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REVIEW

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A systematic meta-thematic synthesis to examine the views and experiences of women following water immersion during labour and waterbirth

Claire Feeley[1] | Megan Cooper[2] | Ethel Burns[1]

[1]Oxford Brookes University, Oxford, UK

[2]University of South Australia, Adelaide, SA, Australia

Correspondence
Claire Feeley, Oxford Brookes University, Oxford, UK.
Email: cfeeley@brookes.ac.uk

Abstract

Aims: To gather, quality assess, synthesize and interpret the views, feeling, and experiences of women who used water immersion during labour and/or birth.

Design: A systematic meta-thematic synthesis and GRADE-CERQual.

Data sources: We searched MEDLINE, CINHAL, PsychINFO, AMED, EMBASE (MIDIRS only), LILACS, AJOL. Additional searches were carried out using Ethos (thesis database), cross-referencing against Google Scholar and citation chasing. Searches were carried out in August 2019, updated February 2020.

Methods: Studies that met the selection criteria were appraised for quality. Data were extracted from the studies using meta-thematic analytical techniques; coding, descriptive findings, and analytical findings. The descriptive findings were subjected to confidence assessments using GRADE-CERQual.

Results: Seven studies met the inclusion criteria. Nine key statements of findings were generated – one had high confidence, three moderate, three low and one very low confidence in the findings. The analytical findings generated three main themes: *Liberation and Self-Emancipation, Synergy, transcendence and demarcation and Transformative birth and beyond*. Overall, women experienced warm water immersion during labour and/or birth positively. Both the water and pool itself, facilitated women's physical and psychological needs during labour and/or birth, including offering effective analgesia. Our findings indicated that birthing pools are versatile tools that provide for a space that women can adapt and influence to best suit their individual needs.

Conclusion: Women who used warm water immersion for labour and/or birth describe liberating and transformative experiences of welcoming their babies into the world. They were empowered, liberated, and satisfied. We recommend maternity professionals and services offer water immersion as a standard method of pain relief during labour/birth.

Impact: Understanding women's experiences of labour and birth will inform future clinical practice. Midwives are optimally positioned to enhance women's access to water immersion. These findings have implications for education, guideline, and policy development as well as clinical practice.

KEYWORDS
analgesia, birth pool, childbirth, maternity care, midwifery, nursing, pain relief, water

1 | INTRODUCTION

Labour and birth are commonly associated with pain (Jones et al., 2015). The pain is most often experienced as physical in nature and attributed to the muscles of the uterus contracting to facilitate descent of the baby into and through pelvis (Whitburn et al., 2017). While the experience of pain is subjective and influenced by several factors, the provision of adequate pain relief in a timely manner to suit the needs of women is a hallmark of respectful maternity care (The White Ribbon Alliance, 2013). A lack of pain relief combined with a lack of supportive midwifery care is associated negative childbirth experiences (Anim-Somuah et al., 2011; Reed et al., 2017). Conversely, supportive relational midwifery care can facilitate positive childbirth experiences, even in the absence of pharmacological pain relief (Walsh & Devane, 2012). Water immersion during labour and birth is associated with midwifery relational care models and settings (home or birth centres) (Burns et al., 2012) and a tool for pain management (Burns et al., 2012). However, the evidence should include the qualitative experiences of women who have used water immersion.

1.1 | Background

The pain women experience during labour is a subjective experience mediated by multiple factors such as women's prior perceptions, values and experiences, availability of support people, the birthing environment and availability of pain relief (Jones et al., 2012; Whitburn et al., 2017). Additionally, pain perception is strongly associated with anxiety and fear (Trout, 2004), which in part explains why relational models of midwifery care mitigate such anxiety and fears, that reduces the need for pharmacological pain relief (Sandall et al., 2016; Walsh & Devane, 2012). These models are optimized when women have a pre-existing relationship with their midwife (continuity of carer) (Sandall et al., 2016), and are characterized by support, guidance, and comfort measures to support the woman to cope in labour (Walsh & Devane, 2012). Even in these relationships, the majority of women seek strategies or mechanisms to reduce or eliminate the pain associated with childbirth. These strategies include both pharmacological and non-pharmacological pain relief options. Common pharmacological options include the use of opioids via epidural or injection, and inhalational analgesia (nitrous oxide). While an epidural provides effective analgesia, it can lengthen labour duration and increase the likelihood for labour augmentation and operative birth (Jones et al., 2012). Additional reported side effects of opioid use include reduced mobility, sedation, nausea, fever, and reduced neonatal suckling (Jones et al., 2012). Pharmacological analgesia may also influence a woman's satisfaction with her birth experience (Anim-Somuah et al., 2011). A recent qualitative evidence synthesis (Thomson et al., 2019) included 15 qualitative studies of epidural and/or opioid use from upper-higher income countries; found a reduction in women's pain but concerns were raised about the negative side effects as previously mentioned. Moreover, pharmacological use was associated with mixed feelings ranging from satisfaction to feelings of guilt and shame (Thomson et al., 2019).

Many non-pharmacological options have the benefit of minimal side effects and support the psycho-physiological process of labour (Jones et al., 2012). Common options include breathing, massage, music, hypnosis, or visualization (Thomson et al., 2019). Evidence reviews (Jones et al., 2012; Thomson et al., 2019) suggested they may not be as effective as pharmacological options. However, women did report positive experiences such as feeling enabled to actively work with their physiological responses and reported enhanced bonding with their partners and healthcare professionals (Thomson et al., 2019). However, these reviews did not include water immersion, warranting further investigation. Water immersion in a birthing pool (i.e., sufficiently large to enable a woman to adopt a range of positions easily with her abdomen and bottom submerged during labour and/or birth) offers women another method of non-pharmacological pain relief. Water immersion supports the physiological processes of labour and childbirth and can reduce epidural use, length of labour, likelihood for transfer requirement from midwifery-led settings to an obstetric unit and increases the rate of spontaneous vaginal births, with no known adverse maternal or neonatal effects (Cluett et al., 2018; Nutter et al., 2014; Vanderlaan et al., 2018). These important findings highlight that water immersion is a tool that meets the needs of labouring women and can reduce unnecessary childbirth interventions. However, it is necessary to include qualitative insights from women who have used water immersion to contribute to the evidence base.

2 | THE REVIEW

2.1 | Aim

To gather, quality assess, synthesize and interpret the views, feeling, and experiences of women who used water immersion during labour and/or birth.

