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The Experience of Land and Water Birth Within the American Association of Birth Centers *Perinatal Data Registry*, 2012-2017

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ABSTRACT

Consumer demand for water birth has grown within an environment of professional controversy. Access to nonpharmacologic pain relief through water immersion is limited within hospital settings across the United States due to concerns over safety. The study is a secondary analysis of prospective observational *Perinatal Data Registry* (PDR) used by American Association of Birth Center members (AABC PDR). All births occurring between 2012 and 2017 in the community setting (home and birth center) were included in the analysis. Descriptive, correlational, and relative risk statistics were used to compare maternal and neonatal outcomes. Of 26 684 women, those giving birth in water had more favorable outcomes including fewer prolonged first- or second-stage labors, fetal heart rate abnormalities, shoulder dystocias, genital lacerations, episiotomies, hemorrhage, or postpartum transfers. Cord avulsion occurred rarely, but it was more common among water births. Newborns born in water were less likely to require transfer to a higher level of care, be admitted to a neonatal intensive care unit, or experience respiratory complication. Among childbearing women of low medical risk, personal preference should drive utilization of nonpharmacologic care practices including water birth. Both land and water births have similar good outcomes within the community setting.

Key Words: birth center, childbirth, community birth, cord avulsion, safety, underwater birth, water birth

Over the past 50 years, consumers have driven many changes in care practices during pregnancy and birth. Family presence during labor and birth, access to a trial of labor after a previous cesarean birth, and pain management choices during labor are a few of these consumer-driven options. In some cases, providers have questioned the safety of consumer-driven practices. As women are increasingly requesting to birth in water, water birth has been similarly questioned.[1,2]

Childbearing women seek water birth as a noninvasive means to reduce pain and increase relaxation during labor. Water birth offers increased buoyancy and hydrostatic pressure that may lead to changes in neural and hormonal pathways supporting improved pain control.[3] Buoyancy associated with water birth encourages upright maternal positions and movement and potentially improves uterine perfusion.[3] Women who have experienced water birth often report higher levels of control and satisfaction with the birth experience than those who did not experience water birth.[4–7]

Despite consumer demand, water birth is controversial in the United States.[8] Maternal-child health professional organizations have published position statements both supporting and opposing water births.

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The American Association of Birth Centers (AABC), the American College of Nurse-Midwives (ACNM), and the Midwives Alliance of North America (MANA) support informed practice and use of evidence-based guidelines during water birth for women and providers.[9–11] In 2016, AABC, ACNM, MANA, and the National Association of Certified Professional Midwives (NACPM) developed a consensus practice guideline for those wishing to utilize hydrotherapy during labor for pain management or water birth.[12] The guideline includes evidence-based standards designed to improve hydrotherapy and water birth safety. In contrast, a committee opinion by the American College of Obstetricians and Gynecologists and the American Academy of Pediatrics suggests that water birth lacks appropriate scientific evidence to support it as a standard of care and due to potential maternal and neonatal complications states that further research is needed.[1,2]

Many observational studies and several systematic reviews have supported that water immersion for labor and birth is safe and effective for both the laboring woman and the newborn.[3–7,12,13–22] Hydrotherapy and water birth consistently reduce the need for pain medication for laboring women. Water birth is not associated with a higher risk of maternal infection[6,23] or postpartum hemorrhage.[5,24] The duration of labor has generally shown nonsignificant differences.[23] Most studies show lower episiotomy and laceration rates,[5,23] although Bovbjerg et al[13] identified more genital lacerations.

