MaHTAS
Malaysian Health Technology Assessment Section

Water Birth
Executive Summary

[Adapted from the report by DR JUNAINAH SABIRIN]

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Introduction

Childbirth, labour, delivery, birth, partus, or parturition is the culmination of a pregnancy period with the expulsion of one or more newborn infants from the woman's uterus. The process of normal childbirth is characterised in three stages of labour: the shortening and dilation of the cervix (1st stage), descent and birth of the infant (2nd stage), and birth of the placenta (3rd stage). The use of water immersion in labour and birth remains a hot topic in perinatal medicine. There are two separate and distinct aspects to the use of water immersion in labour: 1) the use of immersion for women in first stage of labour (without birth into the water), and 2) immersion for women in the second stage of labour with birth into the water (referred as water birth). Hence, water birth refers to childbirth, usually human that occurs in water. Views on water birth are usually polarised. Proponents believe that water birth results in a more relaxed, less painful experience that promotes a midwife-led model of care. Critics argue that the safety of water birth has not been scientifically proven and that a wide range of adverse neonatal outcomes have been documented. In Malaysia, the practice of water birth and the actual number of water birth is unknown. The Federal Territory State Health Department, Kuala Lumpur reported two unsafe deliveries associated with water birth where the deliveries were not attended by trained healthcare providers. Hence, this technology review was requested by the Secretary of the Malaysia Midwife Board.

Objective/Aim

The objective of this systematic review was to assess the safety, effectiveness, economic implication, organizational or legal implication of water birth compared with conventional birth for the mother and the baby.

Results and Conclusions

A total of 1,201 titles were identified through the Ovid interface and PubMed. Twenty one articles related to water birth is included in this review: one systematic review, one non randomised controlled trial, two cohort, three case control studies, four cross sectional studies, three case series, six case reports and one economic evaluation study. The studies were conducted in Switzerland, Australia, United Kingdom, Italy, New Zealand, Turkey and Japan.

a. Safety of water birth compared with conventional birth:

Maternal

Blood loss during labour

- Fair level of evidence to suggest that there was no significant difference in blood loss for women having water birth compared with conventional birth.

Perineal trauma

- Fair level of evidence to suggest that there was significantly lower episiotomy rate and third to fourth degree perineal lacerations in women having water birth. However, women having water birth were found to have higher rate of first to second degree lacerations and vaginal or labial tears.

Maternal infection

- Limited fair level of evidence to suggest that there was no significant difference in maternal infection for women having water birth compared with conventional birth. However, there was a case report on postpartum pneumoperitoneum and peritonitis after water birth.

Fetal / neonatal

Apgar score and umbilical cord arterial pH

- Fair level of evidence to suggest that there was no significant difference in Apgar score and umbilical cord arterial pH in neonates.

Admission to neonatal intensive care unit

- Evidence on admission to neonatal intensive care unit is inconclusive. However, among reasons for admission of neonates delivered in water to the neonatal intensive care unit include snapped umbilical cord, fresh water drowning, water aspiration, persistent pulmonary hypertension and hypoxic ischaemic encephalopathy.

Fetal / neonatal infection

- Fair level of evidence to suggest that there was no significant difference in neonatal infection. However, there were case series and case reports which reported the potential risk of *Legionella pneumophila* pneumonia, adenovirus infection and *Pseudomonas aeruginosa* infection in neonates associated with water birth.

Water aspiration

- Low level of evidence to suggest the greater level of respiratory morbidity following water birth.

Perinatal mortality

- Evidence is inconclusive with regards to perinatal mortality as power of available studies is insufficient.

The lack of evidence of significant difference between the two modes of birth should be taken with caution in view of the limitations of the available studies.

b. Effectiveness of water birth compared with conventional birth:
Maternal

Duration of second stage of labour

- Fair level of evidence to suggest that there was no significant difference in duration of second stage of labour for women having water birth compared with conventional birth.

Use of analgesics

- Fair level of evidence to suggest that there was significant reduction in the use of analgesics among women having water birth.

Satisfaction with childbirth experience

- Limited fair level of evidence to suggest that there was higher level of satisfaction with childbirth experience among women having water birth compared with conventional birth.

Pelvic floor function

- Limited fair level of evidence to suggest that there was no significant difference in pelvic floor function after water birth compared with conventional birth.

Fetal / neonatal

There was no retrieval evidence on the effectiveness of water birth compared with conventional delivery for the fetal / neonatal outcomes.

c. Cost-effectiveness

A cost-effectiveness analysis conducted in Italy found the incremental health care cost (ICER) per avoided perineal tear because of water delivery was estimated as € 1,395.7 (95% CI: € 1,049.2 to € 3,608.5). The cost-effectiveness acceptability curve suggests that at a threshold of € 2,000, more than 80% of water delivery would be cost-effective.

d. Organizational

Water birth is being practiced within the hospital or at home for low risk patient. Guidelines were developed to ensure the safety, as far as possible, for women choosing the option of immersion in water for labour and / or birth for themselves and their unborn / newborn babies. The guidelines include criteria for inclusion and exclusion for immersion in water during labour and / or birth as mentioned in para 3.4 in the text, management of different stages of labour, equipment, water temperature, infection control, cleaning of bath / pool, clothing, education, contamination, emergency situation, health and safety, and audit. Water birth should be attended by a registered midwife and / or medical practitioner who is trained and experienced in facilitating water birth. There is a significant gap in the local setting as water births are not part of the local training curricula of the advanced diploma in midwifery, nor in the training of obstetrics and gynaecology specialists.

e. Legal implication

There was no retrievable evidence or record on legal implication related to water birth.

Methods

Electronic databases were searched through the Ovid interface: Ovid MEDLINE® In-process and other Non-indexed citations and Ovid MEDLINE® 1948 to present, EBM Reviews - Cochrane Central Register of Controlled Trials - October 2013, EBM Reviews - Cochrane Database of Systematic Reviews - 2005 to October 2013, EBM Reviews - Health Technology Assessment - 4th Quarter 2013, EBM Reviews - Database of Abstracts of Reviews of Effects - 4th Quarter 2013, EBM Reviews – NHS Economic Evaluation Database 4th Quarter 2013, Embase – 1988 to 2013 week 46. Searches were also run in PubMed. Google was used to search for additional web-based materials and information. No limits were applied. Additional articles were identified from reviewing the references of retrieved articles. Last search was conducted on 25 November 2013.