Maternal and Neonatal Outcomes Following Water Birth Systematic Review and Meta-Analysis

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Abstract

In more recent years, there has been a lot of interest in and discussion surrounding maternal immersion in warm water during birthing. It has less support from other maternity care specialists even though it is now considered standard practice for midwives. This meta-analysis and systematic review set out to examine the maternal and newborn outcomes connected to water deliveries to offer evidence-based insights regarding the security and effectiveness of this delivery technique. To discover relevant papers available between 2012 and 2022, a systematic search of electronic databases was carried out, together with Science Direct, PubMed, BMC, Embase, Medline, Google Scholar, and the Cochrane Collaborative Library. Included were studies that detailed maternal and neonatal outcomes after water deliveries. The meta-analysis included a total of 24 trials with 221797 participants. Every study shows that traditional childbirth on a bed or in a different position is rarely more perineum-protective than labor in the water. Admission to the NICU within 24 hours of a water birth was modest, ranging from 0% to 10.15%, as opposed to traditional births, which range from 0.8% to 15.7%. It appears to be associated with reduced pain and increased maternal pleasure during labor, which may shorten labor periods and require fewer medical interventions.

Keywords: Maternal outcome, neonatal outcome, water birth, APGAR, Perineal lacerations, NICU admission, meta-analysis.

Introduction

For many years, mothers have frequently found comfort in baths, showers, and whirlpools while giving birth [1][2]. Maternal submersion in warm water during childbirth has generated a lot of interest and debate in recent years. Although it is now considered standard practice for midwives, it has received less backing from other maternity care professionals [3]. A newborn who is purposely born underwater is said to have experienced a waterbirth. If a baby is swiftly brought to the floor, it is thought that the diving reflex, which reflexively seals their airway when underwater, will prevent the infant from aspirating water [4]. Women who give birth in water but labor in the water are not

considered to have had a waterbirth. Considering certain women give delivery and labor in water, whereas other women labor in water before giving birth normally, the unique characteristics of waterbirth makes it challenging to examine. Therefore, it is important to clearly distinguish between the mode and place of birth when evaluating the literature critically. Fetal emergence underwater is what is meant by “waterbirth,” which is separate from immersion hydrotherapy, which is employed during labor but not at the time of birth [5][6]. The mobility, sensation of safety, and sense of empowerment reported by women who use water immersion are greater, and they also report having a more satisfying birthing experience. During labor and delivery, soaking in water reduces the release of anxiety, eases muscles, and encourages contentment in the water, lowering strain on the joints and limbs and letting for easy mobility [7]. Furthermore, being submerged in water significantly decreases blood pressure thanks to vasodilation and blood flow redistribution.

The buoyancy and ease of movement that comes with being in the water while giving birth help women maximize their pelvic diameters, which may result in improved fetal flexion and a simpler delivery. Warm water helps mothers relax, which lessens their feeling of discomfort. It may also enhance uterine perfusion and lower blood pressure [8]. Women who give birth in birthing pools say they feel more in charge of and content with the procedure. Although giving birth in water is generally thought to be safe for women without difficulties, concerns have been raised concerning its safety. Particularly severe perineal injuries and the umbilical cord snapping. Because of the increased risk of perineal laceration, the perineum cannot be guarded during a water birth, a surgical procedure called episiotomy is not feasible, and continual fetal heart rate surveillance is impractical in water [9]. Additionally, the newborn may breathe in tainted water, raising the risk of neonatal asphyxia and aspiration syndrome [10][11].

Concerns and questions concerning the reliability and possible risks of water supply are raised, nevertheless, as with any method of childbirth. The possibility for infections or respiratory distress in neonates due to water aspiration, as well as the paucity of long-term impact studies, are critics’ main points. These opposing points of view have sparked a discussion that is still going on in the medical field, highlighting the requirement for a methodical assessment of the available data. A thorough and current evaluation of the neonatal and maternal outcomes related to water delivery is the goal of this meta-analysis and systematic review. By combining the results of previous studies, we hope to provide a greater knowledge of the benefits and drawbacks of water birth, assisting medical professionals and expectant mothers in making decisions regarding this birthing option.

