

Original Article

Experience of Water Birth Delivery in Iran

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Background: Having considered the physiologic challenges during pregnancy, scientists have searched for different delivery methods with minimal medical intervention. The use of water immersion by women for relaxing during labor is being used worldwide. We aimed to evaluate the controversies surrounding water birth and to find out the interest of Iranian women in this delivery method.

Methods: In a randomized clinical trial, 106 pregnant women were assigned to control and experimental groups. The experimental group underwent the labor and delivery in standardized warm water pools. The control group gave birth by conventional delivery method at the hospital. A questionnaire was completed during the labor for women in both control and experimental groups including the method of delivery; labor length; use of different drugs such as analgesics, opiates, antispasmodic, and oxytocin; use of episiotomy, and newborn's Apgar score and weight.

Results: Totally, 53 cases and 53 controls with the mean age of 26.4 ± 5.9 and 27.1 ± 5.9 years, respectively, completed the study. Women in the control group required oxytocin, antispasmodics, opiates, and analgesics more frequently than those in the experimental group ($P < 0.001$). Meanwhile, the active phase and the third stage of labor were shorter experimental group by 72 and 1.3 minutes, respectively ($P < 0.004$, and $P < 0.04$). All the participants in the experimental group gave birth naturally, whereas only 79.2% of the controls had normal vaginal delivery.

Conclusion: Our results revealed the advantage of water birth delivery. Those who gave water birth experienced less pain and completed the delivery sooner. Meanwhile, normal vaginal delivery was accomplished more frequently with this group. These all lead to a decreased necessity for medical interventions as well as an increased socioeconomic advantage for the society.

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Introduction

Considering the physiologic challenges associated with delivery, scientists have searched for different delivery methods with minimal medical intervention and lower complications for mother and newborn.¹ One of the most prevalent medical interventions is cesarean section. In addition to the risks associated with surgery and anesthesia, cesarean section has a longer hospital stay and recovery time.

Furthermore, it places a financial burden on the family and society.^{1,2} In 2001, the American College of Obstetrics and Gynecology (ACOG) recommended the implementation of a 10% decrease in cesarean deliveries over a decade in the United States [15.5% for 2010].³ Similarly, statistics released by the Department of Medical Education of the Iranian Ministry of Health reveals a frequency of 41.9% for cesarean section in most cities in Iran and 50% in Tehran.⁴ On the other hand, it is the goal of insurance companies and the Iranian Ministry of Health to reduce the rate of cesarean section by 25%.⁴

Several alternatives to cesarean surgery are exercised in obstetrics. These methods encompass advantages and disadvantages, among which water birth that activates peripheral neurologic receptors

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is more attractive. The weightless condition created in water equalizes the pressure throughout the body and leads to energy conservation. In addition, water induces relaxation by release of endogenous opioid peptides. Both these situations lead to reduced pain sensation.^{1,2,5-7} The advantages of this method include reduced pain, increased functional diameter of true pelvis, increased quality of contractions, increased release of endorphins, decreased need for opiates, increased movement for the mother, as well as improved positioning in different stages of labor.

Several studies have reported the disadvantages associated with water birth. These include maternal and neonatal infections, as well as the possibility for respiratory problems for the newborn.^{5,7} Although these complications increase the rate of medical intervention in the newborn, none of them leave a long-term unwanted effect. Despite its popularity, there are far less water births than conventional deliveries.

The aim of this study was to evaluate the controversies surrounding water birth, and to find out the interest of Iranian women in this delivery method. Therefore, we conducted a pilot study on water delivery at Shaheed Akbarabadi Hospital in 2006 – 2007.

Materials and Methods

In a randomized clinical trial, the interview and observation techniques were used to study 106 pregnant women who were admitted to Shaheed Akbarabadi Hospital, affiliated to Iran University of Medical Sciences, between June 2006 and September 2007. The participants were given comprehensive information on water birth before they consented to participate in the study. They were primarily screened by completing a questionnaire, which contained demographic information as well as the inclusion criteria for the study.

The following inclusion criteria were applied at baseline: gestational age between 37 – 42 weeks,

negative history of previous cesarean section, intact gestational sac, absence of placental abruption or placenta previa, no malpresentation, and suitable results of fetal wellbeing tests. The participants were not selected if their pregnancy was the result of assisted reproductive technology.

After primary screening, they were randomly assigned to control and experimental groups. The women in the experimental group underwent the labor and delivery in standardized warm water pools. Those in the control group gave birth by conventional delivery method at the hospital.

A second questionnaire was completed during the labor and delivery for the participants in both groups including the method of delivery; labor length; use of different drugs such as analgesics, opiates, antispasmodics, and oxytocin; use of episiotomy; and the newborn's APGAR score and weight.

The data were analyzed using SPSS software (version 11.5, SPSS Inc., USA). Student *t*- and Chi-square tests were used for data analysis, when appropriate.

Results

Totally, 53 women in the experimental group and 53 controls with the mean age of 26.4±5.9 and 27.1±5.9 years, respectively, completed the study. Most of the participants in both groups were para 2, gravida 2 followed by para 1, gravida 1. Although the number of individuals with para 3 was higher in the experimental group, the difference was not statistically significant (Table 1).

The use of drugs such as oxytocin, antispasmodics, opiates, and analgesics was significantly between the groups. As shown in Table 2, nearly all the women in the control group used these drugs whereas the women in the experimental group took them less frequently.

