

A Review of Current Scientific Studies of WaterBirth

as of November 1, 2006

[Fetal Diagn Ther.](#) 2000 Sep-Oct;15(5):291-300

Waterbirths: a comparative study. A prospective study on more than 2,000 waterbirths.

- [Geissbuhler V](#),
- [Eberhard J](#). Clinic for Obstetrics and Gynecology, Thurgauisches Kantonsspital, Frauenfeld, Switzerland. vgeissbuehler@bluewin.ch

BACKGROUND: Waterbirths were introduced in 1991 as part of a new birth concept which consisted of careful monitoring and birth management, restrictive use of invasive methods and free choice of different birth methods. METHODS: After the introduction of this new birth concept a prospective observational study was initiated. All parturients of the region give birth in our clinic without preselection, ours being the only birth clinic of the region. 2% of the parturients will be referred to a larger birth clinic (university clinic) mainly because of preterm births before the end of the 33rd week of pregnancy. Every one of the 7,508 births between November 1991, and May 21, 1997, was analyzed. In this article the birth parameters of mother and child in the most often chosen spontaneous birth methods will be compared to assess the safety of alternative birth methods in general and of waterbirths in particular. 2,014 of these 5,953 spontaneous births were waterbirths, 1,108 were Maia-birthing stool births and 2,362 bedbirths (vacuum extractions not included). RESULTS: The parity and age of the mother as well as the newborn's birth weight are comparable in all 3 groups: waterbirth, Maia-birthing stool, and bedbirths. An episiotomy was performed in only 12.8% of the births in water, in 27.7% of the births on the Maia-birthing stool and in 35.4% of the bedbirths. These differences are statistically significant. In spite of the highest episiotomy rates, the bedbirths also show the highest 3rd- and 4th-degree laceration rates (4.1%), thus the difference between the rates for bedbirths and alternative births methods for severe lacerations is significant.

The mothers' blood loss is the lowest in waterbirths. Fewer painkillers are used in waterbirths and the experience of birth itself is more satisfying after a birth in water. The average arterial blood pH of the umbilical cord as well as the Apgar scoring at 5 and 10 min are significantly higher after waterbirths. Infections of the neonate do not occur more often after waterbirths. No case of water aspiration or any other perinatal complication of the mother or child which might be water-related was reported.

CONCLUSION: Waterbirths and other alternative forms of birthing such as Maia-birthing stool do not demonstrate higher birth risks for the mother or the child than bedbirths if the same medical criteria are used in the monitoring as well as in the management of birth.

Copyright 2000 S. Karger AG, Basel. PMID: 10971083 [PubMed - indexed for MEDLINE]

A Review of Current Scientific Studies of WaterBirth

as of November 1, 2006

[Cochrane Database Syst Rev. 2004;\(2\):CD000111.](#)

Update of:

[Cochrane Database Syst Rev. 2000;\(2\):CD000111.](#)

Immersion in water in pregnancy, labour and birth.

- [Cluett ER](#), [Nikodem VC](#), [McCandlish RE](#), [Burns EE](#). School of Nursing and Midwifery, University of Southampton, Nightingale Building (67), Highfield, Southampton, Hants, UK, SO17 1BJ.

BACKGROUND: Enthusiasts for immersion in water during labour, and birth have advocated its use to increase maternal relaxation, reduce analgesia requirements and promote a midwifery model of supportive care. Sceptics are concerned that there may be greater harm to women and/or babies, for example, a perceived risk associated with neonatal inhalation of water and maternal/neonatal infection.

OBJECTIVES: To assess the evidence from randomised controlled trials about the effects of immersion in water during pregnancy, labour, or birth on maternal, fetal, neonatal and caregiver outcomes.

SEARCH STRATEGY: We searched the Cochrane Pregnancy and Childbirth Group trials register (September 2003).