Methods

2.1 Investigation technique

This in-depth investigation was executed in accordance with “Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) standards.” Science Direct, PubMed, BMC, Embase, Medline, Google Scholar, and the Cochrane Collaborative Library were all searched with the keyword

“Maternal and Neonatal Outcome Following Water Birth”. Additionally, a meta-synthesis of qualitative studies was looked up to check whether any reviews on the perspectives of outcomes following water birth had been published. In the literature review, keywords including “water birth,” “maternal outcome,” “neonatal outcome,” and “APAG score” were used.

2.2 Inclusion criteria

Peer-reviewed papers from 2012 to 2022 that reported on mother and newborn outcomes following water birth as opposed to vaginal delivery on land met the inclusion criteria. This included cross-sectional research, surveillance investigations, retrospective and prospective cohort studies, and comparative studies. Carefully comparing the publications in the initial search with their citations allowed us to include more papers that we had not yet discovered. There was at least one maternal or neonatal outcome describing intact perineal trauma and the various phases of labor, birth weight, postpartum NICU admission, and APGAR score for 1 or 5 minutes. The meta-synthesis was limited to English-language sources from reputable publications (Table 1).

2.3 Exclusion criteria

Non-comparative research, case series, and reviews were disqualified. There were no limits on languages. Reviews containing case reports or case series, opinion pieces, and management guidelines/recommendations were all rejected similarly. Studies that only examined water birthing as opposed to water laboring were not included. Studies reporting on water birth that were based on themes were also omitted (Table 1).

Table 1: Exclusion and inclusion criteria.

	Inclusion	Exclusion
Studies	Retrospective, prospective cohort studies, cross-sectional studies, surveillance, and comparative studies.	Non-primary studies (literature reviews, policies, guidelines, case studies, reviews, etc.)
Mode of hydrotherapy	Water birth.	Water immersion during labor only.
Outcome	Data regarding maternal or neonatal	No data was provided regarding both outcomes.

Analysis	Quantitative analysis	Qualitative analysis.

2.4 Data extraction

Data was manually extracted from the full-text publications when assessment revealed redundant data, and an attempt was put forth to locate a more comprehensive dataset for incorporation. Neonatal symptoms, according to the researchers, are any of the following upon birth: fever, lethargy, nausea, respiratory problems, or resistance to feeding. The measures of interest were perineal trauma, need for respiratory support, birth weight, neonatal intensive care unit (NICU) admission, and APGAR scores at 1- and 5-minutes.

Results

3.1 Search outcomes

In the PRISMA flow diagram (Figure 1), the selection and search processes are described. 286 citations were located in important databases, according to the search's results. After eliminating duplicates (n = 79), 207 unique papers were chosen for the meta-synthesis based on their title and abstracts. 82 additional papers were ignored beyond the abstract and title because they didn't adhere to the standards for inclusion in the review. The analysis of the entire text led to the acquisition and evaluation of 125 full-text studies in cases where the abstract was poorly written or there was no abstract available. 101 studies were excluded from the 125 studies after they had been submitted to inclusion criteria, allowing space for 24 studies to be added.

3.2 Features of the included research

Twenty-four studies satisfied the requirements for inclusion. The range of publication years was 2012 to 2022. Data were taken from the analyzed articles for 221797 women, including 55465 women who gave birth by water birth and 166332 women who gave birth on land, totaling a combined total of 55465 women (Table 2). The sample sizes ranged from 34 [31] to 17530 [30] for water birth and 30 [31] to 45154 [23] for land or conventional births. Most studies were conducted in United States (n = 7, 29.17%) [14][19][25][29][30][32][33] followed by three studies conducted in United Kingdom [13][17][20] and Australia [21][26][28] comprising 12.5% each and in China [16][23] and Sweden [34][35] two studies were reported with 8.3% each. One study each from Singapore [12], New Zealand [15], Ireland [18], British Colombia [22], Canada [24], Spain [27], and Turkey [31] made up the other seven studies, or 29.17% of the total. Although the studies were conducted in specific countries, the surveillance was done in different ethnicities in some studies.

Table 2: Characteristics of selected study- a summary.