Observational studies confirm water as a safe for newborns. The 5-minute Apgar score is an important tool to assess an infant's adaptation to extrauterine life and status after birth.[25] Studies investigating neonatal outcomes after water birth have not identified a difference between 5-minute Apgar scores and neonatal intensive care unit (NICU) admission following either water birth or land-based conventional delivery.[6,14,24,26,27] Other studies demonstrate either same or lower rates of asphyxia among newborns experiencing waterbirth.[6,23] Neonatal infection is often cited as a concern associated with water birth. In a systematic review, Vanderlaan et al[27] did not observe more pneumonia in water births than in conventional birth. Case reports of *Pseudomonas aeruginosa* or *Legionella pneumophilia* newborn infection exist.[28–31] These cases are concerning and demonstrate the importance of standardized cleaning policies and procedures. It is important that providers offering water birth abide by cleaning and use protocols developed by institutions and professional organizations.[12]

Publications reporting negative outcomes related to water birth are criticized for being largely case reports, small sample sizes, and isolated cases where standards of risk screening and cleaning standards may not have been enforced.[28–34] Water birth protocols generally include criteria such as the absence of maternal chorioamnionitis, maternal fever (temperature >100.4°F or 38°C), active genital herpes, excessive vaginal bleeding, skin infection or open wounds, hepatitis or HIV infection, morbid obesity (body mass index >40 kg/m^2), nonreassuring fetal heart rate (FHR) patterns, and recent use of sedating medications.[12] The number of randomized controlled trials is limited, given ethical concerns and biases from lack of masking.

Birth data from the United Kingdom show that 9% of births there are water births; yet, despite the research and population health experience, skeptics continue to assert that there is insufficient evidence to support the practice.[1,2] The Royal College of Midwives and the Royal College of Obstetricians and Gynaecologists recommend that all maternity organizations offer safe options for water birth.[35] This joint statement further notes that water birth should be available to all women with uncomplicated pregnancies who choose it.

PURPOSE

The purpose of this study was to report the sociodemographic characteristics and outcomes of births occurring on land and in water within community birth practices contributing data to the AABC *Perinatal Data Registry* (PDR).

METHODS

Sample and database characteristics

This descriptive correlational study is a secondary analysis of the AABC PDR from 2012 to 2017. The sample includes births occurring in the community (home or birth center) setting in the United States for which information on water birth (yes or no) was reported. The AABC PDR captures information on more than 200 variables including demographics, general health, and social and pregnancy-related processes and outcomes. The registry is available as an AABC membership benefit and for a nominal fee for other maternity care providers practicing in any setting.

The AABC PDR protocol requires prospective enrollment of all consenting clients into the registry at the start of prenatal care before outcomes are known. Data are entered upon entry to prenatal care, late third trimester, at the birth, and 6 weeks postpartum. Outcome data are collected on all mothers and infants who remain in care, including those transferred to a hospital and having operative births. Data are entered by the primary care provider or by trained clerical staff on a secure Web-based portal. Most of the healthcare delivery sites contributing PDR data are birth centers, with midwives serving as the primary care provider.

The validity and reliability of this data registry has been documented.[36] The registry adheres to the guidelines for data registries established by the Agency for Healthcare Research and Quality.[37] The New England Independent Review Board (IRB) deemed the project as exempt from review as it involves secondary analysis of existing data that were recorded in such a manner that participants cannot be identified directly. The New England IRB was established in 1988 to provide ethical review services for a variety of organizations in the United States. The New England IRB is accredited by the Association for Accreditation of Human Research Protection Programs and part of the Western Institutional Review Board-Copernicus group.

The participants of this study were a subset of the 2012-2017 data set. The inclusion criteria were those women who experienced a community-based birth (home or birth center) and were not transferred to the hospital due to client choice or medical risk factors. Excluding women who experienced hospital transfers reduced bias among those transferred because of medical complications or risk factors. After excluding women who did not meet the criteria, there were 16 432 community land-based births and 10 252 community water births. Figure 1 includes the details of the sampling.

