

The Place To Be

Women's birth place preferences
in the Netherlands



Tamar van Haaren – ten Haken

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CONTENTS

Chapter 1	General Introduction	7
Chapter 2	Preferred place of birth: Characteristics and motives of low-risk nulliparous women in the Netherlands	21
	T.M. van Haaren – ten Haken, M.J.C. Hendrix, M.J. Nieuwenhuijze, L. Budé, R.G. de Vries, J.G. Nijhuis <i>Midwifery 2012, 28: 609-618</i>	
Chapter 3	Eliciting preferences for key attributes of intrapartum care in the Netherlands	47
	T.M. van Haaren – ten Haken, M. Pavlova, M.J.C. Hendrix, M.J. Nieuwenhuijze, R.G. de Vries, J.G. Nijhuis <i>Birth 2014, 41: 185-194</i>	
Chapter 4	The influence of preferred place of birth on the course of pregnancy and labor among healthy nulliparous women: a prospective cohort study	67
	T.M. van Haaren – ten Haken, M.J. C. Hendrix, L.J. Smits, M.J. Nieuwenhuijze, J.L. Severens, R.G. de Vries, J.G. Nijhuis <i>BMC Pregnancy and Childbirth 2015, 15: 33</i>	
Chapter 5	Birth place preferences and women's expectations and experiences regarding duration and pain of labor	89
	T.M. van Haaren – ten Haken, M.J.C. Hendrix, M.J. Nieuwenhuijze, R.G. de Vries, J.G. Nijhuis <i>Journal of Psychosomatic Obstetrics & Gynecology 2017, 6:1-10</i>	
Chapter 6	Choosing place of birth in the Netherlands: a qualitative study on women's beliefs, preferences and expectations	113
	T.M. van Haaren – ten Haken, M.J.C. Hendrix, J.G. Nijhuis, R.G. de Vries, M.J. Nieuwenhuijze <i>Submitted</i>	
Chapter 7	General Discussion	135
	Summary Samenvatting	153
	Valorisation	169
	Dankwoord	179
	Curriculum Vitae	185



1

General Introduction

'Where and how a child is born is like a mirror of society'
(Lieve Blancquart, *Birth Day*, 2013)

The experience of pregnancy and childbirth is universal, but how care around childbirth is organized and the choices available to parents vary between societies, countries, and cultures. There are differences in who attends birth – midwives, obstetricians, physicians, family doctors – and differences in birth settings – home birth, birth centre, and hospital birth. In low resource countries, poor access to quality health care – often “too little too late” – leads to high maternal and perinatal mortality rates. In high resource countries, the safety of childbirth is generally taken for granted and the main problem is “too much too soon” with high intervention rates that increase the complexity and costs of care, and diminish the quality of the birth experience for women and their partners.^{1,2}

Understandings of birth and conceptions of a “good birth” also vary across time and place. In most high resource countries, the biomedical model of care – with its definition of pregnancy and childbirth as medical conditions with treatable risks – is the norm. Maternity care in the Netherlands is an exception to this norm, organized on the principle that pregnancy and childbirth are fundamentally physiologic, normal processes. Risks are not trivialized, but the basic assumption is that childbirth is a normal life event.

Not surprisingly, these different approaches in high resource countries generate different outcomes. Consider, for example, the percentages of caesarean sections in recent years: the caesarean section rates ranged from around 16% in the Netherlands and the Nordic countries like Iceland, Finland, Sweden and Norway, to around 32% in Germany, Switzerland and the United States.³⁻⁵ In Flanders – the Flemish speaking part of Belgium that shares a border with the Netherlands – the overall epidural rate was 69.7% in 2015, compared to a rate of 21.8% in the Netherlands.^{5,6} This variation reminds us that more than in any other branch of medicine, maternity care is marked by the culture and society in which it is found.⁷

These underlying sociological models of pregnancy and childbirth help us to understand the variation in the way maternity care systems are organized. In the Netherlands, independent practicing midwives care for healthy women with straightforward pregnancies. When there is an increased risk of complications – as defined by the *Verloskundige Indicatielijst (VIL)* [List of Obstetric Indications], a national guideline developed cooperatively by all the professions involved in maternity care⁸ – midwives refer women to obstetrician-led care in the hospital.

In obstetrician-led care, a woman receives care from a hospital-based midwife or an obstetric resident under the supervision of an obstetrician who has the ultimate responsibility for the care. Healthy women with a straightforward pregnancy are free to follow their preferences and give birth at home, in a birth centre, or in hospital under the supervision of their independent midwife. However, if a healthy woman prefers a midwife-led hospital birth, she is charged a co-payment of approximately € 300 for the additional cost of the hospital stay, a charge that some, but not all, insurance plans cover.

In midwife-led care women will not receive medical interventions such as medical pain relief, augmentation, or continuous foetal monitoring. If these interventions become necessary, they are available, but only after referral to obstetrician-led care. In the case of a home birth, this means that a woman needs to be transferred to the hospital, most often using her own transportation, but sometimes by ambulance. About 99% of women in the Netherlands are able to reach the nearest hospital with a maternity unit within 30 minutes.⁹ Although uncommon, access to obstetrician-led care is possible when healthy women with a straightforward pregnancy have a strong preference for an obstetrician-led hospital birth. The exact number of healthy women whose primary choice is obstetrician-led care is unknown.

HISTORICAL TRENDS IN PLACE OF BIRTH

According to Coxon et al.¹⁰, two things have changed for women giving birth in high income countries over the past 50 years: first, birth has become much safer, and second, birth takes place in hospital rather than at home. However, the relationship between the two is a source of ongoing debate. In the light of the high intervention rates and financial pressure on health care systems, more attention is being paid to settings other than the hospital, such as midwife-led birth centres or birth at home.¹⁰ Giving birth at home is possible in other high income countries, but the high rate of home birth in the Netherlands is unique. Although the homebirth rate has declined significantly over the last 15 years¹¹, it was still around 13% in 2015.⁵ For comparison, home birth rates in other countries are much lower: 0.6% in Finland (2012)¹², 0.9% in the United States (2015)⁴, 2.3% in England and Wales (2015)¹³, 3.3% in New Zealand (2011)¹², 0.4% in Australia (2011)¹² and 1.4% in Canada (2009).¹⁴ Why does the Netherlands have a culture where home birth is integral part of the maternity care system?

For centuries, all over the world pregnancy and childbirth were almost exclusively a matter for women only, with women giving birth in their own social environment.

Beginning in the 16th century, men became more involved in childbirth and, in subsequent centuries, there was increased attention to the use of technology in the field of childbirth. Care during childbirth shifted gradually from traditional midwives to male doctors.¹⁵ In many Western countries rapid medicalization and hospitalization of birth occurred during the 19th and 20th century, marginalizing midwives. Midwives disappeared or they worked under the supervision of obstetricians, resulting in almost complete elimination of home birth services in many countries. Although midwives in the Netherlands also lost ground to doctors, they retained a strong, autonomous position within the domain of maternity care. Regulations promulgated in the 19th century in the Netherlands specified that midwives would care for normal births and specially trained doctors would be responsible for complicated births (*Wet op de Uitoefening der Geneeskunst*, 1865). In addition, they invested in the education and training of midwives. Dutch maternity care is still characterized by this rational division between ‘physiological’ and ‘pathological’ pregnancy and birth. In addition, as part of the Dutch culture, women continued to give birth at home, instead of the hospital.⁷ As a result, the midwife as an autonomous, independent professional, with the competence to assist at home births, continues to exist in the Netherlands. In the 1960s, 70% of the Dutch women gave birth at home.¹⁶ However, in the following decades a change in Dutch culture and in the organization of care took place. Beginning in the 1940s, the policy of the Dutch public health insurance system was ‘women will give birth at home with a midwife, *unless* they have a medical indication.’ In the 1970s the policy changed, allowing healthy women with straightforward pregnancies to birth in the hospital accompanied by their own independent midwife. As a consequence, in combination with increased technology and medical involvement in childbirth, the home birth rate declined to around 30% by the end of the twentieth century.¹¹

RECENT TRENDS IN PLACE OF BIRTH

Until 2006, the home birth rate remained relatively stable around this 30%.¹¹ But in the past decade, the Dutch maternity care system has come under increased scrutiny. Peristat-I (2004) and Peristat-II (2008) reported that the perinatal mortality rate in the Netherlands was one of the highest in Europe and had decreased at a slower rate compared to other European countries.^{17,18} The maternity care system, with its clear distinction between midwife-led care and obstetrician-led care came under pressure and, in a textbook example of the ecological fallacy, the safety of home birth was questioned. These reports were followed by a study of Evers et al., published in the *BMJ*¹⁹, that called the safety of

Dutch midwifery care into question. These challenges to the Dutch system have since been discredited. A secondary analysis of the Euro-PERISTAT data showed that the Dutch perinatal mortality rate at term was lower, or comparable to, rates in several other European countries that have negligible home birth rates²⁰ and a large nationwide cohort study of perinatal mortality and morbidity among low-risk planned home and hospital births in the Netherlands found no difference in the risk of adverse perinatal outcomes.²¹ The Evers study was replicated, correcting for flaws in its design, and no differences between the outcomes of midwife and obstetrician care were discovered.²² Unfortunately the initial, negative reports gained wide media attention in the Netherlands, setting in motion changes in attitudes toward, and the organization of, the maternity care system.

A committee, set up by the government, analysed how perinatal morbidity and mortality could be reduced, in part, by more effective prevention and a closer cooperation between all care providers involved in maternity care.²³ Subsequently, the National Health Care Institute introduced a new standard *Integrale Geboortezorg* [Integrated Maternity Care] in 2016.²⁴ This document describes the necessary care, support, and possibilities for each pregnant woman in accordance with the current guidelines and supplemented by regional or local agreements between care providers. This standard describes that *every* pregnant woman should have the option to give birth at home, in a birth centre, or in hospital. The coordinating care provider is instructed to support the woman in her choice for place of birth and to advise when there is a medical or social indication for a hospital birth according to the VIL⁸ and local guidelines.

Despite the fact that Dutch women are free to choose how and where to give birth, the number of women having a birth at home is decreasing (13% home births according to the most recent data from 2015).⁵ Fewer women are choosing to give birth at home²⁵, but a dwindling choice for a home birth is not the only driver of this reduction. The increase in hospital births is also the result of an upturn in referrals of women from midwife-led to obstetrician-led care during pregnancy and birth.^{26,27} We know very little about the relationship between women's preference for, and the actual place of, birth.

Two studies, one from Sweden and one from Iceland, found that the rates of women expressing consistently positive attitudes towards choosing a home birth were ten times higher than the actual home birth rates.^{28,29} However, a low availability of home birth services in these countries may partly explain this gap.

WOMEN'S PERSPECTIVES ON PLACE OF BIRTH

Overall, women experience fewer interventions in midwife-led care without an increase in adverse maternal and neonatal outcomes, especially when they plan to give birth at home.³⁰⁻³⁵ It is probable that midwives are less likely to intervene as a result of their philosophical and physiological orientation toward childbirth.³⁶ Reime et al.³⁷ reported that obstetricians were more attached to technology and interventions compared to midwives. On the other hand, some studies comparing home and hospital birth with the same midwives providing care in both settings found lower intervention rates in the home birth group.^{33,38} This suggests that the actual birth setting, as well as the attitudes of birthing women, also affect birth outcomes. Halfdansson et al.²⁹ suggested that women's attitudes towards birth and interventions affected the relationship between women's attitudes towards place of birth and birth outcomes. Women who had a positive attitude towards home birth had significantly more positive attitudes towards birth and more negative attitudes towards interventions. Van der Hulst et al.³⁹ found that the more receptive a woman was toward medical technology, the more likely she was to opt for a hospital birth, and the more likely it was she would experience an obstetrical intervention. In their study of the attitudes of healthy nulliparous women toward childbirth, Klein et al.⁴⁰ concluded that various maternity care providers – obstetricians, family physicians and midwives – were taking care of different populations with different attitudes and expectations. Women using midwife-led care consistently reported attitudes supporting less frequent use of technology compared to women receiving care from obstetricians.

It is known that women's birth place choices are influenced by women's childbirth beliefs, motivated by their ideas regarding the competence of the body to perform birth, the need to control birth, and the desire to ensure the safety of the child.⁴¹⁻⁴⁵ Regan and Liaschenko⁴⁶ describe the effect of "*body knowing*" on women's ways of thinking about childbirth. The term "*body knowing*" refers to the woman's awareness of what she requires for her experience of birth to be congruent with the meaning of childbirth in her biography. They describe a continuum of body knowing with two ends: on one end childbirth is regarded as a normal, natural process, and on the other end childbirth is regarded as a medical condition replete with risks. Choosing a place of birth is a way to manage perceived childbirth risk, in the sense that the preferred place of birth either gives access to medical interventions or limits that option.⁴⁴ The preference for a home birth is often associated with a natural, non-technical approach to childbirth^{28,39,47} and a greater desired level of autonomy, control and responsibility.⁴⁸⁻⁵⁴ Women who opt for hospital birth were more often medically

oriented and concerned about safety issues.^{48-50,54,55} However, Coxon et al.¹⁰ and Borrelli et al.⁵⁶ challenge the tendency to see women's choices of birth place as polarised between a preference for a 'natural' or a 'medical' birth as this dichotomy fails to capture the nuances of women's expectations, experiences and the contextual influences. In her study of women's preferences for childbirth experiences in the Republic of Ireland, Larkin et al.⁵⁷ found that most women did not want to be typified as wanting either 'all natural' or 'all technology' births; instead they wanted 'the best of both worlds'. In addition, Borrelli et al.⁵⁶ found that women choosing a hospital birth preferred to have a natural birth and sought to be in control.

Socio-demographic characteristics and psychological factors are also associated with the choice for place of birth. Women who prefer to give birth outside the hospital are more likely to be older, multiparous and highly educated.^{34,48,52,58-60} In a recent Dutch study, women who planned a home birth reported lower levels of pregnancy related anxiety and a depressed mood than women who planned a hospital birth.⁶¹ There are strong indications that pregnancy related anxiety is related to women's risk perception and expectations during pregnancy, at least in nulliparous women.⁶²

Place of birth or birth setting is an important factor in the way a woman experiences her childbirth. Rijnders et al.⁶³ discovered that nearly 23 percent of Dutch primiparous women looked back negatively on their birth experience three years postpartum. Not giving birth at home, when that was the planned place of birth, was identified as one of the significant risk factors for a negative recall. A Cochrane Review on models of maternity care reported that women who receive midwife-led continuity models of care were more likely to be satisfied with their care.⁶⁴ However, few of the included studies focused on the experience of childbirth itself and because of a lack in consistency in measuring women's satisfaction, the quality of the evidence is low. In a recent Dutch study, Geerts et al.⁶⁵ showed that nulliparous women who planned a home birth at the start of labour were significantly more satisfied with the care they received compared to women who planned a hospital birth. In addition, Hitzert et al.⁶⁶ found that women who planned to give birth at home were more positive about their experiences compared to women who planned to give birth in a birth centre. This accords with the results of a qualitative study of Dahlen et al.⁵³, where women who gave birth at home reported more positive birth experiences.

Many studies of women's preferences, motives, expectations and experiences regarding place of birth have been conducted in countries with maternity care systems where home birth is not mainstream and is not widely and easily available.^{47,67-69} It seems likely that women preferring a home birth in those countries belong to a select and highly motivated group. In the Netherlands, where all options for place of birth are more or less realistically accessible, women's preferences are likely to be driven by other factors. In spite of the fact that 'woman-centred care' – i.e., care agreed upon by all parties – is a central tenet of the current reorganization of the Dutch maternity care, there is a paucity of recent research on women's preferences for place of birth in the Netherlands. From this perspective, if we aim to optimize maternity care that fits with the individual needs and preferences of the woman, knowledge of women's birth place preferences is essential,

AIM OF THIS THESIS

The aim of this thesis was to gain more insight into women's motives, preferences, expectations, and experiences regarding place of birth, and to examine the influence of these on outcomes of care. This research is focused on healthy nulliparous women with straightforward pregnancies. Healthy women with a preference for a home birth, a midwife-led hospital birth and an obstetrician-led hospital birth – without a medical indication according to the national guideline (VIL)⁸– were included in this study. We chose to include only nulliparous women to avoid the influence of previous birth experiences.

The following questions are addressed in this thesis:

1. What are the characteristics and motives that play a part in women's preference for a place of birth? (Chapter 2)
2. What aspects of intrapartum care do women prefer in relation to their birth place preference? (Chapter 3)
3. What is the influence of women's preferred place of birth on pregnancy and birth outcomes? (Chapter 4)
4. What is the relationship between birth place preferences and women's expectations and experiences regarding duration and pain of labour? (Chapter 5)
5. How do women's cognitions about childbirth influence their birth place preferences? (Chapter 6)

OUTLINE OF THIS THESIS

Chapter 2 presents the findings of a prospective cohort study exploring women's preferences, characteristics and motives regarding place of birth.

Chapter 3 addresses the strength and relative importance of women's preferences for different aspects of intrapartum care with regard to their preferred place of birth using a Discrete Choice Experiment (DCE).

Chapter 4 describes the results of a prospective study on pregnancy and birth outcomes in relation to women's initial preferred place of birth at the beginning of pregnancy.

Chapter 5 shows the influences of women's birth place preferences on their expectations and experiences regarding duration of labour and labour pain.

Chapter 6 describes the findings of a qualitative study analysing semi-structured interviews of healthy nulliparous women in their third trimester on women's cognitions regarding childbirth and place of birth.

Chapter 7 includes the main findings from the studies, a reflection on these results and a discussion of the methodological strengths and limitations of this thesis. Finally, I discuss possible implications for maternity care practice.

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2

Preferred place of birth: Characteristics and motives of low-risk nulliparous women in the Netherlands

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ABSTRACT

Objective: To explore preferences, characteristics and motives regarding place of birth of low-risk nulliparous women in the Netherlands.

Design: A prospective cohort study of low-risk nulliparous women and their partners starting their pregnancy in midwifery-led care or in obstetric-led care. Data were collected using a self-administered questionnaire, including questions on demographic, psychosocial and pregnancy factors and statements about motives with regard to place of birth. Depression, worry and self-esteem were explored using the *Edinburgh Depression Scale (EDS)*, the *Cambridge Worry Scale (CWS)* and the *Rosenberg Self Esteem Scale (RSE)*.

Setting: Participants were recruited in 100 independent midwifery practices and 14 hospitals from 2007 to 2011.

Participants: 550 low-risk nulliparous women; 231 women preferred a home birth, 170 women a hospital birth in midwifery-led care and 149 women a birth in obstetric-led care.

Findings: Significant differences in characteristics were found in the group who preferred a birth in obstetric-led care compared to the two groups who preferred midwifery-led care. Those women were older ($F(2,551)=16.14, p<0.001$), had a higher family income ($X^2(6)=18.87, p=0.004$), were more frequently pregnant after assisted reproduction ($X^2(2)=35.90, p<0.001$) and had a higher rate of previous miscarriage ($X^2(2)=25.96, p<0.001$). They also differed significantly on a few emotional aspects: more women in obstetric-led care had symptoms of a major depressive disorder ($X^2(2)=6.54, p=0.038$) and were worried about health issues ($F(2,410)=8.90, p<0.001$). Women's choice for a home birth is driven by a desire for greater personal autonomy, whereas women's choice for a hospital birth is driven by a desire to feel safe and control risks.

Key conclusions: The characteristics of women who prefer a hospital birth are different than the characteristics of women who prefer a home birth. It appears that for women preferring a hospital birth, the assumed safety of the hospital setting is more important than type of care provider. This brings up the question whether women are fully aware of the possibilities of maternity care services. Women might need concrete information about the availability and the characteristics of the services within the maternity care system and the risks and benefits associated with either setting, in order to make an informed choice where to give birth.

INTRODUCTION

In and of itself, childbirth is a natural physiological process but in nearly all modern countries it has become a medical event: most births take place in a hospital equipped with the tools and instruments of medicine. Home births are relatively uncommon. The exception is the Netherlands with a home birth rate of 24%.¹ Although the rates of home births are increasing in countries like the United States (1%), the UK (3%), and New Zealand (7%), the rates are still quite low in comparison with the Netherlands.^{2,3}

In the Netherlands midwifery-led care is the norm for healthy, uncomplicated pregnancies and a significant number of those births take place at home. Dutch midwives are independent practitioners with primary responsibility for the care process for healthy women. All midwives are educated in direct-entry programmes. Midwives are the 'gatekeepers' of obstetric-led care, referring women when complications (or increased risk of complications) – as defined by the 'List of Obstetric Indications' (LOI) – occur during pregnancy or birth.⁴ The LOI is a national, multi-professional guideline for risk indication and for determining the appropriate care provider for each individual woman. In the case of an uncomplicated, 'physiological' pregnancy women are free to follow their preferences and give birth at home or in hospital under the supervision of their independent midwife, without the involvement of an obstetrician. These women do not receive medical interventions such as medical pain relief, augmentation, or continuous fetal monitoring: these interventions are only available in obstetric-led care.

