, Visualization, Conceptualization, Formal analysis. OH: Writing – review & editing, Writing – original draft, Formal analysis, Methodology, Conceptualization. DP: Writing – review & editing. IB-S: Visualization, Conceptualization, Writing – review & editing. YS-T: Writing – review & editing, Writing – original draft, Methodology, Conceptualization, Supervision.

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The importance of promoting positive childbirth experiences for women: a perspective paper

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Childbirth can be a profound and transformative experience, one that embodies complex emotional challenges. Childbirth experiences can have profound and lasting consequences, both positive and negative, shaping a woman's physical, emotional, and psychological well-being. A positive childbirth experience often fosters feelings of empowerment and birth may carry a sense of accomplishment and strength into motherhood. This can enhance bonding with the baby, reduce the likelihood of postpartum depression, and contribute to an overall positive transition into parenting. Supportive environments, effective pain management, and respectful care from healthcare providers play critical roles in creating such experiences. In contrast, a negative childbirth experience can have significant adverse effects. Negative childbirth experiences caused by, for example, a lack of control, disrespectful treatment, or traumatic events during childbirth may lead to feelings of failure, fear, or even post-traumatic stress disorder. These can undermine maternal self-esteem, strain relationships, and hinder the mother-baby bond. Addressing both women's positive and negative childbirth experiences requires providing compassionate, individualised care, fostering open communication, and ensuring that all women feel heard, valued, and supported throughout their childbirth journey. When planning care for women and their families through the childbirth process, it is crucial for health care providers to understand women's perspectives and know how to maximise the likelihood of a positive childbirth experience. This paper explores the significant impact of a positive childbirth experience on a woman's life. It offers perspectives on the importance of recognising and measuring women's childbirth experiences in the ongoing development of maternity service provision.

KEYWORDS

childbirth, empowerment, experience, positive, women

Introduction

Childbirth is a profoundly transformative experience that can encompass a range of emotions, from joy and empowerment to vulnerability and fear. A positive childbirth experience can enhance a woman's confidence, emotional well-being, and physical recovery, fostering a strong bond with her baby. On the other hand, negative experiences, arising, for example, from a lack of control, disrespectful treatment, or traumatic events, can lead to psychological distress, including postpartum depression or post-traumatic stress disorder.

The World Health Organization (WHO) emphasises the importance of fostering a positive childbirth experience for all women, regardless of the type or setting of the birth. Various WHO publications identify that healthcare providers, and midwives in

particular, can play a vital role in shaping positive childbirth experiences by delivering supportive, respectful, and personalised care (1–3).

This perspective paper explores the impact of women's childbirth experiences on their lives and highlights the importance of recognising and measuring these experiences in the planning of maternity services. We argue that features of professionalism in midwifery care that are potentially associated with the promotion of empowerment for new mothers (3) should be incorporated into maternity care planning in an effort to ensure that all women feel heard and valued during this significant period of their lives.

The importance of measuring and fostering positive childbirth experiences in maternity care systems

It is widely acknowledged that childbirth is challenging and demanding for women, with potential implications for both positive and negative experiences, but this has not necessarily been captured in the measures that are chosen to define the outcomes of childbirth. Birth outcomes tend to be measured by a range of physical outcomes in categories related to the type of labour and birth, for example: spontaneous onset or induction of labour, acceleration of labour, vaginal birth, birth assisted with vacuum extraction or forceps, birth by caesarean section as well as neonatal outcomes. Women's experiences are often not included in these routine outcome measures of childbirth.

In 2018, the WHO published new recommendations for labour care, *Intrapartum care for a positive childbirth experience* (1), followed in 2020 by the *WHO Labour Care Guide User's Manual* (2). In both these documents, a positive childbirth experience is identified as an essential outcome that contributes to the health and well-being of the mother and child (3). The importance of fostering a positive childbirth experience is also a major theme in WHO publications highlighting the imperative to provide "respectful maternity care": healthcare providers should provide care "to all women in a manner that maintains their dignity, privacy and confidentiality, ensures freedom from harm and mistreatment, and enables informed choice and continuous support during labour and childbirth" (1).

The humanisation of childbirth movement has, among other things, emphasised the importance of a positive childbirth experience to promote women's psychological health after childbirth (4). This has included highlighting the essential role of effective communication between maternity care providers and women in labour, using simple and culturally acceptable methods. Other strategies that have been shown to promote emotional, psychological and physical health for women include systems that facilitate a companion of choice throughout labour and childbirth, continuous midwifery support in labour and in specific contexts, midwifery-led continuity of care throughout antenatal, intrapartum, and postnatal care in settings with well-functioning midwifery programmes (5–7).

Definitions of a positive childbirth experience

Clear definitions are an important starting point when focussing on which factors may contribute to both positive and negative childbirth experiences (8). A positive childbirth experience has been defined as: " … an experience that refers to a woman's experience of interactions and events directly related to childbirth that made her feel supported, in control, safe, and respected; a positive childbirth can make women feel joy, confident, and/or accomplished and may have short and/or long-term positive impacts on a woman's psychosocial well-being" (8). On the other hand, a traumatic childbirth experience has been identified as: " … a woman's experience of interactions and/or events directly related to childbirth that caused overwhelming distressing emotions and reactions, leading to short and/or long-term negative impacts on a woman's health and wellbeing" (9). By using these definitions, it becomes possible to identify and validate positive childbirth experiences, as well as guide improvements in practice, education, research, advocacy, and policymaking (8).

Why promoting positive childbirth experiences for women matters

People tend to focus more on negative childbirth experiences than positive ones, whether in personal stories, audit, or research. Given the number of women who report negative childbirth experiences and the long-term effects such experiences can have on their health and wellbeing, it is crucial to promote positive childbirth experiences. The prevalence of negative childbirth experiences varies, but studies have suggested that between 6%–44% of women experience childbirth as traumatic (10). A negative experience of childbirth can have a profound effect on a woman's life (11, 12): for example, the identified increase in the likelihood of postnatal depression, stress and anxiety (13, 14) can directly affect postnatal mother-child attachment and negatively influence children's cognitive development (15, 16).

A positive experience of childbirth can also have long-term implications for women's health and well-being, as identified in a qualitative study conducted in Sweden (17). Women who had a very positive birth experience described an increase in their feelings of confidence, ability and strength. A trustful and supportive relationship with their midwife was crucial in promoting this, particularly where the midwife worked as an active guide through pregnancy and labour, helping the woman with physical and mental preparation for birth and techniques to manage labour. A supportive environment for labour, including teamwork between parents and all staff, plus a sense of trust and support from the father of the child, were also important factors in enabling a sense of control and safety. Other studies have also highlighted women's similar views that feeling supported, in control, safe, respected and involved in decision-making during pregnancy, labour and birth were

important factors that contributed to their positive birth experiences, including a sense of increased strength and the capacity to cope with new motherhood and other life challenges (6, 7, 18, 19). Women have described their self-esteem increasing as a result of coping with the challenges of labour and birth and that this increased their feeling that they could cope with life overall and an increased responsibility to their family. Women have described becoming more confident in the role following a positive birth experience and are also more likely to choose vaginal birth in subsequent births (20). In contrast, according to Swift et al. (21), women's low birth satisfaction was independently associated with higher symptoms of childbirth-related post-traumatic stress disorder (CB-PTSD); this emphasises the potential effect that a negative birth experience can have on women's lives and how vital a positive childbirth experience is for women's health after childbirth.

For many years, studies have explored the powerful impact a positive birth experience can have on women's lives for years after childbirth in terms of empowerment (17, 22, 23). Empowerment is a complex and multidimensional concept defined by Lafrance and Mailbot (24) as a process of action and reflection that builds parents' confidence, knowledge, and capacity for decision-making. Two processes have been described related to childbirth empowerment: the strengthening of parental skills, and appropriation, which enhances parents' sense of control (20). Positive childbirth experiences can boost women's self-esteem and confidence in their parental role (17) and strengthen women's attachment to their children (15).

Factors that contribute to positive experiences of childbirth

Women have highly different needs during childbirth as identified in a systematic review of over 40 qualitative studies of women's and their partner's experiences of childbirth in different settings in low, middle and high-income countries (25). Whilst bringing to light the complexity and multidimensionality of the birth experience, the review suggested that what women experience as positive and meaningful for them is surprisingly similar. Parents want support in preparing for birth and facing the challenges of uncertainty around pregnancy, labour and birth; they want sensitive and supportive care during labour. Positive experiences of childbirth are directly related to feeling these needs are met (25), suggesting that support from caregivers and birth attendants is arguably the most crucial ingredient women need during labour and birth (7). According to a Cochrane systematic review, continuous support during labour can lead to several positive outcomes, including: increased spontaneous vaginal birth, shorter duration of labour, and decreased caesarean birth, instrumental vaginal birth, use of any analgesia, use of regional analgesia, low Apgar score and negative feelings about childbirth experiences (6).

Women's childbirth experiences have been studied from many different perspectives, focusing on different outcomes. Positive experiences have been associated with satisfaction with antenatal care and choice of maternity service or provider (22, 26); factors related to personal ability and women's psychological experience of childbirth (27); the predictors of positive childbirth experiences, including the various actors; and positive experiences of managing pain in labour (28).

Recent studies have argued that neurobiological processes induced by the release of oxytocin may contribute to positive experiences of birth and promote an optimal transition to motherhood. The case is made for midwifery one-to-one support in labour and maternity care that optimises the function of neuroendocrine processes, even when birth interventions are used; the importance of providing physical, emotional and social support for women through the intense and transformative psychological experience of birth has the potential to be transformative, particularly where women are encouraged to believe in their ability to give birth and where physiology is not disturbed (29).

The importance of women's experiences fulfilling or exceeding their prior personal and social-cultural beliefs and expectations of childbirth has been identified (30). In a narrative literature review of 20 studies of a positive birth experience of first-time mothers, five themes emerged: women's experiences of personal strength and their ability to give birth, including a sense of pride in how they managed pain and challenges during labour; the support and guidance they received from midwives and obstetricians; physical and mental preparation for the birth; feelings of trust and support from their midwives and partners; involvement in decision-making; and prayers and spiritual support from family and healthcare providers (31).

Maternity service development to measure and optimise positive experiences for women

There is an imperative to recognise that women's experiences of childbirth are a crucial aspect of measuring and informing high-quality care, offering insight into what truly matters to them, and enabling service planning that aligns with their needs (3, 15). This involvement of women in service development should also be incorporated into midwifery education and staff training (32).

In many countries, women's experiences are not measured or studied. Indeed, in many low-income countries, the maternal mortality rate is almost the only measure available (2). Several different questionnaires have been developed to measure women's childbirth experience. For example, in Sweden (33) the childbirth experience questionnaire consists of four domains: own capacity, professional support, perceived safety and participation. This questionnaire has been translated, tested and validated, for example, in Iceland (5) and the UK (34). The widely used Birth Satisfaction Scale Indicator (BSS-RI) has also recently been revised (BSS-RI) (35).

Midwifery models of care and theories are essential when planning services for childbearing women, as many of them focus on the midwife–woman relationship, woman-

centeredness, and a salutogenic approach, factors that women have identified as important in the kind of care they need from midwives (32). The PRIME theory of professionalism in midwifery draws on women's perspectives regarding the competencies and characteristics a midwife needs upon graduation to promote a sense of safety and well-being for women. It defines essential qualities and skills needed to support women and their partners effectively and foster a sense of safety, comfort, and confidence (32). The definition of a positive childbirth experience by Leinweber et al. (8) emphasises the critical role of healthcare providers in facilitating a positive childbirth experience by seeing each woman as unique and responding to her individual needs (25, 26, 30, 36). Where women are treated with respect, and where they have formed trusting relationships with caregivers who have facilitated a relaxing and welcoming atmosphere, they are more likely to have a positive experience of childbirth (31).

During pregnancy, birth and post-partum, it is essential that healthcare providers know how they can strengthen women's self-esteem to deal with childbirth in every possible way to increase the likelihood of a positive childbirth experience and the potential for empowerment. Measuring empowerment is not simple, and in a scoping review of 23 studies including 13 instruments to measure empowerment during pregnancy, the overall findings were that focusing on facilitating women's choice and decision making, women's belief in their abilities and control over situation, self and others is of importance. The instruments included five main components: facilitation of women's choice and decisions, women's belief in their abilities, control over situations, self and others, gender equality and access and control of resources. Under each component are many other components, such as decision-making, self-determination, support and assurance from others, financial authority, self-efficacy, autonomy, and legal dimensions (37).

Some scales are available to measure empowerment, such as the pregnancy-related empowerment scale (PRES) (38) and an empowerment questionnaire (EQ) which focuses on empowerment among pregnant and postpartum women (39). PRES scale has four dimensions: provider connectedness (relationship that minimised the power differential and created with respect and trust), with six statements, skilful decision making (process by which women come to evaluate and choose a direction that will impact their health), with three statements, peer connectedness (a bond between women that develops from the evolution of caring and supportive relationship) with two statements and gaining voice (to be knowledgeable about their health and advocate for their health care options for self and family) with five statements. That tool is a valid and reliable measure of women's health-related empowerment during pregnancy (38). In a scoping review measuring women's empowerment during the perinatal period in high-income countries (40) 21 instruments were identified, and 11 were validated among women during the perinatal period. However, no instrument has been specifically designed for women during the perinatal period that encompasses all dimensions of empowerment and its defining attributes.

Discussion

It is well established that childbirth experiences can have a significant positive or negative impact on both women and their families. Strategies for enhancing a positive childbirth experience are important in efforts to promote a sense of control, self-efficacy and self-esteem for women (41).

We argue that measuring women's childbirth experiences is essential and should be recognised as a fundamental part of childbirth outcomes. In many high-income countries with well-developed healthcare systems that adhere to international standards and evidence-based practice guidelines, there is no routine measurement of women's childbirth experiences. This underscores a deficiency in data concerning how women perceive childbirth and its effects on their own lives as well as those of their family's following childbirth. In recent years, validated questionnaires have been developed to measure women's childbirth experiences, although many place greater emphasis on negative aspects rather than positive ones. While both perspectives are important, shifting the focus beyond negative experiences can assist healthcare providers in understanding the factors that contribute to a positive birth experience and integrate elements that foster positivity in their daily care of women and their families during childbirth.

Midwives have the unique privilege of supporting families during one of life's most transformative moments when bringing new life into the world. This responsibility must be approached with care, as the quality of services can significantly affect a mother and her family's well-being for years to come. We suggest that the PRIME theory can also be used in the educating and training of midwives so that women's views on what they think are the most important characteristics of a midwife can contribute to optimising the potential for positive childbirth experiences Every midwife and midwifery student should recognise the enduring effects of their care and strive to provide the best possible service to maximise the likelihood of a positive childbirth experience. This aligns with the International Code of Ethics for Midwives, which emphasises human rights, justice, and equal access to care, along with mutual relationships of respect and dignity (42). In their position statement, *Heritage and Culture in Childbearing* (43) the International Confederation of Midwives urges their member associations to work with midwives, women, policy makers and the community to promote positive birth experiences by implementing culturally safe health services. For individual midwives across the world, working in ways that promote cultural safety involves an ongoing process of learning to be open to other people's cultural ways of being, knowing, and doing, whilst acknowledging power dynamics and being open to challenging their own individual culture, attitudes and beliefs (44).

The WHO emphasises respectful maternity care, which refers to care organised and provided for all women that upholds their dignity, privacy, and confidentiality, ensuring freedom from harm and mistreatment while allowing informed choice and continuous support during labour and childbirth. Routinely

measuring women's experiences of childbirth and empowerment is crucial and should be valued as an important outcome of childbirth. There is an imperative to continue to develop studies that enable women's voices to contribute to education and maternity service development; this should include qualitative research that enables in-depth exploration of individual women's experiences (45).

Conclusion

When planning maternity care for women and their families, there is an imperative for health care providers to understand women's perspectives and know about factors that maximise the likelihood of a positive childbirth experience. All maternity care systems should consistently utilise validated questionnaires and research methods to engage in discussions with women about their childbirth experiences. Women's perspectives should inform the development and analysis of outcome measures as well as educational activities, with an aim to provide high quality care and promote positive birth experiences for women and their families. Improved health outcomes and wellbeing can include the strengthening of parental skills and attachment and for women, a sense of empowerment related to self-esteem and increased confidence.

Data availability statement

The original contributions presented in the study are included in the article/Supplementary Material, further inquiries can be directed to the corresponding author.

Author contributions

SK: Writing – original draft, Writing – review & editing. NL: Writing – review & editing, Writing – original draft.

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"We have been depriving them": examining the sense of coherence of clinical staff as they implement skin-to-skin contact

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Background: Skin-to-skin contact (SSC) immediately after birth, when the newborn baby and mother remain together during the first hour after birth, has positive health effects on the dyad's physical and emotional wellbeing; however, implementation, the purview of the hospital's labor and birthing unit staff, has been a challenge in many settings.
Objective: To investigate Antonovsky's salutogenic theory's sense of coherence (SOC) of birthing staff members before and after implementing skin-to-skin contact immediately after birth in a regional referral hospital in Uganda.
Method: This qualitative study explored and analyzed before-and-after interviews of clinical staff regarding their experience of practice change to immediate, continuous, and uninterrupted skin-to-skin contact for at least the first hour after birth. The semistructured interviews took place at a regional referral hospital in Western Uganda. Using thematic analysis, the interviews were analyzed for the three components central to SOC: whether the proposed change in practice (pre-SSC intervention) and experience of the change in practice (postintervention) was comprehensible, manageable, and meaningful.
Results: An analysis indicated a high level of SOC before the intervention in relation to the meaningfulness and comprehensibility of SSC, with concerns about manageability. An analysis of postintervention interviews indicated a high level of SOC for all three aspects.
Conclusion: We postulate that a high level of sense of coherence for hospital staff both before and after an intervention may play a role in successfully implementing immediate, uninterrupted skin-to-skin contact in the first hour after birth. Skin-to-skin contact immediately after birth has life-long consequences for the emotional wellbeing of both the mother and the newborn.

KEYWORDS
skin-to-skin contact, salutogenesis, meaningfulness, relationships, maternity care

1 Introduction

Childbirth is not an illness or disease. It is not a pathology. Therefore, salutogenesis, Antonovsky's theory of health that examines factors that contribute to one's wellbeing (1), is optimally applied to hospital practices (2) including those related to pregnancy, birth, and postpartum for both patients (3–5) and staff (6). Skin-to-skin contact (SSC), where the newborn baby and the mother remain together during the first hour after birth, has been shown to have positive, salutogenic effects on the wellbeing of both the mother

and the newborn (7). SSC occurs during a "sensitive period" for the dyad (8, 9). Immediately after birth, the baby has high levels of catecholamines. At the same time, there are high oxytocin levels in the mother (10), which are associated with maternal bonding and attachment (11–14). These two factors combine for a unique and crucial "sensitive moment" for bonding and have a relationship with a "vital importance of contact and touch" between the mother and the newborn (15). With SSC playing a role in stress regulation, this sensitive period of time has been linked to a sense of happiness, connection, and increased positive feelings in the mother (16). SSC may relieve post-traumatic stress, even in women who have had traumatic birth experiences (17). Early SSC has been linked to a decreased risk of early maternal depression and bonding problems (18), and reduced maternal anxiety (19). Stress levels, as measured by salivary cortisol, a key biomarker of stress, are significantly reduced after childbirth in women who have experienced SSC (20). These advantages to the mother are also relevant after cesarean surgery, with research demonstrating that SSC is linked to decreased maternal stress and increased comfort, oxytocin, and levels of antioxidants (11). These, and other positive outcomes for mothers and their babies, have encouraged clinicians and policymakers to implement and scale-up SSC worldwide.

In spite of inclusion in WHO/UNICEF's Baby-Friendly Hospital Initiative (Step 4) (21), practice implementation of SSC remains low. A systematic review of the prevalence of SSC throughout the world, including 28 countries in all six WHO world regions, suggests a wide range of practice, from 1% to 98% (22). Only 15 articles of the 35 in the review defined SSC, so it is unclear whether these practices included the WHO recommendation of immediate, continuous, uninterrupted SSC for at least the first hour after birth. Challenges to implementing SSC include a lack of motivation and skills (23) of the healthcare providers as well as staffing concerns, time limitations, concerns about potential adverse effects, and the impracticality of the duration of 1 h (24).

Prevalence of skin-to-skin contact in Uganda is reported to be high, 73%. However, the question asked in the survey: 'Was child put on mother's chest and bare skin after birth?' does not include the specifics of the international definition; it does not elaborate on whether the SSC was immediate, continuous, and uninterrupted SSC for at least an hour after birth. The 2023 International Guidelines on skin-to-skin contact in the first hour after birth (25) has the potential to provide a roadmap to the Ugandan Ministry of Health's goal of decreasing maternal and infant mortality (26) by increasing best practices in SSC. However, the responsibility of implementation falls on clinicians—midwives, medical interns, and medical doctors who work in the maternity units.

Health and wellbeing are prioritized in Antonovsky's salutogenic theory. Sense of coherence (SOC) forms the core construct of the model and focuses on the capacity of the individual, family, or community to use resources in the environment to maintain and improve health, even in the face of a stressful event or challenge. It is comprised of three components: comprehensibility, manageability, and meaningfulness (1). Comprehensibility refers to the idea that stressful factors are structured, predictable, explainable, consistent, and clear. Manageability refers to the idea that adequate resources are available to cope with stressful factors. Meaningfulness refers to the idea that a challenge is worthy of investment and engagement, and worthy of commitment and involvement. A person with a strong SOC, when faced with a stressful emergency, crisis, or disease, will be able to incorporate the elements of SOC to understand, make meaning of, and manage the situation more successfully than one who has a more fragile SOC. Generalized Resistance Resources (GRRs) are characteristics that help an individual cope with stressors. GRRs can range from material resources to religious beliefs to genetic makeup. Conceptual expansions of these theories have included families, communities, and workplaces as well (27).

According to Antonovsky, work itself needs to be comprehensible, manageable, and meaningful if it is to be considered salutogenic (28, 29). The workplace can be a source of both stress and pleasure, and so can influence an individual's wellbeing both positively and negatively. Antonovsky's line of thinking can be applied in a wider scope then originally intended, by including the workplace itself as a community. It would then follow that the workplace can have an SOC and GRRs, in this case, referred to as job resources (28).

In relation to the practice of providing skin-to-skin in the first hour after birth, thematic analysis using SOC as a lens allows for an examination of the staff's capacities to understand, motivate, and use available job resources to maintain and improve staff work practices and the environment. The first dimension of SOC, comprehensibility, focuses on a clear and comprehensive understanding of the implementation of skin-to-skin contact in the first hour after birth. Along with the protocol and the practice, this cognitive component includes an understanding of how to deal with stressful events that could occur (30).

The next dimension of SOC, manageability, is considered to be a behavioral component (30). It should effectuate an underload–overload balance that takes resources into account. Resources, in this case, job resources, could include those directly under staff control, or resources controlled by others. In relation to skin-to-skin in the first hour after birth, resources controlled by others could include daily staffing in the ward, the space and layout of the ward, and training provided by the management. Resources controlled by the staff include patient access to the ward and the use of the space. Stressors should be manageable; demands and resources should be in balance. Underload can lead to a lack of engagement. Overload can lead to stress and burnout. Job dissatisfaction and burnout, which are considered modifiable states, are associated with increased rates of missed maternity care (31). SOC, among other effects, "*influences* work related outcomes, such as burnout and stress symptoms" (28, p. 199). Changing clinical practices can be perceived as a stressor in staff.

The third dimension of SOC, meaningfulness, is considered to be the motivational component (30). It focuses on the idea that if a challenge is worthy of engagement, then it is worth the investment of resources. Research indicates that happiness has an impact on productivity and job satisfaction (32). Skin-to-skin contact is an acknowledged pathway for connectiveness between parents and newborns; a means to increase bonding (13) with advantages for parents and newborns, including lower stress levels in the mother

and the baby (33). Although it is assumed that the advantages of SSC for the mother and baby would be meaningful to the staff, research has not been published about this aspect of SSC.

Introducing practice change, in this case the implementation of immediate, continuous, and uninterrupted SSC can be considered a workplace stressor. Barriers have been described that thwart SSC implementation, including a lack of staff, time, and training (23, 24, 34). Implementation of a practice change could be considered a "job demand" within Antonovsky's model of salutogenesis in the context of work (28). The implementation of a new practice can be buffered by the GRRs, which in this context are the job resources, such as knowledge, skill, social support, and autonomy.

Although earlier studies have mostly focused on SSC's therapeutic results, fewer studies have addressed the human elements affecting its application. Although this association has been understudied, understanding how the elements of SOC can affect the implementation process could be relevant. Examining SOC in this framework might help explain why some teams struggle, while others effectively incorporate SSC in spite of seemingly similar constraints.

This qualitative study aimed to analyze semistructured interviews of clinical staff through the lens of the three elements of SOC before and after the implementation of a new practice model of postpartum care.

2 Materials and methods

The study was conducted at a regional referral and training hospital in western Uganda, between January and February 2024, which averages 15–20 births a day. The methodology and outcomes of the intervention, which involved the implementation of immediate, continuous, and uninterrupted skin-to-skin contact, have been reported elsewhere (35). Semistructured interviews with leadership and staff, conducted by research team members, were audio-recorded before the intervention and toward the end of the postintervention birth cohort collection. The questions were open-ended and focused on the barriers to implementing the new practice (Table 1). The six preintervention key informants included one medical intern, four midwives, and one midwife in a senior leadership position.

The full intervention methodology, Practice Reflection Education and Training Combined with Ethnography for Sustainable Success (PRECESS), is described elsewhere (35). In short, an educational session for leadership and staff took place after the preintervention data collection was completed. Participants included midwives, doctors, surgical technicians, interns, nurses, nursing and midwifery students, as well as admissions staff. The room held 20 people, and additional staff stood in the doorway and in the hallway for portions of the presentation. The researchers used PowerPoint presentations and videos to demonstrate the justification and practice of keeping babies SSC for 1 h after birth as well as videos of newborns progressing through Widström's nine stages, self-attaching and suckling. The change in practice to 60 min of SSC began with the birth that occurred immediately after the education session.

TABLE 1 Key informant interview questions.

Preintervention questions
What do you know about mothers holding their babies skin-to-skin in the first hour after birth?
Do you think it is possible to have this practice for vaginal births at this hospital? Why or why not?
Do you think it is possible to have this practice for cesarean births at this hospital? Why or why not?
What do you think will be the biggest challenges to starting skin-to-skin in the delivery room for your hospital?
What do you think will be the biggest challenges to starting skin-to-skin in the operating room for your hospital?
Postintervention questions
What do you know about mothers holding their babies skin-to-skin in the first hour after birth?
Do you think it is possible to continue to have this practice for vaginal births at this hospital? Why or why not?
Do you think it is possible to continue to have this practice for cesarean births at this hospital? Why or why not?
What do you think will be the biggest challenges to continue skin-to-skin in the delivery room for your hospital?
What do you think will be the biggest challenges to continue skin-to-skin in the operating room for your hospital?
Can you share some of your experiences with skin-to-skin at your hospital?

Following the PRECESS protocol, the researchers were available 24 h a day to provide pragmatic and practical assistance as well as support during the intervention. This could include answering questions, providing recommendations, demonstrating positioning, etc. The quantitative analysis of this study is reported elsewhere (35). The intervention significantly increased the duration of SSC from a mean of 2 min 25 s before the intervention (92 dyads over 7 days) to a mean of 57 min 51 s after the intervention after (105 dyads over 7 days) ($p < 0.001$).

The second set of key informant interviews were conducted 6–7 days after the initiation of the practice change. The postintervention key informants included two medical interns, three midwives, one obstetrician, and one midwife in a senior leadership position. Only one key informant, the midwife in the senior position, had also participated in the preintervention interviews. The recorded interviews were transcribed and analyzed using the theoretical thematic analysis method suggested by Braun and Clarke (36). Following Braun and Clarke's six phases, the transcripts were analyzed by three researchers familiar with the process. After familiarizing themselves with the data (transcripts), they developed initial codes to identify the three aspects of SOC. Transcripts were then coded for the themes of the three components of SOC, and initial theoretical thematic analyses completed. Text that expressed an understanding or misunderstanding of the practice of SSC was coded for "comprehensibility." This included concepts around the structure and predictable nature of the process of SSC. Text that related to the capability of implementing one hour of SSC and whether job resources were enough to make and sustain the change to extended SSC were coded for "manageability." This included staffing, space, and physical resources. Text that identified the value of SSC, a sense of purpose related to the change, or finding meaning in the practice was coded as "meaningfulness." This included engagement and commitment to SSC. Analyses were discussed. All

investigators reached consensus regarding the aspects of SOC and the transcript elements to include as illustrative.

Ethical approval was obtained from Makerere University College of Health Sciences, the School of Health Sciences Institutional Review Board (IRB) (MAKSHSREC-2023-558), and the Uganda National Council for Science and Technology (UNCST) (HS3183ES) prior to data collection. The study received administrative clearance, informed consent, and voluntary participant participation, ensuring confidentiality and respecting participant privacy. Audiotapes and notes were kept securely.

3 Results

Quotes from the interviews have been categorized into the three focal points of SOC: comprehensibility, manageability, and meaningfulness. In each case, the interviews preintervention and postintervention have been examined for aspects of each focal point.

3.1 Comprehensibility

Comprehensibility is the understanding that a process, specifically skin-to-skin contact in the first hour after birth, is predictable and structured. The comprehensibility of the practice of SSC, both before and after the intervention, has been contextualized by other clinical parameters.

3.1.1 Preintervention: comprehensibility

All six of the preintervention interviews expressed a clear and comprehensive understanding of the current practice of skin-to-skin contact (baby placed on the mother's abdomen before the cord was clamped, and removed to a table after clamping, around 2–3 min of SSC, on average).

> "I would put a sheet [on the mother], dry the baby, then after drying and I am sure the baby is not wet any more, if it does not need any other resuscitation and the baby is fine, I put the baby on the mother's tummy with the head-turned on one side then I cover the baby with the sheet on the mother's abdomen for 2–3 min as I tie the cord … and after clamping the cord I take the baby away" –(Midwife 2).

This quote emphasized confidence in the structured current practice, even though current international recommendations recommend one hour of skin-to-skin contact, rather than the current practice of removing the baby after only 2–3 min. The staff had a high level of comprehensibility of the preintervention practice. This also reflected the staff's autonomy with the current practice.

When asked about challenges to the proposed intervention of 1 h of SSC, four key informants presented hypothetical stressful events that they saw as challenges. One key informant considered repairs a hindrance to continued skin-to-skin contact.

> "Another challenge may be skin-to-skin, especially if a mother has gotten a perineal tear when you are repairing … it is because of the pain the baby feels" –(Midwife 6).

Because more than 85% of mothers experience perineal tears after vaginal birth (37), this demonstrated a significant concern related to the practice to 1 h of SSC. Perineal tear repairs are painful and could require significant suturing with limited anesthesia. Reactions from the mother could result in unexpected movements, which could not be conducive to SSC.

One key informant expressed concern about life-threatening events for the mother and the baby precluding the ability to do continued skin-to-skin contact.

> "The challenges … [if] mother is bleeding and if this baby is asphyxiated, we cannot practice that [skin-to-skin]. But when I see my mother is okay, and my baby is okay, I do not see the reason why I cannot leave the baby to bond …" (Midwife 3).

Concerns about the mother and the baby's survival demonstrated a clear and comprehensive understanding of a stressful factor in Ugandan maternity units. Uganda's maternal mortality rate, 189 out of 100,000 births, is still significantly higher than the WHO goal of 12 per 1,000 (122 out of 100,000). It is estimated that 50% of neonatal deaths stem from birth asphyxia, with a current rate of 22/1,000 live births (38).

A third key informant expressed the lack of comprehensibility for a process for which they were not familiar. Without the comprehensibility for a new process, theoretical challenges create stressful factors. This key informant, who did not work in the operating theater, felt that a challenge for skin-to-skin contact during a cesarean section surgery would be the drapes.

> "Even that cloth that prevents you from seeing what is being done there, how will you help the baby? You will just feel, but you cannot see the baby" –(Midwife 2).

This quote highlighted a misunderstanding about where the baby would be placed on the mother's chest during a cesarean operation in relation to the placement of the drape.

This same midwife also expressed concern for first-time mothers, who would need to try to breastfeed their baby within an hour after birth (a hospital protocol) in the uncomfortable position of lying on their back or lying on their side on a narrow delivery bed.

> "… within that one hour, like for mothers who are delivering [for] their first time, have never breastfed these babies … they cannot breastfeed the baby when lying like this (on their back) and the baby is breastfeeding on [their] side."

Again, this quote highlighted a misunderstanding about the positioning for breastfeeding during SSC, and that the position is conducive to breastfeeding in the first hour after birth.

3.1.2 Postintervention: comprehensibility

All seven of the postintervention interviews expressed a clear and comprehensive understanding of immediate skin-to-skin for the full hour after birth. The process was comprehensible and also reflected the autonomy of the staff with the process.

> "After delivery, we usually bring our baby to the skin, that is, to the mother's chest. That one we provide it for approximately an hour to provide benefits to the mother and the newborn" (Intern 9).

This practice reflected the WHO standard of care for the first hour after birth.

The advantages were also clear.

> "For the benefits, there is warmth. It helps to prevent hypothermia. It helps bonding, that is, for the mother to bond better and probably study the baby better, as well as their movements and whatever they signal to the mother. Then, it helps to reduce the risk of infection because when we take these babies away from their mothers, we expose them probably to an environment which has been exposed to by some other babies, which is also contaminated" (Doctor 15).

This reflected an evidence-based understanding of the scientific background knowledge underpinning SSC.

When asked about challenges, four key informants presented hypothetical stressful events that they saw as challenges. They mentioned three events that would preclude immediate, continuous skin-to-skin contact. The first concern was general anesthesia cesarean section surgeries, although this key informant agreed that the spinal surgeries conducted so far were comprehensible.

> "[It] still depends on the anesthesia … We have so far practiced [SSC] with spinal anesthesia, where the mother is allowed to be conscious, and she can control her body parts. So, I am also imagining a mother who is in general anesthesia and not even responding to any reflex, so in that case, it will be hard"- (Intern 9).

But another key informant had been reflecting on general anesthesia as well:

> "For the part of spinal anesthesia versus general anesthesia … lately, we do not do a lot of general anesthesia; we don't. Out of 10, if there are 10 caesarean sections to be done in a day actually, 10 of them might be all spinal anesthesia. But true, if it is general anesthesia it gets hard" (Doctor 15).

The primary type of anesthesia used in the OR was considered to be comprehensible for SSC. The team had not yet conducted SSC with the unusual anesthesia, general anesthesia, and so it was still considered concerning and a source of stress.

This same key informant also expressed concerns about multiple babies, specifically triplets, but explained that twins should not preclude SSC.

> "But if you have more than two, we usually deliver triplets here; if not, it becomes impossible. Otherwise, it can be achieved the other way around" (Intern 9).

Immediate, continuous, and uninterrupted skin-to-skin contact after birth for twins was considered to be comprehensible, implying that singletons were also considered comprehensible. The hypothetical concept of three babies on the mother's chest remained questionable to the key informant.

Intern 9 also expressed concerns about doing SSC after unusual incision types for cesarean surgeries.

> "We have practiced [SSC] with Pfannenstiel incisions. I am thinking of a situation where I am doing subline umbilical incisions" (Intern 9).

Doing SSC after the most routine method of incisions for cesarean surgery was considered comprehensible. The concern voiced reflected concern about where a baby would be placed after unusual types of cesarean incisions.

Key informants mentioned specific elements about the explicability and predictability, including the impact of their routine medications:

> "Some of the factors related to the health providers and the way we dispense [Misoprostol] could also lead to the frustration or failure of a peaceful skin-to-skin" (Intern 8).

The most common side effects for high doses of misoprostol, such as the dose routinely administered in the hospital to prevent postpartum hemorrhage, are fever and chills (shivering) (39), which can be disruptive to the process of SSC.

The newborn behavior while skin-to-skin after birth had also become comprehensible, including the understanding of the nine stages that newborns experience in the first hour after birth:

> "It is nice when … you, the midwife who has helped with this delivery, see that within one hour, your baby goes through all the stages, the nine stages you have taken us through" (Midwife 14).

These instinctive behaviors when SSC is established in the first hour after birth lead to breastfeeding, a key advantage of SSC. The midwife was able to watch the baby while in SSC, to monitor the stages, and appreciate the success.

The structure and comprehensibility of the hour of skin-to-skin contact also had a positive effect on other procedures within the first hour, such as the effectiveness of repairing a tear during skin-to-skin contact.

> "The process makes the mother calm when you are working on her in case of any tear" (Intern 8).

Research shows that SSC decreases the mother's perception of pain (10), which results in an easier experience for the staff to work on any repairs.

3.2 Manageability

Manageability, in relation to skin-to-skin contact, refers to the balance of adequate job resources available to cope with practice change. It is vital that sufficient consideration of resources is available in comparison with the demands so that SSC is manageable, neither overloaded nor underloaded.

3.2.1 Preintervention: manageability

All six of the preintervention interviews expressed concern about the manageability of changing the process to skin-to-skin contact for an hour after birth. Four of the key informants mentioned concerns about staffing shortages.

> "There was a day I was alone on duty. I had 18 deliveries in one shift" (Midwife 6).

> "The staff is overloaded with work. Like today, I have come to work alone, so if I deliver a mother here, … I will leave them for another due to the inadequate staff" (Midwife 4).

This reflected a concern that implementing a full hour of immediate, continuous, and uninterrupted SSC would increase the time pressure on the staff to implement the practice and increase the amount of care needed for each dyad.

All six key informants mentioned concerns about the space and not having enough delivery beds.

> "There are issues with the beds … once this one delivers, immediately we shift, and we take another mother" (Midwife 3).

There was a concern that leaving a mother in a bed for a full hour after birth to meet the WHO SSC standard would result in other mothers needing to give birth on the floor, since no beds would be available.

> "Maybe the challenge can be if there are many mothers laboring, because of the space, as you leave this mother here skin to skin for one hour, another mother is immediately pushing and eventually going to push on the floor. Actually, what limits us here is space" (Midwife 6).