2.2 | Design

A systematic review and meta-thematic synthesis as per Thomas and Harden (2008) was conducted. All originating from Noblit and Hare's (1988) meta-ethnography, meta-thematic synthesis is one of many current approaches to qualitative evidence synthesis. Thematic synthesis involves the coding of text 'line-by-line'; the development of 'descriptive themes'; and the generation of

'analytical themes' – to determine new interpretations across the dataset (Thomas & Harden, 2008). Additionally, we used GRADE-CERQual (Lewin et al., 2015) to assess confidence in the findings. This method provides transparency for end users and decision-makers to determine what level of confidence to place in the findings presented (Lewin et al., 2015). A review protocol for this study was submitted to PROSPERO (The International Prospective Register of Systematic Reviews), registration number CRD:42019146998 (Feeley et al., 2019). ENTREQ reporting guidelines were followed in the reporting of this meta-thematic synthesis (Tong et al., 2012).

2.3 | Reflexivity

Reflexivity is an integral part of quality research; researchers convey their positioning in relation to the research to enhance the trustworthiness of the study (Kingdon, 2005). In summary, CF, MC, and EB are all midwives. CF and EB have extensive experience of facilitating water immersion for labour and birth across all birth settings (home, birth centre, and hospital), and MC has extensive experience of facilitating water immersion in hospital settings. All have a firm philosophy in woman-centred care and believe that water immersion is a feasible low cost, low tech form of pain relief with benefits for women. All have concerns that women's access to water immersion can be inequitable. By referring back to, or reflecting on our prior positioning throughout the research process, potential blind spots or biases were challenged (Kingdon, 2005).

2.4 | Search methods

A pre-designed and comprehensive search strategy was carried out. Using the Population, Exposure, Outcomes (PEO) framework the search terms were developed and piloted in MEDLINE. Table 1 presents the final search terms used in MEDLINE, CINHAL, PsychINFO, AMED, EMBASE (MIDIRS only), LILACS, AJOL. Additional searches were carried out using Ethos (thesis database), cross-referencing against Google Scholar and citation chasing. All records can be found in Supplementary File 1.

TABLE 1 Search terms

Population	Woman or women* or mother or maternal or nulli* or multip*
Exposure – intrapartum	Intrapartum or intra-partum or birth* or childbirth or labour* or labor* or parturition or delivery
Exposure – water	Water or waterbirth or water birth or water immersion or hydrotherapy or birth* pool
Outcomes	View* or experienc* or perspectiv* or perception* or opinion* or belie* or attitude* or prefer* or feel* or satisfaction or self-efficacy

2.4.1 | Inclusion criteria

The inclusion/exclusion criteria were predefined as per our protocol (Table 2).

2.5 | Search outcome

Searches were carried out during August 2019 by CF, updated in February 2020. Initial screening of the title and abstract was carried out by CF. Blind full text screening was carried out by CF and MC. Inclusion was agreed during a consensus meeting. The searches generated 1946 records to screen, see Figure 1 for PRISMA (Moher et al., 2009). Following screening and quality appraisal, $N = 7$ texts were included to the review. Four full texts were excluded at the full-text screening stage; no qualitative data to extract (Lewis et al., 2018), an auto-ethnography that did not provide enough data to extract (Rania, 2019), study related to women's motivations, not their experience (Wu & Chung, 2003), and one related to the social media representation of water immersion with no data about the experience (TS, 2011).

2.6 | Quality appraisal

Quality appraisal was carried out to ensure minimum standards of reporting were met. The studies were assessed by CF and MC independently followed by consensus agreement, using the Downe et al. (2009) integrated and validated quality appraisal tool. The tool assesses the: scope and purpose; design, sampling strategy, analysis, interpretation, reflexivity, ethical dimensions, relevance, and transferability. Each paper was also graded on a scale of A to D to provide an overall assessment of the quality (Downe et al., 2009). No studies were excluded. See Supplementary File 1 for the full exposition.

2.7 | Data abstraction and synthesis

Data analysis was carried out in two stages using thematic synthesis methods (Thomas & Harden, 2008) to analyse the data and a Confidence in the Evidence from Reviews of Qualitative Research (GRADE-CERQual) framework (Lewin et al., 2015) to assess confidence in the analytical finding. A full exposition of the data analyses can be found in Supplementary File 2.

2.7.1 | Stage 1

As per Thomas and Harden (2008), thematic synthesis involved the coding of text 'line-by-line' and the development of 'descriptive themes' which were the basis of the CERQual statements of findings. On reading each study, initial codes were captured/tabulated by CF. These codes included material, author themes, and statements. MC cross checked three random papers to ensure accurate coding. These

TABLE 2 Inclusion/exclusion criteria

	Inclusion	Exclusion
Time frame	>1993 to capture data that reflects contemporary maternity care, and the publication of Changing Childbirth in the UK – that advocated for women's choice and control over their maternity care.	<1993
Language	Any language that can be translated by Google Translate will be included to strengthen inclusivity and transferability of the review.	Any language that cannot be translated by Google Translate.
Publication type	Primary research that has been published in peer-reviewed journal or unpublished thesis'.	Secondary research, opinion pieces, commentaries.
Study focus	1. The views, experiences, feelings etc. of women who have experienced water immersion during labour and/or childbirth.	1. The views, experiences, or feelings of women who were not able to access water immersion during labour and/or childbirth. 2. The views, experiences of birth partners or maternity professionals regarding water immersion for labour and/or birth.
Methodology	Any qualitative design, including mixed methods with qualitative findings.	Quantitative data.

codes were grouped together to form descriptive themes where similarities and dissimilarities were identified. The descriptive themes were checked and revised in conjunction with MC.

The descriptive themes were used to create statements of findings that were assessed using the GRADE-CERQual approach (Lewin et al., 2015). Using the framework, the descriptive findings were assessed for methodological limitations, relevance to the review question, coherence in terms of whether the clear patterns across the studies could be identified and the adequacy in terms of the amount of data from across the studies, and the study geographical area/contexts (Lewin et al., 2015). Following these assessments, each review finding was graded for confidence on a scale of high, moderate, low, or very low (Lewin et al., 2015). Through several iterations, consensus was reached.

2.7.2 | Stage 2

The descriptive findings were then subjected to further analysis as per Thomas and Harden (2008) to further develop new interpretations across the dataset. This was carried out by CF and MC working iteratively, going back/forth to the original papers alongside the descriptive findings – the data were developed into higher level themes.