In 2008, 88% of the nulliparous women in the Netherlands started their pregnancy in midwifery-led care; twelve per cent started their pregnancy in obstetric-led care.⁵ We can safely assume that the majority of those 12% had a high-risk profile according to the LOI (e.g., diabetes, pre-existing hypertension, multiple pregnancies and chronic diseases). However, the study of Maassen et al.⁶ has shown that some women eligible for midwifery-led care gave birth in obstetric-led care despite having a low-risk profile. Although obstetric-led care is formally not an option for low-risk women, they are not being refused if they have a strong preference for giving birth under supervision of an obstetrician. The exact number of low-risk nulliparous women whose primary choice is obstetric-led care is unknown.

Preferences and expectations regarding place of birth are different between women. Previous studies have shown that women choosing a home birth expect to have greater personal autonomy with the ability to make their own choices, and to have control during the birth process.⁷⁻¹¹ Women who opt for a hospital birth are more often concerned about safety issues.^{7-9,12} Women also differ in

their socio-demographic characteristics: women with a preference for an out of hospital birth are more likely to be older, multiparous and highly educated.^{7,11,13-17} In a study on low-risk nulliparous women's attitudes toward childbirth, Klein et al.¹⁸ concluded that obstetricians, family physicians and midwives, were caring for different populations with different attitudes and expectations.

Most of the studies about women's preferences for place of birth have been carried out in countries with maternity care systems that restrict the choice to give birth outside the hospital. It can be assumed then, that women in those countries who prefer to give birth at home belong to a select and highly motivated group. In the Netherlands, where home birth is common, women's preferences are likely to be driven by different factors. The Dutch studies by Kleiverda et al.⁷ and Wiegiers et al.¹⁹ explored women's motives and background variables regarding place of birth; however, these studies only compared home and hospital birth in midwifery-led care and the studies are relatively dated. During the past decade, the climate regarding childbirth has changed in the Netherlands. In their 1998 study, Wiegiers et al.¹⁹ mentioned the policy of the Dutch government to promote home birth for low risk pregnancies. Now, nearly 15 years later and after the publication of the Peristat-II study – which showed that the national perinatal mortality rate in the Netherlands to be one of the highest in Europe²⁰ – the government is focusing largely on the safety of home births and lowering perinatal mortality.^{21,22} Women's views about childbirth have also changed. An increase in media representations of birth coming from outside the Netherlands has made women more open to hospital birth.³ The home birth rate decreased from 34.1% in 1994 to 23.4% in 2010¹ and in the last 10 years the percentage of epidurals tripled from 8% in 2001 to 25% in 2010.²³ Given these changes, it is important to know which motives underlie women's preferences regarding place of birth at present time and how these preferences are influenced by demographic characteristics and psychosocial variables. Because home and hospital birth are both seen as a normal setting for giving birth, the Dutch environment is a perfect environment for studies comparing home and hospital birth.

This prospective study explores preferences, characteristics and motives regarding place of birth of low-risk women expecting their first birth. Besides women with a preference for a home or hospital birth in midwifery-led care, this study also includes women with a preference for a birth in obstetric-led care.

METHODS

Participants and data collection

We collected the data on preferences for place of birth, characteristics and motives, using self-reported questionnaires. The data came from a Dutch multicentre, prospective cohort study of low-risk nulliparous women and their partners starting their pregnancy in midwifery-led care or in obstetric-led care.

Of the 466 independent midwifery practices in the Dutch Midwifery Association Registration in 2006, 150 practices from across the Netherlands were randomly selected and invited to recruit nulliparous women in midwifery-led care. One hundred practices, spread throughout the Netherlands including rural and urban areas, agreed to participate. The reason most often given for not participating in the study was a lack of time. There is no evidence that the non-participating practices differ significantly from those willing to participate. Thirty hospitals with maternity care units across the Netherlands were randomly chosen and asked to recruit low-risk nulliparous women in obstetric-led care. Fourteen hospitals, three academic and eleven non-academic, agreed to participate. Most frequently given reasons for non-participation were too many other on-going studies and the expectation of too few suitable participants for this study, as midwifery-led care is the norm for low-risk women in the Netherlands. The 14 hospitals were spread across the country.

Women with a first on-going pregnancy and without an obstetric or medical indication according to the List of Obstetric Indications (LOI)⁴ were eligible to engage in the cohort study. In order to read and fill out the questionnaire they had to have a sufficient knowledge of the Dutch language. During the first trimester of pregnancy, eligible women received information about the study from their midwife or obstetrician and were asked whether the researchers could contact them by telephone to give further information. After a week, women who agreed were called by the researchers, received more information and were asked for informed consent for participation. Recruitment in midwifery practices was carried out from March 2007 to August 2007 and in hospitals from March 2007 to September 2011. As mentioned in the introduction, obstetric-led care is not a common practice for low-risk women, which explains the longer inclusion period in the hospitals. Ethical approval was obtained by the Medical Ethical Committee of the Maastricht University Medical Centre (registration no. 04-234 / 11-4-009).

Women filled out the questionnaire before week 21 of their pregnancy. At that time the course of pregnancy does not interfere too much with the preferred place of birth. Women could choose to receive the questionnaire by mail or to fill it out online; both questionnaires were identical. The questionnaire was pre-tested in three midwifery practices.

Women were asked to indicate which place of birth they preferred: a home birth, a hospital birth in midwifery-led care (with their own midwife), a birth in obstetric-led care or 'I do not know yet'. The questionnaire also included questions about socio-demographic and pregnancy factors which are known from literature to be related to the preferred place of birth, such as age, ethnic background, level of education, family income, distance to hospital, any previous miscarriage or ectopic pregnancy and method of conception.

Symptoms of depression were explored using the *Edinburgh Depression Scale (EDS)*. The EDS is a 10-item self-rating scale, originally developed for postpartum use under the name *Edinburgh Postnatal Depression Scale (EPDS)*.²⁴ The EPDS was validated in populations other than postpartum women, resulting in a new nomenclature: the *Edinburgh Depression scale*.²⁵ Previous studies have confirmed its reliability for screening depression during pregnancy.²⁶⁻²⁸ The cut-off score of the EDS was set at 12 for screening major depressive disorder.^{26,27}

The *Cambridge Worry Scale (CWS)* was used to assess the extent and content of maternal worries in pregnancy.²⁹ The CWS is an instrument that includes 16 items measuring women's major worries during pregnancy. Responses on the CWS were made on a five-point Likert-type scale, ranging from (1) 'not worried at all' to (5) 'extremely worried'. According to Green et al.²⁹, the nature of the scale allows analysis at item level or using total or factor scores. Green et al. stated that a principal components analysis of the CWS revealed a four-factor structure of women's concerns during pregnancy: *socio-medical, health, socio-economic and relational* (Figure 1). For analysing the results, we used the separate mean scores of each of these four factors instead of total mean scores, because in the context of this study we considered the content of women's worries more important than the overall extent. Two of the subscales had good reliability: *socio-medical* Cronbach's $\alpha=0.71$, *health* Cronbach's $\alpha =0.70$. The subscale of *socio-economic* had a low reliability, Cronbach's $\alpha =0.29$. After the two items 'problems with the law' and 'giving up work' were excluded from this subscale, the Cronbach's α was increased to 0.63. The Cronbach's α of the subscale relationships was 0.67 but after excluding the item 'whether partner will be at the birth' the value was increased to 0.75.

The *Rosenberg self-esteem scale (RSE)* was used to measure global feelings of self-esteem (e.g., 'I feel I do not have much to be proud of').³⁰ This instrument consists of 10 items measured on a 4-point Likert-type scale, ranging from

'totally agree' to 'totally disagree'. The total score ranges from 0 to 30, with higher scores indicating higher self-esteem. Previous research demonstrated the validity and test-retest reliability of the RSE.³¹ Cronbach's α was 0.88 for the study population.

Furthermore, the questionnaire included questions about women's motives with regard to place of birth. The content of the questions were based on previous Dutch research.^{7,32,33} Women were asked to indicate the weight of importance for several motives related to preferred place of birth on a 4-point Likert-scale ('not important', 'somewhat important', 'important', 'very important'). Depending on their preferred place of birth, the number and the content of the items were different: midwifery-led home birth: 22 items; midwifery-led hospital birth: 15 items and obstetric-led birth: 29 items. Motives about the place of birth women preferred, as well as motives about the place of birth they dispreferred were included. Examples of motives were: 'I prefer a home birth because I would like to give birth in a domestic environment', 'I prefer a hospital birth because medical equipment would be readily available if necessary', 'I prefer a hospital birth because at the hospital they know what kind of pain relief is best for me' or 'I wouldn't prefer a home birth because I have very little faith in the expertise of my midwife'.

Analysis

When fewer than 10% of the values were missing within a case, single imputation was used. The missing values were imputed using general mean substitution in which the mean of the whole group of responders was taken as a value for the missing data. Fifty-three cases were removed from the analysis, because in these cases more than 10% of the values were missing. This approach can lead to selection bias if the characteristics of the excluded patients are different from the included patients. Therefore, we repeated the analyses with the 53 cases included, using single imputation. We found no differences with the presented results.

Groups based on the preferred place of birth (home birth, midwifery-led hospital birth, obstetric-led birth) were compared for socio-demographic factors (age, Body Mass Index, ethnic background, level of education, family income per month and distance to hospital), pregnancy related factors (method of conception and previous miscarriage/ectopic pregnancy), depression (*Edinburgh Depression Scale*), self-esteem (*Rosenberg Self Esteem Scale*) and extent of worry (*Cambridge Worry Scale*).

Chi-square tests were used to test for significant differences in categorical variables. Analysis of variance (ANOVA) and *post hoc* tests were used to compare means. A p-value less than 0.05 was considered statistically significant.

For exploring women’s motives we performed descriptive statistics on an item level. A principal component analysis was not carried out because we measured the variables on an ordinal scale. It was not possible to compare the results of the motives between the groups statistically, because the items of each group were not identical.

Socio-medical	Socio-economic	Health	Relationships
Giving birth	Money problems	Possibility of miscarriage	Relat. with friends/ family
Going to hospital	Housing	Possibility something wrong baby	Relat. with husband/partner
Internal examinations	Employment problems	Own health	<i>Whether partner at birth*</i>
Coping with new baby	<i>Problems with law*</i>	Health of someone close	
	<i>Giving up work*</i>		

* excluded from subscale

Figure 1 The Cambridge Worry Scale (CWS) four factors of women’s worries during pregnancy.

FINDINGS

Of the 773 women who gave informed consent to participate in the study, 107 women failed to fill out the questionnaire (no reasons available) and 666 women completed the questionnaire, yielding a response rate of 86%. Of the 666 participants, 112 women were excluded from analysis: 14 women were multiparae; two women had a medical indication according to the List of Obstetric Indications (LOI); seven women had a miscarriage after giving informed consent; three women had a gestational age over 20 weeks when they filled out the questionnaire; 33 women had an unknown preference for the place of birth and 53 women returned a questionnaire with more than 10% missing data. Figure 2 shows the flowchart of the study population. We analysed the data of the 554 remaining women. Of these women, 231 (41.7%) preferred a home birth in midwifery-led care, 170 (30.7%) preferred a hospital birth in midwifery-led care and 153 (27.6%) preferred a birth in obstetric-led care.

Demographic, psychosocial and pregnancy related characteristics

Characteristics of the three groups are presented in Table 1. The results show that the home birth group was similar to the group who preferred a midwifery-led hospital birth in all the characteristics. Significant differences in characteristics were only found in the group who preferred a birth in obstetric-led care compared to the two groups who preferred midwifery-led care.

Significantly more women who preferred a birth in obstetric-led care had a high family income, $X^2(6)=18.87, p=0.004$. Women also differed in age, $F(2,551)=16.14, p<0.001$. After performing a post hoc test (LSD) it turned out that women in the preferred obstetric-led care group were significantly older ($p<0.001$).

A considerable proportion of women with a preference for obstetric-led care became pregnant after using assisted reproductive techniques like in vitro fertilisation (IVF), intracytoplasmic sperm injection (ICSI), intrauterine insemination (IUI) or hormone therapy: 27.5% ($n=42$). This is much higher compared to groups that preferred home birth (5.4%; $n=9$) and midwifery-led hospital birth (8.9%; $n=11$), $X^2(2)=35.90, p<0.001$. We found no relation in our data between age and method of conception.

Women who preferred obstetric-led care had also higher rates of previous miscarriage and/or ectopic pregnancy: 37.3% ($n=57$) as compared to 20.3% ($n=47$) in the group who preferred a home birth and 14.1% ($n=24$) in the group who preferred a midwifery-led hospital birth, $X^2(2)=25.96, p<0.001$.

There was no difference in self-esteem, as measured by the *Rosenberg self-esteem scale*, $F(2,421)=1.91, p=0.15$. Interestingly, more women who preferred a birth in obstetric-led care had a high score of >12 on the *Edinburgh Depression Scale*

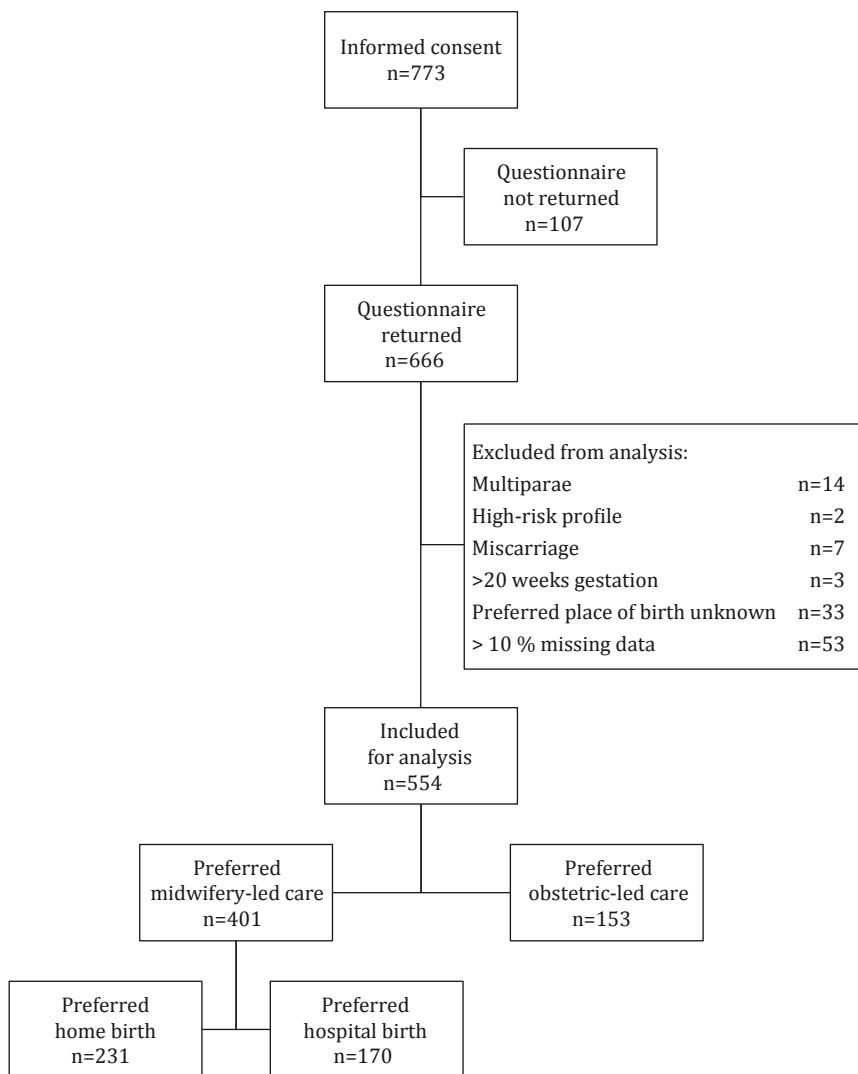


Figure 2 Flowchart of the study population.

(EDS): 9% (n=12) versus 2.4% (n=4) in the home birth group and 4.9% (n=6) in the midwifery-led hospital group, $X^2(2)=6.54$, $p=0.038$. This indicates that more women with a preference for a birth in obstetric-led care had symptoms of a major depressive disorder. We found no significant relation in our data between a high EDS score and method of conception ($X^2(1)=0.28$, $p=0.60$) or previous miscarriage ($X^2(1)=0.21$, $p=0.64$).

An analysis of variance (ANOVA) was conducted on the four factors of the *Cambridge Worry Scale (CWS)* to compare the extent of worries between the three groups. Worries about socio-medical, socio-economic issues and relationships were similar in the three groups, but there was a significant difference regarding worries about health, $F(2,410)=8.90$, $p<0.001$. Post hoc comparisons using the LSD test indicated that women who preferred a birth in obstetric-led care were significantly more worried about health issues with a mean score of 2.58 (SD=0.77) compared to a mean score 2.22 (SD=0.70) of the home birth group and a mean score of 2.37 (SD=0.70) of the hospital birth group in midwifery-led care.

Motives

On the whole, the most important motives mentioned by women with a preference for a home birth were centred on the advantages of their own domestic environment and the possibility of being in control during birth; the most important motives for women with a preference for a hospital birth, either midwifery-led or obstetric-led, were about aspects of safety.

Preference for a home birth in midwifery-led care

Motives that were *very* important for women to prefer a home birth over a hospital birth (Table 2a): 'I would prefer waiting for the birth in my own environment' (67.1%), 'At home I can go about my own things and do what I like, much more than I would be able to in hospital' (64.5%) and 'I would like to give birth in a domestic environment' (64.1%). When looking at the least important motives (Table 2b), we found that they attached little importance to the fact that they did not have to pay an extra out-of-pocket charge at home ('not important' 80.1%) and that it is less likely that they would encounter an unnecessary medical intervention or acquire a hospital infection at home ('not important' respectively 40.7% and 39.8%).

Important or *very* important motives for *not* preferring a hospital birth concerned the environment of the hospital (Table 2c): 'In hospital I have much less privacy' (75.8%), 'Hospital feels like a foreign environment to me' (71.5%) and 'You end up in a situation where strangers walk in and out during birth' (52.0%).

Table 1 Characteristics of low-risk nulliparous women who preferred a home or hospital birth in midwifery-led care or a birth in obstetric-led care.

	Midwifery-led care		Obstetric-led care n=153 (%)	Statistic	p
	Preferred home birth n=231 (%)	Preferred hospital birth n=170 (%)			
Age (years)	mean (SD)	29.1 (4.0)	31.1 (4.7)	$F(2,551)=16.14$	0.000
Body Mass Index				$\chi^2(6)=6.72$	0.35
<18.50	10 (4.3)	4 (2.4)	7 (4.6)		
18.50-24.99	146 (63.2)	127 (74.7)	105 (68.6)		
≥25.00-29.99	58 (25.1)	31 (18.2)	33 (21.6)		
≥30.00	17 (7.4)	8 (4.7)	8 (5.2)		
Ethnic background				$\chi^2(2)=4.60$	0.10
Dutch	228 (98.7)	163 (95.9)	146 (95.4)		
Non-Dutch	3 (1.3)	7 (4.1)	7 (4.6)		
Highest completed level of education				$\chi^2(4)=3.16$	0.53
Low					
Middle	21 (9.1)	20 (11.8)	17 (11.1)		
High	86 (37.2)	54 (31.8)	61 (39.9)		
	124 (53.7)	96 (56.5)	75 (49.0)		
Family income per month				$\chi^2(6)=18.87$	0.004
Low	54 (23.4)	37 (21.8)	24 (15.7)		
Middle	61 (26.4)	36 (21.2)	26 (17.0)		
High	73 (31.6)	61 (35.9)	80 (52.3)		
No information	43 (18.6)	36 (21.2)	23 (15.0)		
Distance to hospital (in minutes)				$\chi^2(2)=1.92$	0.38
0-15 minutes	176 (76.2)	139 (81.8)	118 (77.1)		
>15 minutes	55 (23.8)	31 (18.2)	35 (22.9)		
Method of conception	n=167	n=123	n=153	$\chi^2(2)=35.90$	0.000
Spontaneous	158 (94.6)	112 (91.1)	111 (72.5)		
Assisted Reproduction	9 (5.4)	11 (8.9)	42 (27.5)		

	Midwifery-led care		Obstetric-led care		Statistic	p
	Preferred home birth n=231 (%)	Preferred hospital birth n=170 (%)	n=153 (%)			
First pregnancy						
Yes	184 (79.7)	146 (85.9)	96 (62.7)		$\chi^2(2)=25.96$	0.000
No ^a	47 (20.3)	24 (14.1)	57 (37.3)			
Edinburgh Depression Scale						
≤12	n=167 163 (97.6)	n=123 117 (95.1)	n=134 122 (91.0)		$\chi^2(2)=6.54$	0.038
>12	4 (2.4)	6 (4.9)	12 (9.0)			
Rosenberg Self Esteem Scale RSE	n=167 23.4 (4.4)	n=123 22.5 (3.8)	n=134 23.3 (4.4)		$F(2,421)=1.91$	0.15
	<i>mean (SD)</i>					
Cambridge Worry Scale	n=163 2.07 (0.74)	n=119 2.17 (0.68)	n=131 1.99 (0.65)		$F(2,410)=2.27$	0.10
CWS socio-medical	<i>mean (SD)</i>					
CWS socio-economic	1.74 (0.67)	1.80 (0.71)	1.73 (0.77)		$F(2,410)=0.33$	0.72
CWS health	<i>mean (SD)</i>					
CWS relationships	2.22 (0.70)	2.37 (0.70)	2.58 (0.77)		$F(2,410)=8.90$	0.000
	<i>mean (SD)</i>					
	1.30 (0.62)	1.30 (0.55)	1.26 (0.57)		$F(2,410)=0.23$	0.80

^a Previous miscarriage, ectopic pregnancy or induced abortion

Table 2a The 3 most important motives for preferring a home birth in midwifery-led care (n=231).