The key informants also expressed concerns about training about the practice of SSC.

> "[A] good number of the staff, after employment, get little chances for exposure, like for these refresher trainings" (Midwife 6).

The key informant was concerned about learning a new skill and the need for continuing education after employment.

Several key informants also mentioned specific concerns related to the operating theater. These included existing inadequate staffing resources.

> "In theater, there is no one who [can] resuscitate the baby … immediately when the baby is out … because we are trained to resuscitate babies, and we have to really be there …. Because of shortage and work overload in maternity, the one who was … the midwife in theater was removed and brought to cover the gap in maternity" (Midwife 6).

There was a fear that this could be worse if skin-to-skin is implemented, since the work load was already high. The fear concerned the emergency practice of resuscitating newborns, but also the more practical aspect of someone available to hold or watch the baby while in SSC on the operating table.

> "But there has to be a nurse who holds the baby on the table because this hand is receiving IV fluids, and this hand might be, due to anesthesia, it might not hold the baby. But there should be someone to hold it. Sometimes, these babies can be jumpy and easily fall" (Intern 7).

If both mother's arms were not available to hold the baby, a staff member would be needed to support the baby so that it would not fall off the operating table while in SSC.

There were also concerns about physical artifacts, specifically the resources of sterile cloths to wrap around the newborn.

> "In theater, the linen still is a challenge …. Because now in there, when they are operating, they have only one sheet to receive the baby, the theater sheet, which they only use because this one is for the baby" (Midwife 5).

The hospital traditionally provided sterile linen for use during the operation. The baby would be taken to the table and dried with a hospital sterile sheet. However, once the baby has been removed from the sterile field, they were wrapped in a cloth the mother brought from home. If the baby was in SSC with the mother, they could be considered to be in the sterile field, and therefore should be using a sterile linen provided by the hospital to be dried, and then another sterile linen provided by the hospital to be placed over the newborn while in SSC. This doubled the required resources for each baby.

There were some indications that there were adequate resources for the challenge of skin-to-skin for an hour after birth. Two key informants mentioned the positive resource of the interns and students.

> "With the help of the students and the volunteers, we are building … moving on like that" (Midwife 6).

> "If I have an assistant, what I usually do after tying and clamping the cord [is that] I take the baby away" (Midwife 2).

These job resources increase the manageability of the staffing concerns, since the students, volunteers, and assistants could help with additional work in the unit.

3.2.2 Postintervention: manageability

After implementing immediate, continuous, and uninterrupted skin-to-skin contact, the concept of staffing seems to have been reframed. Although there still was not enough staff, the process of skin-to-skin contact for the hour after birth could make the work easier:

> "… So, if at all you are alone it is easy for you to do skin-to-skin and actually you are not overwhelmed by not getting an assistant [a student] to take the baby [to] the other side and you can continue working on the mother as the baby is on skin to skin" (Midwife 12).

Postintervention, the number of staff, and the need for additional assistance, decreased, since the dyad could remain together, SSC, instead of the midwife having two patients in two locations.

The concepts of not enough space/not enough beds had been reframed as well by the staff:

> "We have been having some mothers occupying these beds, though they are not in the second stage … we will have to see them ambulate … other than occupying the bed when you are not in the second stage and … give the opportunity to one who has delivered to have that skin-to-skin within the recommended time … making it appear as if space is not really enough" (Midwife 14).

Instead of feeling as though there were not enough beds, they had reframed the issue as needing to keep the mothers ambulating until they were ready to have a bed. This left more beds available for mothers to remain in SSC.

> "It is just a matter of seeing who is a priority and whom I can continue talking nicely to as they are ambulating. Yeah, there are challenges; yes, we can do it. It is just space which is a challenge, but we can find a solution to it" (Midwife 14).

The space remained a challenge, but it was manageable.

Questions about training remained on the staff's list of manageability.

> "You see the baby [close] to fall[ing] off the bed because [the mothers] support this baby over their chest and some of them are not given enough information during antenatal" (Intern 8).

> "It needs real training for each and every health worker to have the safety of the mother and the baby and they must be safe in case of a fall" (Intern 8).

However, the requests for training were now specific training requests, rather than general concerns about SSC. Specifically, there was a concern about newborn babies falling off of the narrow delivery beds during SSC, and a request for assistance in problem-solving.

Specific concerns regarding the operating theater continue after the implementation. For example, there were still concerns about the sterile cloths for drying and covering the newborn. However, now it was being framed as a challenge that seemed manageable.

> "[We] need some type of clothing [and] we sterilize it and we incorporate it as part of our practice" (Doctor 15).

> "So, if we can provide small towels for cleaning and covering them and we don't use the other bed sheets or the towels the mothers bring from home. I think it can help to improve sterility" (Intern 9).

By funding and providing small linens that could be included in the hospital's sterilization process, this challenge can be solved.

There were also still concerns about staffing, specifically associated with skin-to-skin in the operating theater.

> "… Especially in our setting, where we have few staff members who can help you provide manpower" (Intern 9).

This is similar to the staffing concerns that were voiced by the labor and delivery team with vaginal births. However, unlike the key informant reports from labor and delivery, the issue still remained with the operating theater staff.

3.3 Meaningfulness

Meaningfulness in the context of Antonovsky's SOC and this research refers to the concept that skin-to-skin contact is worthy of investment and engagement.

3.3.1 Preintervention: meaningfulness

All six of the preintervention interviews expressed a desire to do skin-to-skin contact.

> "Babies with their mothers' skin to skin … it brings a connection of the baby and the mother, it makes the baby know I am with my mummy, so it starts from the time of birth, and it brings that mother-child love, and then it also brings warmth" (Intern 7).

The key informants could list the advantages of SSC, even if they were only providing two to three minutes of SSC with the initial practice. The advantages of connection, love, and warmth were meaningful.

When asked about how long skin-to-skin should continue, concerns were raised. Skin-to-skin was meaningful for the first few minutes but seemed concerning after that.

> "I think the baby shouldn't exceed 30 min. On the mother's abdomen, there are hypothermia issues … not as such because skin-to-skin is the best method for preventing hypothermia, but you know the mother is already [laying] in

> the blood, has been given some medication that can bring on shivering … in some cases, you feel the baby can easily fall off the mother's abdomen" (Midwife 2).

Evidence recommends at least an hour of continuous, uninterrupted SSC beginning immediately after birth. Babies who are in SSC are warmer and are less likely to have hypothermia (10, 40), which is acknowledged by the staff. The other concerns related to extended SSC beyond the first 2–3 min included the ability to clean the mother and the bed, the effects of the anti-postpartum hemorrhage (PPH) medications, and the narrow delivery beds.

There was also concern that longer periods of time skin-to-skin may not feel meaningful to the mother.

> "Delivering on the floor … skin to skin can be done, but for the mothers, she will not feel good … 'I delivered, and I waited for one hour with my baby …' she will feel she was not attended to … whereas there was something I was doing for her and she didn't know" (Midwife 2).

Without an opportunity to provide antenatal education to the mothers, their first introduction to an hour of SSC would be potentially surprising. It was important to the staff to maintain a connection with the mothers and key informants expressed concern that the mother may be dissatisfied with the experience.

Concern was also expressed that longer periods of skin-to-skin may also not be meaningful to colleagues.

> "Then maybe some of us have a bad attitude. I may come and start implementing it, but another may say 'why'? You introduce it to someone else and say, 'not me I have some more mothers to deliver'" (Midwife 5).

There was a question of whether all staff would consistently comply with the new practice of 1 h of SSC, and an emphasis on the importance of it being meaningful to everyone.

The work of the team in the labor and delivery unit, including the operating theater, was meaningful to the group.

> "Doing [the births] with someone and seeing that it leads to success … And making decisions with the [doctors] … we always make decisions as a team" (Midwife 6).

This highlighted the teamwork and social support that was already in place before the intervention. This represented an important job resource (GRR).

3.3.2 Postintervention: meaningfulness

All seven of the preintervention interviews expressed that skin-to-skin contact was meaningful to themselves and their patients. They saw SSC as meaningful to the mothers:

> "I think they feel better, there [is] this calmness [the mothers] feel while their babies are with them, they are not worried. Because before, the moment we take the baby, they keep asking us, 'Where is my baby … where is my baby?' like their mind is where their baby is. But right now, I think they feel better with their baby" (Midwife 13).

The mothers knew where their babies were—with them while SSC—rather than with multiple babies on the table on the other side of the room. The key informant expressed that this makes mothers calmer.

The key informants saw SSC as meaningful for the babies.

> "There are so many activities this baby does like lifting the head, looking for the breast … we have seen that it is very wonderful yes because we have been depriving the baby of the maternal love and bonding and keeping the baby away for some good minutes that [now] we [are] trying to help the mother in this first one hour" (Intern 8)

The staff recognized the instinctive behaviors of the newborn during SSC and the importance of the experience to the bonding of both the mother and the baby. The staff member also recognized their role in making this bonding experience possible for the dyad or not.

They saw SSC as meaningful to the staff, in terms of getting their work done.

> "It is a good thing; it gives a lot of happiness to the mother. The mother feels so good when they are holding their baby on her chest, and it gives them a lot of happiness and joy. They even give you room to do other things; if you are delivering the placenta or closing incisions, they don't mind; they are just looking at their babies" (Intern 9).

And they also saw SSC as meaningful to the staff, in terms of increasing their personal reward.

> "Actually, since l started working with [this], I climb [into] the bed to sleep and sleep deeply because I am satisfied with what l have done. I leave the hospital … excited and satisfied with my job" (Midwife 14).

4 Discussion

PRECESS, a rapid practice change strategy that has been used to successfully implement SSC (35, 41), inherently creates a coherent work experience in that it supports a comprehensive, manageable, and meaningful practice transition. PRECESS does this through multiple means of providing job resources in the workplace: education (formal and informal) as well as 24 h pragmatic support, constructive feedback, problem-solving, and recognizing the existing skills and strengths of the team. However, this study is the first report of use of Antonovsky's SOC framework as the lens in a thematic analysis of staff members' interviews before and after SSC practice change with the PRECESS strategy (Figure 1).

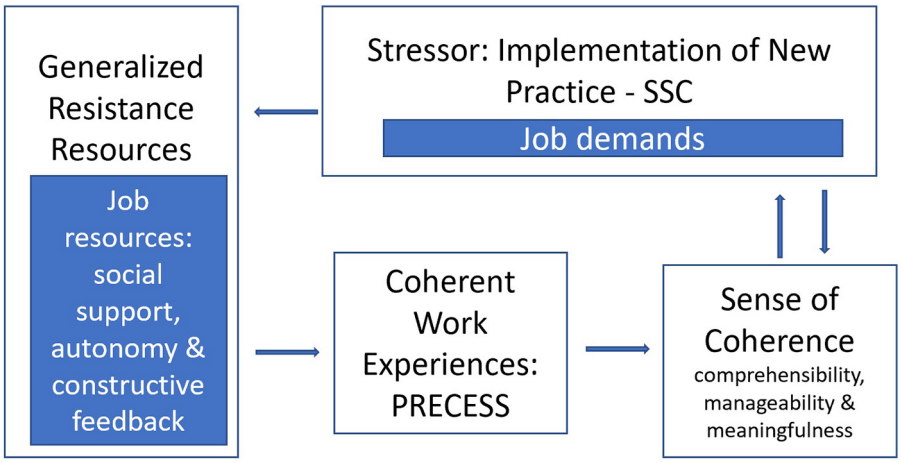

FIGURE 1
Applied model of salutogenic work practice for the context of implementing SSC. Adapted from Antonovsky (29).

The staff exhibited high comprehensibility of their tasks related to SSC even before the intervention. However, the clinical practice changed from a few minutes of SSC to the international standard of immediate, continuous, and uninterrupted SSC for at least 1 hour. The resource concerns expressed in relation to the stressor/job demands of implementing a new practice changed. Before the intervention, the challenges that would preclude a full hour of SSC included common practices in the maternity unit or operating theater. After the intervention, challenges were still described. However, now the challenges expressed were for occurrences that were more hypothetical and unusual. SSC during the common events were not mentioned as challenges anymore, perhaps because all had been practiced and experienced during the intervention.

Before the intervention, the challenges to manageability of an hour of SSC immediately after birth included job resources such as staffing, training, and concerns about enough space. There were specific concerns about the OR, including the lack of sterile cloths to allocate to the newborn. After the intervention, the challenges of staffing were reframed, transforming SSC into a factor in increasing workplace manageability. Now, immediate, continuous, and uninterrupted SSC after birth helped the busy midwives, since the dyad remained together. This conceptual change in the meaning of the work is related to the crafting of the job and can contribute to a more salutogenic life (28). The issue of the manageability of the space was reframed as well. Now the midwives who were part of the key informant interviews reported that they had a justification to keep mothers ambulating until they were ready to deliver, instead of "taking" a bed too early. Walking during labor decreases the duration of the first stage of labor and also decreases the risk of cesarean (42). Implementing SSC had a serendipitous effect of increasing ambulation during labor. This, in turn, increased manageability for the staff. Concerns about the manageability of SSC in the OR continued, specifically the concern about a physical resource, sterile cloths.

Before the intervention, the two to three minutes of SSC was considered meaningful to the staff, although perhaps not for longer than it takes to cut the umbilical cord after it stops pulsing. The key informants expressed concern that the mothers and other colleagues would not value a longer experience of SSC. The key informants highlighted the meaningfulness of the staff cohesion and their teamwork in learning new skills. After the intervention, they saw SSC as meaningful for the mother and for the babies and the staff, both professionally and personally. Qualitative stories highlighted emotional rewards such as how the mothers would look at their babies and bond, that the babies were active and seemed more alert, and that their work felt more positive. This corresponds with studies showing nurse wellbeing to be correlated with perceived patient impact (43) and reflects Antonovsky's assertion that meaningfulness drives the "will to cope" (1). Burnout of staff is a concern in Uganda (44). Research has found that many midwives report work-related stress. Utilizing problem-solving has been found to be one coping technique for stress and burnout in healthcare work in other research in Uganda (45). Dealing with the stress of death and dying has been found to be a contributing factor of work-related stress for midwives in Uganda (44). Skin-to-skin in the first hour enhances factors associated with decreased maternal and neonatal death (10, 25). While preintervention, there were concerns about SSC leading to more stress for the staff; the result expressed by the key informants postintervention was the opposite, with comments such as feeling excited and satisfied after a long day of work.

4.1 Strengths and limitation

A strength of this study is the finding that success in the implementation of a new clinical practice may be influenced by the comprehensibility, manageability, and meaningfulness of the work of the staff and the job resources—in this case, the

PRECESS team's 24 h/7 days a week availability. A limitation is that interview questions were not focused on specific SOC questions and did not elicit details of personal lives, history, and experiences, which could give insight into internal and external loads of individual staff members. An additional limitation is that this study reflects the implementation of SSC in one hospital in Uganda and may not be generalizable.

5 Conclusion

An analysis of the interviews with key informants through the lens of Antonovsky's SOC indicates that the hospital staff expressed comprehensibility, manageability, and meaningfulness related to their new practice of providing a full hour of immediate, continuous, and uninterrupted skin-to-skin contact after birth. Understanding and addressing these aspects of SOC when making practice change could have important implications on the uptake of SSC by practitioners and staff. Healthcare systems can turn SSC from a burden into a source of professional fulfillment by making investments in comprehensibility (education), manageability (resources), and by extension, meaningfulness (purpose of workplace tasks). The salutogenic approach ultimately reminds us that health is not the absence of difficulties but rather the capacity to negotiate them with coherence and hope—a lesson as important for caregivers as it is for patients. This has important salutogenic implications for mothers and babies as well, who can then benefit from the known advantages of this practice, including increased bonding, stability, and satisfaction. Implementing skin-to-skin contact, a worldwide priority in decreasing maternal and neonatal mortality, should consider the SOC of the staff when contemplating clinical practice change. Further research is needed to understand the implications of these findings in a variety of implementation strategies and settings.

Data availability statement

The original contributions presented in the study are included in the article/Supplementary Material, and further inquiries can be directed to the corresponding author.

Ethics statement

Ethical approval was obtained from Makerere University College of Health Sciences, the School of Health Sciences Institutional Review Board (IRB) (MAKSHSREC-2023-558), and the Uganda National Council for Science and Technology (UNCST) (HS3183ES) before data collection. The study received administrative clearance, informed consent, and voluntary participant participation, ensuring confidentiality and respecting participant privacy. Audiotapes and notes were kept securely. The studies were conducted in accordance with the local legislation and institutional requirements. The participants provided their written informed consent to participate in this study.

Author contributions

KB: Conceptualization, Project administration, Methodology, Investigation, Formal analysis, Writing – original draft, Writing – review & editing. SM: Conceptualization, Project administration, Methodology, Investigation, Writing – review & editing. AB: Conceptualization, Methodology, Investigation, Formal analysis, Writing – original draft, Writing – review & editing. KC: Conceptualization, Methodology, Investigation, Formal analysis, Writing – original draft, Writing – review & editing.

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Conflict of interest

KB, AB and KC were employed by Healthy Children Project, Inc.

The remaining author declares that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Generative AI statement

The author(s) declare that no Generative AI was used in the creation of this manuscript.

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The depth structure of a good birth: reconfiguring the environment in a high-risk labour ward birth and creating sanctuary behind a screen

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This article explores how the spatial, relational, and sensory conditions within an obstetric-led hospital birth room were subtly reconfigured to support a safe, satisfying birth, even though the birth in question was considered high risk. Drawing on autoethnographic reflections and interviews with caregivers from the author's own birth at the National Health Service Royal London Hospital, the paper examines the transformation of a standard labour ward room through a low-tech intervention: the erection of a cloth screen brought from home. This simple act created a distinct spatial zone in which institutional norms were less prevalent, fostering privacy, autonomy, and integrative care practices that protected physiological labour and enhanced maternal agency. The article situates this personal narrative within broader theoretical frameworks of birth territory, sociospatial theory, environmental psychology, and institutional power, arguing that space and care interact in complex ways to shape birth experiences. It contributes to calls for more humanised, woman-centred approaches to birth architecture and practice, particularly in highly techno-rational and medicalised settings, and proposes that even small acts of spatial resistance have the potential to generate meaningful shifts in care culture.

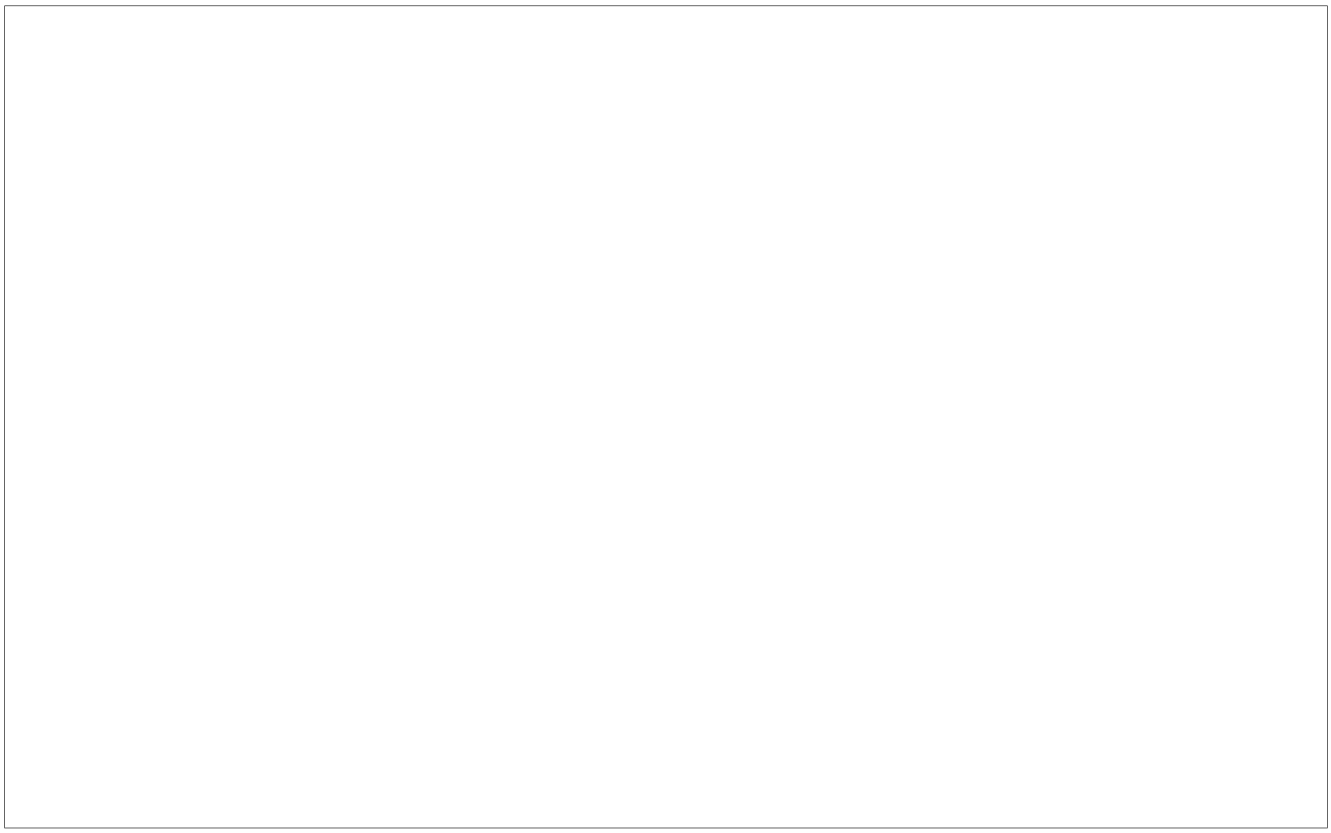
KEYWORDS

high-risk birth, birth environments, physiological birth, birth unit design, birth territories, obstetric care, midwifery care, birthing people's autonomy

1 Introduction

In 2021, I gave birth to premature twins in a high-risk labour room at the Royal London Hospital. Determined to exercise my agency, I brought with me a 2 m^2 piece of printed cotton fabric, shown in Figure 1, with the intention of creating a private space, or a den, in the labour room. As an academic architect with an interest in the sociospatial structuring of human experience, I suspected that this intervention might increase the likelihood of my experiencing a safe, satisfying birth. This article spatially analyses what happened during the unmedicated vaginal birth of Twin 1, Julian, which was 'outside guidance'. It is intended as a springboard for future research into the same topic and, based on a single case study, presents the hypothesis that spatial, relational, and sensory conditions within obstetric-led hospital birth rooms can be subtly reconfigured to better support safe, satisfying birth.

The text is structured as follows: Section 2 is an introduction to literature as a backdrop to this case study, about what is already known about the relationship between birth



environments and safe, satisfying birth and why such conditions are often difficult to achieve for people categorised as 'high risk'. Section 3 is the methodology of the case study and its underpinning sociospatial assumptions. Section 4 is a narrative birth story, based on the birth notes obtained from the hospital, along with my own recollections, those of my husband Colin, our doula Becky, and the obstetrician Philippa. Section 5 is a series of reflections on the three key spaces which feature in the birth story: the bed, the bathroom, and the screened birthspace and how these spaces interacted with caregiving practices and institutional norms at the Royal London in ways which resulted in my experiencing a safe, satisfying birth. Finally, in the conclusion (Section 6), some implications are suggested for future design and research.

2 Birth environments for a safe, satisfying birth

Ensuring a positive birth experience benefits not only the birthing person but also the baby, caregivers, and society. Safe, satisfying birth (SSB) is one in which no one is harmed physically or psychologically, and where the birthing person feels untraumatised by the experience. It is often correlated with physiological birth, characterised by spontaneous labour onset and minimal intervention (1), although they are not always the same. SSB is more likely if the birth experience includes physiological labour as hormones released during it such as oxytocin support infant/parent attachment (2, 3). SSB supports parental wellbeing and infant health because birth has lasting psychological effects; those who feel respected and safe report greater fulfilment and lower postpartum depression (4) while a traumatic childbirth experience can result in posttraumatic stress disorder (PTSD), fear of childbirth, and disrupted bonding (5). The benefits of SSB extend beyond individuals; woman-centred care is a human right (4) and key to reducing unnecessary interventions that burden healthcare systems.

Woman-centred care contributes to SSB. A birth environment is composed of physical space (objects, decor) as well as people, and it is situated in the wider structures of society and its institution(s), and the human and non-human components of birth environments interact with one another, shaping the experiences of all occupants. Foureur developed a conceptual model describing the relationships among the set of variables in a birth environment: safe, satisfying birth is a function of the 'birthing person's stress' and 'communication' with the birthing person multiplied by 'staff stress and communication' mediated by 'birth unit design' and 'model of care' (6). Lefebvre (7) argues that spaces are always imbued with social and ideological meaning, and this includes birth environments. Nations, institutions, corporations, or individuals claim ownership of different types of birth environment, shaping their characteristics, accessibility, and meaning (8). Institutional norms of birth caregiving practices as well as acceptable behaviour of birthing people are communicated by the environment in multiple ways. Caregiver philosophy, continuous labour support, and communication dynamics significantly shape the culture of birth (9, 10). Humanised care, particularly in high-risk births, prioritises shared decision-making and emotional safety (11),

reinforcing the idea that the emotional climate co-created by companions, staff, and the wider institution is just as critical to SSB as the physical environment.

2.1 The impact of the birth environment on birthing people and babies

The birth environment seems to play a crucial role in shaping birth outcomes and experiences, and whether SSB is achieved. Birth room design has been shown to influence physiological responses, including the production of oxytocin, a key hormone in labour and emotional bonding (5). A considerable proportion of birthing people express a preference for a cosy and familiar birthing environment (12–15). This 'homely' birth setting may be described as the opposite of a hospital environment. Architecture and design can facilitate behaviours known to enhance wellbeing during labour, such as free movement (12), adopting varied positions (9, 16), personalising the space (17), capacity for relaxation (18, 19), feeling comfortable (20), and engendering a sense of privacy and protection (21, 22). When birthing people are protected, can move freely, and can personalise their space, they are more likely to experience reduced stress and improved labour progression and more likely to achieve SSB.

Two systematic reviews on the effects of birthing room design on maternal and neonatal outcomes have been carried out, although both comment that available evidence is scant and a safe parent and baby does not necessarily mean that the birthing person experienced SSB. A systematic review by Nilsson et al. (5) found that optimal spatial conditions include 'means of distraction, comfort, and relaxation', temperature, 'features of familiarity' (things from home), and 'diminishing a technocratic environment'. Sands et al. (23), in their review of birth environments for people with complex pregnancies, found that features such as adaptability, spaciousness, and comfort can support staff in assisting birthing people to adopt more comfortable positions, facilitating more straightforward births. Birthing people valued access to birthing pools and supportive tools such as floor mats or bean bags, as well as the freedom to move during labour. A key preference expressed was for a private, homely space where they could control access and feel shielded from the view of others.

However, spatial environments in which SSB can be more difficult to achieve include obstetric-led units where continuous foetal monitoring and oxytocin infusions may restrict mobility (23). The study by Sands et al. (23) also highlighted that birth environments for high-risk labour are shaped by competing priorities between birthing people, midwives, and obstetricians, which can create tension in how space is designed and used. The findings of these studies are echoed throughout the qualitative literature (15, 24–27). In terms of quantitative studies, for birthing people with low-risk pregnancies who birth in midwifery-led units, which tend to have the qualities listed, there are lower medical intervention rates without increased risk to mothers or babies (28). No large-scale cohort-level data exists, however, for the impact of birth environment on high-risk labour and birth.

2.2 The impact of the birth environment on caregivers

The behaviour of companions and staff plays a pivotal role in shaping safe, satisfying birth experiences. High-quality midwifery care, marked by continuous support and respect for physiological processes, is strongly associated with improved maternal and neonatal outcomes (29). The people who comprise the birth environment also reflect and reinforce a particular culture of care (10), and as labour intensifies, birthing people often become less aware of spatial design and increasingly reliant on caregivers (30). In birth environments that host 'integrative power' (22), where the birthing person is the key decision-maker, through midwifery guardianship and respect for bodily sensations, birthing people retain their agency. Conversely, environments steeped in 'disintegrative power', where the birthing person is coerced or forced by caregivers, promote passivity, especially when interventions are framed as essential or when time pressure dominates (24).

Most births take place in hospitals, institutions oriented towards treating illness. In such settings, physicians trained to manage complications are more likely to use interventions. Midwifery-led settings typically involve fewer interventions, as midwives are more likely to support physiological birth (10). The values and philosophies of care providers, the presence of doulas, and staff willingness to offer continuous support shape the culture of the birth environment. This culture directly impacts communication, safety, and outcomes for birthing people (9, 10). Supportive caregivers who offer privacy, reduce interruptions, and protect the 'birth bubble' allow birthing people to relax and let go of fear, even in clinical settings (31). In contrast, surveillance and authoritative control create anxiety and disempowerment and increase the likelihood of PTSD.

Although UK policy suggests everyone should have a choice in birthplace, people with high-risk pregnancies, estimated at 15%–20% of all pregnancies (32), are typically required to birth in obstetric-led units where safety concerns dominate care practices. In these settings, the definition of 'optimal care' is largely medicalised, prioritising continuous monitoring and rapid access to intervention (11, 33). Driven by clinical safety, it often compromises psychological and emotional wellbeing. People categorised as high-risk report heightened anxiety and emotional distress (34), exacerbated by feelings of vulnerability and disempowerment from the 'high-risk' label (33, 35).

Key features of humanised birth, such as privacy, autonomy, and environmental comfort, are often missing in obstetric units. Features such as natural light, control over space, and noise reduction are frequently absent, contributing to emotional discomfort and disrupted hormonal regulation essential for labour (23). Structural barriers, including legal liability concerns, diminished midwifery authority, and physician-led decision-making, may further inhibit personalised, respectful care (11). Although alternative birth environments have been shown to support normal birth (14), they remain largely inaccessible to high-risk populations. In addition, most births in the UK (86%) still occur in obstetric-led units (23, 36), due to preference,

limited choice, or labour transfer (23), with even higher rates in the USA (98.4%) and Australia (93.6%) (37, 38). Although up to 62% of birthing people may require obstetric care due to complications (39), it is not clear whether fewer would require help if hospital birth environments were more conducive to promoting physiological birth. The sheer numbers of births in hospitals, combined with evidence that birth environment is linked to SSB, underscore the urgent need for humanised sociospatial approaches to design within these medicalised settings.

2.3 Gaps in the literature about birth environments and birth outcomes

Despite increasing awareness of how birth environments influence maternal and neonatal outcomes, several research gaps remain. First, there is a need for design-related research that goes beyond the exclusionary confines of quantitative, experimental studies typically associated with healthcare facility design (30, 40). Many studies fail to clearly distinguish between spatial structuring and spatial aesthetics, obscuring how specific environmental factors operate (22). Moreover, the mechanisms by which environmental benefits affect labour and birth remain largely untheorised, contributing to the perception that positive spatial features are luxuries rather than essential supports for physiological birth (22). Although tools such as the Birth Unit Spatial Evaluation Tool (BUDSET) have been developed (9), there is still no widely tested and adopted instrument for measuring the qualities of birth environments. Observational research, such as Joyce or Lepori's studies on home birth behaviours, has highlighted the value of returning to fundamental design principles grounded in spontaneous maternal behaviour (41, 42). Yet, interdisciplinary studies that centre women's and midwives' spatial practices and experiences remain limited. Most research focuses on outcomes rather than on how design affects clinical practice, despite evidence that space shapes midwifery care (43–45). Given that most births in high- and middle-income countries occur in hospital settings, the absence of detailed studies on how design impacts health and wellbeing is particularly concerning (24). A paradigm shift is needed, away from a mechanistic, institution-led model of design and towards woman-centred design, grounded in users' perceptions and informed by a rich, interdisciplinary evidence base (24, 25, 46).

3 Methodological recollections of a high-risk birth

The study adopts an autoethnographic, qualitative, narrative case study approach to explore the sociospatial dynamics of an unmedicated vaginal birth 'outside guidance' of a first twin in an obstetric-led hospital setting, categorised as high-risk. It is phenomenological and rhizomatic, affective and emergent, attending to spatial intensities (47), and draws on the lived, embodied spatial experience (48), which is vital for connecting architectural form to bodily presence in birth. Autoethnography is used as a rigorous research method, triangulated by interviews with my birth companions, rooted in lived experience and emotion (49). Since I, the author, am both researcher and birthing subject, the article draws on personal experience, hospital birth notes, and reflections from my partner Colin O'Sullivan, doula Becky Reed, and obstetrician Philippa Corson to construct a narrative birth story. V was not included in the interviews because she was well represented through her written notes, which offered more insight than her limited verbal interactions at the time. Richardson (50) encourages using writing itself as a site of meaning-making and theory. And birth stories, as Kohler Riessman (51) suggests, challenge dominant discourses of objectivity, embracing positionality and subjectivity as critical tools for inquiry.

Central to this methodology is the understanding that birth unfolds not just physiologically, but through space, affect, and relational practices: space as a social product, not just a backdrop (52). Birthspaces are lived, contested, and ideologically charged. The analysis extends through the production and interpretation of architectural drawings and photographs, mapping how spatial elements, such as room layout, materiality, thresholds, and visibility, interact with emotional states and caregiving practices, exploring the interaction between institutional power and embodied experience (53). This multi-modal methodology highlights the agency of space in shaping experience and enables a layered exploration of design, embodiment, and institutional power. The chronological story of the day traces intensities and spatial transitions as they emerged in the narratives of the three participants. In doing so, the birth story becomes not only a mode of knowledge production but also a spatial critique and an act of reclaiming childbirth as situated, relational, and embodied.

3.1 Sociospatial theoretical framings

There are three spatial theories which are central to the study: space syntax (54), birth territory (22), and depth structure (55, 56). Space syntax quantifies spatial relationships, assessing how well-connected or segregated a space is. Key measures include 'integration' (how easily a space can be reached from all other spaces within a spatial system), step depth (number of spaces, threholds or 'steps' passed-through to reach an area), and visibility (how much of a spatial layout can be seen from any given point) (54, 57, 58). Widely applied in hospital design, space syntax helps researchers understand how spatial configurations shape behaviour, communication, and social engagement (58, 59). Spatial arrangement influences wayfinding, privacy, security, staff–patient interaction, and efficiency (50), and low integration can improve privacy by reducing unnecessary movement and visibility (60), while higher integration can enhance collaboration between caregivers, improving patient safety (58). In maternity settings, birth rooms with high integration were associated with better care satisfaction but lower satisfaction with privacy (60).

In birth territory theory, Fahy and Parratt (22) suggest birth environments exist on a spectrum between 'surveillance' and

'sanctum'. The sanctum is quiet, private, its boundaries protective rather than restrictive. Here, the philosophy is one of trusting the physiological process of birth and safeguarding autonomy (integrative power). The surveillance room is a clinical space where the hospital bed takes centre stage, designed around observation, where birthing people are positioned more as patients to be managed than as active participants in their own experience (disintegrative power). Goldkuhl et al. (24) explored surveillance and sanctuary in different hospital rooms in Sweden and found that they are created not only by architecture but also by how caregivers behave. They call a birth well-supported by caregivers in which the person giving birth experiences a sense of sanctuary and autonomy the 'personal room' and contrast this with the 'institutional room' in which the birthing person feels subjected to the rules of the institution and these take precedence over her autonomy.

Depth structure (55, 56) is a conceptualisation of embedded social space which brings together the space syntax theory of integration, step depth, and visibility (54, 57, 58) with the sociospatial theory of Lefebvre and Soja (7, 52, 53). A depth structure is a series of spatial zones which divide up a room or building, each of which has its own set of social norms, or decorum. The zones are defined by physical features, which form thresholds and define where decorum changes. Usually, the zones closest to common-to-all places (such as the street or corridor), with the least step depth in space syntax terms, tend to have decorum which is more public in character, the zones deeper into the structure tend to have more private characteristics, and the decorum may be more specific or exclusionary. The idea of depth structure led me to purchase the cloth to create a new zone in the room in the first place, as well as informing my understanding of what happened on the day I gave birth.

4 The story of the birth of Julian

This is the story of the birth of Twin 1, Julian. Twin 2, Críostóir, was born about an hour later by Category 1 emergency C-section after a failed breech extraction, which, while urgent, I did not find traumatic. As I laboured with the twins, people (and babies) moved from here to there; we occupied a sequence of spaces in different ways. The chemicals my brain released mean my recollections are not linear, yet the physical memory of the spaces I occupied and the details of each are etched into my mind. The following story was woven together from the narratives of the three people I interviewed, along with excerpts from the official birth notes (italics) alongside my own recollections.

4.1 The background to this birth

Due to the high-risk nature of my pregnancy and birth, I was not eligible to occupy the environment designed for woman-centred care and optimise conditions for physiological birth: the birth centre. I had five biomedical risk factors that 'place the mother and/or her baby at increased risk for adverse outcomes' (61). In 2012, I had a traumatic first birth: an obstructed labour, a caesarian section under general anaesthetic and a severe haemorrhage which resulted in posttraumatic stress disorder and postpartum anxiety. I therefore had a non-standard T-shaped scar on my uterus for which very little research on vaginal birth after caesarean exists. I was also pregnant with twins; I was old (39); it was an IVF pregnancy. I'd had bleeding during pregnancy which had resulted in being admitted to the hospital twice, threatened early labour at 29 weeks, and then when labour began in earnest, it was premature at 32 weeks and 4 days. The guidance for the birth was a scheduled c-section, or at the very least, labouring with an epidural in place to facilitate fast relocation to theatre. I generally avoided telling anyone in a white coat my desire to have a much-longed-for vaginal birth, because it was exhausting having the same conversations repeatedly. I planned for it anyway, engaging a doula and considering the pros and cons of a home birth.

During the run-up to the birth at around 29 weeks, I was admitted to the hospital due to heavy bleeding and threatened labour. I spent two nights in the room where I eventually gave birth, so it was familiar territory. I also briefly met Philippa during this admission, explained about the previous birth, PTSD and other factors, and both my Colin and I liked and trusted her immediately. When I went into labour, due to the prematurity, it was essential for the safety of my babies to be near high-level neonatal medical care. Fervent voices argue that woman-centred care is especially essential for those who find themselves vulnerable or marginalised (66). For people like me, however, who must birth in a highly medicalised environment, 'woman-centred' care is often a distant pipe dream. Nonetheless, I had a safe, satisfying birth.