3 | RESULTS

3.1 | Study characteristics

The study characteristics and the quality appraisal rating are presented in Table 3. The included studies were of heterogeneous research designs, were undertaken in high-income countries; Greece ($N = 1$) (Antonakou et al., 2018), England ($N = 1$) (Hall & Holloway, 1997), New Zealand ($N = 1$) (Maude & Foureur, 2007), Australia ($N = 1$) (Sprague, 2004), Sweden ($N = 1$) (Ulfsdottir et al., 2018), Scotland ($N = 1$) (McKenna & Symon, 2014), Portugal ($N = 1$) (Gonçalves et al., 2019) between 1997–2018, and included a total of $N = 81$ participants.

The GRADE-CERQual summary review findings and the confidence assessment are presented in Table 4. The full assessments can be found in Supplementary File 2. Nine key finding statements were generated where one had high confidence, three moderate, three low, and one very low confidence in the findings.

3.2 | Findings

Three themes were developed from the CerQual statements, illustrated in Table 5- 'Liberation and self-emancipation', 'Synergy, transcendence and demarcation' and 'Transformative birth and beyond'.

3.2.1 | Liberation and self-emancipation

In this theme, we describe the liberating and emancipatory effects of warm water immersion during labour. All seven studies revealed that women's physical and psychological needs were met through access to warm water. Three studies reported that women positively anticipated getting into the pool (Maude & Foureur, 2007; Sprague, 2004; Ulfsdottir et al., 2018) – conveyed as an instinctual 'knowing' during labour, women reported the pool was where they 'needed' to be. Some women reported this as an 'urgency' and were frustrated if the pool was not ready:

> There was a point where I had to get in there, and I guess it was a particular point in my labour where I went, I have got to be in that space NOW!! Daisy (Sprague, 2004).

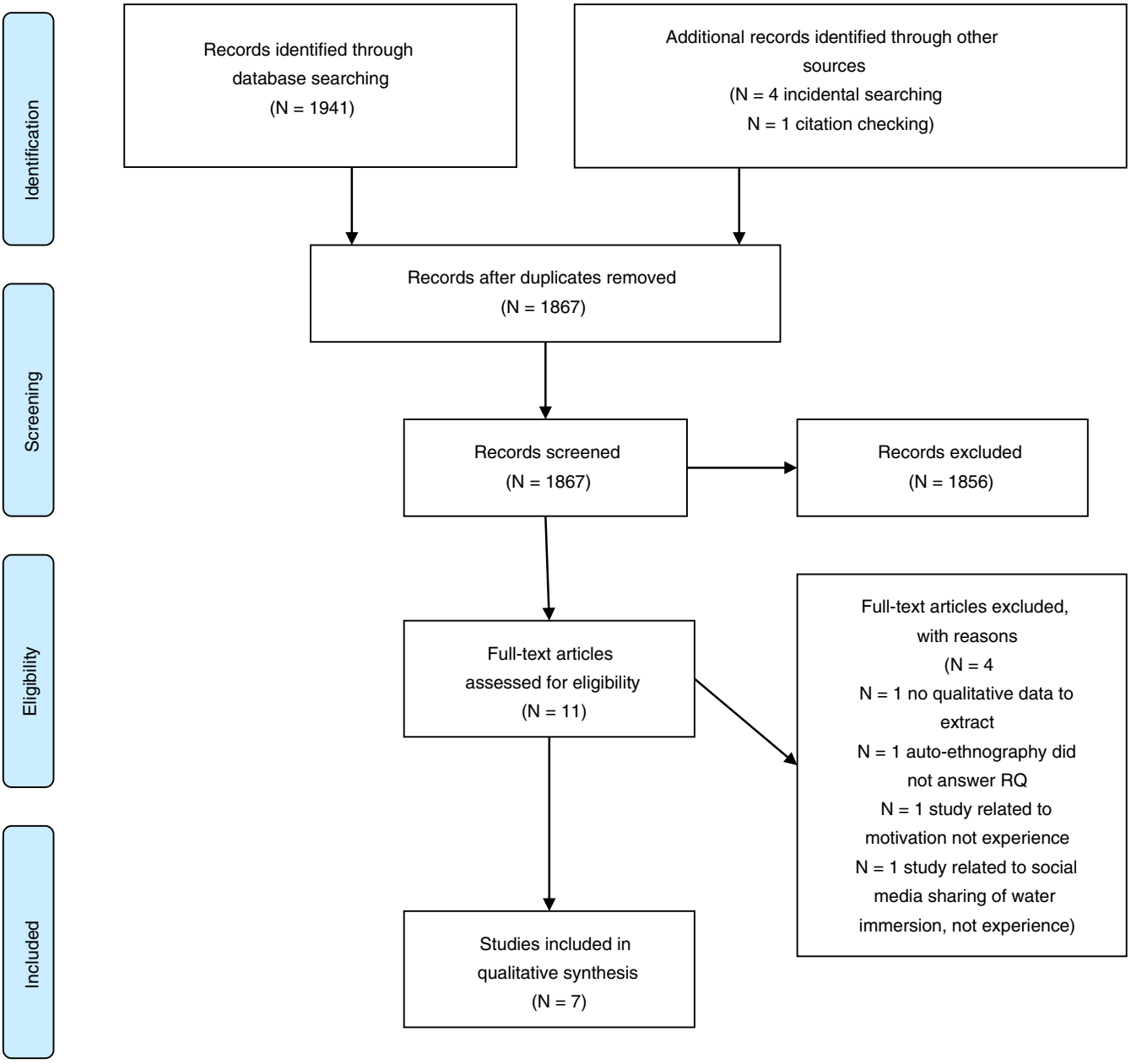

FIGURE 1 PRISMA diagram of study selection [Colour figure can be viewed at wileyonlinelibrary.com]

One study reported on the experiences of women who had not pre-planned water immersion as pain relief, but instead were offered it during labour by a midwife (Ulfsdottir et al., 2018). Here, women reported that the benefits were 'instantly self-evident' as they entered the birthing pool (Ulfsdottir et al., 2018):

> It just felt natural in some way. The warmth and…it felt kind to the body somehow Interview #17 (Ulfsdottir et al., 2018).