SELECTION CRITERIA: All randomised controlled trials comparing any kind of bath tub/pool with no immersion during pregnancy, labour or birth. DATA COLLECTION AND ANALYSIS: We assessed trial eligibility and quality and extracted data independently. One reviewer entered the data and another checked them for accuracy. MAIN RESULTS: : Eight trials are included (2939 women). No trials were identified that evaluated immersion versus no immersion during pregnancy, considered different types of baths/pools, or considered the management of third stage of labour. There was a statistically significant reduction in the use of epidural/spinal/paracervical analgesia/anaesthesia amongst women allocated to water immersion water during the first stage of labour compared to those not allocated to water immersion (odds ratio (OR) 0.84, 95% confidence interval (CI) 0.71 to 0.99, four trials). There was no significant difference in vaginal operative deliveries (OR 0.83, 95% CI 0.66 to 1.05, six trials), or caesarean sections (OR 1.33, 95% CI 0.92 to 1.91).

Women who used water immersion during the first stage of labour reported statistically significantly less pain than those not labouring in water (40/59 versus 55/61) (OR 0.23, 95% CI 0.08 to 0.63, one trial). There were no significant differences in incidence of an Apgar score less than 7 at five minutes (OR 1.59, 95% CI 0.63 to 4.01), neonatal unit admissions (OR 1.05, 95% CI 0.68 to 1.61), or neonatal infection rates (OR 2.01, 95% CI 0.50 to 8.07).

REVIEWERS' CONCLUSIONS: There is evidence that water immersion during the first stage of labour reduces the use of analgesia and reported maternal pain, without adverse outcomes on labour duration, operative delivery or neonatal outcomes.

A Review of Current Scientific Studies of WaterBirth

as of November 1, 2006

1: [J Matern Fetal Neonatal Med.](#) 2005 May;17(5):357-61

Review of 1600 water births. Does water birth increase the risk of neonatal infection?

- [Thoeni A](#), [Zech N](#), [Moroder L](#), [Ploner F](#). Department of Gynaecology and Obstetrics, Vipiteno/Sterzing, Italy. gynaekologie.sterzing@as-bressanone.it

OBJECTIVES: We reviewed 1600 water births at a single institution over an 8-year period. METHODS: We compared 737 primiparae deliveries in water with 407 primiparae deliveries in bed, and 142 primiparae on the delivery stool. We also evaluated the duration of labor, perineal trauma, arterial cord blood pH, postpartum maternal hemoglobin levels, and rates of neonatal infection. In 250 water deliveries we performed bacterial cultures of water samples obtained from the bath after filling and after delivery. RESULTS:

The duration of the first stage of labor was significantly shorter with a water birth than with a land delivery (380 vs. 468 minutes, P<0.01). The episiotomy rate in all water births was lower with a water birth than with a delivery in bed or a delivery on the birthing stool (0.38%, 23%, and 8.4%, respectively). The rate of perineal tears was similar (23%, respectively). There were no differences in the duration of the second stage (34 vs. 37 minutes), arterial cord blood pH, or postpartum maternal hemoglobin levels. No woman using the water birth method required analgesics. The rate of neonatal infection was also not increased with a water birth (1.22% vs. 2.64%, respectively).

CONCLUSION: Water birth appears to be associated with a significantly shorter first stage of labor, lower episiotomy rate and reduced analgesic requirements when compared with other delivery positions. If women are selected appropriately and hygiene rules are respected, water birth appears to be safe for both the mother and neonate.

PMID: 16147851 [PubMed - indexed for MEDLINE]

[Eur J Obstet Gynecol Reprod Biol.](#) 2000 Jul;91(1):15-20

A retrospective comparison of water births and conventional vaginal deliveries.

- [Otigbah CM](#), [Dhanjal MK](#), [Harmsworth G](#), [Chard T](#). Department of Obstetrics and Gynaecology, Homerton Hospital, London, UK.