Variables

Several variables were consolidated for purposes of analysis. Home and birth center births were grouped together as planned community births. Births occurring in bathtub, Jacuzzi, and birthing tubs were grouped

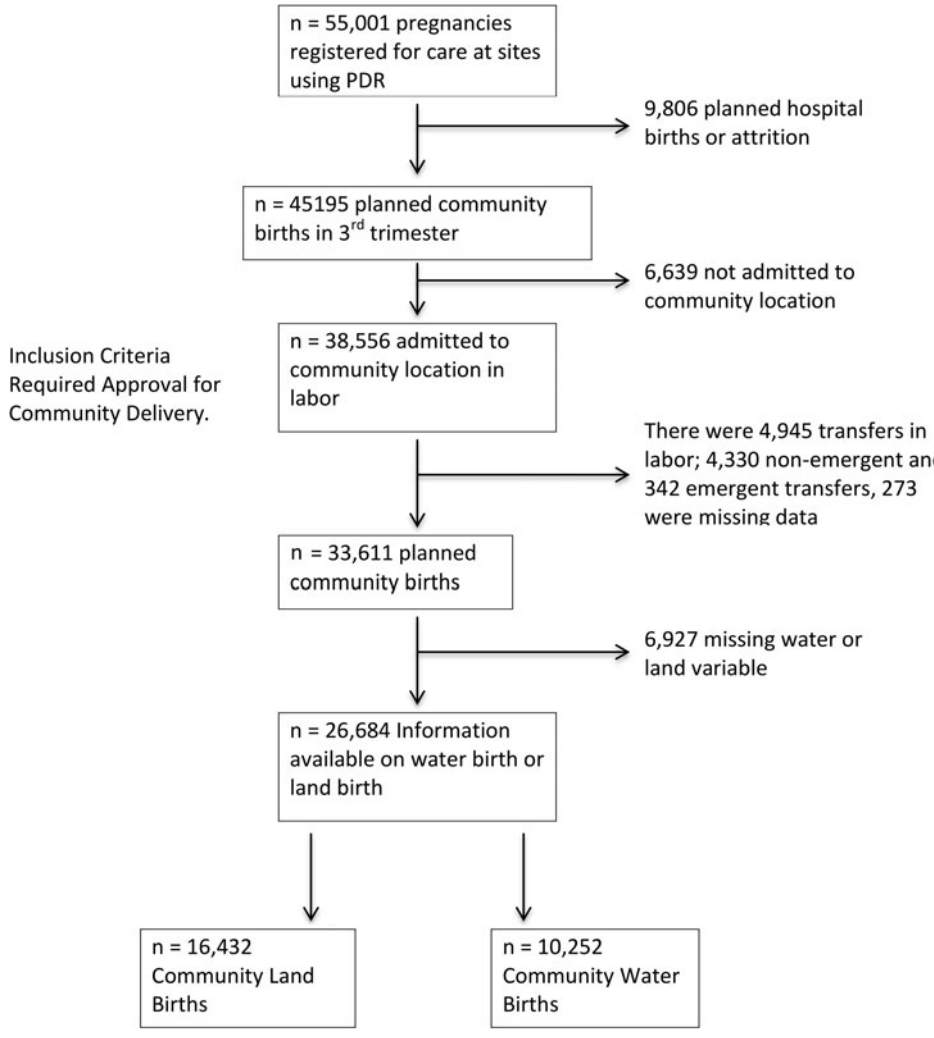

Figure 1. Sampling frame with inclusion criteria.

together as water birth. Several outcome variables were merged for the analysis. For maternal outcomes, among the complications occurring during the labor, the variable indeterminate or concerning FHR pattern noted with intermittent auscultation and equivalent to National Institute of Child and Human Development (NICHD) category II and abnormal FHR pattern equivalent to NICHD category III were merged. The category II and III abnormal FHR patterns were merged because of the low number in category III. The new variable was all abnormal FHR patterns. Maternal infection included all infections occurring during the first 6 weeks following birth. Endometritis, septic pelvic thrombosis, and wound infection were merged to create the new variable maternal reproductive tract infection 6 weeks postpartum. All maternal perineal lacerations were merged into one genital laceration variable. Among neonatal complications, respiratory distress syndrome, tachypnea, and unspecified respiratory conditions were merged into respiratory complications.

