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RESEARCH

Retrospective Cohort Study of Hydrotherapy in Labor

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ABSTRACT

Objective: To describe the use of hydrotherapy for pain management in labor.

Design: This was a retrospective cohort study.

Setting: Hospital labor and delivery unit in the Northwestern United States, 2006 through 2013.

Participants: Women in a nurse-midwifery–managed practice who were eligible to use hydrotherapy during labor.

Methods: Descriptive statistics were used to report the proportion of participants who initiated and discontinued hydrotherapy and duration of hydrotherapy use. Logistic regression was used to provide adjusted odds ratios for characteristics associated with hydrotherapy use.

Results: Of the 327 participants included, 268 (82%) initiated hydrotherapy. Of those, 80 (29.9%) were removed from the water because they met medical exclusion criteria, and 24 (9%) progressed to pharmacologic pain management. The mean duration of tub use was 156.3 minutes (standard deviation = 122.7). Induction of labor was associated with declining the offer of hydrotherapy, and nulliparity was associated with medical removal from hydrotherapy.

Conclusion: In a hospital that promoted hydrotherapy for pain management in labor, most women who were eligible initiated hydrotherapy. Hospital staff can estimate demand for hydrotherapy by being aware that hydrotherapy use is associated with nulliparity.

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Successful implementation of a program to provide hydrotherapy for pain management during labor requires predicting the demand for hydrotherapy facilities. Authors of peer-reviewed descriptions of hydrotherapy during labor suggest wide variation in use for first- and second-stage labor (Brickhouse, Isaacs, Batten, & Price, 2015; Fox et al., 2013; Geissbuehler & Eberhard, 2000; Lukasse, Rowe, Townend, Knight, & Hollowell, 2014; Petersen, Ayerle, Fromke, Hecker, & Gross, 2011; Schrocksnadel, Kunczicky, Meier, Brezinka, & Oberaigner, 2003). Authors of reports of hydrotherapy use in the United States suggest between 8% and 10% of women use hydrotherapy during labor (Declercq, Sakala, Corry, Applebaum, & Herrlich, 2013; Shaw-Battista, 2009). However, researchers suggest that the demand for hydrotherapy is underestimated in these reports because up to half of women who desire hydrotherapy do not have access to a hydrotherapy tub during labor (Forde et al., 1999; Prosser et al., 2013).

Predicting the use of hydrotherapy facilities includes estimating the proportion of eligible women who will initiate hydrotherapy, the duration of hydrotherapy in labor, and the proportion of women who will discontinue hydrotherapy before the end of labor (Baxter, 2006; Forde et al., 1999; Henderson et al., 2014). Currently, to our knowledge, researchers have not described the proportion of eligible women who will initiate and discontinue hydrotherapy or the characteristics associated with the likelihood of discontinuation in the United States. Estimating the proportion of women who will discontinue hydrotherapy is an important consideration to determine the number of hydrotherapy tubs necessary.

The purposes of this study were to provide estimates of hydrotherapy tub use for nurse-midwifery–managed hospital births in the United States and to describe the characteristics associated with use of hydrotherapy. Hydrotherapy use was described in terms of the proportion of women who initiate hydrotherapy, the duration of hydrotherapy, and the proportion of women who discontinue hydrotherapy before birth.

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Hydrotherapy use can be predicted by estimating who will initiate hydrotherapy, the duration of hydrotherapy, and who will discontinue hydrotherapy before the end of labor.

Methods

This study was a secondary analysis of retrospectively collected practice monitoring data for a midwifery practice at a hospital in the Northwestern United States. The data included de-identified patient information collected and reported as required by agreement to attend water birth at the hospital. The researcher received a letter of determination from the institutional review board committee that the study was exempt from institutional review board review (Protection of Human Subjects, 2009).

Setting

Births occurred between 2006 and 2013 at a community hospital that provided a built-in Jacuzzi-style tub for hydrotherapy during the first stage in all labor and birth rooms. In addition, three tubs were designated for water birth, one built-in water birth tub and two portable tubs that could be set up in any labor room. Water birth tubs were larger than the Jacuzzi-style tubs to allow freedom of movement during pushing. Women who desired to have water births signed an informed consent document before admission and were directed to a room with a water birth tub.

A single hydrotherapy protocol informed practice for Jacuzzi-style tubs and water birth tubs. Tubs were filled to maintain a water level that covered the abdomen but remained below the shoulders. Water temperature was maintained between 95°F and 100°F. Women who used hydrotherapy could leave and reenter the tub as desired, and women in the tub were never left unattended. During hydrotherapy, standard protocols were followed for vital signs, fetal heart rate monitoring, Group B *Streptococcus* prophylaxis, and intravenous access. Women were asked to leave the hydrotherapy tub if there was a fetal heart rate abnormality, indications of maternal infection or dehydration including elevated temperature and pulse, excessive bleeding, or excessively soiled water. A woman who was required to leave the tub could reenter the tub if the midwife determined that the conditions of her labor once again met eligibility criteria.

Participants

The final sample included women birthing with the midwifery practice who were eligible for hydrotherapy before the onset of labor. Women were considered eligible if they had a singleton pregnancy and were at least at 37 completed weeks gestation with no pregnancy complications. Women were excluded for known communicable blood or skin infections, active genital herpes, or suspected macrosomia.

Variables and Measurement

There were three primary outcomes: initiation of hydrotherapy, discontinuation of hydrotherapy, and duration of hydrotherapy. These data were collected by the midwives, along with selected maternal and neonatal outcomes, as part of the ongoing monitoring of the hydrotherapy and water birth program.

Initiation of hydrotherapy was measured as a dichotomous variable to indicate whether the participant had spent any time in a hydrotherapy tub. To better understand characteristics associated with initiation of hydrotherapy, two groups of participants who did not initiate hydrotherapy were identified. The two participant groups who did not initiate hydrotherapy included (a) those who declined the offer of hydrotherapy and (b) those who were excluded because they became medically ineligible after hospital admission but before hydrotherapy could be initiated. These groups were analyzed individually to identify any associated characteristics. Duration of hydrotherapy was a continuous variable to indicate the total minutes a participant spent in a hydrotherapy tub. Duration of hydrotherapy included first- and second-stage hydrotherapy.

Discontinuation of hydrotherapy was measured as when the participant left the hydrotherapy tub and no longer intended to return. Participants who left the tub but intended to return were not considered to have discontinued because in such cases the tub was still considered in use and therefore unavailable to other women. The two groups of participant who discontinued hydrotherapy included (a) those who progressed to pharmacologic pain relief, having used hydrotherapy as the first step in a pain management, and (b) those who were removed from hydrotherapy because they experienced a medical exclusion criterion. Exclusion criteria included maternal fever or suspected infection, an abnormal fetal heart tracing, nonprogressing labor, excessive vaginal bleeding, and any condition requiring continuous electronic fetal monitoring. Participants who had meconium-

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