Preference for home birth because:	Not important (%)	Somewhat important (%)	Important (%)	Very important (%)
I would prefer waiting for the birth in my own environment	-	2.2	30.7	67.1
At home I can go about my own things and do what I like, much more than I would be able to in hospital	-	7.4	28.1	64.5
I would like to give birth in a domestic environment	1.7	3.9	30.3	64.1

Table 2b The 3 least important motives for preferring a home birth in midwifery-led care (n=231).

Preference for home birth because:	Not important (%)	Somewhat important (%)	Important (%)	Very important (%)
At home, I don't have to make a financial contribution	80.1	13.0	3.9	3.0
At home, I don't run the risk of unnecessary medical interference	40.7	30.7	21.2	7.4
At home, I don't run the risk of hospital infections	39.8	35.1	14.7	10.4

Table 2c The 3 most important motives for *not* preferring a hospital birth in midwifery-led care (n=231).

No preference for hospital birth because:	Not important (%)	Somewhat important (%)	Important (%)	Very important (%)
In hospital, I have much less privacy	4.8	19.5	38.1	37.7
The hospital feels like a foreign environment to me	6.1	22.5	42.9	28.6
Strangers will walk in and out during birth	18.6	29.4	32.5	19.5

Preference for a hospital birth in midwifery-led care

Motives that were *very* important to prefer a hospital birth over a home birth were related to aspects of safety (Table 3a): 'If necessary, all of the medical equipment will always be readily available' (75.9%), 'If any problems arise, the hospital is the right place to be' (67.1%) and 'If any problems arise, the obstetrician can be called in quickly' (45.9%).

Not important to women in this group were the motives (Table 3b): 'At the maternity ward you can often exchange experiences with other pregnant mothers' (68.8%) and 'The travel time from my home to the hospital is rather long, so if problems arise I wouldn't arrive at the hospital in time' (35.9%). Table 3b also shows that for 34.1% of the women 'The hospital knows the best options for pain relief' was an important motive and for almost half of the women it was slightly important. Important or *very* important motives for *not* preferring a home birth were also about safety issues: 'At home, specialist help is not always readily available' (92.4%), 'I would like to avoid the unpleasant situation where problems arise and I suddenly have to be taken to hospital after all' (87.6%) and 'If things threaten to go wrong at home, I would prefer to avoid panic situations in the ambulance' (72.4%) (Table 3c).

Preference for a birth in obstetric-led care

The most important motives for women with a preference for an obstetric-led birth were almost the same as the motives reported by women who preferred a hospital birth in midwifery-led care and were about the safety of the environment, though a higher percentage of the women who preferred obstetric-led care found the motives *very* important (Table 4a): 'If necessary, all of the medical equipment will always be readily available' (83.0%), 'If any problems arise, the hospital is the place to be' (79.1%) and 'If any problems arise, an obstetrician will be present' (69.9%). The motive 'The hospital knows the best options for pain relief' was important or *very* important for 81% of the women who preferred an obstetric-led birth (data not shown).

Motives such as 'Family and friends persuaded me', 'I am convinced that I am going to have a complicated pregnancy and birth' and 'The obstetrician advised me to stay under obstetric supervision and to have a hospital birth' were not important for the majority of women ('not important' respectively 77.1%, 58.8% and 54.2%) (Table 4b).

Important or *very* important motives for *not* preferring a birth in midwifery-led care, either at home or in a hospital, were all related to aspects of a home birth (Table 4c): 'At home, specialist help is not always readily available' (90.8%), 'I want to avoid the unpleasant situation where problems arise and I suddenly have to be taken to hospital after all' (86.9%) and 'If things threaten to go wrong

Table 3a The 3 most important motives for preferring a hospital birth in midwifery-led care (n=170).

Preference for a hospital birth because:	Not important (%)	Somewhat important (%)	Important (%)	Very important (%)
If necessary, all of the medical equipment will always be readily available	-	2.4	21.8	75.9
If any problems arise, the hospital is the place to be	0.6	5.3	27.1	67.1
If any problems arise, the obstetrician can be called in quickly	1.2	10.6	42.4	45.9

Table 3b The 3 least important motives for preferring a hospital birth in midwifery-led care (n=170).

Preference for a hospital birth because:	Not important (%)	Somewhat important (%)	Important (%)	Very important (%)
At the maternity ward you can often exchange experiences with other pregnant mothers	68.8	26.5	2.9	1.8
The travel time from my home to the hospital is rather long	35.9	41.2	16.9	5.9
The hospital knows the best options for pain relief	17.1	48.8	25.9	8.2

Table 3c The 3 most important motives for *not* preferring a home birth in midwifery-led care (n=170).

No preference for home birth because:	Not important (%)	Somewhat important (%)	Important (%)	Very important (%)
At home, specialist help is not always readily available	1.8	5.9	36.5	55.9
I want to avoid the situation where problems arise and I suddenly have to go to hospital	2.4	10.0	34.1	53.5
I would prefer to avoid panic situations in the ambulance	5.9	21.8	32.4	40.0

Table 4a The 3 most important motives for preferring a birth in obstetric-led care (n=153).

Preference for an obstetric-led birth because:	Not important (%)	Somewhat important (%)	Important (%)	Very important (%)
If necessary, all of the medical equipment will always be readily available	-	0.7	16.3	83.0
If any problems arise, the hospital is the place to be	-	3.9	17.0	79.1
If any problems arise, an obstetrician will be present	-	2.6	27.5	69.9

Table 4b The 3 least important motives for preferring a birth in obstetric-led care (n=153).

Preference for an obstetric-led birth because:	Not important (%)	Somewhat important (%)	Important (%)	Very important (%)
Family and friends convinced me	77.1	15.0	7.2	0.7
I am convinced that I am going to have a complicated pregnancy and/or birth	58.8	32.7	6.5	2.0
On the advice of the obstetrician	54.2	22.9	14.4	8.5

Table 4c The 3 most important motives for *not* preferring a birth in midwifery-led care (n=153).

No preference for midwifery-led birth because:	Not important (%)	Somewhat important (%)	Important (%)	Very important (%)
At home, specialist help is not always readily available	2.0	7.2	20.9	69.9
I want to avoid the situation where problems arise and I suddenly have to go to hospital	5.2	7.8	17.0	69.9
I would prefer to avoid panic situations in the ambulance	7.8	11.8	31.4	49.0

at home, I would prefer to avoid panic situations in the ambulance' (80.4%). Not shown in the tables, but worth mentioning, is the fact that the majority of the women who preferred a birth in obstetric-led care found the motive 'I have little faith in the expertise of the midwife' to be *not* important (56.2%).

DISCUSSION

The Dutch maternity care system is characterised by a clear division between midwifery-led care (for physiological pregnancy and birth) and obstetric-led care (for pathological pregnancy and birth). In the case of an uncomplicated, 'physiological' pregnancy women are free to follow their preferences and give birth under supervision of an independent midwife at home or in hospital. Although obstetric-led care is formally not an option, low-risk women with a strong preference for giving birth under supervision of an obstetrician can give birth in obstetric-led care. This study explored the characteristics and motives that shape the preference of low-risk nulliparous women for a midwifery-led (home or hospital) birth or an obstetric-led birth.

We found significant differences in demographic, psychosocial and pregnancy-related characteristics between those women who preferred a birth in obstetric-led care and those who preferred a birth in midwifery-led care. Women with a preference for midwifery-led care, either in home or hospital, were not significantly different.

Women who preferred obstetric-led care were older, had a higher family income, were more frequently pregnant after assisted reproduction and had a higher rate of previous miscarriage. They also differed significantly on a few emotional aspects: more women in this group had symptoms of a major depressive disorder and more were worried about health issues. Although the women who preferred an obstetric-led care birth were significantly different from those preferring midwifery-led care, there was a trend in the same direction for women who preferred a hospital birth in midwifery-led care. Women in this group were older, had higher incomes, had more pregnancies by assisted reproduction and showed a greater likelihood of symptoms of major depressive disorder and worries about health.

The fact that women who preferred a hospital birth were older is *not* in line with previous research findings that found women planning a home birth were more likely to be older.^{7,11,15-17,34} This difference is likely the result of the fact that these studies also included multiparous women. Multiparity is associated with home birth^{8,11,14-17,34} and it seems plausible that multiparous women are older

than nulliparous women in general. The older age of women in obstetric-led care may also be related to the higher rate of pregnancies after assisted reproduction, as the trend in recent decades to delay the birth of the first child has increased the incidence of age-related infertility.³⁵ However, in our study there seems to be no evidence of an association between age and method of conception.

Previous studies showed that a high level of education or a high socio-economic status are associated with a preference for a home birth.^{7,11,13,15,16} De Jonge et al.¹⁶ showed in a nationwide cohort of all low-risk births in the Netherlands that the majority of women (50%) had a medium socio-economic status, 26% a high socio-economic status and 24% a low socio-economic status. In our study population more than half of the women had a high level of education (53.2%) and 38.6% had a high family income per month. Because women with a high level of education and a high family income were overrepresented in our study population, we expected a significant difference in favour of the home birth group. However, level of education showed no effect, whereas women who preferred a birth in obstetric-led care had more often a high family income.

Noteworthy in our study is the large proportion of women in obstetric-led care who became pregnant with the help of assisted reproduction techniques (27.5%) or who had a previous miscarriage (37.3%). While pregnancy after assisted reproduction or after a miscarriage is not an indication for obstetric-led care according to the List of Obstetric Indications (LOI)⁴, it is likely that women who conceived in a highly medical and technological environment and women who have experienced a miscarriage will think in terms of risks rather than normality and that they will be more reliant on medical technology. It is conceivable that these women prefer obstetric-led care because they do not see themselves as 'low-risk' or because they were already familiar with the obstetrician as care provider. Research on psychological aspects of IVF pregnancies and previous miscarriages shows that these women experience more stress and anxiety about losing the pregnancy.³⁶⁻³⁹ When health care providers address this emotional stress and anxiety by the employment of medical interventions, women's reliance on medicine and obstetrics increases.⁴⁰

Interestingly, women with a preference for a birth in obstetric-led care were more likely to report symptoms of a major depressive disorder and were more worried about health issues. Despite modern systems of obstetrics with low and still declining perinatal morbidity and mortality rates, anxiety or fear of childbirth remains.^{41,42} In the study by Geissbuehler and Eberhard⁴¹, one of the most frequent fears mentioned by pregnant women is fear for the child's health, which is part of the subscale *health* of the *Cambridge Worry Scale* used in this study. Ryding et al.⁴³ reported that women with intense fear of childbirth differ from other pregnant women in personality. This could be an explanation for the

higher rate of women with depressive symptoms and worries about health in obstetric-led care. Fear of childbirth might be a reason for women to choose for the assumed safety of the medical technology in the hospital.

The most important motives for choosing a home birth centred on the importance of one's own, domestic environment and the possibility of being in control during childbirth. Women who choose to give birth at home expect to have greater personal autonomy with the ability to make their own choices. This finding agrees with previous studies.⁷⁻¹¹

Safety and a desire to control risk were the most important motives for preferring a hospital birth, *both* in midwifery-led and obstetric-led care. This also corresponds with other studies.^{7-9,12} The option of medical pain relief in the hospital was relatively important for the group who preferred a hospital birth in midwifery-led care, but it was even more important for the group who preferred a birth in obstetric-led care. In the Netherlands, medical pain relief is available only in obstetric-led care. If women are convinced – before labour begins – that they want medical pain relief, this may be a reason for their choice to give birth in obstetric-led care.

Research has shown that there is a higher risk of obstetric interventions when giving birth in obstetric-led care.^{6,17,44-46} Green and Baston⁴⁷ mentioned in their study a shift toward greater willingness to accept obstetric interventions, but are women aware of the fact that obstetric interventions are more likely when an obstetrician is providing care? We found that most women who preferred a home birth were not motivated by a lower likelihood of unnecessary medical interventions at home. It is not clear if women are not worried about unnecessary interventions, or if they simply lack knowledge of this fact.

The majority of women who preferred obstetric-led care found the motive 'I have little confidence in the expertise of the midwife' not important, which suggests that women with a preference for obstetric-led care choose primarily for the setting and not for a specific type of care provider. Hundley and Ryan⁴⁸ point out that preferences are influenced by knowledge of availability. It may well be that women with a preference for a birth in obstetric-led care do not know about the possibility of a hospital birth in midwifery-led care in the Netherlands.

Our study does have a few limitations. The study started as an RCT in 2006, but was changed into a prospective cohort study in 2007 because it was impossible to find women who would agree to be randomised for place of birth.⁴⁹ As a result, some questions were added to the questionnaire at the start of the cohort study. This explains why the group sizes of some questions were not equal. We believe that the impact of this change on our results is negligible.

The inclusion period for women in obstetric-led care was much longer than expected. It seems there were fewer low-risk women with a preference for obstetric-led care than we initially presumed indicating that obstetric-led care for low-risk women remains uncommon in the Netherlands. We had little direct control over the inclusion processes in midwifery practices and hospitals and thus we do not know the exact number of women who were eligible during the period of recruitment.

The percentage of women with a non-Dutch background was very small in our study population: 3.1% in total study population as compared with 19.6% of all nulliparae in the Netherlands in 2008.⁵ This is a result of the fact that only women who understood Dutch could be enrolled in the study. It is likely that women with a non-Dutch background have a different view on childbirth and place of birth than Dutch women. Future research on this topic should address the whole population.

The Netherlands is one of the few places in the Western world where such a study can be carried out, as home and hospital birth are both seen as a normal place to give birth. This is one of the larger studies on preferences for place of birth and a main advantage of this study is that we have not only included women with a preference for midwifery-led care, but also low-risk women with a preference for obstetric-led care. Most Dutch studies only compare home and hospital births in midwifery-led care.^{7,14,16,19,50} Because only women with a first ongoing pregnancy were included, preferences on place of birth were not influenced by a previous childbirth experience. A major strength of our study is its prospective design: information about preferences and psychosocial aspects were obtained at the beginning of the pregnancy which means that the answers were not influenced by the course of pregnancy.

CONCLUSION

The characteristics of women who prefer a hospital birth, especially within obstetric-led care, are significantly different than the characteristics of women who prefer a home birth. Unlike earlier studies, we found that women preferring a hospital birth were older and had a higher family income. This finding, when considered together with an increase of epidurals²³ and a decrease in the home birth rate¹ suggests that the Dutch view on childbirth is changing. Women's choice for a home birth is driven by a desire for greater personal autonomy, whereas women's choice for a hospital birth, either midwifery- or obstetric-led, is driven by a desire to feel of safe and control risks. The preference for a hospital

birth is motivated by fear of something going wrong and it appears that for these women, the assumed safety of the hospital setting is more important than type of care provider. This brings up the question whether women are fully aware of the possibilities of maternity care services. Women might need concrete information about the availability and the characteristics of the services within the maternity care system and the risks and benefits associated with either setting, in order to make an informed choice where to give birth. Future research should examine women's expectations about and satisfaction with, their preferred place of birth after an intervention involving more complete information-giving about the different settings. Midwives and obstetricians have their own specialties regarding maternity care and if they can bring their strengths together and create a transparent system of maternity care, it would be beneficial for all women.

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3

Eliciting preferences for key attributes of intrapartum care in the Netherlands

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ABSTRACT

Background: As part of the move toward ‘patient-centered care’, women’s preferences with regard to maternity services have become increasingly important to policy makers. To realize optimal patient-centered care, knowledge of patients’ preferences is essential. The aim of our study was to assess the strength and relative importance of women’s preferences for different aspects of intrapartum care in the Netherlands, where women have easy access to both home and hospital birth.

Methods: A discrete choice experiment was conducted at 16 weeks of gestation as part of a Dutch multicenter, prospective cohort study from 2007 to 2011 of low-risk, nulliparous women. Responses were analyzed per intended place of birth group: midwifery-led home (n=191) and hospital birth (n=152) and obstetric-led hospital birth (n=188).

Results: We analyzed 562 questionnaires. Women in all groups preferred the possibility of influencing decision making and pain-relief treatment during birth and no co-payment for childbirth. Women with an intended home birth preferred a home-like birth setting with the assistance of a midwife and transport during birth in case of complications. Type of birth setting and transport during birth were not considered important to women with an intended midwifery- or obstetric-led hospital birth.

Conclusion: Policies aimed at the improvement of maternity care must take into account women’s preferences for the possibility of pain-relief treatment and the fact that all women desire a high level of involvement in decision making. Furthermore, efforts to change maternity care systems must consider how to counter the culturally embedded nature of women’s preferences.

INTRODUCTION

Dutch maternity care is based on the principle that pregnancy and childbirth are fundamentally physiologic processes.¹ Independent practicing midwives provide care to healthy women with uncomplicated pregnancies, called midwifery-led care. They refer women to obstetric-led care when there exists an increased risk of complications as defined by the “List of Obstetric Indications”, a national guideline, developed cooperatively by all the professions involved in maternity care.¹ Women with a low-risk pregnancy are free to follow their preferences and give birth at home or in hospital under the supervision of their independent midwife. In midwifery-led care, women will not receive medical interventions such as medical pain relief, augmentation, or continuous fetal monitoring. Women will receive these interventions if needed, but only after a referral to obstetric-led care. If low-risk women choose for a midwifery-led hospital birth, they must make a co-payment of approximately EU€300 – equivalent to US\$410 – for the additional costs of the hospital stay. Some insurance plans cover the cost of this co-payment. Although uncommon, access to obstetric-led care is possible when low-risk women have a strong preference for giving birth under the supervision of an obstetrician. At present, no co-payment is required for an obstetric-led, low-risk birth in a hospital. It is likely that this exemption is a result of the fact that it is still quite unusual for a low-risk woman to have an obstetrician supervises her birth and thus insurance companies assume these women must have some medical indication for obstetric-led care. The exact number of low-risk women whose primary choice is obstetric-led care is not known.

Maternity care in the Netherlands has been changing over the past decade.² At this moment planned home births are still common, but the rate of home birth is decreasing from 34.1 percent in 1994 to 23.4 percent in 2010.³ Referrals during labor from midwifery-led care to obstetric-led care are increasing from 26.7 percent in 2004 to 43.0 percent in 2010.^{3,4}

After the publication of the PERISTAT-II study – which showed the national perinatal mortality rate in the Netherlands to be one of the highest in Europe⁵ – the Dutch maternity care system, with the option of giving birth at home, was sharply criticized.^{6,7} More recently, reanalysis of the PERISTAT data by de Jonge et al⁸ made clear that the data had been used incorrectly to challenge the organization of the Dutch maternity system.

Nevertheless, the criticism on the maternity care system has resulted in government efforts to reorganize it in the hope of reducing perinatal morbidity and mortality.^{9,10} A central claim in these reorganization efforts, agreed on by all parties, is that maternity care should be patient centered. From this perspective,

knowledge of patients' preferences is essential as input for service redesign.¹¹ Recent research on women's preferences for aspects of intrapartum care in the Netherlands is limited, particularly in relation to their choice for a specific birth place.

The aim of our study was to assess the strength and relative importance of women's preferences for different aspects of intrapartum care with regard to their intended place of birth. Along with women who intended to have a midwifery-led home or hospital birth, our study also included women who intended to have a hospital birth with obstetric-led care. All women in the study were at low-risk and expecting their first birth. In this study we use the method of discrete choice experiment to elicit and examine women's preferences.

METHODS

Discrete choice experiment is a stated preference method based on Lancaster's economic theory of value, which allows for analysis of preferences for complex multi-attribute goods, such as health care.¹² It has also been applied in the area of maternity services.¹³⁻¹⁸ The technique of discrete choice experiment is based on the assumption that, first, any good or service (in this study intrapartum care) can be described by its characteristics, known as attributes. Second, an individual's valuation (i.e., utility or preference) of a service depends upon the levels of these attributes.¹³ In a discrete choice experiment, respondents are offered a series of choice sets, each with two or more scenarios, which differ according to the levels of the attributes, and they are asked to select their preferred scenario.