Data analysis

Preliminary data analysis included descriptive summarization of the data and use of exploratory data analytic techniques to screen for data anomalies (eg, outliers, non-normality). Most variables in the AABC PDR were categorical. The bivariate analysis used relative risk (RR) measurements generated through χ^2 analysis and Fisher's exact testing to examine the frequency of adverse birth-related outcomes among women experiencing water or land-based births. Water birth was identified as the experimental group whereas land-based birth was identified as the control group in the bivariate analysis. Absolute risk reduction (ARR) is also presented among statistically significant outcomes. A sensitivity analysis compared characteristics of women who did and did not have information on water birth status using the χ^2 tests. Calculations were completed with SPSS v.24, with all statistical tests being 2-tailed and α set at .05.

RESULTS

Sample

There were 55 001 women who registered for maternity care with a birth center practice using the AABC PDR during the study time frame. Although 45 195 women planned community births in the third trimester, the number actually admitted to home or birth centers in labor was 38 556. There were nearly 5000 transfers to hospital settings during labor, leaving 33 611 births that occurred in the community setting. Water birth was not a mandatory field within the data registry; therefore, information was not available for 6927 women. The remaining sample consisted of 26 684 women who gave birth on land or in water: 10 252 (38.4%) births occurred in water and 16 432 (61.6%) births occurred on land. Of the water births, 342 occurred at home and 9910 occurred in birth centers. Among the land-based birth, 15 485 occurred in birth centers and 947 occurred at home. Unplanned, unattended home births were excluded.

Sample characteristics

Sociodemographic characteristics of childbearing consumers are found in Table 1. Characteristics of the water birth and land birth groups are similar. Among land births, there were proportionately more women who were primiparas, older than 36 years, and with more than 15 years of education. In comparison, the women giving birth in water were proportionately more likely to be younger, of Hispanic ethnicity, Medicaid beneficiaries, and multiparous.

Maternal outcomes

Relative risk was used to estimate the proportion of outcomes in the water birth group compared with the outcomes in the land-based birth group. ARR (also called risk difference) is used to help identify whether differences are helpful in clinical decisions.

The maternal outcomes for births comparing land and water birth are included in Table 2. Childbearing women experiencing water birth were less likely to use pharmacologic pain medication (RR = 0.95; 95% CI, 0.91-0.98), with an ARR of 1.7%. Women experiencing water birth were significantly less likely to experience an episiotomy (RR = 0.068; 95% CI, 0.04-0.12), with an ARR of 1.8%, or a genital laceration (RR = 0.98; 95% CI, 0.97-0.99), with an ARR of 1.4%. Women having a water birth were also less likely to experience an FHR abnormality (RR = 0.14; 95% CI, 0.10-0.19). The ARR was 2.4% for water to land birth.

Occurrence of prolonged first and second stages of labor was lower in women having a water birth. Women who had a water birth were significantly less likely to experience a prolonged first stage of labor (RR = 0.50; 95% CI, 0.42-0.60). The ARR for a prolonged first stage of labor was 1.5%. Similarly, women who gave birth in water were less likely to experience a prolonged second stage of labor (RR = 0.13; 95% CI, 0.09-0.19). The ARR for water birth was 2.2%. Other significant findings include fewer shoulder dystocias for water births (RR = 0.41; 95% CI, 0.34-0.49). The ARR for water birth was 2.0%.