The study revealed that active phase of the first stage and the third stage of labor were shorter in the experimental group by 72 and 1.3 minutes,

Table 1. Characteristics of the participants in experimental and control groups.

	Experimental group (water birth) (n=53)	Controls (conventional delivery) (n=53)	P value
Age (years)	26.4±5.9	27.1±5.9	0.7
Gravidity ≥3	20(37.7%)	19(35.8%)	0.7
Parity ≥2	18(33.9%)	17(32.1%)	0.66
Previous abortion	5(9.4%)	3(5.7%)	0.3
PROM	1(1.9%)	0	0.5
History of ART	1(1.9%)	2(3.8%)	0.5

PROM=premature rupture of membrane; ART=assisted reproductive technique

Table 2. Use of drugs during labor in experimental and control groups.

	Case (water birth) n (%)	Control (conventional delivery) n (%)	P value
Oxytocin	0	50(94.3)	0.001
Antispasmodic	2(3.8)	53(100)	0.001
Analgesic	2(3.8)	53(100)	0.001

respectively. However, the second stage was the same in both groups, as depicted in Table 3.

Our results revealed that all participants in the experimental group gave birth naturally, whereas only 79.2% of the controls had normal vaginal delivery. There was 23% higher episiotomy rate among the controls compared with the experimental group. Conversely, the perineal laceration rate was 12% higher in the experimental group; however, most of these lacerations were minimal. No statistically significant difference was observed between the two groups in any of the following measures: maternal level of education, newborns' weight, height, head and chest circumferences, sex, APGAR score at the first and fifth minutes, and initial breastfeeding episode.

Discussion

The current study indicates that women who underwent water birth delivery received less anti-spasmodic drugs, opiates, analgesics, and oxytocin during labor. Cammu and co-workers showed that water causes body relaxation that in turn leads to decreased pain between contractions.⁸ Consequently, taking antispasmodic drugs, opiates, and analgesics were substantially reduced among women with water birth compared with those undergoing conventional delivery. Rush et al. also reported a similar finding in their study.⁹ Additionally, Richmond observed that the amount of drug consumption among women using water birth delivery method was significantly lower.¹ Conversely, Eberhard and colleagues believe that water birth is not less painful than conventional delivery.¹⁰ They assert that the comfort associated with water delivery elevates the pain threshold and pain acceptance in the mother.

Our study revealed that the active phase of the first and third stages of labor were shorter in the

experimental group compared with the controls by 72 and 1.3 minutes, respectively. In contrary to ours, Cammu et al. and Schorn et al. did not observe any difference in the duration of different phases of labor.^{8,11} Nevertheless, Harper believes that the hydrokinetic effect of water stimulates release of oxytocin from the nipples that in turn shortens the labor and delivery times.¹² Pellantova and co-workers conducted a long-term study and concluded that the decreased labor time was characteristic of the second phase only.¹³

Analysis of different studies related to water birth and its effect on pain and labor time further qualifies the importance of this area of research in Iran where other resources are limited. It is noteworthy that all women using water birth in our study gave birth naturally whereas only 79.2% of those using conventional delivery had normal vaginal delivery. Rush and colleagues observed a more prevalent use of medical interventions such as forceps and vacuum in women using conventional delivery than those using water birth.⁹ However, they did not observe a significant difference in the number of cesarean section cases between the two methods of delivery. It is important to note that the total number of cesarean sections reported in the Rush et al's. study was less than the average annual cases reported by the center where the study was conducted (8.9% vs. 16.6%).⁹ Eberhard and Geissbuhler were able to establish a positive relationship between the decreased rate of cesarean sections and water births.¹⁰ This is in agreement with ours.

The current study showed a lower episiotomy rate among women with water birth delivery. While the perineal laceration rate was 12% higher in women in the experimental group, the difference was not statistically significant. The lacerations in women with water birth delivery were less severe than those in conventional delivery. Harper

Table 3. Different stages of labor in experimental and control groups.

	Experimental group (water birth)	Control group (conventional delivery)	P value
Active phase of the first stage (minute)	114.4±93.6	186±132.5	0.004
Second stage (minute)	20.9±20.5	20.6±22.2	0.9
Third stage (minute)	6.0±2.3	7.3±3.4	0.04

believes that water hydrothermal characteristics lead to perineal, vaginal, and uterine relaxation that, in turn, shorten the labor and delivery time.¹² Rush and co-workers revealed that there were less perineal lacerations in water birth method than conventional delivery.⁹ Additionally, Pellantova and colleagues observed fewer number of perineal lacerations associated with water birth, they were at most, first degree lacerations.¹³ Therefore, it can be concluded that water birth protects pelvic muscles. Pellantova and co-workers claim that the transitional (temporary) bruise in newborns delivered in water is not caused by fetal hypoxia. They believe that it is caused by fetal circulatory transformation that is routinely seen in conventional delivery when the umbilical cord remains connected for longer than expected time.¹³ Harper asserts that newborns who are delivered by water birth method have a better score because of better nutrition and oxygenation from placenta¹²; however, Rush et al. did not observe a better fetal condition in such newborns.⁹

In conclusion, this study points out several advantages of water birth delivery. Those women who used this method experienced less pain and completed the delivery sooner. Meanwhile, natural vaginal delivery was accomplished more frequently with this group. These all lead to a decreased necessity for medical interventions as well as an increased socioeconomic advantage for the society.

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