Study ID	Author	Year	Design	Country	Water birth	Land or Conventional birth
12	Lim *et al*	2016	retrospective	Singapore	118	118
13	Preston *et al*	2019	retrospective	UK	1244	14490
14	Bailey *et al*	2019	retrospective	US	397	2025
15	Maude and Kim	2020	prospective	New Zealand	584	1275
16	Gayiti *et al*	2015	retrospective	China	60	60
17	Peacock *et al*	2018	Prospective	UK	592	2915
18	Barry *et al*	2020	Prospective	Ireland	100	90
19	Bovbjerg *et al*	2016	retrospective	US	6521	10252
20	Burns *et al*	2012	retrospective	UK	5192	3714
21	Dahlen *et al*	2013	Descriptive	Australia	819	5220
22	Hodgson *et al*	2020	retrospective	British Colombia	2567	23201
23	Wu *et al*	2018	retrospective	China	5420	45154
24	Jacoby *et al*	2019	retrospective	Canada	1716	21320
25	Lathrop *et al*	2018	Prospective	USA	66	132

26	Lewis *et al*	2018	retrospective	Australia	303	199
27	Mallen-Perez *et al*	2018	Prospective	Spain	111	89
28	Menakaya *et al*	2013	retrospective	Australia	219	219
29	Lanier *et al*	2021	Prospective	US	889	1188
30	Bovbjerg *et al*	2022	retrospective	US	17530	17530
31	Sert *et al*	2019	Cross-sectional	Turkey	34	30
32	Sidebottom *et al*	2020	retrospective	US	314	269
33	Snapp *et al*	2019	Prospective	US	10252	16432
34	Ulfsdottir *et al*	2017	retrospective	Sweden	306	306
35	Ulfsdottir *et al*	2019	Prospective	Sweden	111	104

3.3 Maternal outcomes

All of the research discussed maternal outcomes, although some of the studies lacked the necessary data for our analysis. However, all of the trials covered maternal outcomes such as perineal invasions, hemorrhage, discomfort, and blood loss. In every study, water birth is frequently more protective of the perineum than traditional childbirth on a bed or in a different posture, and in some studies, comparing water birth and traditional birth, there are actually no discernible differences. There is a considerably lesser influence in instances involving first-, second-, or third-degree perineal lacerations when contrasting water delivery to conventional birth study.

3.4 “Neonatal outcomes”

The neonatal outcomes were discussed in all the studies, with an average birth weight of around 3500g [13][17][22][26][28][29][31][35] during delivery and when the water birth is contrasted with

the traditional birth, there is no discernible difference. In comparison to traditional births, which range from 0.8% to 15.7%, enrollment in the NICU within 24 hours of a water birth was minimal, falling between 0% and 10.15%. A fast evaluation instrument called the APGAR score is castoff by medical professionals to examine a newborn baby's physical health as soon as it is born. The newborn's overall health is judged by the APGAR score, which rises as soon as the baby is born. When comparing the APGAR score between water birth and conventional birth after both a one-minute and five-minute evaluation, there is no change or a less noticeable difference. However, only patients' data related to 5 min APGAR was enumerated in some studies [18][19][22][24][29][32][33][34] and only 1 min APGAR data was depicted in the study [35]. Apart from this, some studies' columns were empty due to the non-availability of exact analysis data or the absence of data (Table 3).

Table 3: Neonatal outcome following water birth when comparing traditional or conventional birth.

Study ID	**Birth weight**	**Birth weight**	**NICU admission**	**NICU admission**	**Percentage of APGAR Below provided score i.e. below 7**	**Percentage of APGAR Below provided score i.e. below 7**	**Percentage of APGAR Below provided score i.e. below 7**	**Percentage of APGAR Below provided score i.e. below 7**
Study ID	Birth weight	Birth weight	NICU admission	NICU admission	APGAR 1 min	APGAR 1 min	APGAR 5 min	APGAR 5 min
Study ID	Water birth	Normal	Water birth	Normal	Water birth	Normal	Water birth	Normal
12								
13	3520.93	3426.89						
14			1.8	2.5	10.3	8.3	0.5	0.6
15			2.4		5.9		0.7	
16								
17	3540	3450			4.6	6.9	0.7	1.1
18			3.7				1.6	
19			1.4	2.4			1	1.2
20								

21								
22	3574.6	3586.3	0.9	1.15			0.2	0.5
23			10.15	15.7				
24			0.1	1.6			0.2	0.8
25			1.5	0.8	7.6	2.3	0	0
26	3546	3585			6	10		
27								
28	3397.5	3385.5			11.5	4	1	0
29	3559	3610	2	2.8			0.3	0.9
30			1.84	1.94				
31	3410	3408						
32			19	15			2	2
33			1.3	2.1			0.5	0.7
34			2.9	6.2			0.3	0.7
35	3593	3622	0	4.9	0.9	1		

Discussion

4.1 Maternal outcomes

We see different percentages that can indicate the frequency or occurrence of perineal injuries in each group. There are nonetheless gaps in the data, as shown by empty cells where no data is available. This trend raises the possibility of a link between water births and an increased risk of intact perineal damage.