4.2 The birth environment

I laboured in a room at the high-risk end of the labour ward, a drawing of which is shown in Figure 2. Central to the room was the bed, positioned crossways and flanked by a locker for personal items, a visitor's chair with dark blue plastic upholstery, and a wheeled table for meals. Opposite the bed hung a large institutional clock. Above, a ceiling-mounted examination light. The room, approximately 9 m $\times$5 m, had a corridor door at one end and an ensuite bathroom door set at a 45° angle. A beige curtain screened the corridor door. At the far end, a tall window looked over the city, its cream curtains ineffective at blocking light. Off-white walls displayed A4 hygiene posters, and the ceiling featured grey tiles, lights, sprinklers, and vents. Along the side of the room, timber-effect cupboards concealed oxygen, gas and air, and electricity supplies, attempting a more domestic appearance. Near the window stood a desk with a PC and a yellow stacking chair. One wall held a sink, a yellow bin, and dispensers for gloves, aprons, soap, and towels. The 2 m $\times$2 m bathroom had grey–blue decor, a shower with grab rails, a toilet with a black seat, a sink, a mirror, and a wheeled shower chair. A blue exercise mat was rolled up in the corner, along with two cribs containing towels and, later, resuscitation stations.

4.3 Arrival and triage (space: the triage room)

Having been awoken by strong twinges at 1 a.m., I arrived at the Royal London Hospital around 2 a.m., was briefly examined by a midwife, and laboured in a triage room for around 2 h, mostly without a caregiver present. Wearing a soft yellow t-shirt and a pair of pants, I stood and leaned on the bed, humming through the contractions. Colin went out repeatedly to inform the staff that I was in labour, and I was surprised they did not deal with me sooner, but there was a sense that the place was very busy.

> I remember the sunrise being beautiful, but the room we were in—when we saw the sunrise—was facing the sunrise. (Colin)

4.50—Reviewed by doctor, vaginal examination (VE) shows 3 cm dilated, partially effaced, declined monitoring. Explained in view of foetal tachycardia pros + cons of monitoring, agrees to have CTG. In view of previous complications, understands risk of scar/uterine incision, C-section declined. Analgesics offered.

I was eventually attached to a foetal heart rate monitor, lying on my back, and it was agreed that I was in established labour with regular contractions. The babies' heart rates remained within normal range throughout labour and did not decelerate.

4.4 Transfer to labour ward, first stage labour (places: screened birthspace and bed)

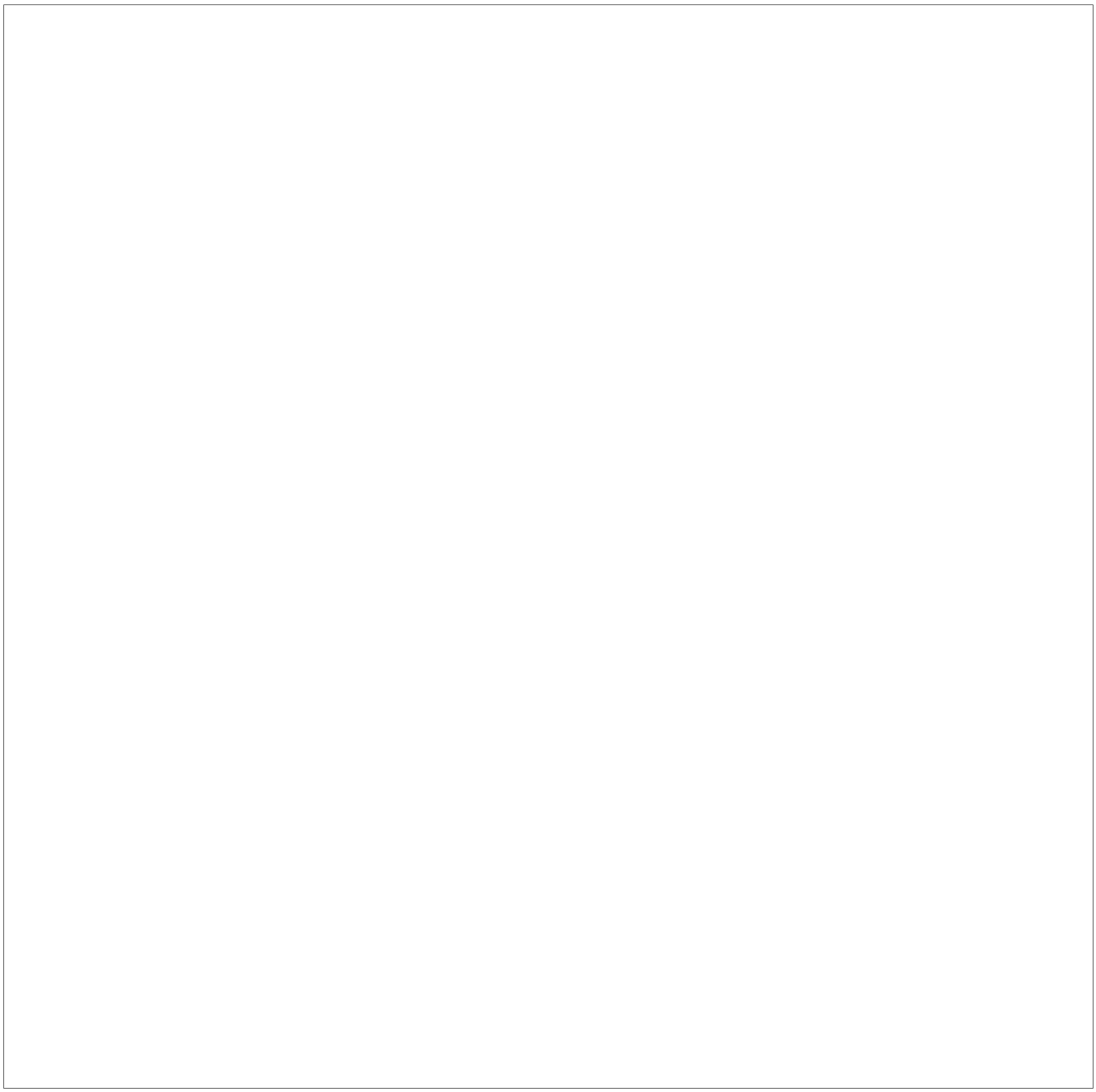
I walked with a midwife to the high-risk labour ward room.

5.30—Admitted and transferred to labour ward, but no midwife available to take over care, awaiting labour ward midwife to take over care. Registrar did bedside ultrasound to determine position of babies (one head down, one breech), client cannulated by anesthetist.

On my instructions, Colin set up the screen. We hung the cloth from drip stands across the room about two-thirds of the way between the door and the window. It was dark red, printed with a circular mandala-style design which reminded me of a uterus (see Figure 1). It created a saggy screen, and behind it, we put the visitors' chair and the exercise mat on the floor. Unlike everything else in the room, I had designed and made this space for myself. An axonometric drawing of the room including the screened birthspace is shown in Figure 3.

> I remember clipping it to stuff or trying to find ways to clip it to things. I remember those metal pegs in the box with the little rubber ends on them … I do remember trying to resist the temptation to string it onto a really important machine. I think they were all looking at me thinking what the f*ck are you doing? I didn't really care. (Colin)

> I remember the screen … I remember it being very set up, in the way that you wanted. And that was good, I think. I had a woman … having a vaginal birth after cesarean. And she had put fairy lights and things around the bed. And I remember walking in and just, she looked at me and I looked at her and I said, "I can see how much you really want this birth". And she was just like, yes, yes, I want it so much. And sometimes, that desire to have that space is also kind of representative, I think, of how much you want a certain



> thing to happen … And actually, again, some of my colleagues don't like it. But I quite like it when somebody has made a space theirs. And taking the time to encourage somebody to feel comfortable with you, at home with you, safe in a room in an environment that there's a two-way thing there, and they have some power and control. (Philippa)

A midwife asked me to get onto the bed for further monitoring and a VE.

6.35—Midwife takes over care. VE shows 4 cm of cervix. Client vomited and offered anti-emetic. Client is lying on the floor mat and used a cloth to divide rest of the room upon arrival.

6.42—*Client declined an anti-emetic; auscultated babies [listened to heartbeat sounds] and took blood pressure.*

The monitoring was very time-consuming as there needed to be two belts, and they kept slipping, or picking up my heart rate. Every time they slipped, the monitoring period would restart.

6.45—CTG monitoring session: noticed that trace might be picking up the same fetal heart rate. Will ask the doctor to come and scan client.

6.51—Doctor scanning client and has picked up both foetal heart rates.

7.03—Client changed position onto bed, and it's difficult to auscultate.

> I do remember those belts, though … it couldn't ever stay on, like, it kept moving. And I was looking and thinking, in what f*cking medical environment do they think this is a

> good idea, and why can't somebody invent a better one, like, where it's taped to you or something? Like, it kept moving. And then they'd go, "Oh, we're not getting a clear reading". (Colin)

7.10—Client needing the toilet. Client said to have her off the CTG monitor immediately, which she did. Doctor has signed the CTG tracing.

7.20—Client is out from the toilet and is on the birthing ball currently.

7.30—Shift hand over notes: intermittent monitoring, [will] attempt vaginal delivery, anti-emetic, and analgesia [incorrect, I'd had neither], drink only clear fluids [in case of CS].

8.00—Client is in the shower currently.

8.30—Care handed over to midwife V. Plan: routine care.

8.43—(V's handwriting)—Jane in a partitioned area of the room. Call to doula Becky, she is keen to come and support. Agreed with coordinator she can come.

Around this time, I had an unwelcome intrusion behind the screen. Hearing me groaning, a clinician offered unsolicited sympathy and pain relief. I interpreted this as a misreading of my experience, for I had not lost control and was embracing the process and was frustrated at having my vocalisations pathologised.

9.00—Jane on birth mat, membranes intact, twins' heartrates monitored.

9.30—On birth mat, discussed need for VE to check progress. Phone call to neonatal SHO to inform of labour 32 + 4 twins.

4.5 Agreeing to a C-section (place: bed)

9.50—Discussion with patient and partner following VE findings … c/s vs labour, patient and partner will discuss.

While it is not clearly written in the notes, I remember that at this VE, dilation was 6 cm. Lying on the bed for the examination was disempowering and uncomfortable, and I remained sitting on the bed while the recommendation was persuasively made to have a caesarean. Several staff had arrived to discuss options with me; the notes name four people plus the anaesthetic team. I vividly remember the on-call obstetrician saying I was 'only' 6 cm dilated and that 'in my position she would have a CS'. They stood in a row of concerned faces, above me. I, by this point feeling powerless, agreed. I had fought institutional pressure for almost 7 h and explained myself repeatedly, while labouring, and my fight was gone.

> I remember it as almost like a cinematic thing … The mental snapshot I have is you were on the bed in a room that it wasn't so full of people, and then suddenly the room being quite full of people … like a herd of people … I remember feeling like it didn't belong to us anymore, the room … because when you were in bed every time somebody came into the room, no matter how junior they were, they were more expert than you and me in the view of the room. (Colin)

4.6 Philippa takes over and Becky arrives (place: bathroom)

Colin and I then escaped into the bathroom. I needed to pee after lying down for so long. I wanted to get into the hot shower, and most of all, I wanted to be away from surveillance.

> And then everybody else was outside, and it was just a horrible bathroom, obviously designed by a contractor for the NHS, but it belonged to us, and there was nobody in there, and people had to knock to come in. It was peaceful … It was respite after all the insistence that you might be doing something wrong and putting your children in jeopardy … And then when the door was closed … even the most annoying medics trying to invade your privacy, they didn't anymore because you could have been having a sh*t in the bathroom! (Colin)

At that moment, two things happened to change the course of events. Becky, my doula, arrived at the hospital. And, consultant Philippa, the Royal London Obstetric Lead who has a special interest in breech birth, took over my care and made decisions which supported my desire to birth 'outside guidance'. Philippa knew my desires, because I had spoken to her prior to the birth. We had a good but brief meeting when I was admitted for bleeding; she was the reason I relocated my care to the Royal London from Guy's and St Thomas' at around 29 weeks.

> I don't think that I was the consultant on call that day. I think it was one of my colleagues, who was much more uncomfortable with what was happening … I had come in just after you'd had an examination by my colleague who'd said you should have a caesarean … And I think your partner was just like, "But she doesn't want it". And it just felt at that moment that it was probably right to say, "All right, you go, and do what else is going on in labour ward, and I'll stay here for a bit, just to see which way the wind is blowing". And it was fortunate that day I was able to do that. But it seemed to me that was the right thing to do in those circumstances. (Philippa)

> I think yours and my prior knowledge of each other … I trusted that you would listen to me, if the risk was too much. So, a two-way trust process, I think, with birth outside guidance … I am happy to hold a degree of risk that perhaps others aren't always comfortable with, particularly if there's been a prior relationship … a lot of obstetricians will ask the question of "What if somebody wants to do something that's unsafe?" That word comes up quite a lot. "Have you told them it's unsafe?" … But there's a line to walk between ensuring safety and inflicting psychological trauma. That's my perspective.

> I was met with what I felt like quite a shocking scene because I was arriving there to support you in your labour. And when I walked into the room, there was a bed with nobody on it. And

> Colin was standing by the bed and he said something like, "She's six centimetres and she's decided to have a caesarean". And me thinking, what? Why? … I was absolutely clear in my mind that you had been absolutely clear in your mind that that was not what you wanted … Something must've happened that's made Jane very scared or there's been a terrible power story where she's been completely subjugated and this feels like the only way out, or the way through … I obviously straight away went to see you in the shower and you were just looking amazing and beautiful and comfortable … So then I was more confused … I mean, perhaps my position in that room then was actually just to look at you and say: "I am an experienced midwife. I believe you can do this. In fact, I believe you are doing it". (Becky)

Becky did a couple of things to help me feel safe and contained, creating better conditions for physiological birth: she switched off the light in the bathroom, and she cheered me on, said how wonderfully I was doing, how normal everything seemed. She gave me some clear facts about the progression of labour and suggested that Philippa come into the bathroom to speak to me. Philippa spoke to me quietly one-to-one in the steamy darkness, as I had hot water pumping from the shower into my back. She reassured me that she saw no reason why I would be unable to have a vaginal birth.

> Everything changed when [Becky] arrived. Like everything. You were different when she got there. And I think it must have been to do with the feeling of kind of protection, a bit, from all the brouhaha. And she changed and affected the timing of Julian's birth, because up to that point, they were beginning to be a bit like, "This needs to happen". And people stopped talking about timelines as immediate as they had been the five minutes before she got there. (Colin)

> I remember [Philippa] then being quite surprising because I was expecting, you know, "Okay, that's it, that's what we're doing, we're going for section", and she said something like, "We're busy at the moment in theatre, you're doing fine, you carry on, you get on with what you're doing, and I will come back and let you know when the theatres are free". And at that moment, my message that I felt from her was, I feel you're okay, I feel you're safe, I'm not worried about you … And she then disappeared. I think she waited a little while and watched you have a couple of contractions; she then went off. (Becky)

10.44 (Philippa's handwriting)—patient in shower; doula present also; patient feels progress is slow, worried about scar rupture and progression to emergency CS, warned that length of labour will increase chance of scar rupture; explained that there is another patient in theatre at present, prior to moving to theatre can reexamine to see if any more progress; patient happy with this; MW to kindly listen to foetal heart rate while patient in shower; continuous CTG after this.

11.10 (V's handwriting)—Jane in shower, doula present.

4.7 Established labour (places: screened birthspace and bathroom)

As I gradually got deeper into labour, as the baby descended, I withdrew into an internal mental world. This was reflected in my choice of spaces, I moved from the bathroom where I stood under the hot shower which massaged my back and relieved the pain, to behind the cloth on the floor, or sitting on the birth ball which also moved with me. I leaned on the visitors' chair, the shower chair and the bathroom grab rails. I hung off Colin and the door frame of the bathroom. The sequence of spaces and how I occupied them is shown in Figure 4.

> You were, in my experience … a woman in entirely normal labour, behaving normally. So just my usual behaviour with a woman in labour, which would be to say, you're doing really well, this is great, you're doing fine, you're doing well. And you were showering yourself and having, yeah, in normal labour. And it sounded like it was progressing really well. (Becky)

11.35 a.m.—On birthing mat, passed urine.

12.10 p.m. (Philippa's handwriting)—returned to reexamine patient prior to consideration of proceeding to CS; discussed options as now fully dilated, patient happy to proceed with vag delivery; discussed that we would advise to foetal monitoring at this stage ideally continuous CTG, other option is for auscultation every 5 min as now in active labour, patient declining CTG.

> Philippa said something along the lines of "You're doing fine. What do you want to do?" And then maybe we had a little discussion or something, but it made absolute sense for you to carry on … then left. She left and I was completely stunned … And then you kind of went … "OK, that's it. I'm carrying on. Yes". Sort of a decision made by you. Instead of saying, "Oh, I'm defeated, I'm going to theatre, that's it", you kind of went, "Yeah, actually, I'm doing this". (Becky)

I went hot and had to throw everything off, and then cold and went under the shower or wrapped myself in my special blankets (Figure 4). I was in my own little bubble of intense concentration: noise-cancelling headphones, eyes closed against the room, which was too bright thanks to the light curtains, cracking them open only briefly to make eye contact with Colin and Becky for reassurance. At times, I needed to leave my sanctuaries. When requested to do so, I went on to the bed, for a vaginal examination or a period of foetal monitoring on the machine, although as labour progressed, this stopped and the midwife V shifted to intermittent mobile monitoring with a handheld Doppler, as staying still on my back was impossible.

4.8 Second stage (place: screened birthspace)

13.00 (V's handwriting)—On mat, Becky giving excellent support.

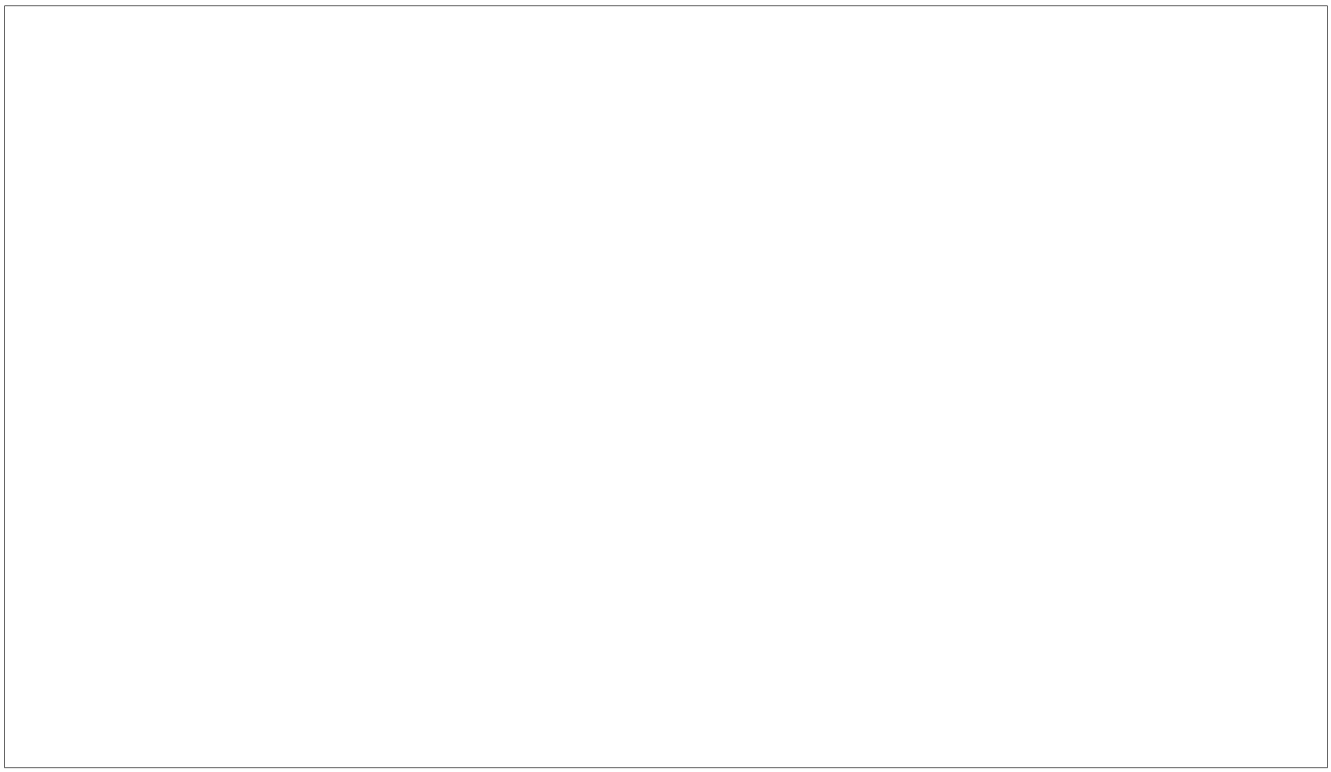
> Once Philippa had declared herself to be content with the situation and gone away, it seemed to me that the midwife then thought, "I'm not going to worry because the consultant's been in and said we're OK". … This is not what I was expecting … no doctors came in after that until Philippa came in later. I don't remember people walking in. What I remember is very few people coming in, and my amazement of being left to get on with it. (Becky)

13.10—Remains fully upright, neonatal team ready nearby.

> You were being a woman who was behaving instinctively … And very active and very upright. I knew by then that you knew that you could do it. So you were never at all, as far as I can remember, doubting yourself. In fact, you were slightly unusual because most women do. But you were not saying "I can't do this". You were saying "I am doing this". So, something had given you that strength and that awareness and that belief … It all felt very straightforward. (Becky)

By the second stage, I was ensconced behind the cloth (Figure 5 shows a silhouette of Colin and I behind the screen). The light was bright from the window, and the reds, purples, and deep oranges on the fabric framed a backdrop which contained my trusted people.

> That space that we created behind the cloth—what was it like? Surprisingly roomy. Very safe. Quite excluding. Very lovely colours … that was the effect of the effect of the of the cloth you had used, which was calming. But the main thing really about it was the separation, that it separated you from the hospital environment, and the bit of you that had agreed to



> the cesarean had gone. It was on the other side of the curtain … It separated that person from the person who was going to get on with it and do it. (Becky)

13.45—Standing and squatting, coping very well with pain without analgesia.

> And then being behind the curtain. I remember being over near the window then, and I remember the red leatherette chair. Maybe it was blue. It was red or blue. Something was red and something was blue. I remember you sitting in that chair … I remember draping things around your shoulders. I remember looking out at the sun from time to time. The jeans I was wearing, a red t-shirt, maybe. I remember holding on to you. At some stage, I was sitting down, and I was holding you. You were facing that way as well, and you were hovering over the floor. (Colin)

4.9 The birth (place: screened birthspace)

Philippa mentioned that I was nearing the end of my allotted 2 h time for pushing. I had a sense of panic when I heard that, because in my previous labour, I 'ran out of time', and it resulted in interventions which I was desperate to avoid. So I pushed mightily.

13.55—Urge to push.

> I think you were squatting, kneeling back, leaning back against Colin. And then I think I think I got you sitting on a bedpan and you were pushing. (Becky)

14.30—Philippa ruptures membranes.

> You were walking around about the time that you felt the urge to push. And I was literally crawling after you on my hands and knees because I was worried that this obviously small early baby would come out suddenly and plummet to the floor. And then … you stopped to be sick, and I was frantically crawling in the opposite direction so it didn't get in my hair. Whilst also thinking, "I mustn't let this distract me from, the possibility that this baby is quite imminent. (Philippa)

14.47—Bedside (sic) ultrasound scan to check position of second twin.

> So there was these two young women with different monitor machines … They were like scientists or something coming to do a test. It was funny, because it's very, I don't know, this very millennial old thing was happening on the floor, in a very on-the-floor kind of way, you know, because you couldn't see the hospital beds, and you couldn't see the machines that go ping, and you couldn't see [the women] either. (Colin)

14.58—Turned, facing forwards, standing.

> Every time somebody [came around the cloth], you got a glimpse into the room, and because I was sitting right next

> to you, and I was very concentrated on your breathing and your guttural noises. I would notice people coming in and out of the room, and so sometimes you'd look and there'd be like two people, and then there'd be 15 people. There was a ridiculous number of people in the room. (Colin)

> At some point also quite an army of neonatologists came in as well, but we ignored them … Let's not look at them at all because we don't need them at the moment. (Becky)

15.00—Pushing.

> I guess it's rare for that kind of thing, for somebody like you to have a vaginal birth after having such a traumatic first [birth], then with twins, and the fact that they're early … It did feel like we were celebrities … And there was people, like, whispering and, you know, talking about you, it was a very intense time. And just before he was born, sh*tloads of people came into the room, and it was like being the guinea pig, or the test case scenario … You can imagine people, like, all the way down the hall, it's happening now, it's happening now. (Colin)

15.04—Baby born.

Julian was born behind the cloth. I pushed him out; it felt momentous and powerful; I was a whole person, with jurisdiction and agency. I did it, it was not done to me. I was crouching with my legs wide on a blue birth stool which V had sourced from somewhere. Colin was holding me up from behind as I hung off him. Behind the cloth were me, Colin, Phillipa, Becky, and V. Phillipa was kneeling in front of me, supporting my perineum as the baby's head was born. She caught Julian in a towel and handed him to me. Unlike lying on the bed, with the team above me, I was eye-level with her. Becky was also kneeling, holding a mirror so I could see him emerging from my vagina, and taking photos. Photographs of this sequence of events are shown in Figure 6. V was off to one side, supporting with whatever Phillipa needed. I could not see the 'herd of people' and 'machines that go ping' on the other side of the screen; these are shown in Figure 7.

> And you pushed him out. It was, you know, as it should be. It was magical and amazing and straightforward and normal and expected by me, at least … I think for me as well, I felt completely safe … And it was all just a very, very straightforward baby birth … Your response is exactly what women do. "I've done it. I did it. I've fucking done it. My body's done it. I'm amazing" … And you were amazing and you did f*cking do it and it was incredible. (Becky)

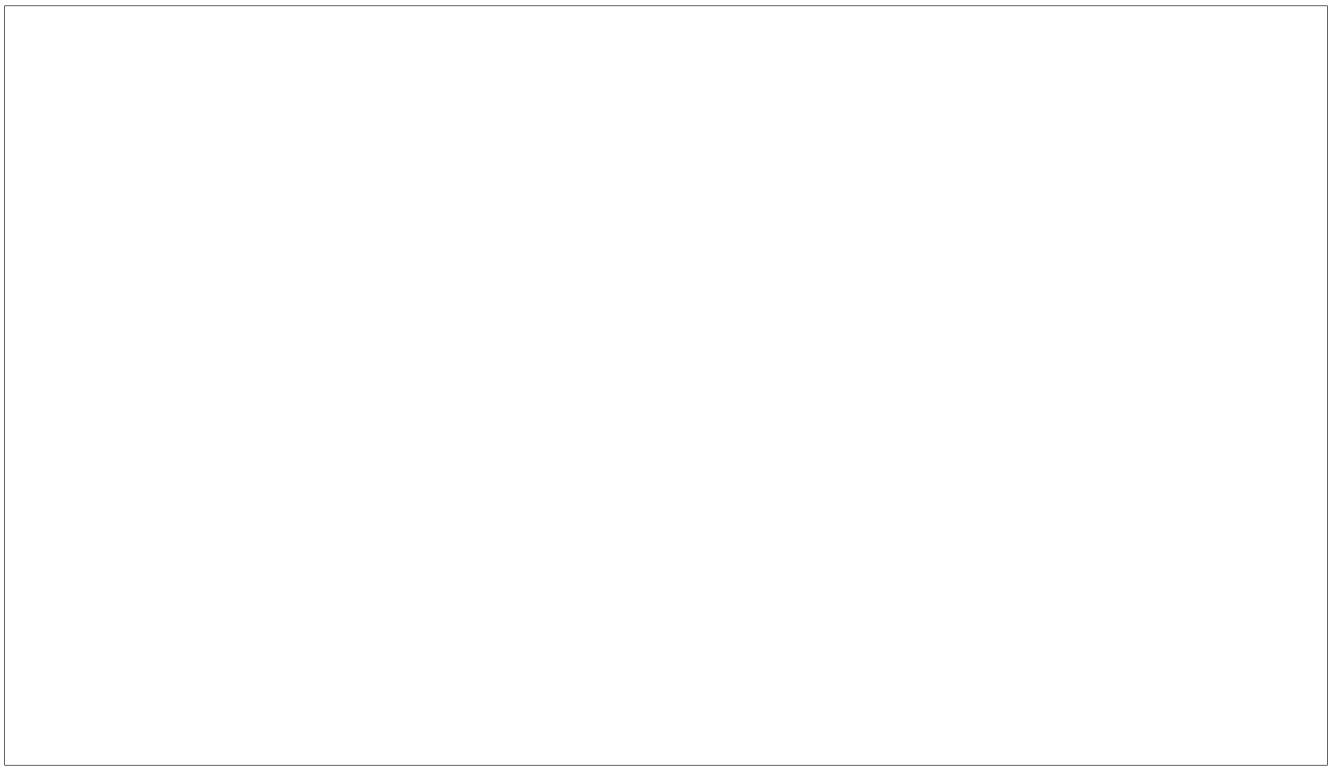
> I think my take home from it was that it was really very powerful … Julian came out, to be able to just sort of pass him through to you like that and see the expression. It was actually a very beautiful moment. It stuck with me. (Philippa)

5 Reflecting on birth in a nested depth structure

> The birthing room should have different spaces which allow the woman to retreat, use the bath or toilet but maintain privacy when she chooses. The process and pain of labour and birth induces various responses and women try to withdraw, to find places where they can be undisturbed, preoccupied with their feelings and focus on the changes taking place as the birth progresses (9).

5.1 Privacy and protection in the birth environment

After the screen was erected, the room had four distinct places, three of which were occupied at different times: the bed, with monitoring equipment; the bathroom, with a door which could be shut and locked; and behind the screen, the birthspace. These zones in the depth structure are shown in plan in Figure 8, and the most private of these, the bathroom and the screened birthspace, are shown in Figure 9. There was also the space between the door and the curtain although labour did not take place there as it was too close to the door, which served as an extra layer of privacy and screened the room from the corridor. Behind the screen, a combination of items already existing in the room (the birth mat and the chair) were utilised, as well as items brought from home (pillows, blankets, and the birth ball).



Later, new things were brought by V: a bed pan and a birthing stool. Joyce calls the use of furniture already a birth room in new ways a spatial practice of 'finding affordances' (41), and across the literature, different authors condone the use of comfort items to make a space more familiar (10, 24). In terms of birth territories (22), the bathroom and the space behind the screen had more characteristics of 'sanctum', and the bed was closer to 'surveillance'. Table 1 shows a comparison of the characteristics of the different spaces used during the labour and birth experience.

5.2 Gatekeeping

Architecture and decor can only go so far when it comes to supporting a person to have a safe, satisfying birth. Of equal or perhaps greater importance is the caregiving received, and in this case, the gatekeeping and protection of the boundary created. In a talk she gave for a workshop for Spaces of Birth and Death, Phillippa described how the obstetrician oversees the scene, and everyone looks to her for cues about how to behave (63). Her taking over of my care and willingness to hold the risks of birth

outside of guidance set the tone. During the birth of Julian, Philippa was respectful of the screening, and she joined me in my chosen place of the floor, a position Becky said she had almost never seen an obstetrician assume. Philippa co-created the decorum of the screened birthspace sanctum, guiding others in the room from her position of power. Because of the screen, alongside the collaborative gatekeeping of Becky and Philippa, the decorum which emerged was one that respected that screened sanctum boundary as real. It shaped the atmosphere and impacted the behaviour of all the caregivers present.

Becky's presence also co-created the decorum in and around the screened birthspace. She was my source of continuous emotional support. As Goldkuhl et al. (24) found in their study of birth environments, a familiar and adaptable physical environment does not determine a birthing person's agency. Instead, their experience is shaped by the support; agency is more closely linked to care practices and birth philosophy than to spatial design alone, particularly a culture of non-disturbance so a person can retain their 'birthing consciousness' (64). Decades of research have reinforced the positive impact of relationship-based care on birth outcomes and experiences (29); skilled birth companionship requires self-awareness, emotional regulation, and confidence in navigating complex situations (65). Key attributes include warmth, openness, sensitivity, and the ability to build strong relationships (62, 67), and these qualities positively shape childbirth experiences, with lasting emotional effects (68). Both Philippa and Becky were warm, open, and skilled at creating strong relationships, as well as sharing a philosophy of person-centred care. Becky, like the cloth, was from outside the institution and did not need to align with its goals, regulations, and guidelines. Philippa has a philosophy of establishing two-way trust with birthing people and is willing to bear the risks of supporting desires for birth outside guidance. Their combined expertise and experience worked together, neither competed for overt control nor attempted to exert disintegrative power.

5.3 Decorum in the screened birthspace

The existing depth structure (55, 56) of the labour room comprised three zones (Figure 8). By erecting the screen, we created a fourth (Figures 4,8). In the original zones, behaviours, hierarchies, and power dynamics were well-established among caregivers accustomed to working in this room. The new zone, however, had no fixed decorum. It emerged in response to the specific human and spatial elements of the situation.

In terms of required gatekeeping, there was a significant difference in privacy and protectedness between the bathroom and the screened birthspace. The bathroom has a heavy lockable door provides aural and visual protection and also contained a shower, and therapeutic showering is effective for pain management (69, 70). By contrast, the screen was light and easily moved, for it to function as a threshold to entry it required gatekeeping and collaborative agreement to respect its presence. Nonetheless, staff were very respectful and knocked by saying 'knock knock', always asking for permission to walk in. A factor in whether a curtain acts effectively as a boundary in a depth structure is its associated gatekeeping. The fabric felt like it offered me safety, but really, protection was created by the collaboration of the people in the room, especially Phillippa, who acknowledged and respected the boundary, making it real. Gatekeeping enforces thresholds which are demarcated by physical objects, within a depth structure.

Unlike the sanctum of the bathroom, the cloth was designed and implemented by me, and although I had very little control over lighting, temperature, or sound, I had perceived control over who was permitted to enter my new zone. The bathroom was already part of the physical structure of the hospital and labour ward, the rules of decorum are set within the institution and society at large: people do not generally enter a bathroom while someone else is using it, so privacy is virtually guaranteed. By contrast, the decorum of the screened birthspace was created by the collaborative behaviour of everyone in the room, led by Philippa, Becky, and V. On only one occasion did it feel like the 'rules of play' behind the screen were disrupted: when, prior to Becky's arrival, a clinician popped his head around and offered me pain relief. He offered sympathy (which in my experience accorded with disintegrative power) while later Becky offered only encouragement (which accorded with integrative power), she met groans with assertive yet supportive responses and framed the pain as a meaningful and expected part of the process. The screened space felt private and protected, my autonomy was respected, my body and its capacity for safe physiological birth were trusted, and the risks associated with the birth outside guidance were held by human beings, who used simple low-tech tools: hands, eyes, ears, and a handheld Doppler. Only at the very end of labour did a technology of surveillance enter the screened space, in the form of the ultrasound to check the position of twin 2, and even then, the ultrasound operators adhered to the social decorum of the screened birthspace and 'knocked' to enter.

5.4 Nested spaces

Both the bathroom and the screened birthspace inside the labour room were embedded or nested spaces: an enclosure within an already relatively private place. For me, this self-made extra layer of privacy was an important spatial configuration, yet such nested spaces are mentioned only rarely in the literature. The birthing pool, in particular, appears in studies as an architecture that offers a clear boundary. Shielded from interference and free to labour on their own terms (62, 71), 'women who laboured in hospitals reported that the birth pools mitigated against harsh clinical environments and intervention by providing a space or territory that they could make their own' (72). Similarly, Joyce's study participants identified 'zones' in hospital birth rooms which felt like they belonged to the staff, or their companions, or were their own jurisdiction (73). Joyce's participants also felt 'the majority of the room was identified as belonging to the midwife … these women would have preferred a physical demarcation between the

zones they perceived' (73, p. 236). When birthing at home, people often retreat to the upper floors to seek solitude and distance from their companions and may restrict the access of midwives to specific rooms (73). According to Space Syntax analysis, the screened birthspace had a generous 'step depth' and low visibility (54, 57, 58). The presence of the screen marked the boundary of a newly installed sanctum birth territory, contained within the relatively private labour room, which had both a door and a curtain, meaning there were three thresholds for intruders to cross between me and the public place of the corridor, all of which had gatekeepers who were not me.

5.5 Orientation away from the bed

The presence of the cloth oriented attention away from the bed, yet all the accoutrements of a 21st-century hospital remained immediately available. Prior to the erection of the screen, the hospital birth room conveyed risk (44), rather than empowerment (15). As Colin pointed out, when on the bed 'in the view of the room', we were the least expert people in our own birth experience. The layout of the 20th-century hospital birth room assumes the role of a patient for a labouring person, keeping her supine on the hospital bed (74, 75) while the prevailing biomedical model, often centred around the hospital bed, can hinder access to conditions for effective physiological birth. There has been a restrictive interpretation of woman-centred care as solely for low-risk people seeking a conventional birth (76). It can be perceived as an 'exclusionary model' that dismisses the needs of birthing people like myself, navigating complex social or medical circumstances. Sometimes, woman-centred care is also seen as carrying connotations of opposition to hospitals (77). Seeing a bed in the room can limit mobility (78). Yet here when new people entered, the screen drew attention. It sent a message that I had made decisions about this birth, and to Philippa, it signalled I wanted a particular type of birth: this person is clear about what she wants and will go to unusual lengths to get it.

