

Hydrotherapy During Labour: A Review of Current Researches

Doğum Eyleminde Hidroterapi Uygulaması: Güncel Araştırmaların Derlemesi

Şerife İrem DÖNER¹, Meltem UĞURLU²

¹Arş. Gör. Ankara Medipol Üniversitesi, Sağlık Bilimleri Fakültesi, Ankara, 0000-0002-0052-4133

²Doç. Dr. Sağlık Bilimleri Üniversitesi, Gülhane Sağlık Bilimleri Fakültesi, Ankara, 0000-0002-9183-219X

ÖZET

Hidroterapi, farklı sıcaklıklardaki suyun hastalıkları tedavi etmek ve ağrıyı azaltmak için kullanıldığı, doğumda ağrı yönetimi için nonfarmakolojik yöntemlerden biridir. Amerikan Obstetrisyenler ve Jinekologlar Derneği, hidroterapinin doğumun ilk evresinde kullanılabileceğini, ancak suda doğumun sonuçları hakkında yeterli kanıt olmadığını belirtmektedir. Hidroterapinin etkileri doğumun evrelerine göre incelendiğinde, doğumun ilk evresinde ağrı, anksiyete, konfor düzeyi, sempatovagal denge, ebeveynlik davranışı ve aktif faz süresi üzerinde etkisi olduğu belirlenmiştir. Doğumun ikinci evresinde ise; epidural ve opioid kullanımı, maternal ağrı, epizyotomi kullanımı, intakt perine, omuz distosisi ve doğum eylemi süresi üzerinde etkili olduğu belirlenmiştir. Doğum sonrası dönemde ise kanama insidansı, doğum memnuniyeti ve kadınların otonomi duygusu üzerinde etkisi olduğu, hastanede yatış süresini kısalttığı ve emzirme oranını artırdığı bildirilmiştir. Suda doğumun yenidoğan üzerindeki etkileri incelendiğinde vücut ısısı, arteriyel ve venöz pH üzerinde etkisi olduğu, Apgar skoru üzerinde ise etkisi olmadığı tespit edilmiştir. Literatürde suda doğum ile ilgili çeşitli çalışmalar bulunmakla birlikte kanıta dayalı sonuçlar elde etmek için daha fazla çalışmaya ihtiyaç vardır. Bu derlemenin amacı, doğumun birinci ve ikinci evresinde uygulanan hidroterapinin son 5 yıldaki güncel araştırma sonuçlarını incelemektir.

Anahtar kelimeler:Hidroterapi, suda doğum, doğum, doğal doğum

ABSTRACT

Hydrotherapy is one of the nonpharmacological methods for pain management in childbirth, where water at different temperatures is used to treat diseases and reduce pain. The American College of Obstetricians and Gynecologists states that hydrotherapy can be used in the first stage of labour, however, there exists a lack of conclusive evidence regarding the impacts of water birth on outcomes. When the effects of hydrotherapy were examined according to the stages of labour, it was determined that it had an effect on pain, anxiety, comfort level, sympathovagal balance, parenting behavior and active phase duration in the first stage of labour. In the second stage of labour; epidural and opioid use, maternal pain, episiotomy use, intact perineum, shoulder dystocia and duration of labour. In the postpartum period, it has been reported to have an effect on the incidence of postpartum hemorrhage, birth satisfaction and women's sense of autonomy, shorten the duration of hospitalization and increase the rate of breastfeeding. When the effects of water birth on the newborn are examined, it is determined that it has an effect on body temperature, arterial and venous pH, while it has no effect on Apgar score. Although there are various studies on water birth in the literature, more studies are needed to obtain evidence-based results. The aim of this review is to examine the current research results of hydrotherapy applied in the first stage of labour and the second stage of labour in water (water birth) in the last 5 years.