Establishing the attributes and levels of attributes

We included seven attributes, with each two levels, that appeared important to pregnant women in previous research¹⁴⁻¹⁶ and that were relevant for the Dutch context (Table 1).

Choice of scenarios

The chosen attributes and levels led to a total of 128 (2⁷) possible scenarios. We used an orthogonal main-effect fractional factorial design (generated by the software package SPSS version 16.0, SPSS Inc., Chicago, Illinois, USA) to reduce them to a manageable number of eight scenarios. Examination of the design confirmed the properties of orthogonality and level balance.¹⁹ One scenario that represented a potentially realistic situation of intrapartum care in the Netherlands was selected to be the basic scenario. The other seven scenarios

Table 1 Attributes of intrapartum care and levels used in the Discrete Choice Experiment.

Attribute	Levels and coding
Assistance during birth	Assistance by a midwife (code 1) Assistance by an obstetrician (code 0)
Type of birth setting	The ambience of the birth setting is home-like (code 1) The ambience of the birth setting is clinical (code 0)
Influencing decision-making during birth	It is possible to influence decision making during birth (code 1) It is not possible to influence decision making during birth (code 0)
Pain-relief treatment during birth	Pain-relief treatment is possible during birth (code 1) Pain-relief treatment is not possible during birth (code 0)
Place of giving birth	At home (code 1) At the hospital (code 0)
Transport during birth in case complications (to a different place)	No transport in case of complications (code 1) Yes, transport in case of complications (code 0)
Co-payment for childbirth	Co-payment for childbirth (code 1) No co-payment for childbirth (code 0)

were used as alternative scenarios. Seven choice sets were defined where each choice set included the basic scenario and one alternative scenario. An example of a choice set is provided in Figure 1. One choice set was repeated to account for internal reliability of the discrete choice experiment, which leads to a total of eight choice sets. Cohen's Kappa coefficients showed high internal reliability with all values higher than 0.80. The survey was designed to estimate main effects, but not two-way interactions between attributes.

For each pair of scenarios respondents were asked to indicate which scenario they would prefer most. It is important to note that some of the alternative scenarios included were hypothetical, for example, assistance of an obstetrician at a home birth (which is not possible in the Netherlands).

Study sample

The discrete choice experiment was conducted as part of a Dutch multicenter, prospective cohort study of low-risk, nulliparous women starting their pregnancy in midwifery-led care or in obstetric-led care.

	Scenario 1	Scenario 2
Assistance during birth	Midwife	Obstetrician
Type of birth setting	Home-like setting	Clinical setting
Influencing decision-making during birth	Not possible	Not possible
Pain-relief treatment during birth	Not possible	Not possible
Place of giving birth	At home	At the hospital
Transport during birth in case complications	Yes	Yes
Co-payment for childbirth	Yes	No
Which scenario do you prefer?	<input type="checkbox"/> Scenario 1	<input type="checkbox"/> Scenario 2

Figure 1 Example of a discrete-choice question in the questionnaire.

Of the 466 independent midwifery practices in the Dutch Midwifery Association Registration in 2006, 150 practices were randomly selected and invited to recruit women in midwifery-led care. Overall, 100 practices, spread throughout the Netherlands including rural and urban areas, agreed to participate. Thirty hospitals with maternity care units across the Netherlands were randomly chosen and asked to recruit low-risk women in obstetric-led care. Of these, 14 hospitals, 3 academic and 11 non-academic, agreed to participate. Women with a first ongoing pregnancy and without an obstetric or medical indication according to the List of Obstetric Indications were considered eligible for inclusion. Sufficient knowledge of the Dutch language was required to read and fill out the questionnaires. Recruitment in midwifery practices was carried out from March 2007 to August 2007 and in hospitals from March 2007 to September 2011. Because obstetric-led care is not a common practice for low-risk women, lower total numbers in this category required a longer inclusion period for hospitals. All women gave written informed consent. Data were collected at a gestational age of 16 weeks using self-administered questionnaires. Women could choose to receive the questionnaire by mail or to fill it out online. The questionnaire was pretested in three midwifery practices. The questionnaire included sociodemographic, medical- and pregnancy-related questions, along with the eight discrete choice questions. To ensure that the respondents understood the meaning of the attributes and their levels, information on the definition of the attributes was included.

Ethical approval was obtained by the Medical Ethical Committee of the Maastricht University Medical Centre (registration no. 04-234 / 11-4-009).

Data analysis

In general, the analysis of discrete choice data is based on the assumption that respondents derive a distinctive utility from each attribute level and within each choice set they choose the scenario that leads to a higher level of total utility.^{20,21} Given that respondents were asked to choose between two scenarios, a random-effects binary probit regression model (Stata statistical software, release 11, StataCorp, College Station, Texas, USA) was used to analyze the data. The inclusion of a random effect for respondent takes account of the multiple observations obtained from the same individual. Before the discrete choice experiment women were asked in the questionnaire to indicate their intended place of birth: a home birth, a midwifery-led hospital birth or an obstetric-led hospital birth. We estimated main effects models separately for each “intended place of birth” group. The main effect models allowed us to determine the following outcomes:

- *The absolute importance of the attributes per intended place of birth group:* The p-values of the regression coefficients indicated whether the attributes had a significant impact on women’s preferences (utility) for intrapartum care.
- *The relative importance of the attributes per intended place of birth group:* Given the binary coding of the independent variables, the size of the estimated regression coefficient made it possible to determine the relative importance of one attribute relative to another attribute in determining overall utility.
- *The preferred level of the attributes per intended place of birth group:* Taking into account the coding of the independent variables (Table 1), the direction (positive or negative) of the regression coefficients indicated which level of the attribute respondents preferred.

Chi-square tests were used to test for significant differences in characteristics between the groups.

We considered a p-value of < 0.05 to be significant.

RESULTS

Of the 773 women who gave informed consent to participate in the study, 604 women returned the first questionnaire with at least one discrete choice question completed, yielding a response rate of 78 percent. Of the 604 participants, 40 women did not meet the inclusion criteria because of a medical indication according to the List of Obstetric Indications, multiparity, miscarriage, or a gestational age over 20 weeks when filling out the questionnaire. Two women did not fill out the question about preferred place of birth. Of the 562 remaining women, 191 intended to have a home birth, 152 intended to have a midwifery-

led hospital birth, and 188 intended to have an obstetric-led hospital birth. Thirty-one women indicated that they did not yet know where to give birth. All 8 discrete choice questions were completed by 544 women, 10 women completed 7 questions, 2 completed 5 questions, 1 completed 3 questions, 1 completed 2 questions, and 4 completed 1 question, which leads to a total of 4,441 choice observations.

Characteristics of the groups are presented in Table 2. Women who intended to have a birth in obstetric-led care were slightly older, were more frequently pregnant after assisted reproduction and had a higher rate of previous miscarriages compared with the other groups.

Table 3 shows the results of the main effect model per intended place of birth group at 16 weeks of gestation. Below are the results separately per intended place of birth.

Intended home birth

All of the attributes of intrapartum care were significant in the model, meaning that all attributes had a significant impact on women's preferences for intrapartum care in this group. Looking at the direction of the regression coefficients (positive or negative), women with an intended home birth preferred the assistance of a midwife, a home-like birth setting, the possibility to influence decision making, the possibility to have pain-relief treatment, transport in case of complications, and no co-payment for childbirth. As expected, a preference for birth at home was of central importance to this group. The higher the absolute magnitude of the coefficient, the greater the impact of that attribute on women's overall utility for intrapartum care compared to the other attributes. For women with an intended home birth, the type of birth setting (with level "home-like") and the place of giving birth (with level "home") were the attributes that contributed most to their utility compared with the other attributes (Figure 2).

Intended midwifery-led hospital birth

Women with an intended midwifery-led hospital birth preferred the assistance of a midwife, the possibility to influence decision making, the possibility to have pain-relief treatment and no co-payment for childbirth. In accordance with their intended place of birth, they preferred to give birth at the hospital. The attributes "type of birth setting" and "transport in case of complications" had *no* significant impact on women's overall utility; these aspects were not considered important to these women. The place of giving birth (with level "hospital") and pain-relief treatment (with level "possible") were the attributes that contributed most to their utility compared with the other attributes (Figure 3).

Table 2 Characteristics of low-risk nulliparous women at 16 weeks of gestation listed per intended place of birth.

	Intended midwifery-led home birth N=191 n (%)	Intended midwifery-led hospital birth N=152 n (%)	Intended obstetric-led hospital birth N=188 n (%)	Intended place not yet known N=31 n (%)
Age (years) ^a				
< 29 years	91 (47.6)	64 (42.1)	56 (29.8)	13 (41.9)
≥ 29 years	100 (52.4)	88 (57.9)	132 (70.2)	18 (58.1)
Body Mass Index				
<25.00	126 (67.7)	110 (75.9)	134 (73.2)	20 (64.5)
≥25.00	60 (32.3)	35 (24.1)	49 (26.8)	11 (35.5)
Ethnic background				
Dutch	189 (99.0)	146 (96.1)	179 (95.2)	29 (93.5)
Non-Dutch	2 (1.0)	6 (3.9)	9 (4.8)	2 (6.5)
Highest completed level of education ^b				
Up to high-school	75 (39.3)	53 (34.9)	92 (48.9)	9 (29.0)
Higher than high-school degree	116 (60.7)	99 (65.1)	96 (51.1)	22 (71.0)
Family income per month				
< 2000 euro	18 (11.7)	9 (7.7)	15 (9.4)	3 (10.7)
≥ 2000 euro	136 (88.3)	108 (92.3)	144 (90.6)	25 (89.3)
Distance to hospital (in minutes)				
< 10 minutes	66 (34.7)	60 (39.5)	86 (46.0)	11 (35.5)
≥ 10 minutes	124 (65.3)	92 (60.5)	101 (54.0)	20 (64.5)
Method of conception ^a				
Spontaneous	157 (94.0)	118 (90.8)	139 (73.9)	30 (100.0)
Assisted Reproduction	10 (6.0)	12 (9.2)	49 (26.1)	-
First pregnancy ^a				
Yes	152 (80.9)	128 (84.2)	118 (63.1)	28 (90.3)
No ^c	36 (19.1)	24 (15.8)	69 (36.9)	3 (9.7)

Chi-square tests were used to test for significant differences between the group.

^a Significant at 1% level; ^b Significant at 5% level.

^c Previous miscarriage, ectopic pregnancy, or induced abortion.

Table 3 Results of the Discrete Choice main effects models at 16 weeks of gestation (Probit regression with random effects).

Attributes	Midwifery-led care		Obstetric-led care	
	Intended home birth N of respondents = 191 N of observations = 1335 Coefficient (SE)	Intended hospital birth N of respondents = 152 N of observations = 1047 Coefficient (SE)	Intended hospital birth N of respondents = 188 N of observations = 1287 Coefficient (SE)	
Assistance during birth (midwife instead of obstetrician)	0.576 (0.087) ^a	0.273 (0.120) ^b	-0.531 (0.176) ^a	
Type of birth setting (home-like instead of clinical)	0.956 (0.090) ^a	0.078 (0.120)	-0.199 (0.175)	
Influencing decision-making during birth (possible instead of not possible)	0.640 (0.087) ^a	0.728 (0.123) ^a	0.861 (0.182) ^a	
Pain-relief treatment during birth (possible instead of not possible)	0.342 (0.086) ^a	0.951 (0.126) ^a	1.081 (0.187) ^a	
Place of giving birth (home instead of hospital)	0.933 (0.090) ^a	-0.965 (0.127) ^a	-1.515 (0.201) ^a	
Transport during birth in case complications (no transport instead of transport)	-0.243 (0.086) ^a	0.209 (0.119)	0.267 (0.175)	
Co-payment for childbirth (co-payment instead of no co-payment)	-0.279 (0.086) ^a	-0.305 (0.120) ^b	-0.189 (0.175)	
	Log-likelihood = -631.545 Wald Chi ² = 250.36 (<i>p</i> < 0.01)	Log-likelihood = -355.714 Wald Chi ² = 168.30 (<i>p</i> < 0.01)	Log-likelihood = -236.730 Wald Chi ² = 114.40 (<i>p</i> < 0.01)	

^aSignificant at 1% level; ^bSignificant at 5% level. The significance levels of the coefficients indicate whether the attributes were considered important for women. The higher the absolute magnitude of the coefficient within a group, the greater the relative impact of that attribute on women's overall utility compared to the other attributes. A positive coefficient suggests women preferred the attribute level presented in the table. A negative coefficient suggests women preferred the opposite attribute level. Example: a positive coefficient for assistance during birth by a midwife instead of an obstetrician suggests a preference for assistance by a midwife. In contrast, a negative coefficient for this attribute level suggests a preference for assistance by an obstetrician.

Intended obstetric-led hospital birth

These women preferred the assistance of an obstetrician, the possibility to influence decision making, the possibility to have pain-relief treatment and, as expected, a hospital birth. The attributes “type of birth setting”, “transport in case of complications” and “co-payment for childbirth” were not significant and therefore not considered important to women with an intended obstetric-led hospital birth. The place of giving birth (with level “hospital”) and pain-relief treatment (with level “possible”) were the most important attributes for this group (Figure 4).

Undecided place of birth

We also ran the model separately for the group of women who did not yet know where to give birth (results not shown in Table). In this model the attribute “place of giving birth” was not significant. However, the positive significant coefficient for “type of birth setting” and “assistance during birth” shows that these women at least preferred to give birth in a home-like birth setting assisted by a midwife.

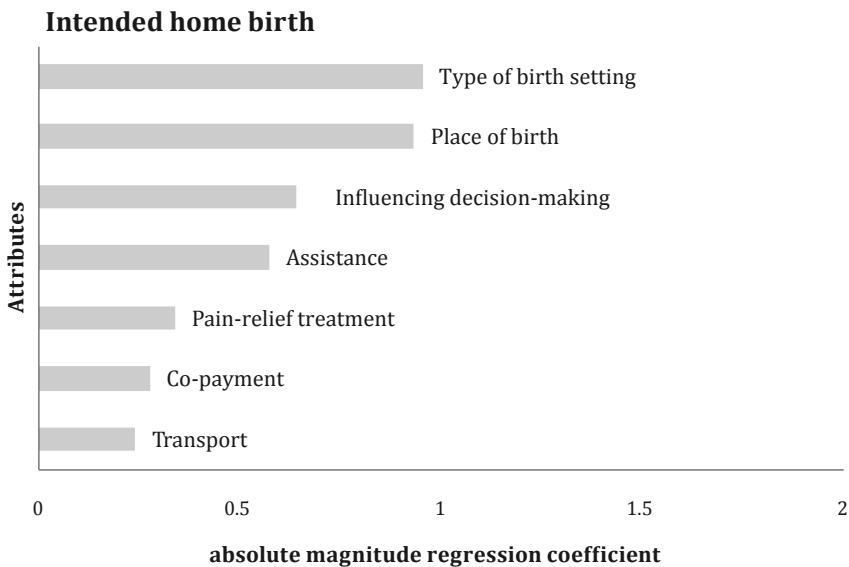


Figure 2 Relative impact of attributes on overall utility in intended home birth group.

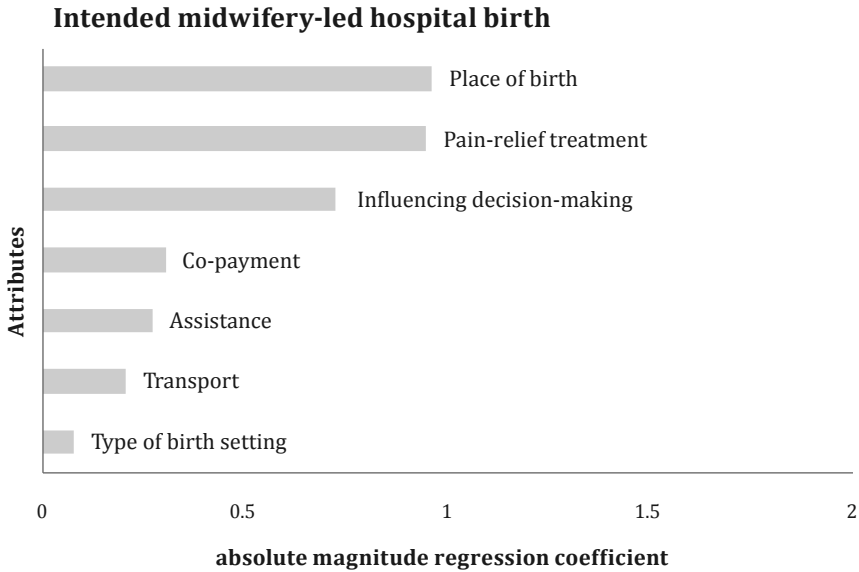


Figure 3 Relative impact of attributes on overall utility in intended midwifery-led hospital birth group.

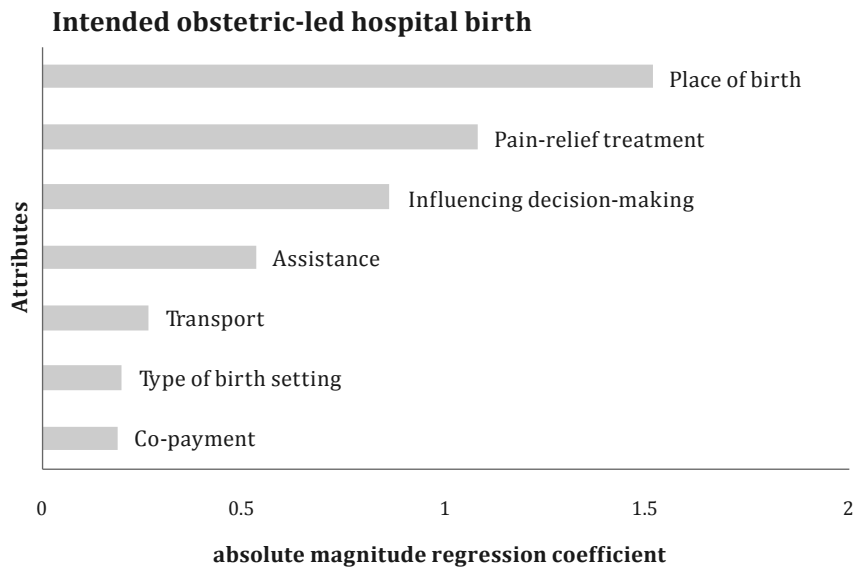


Figure 4 Relative impact of attributes on overall utility in intended obstetric-led hospital birth group.

DISCUSSION

This study uses the method of discrete choice experiment to contribute to the knowledge of women's preferences for different aspects of intrapartum care in the Netherlands.

Looking at responses by intended place of birth, the preferences for some levels of attributes seem obvious, like a preference for a home birth in the intended home birth group. Seen from a different point of view, however, these results are an indication of the validity of the study. In addition, an advantage of the discrete choice experiment is that it not only indicates which attributes are considered important but also provides information about the relative importance or value attached to the different attributes of intrapartum care.

For women in the Netherlands, place of birth was one of the most important aspects of intrapartum care. This fact, coupled with empirical studies showing no difference in outcomes based on place of birth in the Netherlands,^{8,22} underscores the value of policies that give women freedom of choice with regard to place of birth. The ambience of the birth setting was not considered important to both groups of women with an intended hospital birth, in relation to the other attributes in the model. For them, the actual location was more important than the ambience of the location. In contrast, a home-like ambience of the birth setting was the most important aspect for women with an intended home birth. This finding is in line with results of other studies, where a key motive for choosing a home birth was a domestic environment – preferably one's own home.^{15,23}

The ability to have control over the course of birth and involvement in the decision-making process is often associated with women who choose a home birth.^{15,23-25} However, in this study *all* women want to be involved in decision making, regardless of their intended place of birth.

Women with an intended midwifery-led and obstetric-led hospital birth had a strong preference for the possibility of pain-relief treatment. Somewhat surprisingly, the possibility of pain-relief treatment was also considered important by women who intended to birth at home, although their preference was not as strong as compared with women in the hospital groups. Preferring the possibility of pain-relief treatment does not necessarily mean the same as preferring the experience of pain-relief treatment.¹⁸ Our result regarding the pain-relief treatment corresponds to previous findings,^{14-16,18} although, in some studies a preference for the availability of pain-relief treatment is specifically related to the choice for a hospital birth. Longworth et al.¹⁵ found that pain relief is only considered important by women who give birth in hospital and Hildingsson et al.²⁶ reported that seeking a home birth was associated with *not* wanting pharmacological pain relief.