Women who experienced water birth were less likely to be transferred from the community setting to the hospital (RR = 0.59; 95% CI, 0.50-0.71). The ARR for water

Table 1. **Sociodemographics of women experiencing planned home and birth center births: American Association of Birth Centers Perinatal Data Registry—2012-2017**

Variable	Land birth, *n* (%)	Water birth, *n* (%)	*P*
Age, y (*N* = 26 683)			
<20	362 (2.2)	265 (2.6)	<.001
21-25	2 728 (16.6)	1 910 (18.6)	
26-30	6 049 (36.8)	3 844 (37.5)	
31-35	5 341 (32.5)	3 193 (31.1)	
≥36	1 951 (11.9)	1 040 (10.1)	
Method of payment (*N* = 26 226)			
Government	3 608 (22.4)	2 960 (29.2)	<.001
Private	10 120 (62.9)	5 676 (56.0)	
Self-pay	2 240 (13.9)	1 411 (13.9)	
Unknown	127 (0.8)	84 (0.8)	
Maternal race (*N* = 26 680)			
White	13 520 (82.3)	8 494 (82.9)	<.001
Black	905 (5.5)	514 (5.0)	
American Indian and Alaskan Native	126 (0.8)	89 (0.9)	
Asian	347 (2.1)	147 (1.4)	
Other	1 532 (9.3)	1 006 (9.8)	
Maternal ethnicity (*N* = 15 949)			
Hispanic or Latino	1 252 (13.2)	1 035 (16.0)	<.001
Non-Hispanic	8 209 (86.8)	5 453 (84.0)	
Education in years (*N* = 26 646)			
<12	930 (5.7)	387 (3.8)	<.001
12	2 458 (15.0)	1 793 (17.5)	
13-14	2 817 (17.2)	2 062 (20.1)	
15-16	6 194 (37.8)	3 908 (38.2)	
>16	4 007 (24.4)	2 090 (20.4)	
Marital status (*N* = 26 683)			
Married	13 976 (85.1)	8 678 (84.6)	.03
Single with partner	1 789 (10.9)	1 090 (10.6)	
Single/separated/other	666 (4.1)	484 (4.7)	
Parity (*N* = 24 583)			
Primiparous	4 929 (32.8)	2 242 (23.4)	<.001
1-4 previous births	9 656 (64.2)	7 081 (73.8)	
>4 previous births	448 (3.0)	277 (2.8)	

birth was 1.2%. Postpartum hemorrhage was less likely to be diagnosed following water birth (RR = 0.75; 95% CI, 0.69-0.83), with an associated ARR of 2.0%. No significant relationships were found between the proportions of water and land births and maternal reproductive tract infections and maternal hospitalization. The proportion of cord avulsion for water and land births was significantly related (RR = 1.87; 95% CI, 1.23-2.82). Women who gave birth in water were more likely to have a cord avulsion than women experiencing land birth. The ARR for water birth was −0.2%.

Neonatal outcomes

Neonatal outcomes are presented in Table 3. Neonates born under water were less likely to be transferred to a hospital after birth than neonates born on land (RR = 0.58; 95% CI, 0.49-0.69). The ARR was 1.2%. Neonates born in water were less likely to require admission to an NICU (RR = 0.60; 95% CI, 0.49-0.73), with an ARR of 0.8%. Neonates born under water were less likely to experience respiratory complications than neonates born on land (RR = 0.79; 95% CI, 0.67-0.93), with an ARR of 0.6%. There were no significant differences in several key newborn outcomes including the proportion of 5-minute Apgar scores of less than 7, neonatal death, or newborn readmission. Other neonatal outcomes also did not display a significant difference between water or land births in this sample.

Sensitivity analysis

Bivariate analysis of women whose birth information did not include water or land birth (birth type) was performed. Older women, women with higher levels of education, women of Hispanic ethnicity, women who were single with a partner, or women with an identified medical history were more likely to have their birth type documented. Women who identified as white

Table 2. **Pregnancy-related outcomes of community childbirth on land and in water: American Association of Birth Centers Perinatal Data Registry—2012-2017**