On entering the pool, a key benefit reported by four studies was the physical benefit of buoyancy (Antonakou et al., 2018; Gonçalves et al., 2019; McKenna & Symon, 2014; Ulfsdottir et al., 2018). Buoyancy facilitated greater freedom of movement, easeful position changes, enhanced feelings of control and contributed to women feeling as 'active participants' during their labour (Antonakou et al., 2018; Gonçalves et al., 2019; Sprague, 2004; Ulfsdottir et al., 2018). In particular, women reported unencumbered movements were valued as compared with the heaviness they had experienced throughout the later stages of pregnancy:

> It's just being able to move and not be clumsy. Because in the end, I mean of the pregnancy, you are pretty heavy. So, I was really happy to be able to twist and turn and relax and the warmth. That is really nice and you can feel it in your whole body, so it was…and that is the greatest advantage…that you can move as you want to. Interview #12 (Ulfsdottir et al., 2018).

For several women the buoyancy effects were particularly important as they reported feeling 'self-conscious' about their body weight; water immersion mitigated against negative feelings and concerns their partner would be unable to physically support them (Sprague, 2004). Moreover, some women reported an easier and less tiring birth attributed to the buoyancy and relaxation afforded by water (McKenna & Symon, 2014; Ulfsdottir et al., 2018):

> I think that being in water in the first stage of labour saved me lots of energy for the pushing phase, because labour is so favourable in water compared to being above water Interview #16 (Ulfsdottir et al., 2018).

Fundamentally, across all of the studies, women reported positive analgesic properties of water immersion during labour. For some women, pain relief was instantaneous:

> When I got in the water I felt like being in paradise!! It was amazing!! (Antonakou et al., 2018).

The water's analgesic characteristics were commonly described as 'relaxing', 'calming', 'soothing', and 'comforting' with this facilitating and enhancing women's sense of being in 'control'. All of which contributed to and facilitated coping mechanisms:

> I wouldn't have imagined myself in control but in labour it became important to me. I had to prove I could cope. The water somehow helped with this. Participant 5 (Hall & Holloway, 1997).

The physical sensations of the water (warm, soothing, and comforting), facilitated positive psychological responses (control and coping), that in turn 'cushioned' or 'softened the intensity' of labour pain, making it more manageable for the women (Antonakou et al., 2018; Gonçalves et al., 2019; Hall & Holloway, 1997; Maude & Foureur, 2007; McKenna & Symon, 2014; Sprague, 2004; Ulfsdottir et al., 2018). Even though pain was not fully alleviated, rather than being problematic, water immersion facilitated a mind-body synergy where pain was viewed differently as women found inner self-belief to manage and cope:

> The contractions were stretched out and were less difficult to deal with in the water… It must have diffused the pain…I felt relaxed…I could actually stretch out and float. That was probably essential because I could relax very quickly…I could actually stretch out and rest… Water also decreased the intensity of the contractions… Water softened the whole thing and made it more bearable…it was much easier to cope with the pain. Claire (Sprague, 2004).

For some women, they reported water immersion made the difference between coping and not coping with labour (Hall & Holloway, 1997; Maude & Foureur, 2007; Sprague, 2004), that is, 'a shift from the passenger seat to the driver's seat' (Ulfsdottir et al., 2018). Water immersion appeared to instil 'confidence' in their own sense of ability to work with and through their labours:

> [The birth in water] gave me more confidence still and made me… made me know myself a little better. That after all I am able to respect my body more, to perceive what was happening. To think that 'Ok, this hurts, it's not because I'm going … it's not because I'm going to die. It hurts for a reason. So getting to know my body better, [to] enable to control it better. M1 (Gonçalves et al., 2019).

In one study, women were specifically opting for water immersion as a means of experiencing a successful vaginal birth after caesarean (VBAC) (McKenna & Symon, 2014). As such, feelings of control and coping were particularly important, which the participants attributed to labouring in water:

> … it just wasn't invasive this time; I was calling all the shots … What a difference this time being in control; it made the whole experience a much more positive one. R1 (McKenna & Symon, 2014).

Additionally, for the few women who did not give birth in the water (reasons unclear), they continued to report the benefits for during labour:

> I am very satisfied with my experience although I did not manage to deliver in the water. I felt safe, I was calm and I did not feel any pain… I felt relief in the water. K (Antonakou et al., 2018).

Others compared it to a previous labour and more specifically, the use of epidural anaesthesia. Women valued water immersion not only for its analgesic properties but also for the benefits it afforded into the postnatal period:

> I honestly think the pool's better than an epidural. You just float around and for the first time in nine months you don't just feel like a big fat heifer … And afterwards, when you're not tired and sore, the postnatal bit's a lot easier … There's a big difference in six hours and six weeks. R5 (McKenna & Symon, 2014).

3.2.2 | Synergy, transcendence and demarcation

In this theme, we highlight the positive psycho-spiritual benefits of warm water immersion experienced by women. In part, these related to the physical 'container', that is, the pool itself which provided a

TABLE 3 Study characteristics

Code	Author (year)	Country Income status	Aim(s)	Theoretical perspective and/or methodology	Setting
1	Antonakou et al. (2018)	Greece HIC	To explore women's experiences of water immersion during labour and waterbirth.	Not specifically stated. Generic qualitative approach.	Private healthcare setting.
2	Hall and Holloway (1997), England	England HIC	The aim of the paper was to examine women's attempts at control during labour in water.	Grounded theory underpinned by Glaser and Strauss (1967)	Hospital in a medium-sized town in rural South England.
3	Maude and Foureur (2007), New Zealand	New Zealand HIC	To give 'voice' to women's experiences of using water for labour and birth.	Phenomenology	Large urban region in New Zealand
4	Sprague (2004), Australia	Australia HIC	Explore women's experience of using deep-water immersion during childbirth.	Phenomenology (Van Manen Hermeneutic) Feminism	Australia
5	Ulfsdottir et al. (2018), Sweden	Sweden HIC	To describe women's experiences and perceptions of giving birth in water.	Unstated	One city hospital in Stockholm offering waterbirth to low risk women.
6	McKenna and Symon (2014), Scotland	Scotland HIC	Aimed to explore the reasons why women requested water VBAC and their experience of the process.	Interpretive Phenomenology	Single alongside midwife-led unit (AMU).
7	Gonçalves et al. (2019)	Portugal HIC	To understand the experience of mothers who had one or more water births in Portugal.	Phenomenology (Van Manen Hermeneutic).	One public institution, Hospital de São Bernardo in Setúbal

physical demarcation of the women's space in the birthing environment/room. The birthing pool offered a safe and private enclosure in which women were able to let go of inhibitions, physically and psychologically separate themselves from the outside world while also facilitating their ability to go in – flowing 'with' labour rather than fighting against it. In turn, this enabled them to transcend into an altered state of consciousness where time and place lost their meaning, indicative of a deep internal connection to 'being' rather than doing.