Many studies about women's preferences for intrapartum care and place of birth have been carried out in countries where the choice to give birth outside the hospital is restricted. In these countries it is likely that women who prefer to give birth at home are a highly motivated group with preferences that differ from women who choose for the more standard hospital birth. Women's choices in the Netherlands, where home birth is common, are driven by different factors. Women there do not necessarily choose to birth at home as a strategy to avoid medical intervention, and thus have no principled objection to pain-relief treatment. In the current system, only nonmedical approaches to pain relief can be used in midwifery-led care. If medical pain-relief treatment – narcotic or epidural analgesia – is desired, women must be referred to obstetric-led care in a hospital. Our findings are, then, particularly important for Dutch maternity care providers and policy makers because there has been a notable increase in low-risk women requesting pain relief during labor in the Netherlands. In 2004, 3.8 percent of the nulliparous and 0.6 percent of the multiparous women were referred for sedatives or medical pain-relief compared to 10.9 percent of the nulliparous and 3.0 percent of the multiparous women in 2010.^{3,27} Possibilities for pain-relief treatment in midwifery-led care in the Netherlands should therefore be explored.

Despite its frequent use and popularity in many countries,²⁸ the use of nitrous oxide (N₂O) during labor in the Netherlands was stopped in 2004 due to possible health risks for caregivers who are routinely exposed to N₂O.²⁹ However, after a recent Dutch study³⁰ that assessed the effectiveness of a new scavenging system for safe administration of N₂O, approval was granted by the Dutch National Institute for Occupational Safety and Health for using N₂O in hospital settings or midwifery-led birth centers. Nitrous oxide at home births is not yet possible in the Netherlands because of the possible risk of occupational hazard. When technical developments in the future lead to safe use of N₂O at home, this option should be considered.

Women with an intended home birth expressed a significant preference for “transport in case of complications”. This result must be regarded with caution: it is not clear if women placed a value on the *necessity* of being transported or on the *possibility* of being transported if problems arise. Unfortunately, this was not sufficiently defined in the definition of the attributes, which means that the real attribute effect could be confounded.

None of the women in our study preferred paying an extra amount for childbirth. The fact that all costs are covered by health insurances for low-risk women in obstetric-led care is most likely the reason that the attribute “co-payment” was not considered important to women in obstetric-led care in contrast to women in midwifery-led care.

Women in midwifery-led care preferred the assistance of a midwife whereas women in obstetric-led care preferred the assistance of an obstetrician. Given that they were already under the care of a midwife or obstetrician during the discrete choice experiment, this result is not surprising. Hundley and Ryan³¹ and Van Teijlingen et al.³² suggested that women's preferences for attributes may be influenced by their knowledge of availability and by their experience of an attribute. Although discrete choice experiments can elicit preferences for services that are hypothetical or currently not available, it is possible that respondents do not consider hypothetical options to be a real option and interpret those options in a different way.³³ This understanding is a limitation of the method of discrete choice experiment.

This study has some limitations. The inclusion period for women in obstetric-led care was much longer than expected. It seems there existed fewer low-risk women with a preference for obstetric-led care than we initially assumed, indicating that obstetric-led care for low-risk women is uncommon in the Netherlands. We had little direct control over the inclusion processes in midwifery practices and hospitals; thus, we do not know the exact number of women who were eligible during the period of recruitment. The percentage of women with a non-Dutch background was very small in our study population: 3.1 percent in total, as compared with 21.3 percent of all nulliparae in the Netherlands in 2010.³ This discrepancy is a result of the fact that only women who understood Dutch could be enrolled in the study. It is likely that women with a non-Dutch background have different preferences for intrapartum care. Future research on this topic should strive to address the whole population. The attributes and levels of attributes included in the discrete choice experiment were based on previous studies.¹⁴⁻¹⁶ However, the validation of the attributes is not guaranteed in this study. It is not known whether the attributes and the levels selected for the study cover all of the important aspects of intrapartum care.

The Netherlands is one of the few places in the Western world where such a study can be carried out, as both home and hospital are seen as safe and normal places to give birth. The study achieved a high response rate (78%) and is one of the larger studies exploring preferences for place of birth. Major strengths are the prospective design of this study, the fact that only women with a first ongoing pregnancy were included, and the inclusion of women with an intended birth in midwifery-led care and low-risk women with an intended birth in obstetric-led care. Therefore, it can be assumed that preferences are less influenced by previous experiences.

CONCLUSIONS

Our research has several important implications for the Netherlands and for maternity care more generally. Health policy makers in the Netherlands charged with optimizing the Dutch maternity care system should recognize that all women would benefit from a high level of involvement in decision making and should include efforts to explore the options of pain-relief treatment in all settings of maternity care, including home birth. Furthermore, place of birth is one of the most important aspects of intrapartum care for all women; therefore, it is not advisable to restrict women's birthplace choices.

The Dutch situation shows that freedom of choice about place of birth and caregiver stimulates women to be active in decisions about how and where they will give birth. Furthermore, the consistency between choice and preference that we discovered suggests the truth of earlier studies that show that women prefer what the health care system offers.³¹⁻³⁴ The preferences of Dutch women range across the possibilities offered by the system. In other maternity care systems in the developed world, few women prefer a birth outside the hospital. Those who wish to promote less medical approaches to childbirth must consider how to counter the culturally embedded nature of women's preferences.

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4

The influence of preferred place of birth on the course of pregnancy and labor among healthy nulliparous women: a prospective cohort study

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ABSTRACT

Background: Most studies on birth settings investigate the association between planned place of birth at the start of labor and birth outcomes and intervention rates. To optimize maternity care it also is important to pay attention to the entire process of pregnancy and childbirth. This study explores the association between the initial preferred place of birth and model of care, and the course of pregnancy and labor in low-risk nulliparous women in the Netherlands.

Methods: As part of a Dutch prospective cohort study (2007-2011), we compared medical indications during pregnancy and birth outcomes of 576 women who initially preferred a home birth (n=226), a midwife-led hospital birth (n=168) or an obstetrician-led hospital birth (n=182). Data were obtained by a questionnaire before 20 weeks of gestation and by medical records. Analyses were performed according to the initial preferred place of birth.

Results: Low-risk nulliparous women who preferred a home birth with midwife-led care were less likely to be diagnosed with a medical indication during pregnancy compared to women who preferred a birth with obstetrician-led care (OR 0.41 95% CI 0.25-0.66). Preferring a birth with midwife-led care – both at home and in hospital – was associated with lower odds of induced labor (OR 0.51 95% CI 0.28-0.95 respectively OR 0.42 95% CI 0.21-0.85) and epidural analgesia (OR 0.32 95% CI 0.18-0.56 respectively OR 0.34 95% CI 0.19-0.62) compared to preferring a birth with obstetrician-led care. In addition, women who preferred a home birth were less likely to experience augmentation of labor (OR 0.54 95% CI 0.32-0.93) and narcotic analgesia (OR 0.41 95% CI 0.21-0.79) compared to women who preferred a birth with obstetrician-led care. We observed no significant association between preferred place of birth and mode of birth.

Conclusions: Nulliparous women who initially preferred a home birth were less likely to be diagnosed with a medical indication during pregnancy. Women who initially preferred a birth with midwife-led care – both at home and in hospital – experienced lower rates of interventions during labor. Although some differences can be attributed to the model of care, we suggest that characteristics and attitudes of women themselves also play an important role.

BACKGROUND

Studies of place of birth have consistently shown lower rates of intervention in labor and birth for women with low-risk pregnancies who planned their birth at home.¹⁻⁷ Similarly, research confirms that when compared to other models of maternity care, midwife-led care reduces the rates of intervention in labor.^{1,4,5,8,9} While these studies are convincing, maternity care is complex, and it is difficult to consider the degree to which the likelihood of intervention is influenced by birth setting, the philosophy of the care provider, or the characteristics and attitudes of the women. Klein et al.¹⁰ showed in their study that women using midwife care consistently reported attitudes supporting less frequent use of technology compared to women receiving care from obstetricians. It is also possible that midwives will be less likely to intervene due to their philosophical and physiological orientation toward childbirth.¹¹ On the other hand, some studies comparing home and hospital birth with the same midwives providing care in both settings found lower intervention rates in the home birth group, suggesting that the birth setting also has a significant effect on outcomes.^{2,5} The outcome measures used in most studies of birthplace and models of maternity care are obstetric intervention rates and birth outcomes.^{1-6,8,9} In addition, most of these studies used planned place of birth at the onset of labor.^{1-6,8} However, most women express a preference for a specific birth setting (model of care and place of birth) during pregnancy, long before labor begins.¹² Little is known about the influence of these early preferences on the course of pregnancy, labor, and childbirth.

The aim of our study was to explore whether the initial preferred place of birth at the onset of pregnancy – *i.e. home or hospital* – and model of care – *i.e. midwife-led care or obstetrician-led care* – are associated with differences in the course of pregnancy, intrapartum interventions, and birth outcomes in low risk nulliparous women in the Netherlands. By using the initial preferred place of birth instead of the actual place of birth we are able to gain insight into the influence of women themselves – *i.e.*, their characteristics and attitudes – on the course of childbirth. The course of the prenatal period is influential in determining the final birth setting and the management of labor. If policy makers and health care providers want to optimize maternity care, they must consider not only the outcomes of birth, but also the entire process of pregnancy and childbirth. Because there is a well-integrated, nationwide maternity care system, where home and hospital birth are both seen as a normal setting for giving birth, the Dutch environment is an ideal setting for studies on place of birth. Dutch maternity care is based on the principle that pregnancy and childbirth are fundamentally physiologic processes.¹³ Independent practicing midwives provide care to healthy women with uncomplicated pregnancies, referred to as ‘midwife-led care’. Midwives

refer women to obstetrician-led care when there is an increased risk of complications, as defined by the 'List of Obstetric Indications', a national guideline developed cooperatively by all the professions involved in maternity care.¹³ We refer to this as a medical indication for obstetrician-led care. When in obstetrician-led care, a woman may receive care from a clinical midwife or an obstetric resident, but the supervising obstetrician has the overall responsibility for the care. Women with a low-risk pregnancy are free to follow their preferences and give birth at home or in hospital under the supervision of the independent midwife. In midwife-led care, women will not receive medical interventions such as medical pain relief, augmentation, or continuous fetal monitoring. Women will receive these interventions if necessary, but only after a referral to obstetrician-led care. If a healthy woman prefers a midwife-led hospital birth, she is charged a co-payment of approximately € 300 (US\$ 410) for the additional cost of the hospital stay, a charge that some, but not all, insurance plans cover. Although uncommon, access to obstetrician-led care is possible when low-risk women have a strong preference for giving birth under the supervision of an obstetrician. At present, no co-payment is required for an obstetrician-led low-risk birth in a hospital. It is likely that this is a result of the fact that it is quite unusual for a low-risk woman to have an obstetrician supervise her birth, and thus insurance companies assume these women must have some medical indication for obstetrician-led care. The exact number of low-risk women whose primary choice is obstetrician-led care is unknown.

METHODS

Study sample

We conducted a multicenter, prospective cohort study among low-risk nulliparous women who started their pregnancy in midwife-led care or in obstetrician-led care. Of the 466 independent midwifery practices in the Dutch Midwifery Association Registration in 2006, we randomly selected and invited 150 practices from across the Netherlands to recruit women in midwife-led care. One hundred practices, including rural and urban areas, agreed to participate. The reason most often given for not participating in the study was a lack of time. There is no evidence that the non-participating practices differ significantly from those willing to participate. Of the 90 hospitals with maternity care units in the Netherlands, 30 hospitals were randomly chosen and asked to recruit low-risk women in obstetrician-led care. Fourteen hospitals, 3 academic and 11 non-academic, agreed to participate. Most frequently given reasons for non-participation were too many other on-going studies and the expectation of too few suitable

participants for this study, as midwife-led care is the norm for low-risk women in the Netherlands. Participating midwifery practices and hospitals received 25 information packs including project information and an informed consent form and were asked to distribute these to pregnant women who met the inclusion criteria during the first consultation at 8-12 weeks pregnancy. Information on the project contained the background and purpose of the study, the procedures involved in the study, the possible risks and benefits of taking part in the study and the rights of the participants. Eligible women who received information from their caregiver were asked whether the researchers could contact them by telephone to give further information about the study. Women who agreed were called by the researchers, received more information if required, and were formally asked to participate. A signed informed consent form was required for all participants. Women with a first on-going pregnancy and without an obstetric or medical indication according to the List of Obstetric Indications were included. We enrolled only women expecting their first birth so that their previous birth experiences would not affect their preferences and outcomes. Recruitment in midwifery practices was carried out from March 2007 to August 2007 and in hospitals from March 2007 to December 2011. The longer inclusion period in the hospitals was necessary because, as noted above, it is not a common practice for low-risk women to have obstetrician-led care. All women gave informed written consent to participate, and ethical approval was obtained by the Medical Ethical Committee of the Maastricht University Medical Centre (registration no. 04-234/11-4-009).

Data collection

Our data were collected using self-reported questionnaires, medical records and birth registration forms. Sufficient knowledge of the Dutch language was required to read and fill out the questionnaires. All women completed a questionnaire – by post or online - before week 20 of their pregnancy. The questionnaire was pre-tested in three midwifery practices. Women were asked to indicate which place of birth they preferred: a midwife-led home birth, a midwife-led hospital birth, an obstetrician-led hospital birth, or 'I do not know yet'. Additionally, the questionnaire included questions about socio-demographic and pregnancy-related factors such as age, ethnic background, level of education, distance to hospital, any previous miscarriage or ectopic pregnancy and method of conception. We obtained clinical data regarding respondents' course of pregnancy and labor from the medical records and birth registration forms that were filled out by the midwives and obstetricians. We used these data to determine the medical indications requiring a referral to obstetrician-led care, the intrapartum intervention rates, and the birth

outcomes. When there was a referral from midwife-led care to obstetrician-led care during pregnancy or labor, we requested the data records of both the midwife and the obstetrician. Low-risk women whose primary choice was obstetrician-led care did not need a referral in case of a medical indication: those women were already under the supervision of an obstetrician. For this group, we reviewed all medical records to determine whether there had been medical complications or a need for care that occurred during pregnancy – based on the ‘List of Obstetric Indications’ - which would have been an indication for referral to obstetrician-led care if they were in midwife-led care. The national perinatal registry mandates that obstetricians register these medical indications in the medical records in the same way that midwives do.

Outcome measures

Our primary outcome measure was the rate of medical indications during pregnancy. Our secondary outcome measures were the onset of labor (spontaneous, induction, planned cesarean section), intrapartum interventions (augmentation of labor, analgesia during labor, assisted vaginal birth, unplanned cesarean section, and episiotomy) and maternal and neonatal outcomes (laceration of the perineum, retention placentae, postpartum hemorrhage ≥ 1000 ml, intrapartum death-neonatal death up to 7 days - Apgar score of less than 7 at 5 minutes, resuscitation and birth weight).

Data analysis

We analyzed the data according to the preferred place of birth indicated by women in the questionnaire before 20 weeks of gestation (midwife-led home birth, midwife-led hospital birth or obstetrician-led hospital birth), irrespective of the actual place of birth. No cases were removed from the analysis for reasons of more than 10% missing data. We compared socio-demographic and pregnancy-related characteristics among the three study groups using chi-square tests for categorical variables, analysis of variance (ANOVA) for normally distributed continuous variables and the nonparametric Kruskal-Wallis test for continuous variables that were not normally distributed. Using multiple logistic regression, we estimated odds ratios (ORs) and 95 per cent confidence intervals (95% CI) for differences in medical indications during pregnancy comparing the following groups (based on initial preferences): midwife-led home birth versus midwife-led hospital birth, midwife-led home birth versus obstetrician-led hospital birth and midwife-led hospital birth versus obstetrician-led hospital birth. In the same way we estimated ORs with 95% CI for differences in onset of labor, intrapartum interventions and maternal and neonatal outcomes. For the analysis of intrapartum interventions we excluded women with a planned cesarean section.

Odds ratios were adjusted for covariates that were significantly different between the groups in the univariate analysis. We tested the regression coefficients in the model using the likelihood ratio test and the Wald statistic setting significance at $\alpha = 0.05$. In more than 10% of the respondents we did not have information about the method of conception.

The study started as an RCT in 2006, but was changed into a prospective cohort study in 2007 because it was impossible to find women who would agree to be randomized for place of birth.¹² As a result, some questions were added to the questionnaire at the start of the cohort study. Because of the fact that method of conception was significantly different between the groups in the univariate analysis, we decided to include this covariate in the multivariate analysis. In addition, we carried out a sensitivity analysis without method of conception. The differences in the results were negligible (information about these results is available on request from the first author).

RESULTS

Figure 1 shows the flowchart of the study population. Of the 782 women who gave informed consent to participate in the study, 674 women completed the questionnaire, and 108 women failed to fill out the questionnaire (no reasons available), yielding a response rate of 86%. Of the 674 respondents, 26 women did not meet the inclusion criteria. Preferred place of birth was unknown in 37 cases, and birth registration forms were not complete in 35 cases. In the end, we included 576 eligible women for analysis. Of these women, 226 preferred to have a midwife-led home birth, 168 preferred a midwife-led hospital birth and 182 preferred an obstetrician-led hospital birth. Of the 576 women who started their pregnancy with a low-risk profile, 155 women (26.9%) gave birth without a diagnosed medical indication or an intervention.

Characteristics study population

Characteristics of the three groups are presented in Table 1. No differences were observed between the two groups who preferred to have a birth with midwife-led care. However, women who preferred a birth with obstetrician-led care were slightly older ($F(2,573)=14.83, p<0.001$), were more frequently pregnant after assisted reproduction ($X^2(2)=36.96, p<0.001$), had a higher rate of previous miscarriage ($X^2(2)=28.24, p<0.001$) and had a slightly lower median gestational age at birth ($H(2)=15.94, p<0.001$). The percentage of women with a non-Dutch background was too small in our study population to say anything about differences in ethnicity between the groups.

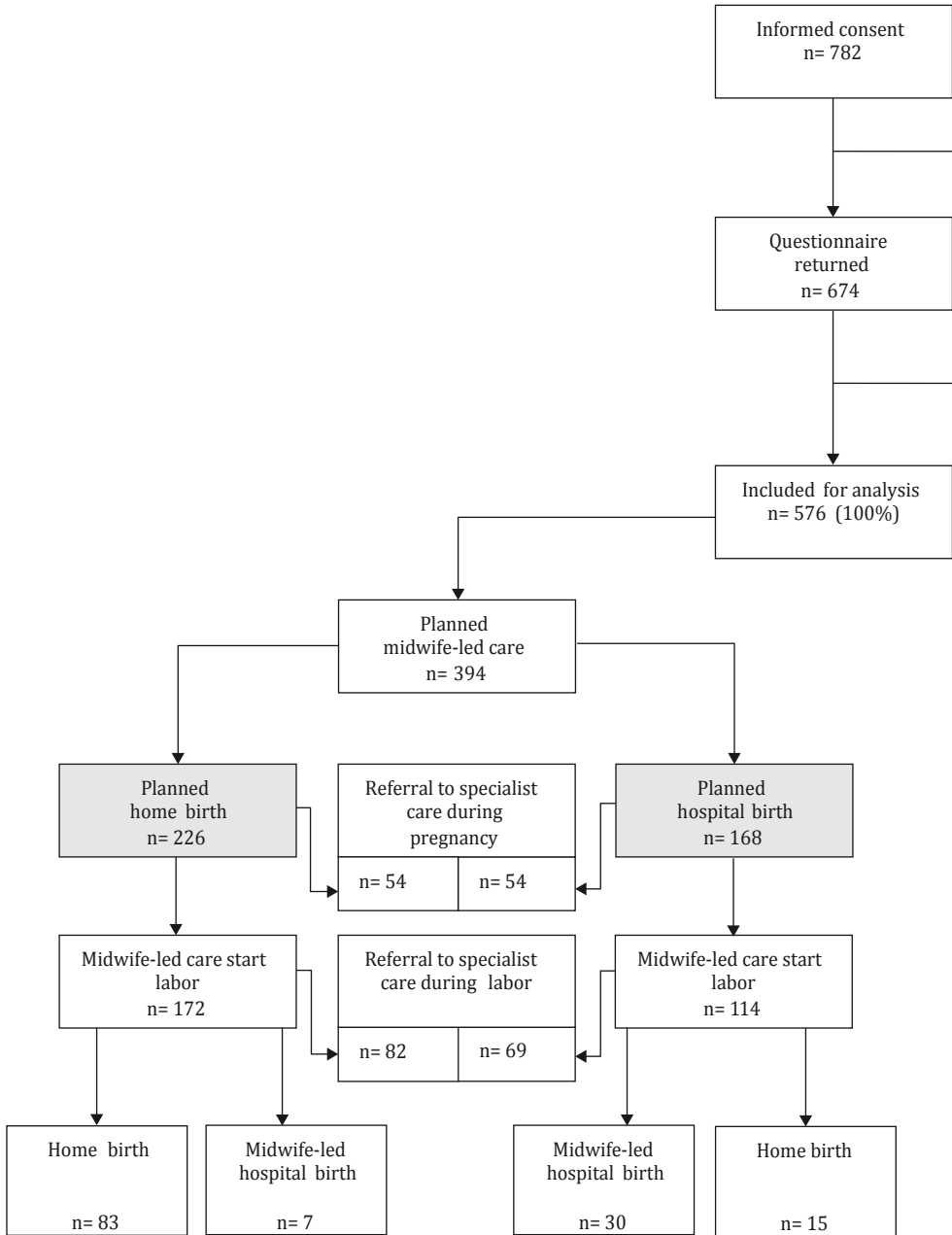


Figure 1 Flowchart study population. The highlighted parts in the flowchart were used in our analysis.