	Maternal outcome variables and frequencies		Results	
	Yes, *n* (%)	No, *n* (%)	Relative risk (95% CI)	*P*
Pharmacologic pain medication (*N* = 26 684)				
Water birth	3 463 (33.8)	6 789 (66.2)	0.950 (0.919-0.983)	.003
Land birth	5 840 (35.5)	10 592 (64.5)		
Episiotomy (*N* = 24 474)				
Water birth	12 (0.1)	9 211 (99.9)	0.068 (0.038-0.121)	<.001
Land birth	288 (1.9)	14 963 (98.1)		
Genital laceration[a] (*N* = 26 684)				
Water birth	8 627 (84.1)	1 625 (15.9)	0.984 (0.974-0.994)	.003
Land birth	14 051 (85.5)	2 381 (14.5)		
Cord avulsion (*N* = 26 684)				
Water birth	49 (0.5)	10 203 (99.5)	1.870 (1.239-2.822)	.003
Land birth	42 (0.3)	16 390 (99.7)		
FHR abnormality[b] (*N* = 26 684)				
Water birth	41 (0.4)	10 211 (99.6)	0.141 (0.103-0.194)	<.001
Land birth	466 (2.8)	15 966 (97.2)		
Prolonged labor first stage (*N* = 26 684)				
Water birth	157 (1.5)	10 095 (98.5)	0.507 (0.425-0.606)	<.001
Land birth	496 (3.0)	15 936 (97.0)		
Prolonged labor second stage (*N* = 26 684)				
Water birth	35 (0.3)	10 217 (99.7)	0.135 (0.096- 0.190)	<.001
Land birth	416 (2.5)	16 016 (97.5)		
Shoulder dystocia (*N* = 26 684)				
Water birth	144 (1.4)	10 108 (98.6)	0.411 (0.343-0.492)	<.001
Land birth	562 (3.4)	15 870 (96.6)		
Postpartum transfer (*N* = 26 373)				
Water birth	177 (1.7)	10 035 (98.3)	0.599 (0.504-0.710)	<.001
Land birth	468 (2.9)	15 693 (97.1)		
Maternal hemorrhage (*N* = 26 684)				
Water birth	645 (6.3)	9 607 (93.7)	0.758 (0.693-0.830)	<.001
Land birth	1 363 (8.3)	15 069 (91.7)		
Maternal reproductive tract infection 6 wk postpartum[c] (*N* = 26 684)				
Water birth	46 (0.4)	10 206 (99.6)	0.730 (0.516-1.034)	.071
Land birth	101 (0.6)	16 331 (99.4)		
Mother hospitalized within 6 wk (*N* = 23 279)				
Water birth	57 (0.6)	8 816 (99.4)	0.784 (0.572-1.075)	.126
Land birth	118 (0.8)	14 288 (99.2)		

Abbreviations: CI, confidence interval; FHR, fetal heart rate; NICHD, National Institute of Child and Human Development.
[a]Includes extensions of episiotomies and lacerations that were not repaired.
[b]Includes fetal heart tone categorized as NICHD levels 2 and 3.
[c]Includes endometritis, septic pelvic thrombosis, and wound infection.

race and women who were self-pay were less likely to have a birth type documented (data available online).

DISCUSSION

Safety and efficacy of community water birth

These findings bolster 30 years of research supporting the safety of low-risk births in community settings, on land, and in water.[13,38–47] The findings from this observational study provide further scientific evidence to support continued access to hydrotherapy and water birth among medically low-risk childbearing women. As in previously published research, water and land birth resulted in equivalent maternal and newborn outcomes in this sample, making it an effective nonpharmacologic pain management option that can be routinely offered to women of low medical risk who wish to avoid epidural anesthesia.[3–7,15,48]

While there were many statistically significant relationships demonstrating better outcomes for water

Table 3. **Neonatal outcomes of community birth on land and in water: American Association of Birth Centers Perinatal Data Registry—2012-2017**