A study showed that postpartum hemorrhage rates were somewhat different between the two groups,

with three cases in the waterbirth group and four in the control group, with an average estimated blood loss (EBL) that was similar in both groups [12]. Fortunately, neither cohort showed any signs of third- or fourth-degree tears. It's interesting to note that first-time mothers chose waterbirth more frequently than did multiparous women, and Asian women had a little higher risk of perineal tears, probably as a result of anatomical variations [13]. Women in the waterbirth group experienced similar rates of first- and second-degree lacerations and higher rates of intact perinea. Both groups had modest rates of fourth- and third-degree perineal lacerations. Rates of postpartum bleeding were comparable [14]. Notably, the group who gave birth with water reported much lower pain levels and significantly fewer rates of episiotomies [16]. Additionally, the likelihood of a physiological third stage and a longer third stage length (>30 min) were both advanced in women who gave delivery in water. The incidence of obstetric anal sphincter injury (OASI) between the water immersion and conventional care groups did not differ significantly, which is notable. The research also found that birth memories were more positive for women who had given birth while submerged in water [18].

In one study, it was discovered that women who went through the additional stage of labor while submerged had a 35% lower chance of transfer after delivery and a 28% lower chance of being admitted to the hospital for mothers in the first six weeks [19]. On the other hand, the likelihood that these identical women would sustain genital tract injuries increased by 11%. For multiple factors, such as increased analgesia or labour that progressed gradually, a different study discovered that a lot of women left the labour pool prior to giving delivery [20]. When birthing on a birth stool was contrasted with giving birth in water, it was shown that the latter caused a higher rate of significant perineal trauma. It was also noted that different types of healthcare professionals were used, with midwives typically attending to women giving birth in water and obstetricians attending to those in semi-recumbent positions [21]. Less frequently experienced by women in the water birth were injuries of the third or fourth degree, substantial bleeding during delivery, and postpartum hemorrhage extending up to 24 hours. Additionally, they had lower rates of primiparity [24].

The water birth cohort had shorter labors, but there was no variance in the prevalence of lacerations between the cohorts in terms of maternal outcomes [22]. Although postpartum urinary retention and degree III and II lacerations were less common, degree I perineal lacerations were more common [23]. There were also fewer cases of neonatal asphyxia in the group of water births. Another study compared groups of water birth and non-water birth for some clinical factors, including maternal age, parity, fever, infections, ICU admission, birth weight, resuscitation, stillbirths, NICU admission, and cord avulsions, but no significant positive or negative associations were found [24]. Even after adjusting for demographic parameters such as education, relationship status, race/ethnicity, insurance, parity and age, water birth was related to fewer lacerations that needed to be repaired. This association remained significant even after these factors were taken into account [25]. After adjusting for potential confounders, water birth was linked to fewer perineal lacerations that needed to be repaired as well as higher overall CEQ, perceived safety, and participation ratings [25].

These studies made an important finding: women who chose water delivery had first-stage labor last noticeably less time, with a remarkable odds ratio of 2.56, compared to women who did not [26]. The

odds ratio for the second stage of labor, which is characterized by the aggressive pushing phase and the baby's descent, showed that it was also significantly shorter, at 3.53 [26]. Equally striking was the finding that for women who chose water birth, the third stage, which involves the placenta's delivery, frequently fell within the ideal length of 11 to 30 minutes, with an odds ratio of 2.15 [26]. Efficiency was only one benefit of water births; there were other benefits as well. The likelihood of delayed cord clamping, which has been linked to better baby health, and the likelihood of maintaining an intact perineum were both significantly higher for women who chose this approach [26]. In contrast to the population of women who gave birth traditionally, the women who gave birth underwater experienced fewer episiotomies, suggesting that water immersion could safeguard the perineum [28].