Key words: Hydrotherapy, water birth, labour, natural birth

Sorumlu yazar:

Şerife İrem Döner, Hacı Bayram Mah, Talatpaşa Blv No: 4, 06050 Altındağ/Ankara

Başvuru/Submitted: 02.02.2024 **Kabul/Accepted:** 31.05.2024

Cite this article as: Uğurlu M. Döner Şİ. Hydrotherapy During Labour: A Review of Current Researches. J TOGU Heal Sci. 2024;4(3):367-373.

Introduction

Labour starts with contraction of the uterus and ends with the birth of the fetus and placenta after the cervix is completely thinned and opened as a result of the increase in the intensity and amount of contractions (1). During labour, contraction and stretching of uterine muscle fibers, relaxation of the birth canal, pressure on the bladder and the root of the lumbosacral plexus cause pain sensation in women (2).

Labour pain is considered to be one of the most severe types of pain (3). Symptoms such as nausea, fatigue, respiratory alkalosis and increased catecholamine production, decreased uterine blood flow and weakened contractions, decreased cardiac output and increased blood pressure can be observed, as well as a number of physiological changes due to severe pain experienced by women during labour (4).

In the guideline published in 2018, the World Health Organization declared "Intrapartum care for a positive childbirth experience", it is reported that pharmacologic and nonpharmacologic methods can be used to reduce pain in labour depending on women's preferences (5). Women benefit from these methods to cope with pain during labour (6). Nonpharmacologic methods may be preferred over pharmacologic methods because they are easy to use and do not cause a risk for the health of the mother and fetus. Hydrotherapy is one of the most commonly used nonpharmacologic methods to reduce labour pain (7). Hydrotherapy is a procedure that uses water of different temperatures to reduce pain and treat diseases (8). It is frequently used during labour and birth (8-17).

Hydrotherapy includes intermittent showering and swimming in the pool in trauma (17). In labour, the hydrothermal (relaxation in the perineum, vagina and cervix) and hydrokinetic (endogenous oxytocin release due to stimulation of the nipple by water) effects of hydrotherapy are utilized (15). Warm water gives calming stimuli to the nerves in the skin, increases vasodilatation and causes a decrease in catecholamines. In this way, a woman in warm water feels less pain during labour contractions (9). Intrapartum immersion (IPI) is defined as entering water at any stage of labour (17). Labour in water (WL) means that the mother enters the water before the birth of the baby. However, she is taken out of the water because labour will take place (17). Water birth (WB) is defined as the woman being in water in the second stage of labour and the baby being born in water (15). A woman's presence in water during labour or at any stage of labour supports physiological birth (19-20).

In studies, it has been reported that water provides relaxation during labour, reduces pain, analgesia and the need for regional anesthesia, contributes to the physiology of labour, increases the mother's satisfaction with labour, increases the functional diameter of the pelvis, the quality of uterine contractions, endorphin release and facilitates the mother's position at different stages of labour (19, 21). In addition, it has been reported that the rate of spontaneous vaginal birth increases and the rate of intervention birth decreases in midwife and nurse-led water births (19).

In the guideline published in 2016, The American College of Obstetricians and Gynecologists stated that hydrotherapy can be used in the first stage of labour, but birth should take place on land and there is insufficient evidence on the outcomes of water birth (22). The American College of Nurse-Midwives advises offering women evidence-based information regarding water birth, indicating it as a viable option for those with uncomplicated pregnancies who desire it. Moreover, due to insufficient case studies, there is no mandate for women to exit the water upon entering the second stage of labour (23). International organizations assert the lack of conclusive evidence regarding water birth outcomes. The review aims is to analyze recent research findings regarding immersion during both the first and second stages of labour, as well as water birth, within the past five years.

Hydrotherapy in the first stage of labour

The initial stage of labour commences with regular and rhythmic uterine contractions and concludes upon reaching full cervical dilation of 10 centimeters (cm). This stage is subdivided into two phases: latent and active. The latent phase is defined as the phase in which cervical changes are observed and cervical dilatation progresses up to 5 cm, whereas cervical effacement and dilatation from 5 cm to 10 cm (full dilatation) is defined as the active phase (5).