Four studies reported that the birthing pool receptacle itself was highly valued and welcomed (Gonçalves et al., 2019; Maude & Foureur, 2007; McKenna & Symon, 2014; Sprague, 2004). For example, the purpose built birth pools were supportive of women's 'relaxation' and 'ease of movement' due to their bigger size and depth compared with an ordinary bath:

> I just found to be even slightly submerged [in the bath] you needed to lie back really and I didn't like lying back and you still weren't totally covered anyway so it just didn't do it for me basically. Tanya (Maude & Foureur, 2007).

Additionally, the 'solidity of the pool was also valued as a tool to hold on and feel weight was supported' (Sprague, 2004), highlighting the importance of the birthing pool design to the women's experience of using them. Moreover, one study reported that the birth pool mitigated against harsh clinical environments; it was experienced as 'less clinical' and likened to being 'at home' (Maude & Foureur, 2007).

All studies, bar one (Antonakou et al., 2018), reported the physical separation from the world at large, by being in a pool of water, was beneficial in providing a 'safe haven' or 'cocoon.' Furthermore, this physical delineation facilitated psychological feelings of 'security' and 'protection'. The birthing pool was likened to a 'womb-like' space and was reported to induce feelings of being 'cherished,

Sample selection method	Sample size and characteristics	Data collection	Data analysis	Quality grade
Purposive sampling. Eligibility -women who consented and spoke Greek.	*N* = 18 responses *N* = 12 participants of mixed parity. Recruitment and data collection ceased when thematic saturation was broadly achieved.	Individual face-to-face semi-structured interviews.	Thematic analyses using six-step approach by Braun and Clarke.	B
Purposive sampling. Eligibility – who had experienced a normal pregnancy and had given birth to a healthy baby at term and who used water at some time during the birth process.	*N* = 9 women (parity not stated) Two women were supported by a doctor and the rest supported by midwives.	Individual face-to-face in depth interviews 48 hr postpartum.	Grounded theory techniques described by Strauss and Corbin including open coding, axial coding and theoretical sampling.	B
States that 'a woman centred approach was employed' – no further information about recruitment or eligibility.	*N* = 5 who used water for labour and birth at home or in hospital.	Individual face-to-face in depth interviews 4–21 days after birth of the baby	Thematic analysis, Giorgi-style.	B/C
Convenience sampling. Eligibility – who had used water during birth.	*N* = 6 women (nullips).	Individual, semi-structured interviews (mode not stated).	Van Manen interpretative phenomenological analysis.	B
Purposive sampling followed by randomised selection. Eligibility – women who had a waterbirth between March 2014 and March 2015 were identified from birth records.	*N* = 20 (*N* = 12 primiparas *N* = 8 multiparas)	In-depth face to face semi-structured interviews 3 to 5 months after birth	Qualitative content analysis as per Graneheim and Lundman.	A
Purposive sample. Eligibility-water VBAC between 2008 and 2011	*N* = 8 (multiparous)	Individual semi-structured interviews (mode not stated).	Interpretive phenomenological analysis (IPA)	B
Purposive sample. Eligibility – women who had at least one experience of childbirth in water in Portugal (number of participants determined by data saturation.)	*N* = 13 women (parity not stated).	Individual face-to-face semi-structured interviews.	Hermeneutic analysis as per Van Manen.	C

pampered and nurtured' aligning with a woman's primal need to be warm, safe and secure during labour and birth:

> Yes, it was like lying in my own womb with the water against my body from all directions, like in a small corner, or nest perhaps - staying warm and I had good contact with my partner... Interview #4 (Ulfsdottir et al., 2018).

Water afforded privacy and protection in that women reported feeling 'naked but clothed' (Sprague, 2004), as the water tempered feelings of exposure and vulnerability commonly associated with being naked (Ulfsdottir et al., 2018). This was echoed across all studies where adjectives such as 'discretion', 'protection', 'concealed', 'shielded', and 'containment' were used to describe the benefits of water immersion (Gonçalves et al., 2019; Hall & Holloway, 1997; Maude & Foureur, 2007; McKenna & Symon, 2014; Sprague, 2004; Ulfsdottir et al., 2018). Such terms denote a broader notion of safety and reflect an intimate, biopsychosocial, and spiritual construct, that extended beyond or transcended the clinical picture:

> It was because the pool space was really safe...quite contained...it was dark, midnight dark...A place I could go to and feel safe, really safe...and thinking back, I am sure that made the difference. Rosa (Sprague, 2004).

Fives studies (Gonçalves et al., 2019; Maude & Foureur, 2007; McKenna & Symon, 2014; Ulfsdottir et al., 2018) related women's feelings of safety to the demarcation of the woman's physical space which in turn created the opportunity for women to claim their own space and 'territory'. Consequently, women experienced and exercised greater discretion and control over who and also when people 'entered