The aim of this study was to document the practice of water births and compare their outcome and safety with normal vaginal deliveries. A retrospective case-control study was conducted over a five year period from 1989 to 1994 at the Maternity Unit, Rochford Hospital, Southend, UK. Three hundred and one women electing for water births were compared with the same number of age and parity matched low risk women having conventional vaginal deliveries. Length of labour; analgesia requirements; apgar scores; maternal complications including perineal trauma, postpartum haemorrhages, infections; fetal and neonatal complications including shoulder dystocias; admissions to the Special Care Baby Unit, and infections were noted.

A Review of Current Scientific Studies of WaterBirth

as of November 1, 2006

Primigravidae having water births had shorter first and second stages of labour compared with controls (P<0.05 and P<0.005 respectively), reducing the total time spent in labour by 90 min (95% confidence interval 31 to 148). All women having water births had reduced analgesia requirements. No analgesia was required by 38% (95% confidence interval 23.5 to 36.3, P<0.0001) and 1.3% requested opiates compared to 56% of the controls (95% confidence interval 46.3 to 58.1, P<0.0001). Primigravidae having water births had less perineal trauma (P<0.05). Overall the episiotomy rate was 5 times greater in the control group (95% confidence interval 15 to 26.2, P<0.0001), but more women having water births had perineal tears (95% confidence interval 6.6 to 22.6, P<0.001). There were twice as many third degree tears, post partum haemorrhages and admissions to the Special Care Baby Unit in the controls, although these differences were not significant. Apgar scores were comparable in both groups. There were no neonatal infections or neonatal deaths in the study.

This study suffers from many of the methodological problems inherent in investigation of uncommon modes of delivery. However, we conclude that water births in low risk women delivered by experienced professionals are as safe as normal vaginal deliveries.

Labouring and delivering in water is associated with a reduction in length of labour and perineal trauma for primigravidae, and a reduction in analgesia requirements for all women.

PMID: 10817872 [PubMed - indexed for MEDLINE]

[Wien Klin Wochenschr.](#) 2002 Jun 14;114(10-11):391-5. [Links](#)

Effects of water birth on maternal and neonatal outcomes.

- [Bodner K](#), [Bodner-Adler B](#), [Wierrani F](#), [Mayerhofer K](#), [Fousek C](#), [Niedermayr A](#), [Grunberger W](#).

Departments of Gynaecology and Obstetrics, Hospital Rudolfstiftung, Vienna, Austria. Klausbodner@yahoo.com

BACKGROUND: Our purpose was to assess benefits and possible disadvantages of water births and to compare maternal and neonatal outcomes with normal vaginal deliveries. METHODS: This case-controlled study was carried out between January 2000 and July 2001. A total of 140 women who wanted water births were enrolled into the study. Our analysis was restricted to a sample of women with a gestational age > 37 weeks, a normal sized foetus, a reactive admission cardiotocography, drainage of clear amniotic fluid (if the membranes were already ruptured) and a pregnancy with cephalic presentation. Women with medical or obstetric risk factors were excluded. 140 controls were selected from the delivery database as the next parity-matched normal spontaneous vaginal delivery.

RESULTS: A statistically significant lower rate of episiotomies (p = 0.0001) and vaginal trauma (p = 0.03) was detected in the group assigned to water birth, whereas the frequency of perineal tears and labial trauma remained similar in both groups (p > 0.05). A statistically significant decrease in the use of medical analgesia (p = 0.0001) and oxytocin (p = 0.002) was observed in women who had water births. A trend towards a reduction of the length of the first stage of labour was only observed in primiparous women bearing in water, but this

A Review of Current Scientific Studies of WaterBirth

as of November 1, 2006

reduction did not reach statistical significance ($p > 0.05$). Manual placenta removal ($p = 0.017$), severe postpartum haemorrhage (blood loss > 500 ml; $p = 0.002$) and maternal infection rate ($p = 0.03$) were statistically significant lower in women who delivered in water.

