Intervene or Interfere? Variations in Childbirth Interventions and Episiotomy in Particular

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2020

document version
Publisher's PDF, also known as Version of record

SUMMARY

Because of wide variations in rates of childbirth interventions and maternal and perinatal outcomes between countries, it is important that childbirth interventions are analysed comprehensively, so that rates of several interventions can be compared and patterns can be better understood. Besides, research into appropriate use of interventions is required in order to evaluate which amount of variation is acceptable. The overarching objective of this thesis is to contribute to improvement of the quality of maternity care, resulting in improved maternal and perinatal outcomes and childbirth experiences. The following research questions were investigated:

1. What is the range of variations in commonly used childbirth interventions and outcomes in high-income countries?
2. Which regional variations in childbirth intervention rates exist in the Netherlands, and how are these variations associated both to each other, and to maternal and perinatal outcomes?
3. How is episiotomy used in Dutch maternity care?
4. What are benefits and disadvantages of suturing the perineal skin?

In chapter 2, the study protocol of the study on international variations is described. It describes the rationale, planned methods, and statistical analyses of this multinational cross-sectional study, which made use of data from births in 2013 with national population data or representative samples of the population of pregnant women in high-income countries.

Chapter 3 includes the results of this multinational cross-sectional study, which aimed to study the range of variations in and associations between commonly used childbirth interventions and adverse outcomes, adjusted for population characteristics.
Considerable intercountry variation was found for all interventions, even after adjustments for population characteristics. The largest variations were found for augmentation of labour, pain relief, episiotomy, instrumental vaginal birth, and caesarean section (CS). Countries with a higher rate of births at ≥42 weeks' gestation had higher rates of births with a spontaneous onset, spontaneous vaginal births among multiparous women, and instrumental vaginal births, and lower rates of induction of labour, prelabour CS, episiotomy among multiparous women, and overall CS. Lower rates of induction of labour, prelabour CS, and emergency CS (nulliparous women only), and higher rates of spontaneous vaginal births among multiparous women were found in countries with higher rates of births with a spontaneous onset. In countries with lower rates of out-of-hospital births, rates of pain medication were lower among nulliparous women. Variation in the overall CS rate was strongly correlated with variation in prelabour CS, and a positive correlation was found between prelabour CS and emergency CS among nulliparous women. We found higher rates of obstetric anal sphincter injury (OASI) in vaginal births in countries with higher rates of spontaneous vaginal birth among nulliparous women. Higher rates of Apgar score <7 were found in countries with higher rates of epidural analgesia among nulliparous women and higher rates of

spontaneous vaginal births among multiparous women. There were no significant differences in perinatal mortality rates up to 7 days.

The aim of the register-based study in chapter 4 was to explore regional variations in childbirth interventions performed in obstetrician-led care in the Netherlands and their associations with interventions and adverse outcomes, controlled for population characteristics.
Largest variations were found for the type of pain medication and whether a paediatrician was involved within 24 hours after birth, followed by variation in augmentation after a spontaneous onset of labour. Less variation was found for induction of labour and prelabour CSs, and least for instrumental vaginal births and intrapartum CSs. Similar variation in intervention rates was found for births in midwife-led care compared to those in obstetrician-led care at the onset of labour in the same region. The adverse neonatal and maternal outcomes were similar in regions with relatively higher and lower intervention rates.

In chapter 5, variations in childbirth interventions were explored that are used in both midwife- and obstetrician-led care, and in referral rates, place of birth, and care provider.
Large variations were found in the use of episiotomy and postpartum administration of oxytocin, and lower rates of these interventions were found in regions with more home births. Although there was a correlation between episiotomy use in midwife-led care and in obstetrician-led care, the variation between regions in episiotomy rates was greater for women receiving midwife-led care. The only correlation that we found with adverse neonatal and maternal outcomes was between intrapartum referral rate and postpartum haemorrhage (PPH). Regions with higher referral rates had also higher PPH rates. Significantly, in this study, no correlation was found between the regional adjusted ORs for episiotomy, and OASI.

In chapter 6, the results of a secondary analysis of two prospective cohort studies have been described. This study aimed to examine the episiotomy incidence and factors associated with episiotomy, reasons for performing an episiotomy, and maternal morbidity related to its use in primary care midwifery practices.
The episiotomy incidence found in this study was 10.8% (20.9% for nulliparous and 6.3% for multiparous women). Episiotomy was associated with prolonged second stage of labour in all women and hospital birth among multiparous women. Compared to episiotomy, perineal tears were associated with a lower rate of postpartum haemorrhage in multiparous women and a lower rate of reported perineal discomfort. Among nulliparous women, episiotomy was performed most frequently for prolonged second stage of labour and among multiparous women for history of episiotomy or prevention of major perineal trauma.

The qualitative study, which is described in chapter 7, aimed to gain insight into perspectives and

values of care providers on performing episiotomy.
Although care providers often emphasized the importance of a restrictive episiotomy policy, a discrepancy was found between this vision and the large number of varying indications for episiotomy. On one hand care providers cited evidence to support their practice, on the other hand many based their decision-making to a larger extent on their clinical experience. Although most care providers consider women's autonomy to be important, at the moment of deciding on episiotomy, the involvement of women in the decision is perceived as minimal, and real informed consent generally does not take place, neither during labour, nor prenatally. Many care providers belittled episiotomy in their language as a minor intervention.

The systematic review in chapter 8 aimed to compare non-suturing of the perineal skin or the use of skin adhesives versus suturing of the skin when repairing a second degree perineal tear or episiotomy.
Non-suturing of the skin leads to less short- and long-term pain compared to suturing and an increased rate of skin separation. Skin adhesives lead to less short-term pain without an increased rate of skin separation, but there is no evidence for the clinical importance of skin separation.

Finally, in the general discussion (chapter 9) the main findings of the studies are summarized, a reflection on the findings is given, and methodological issues are discussed. The discussion also summarizes the limitations in routinely collected registration data, such as the absence and inconsistent registration of variables, the rationale for conducting or leaving out multilevel analyses, and reporting bias of subjective outcomes. This thesis recommends to critically review childbirth interventions with large variations. Evidence-based application of childbirth interventions will reduce unwarranted variation. Consensus on indications for childbirth interventions and the implementation of guidelines based on this consensus is required. Based on the concept of Value Based Healthcare, a shift from strongly focusing on the prevention of pathology to providing high value care to all women, is recommended.

Overall, we concluded that considerable unwarranted variations in all childbirth interventions exist between countries and in most childbirth interventions within the Netherlands. For some interventions, there is insufficient consensus on appropriate usage, whilst for others there is consensus which is, however, insufficiently implemented in many countries. Implementation of evidence regarding appropriate application of interventions will result in a decrease in variation and less under- and overuse, resulting in improved quality of maternity care. This thesis is an important step and a wake-up call to reflect on appropriate use of childbirth interventions in order to improve maternal and neonatal health outcomes and women's experiences.