TABLE 4 CerQual assessments

Review finding	Studies contributing to findings	CerQual assessment	Explanation of assessment
Gaining access to the pool was positively anticipated. During labour women reported positive anticipation of getting into the pool, with some reporting urgency and/or frustrations if any delays occurred. Women who did not plan a waterbirth, but were offered it during labour, reported that the benefits were self-evident immediately after entering the pool.	Three studies: (Maude & Foureur, 2007; Sprague, 2004; Ulfsdottir et al., 2018)	Low confidence	Paucity of included studies, moderate methodological, and adequacy concerns.
Water immersion offered analgesic properties and therefore, the ability to cope with the pain of labour and birth while enhancing feelings of control. Women reported that the warm water was soothing, comforting, and relaxing. Such attributes were reported to offer analgesic properties where the water acted as a cushion and the pain of labour was eased. While pain was not fully alleviated, this was not reported negatively, rather the water facilitated feelings of control and coping while reducing fear responses. Additionally, women reported feelings of calm, tranquillity, and empowerment and the ability to avoid pharmacological analgesia further highlighting the efficacy of water as pain relief.	Seven studies: (Antonakou et al., 2018; Gonçalves et al., 2019; Hall & Holloway, 1997; Maude & Foureur, 2007; McKenna & Symon, 2014; Sprague, 2004; Ulfsdottir et al., 2018)	High confidence	Reasonable number of studies from seven different countries with minimal concerns about methodology, coherence, adequacy, or relevance.
Water immersion during labour and birth was physically beneficial as the increased buoyancy provided a greater freedom of movement during labour. Women reported the physical benefits of water immersion facilitated effortless movement in the water. This was reported as particularly helpful for women who had a greater BMI. Women reported an active participation in their labour that was viewed positively.	Four studies: (Antonakou et al., 2018; Gonçalves et al., 2019; Sprague, 2004; Ulfsdottir et al., 2018)	Moderate confidence.	Low number of studies with some minor methodological concerns.
Water immersion during labour and birth enhanced feelings of safety, protection, and privacy, fostering positive mental well-being. Women reported the submersion benefits of water offered a way to be naked and vulnerable without feeling exposed or fearful. The water offered privacy and discretion that enhanced mental and physical feelings of relaxation, safety, and well-being. Women expressed that water immersion facilitated a positive mental attitude and confidence in their body's ability to give birth. The closed space of the birth pool was viewed as positive containment which felt private and personal facilitating women's ability to go 'within'.	Six studies: (Gonçalves et al., 2019; Hall & Holloway, 1997; Maude & Foureur, 2007; McKenna & Symon, 2014; Sprague, 2004; Ulfsdottir et al., 2018)	Moderate confidence.	Reasonable number of studies from six different countries with some minor methodological and adequacy concerns.
Labouring in water facilitated a positive altered state of consciousness. Women reported water immersion facilitated a positive distortion of time and reality whereby altered states of consciousness helped them access a blissful almost sleep-like state, 'labour land'. The altered consciousness enhanced women's ability to focus and concentrate, to work 'with' their labour and not fight against it. Women expressed a sense of coherence or synergy between body and mind where the psychological and emotional benefits of water were often viewed as more important than the physical.	Four studies: (Gonçalves et al., 2019; Maude & Foureur, 2007; Sprague, 2004; Ulfsdottir et al., 2018)	Moderate confidence.	Low number of studies with some minor methodological concerns.
Water immersion enabled and enhanced trusting relationships between mother-midwife and/or mother-partner. Women reported that their partners took an active role in their labour and birth that increased their closeness. For some women, where concerns about their body weight were raised, they reported that the buoyancy of the water enhanced their partner's ability to support them physically during the labour. Additionally, some women reported a closeness with their midwives, particularly through actions such as repetitively pouring warm water over the women's back during contractions.	Three studies: (Antonakou et al., 2018; Gonçalves et al., 2019; Maude & Foureur, 2007)	Very low confidence.	Paucity of included studies with moderate concerns related to methodological, adequacy, coherence, and relevance.

(Continues)

TABLE 4 (Continued)

Review finding	Studies contributing to findings	CerQual assessment	Explanation of assessment
The birthing pool receptacle itself was highly valued and mitigated against the clinical environment. Purpose built birth pools were reported to be beneficial to women; their size aided freedom of movement, their solidity supported women's body weight when leaning/pulling. Additionally, 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.	Four studies: (Gonçalves et al., 2019; Maude & Foureur, 2007; McKenna & Symon, 2014; Sprague, 2004)	Low confidence	Small number of studies from 4 countries, with moderate concerns about the sample sizes in 3/4 studies.
Water immersion positively benefitted the second stage of labour. Women reported that water immersion was supportive and soothing during the pushing stage of labour with this enhancing their feelings of control during this stage. Some women reported little pain during crowning, others reported the pushing stage was easier than they anticipated, that was attributed to birthing in water. Some women attributed perineal health (no or little tearing) due to birthing in the water.	Three studies: (Gonçalves et al., 2019; Sprague, 2004; Ulfsdottir et al., 2018)	Low confidence	Paucity of included studies, minor methodological, and moderate adequacy concerns.
Water immersion enabled an overall positive, empowering, and ecstatic birth experience with positive implications for the postnatal period. Women across all studies reported significantly positive birth experiences they attributed to water immersion during labour and/or birth. Some valued the natural birth experience, and others reported self-pride or personal transformative effect that was attributed to the water birth. For women who birthed in the water, they reported positive feelings about their baby's transition to life and attributed a closeness they felt with their baby to the birth experience. Moreover, such positive birth experiences enhanced women's feelings of early motherhood where feelings preparedness were reported. Early breastfeeding success was also attributed to a positive waterbirth by some women.	Seven studies: (Antonakou et al., 2018; Gonçalves et al., 2019; Hall & Holloway, 1997; Maude & Foureur, 2007; McKenna & Symon, 2014; Sprague, 2004; Ulfsdottir et al., 2018)	Moderate confidence.	Reasonable number of studies from 7 different countries with some minor methodological, coherence, and adequacy concerns.

TABLE 5 Higher level themes

Grouped cerqual findings	Higher order themes/ synthesis
Gaining access to the pool was positively anticipated (Maude & Foureur, 2007; Sprague, 2004; Ulfsdottir et al., 2018)	*Liberation and self-emancipation*
Water immersion offered analgesic properties and therefore, the ability to cope with the pain of labour and birth while enhancing feelings of control (Antonakou et al., 2018; Gonçalves et al., 2019; Hall & Holloway, 1997; Maude & Foureur, 2007; McKenna & Symon, 2014; Sprague, 2004; Ulfsdottir et al., 2018)	
Water immersion during labour and birth was physically beneficial as the increased buoyancy provided a greater freedom of movement during labour (Antonakou et al., 2018; Gonçalves et al., 2019; Sprague, 2004; Ulfsdottir et al., 2018)	
Water immersion during labour and birth enhanced feelings of safety, protection and privacy, fostering positive mental wellbeing (Gonçalves et al., 2019; Hall & Holloway, 1997; Maude & Foureur, 2007; McKenna & Symon, 2014; Sprague, 2004; Ulfsdottir et al., 2018)	*Synergy, transcendence and demarcation*
Labouring in water facilitated a positive altered state of consciousness (Gonçalves et al., 2019; Maude & Foureur, 2007; Sprague, 2004; Ulfsdottir et al., 2018)	
Water immersion enabled and enhanced trusting relationships between mother-midwife and/or mother-partner (Antonakou et al., 2018; Maude & Foureur, 2007; Gonçalves et al., 2019	
The birthing pool receptacle itself was highly valued and mitigated against the clinical environment (Gonçalves et al., 2019; Maude & Foureur, 2007; McKenna & Symon, 2014; Sprague, 2004)	
Water immersion enabled an overall positive, empowering, and ecstatic birth experience with positive implications for the postnatal period (Antonakou et al., 2018; Gonçalves et al., 2019; Hall & Holloway, 1997; Maude & Foureur, 2007; McKenna & Symon, 2014; Sprague, 2004; Ulfsdottir et al., 2018)	*Thriving and transforming: birth and beyond*
Water immersion positively benefitted the second stage of labour (Gonçalves et al., 2019; Sprague, 2004; Ulfsdottir et al., 2018)	

their space' – one woman reported that she used the water to opt out of talking with the midwife:

> I sank my ears under the water so even if I had wanted to hear the midwife telling me what to do I couldn't. I was able to feel I was in control of my labour. Participant 3 (Hall & Holloway, 1997).

In this context, four studies (Gonçalves et al., 2019; Maude & Foureur, 2007; Sprague, 2004; Ulfsdottir et al., 2018) reported women experienced 'blissful' states of 'altered consciousness' akin to a 'sleep-like' state or 'trance' while in the water. Some women reported they were able to 'dislocate' from the external world while simultaneously being in a state of 'presence'. Time lost its usual meaning. Some women experienced a 'time-warp' or 'transcended time' and in doing so, accessed 'labour-land'. This was characterized by a deep sense of 'going within' where notions of 'simply being' without any sense of 'rushing' were observed:

> It was funny because I know as soon as I entered the pool, so the most unconscious part of the experience I had with Watsu [water bodywork therapy], that I had felt a very caring experience, a lot of inner self connection, a very special silence, that somehow was activated with the water M8 (Gonçalves et al., 2019).

Some women experienced altered consciousness as accessing 'another world' with this reflecting the liminal space between labour and motherhood:

> Another world…it was like by the ocean, and then you come back to land and you are in another country… They call it 'labourland'… It really was another world, and you think about the journey that you make from being pregnant to becoming a mother… An incredible journey Rosa (Sprague, 2004).

Such blissful states reflected spiritual attunement:

> Water shrunk everything down so that time stood still…there was this kind of bizarre gap in time when she was fully born, where I felt like I was looking into her soul or something, like this incredible, unexplainable sort of period of time that I have never felt before. Daisy (Sprague, 2004).

Two studies (Antonakou et al., 2018; Gonçalves et al., 2019) reported that birth pool use 'increased the couple's closeness' whereby the partners were reported to have an 'active' role in supporting women during their labours. Additionally, two studies (Antonakou et al., 2018; Maude & Foureur, 2007) reported that the midwife's supportive presence enhanced women's feelings of safety.

3.2.3 | Thriving and transforming: birth and beyond

This theme highlights women's empowering experiences of labouring and/or birthing in water. More broadly, we examine the transformative power of a positive birthing experience attributed to birth pool use. Women experienced labouring and birthing in water as a means of achieving a natural, physiological birth that was central to their own sense of accomplishment and achievement. Encapsulating the importance of a positive experience being more than just the act of giving birth, women reported that the biopsychosocial health benefits of water immersion extended beyond the immediate postbirth period.

Three studies (Gonçalves et al., 2019; Sprague, 2004; Ulfsdottir et al., 2018) reported that women valued water immersion during the pushing stages of birth. The 'gentleness' and 'warmth' of the water was experienced as 'supportive' and 'soothing' on their perineum, that was also attributed to minimal or no tearing:

> I was amazed to hear that I didn't have any tears… all my friends had an episiotomy when they delivered! I am sure being in the water, made the difference! A (Antonakou et al., 2018).

Some women attributed the water to an 'easier' pushing stage, including for women who had a longer second stage of labour:

> It was not fast, obviously because it was a four-and-a-half kg baby, right? But the memory that remains is, on one hand, how the water helped him [newborn] to slide M3 (Gonçalves et al., 2019).

Three studies (Antonakou et al., 2018; Sprague, 2004; Ulfsdottir et al., 2018) reported waterbirth itself as a pivotal moment for women's experiences that either related the joy of 'catching' one's own baby. For some, it was a 'defining' moment central to honouring 'giving birth':

> I was just making eye contact with her while she was in the water, just going, oh my god, this is like the thing of looking into me and looking into her…and oh, my god I am actually going to receive my own baby, and although my midwife was standing right beside me, I sort of felt like she knew that as well…and knowing that she would not lean over and grab her…and while I was waiting for the next contraction I was mildly freaking out about how excited I was that I was actually going to get her myself and how incredibly defining that was in our relationship, for me to just go, right now, you are my baby…to take her and bring her into the world…that is so major!! Daisy (Sprague, 2004).

For women who did not necessarily receive their baby, the opportunity to watch the birth was highly valued: 'irreplaceable' and a 'perfect' way to meet their baby. One that was felt to be a 'natural' and 'normal' way to meet for the first time (Sprague, 2004).

All studies bar one (Hall & Holloway, 1997), overwhelming reported women's positive affirmations of their water immersion experience as 'amazing', 'perfect', 'incredible', 'enjoyable', 'beautiful':

> My water birth was an absolutely wonderful thing, it was wonderful, it was extraordinary it was everything I wanted and a little more M2 (Gonçalves et al., 2019).

Such positivity was reiterated by women's reports of 'wanting to do it [birth] again' and planning ahead to the 'next time'. Women convincingly asserted the birthing pool was to be a central feature:

> Now that I have used a pool there is no way I would want to labour without one! Rosa (Sprague, 2004).

Reflecting vivid feelings of empowerment, 'victory' women 'claimed' their birth', rather than 'being delivered' of their baby. Moreover, the benefits extended into the postnatal period and their transition to motherhood:

> The next day I was sitting, suckling my daughter, with an oversized aura, super proud of me, my experience, and all that. And I think it's fundamental to have a positive birth experience. M11 (Gonçalves et al., 2019).

This was particularly the case for women who had overcome a previous negative experience of birth:

> The difference in me mentally was unbelievable; I was definitely a lot mentally safer this time. I honestly believe [the water VBAC] turned me into supermum. What a difference when your head's in the right place! …When I got home it was about my baby this time, not my scar and my feelings of failure. R1 (McKenna & Symon, 2014).