Additionally, compared to women who underwent traditional delivery without analgesia, the impression of pain throughout the difficult second stage of labor was significantly less intense for those who selected water birth [27]. The average immediate postpartum hemorrhage for all the women tested was only a little under 300 ml, which is a minor amount of blood lost. 4% of women in the water delivery group experienced postpartum hemorrhage, compared to 5% of the matched cohort, which was a little lower incidence [28]. Reduced chances of significant hemorrhage, hemorrhage diagnosis, postpartum transport, and inpatient care for mothers within the initial six weeks were additional maternal outcomes that supported water birth [30]. Additionally, in the group of women who gave delivery in water, there was very little chance of uterine infection, demonstrating the safety of this delivery technique [30]. To be considered, however, is the fact that the water immersion group's serum disulfide levels and cord blood pH were both much lower [31].

Despite these positive results, it's important to keep in mind a few issues. The likelihood of extended stages of labor and the use of pharmacologic painkillers were both lower in women who chose water birth [33]. Despite the fact that there were no appreciable variations in the extent of cord ruptures among the groups, it is important to recognize that these births tended to involve second-stage water immersion, which raises questions concerning fetal blood loss [32]. Numerous research on water birth point to some potential benefits, including shorter labor phases, decreased sense of pain, and a lower chance of episiotomies. However, factors like cord avulsions and changes in the characteristics of cord blood call for more investigation and prudence. The complex nature of this unique method of labor is shown by the fact that women who choose water birth appear to develop a greater feeling of their capacity during the birthing process [35].

4.2 Neonatal outcome

Numerous newborn outcomes were evaluated in a study comparing waterbirth and traditional land births, revealing insight into the security and effectiveness of water immersion during labor and delivery. A brief respiratory condition known as Transient Tachypnoea of the Newborn (TTNB) affected eight neonates in the control group and four neonates who underwent waterbirth. The good news is that neither group had any perinatal fatalities [12]. The investigation also found that both groups' rates of admittance to the Neonatal Intensive Care Unit (NICU) were similar, with a small number of

babies in each group [13].

Newborns born under water outperformed their non-waterbirth counterparts on all neonatal outcome indicators when primiparity was taken into account [19]. Most babies delivered in water didn't need to be admitted to the NICU, which prompted calls for a reassessment of the tertiary maternity unit's procedures, which appeared to favor a biomedical style of care. This could have influenced choices made about labor and pain treatment options, such as if epidural analgesia was available [15]. The research found no differences in the median gestation, although the waterbirth group's mean birthweight was a little higher [12]. No water aspiration or infection occurred in newborns who were born underwater [18]. Although there were three infant deaths in the waterbirth group, they were not connected to the waterbirth itself and were due to other factors [19].

Some newborns had respiratory issues, and many of them were born in water, but overall, neonatal infections were uncommon and similar in both groups [20]. Interestingly, most umbilical cord snaps happen during water birth, possibly as a result of excessive traction once the infant has been removed from the water [20]. Fortunately, the requirement for resuscitation and NICU hospitalization did not increase who gave delivery in water, and the imminent hazard was quite minimal in both groups [22].

Notably, the rate of infant asphyxia was much reduced in the water birth group, emphasizing the potential advantages of giving birth in water. Furthermore, there was no discernible difference between the two groups in terms of the requirement for NICU transfers [23]. Furthermore, those who were born in water had a considerably lower probability of being admitted to the NICU than those who were born on land [24]. However, it's important to note that newborns who were born in water had a higher risk of developing macrosomia [24].

The frequency of negative outcomes was relatively low among babies born in water, with few instances of respiratory distress, suspected infections, meconium aspiration, hyperbilirubinemia therapy, and considerable weight loss three days after birth [26]. No variations in Apgar scores or arterial and venous pH between babies born underwater and those delivered normally without analgesia were discovered when evaluating the safety of aided births in water [27]. Significantly, there were no water aspiration or umbilical cord rupture-related infant problems, and there were also no recorded water births resulting in NICU admissions [27].

When compared to land-based delivery, having a baby in the water was generally not linked to an increased risk of negative neonatal outcomes, particularly those caused by infectious or respiratory conditions [29]. In actuality, throughout a variety of mother and baby characteristics, water birth was linked to lower morbidity and mortality—apart from a statistically significant spike in umbilical cord avulsion [30]. It is significant to highlight that second-stage water immersion deliveries were the main setting for cord avulsions [32]. Compared to newborns delivered on land, underwater babies had fewer respiratory problems and were less likely to need hospital transfers after birth [33]. Furthermore, the absence of epidural anesthesia during water deliveries was emphasized as a

potential benefit, as epidural anesthesia has been linked to a higher risk of NICU transfer and resuscitation in low-risk spontaneous onset births [34].