In contrast to the 'integrative power' (22) upheld in the screened birthspace, the bed was a surveillance zone of 'disintegrative power' (22). Neurophysiological research shows that uncomfortable or disempowering birth spaces can trigger stress responses, disrupting labour (79, 80). The 'Fear Cascade' theory explains how the sympathetic nervous system responds to acute stress during labour (6, 62, 81), triggering the 'Fight, Flight, or Freeze' response through catecholamine release (62, 82). Adrenaline slows or stops labour and redirects blood away from the uterus, potentially leading to foetal distress (62). In a study by Mondy et al. (15), researchers observed passivity in many participants when they were in conventional labour rooms and suggested it may reflect a 'freeze' response. Experiences in the early part of labour: waiting to find out if the institution agreed I was in labour, being cannulated (which hurts) and frightened and annoyed by ineffective CTG could have resulted in less effective contractions. The passive response to threat also explains why I agreed to a caesarean section that I did not want.

5.6 The intersections between depth structure, people, and the institution

Although Philippa, V, and Becky's protective behaviour around the boundaries of the screened birthspace was a strong force in shaping my safe, satisfying birth, it may also be that the new layout of the room and the qualities of the cloth itself were an environment in which such behaviour was more likely. The birth environment can activate either the fight-or-flight response or the calm and connection system for both birthing people and caregivers (8, 30) argue caregivers such as doulas and midwives carry a high load of emotional labour (82) related to ideology, organisational culture, and interpersonal relationships (83), and part of this labour involves managing feelings generated by the environment. The hormone oxytocin supports successful physiological birth and increases trust, reduces fear and anxiety, as well as heightens caregiving qualities such as trust, generosity, openness, and empathy (30). Calm, warm spaces support oxytocin release, while threatening ones trigger stress (6, 86). The screened birthspace was warm-coloured and protective as Becky noticed, and the feelings of alignment with the environment could perhaps extend to my caregivers as well as myself. The depth structure and sensory qualities may have worked together to support a birth space that activated calm and connection for everyone present.

The individualised curation of the room when we erected the screen is rare but not unheard of. In the study of Mondy et al., four of the five people labouring in conventional hospital birth sessions quickly assumed the role of 'patient', they avoided taking up space, kept belongings neatly in corners, and accepted instructions without question (15). Joyce calls this model of spatial practice in birthing people 'wait and transfer' and notes that birthing people who occupy institutional spaces without curating them often do not move instinctively when labouring but may, for example, sit on the bed, waiting for the next thing to happen to them (41). This reflects literature on the complexities of negotiating the 'patient' role during labour (13, 84, 85). I purposefully did not wait, even when put into a triage room, where I used the curtains and bed as props to facilitate instinctive movements of labour. One person in the study of Mondy et al. did what I did: 'Florence was the exception to the passive patient role. Despite giving birth in a highly medicalised environment, she redefined the space by bringing in family, personal belongings, and rearranging furniture to support an active, upright birth. Through these actions, she transformed the atmosphere, creating a sense of safety and satisfaction in her birth experience' (15, p. 42).

Once we arrived in the labour room, my familiarity with the room from a previous admission meant the room had already become like home, I knew where everything was, and I had already conceptualised the various available zones of occupation and considered a spatial intervention to create a nested depth structure. Nonetheless, in my case, it took a lot of privilege, social capital, and knowledge, and even with these attributes, it almost did not 'work' to achieve my goals; it needed additional gatekeeping from dedicated caregivers to do its job. In Joyce's architectural study of spatial practices in birthing people, Urbinia

was the only person to birth in a hospital who adapted the room. Her room was located in the most private part of the labour ward, and like me, Urbinia had familiarised herself with the room she requested in labour on an antenatal tour. The room Urbinia occupied also consisted of two spaces: a birthing space and an ensuite, 'between which she moved freely', moving furniture about as she required it (41, p. 550). Joyce calls this behaviour 'curate and prosume', and it is common in midwifery-led units and homebirth. Nothing is mentioned either by Joyce or Mondy et al. about the privilege, or social capital of Florence or Urbinia, although Florence had a detailed birth plan and a lot of family who 'appeared to "fill" all the available spaces' (15:42), which suggests she was knowledgeable and perhaps the family acted as gatekeepers. What captures the attention of birthing people and shapes their desires regarding birth spaces often lies within their existing knowledge (87, 88). And my knowledge was more architectural and spatial than most, thanks to a PhD and subsequent architectural and urban research in which I have explored and tested the phenomenon of depth structure.

6 Conclusion

This research explored, through a case study of a single high-risk birth, how spatial configurations in birth environments can shape experience and behaviour using a narrative walk-through and spatial analysis to uncover the relationships between individual and institutional power, arguing that space and care interact in complex ways to shape birth experiences. While one might not initially perceive the high-risk labour room where I delivered Julian as inconducive to ideal physiological birth conditions, it proved otherwise when supported by a simple, cost-effective architectural intervention and a respectful team. Based on my own previous theorising of depth structure, immediately upon entering the birth room, I curated it: found affordances and erected the cloth. As I laboured, I sought spaces that took me into progressively more internal and less public zones within this new depth structure. But without Becky's gatekeeping and Philippa's agreement, the screened birthspace lacked the privacy and protection I needed. This is evident in my agreement to return to the bed for extended monitoring, an experience of surveillance that led to the decision for a C-section, fuelled by the fear cascade. Later, Colin and I hid in the bathroom, and when Becky arrived, she turned off the light, halting the fear cascade and returning me to a path of physiological labour. With Becky's presence and Philippa's support for a birth outside guidance, I returned to the space behind the cloth, now more strongly defended, and had a safe and satisfying birth of my baby, Julian.

In creating a screened birthspace, the cloth did several things: it added step depth and reduced integration; blocked my view to the room, particularly the hospital bed and rescusitaires; reoriented the attention of people entering the room away from the bed; relocated me as the locus of birth into a territory which I had created and felt as though it 'belonged' to me; created a new place with decorum that has to be negotiated *ad hoc*; and sent a message that I was an active participant in shaping the space, exercising spatial agency rather than adhering to the norms of the room.

The context was favourable. The labour room itself already provided many of the birth environment conditions associated with safe, satisfying birth: it was private and acoustically separated, it had an en suite, most of the technological equipment except the resuscitaires, which arrived later, was concealed in domestic-style cupboards. Yet, the cloth created another zone in the depth structure of the room, an additional threshold in the gradation of publicness from the most private to the most public zones, which could be defended by my gatekeepers. I suggest it could be that the cloth itself, and the new zone created with emergent sociospatial decorum, was a tool which supported the caregivers in behaving as they did.

It is important to note that my capacity to design, implement, and maintain the cloth as a boundary in the depth structure of the birth room is a feature of my various forms of privilege. I could afford to hire an expert doula to advocate for me and my chosen spatial practices; I had detailed knowledge of both physiology of birth and of architecture; I was able to build mutually respectful relationships with staff who were (mostly) not tempted to behave in paternalistic ways.

6.1 Implications for practice and further research

The narrative presented here mirrors the spatial practices of birthing people before: moving between different spaces before settling in a final, more secluded area. In a hospital environment, such self-management can be facilitated through the availability of private and protected 'suite rooms' that offer multiple spaces. However, the implications of this research are that movable screens may also have a place in high-risk labour rooms, so birthing people can create additional layers of privacy in the spaces they occupy. However, power over such spatial interventions must be in the hands of those giving birth, and the new zones must be appropriately gatekept by caregivers. Perhaps who emplaces such screens (belong to the birthing person or the institution) plays an important contributing role in their impact.

These topics would bear further scrutiny, alongside research which fills the gaps identified in this paper's introduction: frequent lack of clear distinction between sociospatial structuring and aesthetics and limited empirical data on how the environment affects birth outcomes, experience, spatial practices, and clinician's practice in high-risk birth. The narrative insights from this paper also point towards the future development of a participatory method for analysing and adapting birth spaces, integrating lived experiences with theoretical spatial evaluation. Such a method could involve experts, staff, caregivers, and brithing people in analysing and shaping environments that support diverse forms of care. Overall, there is a pressing need for interdisciplinary, user-centred research that values all voices and reveals mechanisms around how space supports or hinders safe, satisfying birth.

Data availability statement

The datasets presented in this article are not readily available because the data used were in-depth interviews containing identifiable data, plus personal refelections, and may be made available upon request with participants' permission. Requests to access the datasets should be directed to j.clossick@londonmet.ac.uk.

Ethics statement

This research was approved by the London Metropolitan University Research Ethics Review Panel. The study was conducted in accordance with local legislation and institutional requirements. The participants provided their written informed consent to participate in this study. Any individual(s) from whom written informed consent was not sought have been anonymised.

Author contributions

JC: Project administration, Methodology, Data curation, Visualization, Conceptualization, Investigation, Writing – review & editing, Funding acquisition, Resources, Writing – original draft.

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Conflict of interest

The author declares that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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Weaving birth: interdependence and the fungal turn

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In this article, we approach childbirth through the lens of the "fungal turn," using fungal mycelial networks as a conceptual and metaphorical resource for rethinking birth as a relational experience of collective care. Like fungi, which thrive through mutualistic, multispecies relationships, childbirth unfolds within dense networks of biological, social, and ecological connections; between pregnant person and fetus, caregivers, communities, and environments. We draw on our own contrasting childbirth experiences -one shaped by obstetric violence and the need for hyper-vigilant control, the other by trust, safety, and the capacity to surrender- to illustrate how different models of care either reinforce the logic of autonomous, isolated, and bounded birthing subjects or, in contrast, highlight their vulnerability, interconnectedness, and permeability. Our analysis combines a descriptive phenomenological approach, to convey the lived experience of birth in its sensory, embodied immediacy, with a hermeneutical phenomenological approach, which situates and interprets these experiences within the broader cultural and relational frameworks that shape them. Phenomenological insights on intercorporeality challenge the idea of the autonomous subject, reframing subjectivity as emerging through inherently embodied and interconnected engagements with others and the world. In this framework, the fungal metaphor illuminates how the weaving of interdependence unsettles dominant modern conceptions of agency and individuation, offering new ways to imagine what constitutes a positive birth.

KEYWORDS

fungal turn, interconnectedness, interdependence, phenomenology, positive childbirth

> Everything is about weaving. To weave is to understand interdependence; it is to grasp reciprocity, the constant and ongoing interaction between all phenomena. So, weaving is not just a physical act—it's a metaphor. The real weaving is what species do, what symbiotic forms do, what mycelial forms do. [Vicuña C (1)]

Introduction

Testimonies of birth experiences described as positive, as fostering a sense of well-being in the birthing subject, and even as empowering, share some common features. In a nutshell, these are experiences in which birthing women felt supported, safe, respected, and in control (though, as we shall see, "control" can look very different across contexts): experiences in which they participated in the decisions made during

the process and felt like autonomous agents throughout (2, 3)[1]. In these experiences (which are not necessarily the same as those that lead to "positive outcomes"—in the form of live births of "healthy babies" born to "healthy mothers"), the emphasis is on the compassionate treatment and respectful care with which the inherent vulnerability of the birthing subject is met (2, 7–9). Such respectful care sensibly sees and fosters the birthing woman's need to relax and open the body's boundaries, and paradoxically "lose" control (in the sense of rational planning).

What constitutes a positive birth experience varies greatly depending on context. Research shows that when birthing women cannot trust their care environment to prioritize their well-being, autonomy, and active participation in decisions throughout the birth will be key to her experience of the birth as successful and positive (10, 11). Conversely, when the birthing environment is experienced as safe and attuned to needs from the start, a "good" birth is often characterized by the ability to surrender control and allow the process to unfold with support (3). Indeed, and especially in the case of physiological and unmedicated births, recent literature refers to this state as "birthing consciousness"—a state often described as infused with transcendence, profound transformation, and creative energy, akin to what is experienced during certain altered states of consciousness (12–14).

In this paper, we bring together descriptive phenomenology, to convey the embodied immediacy of childbirth, and hermeneutical phenomenology, to interpret these experiences within broader contexts. We use this combined approach to explore recent research on the fungal turn and its potential to illuminate birthing contexts where the subject experiences itself as intertwined both with its surroundings and with the events unfolding within the body. The birthing body in a state of flow resembles the recent descriptions of a fungus: a form of being that defies hierarchies and traditional limits, that straddles life and death, organic and inorganic, plant and animal, singular and plural, and whose porosity and interconnection challenge rationality and autonomy (15–17).

We begin by sharing fragments of our own birthing experiences to ground the discussion in lived realities and to highlight how care practices shape birthing subjectivities. We then reflect on different models of childbirth care, examining how they either reinforce or challenge the notion of the autonomous, bounded birthing subject. Next, we draw on phenomenological insights about embodiment and bodily porosity to provide a theoretical foundation that prepares the way for our central engagement with the fungal turn as a metaphor and conceptual resource for rethinking birth as an entangled, relational process of collective care. Finally, we discuss how this framework reimagines positive birth experiences as ones that move beyond control and individualism toward connection and interdependence, where birth does not need to be "controlled," rationally planned, or defended from unwanted intrusion, allowing the birthing person to safely become a "birthing being," a "fungus" with open boundaries that intertwine and weave with the baby, the world, and others.

Different contexts, changing needs: looking back at our birth experiences

The authors of this text have both written extensively about childbirth, each having given birth twice and having lived experiences that can be placed at both ends of the care continuum.

Sara Cohen Shabot (18) began writing about the topic after her second child was born:

> A labor with apparently optimal results: no physical damage, healthy mother, healthy baby. Nothing to complain about; nothing to mourn. Nevertheless, this labor experience still haunts me and has informed almost all of my academic writing since that time. Today I can say truthfully that I suffered from obstetric violence and that, in more ways than one, this was a traumatic experience. (232)

Sara's birthing experience was marked by feelings of deep abandonment, of loss of autonomy, and of lack of care. She arrived at the hospital at 8 cm of dilation and was then connected to a fetal monitor and left sitting there, unable to move freely while she experienced intense contractions. This went on for nearly five hours, with minimal interactions other than a midwife arriving periodically to perform vaginal examinations and saying "You're not progressing" after each one of them. After several such exams, Sara refused to undergo another one. The midwife then went to find an obstetrician, who came in to reprimand Sara for resisting and not "cooperating." But although the obstetrician then threatened a cesarean section, Sara was able to achieve a vaginal birth thanks to the intervention of another midwife, who asked the obstetrician not to proceed with surgery without one last examination, which confirmed that the birth was imminent. Throughout her experience, Sara felt profoundly abandoned and mistreated. The few moments that she remembers as "good" were those in which she was able, with the support of her partner and/or the second midwife, to defend herself and assert her sovereignty, by resisting further interventions and avoiding unnecessary procedures, including the cesarean section that had been about to be performed. She felt that she had to be constantly on alert and exercising control, defending her needs and desires to whatever extent she could.

[1]In the context of positive birth, autonomy is many times experienced simply as "control" or as a sense of making decisions sovereignly, without coercion and "freely". However, autonomy in such context can also appear as ongoingly created through relations and interconnectedness, that is, through an intertwining with significant others surrounding or accompanying the birthing person (among them also her still-in-womb baby). Such "relational autonomy" has been thoroughly discussed within recent feminist and care ethics [see for instance: (4–6)]. These two diverse ways of conceiving autonomy shall inform our following discussion on different forms of experiencing a "good birth".

Michelle Sadler, on the other hand, began researching childbirth a decade before ever becoming a mother, as an anthropology student conducting fieldwork in public maternity hospitals in Chile. Her experience as a researcher and activist equipped her with the tools to navigate the healthcare system in such a way that her birthing experience, when the time came, was one of comprehensive care. She found healthcare professionals and institutions that supported her desire for physiological, unmedicated births, allowing her to let go of control and fully immerse herself in the experience with confidence. For both of her childbirth experiences, she has a fairly clear recollection of events up until the final few hours of labor. For the last two or three hours, however, while she can provide a highly detailed account of how she herself was feeling in terms of her embodied experience—in some ways even more so than for the earlier stages—she has almost no recollection of what was happening around her. She doesn't remember how many people were in the room or what they were doing (unless they were right beside her), and she can't visualize the physical surroundings. In those final moments, her sense was that everything around her became blurry, even the sounds, and she felt a lack of clear boundaries, as if she were connected to everything in a way that is hard to articulate, perhaps even transcendental. She recalls following the midwives' suggestions and actions to support the labor process. In her first labor, they guided and supported her while she did squats, attempting to help progress in a labor that had already lasted more than 30 h. In her second labor, they recommended a hot shower and supported her in the water as well as later, as she moved to the floor, onto a hands-and-knees position. Only after the birth did she look "outward" again and realize what the environment around her was like: She was surprised to see several people who had not been present earlier and to notice the medical equipment that had appeared in the room. For Michelle, the experience most similar to the intense moments of childbirth was the altered states of consciousness she had encountered in her early twenties through breathing exercises and meditation, after several years of training with Mexican tutors who had, in turn, learned from shamans. Although that earlier experience was far less physically intense, she found the sense of interconnectedness, trust, and being cared for strikingly similar. In both experiences, it was crucial to have caretakers who could support and contain her throughout the journey. So, in Michelle's birthing experiences, what stands out most are feelings of fluidity, yielding, and trust—all of which are at odds with control and decision-making.

In both Sara's and Michelle's birth experiences, no matter how different they were, their most basic expectation and need was to be cared for in a way that allowed them to navigate and go through the birthing journey. And this is what most women and birthing subjects report needing during childbirth. The meta-synthesis carried out by Downe et al. (19), of studies that look into what matters to women for labor and birth, reports that women

> recognized the potential vulnerability of themselves and their baby through the process, and the essential uncertainty about what might happen. This was associated with a strong desire for safe, supportive, kind, respectful and responsive care during labor and birth. These characteristics applied to birth companions, professional and lay care givers, and to the processes and environment of care. (12)

Unfortunately, these needs are not always met. As demonstrated by the extensive evidence of worldwide obstetric abuse, disrespect, mistreatment, and violence, birthing women are often ignored and neglected and their childbirth experiences, as a result, are often negative and even traumatic (20–25).

Because they are aware of this ahead of time, many women approach the healthcare system with suspicion, feeling the need to control whatever dimensions they can in order to have an experience that aligns with their expectations. In many cases, they arrive with a body that has already been "domesticated," silenced to meet the system's needs more than their own (26). Studies that focus on the expectations of women with previous birth experiences show an exacerbated need to exert control. A recent Australian study found that more than 85% of women would make different decisions for future births, "feeling they needed to strongly exert control, choices, and advocate for themselves in future" [(11), 8]. A troubling issue that emerged was that many women felt guilty for not having been better informed, which fostered a desire for a different experience. This sense of self-blame, tied to failures within the system, only intensified the trauma they experienced, reinforcing the conclusions found in other studies (27, 28). These feelings were even more pronounced when previous birth experiences had been negative or traumatic, as the women often had a strong urge to avoid repeating those experiences and to feel in control of their birth choices (10).

Thus, the idea of control takes on a variety of very different shapes. In Sara's birth experience, she was never able to feel that she could release control, given the threatening environment in which she was going through labor—and in that context, she experienced being in as much control as possible as the safest part of the birthing experience. Michelle's experience, on the other hand, involved being in control of managing external factors and decisions (about where and with whom to birth) *previous* to beginning labor. This meant that once she was in labor, she could let go and follow the flow of her needs, while feeling completely supported. As several authors have noted, this apparent paradox -being able to relinquish control and still feel fully in control- is a desirable part of the childbirth journey. In order for a woman to be able to surrender control during childbirth, she must first feel safe and in control of the process (3). Such a possibility is central to many positive childbirth experiences.

It is important to clarify that these testimonies represent the authors' personal birth experiences, offering insight into specific moments along the birthing continuum, whilst recognizing that birthing experiences are diverse and multifaceted, encompassing a wide range of contexts and emotions. The intention in sharing these stories is not to universalize them, but to use them as a foundation for exploring broader themes of control,

vulnerability, and interconnectedness that resonate across many birthing experiences.[2]

From separation to interconnectedness

Sara and Michelle's opposed birthing experiences reflect conflicting models of care and concepts of personhood. At one end of the spectrum are highly medicalized births, often involving a cascade of obstetric interventions within a hierarchical system of care in which medical professionals are regarded as the holders of authoritative knowledge (29). In this model, the "patient" is reduced to a physiological body responding to mechanical rules, with psychosocial factors being frequently neglected (3, 30, 31). Crucially, the birthing body is not just the body of any patient or person; it is a female body. This distinction is of utmost importance, because the biomedical model of childbirth reflects asymmetrical gender power dynamics in which female bodies are objectified. At the dawn of obstetrics, male physiognomy and physiology were considered the standard, which led to the portrayal of the female body and its processes as abnormalities or deviations in need of control (22, 32). As Villarmea (33) notes, Enlightenment-era medicine and philosophy supported the notion that the condition of women was to be inherently deficient, weak, and sick because it was governed by the reproductive function. Women's capacity for pregnancy led to the view that women's bodies were incapable of achieving full self-control, which was considered the standard of rationality. Thus, the undisciplined reproductive female body needed to be controlled and domesticated by disciplinary technologies that would re-feminize and re-objectify it (18, 34, 35).

Modern obstetrics expanded in parallel with the global spread of colonial, and later industrial, logics. Core principles such as the optimization of time, assembly-line production, and the systematic alienation and isolation of relational ties were increasingly imposed on childbirth. The result is the image of the technocratic model of childbirth (32, 36, 37) in its fullest expression: that of a childbearing woman left alone, strapped to a stretcher, and denied the ability to walk, eat, drink, or receive comfort and care from her loved ones. In many cases, she has been subjected to a series of routine obstetric interventions decided by others, with little or no space to voice her needs or wishes. Birth, once a site of connection, transformation, and community, thus becomes instead a scene of alienation and technocratic efficiency—echoing the same colonial and industrial ideologies that have long sought to control both land and bodies.

One powerful mechanism for objectifying female bodies is through individualization, isolation, and separation, as evoked in the previous paragraph. Biomedicine and obstetrics are profoundly shaped by the idea that we are discrete individuals —separated both from other people and from the environment. Despite challenges from research across multiple disciplines, this idea persists in popular culture and medical practice. A striking example is the dominant representation of pregnancy in contemporary Western culture, which casts the woman or birthing subject as a container and the fetus as its separate content (38, 39). Kingma (40) terms this the "fetal container model," in which the fetus is regarded as independently growing within the mother. This model reduces pregnant persons to mere containers, paradoxically obscuring both the fetus's location within and its connection to them. Underlying this logic is the long-standing notion that women are governed by their reproductive capacity and are thus inherently irrational, which enables their transformation into such corporeal containers:

> The move from a subject to a container concerns the deletion/removal/vanishing of that constitutive part of subjectivity that is reason. For, once we deprive a subject of her rationality (full capacity), it is easy to slide into treating it as an object—in this case, as a container. [(33), 74]

Such a view lays the ground for the maternal-fetal conflict in bioethics, which frames the fetus as a threat to the mother and vice versa, in a dynamic that perpetuates the discursive separation between the two (41). Multiple scientific fields include theories that share the common trope of the antagonistic relationship between the mother and the fetus, mirroring the self/other dichotomy in Cartesian dualism (42).

This kind of logic contradicts the understanding of pregnancy and childbirth as processes of cooperation and interconnectedness, an understanding that lies at the heart of humanistic and holistic models of care (31). These models advocate for a comprehensive, woman-centered approach to pregnancy and childbirth in which the psychosocial dimensions of care are central. Such a view fosters an environment in which the woman or birthing subject feels supported, encouraging a compassionate approach to maternal care. Here interconnectedness, not separation, prevails as the fundamental principle of care.

This understanding also challenges the dominant Western scientific notion of the pregnant subject and fetus as separate entities with clearly defined boundaries. Research on the physiology of pregnancy supports a model of association rather than conflict between the pregnant person and the fetus. This relationship is marked by deep physiological interdependence, demonstrated by the exchange of DNA, oxygen, nutrients, and immune cells through the placenta as well as by maternal-fetal microchimerism, in which maternal cells migrate into fetal tissues during pregnancy and breastfeeding (43, 44). The microbial colonization *in utero* during pregnancy and

[2]We emphasize that experiences of transcendence, such as those described by Michelle, may or may not occur in physiological, unmedicated births. We do not wish to essentialize birthing experiences or suggest, in any way, that decisions regarding medication or interventions are inherently better or worse. Each experience is deeply personal and unique, shaped by women's diverse life histories and needs; as such, care should be respectful, individualized, and tailored accordingly.

microbiome transmission during vaginal birth are inherently relational acts, in which bodily boundaries blur; the birth canal, skin-to-skin contact, and breastfeeding are all moments of microbial seeding—a transference of life and immunity (42, 45). Research suggests that birth can be described not as the emergence of a discrete individual (the baby), but as the formation of a new community (46–48). Birth, in this view, represents a transition from one set of symbiotic relationships to another, "for not only is the eukaryotic body being reproduced, but so also are the bodies of its symbiotic microbes and so is the set of relationships between these organic components" (47). Accordingly, the pregnant body may be reconfigured such that the material distinction between "mother" and "fetus" dissolves. Pregnancy can then be understood not merely as a bidirectional exchange but as part of a broader, integrated circulation of matter within a symbiotic system (42).

This integrated, relational view of pregnancy, in which maternal and fetal bodies are deeply interdependent and boundaries are fluid, provides a framework for understanding not only the physiological but also the experiential dimensions of childbirth. At a transcendent level of connectedness, we can recall Michelle's birthing experiences, in which she felt secure and free enough to surrender to the experience she was living, in a way that was similar to what she had felt during altered states of consciousness through meditation. Such a retreat or withdrawal "into an inner world where time seemed to be suspended" [(3), 4] is a common experience reported by women when experiencing unmedicated physiological births in which they feel safe (3, 12). Dahan has proposed the concept of "birthing consciousness" to refer to this withdrawal into an inner world, which allows women to focus on the laboring process and facilitates the feeling that they can cope. The experience of childbirth is a transformative event that can deeply affect a woman's perception of reality, self, and the world around her. This psycho-physical altered state is often likened to other mystical or transcendent experiences, in which ordinary perceptions and boundaries of the self are expanded or redefined (12, 13). During altered states of consciousness, as reported in the literature, there is an enhanced feeling of interconnectedness in which the person feels at one with their surroundings, accompanied by a feeling of being protected and of being more than oneself (49).

In the following, we explore how phenomenological analyses that emphasize intercorporeality and that discuss interconnectedness and intertwining as the essential conditions of life itself might shed light on how a protected birth that allows for blurring boundaries and porous encounters can result in such a rewarding and positive experience. Later, we will use the metaphor of fungi to further explore these issues.

Phenomenology and intercorporeality

Phenomenology challenges the idea that individuals exist as isolated atoms in the world (50, 51). Ever since Merleau-Ponty's discussions of the "body proper" or "one's own body" (*le corps propre*) as always already "cracked," open, and intertwined with the world, and thus a precursor of intercorporeality, phenomenological analyses have emphasized that the clear separation and distinction between the subject and its world is nothing more than an analytical tool intended to provide us with the illusion of well-organized, methodical, "straight" thinking. The point of this illusory thinking is to allow us to detach ourselves from the world and examine it "from the outside," so to speak, when in fact reality is messy and ambiguous and cannot be fully grasped through distinction, detachment, and separation. We are in the world, haunting space and haunted by it, profoundly linked to each other through material intercorporeality:

> The concept of intercorporeality is thus deeply ambiguous: on the one hand it suggests continuity between myself and the other, an absence of definite boundaries, but this continuity is made possible only because of a sense of *discontinuity*, estrangement, anonymity, even dispossession, that prevents my body from ever being unambiguously my own. [(52), 198; emphasis in the original]

This conceptualization of one's own body or the body proper as always already discontinuous in itself, always strange to itself, can be seen as clearly illustrating and supporting the understanding of the pregnant and birthing body discussed earlier: as ambiguous, simultaneously singular and plural, intertwined with its insides, and cracked or fragmented in itself —and, for that reason, not the same as a simple recipient or object that is separate from the fetus that is growing within it.

Critical phenomenological analyses dealing with disease and disability are also pertinent here. Foth and Leibing (53), in their account of the "being with dementia," follow these central phenomenological insights on embodiment and intercorporeality to challenge the concept of the "person" as an isolated embodied entity and, with it, the "person-centered" approach to care: "Actually, the body is dependent on other bodies. … Thus, it is not possible to speak about the body as independent and distinct from other bodies. Only relations to other bodies and a liveable environment make bodily life possible and enable bodies to act" (5).

Phenomenological analyses of the ways in which the COVID pandemic revealed fundamental features of the human condition show how the requirements for isolation, for an exaggerated protection from the environment and others, in fact revealed our original interdependence and interconnectedness, which usually go unnoticed because they have been so deeply normalized and unquestioned: We are profoundly linked to others through our bodies, our fluids, our breaths, and our touch. Discussing the lessons of the pandemic in its aftermath, Butler (54) writes:

> The definitive boundaries of the body presumed by most forms of individualism have been called into question as the invariable porosity of the body—its openings, its mucosal linings, its windpipes—all become salient matters of life and

> death. How, then, do we rethink bodily relations of interdependency, intertwinement, and porosity during these times? Or, rather, how do these times and this world, already shifting in intensity, offer a chance to reflect upon interdependency, intertwinement, and porosity? (33–34)

In other words, porosity, intertwinement, and interdependency are always already there; they characterize our way of being, our situation in the world and toward others. Merleau-Ponty's philosophy is perhaps the one that most clearly and meticulously discusses our intertwined condition, and Butler uses it to show how we are infused with the world:

> The spatial limits of the perceived body belie its proper reach, for it is always both here and there, rooted and transported. The world that is usually assumed to be over there, or around me, is in fact already in and on me, and there is no easy way around that form of adherence, the way the world sticks to me and saturates me. (35)

Sara (4) has already employed these phenomenological insights to write about birth and breastfeeding, using the feminist conceptualization of "relational autonomy" and Beauvoir's ideas about the authentic subject as necessarily ambiguous and embodied, linked to others and to the world, and simultaneously immanent and transcendent, as tools for arguing that obstetric violence might be more accurately described as an injurious abandonment and a damage to the birthing subject's connections with others who are present at the birth, rather than primarily an offense to autonomy. Similarly, in her chapter on breastfeeding (55), she describes breastfeeding foremost as a practice that fosters connection and intercorporeality, precisely through the blurring of boundaries:

> Breastfeeding [is] a fleshed experience through which we experience a "compelled generosity" and a basic intertwinement: between ourselves and the breastfeeding baby, between ourselves and the food we consume, the air we breathe, and the water we drink. The world enters us, nourishes us, and makes us in turn into nourishing bodies ourselves. From us, the world returns again to the outside, now as sticky, smelly, nurturing milk. The breastfeeding body, thus, appears here as an open body, an embodied, leaky, porous subjectivity entangled in the world. … We are giving and providing, but before that we have previously been nourished ourselves; we are the eating-edible body, meeting the world by going out to the world and receiving the world back into our embodied selves. We are "impure beings," contaminating and contaminated, since our flesh is not really ours but an organic part of the organic world. (162, 165)

More recent, "posthuman," accounts have followed this same path, resisting the conceptualization of embodiment as a solid substance and emphasizing instead the "watery" features of bodies. Neimanis (56) uses "bodies of water" as a feminist figuration with environmental, biological, and even ontological implications. Our bodies are in fact mostly made of water, a provocative fact that allows us to imagine our presence in the world, and the relations that we form and are part of, in different terms from those commonly adopted by neoliberal discourses:

> "Bodies of water" trouble the idea of bodies as discrete and coherent individual subjects. As bodies of water we leak and seethe, our borders always vulnerable to rupture and renegotiation. As we know, our human bodies are at least two-thirds watery, but more importantly, these waters are in a constant process of intake, transformation, and exchange. For humans, the flush of waters sustains our bodies, but also connects them to other bodies and other environments—drinking, urinating, sweating, transfusing, siphoning, sponging, weeping. Human bodies are thus very literally implicated in other animal, vegetable and planetary bodies that materially flow through us, replenish us, and draw upon our own bodies as wells. This circulation inaugurates us into complex relations of gift, theft, and debt with all other life. (55)

In the following, we show how recent literature on fungi and the mycotic existence confirms and reinforces these phenomenological and posthuman approaches, emphasizing life as an expression of interconnectedness, porosity, fluidity, blurring of limits, and constant weaving.

The fungal turn

There is a recent interest in fungi within the humanities: in what fungi and their position in the world may suggest about consensual ideas on the contours of subjects and objects and on the possibility of our existence as autonomous, individual, self-determining entities. Fungi belong to a distinct biological kingdom, defined by their unique structure: vast, branching networks of threads known as mycelia. These networks act as an ecological connective tissue, forming intricate webs that link organisms and environments in dynamic, evolving relationships. Unlike organisms that have discrete, isolated bodies, fungi grow as interconnected systems, merging and fusing in ways that challenge conventional notions of individuality. Through these networks, fungi not only sustain ecosystems but also embody the fundamental ecological principle of interdependence—reminding us that all life is enmeshed in mutual influence and exchange (16, 57). Ubiquitous and often unseen, fungi are in and around us, forming symbiotic partnerships with plants, animals, and even within human systems—offering nourishment and being nourished in return. As Alison Sperling notes [in (15)], the fungus serves as a "kind of model organism for ecological thinking—the mushroom not as an individual organism, but as always, a vast network underground, feeding and communicating with countless diverse species of plant and animal. It is a lifeform that animates new forms of thought and worlds with new (weirder) relations" (9).

The fungal turn is, thus, a specific kind of posthuman understanding of reality that anchors itself in the fungal in order to understand reality differently, for instance by challenging

neoliberal and ableist models that privilege separateness, independence, and sovereignty and by generating new models that not only do not consider human beings as being superior to other forms of existence but also view them not as atomic and self-contained but rather as intertwined, permanently porous, and always in relationship. Fungi, thus, might help us to imagine a different kind of embodiment, one that resists clear limits and boundaries and challenges stability and solidity. In a special issue of the journal *Interconnections* devoted to the fungal turn, Mackey and Sendur (15) discuss how new media and diverse cultural products have adopted the fungus to create counter-discourses within, for instance, politics, ethics, and ontology:

> Fungal discourses [are being used] to think about the porous and permeable limits of bodies, to reconsider our relationship with space, time, death and decay, and to imagine novel ways of perceiving, living, and resisting power. At this juncture, the fungal appears as a key concept which enables us to think within and through the many lines of flight presented to us by posthumanist thought: for example, environmental posthumanism, which rejects human exceptionalism and views entanglement as a legitimate form of rethinking our relations with others (human and non-), materializes in the constitutively relational nature of mycorrhizal networks, a process that threatens to dethrone any self-contained, rationally driven understanding of *Anthropos*. … The fungal opens up a space that new ontologies were seeking for a long time: a material, tangible ontology that cannot be accounted for with old forms of agency, individuation, form and matter. This is a posthuman ontology that embraces things in their becoming … that allows us to rethink relationality in its more intricate forms. (5)

In this same special issue, Victoria Jara (58) presents a provocative discussion of care based on insights deriving from the fungus as a figuration that resists conservative, capitalist, and colonialist models of care. As part of her analysis of the Mexican novel *Brujas*, she writes:

> The collaborative work in the behaviour of fungi is mirrored in the character's web of care. … I propose that the similarity in the way both the chamana and fungi interpret their environments to establish relationships suggests that Feliciana is a fungal being in the sense that she is a regenerator, recycler, and networker that stitches the world together. She can see and cure illnesses, and fungi are key in that process. (85)

Can birth-carers, too, in other words midwives, partners, doulas, doctors, and friends and family, constitute "fungal beings" -"stitching the world together," allowing and fostering this kind of blurring of boundaries for the birthing body, its insides, and the world surrounding it? We want to suggest that birthing in a fungal mode might facilitate the kind of positive, flowing, interconnected birth that we discussed above, a birth in which the mere prevention of trauma -through control, "optimal functionality," and the possibility of repelling or resisting undesirable external interventions- is definitely not enough.

Thinking birth through fungi

Fungi can serve as a compelling new metaphorical figuration for thinking about life—and about birth. The fungal turn (15–17) can offer powerful insights into childbirth as an entangled and relational experience of collective care, from which new communities emerge. We suggest that this metaphor is productively suggestive regarding what constitutes a good birth, where the weaving of interdependence unsettles and reconfigures dominant modern conceptions of agency, individuation, form, and matter.

Just as fungi thrive within interconnected mycelial networks, childbirth, too, unfolds within a web of external and internal relationships. Far from being isolated beings, the birthing subject and baby are deeply enmeshed with their environments, communities, and physiological processes. At one level, this entanglement is evident in the collective support systems that shape the birthing experience: midwives, doulas, family, and broader communities. The mycelium, which sustains ecosystems through connection and reciprocity, exemplifies this logic of interdependence and collaboration. And much as mycelial networks sustain and nourish life in the forest, these human networks foster care, safety, and empowerment during childbirth. On another level, entanglement occurs inwardly, in the rich exchanges between the pregnant person and the fetus. All of these interactions defy the notion of the gestating body as a passive container, highlighting instead a dynamic relationship marked by biological generosity, codependence, and mutual influence. This perspective reframes pregnancy not as the hosting of another life but as a process of shared becoming within a deeply entangled biological and relational ecology, which allows us to reimagine pregnancy and childbirth as a multispecies relationship. In this sense, such entanglement clearly challenges dualistic ontologies, such as the Cartesian one, where divisions between subjects and objects, mind and matter, are evident and definitive. By contrast, the ontology that emerges here emphasizes blurred boundaries and the absence of clear separations between the subject and its world. In line with Merleau-Ponty's ontology of the "flesh" (59), the ontology suggested by this "fungal turn" privileges intimate, carnal intertwining; and rejects purely dichotomous or abstract understandings of Being.

Fungi thrive on decay and decomposition, processes that serve as powerful metaphors for the transformative and liminal nature of birth. Anthropological and feminist scholars have long described birth as a rite of passage in which the process of transformation is central (36, 37, 60). Similarly, Dahan (12) uses the concept of "birthing consciousness" to capture childbirth not only as a physiological event but as a profound, liminal experience that traverses the boundary between self and other, life and death, dissolution and becoming. In fungal life, decomposition is not an endpoint but a vital stage of renewal. Fungi are nature's master recyclers, breaking down organic material to return nutrients to the ecosystem and enable new life to emerge (16). As Sheldrake (61) notes, this decomposition is less about destruction and more

TABLE 1 Fungal principles applied to childbirth: implications for obstetric care.