4 | DISCUSSION

Despite water immersion for labour/birth being popularized since the 1990s, our study only found seven qualitative studies for inclusion indicating a paucity of literature in this area. One related to women with complicated pregnancies (VBAC) (McKenna & Symon, 2014), the others related to women with healthy pregnancies. Overall, our findings revealed that women experience warm water immersion during labour and/or birth positively. The findings showed that both the water and pool itself, facilitated women's physical and psychological needs during labour and/or birth. Our findings indicated that birthing pools are versatile tools that provide for a space that women can adapt and influence to best suit their individual needs. The presence of the birth pool created an atmosphere conducive to relaxation; whereas the warm water offered physical comfort during contractions. The analgesic properties of the water did not remove pain, instead women appeared to possess a greater ability to cope with the pain. This stimulated a mind-body connection or 'synergy' whereby women were enabled to 'work-with' their bodies during labour leading to enhanced feelings of control, self-efficacy and self-trust. The birth pool receptacle itself was of importance, through a demarcation of space created by the structure of the pool sides, women reported feelings of safety, privacy, and security. Moreover, some women reported that water immersion facilitated altered states of consciousness, a transcendent experience that not only took them to another place but also facilitated their ability to thrive as they entered the postnatal period. As such, the cumulative benefits of warm water were highly valued beyond just the duration of immersion.

This review follows a recent metasynthesis of five studies related to waterbirth (Clews et al., 2019). While the authors sought to examine women's experiences of waterbirth, only one theme directly addressed this aim; autonomy and control was a key theme that women reported following their experience of a waterbirth; a finding that aligns with our theme of 'Liberation and self-emancipation'. Our review expands on Clews et al.'s (2019) theme through the development of three higher order themes, nine key finding statements supported by confidence assessments; all of which relate to women's experiences of water immersion. Our findings are also supported by several quantitative surveys that examined women's experiences of water immersion (Carlsson & Ulfsdottir, 2020; Cooper & Warland, 2019; Reyhan & Sayiner, 2019; Richmond, 2003; Ulfsdottir et al., 2020). For example, Ulfsdottir et al., (2020) surveyed 215 women, broadly half used water immersion for labour and birth and the other half did not but had a normal birth. They found that the overall Childbirth Experience Questionnaire scores did not differ between the groups; but those using water immersion scored higher for the 'own capacity' domain, lower for 'professional support', and reported lower pain scores (Ulfsdottir et al., 2020). This concurs with our findings in that support from midwives was reported in few studies, whereas women provided detailed accounts about the benefits of water, that is, self-control and efficacy; the latter mirroring the survey domain of 'own capacity'(Ulfsdottir et al., 2020). Given midwifery relational care is associated with lower anxiety, fear, and non-pharmacological pain relief (Walsh & Devane, 2012), women's reports of greater personal capacity versus reporting on the relationship with the midwives concurs with the findings from Walsh and Devane (2012). Their metasynthesis found that relational care enabled personal agency, autonomy, and empowerment; thus, once safety needs were met, women were more likely to report empowered births (Walsh & Devane, 2012), similar to our findings. Additionally, the survey findings by Ulfsdottir et al., 2020 supports our findings that women reported good pain management.

In another study, Cooper and Warland (2019) surveyed 740 women who had used water immersion using Likert scales. They found that 80% of the women 'entirely agreed' that water utilization provided a sense of 'safety', was soothing (72%), enhanced freedom of movement (71%) and facilitated a positive birth experience (72%) while 90% suggested that they would recommend water immersion to others (Cooper & Warland, 2019). The study reported some concerns raised by women – related to fears of unsupportive

staff (16%) or fearing being told to get out before they were ready to (9%) – indicative of the value women placed on water immersion, prior to and after the event (Cooper & Warland, 2019). Carlsson and Ulfsdottir (2020) carried out a mixed methods survey of 111 women who had given birth in water in Sweden. Their findings largely supported those already discussed, but the authors did find that some women reported negative experiences due to inadequate birthing pools (Carlsson & Ulfsdottir, 2020). Likewise, this review illustrates that women highly valued the pool receptacle itself, particularly if it was spacious and allowed for freedom of movement. Therefore, we concur with Carlsson and Ulfsdottir (2020) survey conclusions; for women to experience the maximum benefit of water immersion, purposefully designed birthing pools are required. Collectively, our findings and the supporting evidence discussed here supports the use of birthing pools as a low-tech, low-cost midwifery intervention which supports women's biopsychosocial needs for childbirth.

4.1 | Limitations

While there is always a risk of over or under interpreting qualitative datasets, we mitigated this with ongoing reflexivity to ensure our prior beliefs did not conceal alternative analytical interpretations. There are some limitations to the study, with only seven studies included and all from high-income country contexts; our findings only relate to similar contexts. Further research about the availability, accessibility, and experiences of water immersion in other contexts is required. However, the supporting survey evidence mitigates against the limited qualitative literature. The strengths of this study were the comprehensive systematic search strategy and use of CerQual (Lewin et al., 2015) to assess the confidence in the review findings.

5 | CONCLUSION

This review addresses a significant gap in the literature reflecting a multitude of benefits that water immersion offers women both in labour and during birth, as described by women themselves. The findings strongly suggest water immersion is a valued and accepted approach to labour care from the perspectives of women. As a tool for pain management that enhances both psychological coping and which supports the physiological processes of labour and birth, this low-tech, low-cost option should be available for all women. Maternity professionals need to be proactive, ensuring women have access to the birth pool as a meaningful alternative to pain management. Maternity services need to ensure birthing pools are embedded into service planning and provision.

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CONFLICTS OF INTEREST

We declare no conflict of interest.

AUTHOR CONTRIBUTIONS

CF, MC, EB made substantial contributions to conception and design, or acquisition of data, or analysis and interpretation of data; involved in drafting the manuscript or revising it critically for important intellectual content; given final approval of the version to be published. Each author should have participated sufficiently in the work to take public responsibility for appropriate portions of the content; and agreed to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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ORCID

Claire Feeley https://orcid.org/0000-0002-8013-0352
Megan Cooper https://orcid.org/0000-0001-8188-1652
Ethel Burns http://orcid.org/0000-0002-7505-7621

TWITTER

Claire Feeley @DrFeeleyRM

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SUPPORTING INFORMATION

Additional supporting information may be found online in the Supporting Information section.

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