4.3 APGAR

In the context of waterbirth deliveries, a great deal of research has been done on the Apgar score, which is a crucial evaluation of a newborn's health at 1- and 5 minutes following birth. Some publications observed that between the waterbirth group and the control group at both the 1-minute and 5-minute marks, there was no statistically significant difference in mean Apgar scores, indicating a similar infant status overall. On the other hand, some research lacks APGAR-related data [13][18][23][30]. However, details become apparent when looking at particular periods. Comparing the waterbirth group to the control group, Apgar scores under 7 were somewhat more frequent in the waterbirth group [14]. This suggests that waterbirth may have a brief impact on the health of the early neonate. Although the waterbirth group may have initially displayed signs of higher one-minute Apgar scores, this distinction tended to disappear by the 5-minute assessment, indicating a potentially transient impact [17]. However, 1-minute Apgar scores below 7 or the presence of meconium-stained amniotic fluid did not differ substantially, indicating that waterbirth did not have a major impact on these variables [25][31]. Low 5-minute Apgar scores and the requirement for neonatal resuscitation were similar across the groups, indicating that any initial differences in Apgar scores did not translate into significant clinical outcomes [29], and Some crucial infant results showed no appreciable changes, reinforcing waterbirth's overall safety [33].

Further analysis in a variety of birth scenarios, including waterbirth, revealed a repeated trend in which Apgar scores at 1, 5, and 10 minutes were typically more than or equal to seven [15]. This discovery demonstrates how flexible neonates are in a range of delivery scenarios. There were no discernible variations in the frequency of 5-minute Apgar scores below 7, a critical cutoff for assessing infant health, between the waterbirth and control groups [19]. The safety of giving birth in water was highlighted by an author who discovered that other than the semi-recumbent position, there was no obvious difference in 5-minute Apgar scores below 7 among the other delivery positions [21]. When adverse infant outcomes, such as 5-minute Apgar scores below 7, the need for resuscitation, and NICU hospitalization, were taken into account, it was important to note that the water birth group did not show a higher risk compared to the traditional birth cohort. When done under the proper conditions, waterbirth does not offer significant risks to the newborn's health, as shown by the small absolute risk that was shown in both groups [22].

When different Apgar score components are examined in the context of waterbirth, some interesting conclusions are reached. Notably, there were instances within the Water Birth subgroup when mothers had infants with low Apgar scores at 5 minutes, highlighting the necessity of cautious monitoring during waterbirth deliveries [24]. The lack of relevance in Apgar scores is evidence that waterbirth does not necessarily have an impact on Apgar scores in a clinically significant way [26]. An increased prevalence of newborns in the waterbirth group having Apgar scores of 7 or below at 1

minute, indicates a potential transitory impact on early neonatal well-being [28]. Waterbirth appears to be a safe practice, with no discernible negative impacts on neonatal well-being at 5 minutes or in major infant outcomes, even though there may be minor variances in early Apgar scores and one-minute Apgar scores.

Conclusion

The maternal and newborn outcomes following water birth have been examined in depth in this meta-analysis and systematic review, giving light on the benefits and possible hazards of this alternative delivery technique. Our examination of the available data has yielded insightful conclusions that will help clinical practice, pregnant women, and future research. According to our research, water birth may have certain advantages for both women and newborns. It seems to be linked to less pain and greater maternal pleasure during labor, which could result in quicker labor times and fewer medical interventions. These benefits support the objective of encouraging a happy delivery experience and allowing mothers to make their own decisions.

We must, however, use caution when interpreting these findings. The quality of the studies that were available varied, and many of them had restrictions due to small sample numbers and other biases. Additionally, even if the data frequently show positive outcomes, we must ignore the possible hazards, such as the requirement for diligent infection control measures and worries about water aspiration in newborns. Given our findings, healthcare professionals must have in-depth conversations with expectant moms, assessing the possible advantages of a water birth against the person's medical background and preferences. The evidence base has to be strengthened and more conclusive information regarding the safety and effectiveness of water birth needs to be provided. Large-scale prospective studies in particular should be the focus of future well-designed research. In the end, choosing to give birth in water should be a team effort, based on a full comprehension of the research that is currently available, individual circumstances, and the common objective of delivering a safe and positive birthing experience for both mother and child.

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