Fungal principle	Birth analogy	Implications: what does this mean in obstetric care?
Mycelial networks: Vast, interconnected webs sustain fungal life through mutual support and resource sharing.	Childbirth unfolds within dense relational networks -between birthing person, baby, caregivers, communities, and environments.	Positive birth thrives in collective, supportive environments rather than isolation. Collaborative care models involving doulas, midwives, family, and community are encouraged.
Porosity and permeability: Fungi exist as interconnected organisms, sharing nutrients and genetic material, with blurred boundaries between individuals.	Pregnancy and childbirth are not isolated events but part of a new, multi-species community that transcends individual boundaries.	Trust and care allow surrendering rigid control. Care practices and environments that foster trust, safety, and fluid support, respecting and engaging fully with the birthing process.
Transformation through decomposition: Fungi use decay as a vital process for renewal and new growth.	Birth involves a liminal, transformative dissolution of previous selfhood, enabling emergence of new identities and relations.	Recognizing birth as liminal transformation reframes it as more than a medical event -it's an ontological shift. Support birthing people through the emotional and physical transformation of birth by integrating trauma-informed care and reflective practices into obstetric care.
Resistance to monocultures: some fungi require multispecies relationships and cannot be industrially domesticated.	Childbirth flourishes when love, care, and relational connection are central -not when reduced to a standardized, alienating procedure.	Care models that move away from rigid, protocol-driven birth practices towards flexible, individualized care that respects birthing person's preferences and relational needs.
Relational control: Fungal processes like fermentation require guiding parameters but allow for unpredictable collaboration.	Birth balances preparation and agency with surrender to the process, within a relational dynamic.	Guidance is fluid and collaborative. Thus, a medical oversight should be balanced with respect for individual needs and rhythms during childbirth, emphasizing supportive guidance rather than strict control or intervention.

about rearranging possibilities -transforming matter into new forms. This biological process offers a rich metaphor for birth. Just as fungi flourish by turning decay into new life, the birthing subject navigates a state of temporary dissolution that allows for the emergence of new forms of self and relation. Birth, then, is not only about bringing new life but also about the birthing person's reconstitution -a becoming that is contingent on the temporary disintegration of what was (illusorily) perceived as known, stable, and individual.

Fungi offer a compelling framework through which to challenge the foundational assumptions about the neoliberal subject, namely that it is autonomous, self-contained, and in constant pursuit of individual gain. As Sheldrake (16) observes, fungi constitute the living infrastructure through which much of life is relationally woven. Their adaptive success, thriving across millions of years and in the most inhospitable conditions, signals an evolutionary strategy rooted not in competition or sovereignty but in interdependence, flexibility, and symbiosis. Fungi model an ontology in which entanglement is not a liability but a condition for survival, revealing humanity to be irreducibly porous, embedded within ecological, microbial, and material relations. As Anna Tsing (17) writes in her study of matsutake mushrooms, fungi disrupt the fantasy of "alienation—that is, the ability to stand alone, as if the entanglements of living did not matter" (5). They offer a biological and philosophical counterpoint to the competitive logic of neoliberalism, demonstrating that "the important stuff for life happens in collaborations and transformations involving others" (29).

As we have explored in the experiences of birthing individuals like Sara and Michelle, control is not a fixed state but a dynamic interplay among agency, environment, and trust. For some, like Sara, maintaining control was a protective response to a threatening and disempowering context; for others, like Michelle, feeling safe in advance made it possible to relinquish control during labor. This paradoxical nature of control in childbirth, where true surrender can only occur when a sense of safety and agency is first established (13), finds an illuminating analogue in the fungal world. As Sheldrake (61) reflects, engaging with fungi, particularly in fermentation, reveals that control is never absolute but instead always relational. One can set certain parameters, such as adjusting the temperature and managing the oxygen, but the microbial cultures will respond in their own ways. Thus, rather than commanding outcomes, the fermenter is entering into a dance with wild populations of fungi and bacteria, learning to guide while also letting go. This mirrors what many birthing individuals describe: on the one hand the need to prepare, to assert preferences, to navigate the systems that often undermine autonomy (62, 63) but also, on the other hand, a kind of surrender that the process demands once labor begins and that is only possible when the conditions for safety and respect have already been established (3, 12). It is this relational mode of being, rather than individual mastery, that allows both fermentation and birth to unfold as creative, transformative processes. In both cases, control is not something to wield but something to recalibrate, a fluid balance between structure and openness, boundaries and surrender. Learning from fungi, we begin to understand that not being fully in control does not mean chaos—it can mean collaboration with life.

There is also another way in which fungi challenge the logic of control. Consider the technocratic model of childbirth, where birthing women are stripped of their individuality and reduced to machine-like bodies on an industrial assembly line (32, 36, 37). Drawing on Anna Tsing's (17, 64) analysis, we can liken this model to the structure of colonial-era plantations, which were deliberately organized around the principle of alienation in order to maximize control. These plantations introduced monocultures —non-native crops planted on land cleared of local vegetation— that were tended by enslaved laborers who had been forcibly detached from their communities. As Tsing (64) notes, plantation agriculture sought superabundance through the domination of a single crop. "But one ingredient [was] missing: They remove[d] the love" (148). In other words, they removed the element of care and relational connection. "Instead of the romance connecting

people, plants, and places, European planters introduced cultivation through coercion" (148). Many fungi, in stark contrast—such as the matsutake mushroom that Tsing (17) focuses on and that "cannot live without transformative relations with other species" (40)—resist such industrial domestication. They flourish only through mutualistic, multispecies relationships, nourished by trees and thriving in the dynamic entanglements of the forest. This "contaminating relationality" (40), which embodies a form of life that defies hierarchical, alienating logics, makes species like the matsutake unfit for cultivation within monocrop systems. Similarly, human childbirth depends on the vital elements of love and connection, and it may be compromised when it is situated within systems structured by alienation instead. We birth with others, and as such, fostering the essential interdependence and relationality that underpin childbirth is vital to ensuring positive experiences and resisting the alienation that threatens them (4).

In order to help to grasp the value of the fungal turn as a lens on childbirth, Table 1 outlines key synergies and their practical implications for fostering positive childbirth environments. Although such implications are well reflected in existing world guidelines advocating for respectful childbirth care, their comprehensive adoption remains insufficient (65). The dominant technocratic model, emphasizing standardized protocols and medical intervention, continues to prevail in many obstetric contexts, thereby impeding the consistent application of humanistic and relational approaches that foster positive childbirth experiences.

Conclusions

The fungal logic has profound implications for how we understand birth. The modern medicalization of childbirth, marked by control, standardization, and risk management, can be read as a symptom of a broader cultural alienation: from our bodies, from ecological temporality, and from collective modes of care. Science is increasingly questioning rigidly individualistic models of life and moving toward more ecological frameworks; fungi embody this turn. Reframing childbirth through a fungal lens allows us to see it as a deeply ecological and collaborative process.

It is of course not impossible to have a positive birth experience in scenarios where women are suspicious about the degree to which they will be protected and must therefore find solace in exercising their autonomy and control and protecting themselves from coercion or violence. However, this is a very low bar for birth experiences, and it usually puts too much responsibility on the birthing woman, frequently producing strong feelings of self-blame if she does not get to experience the birth that she expected and hoped for. A higher and more appropriate standard for birth experiences is one that begins with a setting in which the birthing subject feels cared for and protected—where she is not required to defend herself or constantly protect her body from unwanted intervention. Births experienced under such conditions have been reported as deeply rewarding and as allowing expansiveness, flow, and sometimes profound transformation. In a protected space where the birthing subject can let itself go into a fluid state of being, blurring its boundaries and experiencing intercorporeality and interconnectedness, the "person" does not need to maintain the traditional boundaries that are perceived as separating her from the world and from others, protecting her, among other things, from others' intrusions (12, 14). Under these optimal conditions, the person is transformed into a kind of fungus, a porous being, a less solid and much spongier, waterier one, who can birth not through autonomy and agency but through expansiveness, fluidity, and a blurred, leaky, permeable intertwining with her surroundings.

Like fungal networks, birth is an entangled transformation—one that calls for relationality, adaptability, and respect for porous boundaries. Seen in this light, it is not only politically and ethically urgent but ecologically essential to move toward models of birth that prioritize connection over control. As Tsing (17) reminds us, "survival requires livable collaborations" (29)—a truth that fungi have long embodied and one by which we, too, might yet learn to live.

Data availability statement

The original contributions presented in the study are included in the article, further inquiries can be directed to the corresponding author.

Author contributions

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Auricular acupuncture as stress-relieving intervention for parents of infants in the neonatal intensive care unit: insights gained from a pilot study

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Background and aim: This pilot study aimed to explore the feasibility and effects of auricular acupuncture called NADA, according to the principles of the National Acupuncture Detoxification Association. Previous studies have reported the effects of NADA on stress, anxiety, and sleep. Given the high levels of stress, anxiety, and psychological distress commonly experienced by parents of infants admitted to the Neonatal Intensive Care Unit (NICU), the study sought to determine whether NADA could serve as a stress-relieving intervention.

Method: The pilot study was conducted as an observational cross-sectional study for 6 months from October 2019. The "Nada in NICU" pilot project involved 41 parents (33 women and 8 men) who received between 3 and 16 NADA interventions during their child's NICU hospitalization. Data were collected through a questionnaire assessing sleep, stress/restlessness, and physical well-being. Participants were also given the option to add free-text comments in the questionnaire regarding their experiences with the NADA treatment. Quantitative data were analyzed using mixed regression, while qualitative data were thematically analyzed to identify recurring themes.

Findings: The results indicated a statistically significant reduction in stress, sleep disturbances, and physical discomfort post-NADA intervention, with a mean difference in sleep scores of –1.951. Qualitative feedback generated an overall theme, "An increased feeling of calmness," and two themes, "A psychological booster," reflecting parents' experiences of enhanced mental clarity and emotional regulation and "Bodily calmness," highlighting improved physical relaxation and sleep quality. Parents universally regarded NADA as a relevant and beneficial intervention during their NICU stay.

KEYWORDS

NADA auricular acupuncture, NICU, stress, parents, sleep, physical discomfort

1 Background

When an infant is born preterm and requires hospitalization in a neonatal intensive care unit (NICU), parents often experience an array of negative emotions, including stress and anxiety, which are related to the infant's condition, parenting roles, and the NICU environment and staff (1). A recent meta-analysis showed that 49% of mothers and 23% of fathers experienced anxiety following their infant's admission to the NICU (2). Most hospitalized parents are affected to varying degrees of anxiety and stress during their child's admission to the NICU, while still being expected to undertake their parental responsibilities. In a study by Diaz-Caneja et al. (3), parents described their experience as similar to a grief reaction, including shock or disbelief, guilt and blame, and avoidance and escape strategies. These parents are at increased risk of developing depression, which can negatively impact their well-being during hospitalization and after discharge (4). Furthermore, parents suffer negative psychological effects during and after NICU, including disrupted parent–infant attachment (5) and an affected sense of parental role which have been associated with symptoms of depression negatively affecting parental well-being (4). Additionally, patients of hospitalized infants report higher rates of anxiety and posttraumatic stress compared with parents of healthy infants (6–8).

It is also known that these psychological constraints negatively affect milk production, potentially compromising mothers' ability to feed their infants in accordance with recommendations on human milk nutrition (9). A study by Ziomkiewicz et al. (10) found that perinatal psychosocial stress negatively affected the energy density and fatty acid content in breast milk.

Furthermore, infants in the NICU are at a heightened risk for adverse developmental, cognitive, academic, and mental health outcomes due to prematurity, illness, quality of care, and mother–infant interaction (11). Parent–infant closeness evolves and is influenced by multifaceted biopsychosocial factors (12). Accordingly, parental stress affecting mother–infant interaction and quality may negatively impact these infants both during NICU hospitalization and after discharge (8).

Supporting parents in the NICU after preterm birth is crucial not only for their own mental health but also due to potential negative implications for the parent–infant relationship and the child's subsequent development. A multilayered approach to supporting parents of preterm infants in the NICU is therefore recommended. Evidence specifically supports the inclusion of individual psychological and psychosocial support, peer-to-peer support, and family-centered care (7).

1.1 NADA acupuncture

To relieve stress and support recovery, auricular acupuncture, which originated from traditional Chinese medicine, was adapted and further developed in the USA in the 1970s. American psychiatrist Michael Smith developed an auricular acupuncture model, later known as the NADA (National Acupuncture Detoxification Association) method (13). A NADA intervention session involves the placement of a total of 10 small needles, five in each ear, at specific points. The needles are then left *in situ* for 45 min while the individual is in a calm environment.

NADA has been used in various contexts and populations. Notably, it has been applied in substance abuse treatment programs, hospitals, and prisons for almost 40 years despite conflicting and limited evidence regarding its effectiveness (14). NADA has been used to treat posttraumatic stress disorder (PTSD), for example, in refugee settings (15) and has been found to reduce burnout and distress. A study by Olshan-Perlmutter et al. (16) found that auricular acupuncture reduced symptoms of anxiety and burnout in behavioral healthcare providers. NADA has also been used to treat maternal perinatal anxiety. In the study by Favre-Fèlix et al. (17), NADA was found to reduce maternal anxiety levels upon arrival in the operating room and immediately before the commencement of a cesarean section, compared with usual care.

A meta-analysis indicated that NADA is effective in treating insomnia. However, due to the low quality of existing trials, further clinical trials with higher design quality, extended treatment duration, and longer follow-up periods are necessary (18). To date, no studies on the effects and experiences with NADA as a stress-relieving intervention for parents of infants admitted to the NICU have been reported.

Given its reported effects on psychological stress and sleep (19), we anticipated that NADA could be valuable to support parents in handling the stressful, sleep-disturbed, and often traumatic time during their NICU stay. In this study, we aimed to pilot test NADA to generate knowledge about the feasibility of the intervention and its effects and parents' experiences with it in a NICU setting.

2 Method

In October 2019, the "NADA in NICU" pilot project was started. Two experienced neonatal nurses were certified as NADA therapists at the association called NADA Denmark. NADA was offered as an individual intervention at flexible times. We aimed to test NADA in a form that was feasible in everyday clinical life and adaptable to the rhythm, physical condition, and general needs of both the parents and infants, with a focus on creating a peaceful moment for the parents to receive the intervention. Posters with information about the NADA intervention were strategically placed in prominent locations within the NICU to inform parents of its availability during their infant's hospitalization. In addition to this passive recruitment strategy, nursing staff actively engaged with parents by verbally informing them about the pilot testing of the NADA intervention. The two NADA therapists also personally informed parents that NADA was offered only at times when they were present in the NICU and had allocated time for NADA sessions. Through this combined approach, parents were recruited via visual materials and direct communication. There

were no formal exclusion criteria for participation. Instead, parents independently assessed their own readiness and interest in receiving the NADA intervention based on their individual circumstances during their infant's hospitalization in the NICU. Neither the length of the NICU stay nor the timing of the intervention served as limiting factors, as the aim was to explore how NADA was experienced across a diverse parental population.

This pilot study was conducted as an observational cross-sectional study. Data were collected using a questionnaire developed to investigate the experience of NADA based on three general themes: sleep, stress/restlessness, and physical well-being (see Appendix 1). These three themes cover common concerns experienced by parents of children admitted to the NICU (3). For each of the three themes, one question was developed. The response categories followed a Likert scale format but lacked descriptive labels, e.g., "strongly agree" and "disagree." Furthermore, the parents were asked whether they considered the offer of NADA during hospitalization to be relevant in the NICU.

Parents were allowed to provide written comments regarding their experiences with receiving NADA as part of completing the evaluation questionnaire. These written comments were chosen to add new perspectives as a supplement to the scorings on the questionnaire evaluating the NADA treatment and provided an opportunity for parents to express their experiences in their own words.

The NADA therapists filled in information about the physical setting during the NADA intervention and how it was experienced by the parent, whether the session was best conducted in a separate room or in the patient room, in a bed or a chair, and without or with the child or others in the room. This was conducted to gather knowledge about their experiences with NADA in different physical contexts. This is important knowledge for potential further implementation of the intervention in the NICU. Various calm settings such as available empty rooms and rooms used for appointments and conversations with a social worker, a psychologist, or a priest, were used pragmatically depending on what was possible in the ward at a time that was convenient for parents to receive NADA. These rooms were equipped with a comfortable reclining chair or a bed.

In the context of providing NADA to parents of children admitted to the NICU, several ethical considerations had to be addressed. NADA has demonstrated efficacy in reducing stress and anxiety levels, making it a pertinent intervention to investigate within this specific demographic context. The decision to offer NADA to parents was grounded in the understanding that they were experiencing significant emotional challenges during their child's hospitalization, and thus, exploring potential supportive interventions was important.

Written informed consent was obtained from the participating parents after they were provided with written information sheets by nursing staff, which were signed just before receiving NADA.

It was essential to clarify that the parents participating in this program were considered healthy companions rather than patients. This distinction was crucial as it alleviated some ethical concerns regarding the treatment of individuals who may be vulnerable due to their infant's medical condition. Furthermore, in compliance with the General Data Protection Regulation (GDPR), the program did not involve the collection of sensitive personal information from participants such as hospital records. This adherence to privacy regulations ensured that parents' rights and confidentiality were upheld throughout the intervention.

NADA therapy was administered solely by two certified NADA practitioners, ensuring that the intervention was delivered according to the established standards and guidelines set forth by the NADA center. This adherence to professional guidelines not only enhanced the quality of care provided but also reinforced the ethical commitment to providing safe and effective treatments.

Participation in the NADA intervention was entirely voluntary, allowing parents of infants in the NICU to make informed decisions about their involvement. This voluntary nature respected the autonomy of the parents and acknowledged their right to choose whether to engage with the intervention. The departmental leadership at the university hospital granted ethical permission to trial NADA, with a limited group of parents to evaluate its relevance and utility as a supportive resource for those with hospitalized infants. This pilot approach was ethically sound, as it sought to gather data on the effectiveness of the intervention while minimizing potential risks to participants.

2.1 Data analysis

2.1.1 Quantitative analysis

Changes in scores from pre- to post-assessment were evaluated for the items pertaining to stress, sleep, and physical well-being.

A mixed regression was used with a random intercept by each individual to analyze changes in scores from before to after NADA.

2.1.2 Qualitative analysis

The free-text comments were analyzed thematically to identify themes that could nuance or supplement the questionnaires' answers with quantitative self-reported ratings. Braun and Clarke's (20) reflexive thematic approach was used as it is flexible and can be used for various qualitative data. All the comments were read and reread by the authors, and the data were then organized in groups by two of the authors (BS, CS). These initial codes were subsequently discussed by the authors in collaboration, where discussions enhanced understanding, reflexivity, and interpretation. In this phase, codes that described similar content were grouped and reviewed in agreement among authors. In the next phase, the authors reviewed and discussed further to identify and define what each theme was about, which resulted in consensus on the findings and final themes. Finally, the analysis was written up, and quotes to illuminate key issues were chosen.

TABLE 1 Sample characteristics for included participants in the pilot study.

ID	Gender	Knowledge about NADA prior to intervention	Gestation age	Number of NADA sessions	
				<3	>3
1	Female	No	30 + 6		7
2	Female	No	32 + 0		7
3	Female	No	32 + 3		4
4	Female	No	34 + 1		3
5	Female	No	39 + 2	2	
6	Female	No	35 + 4	2	
7	Female	No	34 + 0	1	
8	Male	Yes	35 + 1		3
9	Female	No	33 + 6		6
10	Female	No	32 + 0		7
11	Female	No	35 + 0		3
12	Female	No	34 + 4		3
13	Female	No	34 + 0	1	
14	Female	No	31 + 2		4
15	Female	No	28 + 1		7
16	Female	No	28 + 2		8
17	Female	No	32 + 2		4
18	Female	No	31 + 3		5
19	Male	No	31 + 3	2	
20	Male	No	35 + 4		3
21	Female	Yes	27 + 5		16
22	Female	No	38 + 3		4
23	Female	No	33 + 4	2	
24	Female	No	Missing	2	
25	Female	No	35 + 4	2	
26	Female	No	29 + 1	2	
27	Female	No	41 + 5	2	
28	Female	No	26 + 0	2	
29	Female	No	41 + 1	2	
30	Female	No	35 + 1		3
31	Female	No	35 + 2	2	
32	Female	No	Born at term		4
33	Male	No	27 + 5		9
34	Male	No	Born at term	2	
35	Male	No	34 + 1	2	
36	Male	No	26 + 0	1	
37	Female	No	31 + 6		4
38	Female	No	34 + 0		5
39	Female	No	31 + 2		4
40	Female	No	35 + 4	2	
41	Male	Yes	27 + 5		12

3 Results

3.1 Quantitative results

In total, 41 parents participated in the study (Table 1). Of these, 23 received fewer than three NADA sessions. Data were collected from 41 parents (33 women and 8 men) who received NADA and completed the post-intervention questionnaire either on the same day or within the next couple of days of their final session. Overall, these participants received an average of 1–16 interventions during their infant's hospitalization. Among them, 20 had a child born moderate to late preterm.

Given the cross-sectional design of the study, causality cannot be established, and the results should be interpreted with caution. However, the results showed changes in levels of stress, sleep quality, and physical well-being among participants before and after receiving the NADA intervention (Table 2). Group means were significantly different, with the p-value less than 0.05 (i.e., based on a two-tailed significance level). The level of stress and sleep was lower after intervention with NADA (Table 2). No differences were found related to the actual room in which NADA treatment was conducted.

TABLE 2 Measured changes in stress, sleep, and physical activity before and after the NADA intervention.

Items	Before NADA		After NADA		Difference			
	Mean	SD	Mean	SD	Mean diff	95% CI		*p*-value
Stress score	4.22	0.79	2.27	0.74	−1.951	−2.288	−1.614	0.00
Physical activity	3.34	1.20	1.88	0.64	−1.463	−1.885	−1.042	0.00
Sleep score	4.10	0.83	2.15	0.73	−1.951	−2.294	−1.608	0.00

3.2 Qualitative findings

These findings, with short spontaneous evaluative statements on NADA treatment voiced by parents, should be understood in the context of parenting an infant hospitalized in the NICU and the psychological stress commonly experienced by this population.

Parents reported various aspects of their experiences related to receiving NADA intervention through short statements. All parents included free-text comments in the questionnaire. These comments demonstrated that parents associated NADA with positive experiences, physically and mentally, and the overall theme was *an increased feeling of calmness*: "NADA gives me calmness and makes me more relaxed both mentally and physically" (ID 11). Obtaining calmness and relaxation was valued by parents and implies that this is a needed feeling and experienced as a welcomed contribution to the well-being of parents during their NICU stay.

The positive implications of feeling calmness were expressed here: "NADA opens up to it all and gives me serenity to be present in the situation" (ID 9). Being mentally present in the NICU is demanding, and it was implied that emotional withdrawal could serve as a coping mechanism. However, such disengagement could potentially have adverse effects on the relationship with the other parent, the infant, and the collaboration with healthcare professionals. Two subthemes were generated from the comments, each pointing to a distinct aspect of parental NADA experiences: *a psychological booster* and *bodily calmness*. The subthemes elaborated physical and psychological elements that were associated with NADA, all in a positive way. The bodily calmness generated physical effects, and the psychological calmness generated a boosted overview of their life as a family in a NICU context and clarity of thoughts.

3.3 A psychological booster

Parents reported that their psychological condition was strengthened in different ways which generated newfound and increased room for reflection and consequently handling the situation mentally. One participant expressed, "NADA helps me to get an overview of my thoughts that otherwise make me anxious and worried" (ID 35). Here, NADA referred to helping to gain an overview in a chaotic mind where the overview was somewhat lost and their thoughts caught up in worry and anxiety. Such a state of calmness and clarity of thought was reported to have helped initiate reflection and to stimulate mental work, exemplified here, "I get to reflect and address some issues that I otherwise would not have been working on if NADA had not helped me to think about it" (ID 12). Being able to reflect and think about the situation seemed to be needed for this participant, and it was remarked as a positive aspect that was considered helpful. Another participant reported:

> Coming to NADA, I was so tired of being filled with worry. And really it happened automatically. Instead, I had really good and quite constructive thoughts. So, I have made plans for our admission period here. Now I really think everything is going to be ok (ID4).

The ability and opportunity to reflect and structure thoughts seemed to be a foundation for making choices, where confusion and sadness was a limiting state of mind which was elaborated here: "I was so sad and confused about everything. And at once, when I came back to the room after I got NADA, I totally knew what to do" (ID 17). This statement demonstrated that NADA for this participant was experienced as associated with reduced confusion and sadness, which affected the ability to make choices and act according to the situation, and another noted that after NADA, "the crying stopped and a hopeful feeling of everything is going to be ok" (ID 39) appeared.

Sadness was associated with worries and anxiousness which might have inhibited more energizing feelings comprising hope and positive future expectations. NADA seemed in our data to be experienced as associated with positive regulation of emotions which stimulated mental overview and ability to make choices: "I feel more courageous and happier" (ID 33). Courage could be considered as the opposite of anxiety, which points to an empowering aspect of NADA treatment, to parents who were in an uncertain NICU context where issues of health, sickness, and future were at stake.

3.4 Bodily calmness

In addition to the various psychological effects, there were parents who reported on physical effects related to bodily calmness which seemed to entail better abilities to sleep: "NADA gives me a sound and profound sleep, and a feeling of calmness in my body" (ID 37). Sleeping difficulties that had been present even before admission to the NICU could also be helped by NADA treatment during the NICU stay: "This is the first time in six years that I am able to sleep at night" (ID8). Improved sleep was also associated with more mental energy by others and with decreased muscular tensions in the neck.

Some mothers reported that their production of milk increased, which was a bodily reaction that might be related to reduced stress, improved sleep, and psychological calmness. A mother expressed it this way:

> I have really relaxed. I snored even though I was awake. I decided to give worries a break, and that just came totally naturally. Instead, I experienced only good constructive thoughts, and I have now planned for the time here at the hospital. It will be okay. After I have slept well, and my milk production has tripled (ID3).

This quote demonstrates how psychological and bodily calmness were experienced as interconnected and constituted inseparable dynamics, which confirmed a holistic non-dualistic view of body and mind.

4 Discussion

Given the documented benefits of NADA in other populations experiencing psychological distress (14, 16, 17), we conducted this pilot study with the expectation that the intervention might be transferable to a well-documented high-stress population, parents of preterm or ill infants. The findings from this study suggest that such transferability is possible. Moreover, the results demonstrate that implementing NADA in a NICU setting is feasible. Overall, the intervention was associated with several positive outcomes, and qualitative accounts from parents further elaborated, nuanced, and substantiated these findings.

Following the NADA intervention, participants reported reduced levels of stress, improved sleep, and increased physical well-being. Nevertheless, these findings should be interpreted with caution due to the limitations inherent in the study's design—namely, its pilot nature, cross-sectional methodology, and small sample size—as causal relationships cannot be established. Considering these limitations, outcomes suggest that NADA may enhance mental resources, which can be redirected toward fostering parent–infant attachment and facilitating collaboration with healthcare professionals. These processes are likely to yield both short- and long-term benefits for infants and their parents. Such a dynamic interplay between attachment which serves as a prerequisite for engagement, and mental and bodily well-being is supported by findings from Buchanan et al. (21), which supports the association between auricular acupuncture, reduced anxiety, and enhanced engagement.

However, it is uncertain if the change in, e.g., stress before and after NADA intervention is explained by other reasons than NADA. Such as an improvement in the child's condition, the multifaceted nature of therapeutic encounters that parents can be exposed to while in NICU or resting in a calm setting for 45 min after placement of the needles. An expanding body of literature highlights the therapeutically powerful potential of placebo, particularly in contexts involving psychological and somatic distress (22–24). Placebos have been increasingly recognized as a legitimate biopsychosocial phenomenon, constituting an integral component of the overall therapeutic response even though the effects vary considerably across individuals (22, 24).

Drawing on placebo research, clinical guidelines incorporating three core principles have been developed to facilitate integration of placebo clinical practice settings (24). The first two principles involve the modulation of patient expectations, wherein healthcare professionals convey confidence in the effectiveness of the treatment and provide knowledge for patients. In accordance with these principles, we acknowledge that NADA was communicated to parents in the NICU setting by certified healthcare professionals, thereby conveying a sense of professional credibility and suggesting the potential effectiveness of the intervention. The third principle emphasizes enhancing communication styles to foster a supportive and empathetic relationship between healthcare professionals and patients, which is essential for promoting trust and engagement, which triggers placebo effects. Communicating and collaborating with parents through empathetic and respectful relationships aligns with the core family-centered care values of NICUs in Denmark by developing respectful, informative, and trustful collaboration with parents. Accordingly, this third principle was presumably actively applied in the provision of the NADA, reinforcing a supportive and trust-based therapeutic environment.

The provision of NADA in NICU may be regarded as a holistic approach to supporting parental well-being that comprises a placebo. The findings of our pilot study should therefore be considered within the evidence base of placebo, which posits that observed improvements may not be attributable solely to the specific physiological mechanisms of acupuncture needles.

Research indicates that psychological distress can impact various breastfeeding outcomes, such as delayed secretory activation and reduced duration of exclusive breastfeeding. One suggested physiological mechanism is that psychological distress may hinder the release of oxytocin. Maternal distress can lead to increased serum cortisol levels and reduced insulin sensitivity, both of which are linked to lower milk production. Supporting lactation and breastfeeding goals in women experiencing high levels of psychological distress can greatly benefit both maternal and infant well-being. Investigating stress-reducing programs and policies may improve breastfeeding outcomes (9).

Ziomkiewicz et al. (10) found that perinatal psychosocial stress adversely affected breastmilk composition, specifically by reducing its energy density and altering its fatty acid profile. This points out that in addition to breastmilk volume as essential for the ability to feed the infant, the nutritional quality of the breastmilk is also at stake when mothers are psychosocially stressed. Preterm infants and sick infants are dependent on sufficient nutrition being adequate amounts of high-quality breastmilk to thrive and develop optimally.

5 Methodological considerations—limitations

This pilot study was conducted as an observational cross-sectional study. Therefore, it is not plausible to determine any

causal relationship between NADA acupuncture and stress, sleep, and well-being. We can read an association. To be able to establish a causal relationship, we need to conduct a randomized controlled trial. However, it is uncertain if the change in, e.g., stress before and after NADA intervention is explained by other reasons than NADA. Such as an improvement in the child's condition, or attention from the parent, from a health professional, the opportunity to rest in a calm room, and a placebo.

For the questionnaire data, the responses might be influenced by social desirability bias (25) with an overrepresentation of positive responses.

Participation in the intervention was voluntary, which may have led to a self-selection bias. It is plausible that more skeptical parents chose not to participate. This potential sampling bias could have influenced the composition of the study population and thereby limited the generalizability of our findings.

As the questionnaire employed in this pilot study was not a validated instrument, there might be limitations in the measures of stress, sleep, and physical well-being. Further studies should ideally use validated questionnaires encompassing themes related to sleep, stress, and physical well-being. Moreover, the recruitment and data collection could include a more equal gender representation in the data.

Having short evaluation statements from parents was a strength to help understand why and how parents benefited (or not) from the intervention. However, further studies could explore more in depth using qualitative interviews. The comments were given after the NADA treatment that they had voluntarily chosen to receive. The questionnaires were administered considering anonymity. To ensure participants felt free to respond without influence, NADA instructors were instructed not to read the completed questionnaires while participants were present.

6 Conclusion

This pilot study suggests that NADA may be a promising intervention for reducing stress among parents in the NICU, potentially facilitating the mobilization of mental energy essential for the development of parental attachment and the establishment of parenthood. The findings indicate that NADA could serve as an effective approach to alleviate stress and support parental well-being during this critical and emotionally demanding period. However, this conclusion must be drawn with caution due to the study's limitations. Further research is warranted to substantiate these preliminary findings and to explore the potential effects in greater depth. Future studies should include randomized controlled trials and employ validated measurement tools to assess outcomes such as stress, well-being, sleep quality, and breastfeeding, including breastmilk production.

No adverse effects were reported, and all participants considered NADA as a relevant and valuable intervention. Attention to more equal gender representation should be considered in future studies.

A further potential could be to provide NADA to caregivers in NICUs, such as nurses and doctors.

Data availability statement

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

Ethics statement

Ethical approval was not required according to the regulations in the region. However, it was ethically discussed in dialogue with ward management and approved. The studies were conducted in accordance with the local legislation and institutional requirements. The participants provided their written informed consent to participate in this study. Written informed consent was obtained from the individual(s) for the publication of any potentially identifiable images or data included in this article.

Author contributions

HH-H: Conceptualization, Data curation, Formal analysis, Funding acquisition, Investigation, Methodology, Project administration, Resources, Software, Supervision, Validation, Visualization, Writing – original draft, Writing – review & editing. BS: Conceptualization, Data curation, Formal analysis, Investigation, Methodology, Project administration, Resources, Validation, Visualization, Writing – review & editing. CS: Conceptualization, Data curation, Formal analysis, Investigation, Methodology, Project administration, Resources, Validation, Visualization, Writing – review & editing. MH: Conceptualization, Data curation, Formal analysis, Investigation, Methodology, Project administration, Resources, Supervision, Validation, Visualization, Writing – review & editing. MG: Conceptualization, Data curation, Formal analysis, Funding acquisition, Investigation, Methodology, Project administration, Resources, Software, Supervision, Validation, Visualization, Writing – original draft, Writing – review & editing.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Generative AI statement

The author(s) declare that Generative AI was used in the creation of this manuscript. AI used to translate quotes and the questionnaire from Danish to English.

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Appendix 1
Questionnaire—translated into English.

Dear parents,

Please mark on the scale below before and after your NADA course.

1 means no problems, and 5 means very affected.

Sleep: To what extent is your sleep affected by your current situation?

Before NADA: 1_____2_____3_____4_____5_____

After NADA: 1_____2_____3_____4_____5_____

Stress/Anxiety: To what extent is your mental well-being affected by your current situation?

Before NADA: 1_____2_____3_____4_____5_____

After NADA: 1_____2_____3_____4_____5_____

Physical well-being: To what extent is your physical condition affected by your current situation (e.g., muscle tension, pain experience, etc.)?

Before NADA: 1_____2_____3_____4_____5_____

After NADA: 1_____2_____3_____4_____5_____

Total score:_____(to be filled out by the therapist)

Please describe in your own words how you experience the effect of NADA:

—

—

—

Do you think NADA is a relevant offer for hospitalized parents in the neonatal unit?

By signing, I give consent for this information to be used in data collection for the neonatal unit's NADA project.

Date: Signature:

Data will be anonymized before presenting the results.

To be filled out by the NADA therapist:

Parent's name:

Child's name (label):

GA/diagnosis:

Hospitalization period:

Relevant history/conditions for the family:

How did the parent hear about the NADA offer on Neo?

Knowledge/experience with NADA:

Location/setting—how is this experienced in terms of calm, darkness/light, disturbances:

Was the child or other relatives in the same room during the treatment?

Number of treatments (write dates):

Other?

NADA therapist's name:

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Experiences of group antenatal care in the context of the NHS in England: what are the mechanisms by which it functions in this context?

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Introduction: Group antenatal care is a model where care is provided in groups of around 6–12 women/birthing people, integrating healthcare with information and learning in a participatory approach. There is international evidence of improved care experiences and outcomes; however, the approach (here called Pregnancy Circles) had not been trialled in the United Kingdom in the context of a universal health system with midwife-led care. We aimed to understand the experience of care and any mechanisms by which group care functions for the different people involved.

Method: This study comprised a qualitative process evaluation nested within a randomised controlled trial. The mixed qualitative methods used in this study included observations of care, interviews with participants, survey open-text responses and written feedback, and a review of relevant documents. Inductive thematic analysis was conducted using a framework of theorised mechanisms based on a realist review. The trial's clinical and psychosocial outcomes and lessons for implementation are reported elsewhere.

Results: We found a high level of concordance with the framework of mechanisms derived from the literature. The key mechanisms were social support and community building, a critical pedagogy (combining peer learning, an interactive and participatory approach, and health education), satisfaction and engagement with care, and the health professionals' satisfaction and development. Building on these, the empowerment of participants and midwives formed an overarching mechanism. Relational continuity and time for care were the key underpinning components.

Discussion: Pregnancy Circles address key deficits in contemporary maternity care, including the lack of time and relational or informational continuity of care, the lack of informed choice, and loss of opportunities to enhance empowerment through health knowledge, social support, and confidence in caring for one's own health, in decision-making, and in seeking support. Importantly, midwives felt that facilitating group care enhanced their professional satisfaction and development and collaboration across boundaries, features associated with service safety and resilience. Fidelity in terms of the midwives' skills and confidence in using a facilitative approach was important and was underpinned by continuity. Midwives' and women's empowerment were found to be mutually supportive rather than in tension. Scaling up Pregnancy Circles as a standard care option in the National Health Service may support positive care experiences; however, further research is needed to monitor the longer-term impact and service and public health implications.

KEYWORDS

group antenatal care, pregnancy circles, Centering Pregnancy, experience, mechanisms, empowerment, continuity

Introduction

Pregnancy Circles (PC) is a model of group antenatal care adapted for the United Kingdom's National Health Service (NHS) setting that is aligned with the Centering Pregnancy model introduced in the United States. Group antenatal care involves providing the usual schedule of antenatal care (ANC), with 90–120 min per visit (rather than the typical 15–30 min), to a group of around 6–12 women with births due around the same time, rather than individually, which is facilitated by two professionals—midwives in the case of the United Kingdom. Depending on the context, partners may be included in all or in selected sessions; at our study sites, this was decided by the women in the group during their first session. Although satisfaction with antenatal care in the United Kingdom is generally high, there is evidence of inequity in access and quality of care for Black and South Asian heritage women and those who are more socioeconomically disadvantaged (1), levels of informed choice and continuity of carer are limited (2–4), and antenatal education is not always accessible or of a high quality (5). Group care aims to enable a more active and interactive approach to learning, with a facilitative rather than didactic approach, engaging pregnant women/birthing people more fully in their care, including conducting their own routine health checks, such as blood pressure monitoring, within the group space. It also seeks to enable a higher level of social support from peers and from midwives. Previous studies have identified a range of potential benefits, including improved uptake and experience of care (6, 7), reduced preterm birth or low birthweight among women in more vulnerable situations (8), and increased breastfeeding rates (9). A small-scale pilot study of Centering Pregnancy in the United Kingdom reported positive responses among women and midwives but was not continued by the service (10).