The hydrotherapy intervention employed during the initial stage of labour aims to alleviate women's anxiety and promote relaxation (24). Taşkın and Ergin (2022) conducted a randomised controlled study to investigate the effects of hot shower application on pain, anxiety and comfort in the first stage of labour. As a result of the study, it was stated that hot shower reduced pain and anxiety and increased the comfort of labour (25). In a quasi-experimental study designed to assess the impact of hydrotherapy administered during the active phase of labour on both the birthing process and parental behavior, findings revealed shortened durations of the active and second stages of labour, along with reduced pain perception among women who underwent hydrotherapy. The same study reported that parenting behavior was more

positive compared to the control group (26). In a case-control study led by Aksakal et al. (2022) investigating the impact of hydrotherapy during the active phase of labour on postpartum depression, findings indicated that the group receiving hydrotherapy experienced reduced labour pain compared to the control group. However, there was no observed effect on postpartum depression. (27). In a research investigation assessing the impact of warm shower hydrotherapy on women in the first stage of labour, findings suggested that warm shower application during this stage might have a beneficial effect on sympathovagal balance in women by promoting parasympathetic withdrawal (28).

Second stage of labour - water birth

The second stage of labour is the time period between the completion of cervical dilatation and birth of the baby (5). Water birth helps women with pain management and reduces the use of routine interventions in labour (29). Women who are in water during the first stage of labour and who give birth in water are less exposed to routine intrapartum interventions (10). A meta-analysis of 36 studies (n=157.546 participants) was conducted to determine the impact of being in water during the first stage of labour and water birth on maternal and neonatal health outcomes. The results of the meta-analysis showed that epidural and opioid use, episiotomy, maternal pain and postpartum hemorrhage were significantly reduced in women who had water birth compared to women who were only in water during the first stage. The same study reported that water birth increased maternal satisfaction and the rate of intact perineum (10). In a cohort study conducted by Bovbjerg et al. (2022) to examine the effect of 17.530 water births and 17.530 land births on maternal and neonatal health outcomes. The results of this study showed that water birth was associated with improved outcomes such as neonatal death and maternal or neonatal hospitalization in the first 6 weeks but was also associated with morbidity due to uterine infection and umbilical cord avulsion (11). Meta-analysis of 22 studies (n=212 843 women) comparing land birth and water birth reported a lower risk of postpartum hemorrhage and less shoulder dystocia as a result of water birth compared to land birth. In addition, there was a 45% increase in the incidence of first-second degree tears, with no significant difference in the rates of third and fourth degree tears (12). In another meta-analysis study in which 9 retrospective articles (n=124.090) were analyzed to determine the effect of water birth on perineal laceration, it was reported that the risk of perineal laceration decreased 1.09 times in women who gave birth in water, but it was not statistically significant (13).

Mothers who gave birth in water reportedly needed less painkillers and had higher breastfeeding success. It was reported that umbilical cord artery and vein pH was higher, body temperature was lower and hospital stay was shorter in babies born in water. It was also reported that there was no difference between the Apgar scores of babies born in water and babies born on land (14). A prospective cohort study (n=1665) was conducted in Australia to evaluate and compare obstetric and neonatal outcomes among three groups (birth in water, experienced immersion in the first stage of labour and gave birth on land). The study findings revealed comparable rates of obstetric anal sphincter injury and postpartum hemorrhage across all groups, with a lower incidence of regional analgesia usage observed among women delivering in water. Additionally, infants born in water exhibited a decreased requirement for neonatal intensive care unit admission, while only one case of cord rupture was documented in the same study. (15). In a retrospective cohort study conducted by Neiman et al. (2020) that compared birth outcomes between women who experienced water immersion solely during the first stage of labour and those who immersed during both the first and second stages, findings indicated that a majority of women delivering in water were multiparous. Additionally, the second stage of labour was shorter for primiparous women, while postpartum hemorrhage was found to be more prevalent (16). In a meta-synthesis study incorporating five qualitative research works exploring women's experiences with water birth, findings indicated that those who delivered in water reported enhanced feelings of autonomy and increased control during labour (17).