When analysing the postpartum haemoglobin, no statistically significant differences could be observed between the two groups ($p > 0.05$). No statistically significant differences were detected for neonatal parameters ($p > 0.05$) between women who had had water births and those choosing conventional vaginal delivery.

PMID: 12708093 [PubMed - indexed for MEDLINE]

[Minerva Ginecol.](#) 2005 Apr;57(2):199-206.

[Water birth and neonatal infections. Experience with 1575 deliveries in water]

[Article in Italian]

- [Thoni A](#), [Zech N](#), [Moroder L](#). Unita di Ginecologia e Ostetricia, Ospedale Zonale, Vipiteno (BZ).

AIM: The aim of our study is to provide an answer on the advantages offered by water births, to compare them with 2 other delivery positions and to analyse the pathogenous microorganisms present in the water from the bath. METHODS: We compared 725 primiparae deliveries in water, 407 primiparae deliveries in bed and 142 on the delivery stool over the last 7 years. We evaluated the duration of labour, perineal trauma, arterial cord blood pH, shoulder dystocia and postpartum maternal hemoglobin levels. We have evaluated 200 water samples, taken from the bath after filling it and after delivery, and analyzed the pathogenous microorganisms and the possibility of neonatal infections.

RESULTS: The duration (first stage) of labour and the rate of episiotomies was significantly reduced in primiparae delivering in water compared with the other delivery positions. Nevertheless, the percentage of perineal trauma was not increased. There were no differences in the duration of the second stage and arterial umbilical cord blood pH. Postpartum maternal hemoglobin levels remained unchanged. No woman delivering in the water required analgesics. Infections after water births do not occur more frequently than after traditional births.

CONCLUSIONS: Our results show that water birth has major advantages compared with traditional delivery methods. It is associated with a significantly shorter first stage of labour, a lower episiotomy rate and reduced analgesic requirements when compared with other delivery positions. Provided that the women are selected appropriately, and the hygiene rules are respected, water birth is safe for mother and neonate.

PMID: 15940082 [PubMed - indexed for MEDLINE]

A Review of Current Scientific Studies of WaterBirth

as of November 1, 2006

[Minerva Ginecol.](#) 2001 Feb;53(1):29-34. [Links](#)

[Birth in water. A comparative study after 555 births in water]

[Article in Italian]

- **Thoni A, Murari S.** Divisione di Ostetricia e Ginecologia, Ospedale di Vipiteno, Bolzano, Italy.
gynaekologie.sterzing@se-nord.provinz.bz.it

BACKGROUND: The object of our study is to research into the quality of the different delivery positions, offered in our hospital with special focus on the advantages for birth in water. METHODS: From February 1997 to 1 October 2000 we do research retrospectively on data of 555 deliveries in water, 320 on the traditional bed and 125 on the delivery stool give us the possibility to investigate about duration of birth, rate of episiotomies and perineum lacerations, consumption of painkillers, arterial umbilical cord pH and haemoglobin postpartum.

RESULTS: In our comparing analysis of the duration of birth we could show a relevant reduction especially for primiparae which had delivered in water. The reduction is only significant for the first part of labor (360 minutes in the pool, 445 minutes on the traditional bed and 420 minutes on the stool) whereas there is no difference for the second part of labor. The significant reduction on episiotomies (1%) in comparison to the one on the traditional bed (20%) or on the stool (10%) for primiparae in water doesn't mean an increase at perineum lacerations. (each 25%). In water we saw no lacerations/injuries of the perineum for 58% of primiparae, on the traditional bed 36% and on the stool 43%. No woman in labour needed a painkiller in the pool. There was no difference found between the three groups referring to the arterial umbilical cord pH or the haemoglobin postpartum.

CONCLUSIONS: Our study shows relevant medical advantages for a delivery in water: and a significant reduction of the duration of the first part of labour, significant less episiotomies and perineum lacerations and no need for painkillers. The security of the neonate is guaranteed under attention to the known contraindications.

PMID: 11279393 [PubMed - indexed for MEDLINE]