The Pregnancy Circles trial grew from a community-based co-design process, exploring ways to improve equity in access and quality of antenatal care. A feasibility study identified positive experiences among both women and midwives (11, 12). A core theme of "Better Together" (being in the group) captured the experience of social support within a safe group space that also provided clinical care (12). Midwife participants valued a more relational approach to care, which felt like "real midwifery" (12). The feasibility work established that, despite the reservations of some service managers, the approach would be acceptable to women from diverse social and ethnic backgrounds, and that diversity within groups, including parity, obstetric risk, and social factors, was preferred (11). A pilot RCT indicated feasibility (13, 14), including the feasibility of including women with limited English proficiency with interpreter support (15). An individually randomised multicentre controlled trial with integral process and economic evaluations was conducted from 2018 to 2024 (including a 26-month pause relating to the COVID-19 pandemic) across 14 NHS Trusts in England (16). The key values of the Pregnancy Circles model were identified through this process to be the following: relational, interactive, personalised, and safe (Figure 1).

A realist review conducted alongside this work to understand theories of effect within the existing research and professional literature identified a range of candidate mechanisms by which group antenatal care may enhance care experiences and/or outcomes across different settings (18).

In this article, we report findings from the process evaluation that explore and identify the mechanisms by which group antenatal care functioned, or did not, to enhance care experience and outcomes within an NHS setting at an early implementation stage. In this approach, mechanisms are conceptualised as the means by which a programme or intervention works "through changing the reasoning and responses of participants to bring about a set of intended outcomes" (19). While components of an intervention may be standardised, they may be adapted in planned or unplanned ways and mechanisms can vary, shaped by contexts and actions.

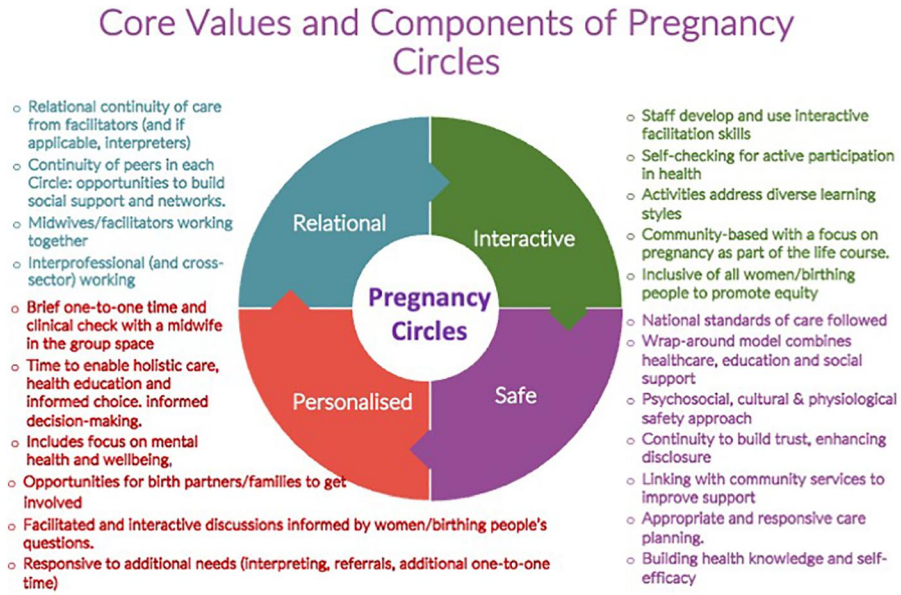

FIGURE 1
Core values and components model [reproduced from Wiseman et al. (17)].

Findings related to implementation facilitators and barriers, clinical and psychosocial outcomes, and cost-effectiveness are reported separately (17).

Methods

We conducted a qualitative process evaluation informed by realist evaluation principles (19) to examine the providers' and service-users' experiences of care and the presence or absence of treatment effects and to identify any unanticipated or unintended consequences. This included a focus on the implementation context and process and how the model was implemented in practice, acknowledging that practices and experiences may vary across different settings and participants. Implementation-related findings are reported elsewhere (17).

Data collection was mainly conducted at three "case study" sites, selected from within the 14 trial sites for variation of context, with additional data collection at 8 of the other trial sites where needed to address any gaps or questions generated during the process. Group care is a complex intervention requiring adaptation at the organisational and professional levels, including adaptations to a more facilitative and interactive way of working, co-working with other professionals, and sharing experience with other pregnant women/birthing people and their birth partners. Therefore, variation is expected in how the care functions in different contexts and the responses of different participants. Mechanisms are, therefore, a combination of the intervention itself, how it is implemented in different contexts, and how participants interact with it (18, 19). In earlier stages of the work, we developed a logic model to represent the research team's initial programme theory and a core values and components model (16). This will contribute to a final programme theory, incorporating both the trial's and process evaluation's findings.

A mix of qualitative methods was used to develop a rounded understanding of how the care was implemented, provided, and experienced in each setting, including observations, focus groups, interviews, free text from follow-up questionnaires, and a review of relevant documents. Observations included Circle sessions and traditional antenatal clinic appointments. Documents included maternity team meeting minutes, training workshop evaluations, field notes from facilitator reflection sessions, and facilitators' written reflections. The focus groups and interviews were semi-structured and conducted with the midwives who facilitated the groups, the midwifery and other service managers, the women receiving group care, and those in the control group receiving standard care. Topic guides were used to provide a balance of openness and focus on the overall evaluation aims. Participants were encouraged to talk about their overall experience of care in a more narrative style, with some prompts relating to specific aspects such as postnatal contact with the group. We aimed to recruit participants from diverse groups in terms of ethnicity and socioeconomic position and include those with obstetric risk factors, since prior studies have shown particular benefits for people in racialised or socioeconomically disadvantaged groups (8) and also reflecting the findings of feasibility work that the women preferred the groups to be diverse (12). The participants could invite their partners to join interviews, observations, or focus groups if they wished. The researchers were from a range of backgrounds, including midwifery and anthropology, and were not involved in providing care, although some played a role in training provision and implementation support. Interviews were

conducted either in person, via telephone, or via a video platform and were audio recorded and transcribed in full. Further details are provided in the trial protocol (16). Transcripts, observation notes, and open-text comments in survey forms were uploaded to NVivo 14 for analysis (https://lumivero.com/products/nvivo/).

Data were analysed thematically in two key steps. The first step was line-by-line inductive open coding. We then analysed the inductively coded data in relation to a "mechanisms of group care" framework developed by the study team in a realist review (18) (Table 1). This step was conducted iteratively rather than deductively to allow for new mechanisms and/or dissonant or disconfirming findings to be incorporated and the framework amended accordingly (20).

Findings

We first present a summary of the data drawn on for this analysis (Table 2), followed by a brief description of the case study sites. The thematic findings are then given in relation to the theorised mechanisms framework used in our analysis (Table 1).

Illustrative quotes and excerpts are labelled as follows: CS1, 2, or 3 = case study site; Other = non-case study site; FGD = focus group discussion; feedback = feedback to service or in midwife reflection sessions; Survey = follow-up questionnaire in late pregnancy or postnatally.

In total, 24 (two-thirds) of the 36 women interviewed were identified as living with social complexity, of whom 6 had multiple disadvantages and 4 required an interpreter. One was under the age of 20, 16 were of ethnic minority heritage, and 8 lived in the lowest quintile of the index for multiple deprivation. Finally, 12 (one-third) had obstetric risks requiring additional scans and appointments, 10 of whom had both obstetric and social complexities.

Implementation characteristics at each case study site

The case study sites were selected from among the trial sites for variation, including variations in local population characteristics and service organisation, as we wanted to explore how practice variations may influence the mechanisms of group care in different NHS settings. All the sites followed the key components of Pregnancy Circles (16) with variations in detail in response to their local contexts. Site 1 was in a coastal town with high rates of socioeconomic deprivation in a predominantly white community with high rates of teenage pregnancy and relatively large family sizes. It was described as having low levels of flux in midwives or women receiving care and reasonably high levels of antenatal midwifery continuity and family support. It had a single small obstetric unit and a small freestanding midwifery unit based in a rural cottage hospital. Site 2 was a suburban service with two obstetric units, each with an alongside midwifery unit (AMU), and a mix of more affluent and socioeconomically deprived neighbourhoods. It was characterised by strong leadership from consultant midwives during the implementation and long duration of the trial. Site 3 was a large inner-city service with two obstetric units and AMUs covering an area of high ethnic and socioeconomic

TABLE 1 Theorised mechanisms of effect in the literature [from Mehay et al. (18)].

Mechanism	Description
Social support	Bringing women together in a group and receiving continuity of peers provides the opportunity for building supportive relationships and social capital. Furthermore, trust can form to share experiences and disclose concerns, which can normalise pregnancy and encourage problem-solving, coping, and resilience, leading to reduced stress. This moves support to the community and reduces dependency on health services. Reference to social capital and community development.
Peer learning	Learning occurs through peers who are deemed to share similar characteristics as themselves (in some cases, sociodemographic, but more often the pregnancy experience). Information and messages from peers are seen as more salient, relevant, and personalised; therefore, women are more likely to act on that knowledge. Highlights the value of different sources of knowledge and expertise and that peers can be positive role models. This modelling leads to greater confidence in taking control of their own health by viewing others' behaviours. Reference to social cognitive theory and theories of behaviour change.
Active participation in health	Learning occurs through active participation in health and doing things for oneself, where self-checks, engaging in active discussions, and problem-solving place women at the centre of their own health. Shared health activities and engaging in women-led, group-based discussions supported more equal and trusting relationships between women and midwives.
Health education	A group setting allows more time for ANC education and for covering a broader range and depth of a health curriculum. Group ANC is theorised as a space to deliver behavioural strategies through specialised content (e.g., dental care, HIV support) and practical demonstrations to increase the transaction of "expert" knowledge and support for women to make appropriate choices for their health. Reference to behaviour change theories.
Satisfaction with care	A group setting enabled more time and continuity with a midwife and other healthcare professionals. Group ANC was seen as facilitating positive relationships between women and their healthcare provider, particularly where midwives are able to build relationships that are based on trust, leading to greater satisfaction with care, better management of risks, and increased engagement with health services generally. Furthermore, groups allow better joined-up care where other health professionals and invited speakers can attend groups to provide information (e.g., health visitors).
Health professional development and wellbeing	Midwives are able to provide richer and safer care with the increased time and continuity with the women, and by gaining the opportunity to develop their own knowledge with colleagues. This increases midwives' job satisfaction, which in turn translates to better care provided and reduced burnout.
Empowerment	Components such as interactive learning and peer group and relational continuity help support self-efficacy, confidence about health, seeking and using information, and decision-making. They may also help shift power balances and distance between professionals and clients, countering the hierarchy that is common in healthcare

TABLE 2 Summary of data sources for this analysis.

Type of data	CS1	CS2	CS3	Other: drawn from eight maternity services and external stakeholders	Total	Notes
Interview/focus group participant (intervention)	4	4	5	16 (of which 9 took part in a focus group)	29	$n = 6$ allocated to PC but left for a range of reasons. $n = 8$ high-risk obstetrically $n = 19$ social complexity
Partners (intervention)	0	0	0	4 (all took part in the focus group)	4	All partners took part in one postnatal focus group
Interviews with women in the control arm (standard care)	3	2	2	0	7	$n = 4$ high-risk obstetrically $n = 5$ social complexity (four had both social and clinical risks)
Interviews with midwives	5	3	5	10	23	All the interviewed midwives facilitated both PC and traditional care
Interviews with stakeholders	2	2	2	8	14	These included team leaders, community matrons, senior managers, consultant midwives, research midwives, and commissioners
Observations of Pregnancy Circles	2	2	8	2	14	
Observations of traditional visits	1	0	6	0	7	
Reflections by midwives	0	4	1	14	19	These include "reflection pages" from the PC Manual and field notes made by the research team during reflection sessions with the facilitating midwives
Free text from questionnaire at 35 weeks of pregnancy (FU1)	N/A	N/A	N/A	N/A	545	Out of 1,593 trial participants (34%)
Free text from follow-up questionnaire at 3 months postnatally (FU2)	N/A	N/A	N/A	N/A	475	Out of 1,593 trial participants (30%)

diversity and a significant minority of women in maternity care with limited English proficiency (17%), with 33% born outside the United Kingdom (21). All three, based in South East England—reflecting the location of the majority of trial sites—were rated as "good" by the Care Quality Commission and had perinatal mortality rates within or lower than 10% of the national average.

Mechanisms

The analysis confirmed that the theorised mechanisms we had identified in the literature were relevant and resonant with our data. Nonetheless, some adjustments were made during the analysis. First, continuity emerged as an important underpinning mechanism and time as an important underpinning component. Second, we combined the propositions related to learning under the overarching theme of a critical pedagogy, which is explained below.

Social support and building community

Social support was integral to the design of group care and, as indicated under peer and interactive learning and continuity, the approach to information provision and the consistency of participants and facilitators were contributors to this. Many participants spoke about this in interviews or added comments in their follow-up questionnaires; for example:

> "This is my second pregnancy and i [sic] feel the antenatal care support i [sic] have received as part of the pregnancy circles is far superior to that of the 1:1 sessions I had previously. It is great to be a part of a group of other women and I enjoy the fact that we receive the usual 1:1 midwife care but also discuss other topics as a group." (Survey G52, intervention FU1).

> "This was fantastic I got to meet new mums and able to ask lots of questions and feel ready to be a mum." (Survey C06, intervention FU1).

This was consistent for women who did not see themselves as extroverted or confident:

> "I would totally recommend the pregnancy circle option to anyone especially if you are quite shy and anxious like me it's a good way to not feel so alone during pregnancy and then have friends to do things with after babies are born." (Survey H25, intervention FU1).

Midwives commented positively on the ways they felt the women in the groups supported each other and their observations highlighted a range of supportive interactions, such as helping each other with self-checks, offering refreshments, and providing words of comfort or validation when participants had worries or concerns. As one midwife explained:

> "… one of my ladies, she had some mental problems, of course she's struggling more … so when we were meeting up in the group, she seems like coping a little bit better, because she

> can communicate, she can talk, she didn't have the very big family and her partner is at work most of the time." (Other, interview with midwife 3).

The women were also observed to play facilitating roles in some cases, such as drawing their peers into discussions or those with more experience providing insights from experience and reassurance to first-time parents:

> "One woman does a small demonstration of cloth nappies for the others in the circle- she has brought with her cloth nappies, cloth liners and explains how she plans to use them, how to wash them, how many you need to buy, cost and how to make this cost affordable (buy second hand). Another has brought printed handouts on cloth nappies which has details of price, availability, brands. This leads into a discussion about individual choice, environmental issues, cost. One woman shares that cloth nappies used to be very common in Africa but more recently, there has been a rise in disposable nappy use." (CS3, observation 1).

The potential to mitigate birth trauma was also mentioned by the midwives and women. The women talked about how feeling better informed helped them to cope with difficult births and interventions; for example:

> "I would recommend it to everyone. It was absolutely fantastic. I was terrified of having a c section [sic] but pregnancy circles helped me feel a lot better about the procedure. I ended up being induced and had an emergency section due to the cord compressing on my babies [sic] neck. I was still nervous but felt a lot better after our talks in pregnancy circles." (Survey P46, intervention FU2).

The midwives also highlighted the value of the postnatal session to follow up with the women and link them with health visitors or other support services, in addition to the peer support from the group. One midwife flagged the loss of social support when a group was discontinued because of the COVID-19 pandemic, but noted that the women continued to stay in touch via a WhatsApp group.

The participants themselves described hearing from others and doing things together as helpful in encouraging healthy behaviours, for example:

> "We all went with yoga balls, and we talked about exercises and just when I guess when you hear that all the people with you are going to the same thing, practicing these exercises or going through these sessions, it makes you a bit more [sic]. At least I felt like I could probably do it too, like, so I signed up for yoga sessions and ended up walking more because people are going for walks with the even with their newborn. From [sic] my culture, people don't really get out with their newborn to like 2–3 months, but the people in the Circles who were going for walks like in a week's time I'm and I think that's really good." (Other, interview with woman 16).

There was also evidence of community building through continuing the support and connections established during the Circles:

> "It's really nice how everybody is still very much in touch and there are plans every month and if there's something that somebody's worried about or 'is this normal' for because I think all in our group, everybody's a first-time mum. So everybody's a bit like 'ohh is, is this expected? Is this normal?' Things are changing every day and it's, it's nice that the [WhatsApp group was] proposed and even and everyone's open about their experiences." (Other, interview with woman 1).

In most cases, the group was experienced as a safe space to share worries and gain support and information:

> "This is my second baby and I feel that I have had more chances for open and honest discussion and have been given a lot more advice." (Survey H02, intervention FU1).

Social support was not dependent on homogeneity of personal backgrounds and experiences so much as the shared pregnancy journey. Diversity in the groups was generally viewed positively by participants and midwives; for example, these midwives discussed their observations on diversity:

> P1: Because everyone's bringing their different experiences, aren't they … Umm, it was … and I think they were really tolerant of each other, as well, because they were very different, weren't they?
>
> P2: Mmm
>
> I: In what ways were they different?
>
> P2: Umm, I would say one lady had a, maybe a bit more of a socially-deprived background.
>
> P1: Yeah, which she spoke very openly about, didn't she?
>
> P2: Yup, yup … Umm…
>
> P1: One lady a bit more middle class…
>
> P2: Yep…
>
> P1: … with, you know … Then there was a younger girl, first baby
>
> P2: … and then … yeah, one girl, bit younger, having her first baby … and I did wonder at the beginning how that would impact on her, having everyone else already had a baby, but.

> P1: She was actually the most vocal out of the group, on the WhatsApp group, isn't she?
>
> P2: She is, yeah, yeah … I think she's got a lot from the other mums. (CS1, Joint interview with midwives 1 and 2).

Groups with a good level of ethnic diversity were observed as enabling women to share and compare cultural knowledge and practices, including healthy food and weaning, with midwife facilitation and this was echoed in women's responses. For many racialised or otherwise marginalised women, Circles was a place of cultural safety, in sharp contrast to descriptions of other hospital services, which can be experienced as inaccessible and stigmatising:

> "No one is there to listen to you. When you call, they say sorry can you ring this number. When you call your GP they say sorry we can't tell you anything or how to get through to your midwife, sorry ring this number and when you ring that number they say you have not been assigned to any midwife, it makes you feel tired, it's so heart-breaking, so that group with my first pregnancy was fantastic." [Other, interview with woman 14 (Black African)].

> "I definitely don't feel like in my labour they listened [to me], but I also think I wasn't in a position to talk for myself at times … I don't know if my experience would have been different if I was a white person maybe … I don't know if it's health, I just don't know if it's because we're not as prepared, I don't know if it's because we don't always get the best treatment." [CS3, woman 2 (Black African background receiving standard care)].

Nonetheless, a small number of participants highlighted difficulties with feeling that they fitted in with the group. For example, some women with a high BMI, those from a minority ethnic background, or those of an older age felt different from the other participants if the group was not diverse overall, and some expressed that they were hesitant to raise questions around issues such as weight management:

> "Know what I mean? Like, my voice is never going to be heard, as the Black woman who's overweight, having my third baby, in a room of white women that are not overweight and having their first child." (Other, interview with woman 6).

A lack of skills and confidence to facilitate a discussion of sensitive topics in a group setting was observed in a few Circles, indicating a need for further development support among some midwives:

> "The midwives also discuss that they think it's inappropriate that a woman with such a high BMI (over 40) is in the Pregnancy Circle—the language used "she knows she shouldn't be in here" (emphasis is the midwife's). They talk about how they find discussing diet awkward with her when the other women in the group are visibly not obese. … One midwife is visibly blushing and is very uncomfortable discussing this. The midwives also share that they think Pregnancy Circles might not be a suitable place for high-risk women because things take longer and often require further referrals that take more time." (CS3, observation 1).

Although there is evidence that in standard individual care, midwives lack skills and confidence in addressing potentially stigmatising topics sensitively (22, 23), this highlights that additional skills may be needed to facilitate psychologically safe group discussions and highlights the importance of midwives participating in training workshops and follow-up reflection sessions.

The midwives felt the group model could be particularly helpful for women who are socially isolated, for example:

> "She doesn't have many friends, as well, so she is learning about pregnancy and about, umm, we had a woman who was breastfeeding. She came and breastfed her baby and talked about infant feeding in the group, and I think a lot of women hadn't seen that before… So, for the vulnerable and the people who haven't got mothers around them, or role models, or, and we've got two multips and four primips, so they're sharing together, their experiences." (Other, interview with midwife 2).

Participants commented on the value of this support in the early postnatal days and for the care of the baby. The following woman, for example, talked about support from the group via WhatsApp when her baby was suffering from constant colic and crying:

> "I probably would have rushed to hospital because I didn't know what to do, but because something so simple and somebody else was going through it and it [giving some drops] didn't seem like a, a very invasive anyway." (Other, interview with woman 1).

The contribution to postnatal and social support was also observed from midwives and participants; for example:

> "Midwife uses this [button support activity] as an opportunity to discuss health visitors and community midwife schedule of postnatal visits. Women share networks of support locally with other women: baby groups, Children's Centres, baby and toddler activities." (CS3, observation 1).

Approaches to group care have varied internationally regarding the level of involvement of fathers/birth partners. In the Pregnancy Circles approach, each group was encouraged to discuss the level and timing of partner involvement during the first session. The groups varied, therefore, with some feeling they needed time to bond as a group first and then include partners in the later sessions. Others allowed limited or more active involvement and a few chose not to involve partners at

all, which could be disappointing for some of the participants involved:

> "I've had a really positive experience but have missed having my partner more involved. And he has commented on this also." (Survey P603, intervention FU1).

The women sometimes preferred for their own partner to be included, but this was not the case for others. Some groups had higher levels of partner involvement and observations suggested this could work well with open discussion, with the opportunity for participants to get to know each other and feel safe to discuss sensitive topics in the group space. However, we do not have sufficient data to investigate how the mechanisms varied in groups with differing levels of partner involvement.

A critical pedagogy

The mechanisms related to information and learning identified in our realist review, namely, *peer learning, active participation in health,* and *health education,* were closely interlinked in our study. We combined these under an overarching theme of *critical pedagogy*, which is a philosophy of education that aims to address social inequalities through critical thinking and social action. This concept draws on the theories of Freire (24) and hooks (25), who argued that to be effective (deep rather than surface learning, which implies deeper understandings and greater retention of knowledge) and transformative, pedagogy must be participatory, involving people actively, and recognise that all have contributions to bring to a learning process with strengths and needs or vulnerabilities. Although the concept of health education draws on more behavioural and transactional approaches, which differ from the philosophy of more active and interactive approaches that we align with in critical pedagogy, the analysis highlighted ways in which the participants felt they had acquired health knowledge and support for healthy behaviours, which supported their confidence in being able to care for their health.

The training workshops provided to the midwives who facilitated the Pregnancy Circles in the trial were designed to support midwives who have been schooled and socialised in a more didactic lecture-style approach to develop their skills in critical pedagogy, through role modelling a facilitative and interactive approach to information provision, including active learning techniques such as role play, reflection, interactive games, and active discussions, rather than a lecture-presentation style. Although not part of our qualitative data collection, we noted that in the workshop evaluation forms, the midwives commented on how this approach helped them develop skills in facilitation but also challenged their traditional ways of thinking, enabling the philosophy to "click" as something they could put into practice. One stakeholder commented on the 'shift in thinking' involved:

> "That's probably the shift in thinking that needs to take place, because at the moment I think those that haven't done Pregnancy Circles probably look on it as some sort of antenatal education type offering, and it's very different and that's what we probably, that sort of culture change is something that's needed." (Other, interview with stakeholder 7).

The midwives suggested that this approach could more effectively promote health by improving the participants' capacity to process, understand, and retain information; for example:

> "… a longer lasting health promotion benefit. And actually, you know, perhaps a longer support outside the pregnancy group which is enabling these women to look at what is the data, what are we preaching about, and actually taking that story on board, a message on board, a bit further down the line … their mental health has to be improved as well, because often that can be quite daunting, hearing 'well how's it gonna affect my baby if I've just been diagnosed with gestational diabetes?', and it, we don't have enough time to devote to that patient and their expectations often aren't met, so they, you know, we usher them in, usher them out, give them a message, and that's it, job done." (Other, interview with midwife 9).

Another midwife contrasted the level of active participation and discussion in the Circles with the usual parent/antenatal education classes:

> "… we have ten women and partners, and we do three sessions and they all just literally sit there. And you ask them to kind of go around and say something about themselves, and they just say what the person before them has said, kind of thing, and it's really difficult …." (CS3, interview with midwife 1).

Group care sessions (as highlighted in the name, Pregnancy Circles) used a circular room layout for the discussions, typically with a table to one side where the women (and sometimes birth partners) in the group collaborated in taking and recording their own routine measurements, such as blood pressure, urine testing, and, latterly, carbon monoxide monitoring. Individual clinical checks and brief discussions were usually conducted on a mat in a quiet corner, while the conversation continued in the circle. The experience and impact of this collaborative approach were highlighted in a number of interviews with female participants, for example:

> "Every time we come, the first thing we do is how to do a urine sample and dip it and check and if you still have problems reading it, they tell you this one means this, this one means that they showed us where we can record it, but even when you are confused, you also call them they are there. It makes you feel belonged [sic], it makes you feel involved in your

> pregnancy journey, it makes you feel I've learned this, I have learnt that." (Other, interview with woman 14).

The midwives also commented on the self-checks as being valuable for learning, and the surprise of other professionals that women could be this involved. This senior midwife commented on how, when the women who had been in Pregnancy Circles attended individual visits, they still expected to be more active in their own care:

> "They're going, oh, where's the dynamap? [sic; blood pressure monitor] Oh, OK. It's over there. OK, off; they do their blood pressure. And then … they're like, right, so, where am I going? You know, you're like, oh, that's a good point. I need to take you to the sluice so that you can tip your urine and do it yourself. And obviously, the clinic sisters are like, they're doing what? They're going round? … So yeah, that was brilliant because they've got these enabled skills already. And they were like, yes, I know what I'm on about. I'm doing this myself." (CS2, interview with stakeholder 2).

Peer learning was achieved through guided activities, by supporting each other during self-checking activities, and through a facilitative approach to information-sharing, including techniques such as reflecting questions back to the group rather than simply answering them directly and actively encouraging participation in discussion on pregnancy, birth, adapting to parenthood, wellbeing, and related topics. This approach aims to tease out a participant's existing knowledge and ideas (including information sources) for more exploration and group discussion, and to support peer interaction and learning. The women often commented on the knowledge gained from being together and the reassurance this provided; for example, a woman with limited English proficiency said:

> "And yeah, we would talk about body parts and things like that which would be happening to us at the moment, 'cause like a lot changes in your body when you're growing a baby and it was nice to know that' kay, it's not just me, it happens to nearly every woman that's going through pregnancy." (CS2, interview with woman 4).

The responses also illuminated how this style of learning, in a context of high socioeconomic disadvantage, could support self-efficacy and health knowledge, as illustrated in this exchange:

> I: Did you find … because you've had many babies, did you find that you had a lot to share with the others?
>
> P: Yeah, yes, I could share a bit more of my experience and yeah…
>
> I: Mmhmm, was that…
>
> P: … all the horrible bits! But there are good bits as well (laughter) (CS1, interview with woman 6).

The groups were designed to be inclusive of those having first or subsequent babies, those with different levels of risk, those from diverse socioeconomic or ethnic backgrounds, and those of different ages. How far this was achieved in practice varied on a local basis, but a principle of peer learning was that the women involved would have a range of experiences and knowledge to share and would ask questions others had not thought to ask, with skilled facilitation by a midwife to support effective information provision. Participants responded positively to this diversity; for example:

> "I thought it was really good, really good. I really enjoyed it, 'cause what kind of helped me, obviously I know that each person's delivery and labour and all sorts is like, pregnancy alone is all different. But all the other ladies were already mums, I was the only one in there that was first-time." (CS1, interview with woman 7).

The midwives also commented on how the women with more risk factors still wanted to participate in most cases, despite having a number of additional appointments. For example, a senior midwife commented:

> "She'd had her scan for twins when she still said, yeah, I'm still coming … . knowing she was going to probably end up with the caesarean section, but she thought it would be a good way to share all that sort of stuff. But it was quite nice. Because then when you're talking about your first baby, first baby; so she's like, oh, I had a water bath … So, but that's their experience is telling the women that, that's not me." (CS2, interview with stakeholder 2).

The women were observed discussing a wide range of pregnancy, birth, and postnatal issues, with varying levels of introduction or input from the midwives, including topics as diverse as healthy eating, maternity rights and benefits, what equipment to buy, staying at home in early labour, epidurals, physical recovery, feelings, and adapting to parenting postnatally.

The observations illustrated how sharing health information, including the advice received from friends and family, could help participants consider information from different perspectives and weigh up the information they were exposed to. In one group, for example, the midwives were observed discussing "cot death" (sudden infant death) and care and sleeping arrangements, advising no swaddling, bed bumpers, or pillows:

> "Women are surprised about swaddling and discuss conflicting information from friends/family/other healthcare professionals." (CS3, observation 3).

Nonetheless, we observed that a shift from a didactic lecture style to a critical pedagogy approach presented challenges for the midwives, who needed time, support, and motivation to develop their skills and confidence using a more facilitative

approach. Most were new to this way of working and some were anxious or reticent. Some struggled to develop an approach of "reflecting back" questions to prompt more interactive discussions; instead, they provided direct answers, highlighting that even with volunteers for a new model, time and support are needed to establish a different way of working. In some cases, particularly where there was a lack of continuity or a long delay between the training workshop and starting circles, midwives were observed to move away from a "circle" approach to one more closely resembling a more linear type of classroom layout, such as standing up while facing the participants, or both midwives conducting clinical checks while the women waited, rather than combining a facilitated discussion and individual checks throughout the sessions; for example:

> "Both midwives are still out of the circle writing notes and taking bloods, so the women are leading on perineal care, including massage and pelvic floor care. One multip shares her experience of episiotomy and what she used to help it heal afterwards. Primips in the group ask what an episiotomy is and why it would be done, the woman is not clear about why she had an episiotomy. Midwives do not contribute to this discussion." (CS3, observation 1).

> "MW2 speaks openly to MW1 about the women being out of the circle too long and expresses her frustration with MW1—says she has mentioned this to other midwives she does other circles with- there's no need to have women watching you write up notes, they can be back in the circle participating whilst you write up and this is not how they've been trained to run the circles and they are always going to overrun if the future sessions are run like this. MW1 shrugs her shoulders slowly and says slightly awkwardly to me that she is a 1–2–1 midwife, and that women need the private time." (CS3, observation 8).

Even in such instances, however, interactive discussions and peer support continued:

> "Women lead other [sic] discussion on pumping: how do you feed twins? What if you spend the day out? Women ask about feeding cues, on-demand feeding vs formula feeding … Women start sharing recipes and diet advice whilst the midwives are preoccupied with bloods and notes. One woman (high BMI) has her BP rechecked by one of the midwives with a manual cuff. Women give encouragement to her about stopping drinking coke [sic] in this pregnancy." (CS3, observation 1).

One midwife described using one woman's diagnosis with gestational diabetes as a positive opportunity to share knowledge about managing health conditions and diet in an inclusive way:

> "… we discussed it in the group—what is gestational diabetes, how do you detect it, who is at higher risk, and things like that." (CS1, interview with midwife 5).

This contrasts with the case described above of a midwife lacking the skills to facilitate a supportive and informative discussion about a topic such as weight management.

Engagement and satisfaction with care

While a range of external factors could affect care attendance, and for some, the longer session time in Circles presented a practical barrier, almost all the women talked about their care experience positively, saying that they felt more involved, had a higher level of support and information access, and felt they would opt for this form of care again or recommend it to others.

A number had fewer Circles than expected because of the COVID-19 pandemic lockdowns, but still valued the limited experience:

> I: So if you were to have another baby, and if you were to get the option of Pregnancy Circles or traditional care, what do you think you would choose?

> P: Pregnancy Circles, I definitely would, because although I didn't have it for long it was very useful … . In terms of, like, the information and feeling that you've come away knowing more for yourself rather than just relying on the hospital to tell you certain things, you know, you get a well-rounded knowledge. (CS3, interview with woman 6).

In a smaller number of cases, including some who had additional medical visits or complexity, it was more difficult to maintain participation; thus, their engagement with the group was reduced. However, they valued the social support and interactivity of the group and the chance to receive "normal" care and were motivated to attend.

Those who participated had agreed to group care within the trial, with the possibility of randomisation to group or individual care. We were not able to interview those who declined, but the recruiting midwives recorded the main reasons for declining, which were usually practical, such as difficulty in arranging childcare or leave from work for the duration of the sessions (26). Interviews conducted with the Circles participants who withdrew from the study also confirmed that this was usually for practical reasons such as childcare problems or difficulty with session timings. However, one woman found the lack of privacy in the one-to-one clinical checks difficult and another left because the midwives could not obtain an interpreter for the group.

Therefore, positive or at least neutral expectations of group care should be anticipated. One woman reflected on her expectations being met, saying the following:

> "I just thought it was a really good idea, I think it's nice that you've got all these pregnant people together and we could all discuss our … and I found out so much that I didn't know, I've had … this is my seventh, and I didn't know half of it …." (CS1, interview with woman 6).

She went on to mention that she did not know the signs of pre-eclampsia or gestational diabetes or the purpose of checking blood pressure prior to taking part in Circles, despite six previous pregnancies in traditional NHS care.

The women in the control group, in contrast, often indicated more basic levels of satisfaction with care, as the following questionnaire comment illustrates:

> "It was just a form of routine check for me and the baby to ensure everything was okay." (Survey K74, control FU1).

This could be couched in allowances for the busyness of the midwives and demands on the NHS service; for example:

> "I just got more information only if I am asking further questions otherwise we are going through general basics [sic] checks. But midwives have been helpful and very nice so nothing to complaint [sic] about it. Just I saw a different one anytime [sic] I went so no one remembered or even know [sic] me. For NHS antenatal care services I think this is good for at least someone like me with no complications during my pregnancy." (Survey P606, control FU1).

> "When I had questions, the midwife would answer them, though it always feels rushed." (Survey R119, control FU1).

Such comments illustrate that women may often limit their expectations of NHS care in a context of constrained resources.

Health professionals' development and wellbeing

This mechanism was less well-developed or explored in the wider literature that informed our analytical framework, but emerged as an important theme in this study.

Group facilitation using an interactive approach was very new for all the midwives involved, and, as noted above, a key challenge was facilitating information-sharing among the women without becoming directive or correcting them, while still ensuring accurate information was transmitted. Exploring sources of knowledge and understanding is complex and the wider literature suggests the skill is underdeveloped among many health professionals.

Some midwives had initial concerns about the ability to provide accurate health information using this approach; however, they were generally reassured by their experience:

> "When you let them talk, people will say something and then, you know they've said something that's not quite right, but you let the other members of the team, or the group, sorry, discuss whether or not they agree with what they've said, or whether they, that sort of thing, and then they kinda come up with their own conclusions themselves … So I feel like a lot of women are learning a lot of things that, from each other, not just from us, which is great." (Other, interview with midwife 1).

Midwives talked about the positive rewards of feeling they were providing good care, seeing the social support, and having relational continuity, suggesting in some cases that this was returning to what they felt was proper midwifery:

> "Pretty much all of us have said that we want to continue this because we think it's a brilliant way to deliver antenatal care. I can't, sometimes I can't quite believe how much I've covered in one hour, with nine people, they're getting a substantial amount of information, and they're building really good friendships with each other." (Other, interview with midwife 1).

This was also observed by senior midwives:

> "A lot of midwives loved it because they thought they were, umm, they told me they felt like they were doing proper midwifery, they were doing the whole shebang. It wasn't like 'oh, here comes another 14-weeker' … the exact same thing, rota, repeat, repeat, repeat." (CS1, interview with stakeholder 1).

The midwives talked less directly about their own enjoyment of working this way once they had gained skills and confidence, so this was largely apparent indirectly through observations and enthusiasm to continue. Nonetheless, some commented on how much they anticipated the Circles:

> "I actually really like working in the model, the pregnancy care, umm, Pregnancy Circle model, and with the other midwives. I've learnt loads, and I actually think it's much a nicer way to work." (CS3, interview with midwife 1).

> "… even at home, I was like 'oh I've got a brand new Pregnancy Circle starting today', and it, I was excited about it and then to come in and go 'well actually no, it's cancelled, you're doing bookings all day', 'oh great'." (CS3, interview with midwife 3).

Midwives typically provide individual care and work alone in busy services, with little time allocated for peer discussion and review beyond specific cases and workload planning. Group care involved working together, an unfamiliar experience for most, which some reported feeling nervous about. Several midwives spoke about the benefits of this approach in terms of sharing knowledge, using complementary skills and strengths, and supporting each other, in a way that paralleled the interactive learning principles of the group for the participants; for example:

> "Before we started, when we had just the prospect of doing Pregnancy Circles, I felt a little bit on edge and I felt a bit apprehensive, and I thought 'ooh, is this just another thing that I'm going to have to try and work into my diary? How

> am I gonna manage my time?' Umm, but certainly once I've started, and after doing a couple of circles, that anxiety certainly goes away, and any worries you are having, I feel like they're shared between the two of you … umm, or if you've got a lady, a patient, who perhaps needs a little bit of extra care, for whatever reason, uhh, you can share that between you rather than having that all upon yourself." (Other, interview with midwife 4).

Others described benefits in developing their working relationships, their learning, and finding they had complementary skills:

> "I was quite daunted by that [working together] I felt like, a bit like 'oh my goodness, am I saying the right thing?', and then you kind of realise that everyone feels like that, and you learn things from what other people are saying, and they also learn things from what you're saying, and there's definitely things that, you know, different midwives are better at." (CS3, interview with midwife 1).