	Maternal outcome variables and frequencies		Results	
	Yes, *n* (%)	No, *n* (%)	Relative Risk (95% CI)	*P*
5-min Apgar score <7 (*N* = 24 777)				
Water birth	50 (0.5)	9 240 (99.5)	0.738 (0.529-1.028)	.67
Land birth	113 (0.7)	15 374 (99.3)		
Neonatal transfer (*N* = 26 364)				
Water birth	174 (1.7)	10 036 (98.3)	0.584 (0.492-0.694)	<.001
Land birth	471 (2.9)	15 683 (97.1)		
Neonatal demise[a] (*N* = 26 684)				
Water birth	6 (0.1)	10 246 (99.9)	1.603 (0.517-4.968)	.416
Land birth	6 (.04)	16 426 (99.96)		
NICU admission (*N* = 26 684)				
Water birth	130 (1.3)	10 122 (98.7)	0.602 (0.493-0.736)	<.001
Land birth	346 (2.1)	16 086 (97.9)		
Respiratory complications[b] (*N* = 26 684)				
Water birth	218 (2.1)	10 034 (97.9)		
Land birth	441 (2.7)	15 991 (97.3)	0.792 (0.675-0.930)	.005
Newborn readmission within 6 wk (*N* = 23 061)				
Water birth	235 (2.7)	8 557 (97.3)	0.865 (0.740-1.012)	.0.68
Land birth	440 (3.1)	13 829 (96.9)		

Abbreviations: CI, confidence interval; NICU, neonatal intensive care unit.
[a]Includes 4 congenital anomalies, 2 in land birth and 2 in water birth; the adjusted neonatal death was 0.299 in this sample.
[b]Includes respiratory distress syndrome, tachypnea, and all unspecified respiratory complications.

births in this study, the ARRs are relatively small. Findings favoring water birth over land birth in this sample were likely attributable to the appropriate utilization of policies, procedures, risk screening, and expertise of the nurses and midwives caring for the families. The findings suggest, as have previous studies, that experienced water birth providers can recognize potential complications and either avoid or discontinue water immersion for those women. The lower incidence of prolonged labor, intrapartum and neonatal transfer to hospitals, shoulder dystocia, and neonatal respiratory issues in the water birth group may reflect this clinical decision-making. The Commission for the Accreditation of Birth Centers' *Indicators of Compliance with Standards for Birth Centers* includes specific criteria for birth centers offering water birth, including the implementation of exclusion criteria, water temperature guidelines, maternal and fetal assessment while in the water, tub cleaning protocols, staff training, and emergency drills addressing management of complications when the client is in the water.[49]

Ongoing risk screening and clinical judgment were demonstrated in the comparative outcomes within this sample. This is evident in the outcomes such as utilization of pharmacologic pain management, incidence of shoulder dystocia, and episiotomy. Less use of pharmacologic pain medication and shorter lengths of labor were observed in the water birth sample. While augmentation with oxytocin would require transfer to the hospital, nonpharmacologic methods of augmentation such as artificial rupture of membranes and nipple stimulation might be used in conjunction with water immersion. It is possible that water immersion during labor is associated with decreased use of analgesia and shorter labors. Further research is needed to explore these relationships. Women with risk factors including labor protractions or decelerations of the FHR were not candidates for water birth, which may have led to fewer incidences of shoulder dystocia and episiotomy in the water births. Similar observations have been found in other water birth studies.[5,13,15,20,25]

Ongoing risk screening and clinical judgment were demonstrated in this sample through the neonatal transport, NICU admission, and respiratory complication findings. Neonatal outcomes were favorable in the community setting for both land and water births. We found that neonates born in water did not fare worse than their land-based counter parts. Neonates were less likely to be transported to a hospital, be admitted to an NICU, or experience respiratory complications. In 2018, Bovjerg et al[13] identified similar outcomes for hospital transfer or NICU admission after home water birth.