Conclusion

Hydrotherapy and water birth is one of the nonpharmacological methods used to relieve women's reduce pain and increase relaxation. International organizations such as American College of Obstetricians and Gynecologists and World Health Organization recommend hydrotherapy in the first stage of labour. When the results of recent meta-analysis studies are examined, it is seen that the rate of intrapartum intervention decreases in women who give birth in water and newborn outcomes are more positive compared to land birth, but some negative results are also reported. In the literature, it is seen that studies with high level of evidence are insufficient to make recommendations about water birth. More studies are needed to make recommendations to improve the outcomes of care related to hydrotherapy in labour and water birth.

References

1. Serrano S, & Ayres-de-Campos D. Normal Labour. The EBCOG Postgraduate Textbook of Obstetrics & Gynaecology: Obstetrics & Maternal-Fetal Medicine. 2021;1, 359.
2. Mathur VA, Morris T, McNamara K. Cultural conceptions of Women's labor pain and labor pain management: A mixed-method analysis. *Social Science & Medicine*. 2020;261:113240.
3. Sng BL, Sia ATH. Maintenance of epidural labour analgesia: The old, the new and the future. *Best Practice & Research Clinical Anaesthesiology*. 2017; 31(1):15-22.
4. Koyyalamudi V, Sidhu G, Cornett EM, Nguyen V, Labrie-Brown C, Fox CJ, et al. New labor pain treatment options. *Current Pain and Headache Reports*. 2016; 20:1-9.
5. World Health Organization. 2018. Intrapartum care for a positive childbirth experience. Available date: 14.07.2023. Available at: <https://apps.who.int/iris/bitstream/handle/10665/260178/9789241550215-eng.pdf?sequence=1>
6. Muhammad Z, Abdulrahman A, Tukur J, Shuaibu SA. A Randomized controlled trial of intramuscular pentazocine compared to intravenous paracetamol for pain relief in labor at Aminu Kano Teaching Hospital, Kano. *Tropical Journal of Obstetrics and Gynaecology*. 2017; 34(2):116-123.
7. Mascarenhas VHA, Lima TR, Negreiros FdS, Santos JDM, Moura MÁP, Gouveia MTdO, et al. Scientific evidence on non-pharmacological methods for relief of labor pain. *Acta Paulista de Enfermagem*. 2019; 32:350-357.
8. Chowdhury RS, Islam MD, Akter K, Sarkar MAS, Roy T, Rahman ST. Therapeutic aspects of hydrotherapy: a review. *Bangladesh Journal of Medicine*. 2021;32(2):138-141.
9. Vidiri A, Zaami S, Straface G, Gullo G, Turrini I, Matarrese D, ... & Marchi L. Waterbirth: current knowledge and medico-legal issues. *Acta Bio Medica: Atenei Parmensis*. 2022;93(1).
10. Burns E, Feeley C, Hall PJ, Vanderlaan J. Systematic review and meta-analysis to examine intrapartum interventions, and maternal and neonatal outcomes following immersion in water during labour and waterbirth. *BMJ open*. 2022;12(7):e056517.
11. Bovbjerg M, Cheyney M, Caughey A. Maternal and neonatal outcomes following waterbirth: a cohort study of 17 530 waterbirths and 17 530 propensity score-matched land births. *BJOG: An International Journal of Obstetrics & Gynaecology*. 2022;129(6):950-958.
12. Cristina T, Mara T, Arianna S, Gennaro S, Rosaria C, Pantaleo G. Impact of waterbirth on post-partum hemorrhage, genital trauma, retained placenta and shoulder dystocia: A systematic review and meta-analysis. *European Journal of Obstetrics & Gynecology and Reproductive Biology*. 2022; 276: 26-37.
13. Kartikasari M, Aktovianta L. Meta-Analysis: The Effect of Waterbirth Delivery Method on the Risk of Perineal Rupture. *Journal of Epidemiology and Public Health*. 2021;6(4):505-20.
14. Hautala M, Smeds M, Taittonen L. Waterbirths were associated with low pain relief during delivery, high breastfeeding success and healthy newborn infants. *Acta Paediatrica*. 2022;111(10):1885-1890.
15. Seed E, Kearney L, Weaver E, Ryan EG, Nugent R. A prospective cohort study comparing neonatal outcomes of waterbirth and land birth in an Australian tertiary maternity unit. *Australian and New Zealand Journal of Obstetrics and Gynaecology*. 2023;63(1):59-65.
16. Neiman E, Austin E, Tan A, Anderson CM, Chipps E. Outcomes of Waterbirth in a US Hospital-Based midwifery practice: a retrospective cohort study of water immersion during labor and birth. *Journal of midwifery & women's health*. 2020;65(2):216-223.