One stakeholder also suggested the approach could help break down isolated ways of working:

> "I think they [the midwives] really like knowing what other people are doing and how they might be doing things differently that might be having a positive effect in another way, as well as sharing their own experiences. So I think that was also important, you know, in terms of the working in silos that's so often so common in maternity services in the UK, just very much opens everyone up." (Other, interview with stakeholder 7).

Some midwives reflected on the impact on their own skills and knowledge; for example:

> "I think continuity has definitely changed my practice as a midwife, but Circles as well because I think the main, the main thing and the way that I can sum it up is just the role of the midwife and what the perception of that role is versus maybe what it's like in reality. … it's like right, these are the checks you do at these appointments and this is the information that you give at those appointments and it's not tailored at all to what those individual people need. Whereas when you're kind of giving them the autonomy over the clinical checks, that's one thing it takes away from me … but you know, if I can be instrumental in helping them in their decision-making processes and their birth preferences and, you know, bring in their child into the world, for me, that's so much more rewarding, that's what midwifery is about." (Other, interview with midwife 10).

Empowerment

The view that this form of care is empowering was cited in the wider literature review as an overarching mechanism by which group care may achieve wellbeing benefits. However, the details of this were often underexamined (18). Although empowerment can also be considered an outcome, we considered it to also function as a mechanism through which more specific public health outcomes may be enhanced. Our analysis elucidated the ways in which the model supported empowerment via mechanisms such as social support and critical pedagogy. Empowerment was referred to directly and indirectly by Circle participants and midwives:

> "I knew about different places because of my work, but Circles empowered me to actually go to them, that its OK to ask for help." (Other, interview with woman 8).

> "I feel like I had more knowledge now going into it, so I knew what I wanted to do when I went in and understood why I wanted to do it." (Other, interview with woman 13).

> "I think it's because it was in a group, it's being able, I'm not really one to, like, jump up and ask questions or query anything. But because they were all doing it. I was like, Oh I can join in now." (Other, interview with woman 2).

This was also expressed by the midwives and service leads; for example:

> "It made me feel like 'this is your time, your important time', so I wasn't the person who had all the answers. In fact, often the case, you know, something would come up and it would be a shared experience of someone in the group. It wasn't necessarily me giving all the answers, it was, you know, I was empowering them to sort of be resourceful with what they could come up with… I can't tell you what we'd achieved, but it felt like we'd achieved something with that group." (Other, interview with midwife 9).

> "I felt it broke down a lot of barriers, between the midwives and the women, it was quite, not, even though it was a professional interaction and clinical aspects were taken into consideration, the fact that it wasn't like timing within a certain frame, it wasn't rushed through, I felt for me the midwives felt it was time well spent." (Other, interview with stakeholder 1).

> "As a team they're getting a reputation for developing 'strong willed' women." (CS2, reflection session 2).

Some also spoke about empowerment for themselves as midwives, even though adopting a more facilitative role could be assumed to mean a loss of power:

> "I really enjoyed doing it. I felt it empowered me as a midwife. I felt I learnt a lot about me, and I enjoyed every bit of it really,

> enjoyed working with my colleague." (Other, interview with midwife 9).

The Pregnancy Circles approach, except in one NHS service, did not extend continuity into intrapartum care. As this was a new approach that was being trialled in each service on a limited scale, many professionals who were not directly involved were unfamiliar with the model and had not participated in the facilitation workshops or planning meetings. Thus, the women may have encountered dissonant approaches to informed choice and support during their labour experience. One woman, for example, was observed in a postnatal session describing the mismatch she experienced when in labour:

> "W4 said that the midwife at her birth was "not a good personality fit for me. I didn't feel listened to". The midwife advised her to have the augmentation drip, but she wanted to avoid epidural because of a spinal problem so she "sent the midwife out of the room, spoke to my partner and made a plan"—pethidine and wait & see, which worked. 'I know there were alternatives due to the discussions we have had and my own reading'." (Other, observation 2).

While this excerpt illustrates that the woman felt empowered enough to assert her wishes, this did not apply to all those who encountered a different approach in other aspects of their care. Another woman, for example, said:

> "I did not have a good experience of birth, felt highly pressured into decisions I did not feel comfortable with and I was later told I could have been put on a different pathway that would have given me more choice or avoided me having conversations with staff who gave me misleading facts at the hospital. I did not have a clear picture of options, as what I believed I could do was different when I got to hospital." (Survey J03, intervention FU2).

This suggests that the impact of empowerment on birth experiences or outcomes may be more limited without continuity across the whole care journey and consistency of philosophy and approach across service providers. Nonetheless, our qualitative findings on empowerment were concordant with the analysis of the trial outcomes as we found that the participants in Pregnancy Circles were significantly more likely to feel that they were always involved in decisions about their care, that they were well prepared for labour and birth, that they managed very well during labour, and that they were confident in caring for their baby in the first week after birth (26).

Relational continuity

To support the principle of peer and interactive learning and for the group to function as a safe space where experiences or worries could be shared, continuity of facilitators and of participants emerged as an important underpinning component. Each service involved in the trial identified specific midwifery teams (usually but not always community midwifery teams) that would provide group care, and rotas within the teams were planned so that the same two midwives would normally facilitate care for a specific group, with a third midwife identified as back-up in the event of holidays or sickness. Assistance was provided by the research team to schedule this new way of organising antenatal care. One service opted for its existing midwifery continuity of carer teams (a caseloading model providing continuity through antenatal, intrapartum, and postnatal care) to provide the group care, thus piloting how to combine these two models within the setting of the trial. In some settings, a midwifery student, maternity support worker, health visitor, interpreter, or bilingual health advocate was included, also with continuity.

The observations of the groups and interviews with the facilitators highlighted several features of continuity. The midwives commented on the opportunity to get to know and understand the women in their care more deeply. This also applied to the midwives working in the established continuity teams, some of whom described getting to know the women even better through observing their interactions within the group. The midwives felt that the women in the groups were able to develop bonds and feelings of safety that enabled them to participate more actively and to disclose worries, concerns, or details of personal situations; for example:

> "We were talking about emotional well-being and one of the girls in the circle was very much, oh, you know, I had it [baby blues] before. I, I don't know how I'm gonna cope. And she'd started crying. Anyway, so [the Health Visitor] shared that piece of information with her and said, you know, we're here to help. … So obviously all the other girls like bounced on her to say, oh, no, no, you're, you know, all together they all came up with these different ideas and suggestions they were going to go off and do group swimming classes together and all that." (CS2, interview with stakeholder 2).

Another commented on the feelings of safety that developed within the groups:

> "I think it also helped their mental health 'cause it allowed them to really have dark, deep conversations about how they were feeling, and what they each recommended that helped them in terms of, you know, the morning sickness, or feeling tired, or work pressure; it allowed them to sort of share those personal stories at a deeper level and have that shared wisdom of conversing with each other in a safe room." (Other, interview with midwife 9).

In interviews, the participants highlighted the value of continuity, both regarding the midwives and their peers, echoing the midwives' observations that continuity enabled a feeling of "safety." Furthermore, they highlighted the bonds within the groups that, in turn, supported other mechanisms

such as peer learning, social support and community building. One woman who was receiving individual care commented on how one may be more able to share feelings in a group:

> I: What do you think about being in a group of other women who are going to have a baby at the same time as you? Do you think that might have helped you?
>
> P: Yeah, yeah. Because maybe you're not going to be shamed to talk about your feelings, what do you think … You can talk to the woman, and she can share her experience, and I can share my experience all the way … you learn. (CS2, interview with woman 3).

The participants welcomed the chance to receive social support from the others in the group through sharing knowledge and experiences, with one woman with limited English proficiency saying:

> "You know, working in the group of women all in the same condition was very helpful because we used to talk to each other and any problems we were experiencing individual, and whether any itching, any health problems, anything like that." (CS3, interview with woman 4).

We did not identify any data in the women's interviews to indicate any negative aspects related to continuity, either of facilitators or group participants. However, the planned level of continuity of facilitators was not always maintained and, in some groups, a smaller-than-planned group size or participants with higher levels of social and/or medical complexity disrupted the level of peer continuity. Even in such cases, we found that the participants often maintained continuity of peer support via WhatsApp. Some women with higher medical risk factors had numerous additional appointments, which disrupted their capacity to attend the group sessions. This was also influenced by mixed messages from other maternity professionals who were not always aware that group care can include women with varying levels of risk and advised that they should no longer participate:

> "Well [it was] very much like 'okay, from now on you're going to be coming to this clinic every 2 weeks, you can no longer go to the Circles'. Erm, 'cancel- if you've got Circle appointments on your app, ignore them, just come to these appointments'" … But I was quite keen to get back to the girls and like, let them know what was going on. Erm, and then eventually they were like, 'oh yes, yes you can still go to the Circles', so I continued going to the Circles. In general—this is nothing to do with the Circle—I think the only consistent people that I saw throughout my pregnancy was the Circle. Like every time I went into the hospital for something that I was seeing somebody else. I don't think I saw anybody twice … Whereas when I went to the Circle it was nice that they would follow up 'okay you said that this happened', or 'what's going on with that'." (Other, interview with woman 6).

The midwives also valued the continuity and co-working in terms of information and care planning; for example:

> "We'd always have a cup of tea, sit at the table and just get into the zone 'this is our Pregnancy Circles', chat about who we were gonna see, what their blood results were. … so we could have that all sorted and planned in our head so that we could just let the group run and discuss privately the results and bits and bobs." (Other, interview with midwife 9).

Time

Time emerged as an important underpinning component, which, along with continuity, was consistent in the data as an enabler of the mechanisms, confirming one of the key elements of the Pregnancy Circles core values and components model (16, 18, 26). The sessions were 2 h long compared with the typical 20 min for individual antenatal visits, enabling more extended discussions. This is connected to the benefit of continuity, as the participants were able to return to and develop discussions and understandings over time: thus, this dimension of time emerged as an important aspect of how continuity, rather than fragmentation of care, functions. One midwife, for example, reflected on how being able to discuss health issues within the group and also return to them over the course of care could help participants to "digest" health messages:

> "There's a bit more of a valued conversation because we had more time to devote. And that felt, you know, also it felt that we weren't the ones giving the message. The group shared it and the group were able to review and reflect what worked for them, so it wasn't, we weren't just being strictly dictatorial, the group was able to digest the information and work out how they could trial different things, whether it was just having a daily walk or going for a swim. And in fact, a couple of them did meet up for walks and swims and yoga classes, so that worked, yeah." (Other, interview with midwife 9).

Another, who had expressed some concerns initially about managing group dynamics, also commented on the importance of time and continuity:

> "The advantage to the Circles is you do have more time to discuss things, and that is something that has been really good, as a midwife, is that I do feel like I've got to know those women better." (CS3, interview with midwife 1).

Time constraints in traditional care were similarly a common theme in our data, and were perceived as a root cause of sub-optimal care by both the midwives and the women. Even the

midwives with Pregnancy Circles experience who wanted to transfer those skills to their traditional clinics found that they were constrained by short appointments. The midwives talked about the increasing range of areas and specialisms they were expected to discuss in a short time within individual visits:

> "You've got all these different people that see antenatal care priorities quite differently, and when you're doing one-to-one or traditional care, it's really hard to convey all of that information in a really nice way to the women, kind of, without just giving them bullet points of information; whereas in a circle, you know, you can do a whole session on whatever might be particularly important to those women at that time, and … so I feel like it's much easier to have all those conversations that other people want you to have, to deliver all the information and still get the clinical care done." (Other, interview with midwife 4).

Discussion

While previous studies have focused on satisfaction with and experience of group care (6) and on attendance or clinical outcomes, and others have argued that group care will increase community building and empowerment (18), few studies have used a realist-informed approach to explore the mechanisms by which providing care in this way may lead to more positive care outcomes and experiences. In this analysis, we were able to identify such mechanisms in the context of universal NHS care from the perspectives of care providers and participants and the key underpinning features of relational continuity and time. Empowerment was confirmed as an overarching mechanism that linked the elements of social support and a different approach to learning, which we have characterised as critical pedagogy, with a more active and positive experience of care that enhanced the participants' sense of confidence and feeling well-informed. These qualitative and conceptual findings were concordant with the preliminary quantitative findings of the Pregnancy Circles trial (26). Our analysis identified that empowerment was also relevant for the midwives who facilitated the Circles, suggesting that this was mutually constitutive rather than the empowerment of one group implying a loss of power for another. Nonetheless, the findings elucidate differences in this process for providers and participants, as the key elements for the midwives included co-working, learning feedback through continuity, getting to know the participants, and understanding the influences on the participants' health. Although a more interactive and participant-shaped approach may appear to reduce professional control, the midwives in this study spoke of feeling greater autonomy and scope in their practice.

A framework of mechanisms theorised in the literature (18) was adapted and developed more fully through this analysis. The mechanisms were closely interlinked, with time and relational continuity emerging as foundational; the longer sessions allowed for an interactive approach with the potential for deeper connections and learning. Equally, the continuity of facilitators and group participants was key to enabling the group to develop as a "safe space," enhancing trust and allowing concerns or worries to be discussed openly and for clinical checks to take place in the group space without overwhelming privacy concerns. Continuity enabled peer support to build and learning to be reinforced, and this applied to the professionals in the space and the participants. Midwives already working in continuity models were able to integrate the group approach, observing that interaction in the groups and the longer visits enhanced their understanding of the women's needs. Figure 2 provides an infographic overview of these interlinkages.

The findings on continuity from the provider and user perspectives, namely, that it enables learning from experience and the growth of trust and meaningful communication that underpins informed choice, echoed those of prior studies on how continuity of carer functions in practice (27, 28, 38). The midwives in continuity models also spoke of being able to practice what they perceived to be "real" midwifery (29, 30) and the professional satisfaction of providing high-quality care, both of which were echoed in the midwives' experiences of Pregnancy Circles and in a systematic review of providers' experiences of facilitating group care (31). The findings also highlighted the ways in which a lack of continuity of facilitators could undermine the fidelity and functioning of the group care approach. A study on group antenatal care cites community building and empowerment as key benefits of the approach, but each had been relatively underdeveloped conceptually (18). Our analysis illuminated the ways in which each can be enhanced in group care. The interactive approach and self-checking element, supported by time for discussion, appeared to enable deeper learning. Jakubowski et al. found that while promoting

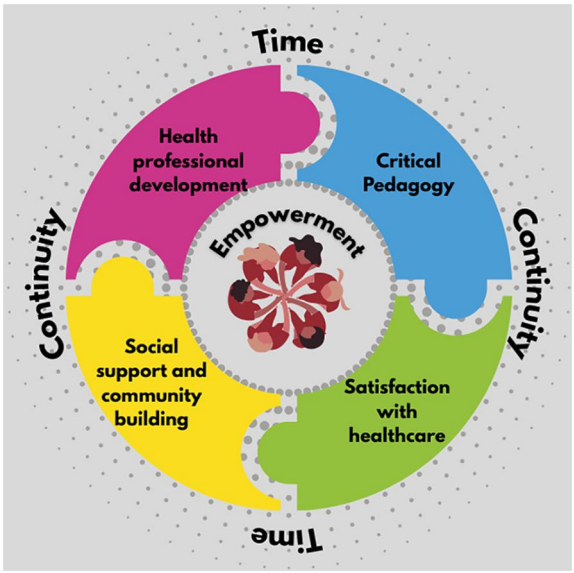

FIGURE 2
Infographic of group antenatal care mechanisms and their supporting elements.

empowerment through self-testing was widely acceptable to clinicians and patients, there can be a reluctance on both sides to move away from the "clinical gaze" (32). In our study, this move was a gradual, negotiated transition: the women gained confidence in their abilities at different rates, facilitated by the midwives' oversight and support. In turn, the midwives needed to witness the women's capacity before they could "relax" out of their surveillance role. Jakubowski et al. suggest that self-testing can be both disruptive to traditional hierarchies and an intensification of surveillance. Arguably, the intimacy of the Circles could be construed as an extension of surveillance, enhancing disclosure and thus the clinicians' reach into the women's lives. Nevertheless, the women in our study described the experience of participatory surveillance as empowering, increasing their confidence in seeking information and decision-making. We introduced the concept of critical pedagogy since this deeper learning was also associated with empowerment, suggesting a more transformative approach than traditional health education. The formation of peer support for many of the participants was not dependent on similar social characteristics so much as their shared journey of pregnancy, with connections continuing into early parenthood in many cases. The study period was not sufficient to learn how enduring such connections may be or whether these may translate into an enhanced capacity to gain social support from others and build a sense of community.

While the concept of critical pedagogy entails a transformative, power-shifting intention, further study is needed to explore how far this approach to care is able to achieve a transformative effect, particularly considering that in most settings it does not extend into the intrapartum period. In addition, our analysis of implementation experiences (26) highlighted how structural influences in the wider organisation, maternity system, or indeed social system may limit this potential. The current pilot work on the implementation of a Pregnancy and Parenting Circles approach in an integrated care system may elucidate this question. Our analysis highlighted that, in general, diversity in group care was experienced positively and was observed to encourage more active questioning and learning and peer support, but we also identified cases where the participants felt different from their peers and expressed concerns about being able to broach uncomfortable topics or had fears of stigma. While this is known to be a problem in individual antenatal care, our observations highlighted areas where the group facilitation skills of midwives, including sensitive conversations, needed development. The peer review sessions offered to all the participating midwives following their training workshops were rarely attended, which in some cases reflected a lack of perceived need, but more often was due to a lack of time allocated to staff reflection or development.

Perinatal peer support is known to improve psychosocial outcomes in pregnancy and may have benefits for those providing and those receiving support (33). Anthropologists use the term "biosociality" (34) to describe how groups can be transformative for people linked by a biological issue (in this case, pregnancy). Active peer support in groups can be a powerful tool to combat isolation and build a sense of community, but the biosocial environment, as we found, can also cause individuals to feel excluded, requiring attention and maintenance to bring people together (34). In a trial involving a social support intervention during pregnancy, Oakley et al. did not find a significant increase in the primary outcome measure of birthweight but noted that the participants had obtained more support postnatally than those in the control group (35, 36). The Pregnancy Circles trial found a non-significant trend towards higher social support, and, although both groups reported lower social support postnatally, this was higher in the Circles group (26). We also found that fidelity in terms of the midwives' skills and confidence in using a facilitative approach was important, and this was underpinned by continuity. For a few individuals, the sense of social support and feelings of trust that would have enabled them to share worries or concerns were not present, particularly if the group was small and lacked consistency. Moreover, a number of trial participants did not receive group care throughout the trial as a result of the COVID-19 pandemic restrictions. The findings highlight the importance of tailored training and support to consolidate the skills of those facilitating the groups, as well as the potential for a change in approach in pre-registration education to develop group care skills.

The findings highlighted that the midwives and participants found the group approach to be empowering. This was also supported by the significant increase in Pregnancy Related Empowerment Scale and health literacy scores (26). In addition to direct references to empowerment, this mechanism was supported in the way the women described how the self-checking and interactive discussions built greater confidence and understanding. Nieuwenhuijze and Leahy-Warren, in a concept analysis of empowerment during pregnancy and childbirth, highlighted external and internal attributes. External attributes are conditions that influence and may constrain or facilitate internal attributes. Internal attributes include a sense of control, self-efficacy, and belief in one's own ability to achieve meaningful goals (37). A further aspect identified in our study was the empowerment of the midwife participants, who felt that working together, continuity within the group, and developing their facilitation skills built their own capacity to offer high-quality midwifery care. This rested on the midwives having timely and appropriate training and support, including scheduling and autonomy to ensure group continuity. Importantly, empowerment was not viewed as a "zero-sum game", but rather as aligned with a critical pedagogy where learning was mutually constitutive and transformative (24, 25).

Strengths and limitations

A strength of this study was the inclusion of a range of data sources and perspectives, including observations of care, focus groups and interviews with a range of participants, and reviews of meeting notes, reflections, and workshop evaluations. The thematic findings from the qualitative data were also compared

with free-text survey comments from a much wider sample of participants, with consistent overall findings. A key limitation was the inability to interview those who declined to participate in the study, but we were able to interview a proportion of those who withdrew from Circles. The study period did not allow for longer-term follow-up, and this is an area recommended for future work. The potential impact of Circles on birth partners/fathers was underexplored and would benefit from further research.

Conclusions

The theorised mechanisms from our prior realist review of group antenatal care were supported by our study's findings, which provided further depth and detail, particularly with respect to the empowerment and learning of the facilitators and participants. The mechanisms were found to be mutually constitutive, with continuity and time forming key pillars supporting them. These aspects have not been highlighted in previous studies on group care. On these foundations, the facilitative and interactive approach fostered deeper learning and growth of trust and self-confidence. We have described this approach as a critical pedagogy since it was associated with the participants feeling a greater sense of empowerment. Together with peer support, this showed the potential for community building and improvements in wellbeing beyond pregnancy, but longer-term research is needed to explore this fully. An analysis of the integration of group care into continuity midwifery models and further work on how best to increase participation in diverse groups, including midwifery skills, are warranted. While most of the midwives responded positively to their experience of group care in this NHS setting where midwifery-led care is the norm, the degree of adaptation required was considerable and future studies on their longer-term experiences while working in more established models would be of value. The findings highlighted the importance of training and mentoring support to facilitate this adaptation, but we also found that empowerment was mutually constitutive—the midwives involved also felt a greater sense of professional satisfaction, empowerment, and even joy in their work when participating in this approach to care.

Data availability statement

The datasets presented in this article are not readily available because we did not collect any of the kinds of data that are required to be made available. Requests to access the datasets should be directed to angela.harden@citystgeorges.ac.uk.

Ethics statement

This study involving humans was approved by the London—Surrey Borders Research Ethics Committee. This study was conducted in accordance with the local legislation and institutional requirements. The participants provided their written informed consent to participate in this study.

Author contributions

CM: Conceptualization, Supervision, Writing – original draft, Methodology, Investigation, Funding acquisition, Writing – review & editing. AM: Methodology, Investigation, Conceptualization, Writing – review & editing. OW: Investigation, Writing – review & editing, Formal analysis. JL: Writing – review & editing, Investigation. RA: Writing – review & editing, Conceptualization. TH: Writing – review & editing. VH: Formal analysis, Writing – review & editing, Investigation. RH: Conceptualization, Writing – review & editing. EM: Formal analysis, Writing – review & editing. PS: Investigation, Writing – review & editing. MW: Funding acquisition, Conceptualization, Writing – review & editing. AH: Supervision, Conceptualization, Writing – review & editing, Funding acquisition, Methodology. CS: Writing – review & editing, Project administration. BH: Writing – review & editing, Conceptualization, Project administration.

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Empowering women through trauma-informed maternity care: the EMPATHY framework

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Background: At least one in four women in the UK has experienced trauma, such as sexual abuse or violence, with profound implications for mental and physical health, particularly during the perinatal period. Despite the potential benefits of addressing trauma in maternity care, many women are reluctant to disclose their experiences due to stigma, fear of judgment, or lack of trust in healthcare systems. This paper presents the development and evaluation of the EMPATHY framework, a novel, evidence-based approach to routine trauma discussions in maternity care, designed to address these challenges and promote emotionally-centred care.

Methods: The EMPATHY framework was developed through a critical participatory action research approach, integrating findings from a systematic review, qualitative interviews, and stakeholder input, including experts by experience, healthcare professionals, and voluntary sector practitioners. The framework was refined through iterative workshops and a public consultation ($n = 52$), ensuring its relevance and applicability. The development and evaluation of the EMPATHY framework were guided by the Appraisal of Guidelines for Research and Evaluation II (AGREE II) tool, ensuring methodological rigor, transparency, and adherence to established standards in guideline development.

Results: The framework is structured around six core principles: system-wide change, promote trauma awareness, trust and relationships, training and support, local tailoring, and continuous improvement. A key innovation is the recommendation that all women, regardless of disclosure, should have access to information and support. Feedback from the public consultation highlighted the framework's value and its potential to transform perinatal experiences. Challenges such as resource constraints and implementation barriers were acknowledged, but respondents emphasised the importance of the framework in improving care for women who have experienced trauma.

Discussion/conclusion: The EMPATHY framework addresses a critical gap in existing guidance by offering a structured yet flexible approach to routine trauma discussions. Its implementation has the potential to empower women, strengthen therapeutic relationships, and reduce re-traumatisation. The framework represents a significant step forward in trauma-informed perinatal care.

KEYWORDS

trauma-Informed care (TIC), perinatal mental health, participatory research (PR), maternity care, patient empowerment, adverse childhood experience (ACE)

Introduction

At least one in four women in the United Kingdom has experienced trauma, such as sexual abuse or violence, with profound implications for mental and physical health, well-being, and interpersonal relationships (1, 2). Large-scale population studies in England and Wales show that childhood trauma is cumulatively associated with physical and mental health risks, including substance use, elevated body mass index, cardiovascular disease, and mental illness (2). Trauma can influence pregnancy outcomes through both physiological and behavioural pathways, with repeated exposures increasing risk (3).

The perinatal period, which is marked by significant physical and emotional changes, can exacerbate the effects of trauma (4). For some women, the physiological changes of pregnancy may trigger flashbacks or lead them to ruminate on their own childhood experiences as they contemplate parenthood (5). Trauma is closely linked to mental health challenges, including maternal suicide, which remains a leading cause of maternal mortality (6). The intimate nature of maternity care procedures, coupled with the potential for new or worsening mental health challenges, underscores the need for sensitive and effective support during this critical time (7).

Pregnancy is a powerful time to offer support to women affected by trauma (8). Women are often motivated to improve their health and well-being for the sake of their unborn child, and have frequent contact with healthcare providers in the perinatal period. They frequently engage with healthcare providers, particularly midwives, who are uniquely positioned as trusted professionals (9). However, despite the potential benefits, women rarely disclose previous trauma without prompting due to strong social taboos and the stigma surrounding disclosure (5). This reluctance highlights the need for a structured, compassionate approach to trauma conversations within maternity care.

The case for routine trauma discussions

Embedding discussions of previous trauma as a routine component of maternity care, rather than on the basis of clinician concern about individual women, is essential to mitigate clinician bias and ensure equitable care (10). Evidence suggests that both women and clinicians find such discussions valuable and worthwhile (21). Without routine trauma discussions, care providers may miss critical opportunities to support women in distress. Furthermore, even when women choose not to disclose at this time, sensitively raising the issue prepares them for the emotional challenges of the perinatal period and may facilitate future disclosure (37).

However, initiating trauma discussions is not without challenges. Raising the issue insensitively or without adequate forewarning can be futile or even harmful (11). Women may find such conversations unexpected, intrusive, or distressing, potentially leading to disengagement from maternity services (12). Overzealous safeguarding responses or unwarranted referrals to safeguarding or mental health services can further alienate women, while the lack of trauma-informed support services often leaves clinicians ill-equipped to respond effectively (21). These complexities underscore the need for a carefully designed framework to guide trauma conversations in maternity care.

Challenges in current practice

Existing tools and approaches for trauma discussions often fall short. Commonly used instruments, such as the Adverse Childhood Experiences (ACE) score, have been criticised for their potential to harm the clinician-patient relationship and their limited effectiveness in identifying and addressing trauma-related needs (13). Asking patients to complete an ACE questionnaire can trigger shame, embarrassment, or painful memories of past trauma, particularly if administered without adequate support. Pregnant women may worry about the impact of their experiences on their unborn child, which can increase anxiety and feelings of disempowerment (32). Furthermore, ACE scores were designed for population-level research rather than individual risk prediction, and relying on these scores in clinical decision-making can oversimplify complex experiences and inadvertently pathologise patients (33, 34). Standardised questionnaires may also fail to capture protective factors or the socio-political context of trauma, and they can further marginalise vulnerable groups, such as people with low literacy, limited English proficiency, or cognitive differences (21, 35). The EMPATHY study emphasises a woman-centred, compassionate approach that prioritises open communication and empathy, creating a safer environment for discussing previous trauma while minimising potential harms.

Clinicians face significant challenges in conducting trauma discussions. Women who have experienced trauma may exhibit heightened distress, fear, or frustration during perinatal care, which can occasionally manifest as challenging behaviours (14). These behaviours are best understood as responses to past trauma rather than intrinsic traits, underscoring the importance of trauma-informed approaches that prioritise empathy, trust-building, and safety. Hearing distressing disclosures can also evoke personal memories of trauma among care providers, highlighting the need for reflexive supervision and support (15). Without such infrastructure, trauma discussions risk re-traumatising both women and clinicians, complicating the delivery of compassionate care.

The need for a new framework

Given these challenges, there is a pressing need for a structured, woman-centred framework to guide trauma conversations in maternity care. Such a framework should account for the timing, setting, and methodology of discussions, as well as the training and support needs of clinicians (31). It must also prioritise cultural acceptability and accessibility, particularly for vulnerable populations such as ethnic minorities

and socially excluded groups, who are disproportionately affected by trauma, yet less likely to access support (16).

This paper introduces the development and evaluation of the EMPATHY framework, a fresh approach to facilitating discussions about previous trauma in maternity care. Designed to address the limitations of existing practices, the framework promotes equitable, compassionate, and emotionally-centered care. By integrating insights from a systematic review of trauma discussions in maternity care, interview findings, and expert input from lived and professional experience, the framework aims to facilitate meaningful discussions, support women in distress, and ultimately interrupt the intergenerational transmission of trauma.

Methods

Reflexive note

In developing the EMPATHY framework, we critically reflected on our pre-existing beliefs about routine trauma discussions and how these might influence the design and implementation of the framework.

The research team brought diverse perspectives to the project. JC, a midwife and doctoral student, was uncertain about the benefits of routine trauma discussions, particularly for women facing discrimination based on factors such as race, class, or immigration status. She was concerned that disclosure could lead to unnecessary safeguarding interventions or mental health referrals, potentially causing harm rather than providing support. SD, a midwife with 18 years of clinical experience and a background in maternity care research, shared similar concerns about the potential risks of routine trauma discussions. GT, a maternity care researcher with a psychology background and extensive experience in perinatal mental health research, emphasised the importance of trauma-informed conversations to enable needs-led care. AT, a maternal and neonatal care researcher, highlighted the necessity of a supportive care model to facilitate meaningful trauma discussions. MF, a critical psychology scholar with expertise in participatory work with marginalised communities, contributed insights into trauma as both a source of pain and a site of resilience, knowledge, and activism.

The EMPATHY study

The framework was created as the concluding element of the EMPATHY (EMpowering Pregnant women Affected by Trauma HistorY) study, a doctoral project grounded in critical participatory action research (21).

This study was conducted within the UK National Health Service (NHS), where maternity care is publicly funded, universally accessible and primarily delivered by midwives, with escalation to obstetric or mental health services when required. Continuity of care is implemented inconsistently across regions. Although routine perinatal mental health screening is recommended in national policy, routine enquiry about previous trauma is not currently included.

The study was guided by a Research Collective, a group of 18 women which included women with trauma histories, voluntary sector practitioners, and healthcare professionals. The Research Collective first met prior to the doctoral funding application, shaping the study's design and conceptualisation from the outset. They played a central role, providing feedback on the study design, interview methods, and the development of the EMPATHY framework. Across six workshops (five online, one in-person), they offered insights on stakeholder engagement, interview guides, and dissemination strategies. Their contributions ensured the study remained inclusive, equitable, and grounded in real-world perspectives.

Phases of the study are shown in Table 1. A systematic literature review and qualitative evidence synthesis were conducted, incorporating 25 papers from five countries, which included perspectives from 1,602 women and 286 healthcare professionals and voluntary sector experts (21). The review, conducted in July 2021 and updated in April 2022, included 25 papers from five high-income countries published between 2001 and 2022. Study quality was assessed using the Critical Appraisal Skills Programme (CASP) checklist, and findings were thematically synthesised. Confidence in the evidence was evaluated using the GRADE-CERQual approach, with most findings rated as moderate or high.

Semi-structured interviews were conducted with key stakeholders, including experts by experience ($n = 4$), voluntary sector representatives ($n = 7$), and healthcare providers ($n = 12$). Reflexive thematic analysis was used to explore participants' perspectives on the acceptability, feasibility, and value of routine trauma discussions in maternity care (37).

Findings from the qualitative synthesis and interviews were analysed independently and then combined with input from the Research Collective to formulate an evidence-based framework of guiding principles for discussing previous trauma during the perinatal period. The framework's development also involved a rigorous public consultation, which received 52 responses. The development and evaluation of the framework are described in this paper.

Development of the framework

Findings from the review and interviews identified that effective and sensitive trauma discussions require more than just an appropriate tool or methodology; they also need an

TABLE 1 Phases of the EMPATHY study.

Study phase	Participant numbers
Systematic review and qualitative synthesis (21)	25 papers from 5 countries included, representing the views of 1,602 women and 286 healthcare professionals and experts from the voluntary sector
Interviews (37)	Women with trauma histories ($n = 4$), healthcare professionals ($n = 12$), and voluntary sector experts ($n = 7$)
Public consultation on framework (described in this paper)	52 respondents to the consultation

TABLE 2 Application of AGREE II quality domains in the development of the EMPATHY framework.

AGREE II domain	Description	How the domain was addressed in the EMPATHY framework
Scope and purpose	Clearly define the aim, health questions, and target population.	The framework aims to: 1. Provide guidance on sensitive and effective trauma discussions to address women's health and well-being needs. 2. Identify optimal service settings for trauma discussions. 3. Outline training needs for maternity care providers. Target population: Women in the perinatal period with previous trauma.
Stakeholder involvement	Engage relevant stakeholders in guideline development.	Stakeholders, including experts by experience, healthcare professionals, and voluntary sector representatives, were actively involved through workshops, interviews, and public consultation. The Research Collective provided iterative feedback on the framework.
Rigour of development	Use systematic methods to collect and synthesise evidence, formulate recommendations, and plan updates.	The framework was informed by: 1. A systematic review and qualitative synthesis (21). 2. EMPATHY study interviews (37). 3. Key documents [e.g., (17, 18)]. 4. Insights from the Research Collective. Recommendations were evidence-based and balanced potential benefits and risks.
Clarity of presentation	Ensure recommendations are specific, unambiguous, and clearly presented.	The framework was assessed for clarity by the Research Collective and through public consultation. Recommendations were refined to ensure they were specific, sensitive, and accessible. Language was adjusted to reflect diverse preferences (e.g., using "difficult experiences" alongside "trauma").
Applicability	Identify barriers and facilitators to implementation and strategies for uptake.	A public consultation gathered feedback on the framework's practicality and relevance. Barriers (e.g., resource constraints) and facilitators (e.g., staff training) were identified. Recommendations were tailored to local needs and included strategies for implementation and evaluation.
Editorial independence	Ensure recommendations are free from bias or competing interests.	The framework's content was not influenced by the study funders (National Institute for Health Research and Wellbeing of Women). No members of the Research Collective had competing interests. Recommendations were developed independently and transparently.

environment conducive to disclosure. Key elements include addressing concerns about confidentiality, providing sufficient time and context for discussions, and developing trusting relationships. The study also highlighted the need to critically examine assumptions about the benefits of trauma discussions and to assess their acceptability and utility. Practitioner-level data and interview findings revealed that trauma discussions were often incorporated into care providers' responsibilities without adequate training, resources, or support. Consequently, it was deemed essential to develop a broad-ranging, foundational set of guiding principles outlining all aspects of effective and sensitive trauma discussions.

The framework was informed by the systematic review and qualitative synthesis of existing literature on routine trauma discussions and interviews referred to above (21, 37). In addition, the framework incorporated guidance from seminal documents on trauma-informed care including SAMHSA's *Concept of Trauma and Guidance for a Trauma-Informed Approach* (17) and NHS England's *Good Practice Guide to Implementing Trauma-Informed Care in the Perinatal Period* (18).

Development process and AGREE II guidance

The framework was developed and evaluated in accordance with the Appraisal of Guidelines for Research and Evaluation II (AGREE II) tool, a widely accepted standard for clinical practice guidelines (19, 20). Table 2 presents the six quality domains of AGREE II and how they were addressed in the study.

Consultation on the framework

In March 2023, the Research Collective participated in a workshop to review the draft framework and provide feedback via Google Forms, a secure and user-friendly platform. Eleven members evaluated the framework, assessing each recommendation for clarity, sensitivity, importance, and value. Participants also provided free-text comments on the feasibility and potential harms of the recommendations. Feedback was overwhelmingly positive, with minor revisions suggested to improve clarity and inclusivity.

Key changes based on stakeholder feedback included:

- Replacing the term "midwives" with "maternity care providers" to reflect the diverse range of professionals involved in trauma discussions.
- Adding a recommendation for an additional antenatal appointment focused on women's well-being, to address concerns about limited time, partner presence, and the lack of an established trusting relationship at booking appointments.
- Clarifying the language of several recommendations to ensure they were accessible and unambiguous.
- Resolving minor technical issues in the feedback form, such as a missing comment box.

The draft framework was refined through a public consultation process to gather feedback from a wider audience, including

healthcare professionals, voluntary sector experts, and women with lived experience of trauma. Recruitment for the consultation commenced on May 25, 2023, and concluded on September 10, 2023. The consultation was conducted online using a survey format, which included questions about the clarity, relevance, and feasibility of the framework's principles and recommendations. Participants were also invited to provide free-text comments and suggestions for improvement. The consultation was promoted through professional networks, social media, and voluntary sector organisations.

In March 2024, the Research Collective reconvened for a final workshop to review and comment on the framework, which had been updated to incorporate feedback from the public consultation.

Data analysis

Consultation data were analysed using descriptive content analysis, following the three-phase approach outlined by Vaismoradi, Turunen and Bondas (22).

1. Preparation phase: The data were read and re-read to enable the researcher to become familiar with the content.
2. Organising phase: Responses were grouped into preliminary categories (e.g., "valuable," "essential," "unfeasible") which were then reviewed for consistency and refined collaboratively
3. Reporting phase: Findings were presented narratively and supported with illustrative quotations.

JC led the analysis of the consultation data. Analysis of consultation responses considered the possibility that participants might provide polite or supportive initial comments before offering critique; coding captured both supportive and critical perspectives. Emerging interpretations were discussed and refined collaboratively through multiple meetings with the author team.