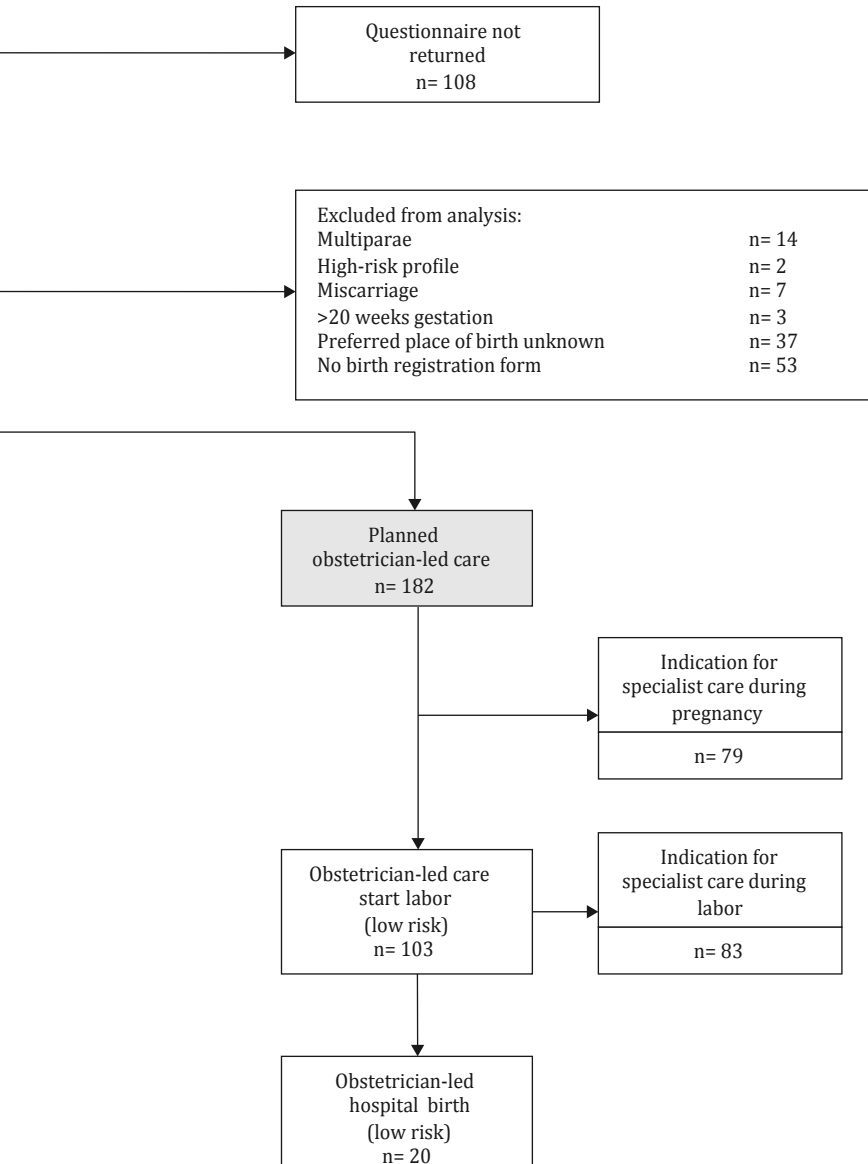


Table 1 Characteristics of low-risk nulliparous women who initially preferred a midwife-led home or hospital birth or an obstetrician-led birth.

		Midwife-led care		Obstetrician-led care
		Preferred home birth n=226 (%)	Preferred hospital birth n=168 (%)	n=182 (%)
Age (years) ^a	<i>mean (SD)</i>	28.8 (3.9)	29.1 (3.8)	30.9 (4.8)
Body Mass Index				
<18.50		10 (4.5)	5 (3.1)	7 (3.9)
18.50-24.99		139 (63.2)	115 (71.4)	121 (68.0)
≥25.00-29.99		55 (25.0)	33 (20.5)	40 (22.5)
≥30.00		16 (7.3)	8 (5.0)	10 (5.6)
Ethnic background ^b				
Dutch		225 (99.6)	160 (95.2)	174 (95.6)
Non-Dutch		1 (0.4)	8 (4.8)	8 (4.4)
Highest completed level of education				
Low		19 (8.4)	18 (10.7)	19 (10.4)
Middle		86 (38.1)	56 (33.3)	71 (39.0)
High		121 (53.5)	94 (56.0)	92 (50.5)
Distance to hospital (in minutes)				
0-15 minutes		170 (75.6)	135 (80.8)	135 (74.6)
>15 minutes		55 (24.4)	32 (19.2)	46 (25.4)
Method of conception ^a		n= 163	n= 121	n= 182
Spontaneous		154 (94.5)	110 (90.9)	132 (72.5)
Assisted Reproduction		9 (5.5)	11 (9.1)	50 (27.5)
First pregnancy ^a				
Yes		181 (80.1)	142 (84.5)	112 (61.9)
No ^c		45 (19.9)	26 (15.5)	69 (38.1)
Gestation at birth (days) ^a	<i>mean (SD)</i>	278 (15)	278 (13)	274 (15)

^a Significant at 1% level.

^b Significant at 5% level.

^c Previous miscarriage, ectopic pregnancy or induced abortion.

Medical indications during pregnancy and onset of labor

Table 2 shows the overall rates of medical indications diagnosed during pregnancy, the rates per indication, and the rates of different types of onset of labor. Women who preferred a midwife-led home birth had the lowest number of medical indications (23.9%), followed by the group of women who preferred

a midwife-led hospital birth (32.1%). Women who preferred an obstetrician-led hospital birth had the highest number of medical indications diagnosed during pregnancy (43.4%). The most prevalent medical indication during pregnancy in all the three groups was a hypertensive disorder. There were four cases of stillbirth: in the preferred midwife-led home birth group one unexplained stillbirth at 21 weeks of gestation, and in the preferred obstetrician-led care group, two unexplained stillbirths at 23 weeks and 39 weeks of gestation and one stillbirth due to dysmaturity at 39 weeks of gestation (birth weight: 2135 gram). Women who preferred a home or midwife-led hospital birth had lower rates of labor induction and planned cesarean section compared to women who preferred an obstetrician-led birth (10.6% and 10.7% versus 22.5% for labor induction; 4.4% and 6.5% versus 11.0% for planned cesarean). We explored the association of preferred place of birth with medical indications during pregnancy and onset of labor in a multivariate analysis adjusting for maternal age, method of conception, first pregnancy and gestational age at birth (this last variable only for onset of labor) (Table 2). The likelihood of a diagnosis of a medical indication during pregnancy was significantly reduced in the group of women who preferred a home birth compared to women who preferred an obstetrician-led birth (adjusted OR 0.41, 95%CI 0.25–0.66). The same trend was observed for women who preferred a home birth compared to women who preferred a midwife-led hospital birth and for women who preferred a midwife-led hospital birth compared to women who preferred an obstetrician-led birth, but these results were not statistically significant (adjusted OR 0.64, 95%CI 0.38–1.09 resp. 0.64, 95%CI 0.39–1.04). Women who preferred a birth with midwife-led care, either at home or in hospital, were significantly less likely to have their labor induced compared to women who preferred a birth with obstetrician-led care (adjusted OR 0.51, 95%CI 0.28–0.95 for the home birth group and adjusted OR 0.42, 95%CI 0.21–0.85 for the midwife-led hospital group). The odds of women having a planned cesarean section were not significantly different among groups.

Intrapartum interventions and maternal outcomes

The frequency of intrapartum interventions and maternal outcomes are listed in Table 3. Overall, women who preferred to have a home birth experienced the lowest intervention rates, except for episiotomy: 56.3% versus 51.9% for women who preferred a midwife-led hospital birth. Women who preferred a birth with obstetrician-led care had the highest intervention rates with the exception of unplanned cesarean sections (13.6% versus 15.3% for women who preferred a midwife-led hospital birth). The number of perineal tears was lowest in the group preferring obstetrician-led care (17.3% versus 23.9% and 31.1% for women who preferred a home birth and women who preferred a midwife-led

Table 2 Association between the initial preferred birth setting and medical indications during pregnancy and onset of labor.

	Midwife-led care		Obstetrician-led care
	Preferred home birth n=226 (%)	Preferred hospital birth n=168 (%)	n=182 (%)
Medical indications (overall) ^a	54 (23.9)	54 (32.1)	79 (43.4)
Hypertensive disorders	19 (8.4)	15 (8.9)	27 (14.8)
(Suspected) IUGR	1 (0.4)	5 (3.0)	8 (4.4)
Diabetes	-	1 (0.6)	3 (1.6)
Congenital anomalies	1 (0.4)	-	1 (0.5)
Stillbirth	1 (0.4)	-	3 (1.6)
Malposition incl. breech	7 (3.1)	10 (6.0)	13 (7.1)
Placental problems , blood loss	1 (0.4)	1 (0.6)	4 (2.2)
(Threatening) preterm birth	8 (3.5)	9 (5.4)	6 (3.3)
Post-term pregnancy	11 (4.9)	9 (5.4)	6 (3.3)
Other	5 (2.2)	4 (2.4)	8 (4.4)
Onset of labor ^{a b}			
Spontaneous	192 (85.0)	139 (82.7)	121 (66.5)
Induction	24 (10.6)	18 (10.7)	41 (22.5)
Planned cesarean	10 (4.4)	11 (6.5)	20 (11.0)

MFL = Midwife-led; OBL = Obstetrician-led; OR=Odds Ratio; CI 95%= confidence interval 95%.

^a Adjusted for maternal age, method of conception, first pregnancy (previous miscarriage or ectopic pregnancy), ^b Gestational age at birth.

hospital birth respectively). On the other hand, the number of episiotomies was the highest in the preferred obstetrician group with a percentage of 68.3%. In a multivariate analysis adjusting for maternal age, method of conception, first pregnancy, gestational age at birth and medical indications during pregnancy, women with a preference for a home birth were less likely to have augmentation of labor (adjusted OR 0.54 95%CI 0.32-0.93), narcotic analgesia (adjusted OR 0.41 95%CI 0.21-0.79), and epidural analgesia (adjusted OR 0.32 95%CI 0.18-0.56) compared to women with a preference for an obstetrician-led birth (Table 3). Women who preferred a midwife-led hospital birth were less likely to experience epidural analgesia (adjusted OR 0.34 95%CI 0.19-0.62) and an episiotomy (adjusted OR 0.49 95%CI 0.30-0.81) compared to women who preferred an obstetrician-led birth. We observed no significant differences in any of the

Preferred MFL home birth versus Preferred MFL hospital birth	Preferred MFL home birth versus Preferred OBL hospital birth	Preferred MFL hospital birth versus Preferred OBL hospital birth
OR (adjusted) ^a (95% CI)	OR (adjusted) ^a (95% CI)	OR (adjusted) ^a (95% CI)
0.64 (0.38 – 1.09)	0.41 (0.25 – 0.66)	0.64 (0.39 – 1.04)
1.23 (0.57 – 2.64)	0.51 (0.28 – 0.95)	0.42 (0.21 – 0.85)
0.74 (0.25 – 2.21)	0.41 (0.16 – 1.04)	0.55 (0.22 – 1.41)

intrapartum interventions between the home birth group and the midwife-led hospital group. In addition, the odds of assisted vaginal birth, unplanned cesarean section and the maternal outcomes were not statistically different between all the three groups.

Neonatal outcomes

Neonatal death, Apgar score of less than 5 after 7 minutes and resuscitation were rare in all three groups. Therefore, it was not meaningful to perform a statistical test. We found no significant differences in birth weight between the three groups (Table 4).

Table 3 Association between initial preferred birth setting and intrapartum interventions and maternal outcomes.

	Midwife-led care		Obstetrician-led care
	Preferred home birth n=226 (%)	Preferred hospital birth n=168 (%)	n=182 (%)
Augmentation of labor	n=192	n=137	n=120
No	133 (69.3)	83 (60.6)	61 (50.8)
Oxytocin or prostaglandins	59 (30.7)	54 (39.4)	59 (49.2)
Analgesia during labor	n=215	n=155	n=160
No	156 (72.6)	96 (61.9)	66 (41.3)
Narcotic analgesia	25 (11.6)	33 (21.3)	35 (21.9)
Epidural analgesia	34 (15.8)	26 (16.8)	59 (36.9)
Mode of birth	n=216	n=157	n=162
Spontaneous vaginal	161 (74.5)	104 (66.2)	103 (63.6)
Assisted vaginal (VE/FE)	37 (17.1)	29 (18.5)	37 (22.8)
Cesarean (unplanned)	18 (8.3)	24 (15.3)	22 (13.6)
Episiotomy	111 (56.3)	70 (51.9)	95 (68.3)
Perineum	n=197	n=135	n=139
Intact	39 (19.8)	23 (17.0)	20 (14.4)
Tear	47 (23.9)	42 (31.1)	24 (17.3)
First- or second degree tear	46	34	22
Third- or fourth degree tear	1	8	2
Retained placenta	4 (2.0)	3 (2.2)	8 (5.7)
Postpartum hemorrhage	n=221	n=160	n=176
< 500 cc	158 (71.5)	108 (67.5)	109 (61.9)
≥ 500 - < 1000 cc	50 (22.6)	42 (26.3)	48 (27.3)
≥ 1000 cc	13 (5.9)	10 (6.3)	19 (10.8)

MFL = Midwife-led; OBL = Obstetrician-led; OR=Odds Ratio; CI 95%= confidence interval 95%.

^a Adjusted for maternal age, method of conception, first pregnancy (previous miscarriage or ectopic pregnancy), gestational age at birth, medical indications pregnancy.

Preferred MFL home birth versus Preferred MFL hospital birth	Preferred MFL home birth versus Preferred OBL hospital birth	Preferred MFL hospital birth versus Preferred OBL hospital birth
OR (adjusted) ^a (95% CI)	OR (adjusted) ^a (95% CI)	OR (adjusted) ^a (95% CI)
0.79 (0.46 – 1.35)	0.54 (0.32 – 0.93)	0.69 (0.40 – 1.21)
0.56 (0.28 – 1.09) 0.94 (0.48 – 1.83)	0.41 (0.21 – 0.79) 0.32 (0.18 – 0.56)	0.74 (0.39 – 1.38) 0.34 (0.19 – 0.62)
0.94 (0.49 – 1.83) 0.48 (0.23 – 1.02) 1.40 (0.86 – 2.29)	0.83 (0.45 – 1.53) 0.75 (0.35 – 1.59) 0.69 (0.44 – 1.10)	0.88 (0.46 – 1.68) 1.55 (0.76 – 3.17) 0.49 (0.30 – 0.81)
0.72 (0.41 – 1.26)	1.58 (0.87 – 2.87)	2.21 (1.18 – 4.12)
NT	NT	NT
0.82 (0.32 – 2.08)	0.57 (0.25 – 1.30)	0.70 (0.30 – 1.63)

Table 4 Association between initial preferred birth setting and neonatal outcomes.

	Midwife-led care		Obstetrician-led care
	Preferred home birth n=226 (%)	Preferred hospital birth n=168 (%)	n=182 (%)
Neonatal death (dp – 7 dgn)	-	-	-
Apgar score < 7 at 5 min	4 (1.8)	3 (1.8)	4 (2.2)
Resuscitation	1 (0.4)	-	-
Birth weight <i>mean (SD)</i>	3365 (543)	3401 (575)	3210 (555)
2500 – 3999 gram	195 (86.3)	135 (80.4)	155 (85.2)
< 2500 gram	11 (4.9)	10 (6.0)	15 (8.2)
≥ 4000 gram	20 (8.8)	23 (13.7)	12 (6.6)

MFL = Midwife-led; OBL = Obstetrician-led; OR=Odds Ratio; CI 95%= confidence interval 95%.

^a Adjusted for maternal age, method of conception, first pregnancy (previous miscarriage or ectopic pregnancy), gestational age at birth, medical indications pregnancy.

DISCUSSION

The aim of our study was to explore whether the initial preferred place of birth at the onset of pregnancy and model of care are associated with differences in the course of pregnancy and intrapartum interventions and birth outcomes. We found that low-risk nulliparous women who preferred a home birth were less likely to experience a medical indication during pregnancy compared to women who preferred a birth with obstetrician-led care. Furthermore, preferring a birth with midwife-led care – both at home and in hospital – was associated with lower rates of induced labor and lower rates of epidural analgesia. In our study, preferred place of birth was not associated with differences in mode of birth.

The difference we found in medical indications during pregnancy in relation to preferred place of birth and model of care is intriguing, because one would not expect the preferred place or model of care to influence the likelihood of developing, for instance, a hypertensive disorder. In principle, the same care is given during pregnancy, but it is likely that each professional acts from his or her own paradigm. The difference in medical indications between midwife-led and obstetrician-led care could be a matter of difference in clinical judgment between the maternity care providers. It is recognized in medical sociology that

Preferred MFL home birth versus Preferred MFL hospital birth	Preferred MFL home birth versus Preferred OBL hospital birth	Preferred MFL hospital birth versus Preferred OBL hospital birth
OR (adjusted) ^a (95% CI)	OR (adjusted) ^a (95% CI)	OR (adjusted) ^a (95% CI)
NT	NT	NT
0.68 (0.16 – 2.84)	0.83 (0.22 – 3.12)	1.23 (0.36 – 4.20)
0.69 (0.32 – 1.52)	1.02 (0.44 – 2.40)	1.47 (0.63 – 3.46)

differences in opinion or judgment between care providers are part of a wider phenomenon, namely that concepts of health and illness are socially constructed and differ between care providers.^{14,15} Another, somewhat weaker, explanation mentioned by Eskes¹⁶ is that some intuitive form of self-selection regarding medical complications occurs among low-risk pregnant women. However, this has never been properly investigated. Considering induction of labor and intrapartum interventions, our results are in line with previous studies showing that midwife-led care for low-risk women reduces the risk of some interventions when compared to obstetrician- or physician-led care.^{1,4,8,9} Reime et al.¹⁷ reported that obstetricians were more attached to technology and interventions, including inductions, compared to midwives. However, our results are based on the initial preferred place of birth at the beginning of pregnancy (intention-to-treat), instead of the planned place at the onset of labor. This introduces the possibility that differences in findings between the groups were not only attributable to model of care or care provider, but also to attitudes and characteristics of the women. Van der Hulst et al.⁷ observed that the more receptive women's attitude was toward medical technology, the more likely women were to opt for a hospital birth, and the more likely it was they would experience an obstetrical intervention. In a previous study where we explored women's

preferences for aspects of intrapartum care regarding planned place of birth we reported that women with a preference for a hospital birth – both midwife-led and obstetrician-led – found the possibility of pain relief treatment much more important compared to women with a preference for a home birth.¹⁸ This could be an explanation for the fact that women who preferred a birth at home –irrespective of their actual place of birth – experienced lower rates of narcotic and epidural analgesia. The rates of assisted vaginal births and cesarean sections in this study are comparable to the national data of nulliparous women from 2012 (16.4% assisted vaginal birth and 17.7% cesarean section).¹⁹ Our study shows no differences in association between preferred place of birth and mode of birth. The fact that the Netherlands has low rates of assisted births and cesarean sections in general probably plays a role in this. Overall rates in 2012 for assisted vaginal births and cesarean sections (planned and unplanned combined) were 9.2% and 16.3%, respectively.¹⁹

Strengths and limitations

Most of the studies about place of birth have been done in countries where giving birth outside the hospital is not always available or more difficult to arrange. It can be assumed, then, that women in those countries who planned a home birth belong to a select and highly motivated group. This difference in populations may influence the results of studies in those countries. In the Netherlands, however, both home and hospital are seen as a safe and normal place to give birth. A main advantage of our study is its prospective design, which enables us to explore the association between preferred place of birth and the course of both pregnancy and childbirth. Another advantage is that we were able to include low-risk women with a preference for three different settings.

