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Contraindications in planned home birth in Iceland: A retrospective cohort study

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ABSTRACT

Objectives: Icelandic national guidelines on place of birth list contraindications for home birth. Few studies have examined the effect of contraindication on home birth, and none have done so in Iceland. The aim of this study was to examine whether contraindications affect the outcome of planned home birth or have a different effect at home than in hospital.

Methods: The study is a retrospective cohort study on the effect of contraindications for home birth on the outcome of planned home (n = 307) and hospital (n = 921) birth in 2005–2009. Outcomes were described for four different groups of women, by exposure to contraindications (unexposed vs. exposed) and planned place of birth (hospital vs. home). Linear and logistic regression analysis was used to evaluate the effect of the contraindications under study and to detect interactions between contraindications and planned place of birth.

Results: The key findings of the study were that contraindications were related to higher rates of adverse maternal and neonatal outcomes, regardless of place of birth; women exposed to contraindications had higher rates of adverse outcomes in planned home birth; and healthy, unexposed women had higher rates of adverse outcomes in planned hospital birth. Contraindications significantly increased the risk of transfer in labour and postpartum haemorrhage in planned home births.

Conclusion: The defined contraindications for home birth had a negative effect on maternal and neonatal outcomes in Iceland, regardless of place of birth. The study results do not contradict the current national guidelines on place of birth.

Introduction

The outcome of planned home birth has been studied around the world in recent years. In countries such as the United States, Canada, the United Kingdom, the Netherlands, Norway, Sweden, Iceland, Australia, and New Zealand, the outcome of planned home birth has been compared with hospital birth outcome in several observational studies [1,2]. Studies on planned home birth have frequently either preceded or succeeded guidelines and standards on home birth indications and contraindications, published by governmental institutions or professional societies [3–16].

The guidelines and standards describe pre-existing and pregnancy-related health problems and other factors that either constitute a body of contraindications or warrant individual consultation before deciding on home birth. Frequently cited birth-related contraindications include prematurity, prolonged pregnancy, multiple gestation or non-cephalic presentation of the baby [3,4,6–13,15,16], and the unavailability of competent, professional support in labour [3–5,13,15]. Significant medical conditions of the mother such as hypertensive disorders or diabetes [3,4,6–8,10,11,13,15,16], maternal obesity [3,4,7,8,15,16], a previous caesarean section [3,4,6–8,12–15], postpartum haemorrhage [3,6–8,13,15] or shoulder dystocia [3,7,8,13,15], current psychiatric or social problems [4,6–8,10,13,15,16], and residential issues [13,15] are among the most commonly cited maternal contraindications for home birth. Fetal contraindications include suspected congenital or growth related abnormalities of the baby [3,4,6–8,13,15,16]. Primiparity, although widely debated, has not been defined as a contraindication, but women may benefit from information on risk in different places of birth based on their parity [7].

Existing guidelines on home birth contraindications, including the

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Icelandic national guidelines for choice in place of birth issued by the Icelandic Directorate of Health [3], are primarily based on scientific evidence from studies comparing home and hospital birth outcome, and on general studies on risk, that are predominantly based on the hospital setting. This evidence may be insufficient for drawing the line between high- and low-risk in the home birth setting and for defining appropriate home birth contraindications. Studies on the outcome of women who are in a mixed-risk population—that is, they are either unexposed or exposed to contraindications—and give birth in different settings, home and hospital, would add valuable information for the formation of policy and the drafting of guidelines on women's choice in place of birth.

A recent retrospective cohort study on the outcome of planned home birth in Iceland suggested that planned home birth was as safe as hospital birth in a low-risk and mixed-risk population, and that the rates of interventions and maternal morbidity were significantly higher in hospital than at home [1]. The present study was a secondary analysis of the data, that further examined the effect of contraindications on the outcome of a mixed-risk population in the home and hospital birth settings, and was the first of its kind in Iceland.

The study setting was in Iceland, a sparsely populated island with a harsh terrain and a population of 338,000. Its fertility rate (1.8 births/woman in 2015) and home birth rate (1.8 percent of all births in 2015) are high compared with other European countries, but the absolute numbers of births are less than 5000 a year [17]. Women in Iceland have a right to choose their place of birth. In the study period, Icelandic hospitals offered birth services in five obstetric units (one urban, four rural), four medium-risk primary hospital units with surgical services (rural), one low-risk primary hospital unit with access to a general practitioner (rural), and one alongside midwifery unit (urban) that predominantly admitted low-risk women but also cared for women with less severe health problems, such as mild gestational hypertension or diabetes.