Again, this is likely reflective of the ongoing risk screening occurring within community birth practice setting. Labors developing risk factors, such as FHR decelerations, require women to exit the water, thus driving statistically significant variation in land birth outcomes. These outcomes represent characteristics of women giving birth in the community setting from 2012 to 2017. During that time, the AABC published a position statement on water birth[9] and the AABC, ACNM, MANA, and NACPM published a consensus statement on their Model Practice Template that includes education, precautions, and management for the safe conduct of water births.[12] It is uncertain what effect this position statement may have had on outcomes.

Cord avulsion was the only indicator that demonstrated a negative outcome for water birth in this sample. Similar to previous research, cord avulsion occurred at a greater frequency among women experiencing water birth in this sample.[6,24,48] While, generally, cord avulsions can be managed noninvasively by encouraging maternal pushing efforts for delivery of the placenta, they do increase the need for manual removal of the placenta with concomitant risk of uterine perforation or hemorrhage. In addition, if not clamped quickly, they can result in newborn hemorrhage. Of note, there were no increases in maternal hemorrhage or adverse neonatal events, suggesting that the avulsions were managed without sequalae. Cord avulsion has only recently begun to be reported in the literature, and the incidence of this complication in land births is unknown.[50] Researchers speculate that cord avulsion results from bringing the newborn rapidly to the surface of the water following birth.[12,49,50] Among the measures believed to reduce the risk of cord avulsion include recognition of the potential for cord avulsion, lowering the water level prior to birth, and bringing the newborn to the water surface gently. Although experienced water birth providers are often able to avoid cord avulsion, more research is needed to evaluate the effectiveness of these measures.

Shared decision-making in the context of care

Nursing, midwifery, and medical professional organizations agree that when the state of the science supports more than one evidence-based practice (eg, pharmacologic pain management or nonpharmacologic pain management, or land birth or water birth for women of low medical risk), consumers should be the drivers of healthcare decisions. It is well documented that patient preferences are not driving healthcare decisions; instead, provider preferences often shape the utilization of healthcare delivery in the United States.[51–64]

This research represents an additional body of knowledge to support women's right to access nonpharmacologic pain relief options and support in labor. Restriction of access to hydrotherapy and water birth may be harmful. Recent research suggests that water birth is a driver of improved birth experience, empowerment, and report of enhanced capacity at 6-weeks postpartum.[7] Professional societies, interprofessional teams, policy makers, and third-party payers might align with best practice standards and provide support for low-risk women as a system's property, not simply if women have access to the birth center model of care. With regard to the decision to give birth in water in the United States, shared decision-making is limited by lack of access to hydrotherapy tubs, access to midwives as leaders across care settings, access to intermittent auscultation as the primary form of fetal surveillance, and lack of standardized screening to establish labors of low medical risk.

Strengths and limitations

The strength of this study is that it includes the use of a validated data registry that captures the lived experiences of more than 10 000 women in the United States giving birth in water. Given the difficulties of a randomized controlled trial related to women's options in childbirth, this study provides support for the practice of water birth. Results cannot be generalized to settings where risk screening is not standardized and attending providers are not experts in water birth.

This study sample cannot be generalized to the population of birthing families in the United States. The consumers in this study chose community birth providers as their primary care providers, and all births occurred within the community setting (home and birth center). Compared with childbearing women in the United States, the AABC population was more likely to be white (80.2% vs 52%), less likely to have Medicaid as a payment method (29.9% vs 42.6%), and more likely to have greater than 15 years of education (54% vs 32%).[51] There were some differences between women who did and did not have documentation of water birth status; the implications of these differences are unknown but are unlikely to be large.

CONCLUSION

This evaluation of 26 684 women who gave birth in community settings (home and birth center) supports safety and efficacy for mothers and infants—whether giving birth on land (16 432; 61.6%) or water (10 252; 38.4%). Among childbearing women of low medical risk, personal preferences should drive utilization of

care practices, rather than professional preferences or institutionalized restrictions, which limit access to safe childbearing options for women.

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