Our study has some limitations. The inclusion period for women with a preference for obstetrician-led care was much longer than we expected. It seems there were fewer low-risk women with a preference for obstetrician-led care than we initially assumed, indicating that obstetrician-led care for low-risk women is uncommon in the Netherlands. Another limitation of our study is the possibility of selection bias. We had little direct control over the inclusion processes in midwifery practices and hospitals, and thus we do not know the exact number of women who were eligible during the period of recruitment. Furthermore, we do not have information about characteristics of the women who were eligible for the study but refused to participate. The reason most often given by women for not participating in the study after the researchers called them was a lack of time. In our study, the number of women with a low level of education was probably smaller compared to the Dutch population.²⁰ It is possible that women with a lower level of education more often refused to participate. Level of

education may have influenced the likelihood of diagnosing a medical indication during pregnancy or an intrapartum intervention. However, there was no significant difference in level of education between the three study groups. The percentage of women with a non-Dutch background was also small in our study population: 3.1% in total, as compared with 25.3% of all nulliparous women in the Netherlands in 2012.¹⁹ This is a result of the fact that only women who understood the Dutch language could be enrolled in the study. For these reasons, it is unclear to what extent our results apply to lower-educated women and ethnic minority populations in the Netherlands.

CONCLUSIONS

Our study demonstrates significant differences in the course of pregnancy and labor in relation to *preferred* place of birth, as showed by the fewest number of diagnosed medical indications during pregnancy and the fewest intrapartum interventions among women who preferred a home birth. Although some differences can be attributed to the eventual model of care – *i.e., midwife-led or obstetrician-led* – we suggest that characteristics and attitudes of women also play an important role. Maternity care providers should take this into account. For a better understanding regarding the choice for place of birth and the consequences of that for pregnancy and childbirth, future research should focus more on these characteristics and attitudes. In addition, we should explore the process of decision making around determining indications for specialist care or interventions, both from the perspective of the care providers and the women.

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5

Birth place preferences and women's expectations and experiences regarding duration and pain of labor

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ABSTRACT

Introduction: We know a great deal about how childbirth is affected by setting; we know less about how the experience of birth is shaped by the attitudes women bring with them to the birthing room. In order to better understand how women frame childbirth, we examined the relationship between birth place preference and expectations and experiences regarding duration of labor and labor pain in healthy nulliparous women.

Methods: A prospective cohort study (2007-2011) of 454 women who preferred a home birth (n=179), a midwife-led hospital birth (n=133) or an obstetrician-led hospital birth (n=142) in the Netherlands. Data were collected using three questionnaires (before 20 weeks gestation, 32 weeks gestation and 6 weeks postpartum) and medical records. Analyses were performed according to the initial preferred place of birth.

Results: Women who preferred a home birth were significantly less likely to be worried about the duration of labor (OR 0.5, 95%CI 0.2-0.9) and were less likely to expect difficulties with coping with pain (OR 0.4, 95%CI 0.2-0.8) compared with women who preferred an obstetrician-led birth. We found no significant differences in postpartum accounts of duration of labor. When compared to women who preferred an obstetrician-led birth, women who preferred a home birth were significantly less likely to experience labor pain as unpleasant (OR 0.3, 95%CI 0.1-0.7). Women who preferred a midwife-led birth –*either home or hospital-* were more likely to report that it was not possible to make their own choices regarding pain relief compared to women who preferred obstetrician-led care (OR 4.3, 95%CI 1.9-9.8 resp. 3.4, 95%CI 1.5-7.7). Compared to women who preferred a midwife-led hospital birth, women who preferred a home birth had an increased likelihood of being dissatisfied about the management of pain relief (OR 2.5, 95%CI 1.1-6.0).

Discussion: Our findings suggest a more natural orientation toward birth with the acceptance of labor pain as part of giving birth in women with a preference for a home birth. Knowledge about women's expectations and experiences will help caregivers to prepare women for childbirth and will equip them to advise women on birth settings that fit their cognitive frame.

INTRODUCTION

Childbirth is a complex, multidimensional event, an “intense powerful life experience” that affects women’s whole life and being.¹⁻³ Although childbirth is a biological process, the way it is experienced is subjective, colored by the circumstances and expectations of women.^{1,4,5} Rijnders et al.⁶ discovered that nearly 25% of primiparas had a negative recall of their birth experience three years postpartum. If we are to improve on this situation, it is necessary to understand women’s expectations of, and satisfaction with, the birthing experience.⁷

Hodnett⁸ claims that the most powerful influence on childbirth experiences and satisfaction are the attitudes and behavior of the caregivers. Equally important, however, are the characteristics of women and their ways of thinking about childbirth. Regan and Liaschenko⁹ describe the effect of “*body knowing*” on the “cognitive frames” women bring to childbirth. The term “body knowing” refers to the woman’s awareness of what she requires for her experience of birth to be congruent with the meaning of childbirth in her biography. They distinguish two ends of a continuum of body knowing: on one end childbirth is regarded as a normal, natural process, and on the other birth is regarded as a medical condition replete with risks.¹⁰ These different cognitive frames have an impact on women’s perceptions of the natural course, and pain, of labor. If a woman views birth as a normal process with confidence in her body’s ability to give birth, she is less likely to be worried about the duration and pain of labor and her ability to cope. We know from the work of Haines et al.¹¹ that women with high levels of fear and concern about labor pain do not see birth as a natural event. Pain and pain relief are often mentioned as important contributors to women’s birth experience^{3,6,7} as well as the duration of labor,² but there are few, if any studies of women’s attitudes and expectations regarding duration of labor.

The place of birth is another important factor in the way a woman experiences the event. Most studies of the relationship between experience and place of birth use the *actual* place of birth, a choice that allows examination of how the birth environment influences women’s experiences.¹²⁻¹⁴ It is known that women’s birth place choices are influenced by women’s childbirth beliefs.^{10,15-18}

In order to gain more insight into how women frame their childbirth, we examined the relationship between women’s birthplace *preferences* and their expectations and experiences regarding birth. Our hypothesis was that women with a preference for midwife-led care, especially at home, would be less worried about duration of labor and labor pain and would have fewer negative feelings about the duration and pain of labor after the birth. Therefore, in our analysis we used the *initial*

preferred place of birth at the onset of pregnancy, irrespective of the actual place of birth.

We examined the *expectations* and *experiences* of healthy nulliparous women with regard to the duration and pain of labor, comparing women with a preference for a midwife-led home birth, a midwife-led hospital birth, and an obstetrician-led hospital birth.

METHODS

Study setting

This study was undertaken in the Netherlands.

Dutch maternity care is based on the principle that pregnancy and childbirth are fundamentally physiologic processes.¹⁹ Independent practicing midwives provide care to healthy women with uncomplicated pregnancies, referred to as “midwife-led care”. Midwives refer women to obstetrician-led care when there is an increased risk of complications, as defined by the “List of Obstetric Indications”, a national guideline, developed cooperatively by all professions involved in maternity care.¹⁹ In obstetrician-led care, a woman may receive care from a clinical midwife or an obstetric resident, but the supervising obstetrician has the overall responsibility for the care. Women with a low-risk pregnancy can choose to give birth at home or in hospital under the supervision of the independent midwife. In midwife-led care, women will not receive medical interventions such as medical pain relief or continuous fetal monitoring. If women need these interventions, they must be referred to obstetrician-led care. Although uncommon, access to obstetrician-led care is possible when healthy women have a strong, but not medically indicated preference for an obstetrician.

Study design

The study began as a randomized clinical trial of the place of birth in 2006. However, we soon discovered that most women were unwilling to be randomized for place of birth.²⁰ As a result, the study was redesigned as prospective cohort study.

Study sample

Healthy nulliparous women in their first trimester were eligible for inclusion. We randomly selected 150 of the 466 independent midwifery practices in the Dutch Midwifery Association Registration (2006) and invited them to recruit women for our study. Overall, 100 practices, including rural and urban areas, agreed to participate. In addition, 30 hospitals with maternity care units

were randomly chosen and asked to recruit women in obstetrician-led care. Of these, three academic and 11 non-academic hospitals agreed to participate. Participating practices and hospitals were asked to give eligible women written information on the study during the first consultation. These women were asked whether the researchers could contact them within one week. Women who agreed were called by the researchers, received more information if required, and were asked to participate. Participating women signed and returned an informed consent form. Recruitment in midwifery practices was carried out from March 2007 to August 2007 and in hospitals from March 2007 to September 2011. Because obstetrician-led care is an uncommon practice for low-risk women, lower total numbers in this category required a longer inclusion period. Ethical approval was obtained by the Medical Ethical Committee of the Maastricht University Medical Centre (registration no. 04-234/11-4-009).

Data collection

Data were collected using three questionnaires (pre-tested in three midwifery practices), medical records, and birth registration forms. Sufficient knowledge of the Dutch language was required to fill out the questionnaires.

The first questionnaire (Q1) was sent before 20 weeks gestation and included questions about socio-demographic and pregnancy-related factors and preferred place of birth: a midwife-led home birth, a midwife-led hospital birth, an obstetrician-led hospital birth, or "I do not know yet".

The second questionnaire (Q2) was sent at 32 weeks gestation and included questions about the course of pregnancy and women's preparation and expectations regarding birth. Two of those expectations regarding birth are reported here: expectations regarding the duration of labor and coping with pain. Women ranked the items (five items on the duration of labor; six items on coping with pain) on a five-point Likert-scale from (1) "totally agree" to (5) "totally disagree". For example: *"I am not worried about how long giving birth takes"*. These items were developed by the authors because at the time of the study, there were no high quality questionnaires applicable to the Dutch system. Items measuring the constructs were phrased affirmatively and negatively. The negative-phrased items were reversed for analysis. With each item, there was the option to answer "not thought about" (NTA). This category was excluded from analysis, but will be described separately. The item responses were summed and mean scores were calculated; higher scores indicate that women expected more difficulties with coping with pain and were more worried about the duration of labor. Both of our constructs had high reliabilities: Cronbach's α were

0.84 and 0.87 respectively. For regression analysis, responses were dichotomized as “expect no difficulties coping with pain” or “not worried about duration of labor” (score <3.5) and “expect difficulties coping with pain” or “worried about duration of labor” (score ≥3.5). On the original Likert-scale, a score of 3 was the neutral value. Taking into account a margin around the neutral value and the rounding of the mean score, we chose *a priori* for the cutoff point of 3.5.

The third questionnaire (Q3) was sent 6 weeks postpartum. This questionnaire was sent to all women who filled out both Q1 and Q2.

This questionnaire covered a range of topics including the course of childbirth and women’s experiences. The experiences we address here are about duration of labor (two questions) and labor pain (four questions). We dichotomized the response options for analysis to reduce the number of small groups (Table 1). Each question offered the option “I do not know”. This category was excluded from the analysis.

Symptoms of depression were assessed in Q2 and Q3 using a version of the Edinburgh Depression Scale (EDS) that was validated in the Netherlands.²¹ The EDS was originally developed for postpartum use (Edinburgh Postnatal Depression Scale).²² However, its reliability for screening for depression during pregnancy has been confirmed, resulting in a new nomenclature: Edinburgh Depression Scale.²³⁻²⁵

We obtained clinical data regarding antenatal care, pregnancy and birth outcomes including actual place of birth, from medical records and birth registration forms that were filled out by the midwives and obstetricians.

Analysis

Given the aim of our study, we analyzed the data according to the preferred place of birth, irrespective of the actual birthplace (intention-to-treat). We compared characteristics and outcomes among the study groups using chi-square tests for categorical variables, analysis of variance (ANOVA) for normally distributed continuous variables, and the nonparametric Kruskal-Wallis test for continuous variables that were not normally distributed.

Using multiple logistic regression, we estimated odds ratios (ORs) and 95% confidence intervals (95% CI) for differences in expectations in the following paired groups (based on initial preferences): midwife-led home birth versus midwife-led hospital birth, midwife-led home birth versus obstetrician-led hospital birth, and midwife-led hospital birth versus obstetrician-led hospital birth.

Table 1 Response options and dichotomization for experiences about duration of labor and labor pain.

	Response options questionnaire	Dichotomized response options for analysis
Experienced duration of labor in time	Very, Quite or Rather long Hardly or Not long	: Long : Not long
Duration of labor experienced as:	Very, Quite or Rather unpleasant Hardly or Not unpleasant	: Unpleasant : Not unpleasant
Experienced pain intensity	Very, Quite or Rather intense Hardly or Not intense	: Intense : Hardly intense
Pain experienced as:	Very, Quite or Rather unpleasant Hardly or Not unpleasant	: Unpleasant : Not unpleasant
Possible to make own choices pain relief	No, Not at all; Not really To a large extent; Yes	: No : Yes, for all or most of the time
Feelings about management pain relief	Not satisfied; Mixed feelings I am satisfied	: Mixed feelings, not satisfied : Satisfied

Similarly, we estimated ORs with 95% CI for differences in experiences. For the analysis of experiences we excluded women with a planned cesarean section, because they did not go into labor. Odds ratios were adjusted for covariates that were significantly different between the groups in the univariate analysis. Our adjustment for complications and/or interventions during pregnancy or birth was, in fact, an adjustment for the actual birth setting, because women who preferred midwife-led care had to be referred to obstetrician-led care in that situation. We tested the regression coefficients in the model using the likelihood ratio test and the Wald statistic, setting significance at $\alpha = 0.05$. In 17% of the respondents we did not receive information about the covariate method of conception. As the method of conception was significantly different between the groups in the univariate analysis, we included this covariate in the multivariate analysis. We carried out a sensitivity analysis without method of conception, but differences in results were negligible (information about these results available from the first author).

RESULTS

Figure 1 shows the flowchart of the study population. Of the 782 women who gave informed consent to participate, 108 women failed to fill out the first questionnaire (Q1), yielding a response rate of 86%. Of the 674 women who returned Q1, 19 women did not meet the inclusion criteria, seven women had a miscarriage and 37 women had an unknown birth place preference, resulting in 611 women eligible for inclusion. One hundred and thirty nine women did not return or fully complete the second questionnaire (Q2) sent at 32 weeks gestation. Of the women who returned Q2, 18 women indicated that they had a miscarriage or a preterm birth after Q1. They were excluded from the study. The third questionnaire was not returned by 71 women. As a result, we included 454 women for the analysis of expectations (Q2) and 383 women for the analysis of experiences (Q3).

Characteristics and outcomes

Women's characteristics and pregnancy and birth outcomes are presented in Table 2. No differences were observed between the two groups who preferred midwife-led care. However, women who preferred obstetrician-led care were slightly older ($F(2,451)=10.03, p<0.001$), were more frequently pregnant after assisted reproduction ($X^2(2)=26.91, p<0.001$), had a higher rate of previous miscarriage ($X^2(2)=34.27, p<0.001$), had more often developed a medical complication at 32 weeks gestation such as hypertension or diabetes ($X^2(2)=10.72, p<0.01$) and

more often experienced a medical complication or intervention during pregnancy or birth ($X^2(2)=33.80, p<0.001$). These medical interventions included the use of medical pain relief, with a higher rate of medical pain relief among women preferring obstetrician-led care ($X^2(2)=43.00, p<0.001$). Due to medical interventions, 178 of the 312 women who initially preferred midwife-led care (57%), gave birth with obstetrician-led care. We found no differences in attending antenatal classes and symptoms of depression. The percentage of women with a non-Dutch background was too small in our study population to make conclusions about differences. When compared to women who returned Q3, women who did not return that questionnaire ($n=71$) were more likely to have low or middle levels of education ($X^2(2)=6.553, p=0.038$). We found no other significant differences between those who did and did not return Q3.

Expectations towards duration of labor and coping with pain

Women's expectations are listed in Table 3. Compared with women who preferred an obstetrician-led birth, women who preferred a home birth were significantly less likely to be worried about the duration of labor (OR 0.5, 95%CI 0.2-0.9) and were less likely to expect difficulties with coping with pain (OR 0.4, 95%CI 0.2-0.9). Seventeen percent of the women who preferred a home birth ($n=29$) had not thought about the duration of labor compared to 11% ($n=14$) of the women who preferred a midwife-led hospital birth and 13% ($n=18$) of the women who preferred an obstetrician-led birth. About 10% of all women had not thought about coping with pain at 32 weeks gestation.

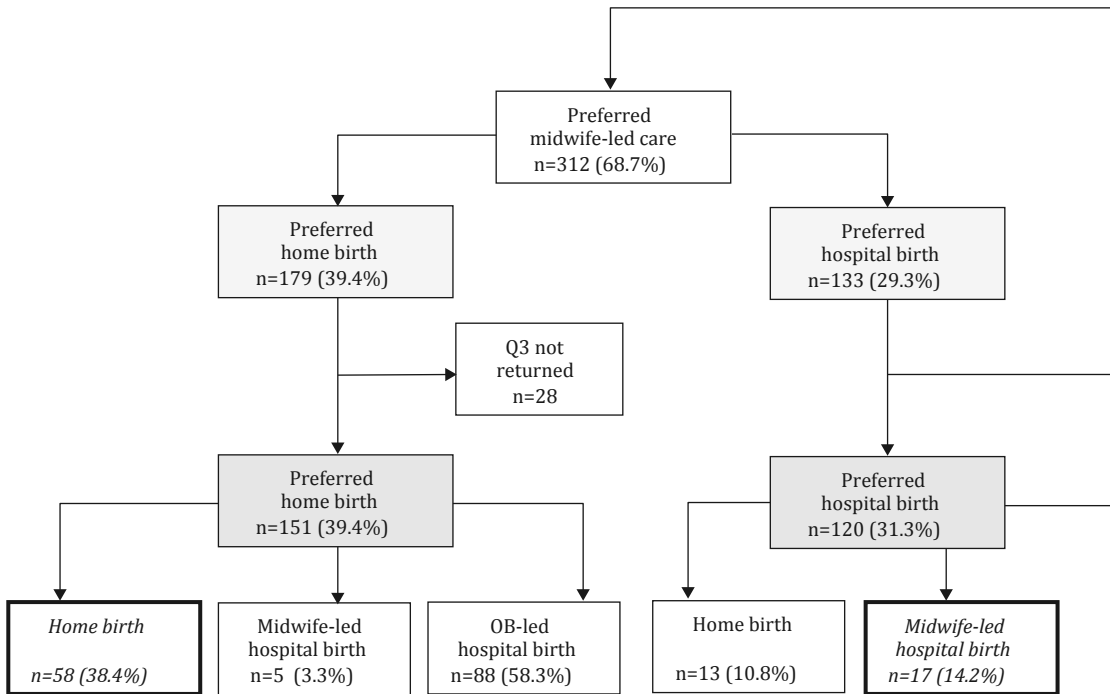


Figure 1 Flowchart study population.

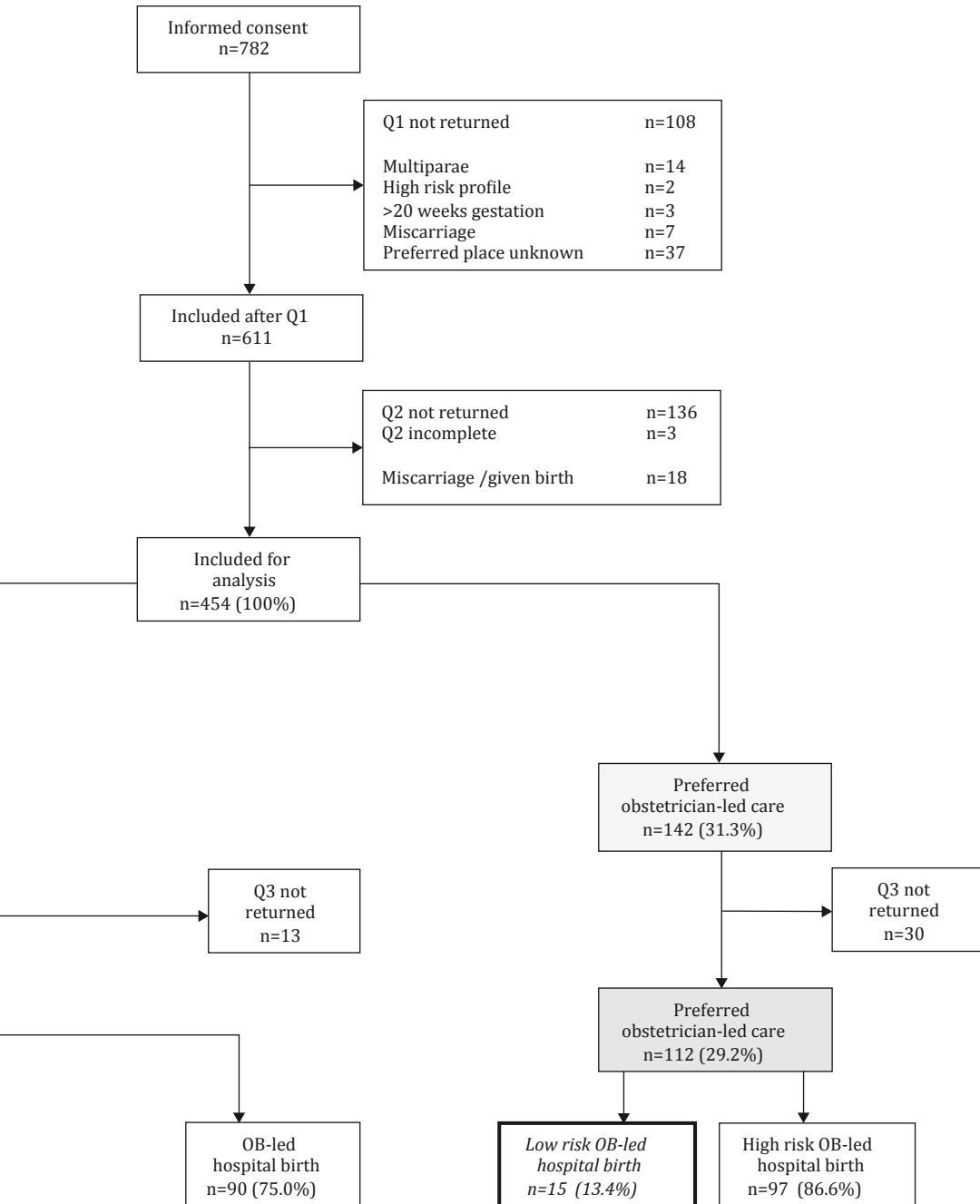


Table 2 Characteristics and outcomes of the study population.