17. Clews C, Church S, Ekberg M. Women and waterbirth: a systematic meta-synthesis of qualitative studies. *Women and Birth*. 2020;33(6):566-573.
18. Uzunlar Ö, Şule Ö, Tokmak A, Üstün YE. Alternatif bir doğum yöntemi; faydaları ve riskleri ile suda doğum. *Jinekoloji-Obstetrik ve Neonatoloji Tıp Dergisi*. 2017;14(4):187-191.
19. Shaw-Battista J. Systematic review of hydrotherapy research. *The Journal of perinatal & neonatal nursing*. 2017;31(4):303-316.
20. Maude RM, Kim M. Getting into the water: a prospective observational study of water immersion for labour and birth at a New Zealand District Health Board. *BMC Pregnancy and Childbirth*. 2020; 20:1-12.
21. Feeley C, Cooper M, Burns E. A systematic meta-thematic synthesis to examine the views and experiences of women following water immersion during labour and waterbirth. *Journal of Advanced Nursing*. 2021;77(7):2942-56.
22. The American College of Obstetricians and Gynecologists. Immersion in Water During Labor and Delivery. 2016; No:679. Available date: 23.03.2023 Available at: <https://www.acog.org/clinical/clinicalguidance/committeeopinion/articles/2016/11/immersion-in-water-during-labor-and-delivery>.
23. The American College of Nurse-Midwives. ACNM's Statement Regarding the New ACOG/AAP Water Birth Committee Opinion. Available date: 23.03.2023. Available at: <https://www.midwife.org/acnm-water-birth-statement>.
24. Susiloningtyas L, Novitasari F, Wulandari RF. Effect of heat compresses hydrotherapy to reduction of pain labor stage 1st. *STRADA Jurnal Ilmiah Kesehatan*. 2019;8(2):136-45.
25. Taşkın A, Ergin A. Effect of hot shower application on pain anxiety and comfort in the first stage of labor: A randomized controlled study. *Health Care for Women International*. 2022;43(5):431-47.
26. Tuncay S, Kaplan S, Moraloglu Tekin O. An assessment of the effects of hydrotherapy during the active phase of labor on the labor process and parenting behavior. *Clinical nursing research*. 2019;28(3):298-320.
27. Aksakal SE, Pay RE, Köse C., Özkan D, Üstün YE. The effect of hydrotherapy applied during the active phase of labor on postpartum depression: A Case-Control Study. *Journal of Clinical Obstetrics & Gynecology*. 2022;32(4):120-126.
28. Dias RA, de Faria Cardoso C, Ghimouz R, Nono DA, Silva Jr JA, Acuna J, et al. Quantitative cardiac autonomic outcomes of hydrotherapy in women during the first stage of labor. *Frontiers in Medicine*. 2023;9:2868.
29. Plint E, Davis D. Sink or swim: water immersion for labor and birth in a tertiary maternity unit in Australia. *International Journal of Childbirth*. 2016;6(4):206-222.