Births in Iceland, in all settings and risk levels, are attended by midwives with a 4 year BSc in nursing and a 2 year master-level midwifery education. Independent midwives, governmentally supervised and fully funded, attend all planned home births and provide continuous midwifery services in pregnancy, labour, and postpartum. All midwives have hospital admitting privileges during labour services. Their work is guided by the Icelandic national guidelines that list contraindications for home birth and indications for transfer that can be relatively benign (e.g. prolonged labour and the need for increased analgesia) or potentially morbid (e.g. fetal stress and postpartum haemorrhage) [3]. Some of the listed indications for transfer from home to hospital, such as prolonged labour, fetal stress, and postpartum haemorrhage, were not listed as indications for transfer from the alongside midwifery unit to an obstetric unit. Transfer from one obstetric unit to another, or to a lower-level birth unit, was a rare occurrence.

The purpose of the study was to support further development of Icelandic national guidelines on home birth, to facilitate childbearing women's informed choice in place of birth, and to add to the international body of evidence on the effect of contraindications on the outcome of planned home birth. The aim was to answer three research questions: 1) What is the birth outcome of women that have planned home or hospital births in Iceland and are either unexposed or exposed to contraindications for home birth? 2) Do women who plan home births and are exposed to contraindications have different birth outcomes than healthy, unexposed home birth women? 3) Do contraindications have a different effect in the home than in the hospital setting?

Methods

This study was a retrospective cohort study, based on a maternity notes' review, on the effect of contraindications on birth-related, maternal and neonatal outcome and the influence of planned place of birth

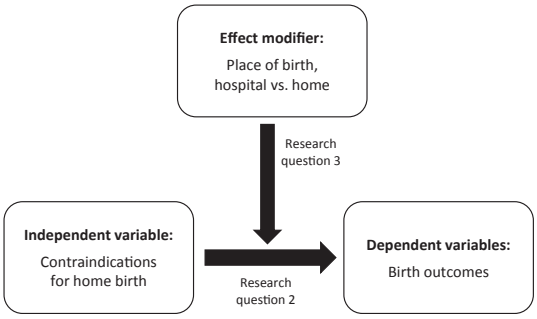

Fig. 1. Variable groups and research questions on their relationships.

(Fig. 1). Six regional health care authorities, 22 independent midwives, the Icelandic Data Protection Authority (no. PV2010/381), and the National Bioethics Committee (no. 10-064-S1) approved this study.

The study was a secondary analysis on a data set previously used to compare the outcome of planned home and hospital birth in Iceland [1]. Data were collected by the first author directly from original handwritten maternity notes, using a structured item list with conceptualized and operationalized variables. No inter-rater reliability measures were taken. The home birth group was defined by intention to treat and included births that ended in hospital after transfer, but excluded unplanned and unattended home births. The data set included the total mixed-risk population of 307 planned home births that were accepted for midwifery care in Iceland at the onset of labour in 2005–2009, and a 1:3 purposive sample of 921 planned hospital births that were required to obtain sufficient power in the primary analysis [1]. The sample was matched on parity (primiparity vs. multiparity), contraindications (if present in the home birth), residence, maternal age (± 2 years), and year of birth. The sample was obtained from the two largest obstetric units, one urban, one rural ($n = 584$), and the midwifery unit that was alongside the urban obstetric unit ($n = 337$). The urban sample was collected randomly from either the obstetric unit or its alongside midwifery unit.

When matching low-risk home births, hospital births that did not fulfil the Icelandic national guideline criteria for home birth [3] were excluded. Home births that were planned in spite of contraindications were matched on a condition-specific basis with similarly contraindicated hospital births, when possible. Contraindicated matches could be obtained from any of the three hospital birth units in the sample. When no similarly contraindicated hospital births were available in the population, the contraindicated home births were matched with low-risk hospital births. This resulted in a skewed hospital birth group with lower rates of contraindications in the primary analysis. In the secondary analysis of the data this skewness was addressed by dividing the planned home and hospital groups by exposure to contraindications and defining four different groups of women: healthy, unexposed women planning hospital birth; healthy, unexposed women planning home birth; women exposed to contraindications planning hospital birth; and women exposed to contraindications planning home birth.

The primary independent exposure variable of the study was the presence of any contraindications for home birth, as defined by the Icelandic national guidelines for choice in place of birth: (1) Maternal: Chronic diseases that can influence or be influenced by labour; isoimmunization; anticoagulation treatment in pregnancy or planned after birth; pre-eclampsia; gestational diabetes; multiple pregnancy; placenta praevia; anaemia < 9.5 g/dL; maternal obesity or malnutrition (body mass index > 35 or < 18); smoking > 10 cigarettes a day; active substance abuse. (2) Fetal/pregnancy related: Growth retardation > −24%; prolonged pregnancy (gestation > 42 weeks) or premature labour (gestation < 37 weeks); breech, transverse or oblique lie; macrosomia ≥4500 g or expected cephalopelvic disproportion; abnormal findings on antenatal screening. (3) Obstetric history: Previous caesarean birth, shoulder dystocia, or atonic postpartum haemorrhage