Findings

Participants

The public consultation received 52 responses, including ten interview participants (two of whom were former Research Collective members), 28 individuals approached based on their expertise or interest, and 17 recruited via channels such as Twitter (now X) and conference presentations. While demographic information was not explicitly collected, based on participant familiarity and shared details, 49 respondents identified as female and three as male. Most participants were based in the UK, with additional representation from Cameroon ($n = 1$), the Netherlands ($n = 1$), and Japan ($n = 1$). Only one participant declined to be acknowledged in the published guidance.

Participants represented a range of professional backgrounds, including:

- Voluntary sector representatives from organisations such as the Birth Trauma Association (the only UK charity solely supporting those affected by traumatic birth), For Baby's Sake (supporting expectant parents experiencing domestic abuse), Birth Companions (addressing inequalities during pregnancy and early motherhood), and Birthrights (advocating for human rights in childbirth).
- Healthcare professionals, including obstetricians, midwives, and health visitors, many with expertise in supporting women with histories of abuse.
- Specialists in maternal mental health and safeguarding, including those working in Mother and Baby Unit settings.
- Diverse professionals such as commissioners, social workers, national advocates, clinical psychologists, childbirth educators, and compassionate inquiry practitioners.
- Researchers focused on maternity care for survivors of sexual violence and abuse.
- Midwifery educators.
- Trauma survivors, some of whom also held academic or voluntary sector roles or supported local Maternity Voices Partnerships.

Content of the evidence-based framework

The final framework can be found in Appendix 1.

The framework includes a preamble emphasising the importance of collaborative development with stakeholders, including experts by experience, maternal mental health services, voluntary sector organisations, and maternity care providers. It underscores the need to prioritise women's choice, control, and agency throughout the process.

The framework is structured around six core principles:

1. Whole system approach: Routine trauma discussions should be integrated into maternity care as part of a broader system-wide transformation, supported by policy changes, training, and resource allocation. Policies should specify who will conduct discussions, when and where they will take place, and referral pathways. Resources should also support ongoing staff supervision and reflective practice.
2. Promote trauma awareness and access to support: Women should be informed about the potential impact of trauma on their well-being and offered access to support services. Multiple "light-touch" opportunities should be provided for women to discuss past experiences or mental health concerns. Where feasible, maternity services should provide an additional antenatal appointment focused specifically on social, emotional, and psychological wellbeing, giving women a private space to disclose previous trauma if desired. Women should also have access to independent support resources that do not require disclosure to healthcare providers.
3. Build trust and relationships: Trauma discussions must be conducted sensitively, with a focus on building trust and maintaining confidentiality. Discussions should allow sufficient time, be conducted in private, and, where possible,

involve a known care provider. Women should be able to decline to answer questions and be informed of the limits of confidentiality. Documentation should respect women's wishes while adhering to safeguarding requirements.

4. Staff training and support: Healthcare providers require adequate training and ongoing support to conduct trauma discussions effectively and manage the emotional impact of disclosures, recognising that some staff will have personally suffered traumatic experiences. Training should be developed in partnership with experts by experience and specialist voluntary sector organisations, covering counselling skills, recognition of trauma effects, and local referral pathways. Staff should have access to ongoing reflective supervision or confidential counselling to support their well-being.
5. Locally tailored pathways: Trauma discussions should be adapted to local contexts, considering available resources and the specific needs of diverse populations. Services should address cultural, linguistic, and accessibility barriers and provide both local and national support options to ensure equitable care for all women.
6. Ongoing evaluation and improvement: Services should systematically evaluate the implementation and impact of routine trauma discussions and use these insights to refine trauma pathways. This includes monitoring staff training, proportion of women asked about previous trauma, referrals made, and feedback from women and staff, with attention to potential unintended consequences such as re-traumatisation or impacts on staff wellbeing.

The EMPATHY framework offers maternity services concrete guidance on how to routinely discuss previous trauma in the perinatal period. Its recommendations emphasise both organisational change and individualised care, ensuring discussions are sensitive, safe, and supportive. The underpinning evidence base and rationale for each recommendation are provided in Table 3.

Findings from the public consultation

Full stakeholder feedback is provided in Supplementary Table 1. Of the 22 recommendations presented, 11 remained substantially unchanged, with minor adjustments for clarity. The remaining 11 were revised based on feedback, and one new recommendation was added: maternity services should develop a comprehensive written policy for routine trauma discussions, including provisions for implementation, communication, staff training, supervision, evaluation, and review.

The following section presents a summary of participants' responses to open-ended questions about the framework, offering insights into their perceived value, feasibility, acceptability, potential impact on disadvantaged groups, and risk of harm. Each subsection includes illustrative quotes, with consultation respondents identified as R1, R2, and so on. Respondents have been identified by category (e.g., woman with lived experience, maternity care provider, maternity educator, voluntary sector expert) to provide context while maintaining confidentiality. Some respondents have overlapping roles and experiences, and may be represented in more than one category.

Value of the framework

The majority of respondents regarded the framework as highly valuable for women who have experienced trauma. Participants described it as "*absolutely invaluable*" (R9, voluntary sector expert), with one noting, "*there is much that is very important and valuable in these guidelines*" (R8, maternity care provider) and another stating, "*I feel grateful to read these very well thought through and trauma-sensitive directions to talk with our clients about difficult experiences*" (R25, maternity care provider). One participant highlighted the transformative potential of the framework, suggesting that its implementation "*would lead to a dramatic shift in perinatal experiences and significantly reduce retraumatisation*" (R41, woman with lived experience).

The framework was seen as addressing a critical gap in current practice. While awareness of trauma-informed care is growing, respondents noted that "*there is much less available about what this means or looks like in practice*" (R9, voluntary sector expert). The inclusion of clear recommendations for training maternity care providers was particularly well-received. One participant even expressed interest in piloting the framework within their NHS trust, underscoring its practical relevance.

Although the framework was generally well received, some respondents identified areas for improvement. Suggestions included expanding its scope to address commissioning services and aligning it with existing safeguarding and domestic abuse guidance and training. Participants also stressed the importance of sensitive implementation and the establishment of robust support pathways, both of which have been addressed in the final version of the framework. While several respondents recommended extending the framework to include co-parents or partners affected by trauma, this falls outside the scope of the EMPATHY study.

The challenge of finding appropriate language to discuss trauma was another recurring theme. As one participant noted, "*not everyone will identify as a trauma survivor,*" even if they exhibit symptoms of post-traumatic stress disorder (R41, woman with lived experience). A respondent with expertise in sexual violence and maternity care described the framework as "*excellent*" (R36, woman with lived experience) but advocated for a stronger survivor voice in its implementation. They argued:

> "I know this might seem unrealistic in a currently under-funded and over-stretched system, but survivors need to be instrumental in bringing about change—otherwise, it is not a trauma-informed approach" (R36).

Feasibility of implementation

Respondents expressed mixed views on the feasibility of implementing the framework. Some believed it could be seamlessly

integrated into existing practices, particularly given its alignment with mental health and emotional well-being assessments. However, others highlighted significant challenges, including resource constraints and the overwhelming demands on maternity services. One participant captured this sentiment succinctly: "*The NHS is tired, very very noisy with "change" initiatives and nothing really changing*" (R28, maternity care provider).

Despite these challenges, many respondents emphasised the importance of the framework, arguing that improving care for women who have experienced trauma is essential. As one participant stated plainly, "*If they aren't* [achievable]*, something has to change*" (R31, woman with lived experience). Others acknowledged the inherent difficulties in changing practice, noting that "*there will never be a [right] time*" (R9, voluntary sector expert) and that partial implementation could still yield significant benefits*:* "*If even half the guidelines were implemented, that would make a huge difference*" (R41, woman with lived experience). Additionally, several respondents stressed the importance of continuity of carer, with one describing it as "*paramount*" (R52, maternity care provider) to enabling women to feel safe when disclosing previous trauma.

To enhance feasibility, participants suggested aligning trauma discussions with established workstreams on domestic abuse, safeguarding, and mental health. These areas already have specialist maternity care teams, guidelines, and a presence in mandatory training, making them a natural fit for integration. Strong leadership and the appointment of implementation champions were also seen as critical, with one participant proposing that a funded coordinator role could facilitate successful implementation (R50, voluntary sector expert).

Acceptability

Participants generally agreed that women would find the framework acceptable if the rationale for trauma discussions was clearly communicated and handled with sensitivity. Even for those without personal trauma histories, such discussions were seen as an opportunity to "*help women share all manner of concerns*" (R49, maternity care provider), raise awareness, and reduce stigma. Respondents shared examples of women responding positively to trauma discussions, often expressing gratitude and understanding, even if they had not experienced trauma themselves.

Drawing parallels with routine domestic abuse enquiries, participants noted that trauma discussions are generally well-received. As one respondent observed, "*Women are very supportive if they think it will help other women*" (R32, maternity care provider). This suggests that, when framed appropriately, trauma discussions can foster a sense of solidarity and collective benefit.

Guideline respondents highlighted challenges in addressing trauma during booking appointments. One maternity care provider explained, "*we ask lots of questions at booking that relate to trauma but have not built up a trusting relationship at that point*" (R6), while another noted that "*the booking appointment…may not be the place as there may not be sufficient time to respond adequately*" (R21). Concerns about partner presence were also raised, with one respondent observing that "*Some women can still find it difficult to talk when their partner is in another room… I don't feel that within this time a relationship can be established and a women would want to disclose. Time is something that will need to be offered*" (R52, maternity care provider). In response, the framework was revised to recommend an additional antenatal appointment focused on women's well-being. This protected space allows women to disclose trauma when they feel ready and ensures adequate time for sensitive, meaningful discussion.

Inequality and disadvantage

Most respondents believed the framework would particularly benefit women facing inequality and disadvantage, highlighting the complex interplay between trauma, inequality, and lack of support. One participant explained:

> "Most definitely [the guidance would benefit women facing inequality and disadvantage]—as they have often suffered significant trauma, are more susceptible to traumas that arise with multiple disadvantage, and these could impact their current experiences of pregnancy, birth, and mothering. They may also have less knowledge or access to places where they can find support" (R40, voluntary sector expert).

The framework was seen as having the potential to improve care for vulnerable groups, including women seeking asylum, individuals from ethnic minorities, and those facing socio-economic challenges. One participant suggested that the approach outlined in the framework "*could be the most impactful way to challenge health inequalities and reach those people who do not have trust in the system*" (R9, voluntary sector expert).

However, some respondents raised concerns about barriers to disclosure within certain ethnic and socio-economic groups. As one participant noted, "*They are the ones least likely to disclose because of fears of consequences*" (R3, maternity care provider). Addressing language barriers, ensuring cultural safety, and maintaining ongoing anti-racist efforts were identified as essential to make the framework inclusive and effective for all. Additionally, several respondents recommended using inclusive language to acknowledge individuals who are biologically female but do not identify as women.

Potential for harm

Most participants believed the framework itself was unlikely to cause harm, with comments such as "*no more so than current fragmented care*" (R19, maternity care provider), "*far less than the harm caused when we don't know about previous trauma*" (R37, maternity care provider), and "*more harm comes from*

women suffering guilt and blame for experiences that were not their fault" (R5, woman with lived experience).

However, participants expressed significant concern that inadequate implementation could undermine the framework's effectiveness. One participant warned, "*Of course there are harms from disclosures if they are not managed well or if there is not sufficient time/corners are cut*" (R9, voluntary sector expert). Others feared the guidance could become "*a tick-box exercise*" (R38, voluntary sector expert) or "*another document uploaded in a cloud that nobody looks at*" (R42, voluntary sector expert), potentially raising unrealistic expectations for both women and care providers.

Insufficient training was identified as a key risk, potentially leading to insensitive discussions or coercion, which could worsen women's experiences and deter future disclosures. Participants also highlighted the potential for inappropriate handling or recording of trauma disclosures, which might stigmatise women. Additionally, there were concerns about burdening maternity care providers with additional responsibilities without adequate resources or support, leading to low uptake of the guidelines. Respondents stressed the importance of providing emotional support for staff to manage the challenges associated with trauma discussions effectively, with one eloquently summing up the pressures on maternity staff and the imperative of providing support to maintain a healthy workforce:

> 'The impact of the work they do, their own lived experience, the stretched systems they work in, the responsibilities they hold and the extreme emotions they are working with from one moment to the next—joy, fear, sadness, grief…….if we are going to develop, grow and sustain a healthy maternity workforce, this is essential.' (R49, maternity care provider)

Discussion

In the UK and internationally, trauma discussions in maternity care have traditionally relied on questionnaire-based methods, where service users are asked to disclose specific past experiences, such as childhood sexual abuse or domestic violence (23). In contrast, the EMPATHY framework represents a paradigmatic shift towards a holistic, emotionally-centred approach that prioritises trust, safety, and empowerment. Rather than relying on tools and checklists, it seeks to create a supportive environment in which women feel heard, respected, and in control of their care.

The framework was developed through a systematic review, qualitative synthesis, and stakeholder interviews. It defines the optimal conditions for trauma discussions and outlines the training required to support maternity staff. The study was guided by a critical participatory action research (CPAR) methodology, underpinned by critical social theory, to examine power dynamics and structural injustices. CPAR actively engages affected communities in the co-production of knowledge and aims to create meaningful societal change (24).

To facilitate this approach, a Research Collective was established, bringing together individuals with diverse forms of expertise, including lived experience, voluntary sector practitioners, and maternity care professionals. Grounded in critical social theory, the EMPATHY framework explicitly addresses the needs of underserved populations, including women facing language barriers, immigration-related vulnerabilities, or cultural obstacles to disclosure.

An intersectional lens further informed the framework's development, recognising that experiences of trauma and barriers to care are shaped by the interplay of multiple social identities, including race, class, immigration status, disability, and linguistic exclusion (25, 26). By acknowledging these intersecting forms of oppression, the framework seeks to promote equitable, culturally safe care that does not rely on disclosure as a prerequisite for support. A key innovation is its recommendation that all women—regardless of whether they disclose trauma—should be offered access to relevant information and support. This inclusive approach seeks to avoid placing the burden of disclosure on women, while ensuring their needs are still met (21).

The EMPATHY framework addresses a critical gap in existing policy guidance, which often centres on identifying and supporting women in current abusive situations, with limited consideration of past trauma (27, 28). Although the NHS England guide to trauma-informed perinatal care calls for "*early and respectful trauma screening and assessment for all*" (18), p. 34), it provides little direction on implementation. The EMPATHY framework contributes a structured yet flexible model, grounded in evidence and shaped by stakeholder input.

By prioritising cultural safety, inclusivity, and staff well-being, the framework provides a comprehensive resource to support maternity care providers in delivering compassionate, trauma-informed care. Its implementation has the potential to transform perinatal experiences, fostering positive emotional outcomes for women and their families. By creating a safe space for open dialogue, the framework is designed to empower women to share their histories on their own terms, reducing feelings of isolation and stigma. This approach therefore has the potential to not only enhance women's emotional well-being but also strengthens the therapeutic relationship between care providers and families, laying the foundation for positive perinatal experiences (29).

However, poor implementation of the framework carries significant risks. Several participants highlighted the potential for harm if services introduce trauma discussions without ensuring that appropriate referral pathways and support systems are in place. Inadequate training, limited follow-up options, or poorly managed disclosures may re-traumatise women or leave them without the support they need. Therefore, the framework should not be implemented in settings where effective referral pathways and support infrastructures are lacking. Without these, the well-intentioned use of trauma discussions may unintentionally exacerbate distress, undermine trust, and cause further harm. This underscores the critical importance of a whole-system approach that includes staff training, supervision,

and access to specialist support as prerequisites for safe and ethical implementation.

As the framework was developed within the configuration of UK maternity services, some elements may require adaptation in health systems with different funding models, workforce structures or service pathways. However, the principles underpinning safe and sensitive trauma discussions may still have relevance internationally.

Strengths and limitations

The EMPATHY framework addresses a critical gap in the literature by providing practical, evidence-based recommendations for routine trauma discussions during the perinatal period. A key strength lies in its development through a critical participatory action research approach, which ensured the active involvement of diverse stakeholders, including experts by experience, healthcare professionals, and voluntary sector representatives. Perspectives from over 1,600 women and 250 healthcare professionals were integrated through a systematic review, qualitative synthesis, interviews, and public consultation, enhancing the framework's validity and applicability.

Methodologically, the study is grounded in robust empirical evidence, combining findings from a systematic review and qualitative interviews. It is the first to integrate the perspectives of both women and maternity care professionals on routine trauma discussions, offering a comprehensive understanding of the challenges and opportunities involved. Rigorous search strategies and measures to minimise bias, such as positionality and reflexivity, further strengthen the reliability of the findings.

Finally, the framework goes beyond identifying issues to propose practical solutions, demonstrating a commitment to translating research into actionable policy and practice. These strengths collectively enhance the study's credibility and potential to advance trauma-informed care in perinatal settings.

Despite its contributions, the study has several limitations. Challenges in recruiting women with limited English proficiency may affect the broader applicability of the findings. Additionally, the lack of data on participants' personal trauma histories raises the possibility that certain types of trauma were under- or overrepresented. Although efforts were made to encourage open discussion in Research Collective workshops, some members of the Collective may have felt inhibited in sharing their views, particularly in the presence of healthcare professionals.

Implications for policy, practice, and research

Implications for policy

The EMPATHY framework represents a critical, evidence-based resource for integrating routine trauma discussions into UK maternity care. To support its effective implementation, it should be embedded within national maternity guidance and backed by dedicated, ring fenced funding. This funding must extend beyond initial training to include delivery, ongoing supervision, and system-level coordination, particularly in light of persistent understaffing and resource constraints that threaten implementation fidelity.

Strategic investment in the framework has the potential to generate long-term savings by facilitating earlier access to mental health services and mitigating the intergenerational transmission of trauma. Equally, policies must prioritise comprehensive support structures for staff, including access to independent psychological support and clinical supervision. These supports are essential for preventing burnout and vicarious trauma and for sustaining trauma-informed care over time.

Implications for practice

The EMPATHY framework offers clear, actionable guidance for embedding trauma discussions within maternity services. It advocates for a whole-systems approach, ensuring healthcare providers are equipped with the necessary skills, time, and confidence to approach these conversations sensitively and effectively. Central to the framework is a commitment to building trust and upholding women's autonomy and informed choice.

A key innovation is the recommendation for a dedicated antenatal appointment focused on mental health and emotional well-being, scheduled shortly after the first maternity care appointment. This allows time for trust-building, enables women to prepare for the conversation, and creates an opportunity to provide independent access to support. By demonstrating parity between physical and mental health, this appointment could address long-standing limitations in current practice and facilitate safer, more meaningful trauma discussions.

It is important to note that the framework has not yet been implemented. Several practical challenges identified in the study —including limited appointment time, variable continuity of care, insufficient supervision and referral pathways, and the need for appropriate training—may affect how the framework can be operationalised. Without adequate infrastructure, routine trauma discussions risk causing harm, potentially retraumatising women or exposing staff to ethical and emotional challenges for which they are unprepared.

Trauma-informed care must not become a symbolic gesture or a box-ticking exercise; successful implementation requires the ethical and practical readiness of the entire maternity care system. Reflecting on these implementation challenges in practice highlights the need for careful planning, resource allocation, and ongoing evaluation to ensure the framework achieves its intended impact.

Implications for research

The development of the EMPATHY framework highlights several critical areas for further research. First, there is an

urgent need to co-design culturally safe, context-specific tools for initiating trauma discussions in the UK. Existing tools, such as the Adverse Childhood Experiences (ACE) questionnaire, have been found to be inappropriate or potentially harmful when used in maternity settings. Research should prioritise collaborative development of resources that centre women's lived experiences and uphold trauma-informed principles.

Second, future research should focus on producing and evaluating national implementation materials. These include policies, training curricula, and women-centred information resources that are co-developed with stakeholders from practice, voluntary organisations, and communities with lived experience. Additionally, the prevalence and impact of trauma among maternity staff must be examined, to inform organisational strategies that support staff well-being and improve workforce retention.

Finally, a robust framework for monitoring and evaluation is crucial to ensure that the EMPATHY framework does not inadvertently cause harm and continues to meet the needs of diverse populations. Future research should focus on tracking and improving implementation over time. Key areas for investigation include developing clear evaluation metrics to assess clinical outcomes, practitioner adherence, and the quality of trauma discussions, as well as considering patient-reported outcomes such as satisfaction with care, sense of safety, and perceived support. Additionally, staff experience, including emotional impact, confidence, and training effectiveness, should be examined, alongside feedback mechanisms that enable continuous input from both healthcare providers and women receiving care. Equity monitoring is also necessary to assess how well the framework serves minoritised and underserved groups, using disaggregated data to address disparities. A structured, participatory approach to evaluation will be essential to ensure the framework remains responsive, ethically sound, and effective in real-world practice.

Conclusion

The EMPATHY framework represents a significant step forward in trauma-informed perinatal care, addressing a critical gap in existing guidance and practice. By providing a structured yet flexible approach to routine trauma discussions, the framework offers practical solutions to improve care for women who have experienced trauma. Its emphasis on cultural safety, inclusivity, and staff well-being ensures its relevance across diverse populations and settings.

While the framework has the potential to transform perinatal experiences and reduce health inequalities, its successful implementation will require sustained investment in training, resources, and support for maternity care providers. Further research is needed to refine tools, develop national materials, and explore the impact of trauma on care providers.

Ultimately, the EMPATHY framework paves the way for a more empathetic and supportive approach to perinatal care, in which women feel empowered to seek support and maternity care providers are equipped to deliver compassionate, trauma-informed care.

Data availability statement

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

Ethics statement

The study was approved by The University of Central Lancashire Health Ethics Review Panel (reference HEALTH 0220). The studies were conducted in accordance with the local legislation and institutional requirements. The participants provided their written informed consent to participate in this study.

Author contributions

JC: Conceptualization, Formal analysis, Funding acquisition, Investigation, Methodology, Writing – original draft, Writing – review & editing. GT: Formal analysis, Methodology, Supervision, Writing – review & editing. SD: Supervision, Writing – review & editing. AT: Supervision, Writing – review & editing. MF: Supervision, Writing – review & editing.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Correction Note

This article has been corrected with minor changes. These changes do not impact the scientific content of the article.

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Supplementary material

The Supplementary Material for this article can be found online at: https://www.frontiersin.org/articles/10.3389/fgwh.2025.1608174 /full#supplementary-material

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Appendix 1

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About the framework

Over a quarter of pregnant women (~150,000) each year in the UK have suffered trauma such as domestic abuse, adverse childhood experiences, or sexual assault (30). These experiences can have a lasting effect on mental and physical health, and impact pregnancy and parenting. Despite this prevalence and the potential consequences, discussing prior trauma is not standard practice in maternity care in the United Kingdom.

This framework offers a new model for trauma discussions, informed by meaningful engagement with trauma survivors and stakeholders. It aims to help maternity care providers raise the issue of previous trauma and provide appropriate follow-up. The framework was developed as part of the EMpowering Pregnant women Affected by Trauma HistorY (EMPATHY) study, a critical participatory action research study which was guided by a Research Collective of women with trauma histories, experts from the voluntary sector, and maternity care providers.

A systematic review and qualitative evidence synthesis was conducted which included 25 papers from five countries, representing the views of 1,602 women and 286 healthcare professionals and experts from the voluntary sector (21). Interviews were then undertaken with women with lived experience of trauma ($n = 4$), healthcare professionals (12), and voluntary sector experts ($n = 7$) (37).

The following sources informed the development of an evidence-based framework of guiding principles for the routine discussion of previous trauma in the perinatal period:

- Papers included in the systematic review and qualitative synthesis (21).
- Findings from the study interviews (37).
- The seminal conceptual document "SAMHSA's Concept of Trauma and Guidance for a Trauma-Informed Approach" (17).
- The "Good Practice Guide to Implementing Trauma-Informed Care in the Perinatal Period", commissioned by NHS England and NHS Improvement (18).
- Insights from the Research Collective.

The framework was further developed through a rigorous public consultation with 52 responses from participants with diverse professional backgrounds, including:

- Voluntary sector representatives, including those linked with the Birth Trauma Association, For Baby's Sake, Birth Companions, and Birthrights.
- Obstetricians, midwives, and health visitors, many with expertise in supporting women with abuse histories.
- Specialists in maternal mental health and/or safeguarding, including in Mother and Baby Unit settings.
- Diverse professionals, including a commissioner, a social worker, a national advocate, and a clinical psychologist, a childbirth educator and a compassionate inquiry practitioner.
- Researchers dedicated to maternity care for survivors of sexual violence and abuse.
- Midwifery educators.

- Trauma survivors, some with academic or voluntary sector expertise or who supported their local Maternity Voices Partnership.

The framework contains 23 recommendations based on six core principles: 1. Routine trauma discussion should be introduced as part of a system-wide change; 2. Maternity care providers should let women know previous trauma can affect their well-being and help them access support; 3. Trauma conversations need to be carried out sensitively, to build trust and relationships; 4. Staff must be provided with adequate training and support; 5. Trauma discussions should be tailored to local needs and services; and 6. Services should systematically assess the implementation and impact of routine trauma discussions and seek to continuously improve trauma pathways based on these insights. By offering flexible principles, the framework supports providers in tailoring discussions to each woman's needs while reinforcing women's agency and autonomy.

The term "routine" indicates the need for trauma discussions to be part of care for every woman, avoiding the unconscious biases, stigmatisation, and missed opportunities for support that can result when clinicians only discuss trauma with women who they believe to be affected.

Preamble to the framework

Maternity care services should develop procedures for routine trauma discussions in close collaboration with a steering group comprising experts by experience, maternity care providers responsible for conducting trauma discussions, maternal mental health services, and local voluntary service organisations. The steering group should be intentionally inclusive and representative of various trauma types and member demographics.

To ensure that steering group members have adequate support, consideration should be given to recruiting experts by experience through voluntary service organisations. Participants in the steering group should receive compensation for their invaluable expertise and contributions. Feedback mechanisms, including anonymous options, should be implemented to foster open and inclusive communication within the group. The steering group should be meaningfully involved throughout the entire process of developing, implementing, and evaluating routine trauma discussions in maternity care.

The overarching principle of empowering women by promoting choice, control and agency over decisions relating to their care should be upheld at all times.

Principle 1. Routine trauma discussion should be introduced as part of a system-wide change

1. Maternity care services should develop a comprehensive written policy for routine trauma discussions, addressing the following key elements:

   - Who, how, when, and where discussions will take place.
   - Referral pathways.
   - Communication strategy to prepare women for trauma discussions, ensure they understand the purpose and benefits, and inform them of available support resources.
   - Strategies to ensure trauma discussions are culturally sensitive, equitable, and accessible. This includes addressing the needs of women with limited English proficiency or other communication needs and women who seek care later in pregnancy or have received limited maternity care.
   - Format, content, and delivery plan for staff training, including provisions for ongoing training to maintain competency and awareness.
   - Mechanisms for providing supervision and ongoing emotional support to staff involved in conducting trauma discussions.
   - Procedures for evaluating and monitoring the impact and acceptability of routine trauma discussions, incorporating feedback from both women and staff.
   - Identifying key individuals or teams responsible for implementing and overseeing the policy within maternity care services.
   - A regular review schedule for the policy, to ensure it is responsive to emerging research, evolving practices, and feedback from stakeholders.

Principle 2. Maternity care providers should let women know previous trauma can affect their wellbeing, and help them access support

2. Maternity care providers should make women aware that previous difficult or traumatic experiences can affect their current wellbeing and experience of pregnancy and parenting.
3. Discussions about difficult experiences should be combined with discussions about mental health, because many troubling thoughts, feelings, and behaviours are attributable to previous experiences.
4. Maternity care providers should give women multiple "light-touch" opportunities to talk about mental health concerns and previous difficult or traumatic experiences, because women may not feel comfortable disclosing or need support until later in the perinatal period.
5. Maternity care providers should only ask direct questions about difficult or traumatic previous experiences if there is a protocol and referral pathways in place and they have had training in how to ask and respond.
6. Women should be provided with information and support that they can access independently, without the need to disclose traumatic experiences to healthcare providers. Maternity care providers should address potential concerns about confidentiality, reassuring women that they cannot determine whether she has accessed online resources.
7. When women disclose previous difficult or traumatic experiences, maternity care providers should collaborate with them to develop a personalised plan of care for the perinatal period that prioritises choice, control, and individualised care. This plan could include:

- Clarifying birth preferences or wishes.
- Addressing potential triggers, with specialist psychological support if needed.
- Facilitating continuity of carer where feasible.
- Assisting in accessing mental health support if this would currently be, or might become, beneficial. In cases where women may not meet criteria for perinatal mental health services, exploring alternative support options such as third sector organisations or online resources is recommended.
- Providing information about additional support services, such as peer support, parentcraft groups, third-sector, community, or online resources.
- Offering information for women's partners on how to provide support during this time.

However, it is important to note that structured care plans may not be desired or beneficial for all women.

Principle 3. Trauma discussions should be carried out sensitively, in a way that builds trust and relationships

8. Women should be sensitively forewarned that the issue of previous trauma will be raised, providing them with the opportunity to prepare for the discussion and ensure they have adequate support in place. They should be informed that they can opt out of answering any questions about previous difficult experiences and told of the limits of confidentiality.
9. The issue of previous difficult or traumatic experiences should be raised when there is sufficient time for staff to listen and respond to disclosures, recognising that for women who do not feel listened to, these discussions can be re-traumatising. When care providers cannot adequately respond to a disclosure due to time constraints, they should acknowledge the disclosure and schedule a follow-up appointment where they will be able to talk in more depth. Service managers should ensure appointments include additional time for trauma discussions and facilitate autonomy in arranging follow-up or additional appointments.
10. An additional antenatal appointment specifically focused on addressing women's social, emotional, and psychological well-being, including the opportunity to disclose any previous traumatic events if desired, should be provided. This appointment should adhere to the following criteria:
    - Conducted in a private and undisturbed environment.
    - Without the presence of a partner, acknowledging that some women may not have disclosed their traumatic experiences to their partners or that partners may have been involved in the experiences. However, if a woman prefers to include her partner or a trusted support person in the discussion, a follow-up appointment should be offered.
    - Ensure there is a private space available and a dedicated staff member to provide support if a woman becomes upset during the conversation, allowing her the necessary time to gather herself.
    - Ideally conducted by a female care provider, recognising that some women may not feel comfortable disclosing previous trauma to male staff.

All maternity care settings should prioritise allocating resources to facilitate this additional appointment. If an additional appointment is currently not feasible, services should consider how the above points can be integrated within existing maternity care appointments.

11. Where possible, the issue of previous difficult or traumatic experiences should be raised by a maternity care provider who is known to the woman, as many women will not disclose trauma without a trusting relationship.
12. Maternity care providers should collaborate with women to ensure documentation of trauma disclosures is sensitive and acceptable (while adhering to safeguarding requirements), recognising and advising women that maternity records may inadvertently be viewed by others, including partners and family members. This approach aims to both prevent sharing of information without consent and reduce the potential for re-traumatisation by minimising the need for women to needlessly repeat their stories.
13. Maternity care providers should ask women's wishes about information sharing within the maternity team and with other services, and as far as possible follow these wishes.

Principle 4. Staff should be given training and support to carry out routine trauma discussions

14. Maternity care providers should undergo comprehensive training to sensitively conduct trauma discussions. This training must be collaboratively developed and delivered in partnership with experts by experience and specialist voluntary sector organisations, with due compensation for their invaluable expertise. Ongoing training, supervision, and support should be provided to staff to ensure sustained competence. The training curriculum should include the following key elements:
    - Understanding the potential effects of trauma on mental and physical health, behaviour, wellbeing, and parenting across diverse population groups.
    - Fundamental counselling skills, including active listening, employing open-ended questions, building confidence in asking about and responding to disclosures of difficult experiences, and sensitively concluding difficult conversations.
    - Recognising and sensitively supporting women who may have suffered trauma but choose not to disclose it.
    - Local care pathways available for women who have suffered trauma.
    - Appropriate documentation of trauma disclosures and safeguarding considerations.
    - An evaluation so the effectiveness and acceptability of the training can be monitored.

Facilitators of the training must be mindful that attendees may reflect on personal experiences, potentially eliciting painful memories, and should consider strategies to support them.

15. All staff working in maternity care, including support staff such as healthcare assistants and receptionists, should receive role-appropriate training in supporting women who may have suffered trauma.
16. Staff training on routine trauma discussion and trauma-informed care should begin in the undergraduate period.
17. Maternity care providers should be provided with regular (e.g., monthly) counselling, within paid working hours, to help them manage the emotional impact of discussions about trauma, including any personal memories these conversations may evoke. The counselling should be confidential and provided by a qualified professional who is independent of service management.

Principle 5. Routine trauma discussions should be tailored to local needs and services

18. Consideration should be given to overcoming cultural, systemic, and societal barriers to trauma discussions. These barriers include:

    - Shame, stigma, and silencing.
    - Expectations about gender.
    - Strong social taboos around discussing abuse, potentially leading to a lack of recognition of abusive experiences by women.
    - Lack of awareness of mental health issues.
    - Some languages lack specific vocabulary to describe mental health and may use terms that are stigmatising or derogatory (e.g., "crazy").
    - Mistrust of institutions, which may stem from prior experiences with statutory services.
    - Fears that care providers will gossip or discuss their personal information without consent.
    - Cultural bias and racism from care providers.
    - Insecure immigration status, which can increase vulnerability to abuse and discourage disclosure of experiences.
    - Sexual orientation and gender identity.

To ensure these barriers are considered and to provide an inclusive approach, the development of pathways and the design and delivery of training should incorporate input from individuals with various cultural backgrounds and lived experiences.

19. Pathways should be designed with recognition of the specific challenges faced by women with limited English proficiency or other communication difficulties when disclosing trauma. These challenges may include:
    - Reluctance to disclose in the presence of an interpreter. It is essential to acknowledge and address potential barriers that interpreters might pose to open communication.
    - Fear that interpreters will breach confidentiality and disclose sensitive information to others in the community. Strategies should be implemented to build trust and ensure interpreter confidentiality.
    - Reluctance to disclose in the presence of partners, family, or friends who are acting as interpreters. It is crucial to discourage this practice, emphasising the importance of neutral and professional interpreters.
    - Limited literacy in their own language can mean translated materials are not helpful and make women feel ashamed. Services should strive to provide accessible information such as audio translations of questionnaires and information leaflets.
    - Difficulty understanding technical terms, written information, or subtle nuances even for women with good conversational English. Efforts should be made to communicate information in a clear, straightforward manner to ensure understanding across varying levels of English proficiency.
    - Services should also consider how they can meet the needs of women who have other communication needs, including hearing difficulties, learning disabilities, neurodivergence, or low literacy.
20. Routine trauma discussion pathways should be tailored to local resources and services. Women should also be informed of national support organisations to ensure a minimum level of support for all women, regardless of location. It is important to acknowledge that some women prefer anonymous support options, such as telephone-based or national rather than local services, due to concerns about confidentiality and social encounters with support providers. Additionally, poverty should be recognised as a barrier to accessing support.

Principle 6. Services should systematically assess the implementation and impact of routine trauma discussions and seek to continuously improve trauma pathways based on these insights

21. While respecting women's individual rights to confidentiality and their choices regarding documentation of trauma disclosures in medical records, efforts should be made to measure the uptake and impact of routine trauma discussions. Collected data could include:

    - Proportion of staff trained in conducting trauma discussions.
    - Proportion of women asked about previous trauma.
    - Basic sociodemographic information.
    - Number of women who disclosed trauma and types of traumas disclosed.
    - Changes in care resulting from trauma disclosures.
    - Uptake of referrals made.
    - Impact on related services such as referrals to mental health and addiction services.
    - Impact of routine trauma discussion on outcomes such as health, quality of life and experience of parenting.

In analysing the data, both the overall dataset and specific results relating to marginalised groups and individuals from different

cultural backgrounds should be considered to ensure inclusivity and representation of diverse voices.

22. Feedback should be sought at a local level from women using maternity services and staff regarding routine discussion of previous trauma. The aim of this feedback is to establish whether it is acceptable and helpful, and to identify unintended consequences, such as the risk of re-traumatisation for women or negative impact on staff wellbeing. To encourage open communication and constructive criticism, feedback collection should be anonymous. Services should collaborate with voluntary service organisations to develop strategies to seek feedback from marginalised populations. Responses should be analysed both as a whole, and separately for marginalised groups and different cultural backgrounds, to ensure trauma discussions are equitable.
23. While upholding women's rights to confidentiality, maternity services should collaborate with each other to share findings and identify best practices. Findings should also be shared with the steering group, staff conducting trauma discussions, and local voluntary service organisations.

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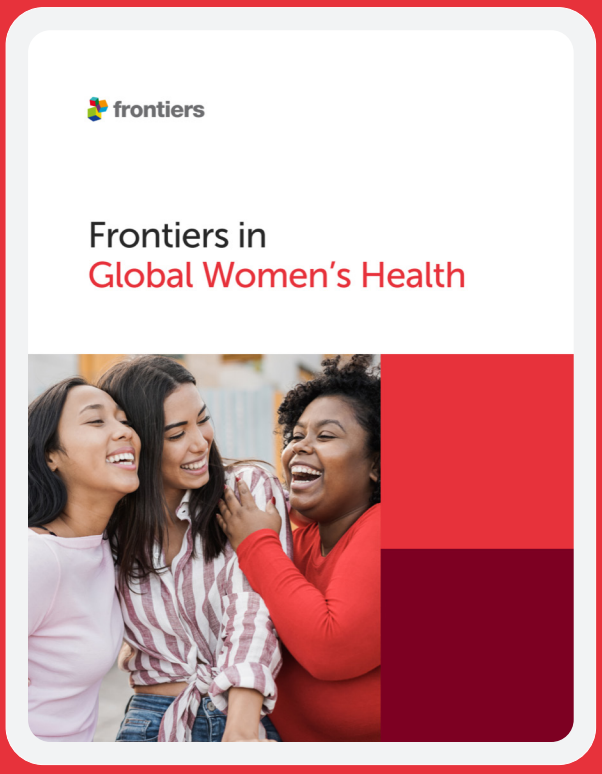

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