Variable	Midwife-led care		Obstetrician-led care
	Preferred home birth n=179 (%)	Preferred hospital birth n=133 (%)	n=142 (%)
Sample characteristics			
Age (years) ^a <i>mean (SD)</i>	29.2 (3.7)	29.4 (3.7)	31.1 (4.6)
Ethnic background			
Dutch	178 (99.4)	129 (97.0)	136 (95.8)
Non-Dutch	1 (0.6)	4 (3.0)	6 (4.2)
Highest completed level of education			
Low	11 (6.3)	11 (8.3)	12 (8.6)
Middle	63 (35.8)	44 (33.1)	57 (40.7)
High	102 (58.0)	78 (58.6)	71 (50.7)
Method of conception ^a			
Spontaneous	n= 130 124 (95.4)	n= 103 92 (89.3)	n= 142 105 (73.9)
Assisted Reproduction	6 (4.6)	11 (10.7)	37 (26.1)
First pregnancy ^a			
Yes	148 (83.6)	118 (88.7)	87 (61.7)
No ^b	29 (16.4)	15 (11.3)	54 (38.3)
Attended antenatal classes			
Yes	123 (69.5)	94 (71.8)	97 (68.3)
No	54 (30.5)	37 (28.2)	45 (31.7)
EDS 32 weeks <i>mean (SD)</i> (<i>Kruskal-Wallis</i>) $H(2)=0.998, p=0.61$	4.4 (3.4)	5.3 (3.9)	5.4 (4.5)
EDS postpartum <i>mean (SD)</i> (<i>Kruskal-Wallis</i>) $H(2)=3.026, p=0.22$	3.8 (3.8)	5.5 (5.0)	5.2 (4.4)
Pregnancy and birth outcomes			
Obstetrical complication at 32 weeks (e.g. hypertension, IUGR etc.) ^a			
Yes	4 (2.2)	10 (7.5)	16 (11.3)
No	175 (97.8)	123 (92.5)	126 (88.7)
Obstetrical complication and/or intervention during pregnancy or birth (incl medical pain relief) ^a			
Yes	90 (59.6)	95 (79.2)	97 (90.7)
No	61 (40.4)	25 (20.8)	10 (9.3)
<i>Medical pain relief^a</i>			
Yes	33 (22.4)	40 (36.0)	61 (64.2)
No	114 (77.6)	71 (64.0)	34 (35.8)

^a Significant at 1% level.

^b Previous miscarriage, ectopic pregnancy or induced abortion.

Experiences of duration of labor and labor pain

The experiences of women are shown in Table 4. Fewer women who preferred a home birth experienced the duration of labor as *long* and as *unpleasant* compared to the two groups of women who preferred a hospital birth. However, after multivariate analysis we found no significant differences between the groups regarding experiences of duration of labor. The majority of women in all three groups experienced intense pain during labor, with the highest rate among women who preferred an obstetrician-led birth (93%, n=87) and the lowest rate among women who preferred a home birth (77%, n=117). After adjustment, the likelihood of experiencing labor pain as unpleasant was significantly reduced in the group of women who preferred a home birth compared to women who preferred an obstetrician-led birth (OR 0.3, 95%CI 0.1-0.7). Women who preferred a midwife-led birth (home and hospital) had a three- to fourfold increase in the odds of feeling it was impossible to make their own choices regarding pain relief compared to women who preferred a birth with obstetrician-led care (OR 4.3, 95%CI 1.9-9.8 resp. OR 3.4, 95%CI 1.5-7.7). Most of the women in all groups were satisfied about the management of pain relief during labor. However, compared to women who preferred a midwife-led hospital birth, women who preferred a home birth had an increased likelihood of having “mixed feelings” or “not being satisfied” about the management of pain relief (OR 2.5, 95%CI 1.1-6.0).

Table 3 Preferred place of birth and expectations towards duration of labor and coping with pain at 32 weeks gestation.

	Midwife-led care		Obstetrician-led care
	Preferred home birth n=179 (%)	Preferred hospital birth n=133 (%)	n=142 (%)
Worry about duration of labor			
Not worried	125 (72.3)	94 (72.9)	91 (65.0)
Worried	19 (11.0)	21 (16.3)	31 (22.1)
Not thought about (NTA) ^a	29 (16.8)	14 (10.9)	18 (12.9)
Coping with pain			
Expect no difficulties	136 (77.7)	94 (73.4)	89 (65.4)
Expect difficulties	21 (12.0)	22 (17.2)	33 (24.3)
Not thought about (NTA) ^a	18 (10.3)	12 (9.4)	14 (10.3)

MFL = Midwife-led; OBL = Obstetrician-led; CI 95% = confidence interval 95%;

^a Excluded from analysis. ^b Adjusted for maternal age, method conception, first pregnancy (previous miscarriage or ectopic pregnancy), obstetrical complication at 32 weeks.

^c Significant findings.

Preferred MFL home birth versus Preferred MFL hospital birth		Preferred MFL home birth versus Preferred OBL hospital birth		Preferred MFL hospital birth versus Preferred OBL hospital birth	
Crude Odds ratios (95% CI)	Adjusted ^b Odds ratios (95% CI)	Crude Odds ratios (95% CI)	Adjusted ^b Odds ratios (95% CI)	Crude Odds ratios (95% CI)	Adjusted ^b Odds ratios (95% CI)
0.7 (0.4-1.3)	0.6 (0.3-1.4)	0.5 (0.2-0.8) ^c	0.5 (0.2-0.9) ^c	0.7 (0.4-1.2)	0.7 (0.4-1.4)
0.7 (0.3-1.3)	0.7 (0.3-1.5)	0.4 (0.2-0.8) ^c	0.4 (0.2-0.9) ^c	0.6 (0.3-1.2)	0.6 (0.3-1.3)

Table 4 Preferred place of birth and postpartum experiences about duration of labor and labor pain.

	Midwife-led care		Obstetrician-led care
	Preferred home birth n=147 (%)	Preferred hospital birth n=113 (%)	n=95 (%)
Experienced duration of labor in time ^a			
Long	52 (35.6)	54 (48.2)	46 (48.4)
Not long	94 (64.4)	58 (51.8)	49 (51.6)
Duration of labor experienced as ^a			
Unpleasant	60 (41.7)	50 (46.3)	52 (55.9)
Not unpleasant	84 (58.3)	58 (53.7)	41 (44.1)
Experienced pain intensity ^b			
Intense	113 (77.4)	93 (83.0)	87 (92.6)
Hardly intense	33 (22.6)	19 (17.0)	7 (7.4)
Pain experienced as ^b			
Unpleasant	100 (69.0)	90 (81.8)	82 (91.1)
Not unpleasant	45 (31.0)	20 (18.2)	8 (8.9)
Possible to make own choices regarding pain relief ^b			
No	38 (33.0)	31 (34.1)	15 (17.2)
Yes, for all or most of time	77 (67.0)	60 (65.9)	72 (82.8)
Feelings about management of pain relief ^b			
Mixed feelings, not satisfied	21 (16.2)	13 (13.5)	15 (18.1)
Satisfied	109 (83.8)	83 (86.5)	68 (81.9)

MFL = Midwife-led; OBL = Obstetrician-led; CI 95%= confidence interval 95%.

^a Adjusted for maternal age, expectations duration labor, method conception, first pregnancy (previous miscarriage or ectopic pregnancy), obstetrical complication and/or intervention during pregnancy or birth. ^b Adjusted for expectations pain, obstetrical complication and/or intervention during pregnancy or birth. ^c Significant findings.

Preferred MFL home birth versus Preferred MFL hospital birth		Preferred MFL home birth versus Preferred OBL hospital birth		Preferred MFL hospital birth versus Preferred OBL hospital birth	
Crude Odds ratios (95% CI)	Adjusted ^a Odds ratios (95% CI)	Crude Odds ratios (95% CI)	Adjusted ^a Odds ratios (95% CI)	Crude Odds ratios (95% CI)	Adjusted ^a Odds ratios (95% CI)
0.6 (0.4-1.0)	0.9 (0.5-1.7)	0.6 (0.4-1.0)	1.3 (0.7-2.6)	1.0 (0.6-1.7)	1.5 (0.7-2.9)
0.8 (0.5-1.4)	1.0 (0.5-2.0)	0.6 (0.3-1.0)	1.1 (0.5-2.2)	0.7 (0.4-1.2)	1.1 (0.6-2.2)
0.7 (0.4-1.3)	1.0 (0.5-1.9)	0.3 (0.1-0.7) ^c	0.4 (0.2-1.1)	0.4 (0.2-1.0)	0.4 (0.2-1.1)
0.5 (0.3-0.9) ^c	0.6 (0.3-1.1)	0.2 (0.1-0.5) ^c	0.3 (0.1-0.7) ^c	0.4 (0.2-1.1)	0.5 (0.2-1.3)
1.0 (0.5-1.7)	1.3 (0.7-2.5)	2.4 (1.2-4.7) ^c	4.3 (1.9-9.8) ^c	2.5 (1.2-5.0) ^c	3.4 (1.5-7.7) ^c
1.2 (0.6-2.6)	2.5 (1.1-6.0) ^c	0.9 (0.4-1.8)	2.3 (1.0-5.1)	0.7 (0.3-1.6)	0.9 (0.4-2.2)

DISCUSSION

In line with our hypothesis we found that, compared to women who preferred a birth with obstetrician-led care, women who preferred a home birth (with a midwife) were less worried – while pregnant – about the duration of labor and coping with pain and they less often experienced their labor pain as unpleasant. Women who preferred a midwife-led birth – *either home or hospital* – felt more often that it was not possible to make their own choices regarding pain relief. Healthy women choose their caregiver and birth setting based on their own definitions of pregnancy and childbirth.¹⁰ Regarding expectations, our results confirm the idea that women who prefer to give birth at home with a midwife conceptualize birth more as a natural process and that they have more confidence in their ability to manage labor. Our findings are in line with those of Haines et al.¹¹ In their cohort study, they identified a cluster of women who had clear attitudes about birth including seeing it as a natural process and these women were not afraid of childbirth. Related to this are the results of a Dutch, qualitative study where women with a “*pragmatic natural*” approach were confident that they would not need pain relief if labor proceeded naturally.²⁶

Our hypothesis regarding birth experiences was not entirely supported. Women who preferred a hospital birth, especially with obstetrician-led care, did more often experience a long duration of labor and an intense pain, though results were not statistically significant.

Women who preferred a home birth were significantly less likely to find the experience of pain to be unpleasant. An orientation toward birth as more natural may lead these women to accept pain and discomfort as part of giving birth. It is not surprising that women who preferred a midwife-led birth indicated they were less able to make their own choices regarding pain relief, as the Dutch maternity care policy allows no opportunities for medical pain relief in midwife-led care. We do not know whether women perceived reduced choice as a *negative* experience. Some women may chose settings that limit their choice as a strategy to avoid unwanted use of pain relief

Nevertheless, women who preferred a home birth more often had mixed feelings, or were dissatisfied, with pain relief management. This may be the result of an expectation-reality gap where women preferring a home birth expected to have a natural, drug-free labor and were disappointed when that did not occur.^{27,28} On the other hand, it is possible that women with a preference for midwife-led care needed a form of pain relief but that the timing of transfer to obstetrician-led care limited their options or reduced the effect of pain relief. A previous Dutch study found that not having a choice in pain relief and not being satisfied in

coping with pain were associated with a negative recall of the birth event, but this research did not control for preferred or actual place of birth.⁶

A noteworthy finding of our research is the discrepancy between expectation and experience. The number of women who were concerned about the duration of labor and labor pain during pregnancy was much smaller than the number reporting a long duration of labor and intense pain during birth. Lally et al.²⁸ concluded that women generally underestimate the intensity of the pain they will experience. This leads us to question whether women are adequately prepared for childbirth, regardless of their preferred birth setting. In the Netherlands there has been a notable increase in women requesting pain relief during labor. In 2004, 3.8% of the healthy nulliparous women were referred for medical pain relief; 10 years later, in 2013, that number had risen to 13.6%.^{29,30} This may be related to women's preparations and expectations regarding childbirth. On the other hand, it is possible that using pain relief is now more generally accepted. Recognizing the need for more in-depth knowledge about women's attitudes towards childbirth, we are supplementing this survey research with a qualitative study of women's expectations regarding childbirth and birth place preferences in the Netherlands.

Our study has certain limitations. The inclusion period for women who preferred obstetrician-led care was longer than we expected. There were fewer low-risk women with obstetrician-led care than we initially assumed, showing that obstetrician-led care for these women is still uncommon in the Netherlands. Another limitation is the possibility of selection bias. We had little direct control over the inclusion processes by caregivers, and we do not know the exact number of women who were eligible during the inclusion period. Furthermore, we do not have information about characteristics of women who refused to participate. The number of women in our sample who had a low level of education was smaller compared to the Dutch population in general.³¹ It is possible that women with a lower level of education refused to participate more often. However, there was no significant difference in level of education between the three study groups. As only women who understood the Dutch language could be enrolled in the study, the percentage of women with a non-Dutch background was small in our study population: 2.4% compared with 24.5% of all nulliparous women in the Netherlands in 2013.³⁰ Because the results may be influenced by social and cultural aspects, it is unclear to what extent our results apply to lower-educated women and ethnic minority populations. Although we adjusted for medical complications – including the actual birth setting – a disagreement between preferred and actual birthplace may have introduced some unavoidable recall bias.

CONCLUSION AND PRACTICAL IMPLICATIONS

Our findings show that women with a preference for a home birth are less worried about the duration of labor and coping with labor pain compared to women with a preference for an obstetrician-led hospital birth. Differences in experiences of the duration of labor and labor pain were less clear. Most women experienced intense pain during labor. However, women with a preference for a home birth were less likely to find the experience unpleasant, suggesting a more natural orientation toward birth with the acceptance of labor pain as part of giving birth. On the other hand, women with a preference for midwife-led birth – either at home or in the hospital – experienced less possibility to make their own choice regarding pain relief and women who preferred home birth were less satisfied about the management of pain relief. When caregivers know what women expect from their upcoming birth, they will be better equipped to prepare women for childbirth and to help them to set realistic expectations. This knowledge can also be used to help women choose a setting for birth that fits their cognitive frame, increasing their chance of a positive birth experience.

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6

Choosing place of birth in the Netherlands: a qualitative study on women's beliefs, preferences and expectations

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ABSTRACT

Objective: Women's cognitions about birth determine their ideas about, and expectations of, birth and are the foundation for their choices, including the choice for place of birth. Our objective was to gain further understanding of how these cognitions influence their choice of birth place.

Design: A qualitative, descriptive design with face-to-face, semi-structured interviews.

Participants: Twenty-three healthy nulliparous women with straightforward pregnancies in their third trimester in the Netherlands.

Findings: We identified three main themes: (i) beliefs – conceptions about birth, risk and care; (ii) expectations – approaching the unknown; and (iii) choice – preference not demand. Women based their decisions for place of birth primarily on aspects of safety, but women vary in their perceptions of safety. Women who chose hospital birth wanted to be safe, while women who chose home birth wanted to feel safe. Women had low expectations of birth, resulting in a pragmatic 'take it as it comes' attitude. Birth place preferences were not viewed from a strictly binary perspective, but rather were seen as a continuum between home and hospital.

Key conclusions and implications for practice: In general, women are flexible in their preference for place of birth and have low expectations about childbirth. This attitude offers an ideal strategy for approaching the unknown, but it also may lead to unfulfilled desires and negative experiences. Our findings underscore the importance of talking with women about their expectations and paying attention to women's knowledge about childbirth. Providing up-to-date information will empower women to make realistic, informed and well-considered choices.

INTRODUCTION

In the Netherlands, healthy women with a physiological pregnancy are offered the choice between a midwife-led birth at home, in a birth centre, or in the hospital. These options are well-integrated in the Dutch maternity care system and are available to all healthy women. Some women with a physiological pregnancy choose for an obstetrician-led hospital birth, but this is not common practice and numbers are low. For a long time, women's preference for an out of hospital birth remained high.¹ A study from 1990 among 170 nulliparous women in midwife-led care showed that 59% of these women indicated that they preferred a home birth;² data collected in 2007 for two separate studies showed similar percentages (57% and 58%) among a group of 321 nulliparous women and another group of 793 women.^{3,4} However, more recent data from the national registration show a declining preference for home birth since 2010,⁵ with only 24% of women planning a home birth in 2014.⁶ This raises questions about what is instigating these changes in women's preferences.

Place of birth has been studied extensively over the past decades, but most of the studies focus on safety: comparing outcomes for maternal or neonatal mortality and morbidity according to place of birth.⁷⁻¹⁷ Other studies compare women's experiences of the different places or explore the characteristics of women choosing a certain place of birth.¹⁸⁻²³ Generally, these studies use a quantitative study design. Studies that focus on the reasons for women's preferences in place of birth are limited and mostly focus specifically on the choice for a home birth, often in a system where home birth is not mainstream and is not widely and easily available.^{2,21,24-29} These studies suggest that factors, such as the wish for personalised care, increased control and autonomy, the rejection of technology or interventions, former experiences, and beliefs around safety play a crucial role in women's choice for a birth at home.

We know little about how women's preferences for place of birth are determined. We do know that these preferences are shaped by what we call here 'cognitions' – the mental baggage we use to understand the world. Cognitions influence how we act and the choices we make. They are the result of a process of acquiring understanding through the senses, experience, and cultural and societal values. Women's cognitions about birth are shaped in the years prior to their pregnancy and are influenced by their surroundings, including stories from their mothers, other family members and friends, as well as public images in the media and elsewhere. They determine women's ideas about, and expectations of, birth and are the foundation for their choices. A mixed method study among 49 American

women showed that stories about birth and/or attending a birth had a strong influence on women's perceptions of birth and their birth choices, including the choice for place of birth.³⁰

Given the limited amount of research focused on women's cognitions about the location of birth, we designed a study to gain further understanding of how these cognitions influence their choice of birth place.

METHODS

Design

We used a qualitative, descriptive design³¹ that allowed women to describe their expectations, motives, preferences, and choices regarding childbirth and place of birth. Ethical approval for this study was obtained by the Medical Ethical Committee of Zuyderland-Zuyd University, Heerlen, in November 2014.

Participants

Participants were recruited from one (non-academic) hospital and four midwifery practices located in the south-eastern part of the Netherlands, representing both urban and rural areas. Healthy nulliparous women with a straightforward pregnancy in their third trimester were informed by their care provider of the purpose of the study and were given a written description of the research. Women who expressed an interest in participating were asked by their care provider whether the researchers could contact them within one week. Those who agreed were called by the researchers. If requested, they were provided with additional information and were then asked to participate.

Data collection

Face-to-face, semi-structured interviews were conducted by the first author at a time and location convenient for the women. Our interview guide allowed women freedom in their responses while providing consistency in the coverage of topics. The interview guide included questions concerning childbirth expectations, motives and preferences for place of birth, barriers and facilitators that influenced choice of birth setting, and preparation for, and sources of information about, childbirth. These topics were chosen based on reports in the literature and quantitative studies done earlier by the research team.^{2,28,30,32,33} Interviews took place between January and December 2015 and all participants provided written informed consent. During the interview process a member check was done to check the accuracy of the responses.³⁴ The interviews lasted

between 30 - 90 minutes. Interviews were digitally recorded, transcribed verbatim by the first author, and anonymised. If a clinical issue arose during the interviews, women were advised to contact their care provider.

Analysis

The data were analysed using a modified form of framework analysis³⁵, allowing for the identification, analysis, and reporting of patterns – or themes – within the data.³⁶ To limit bias in the interpretation of the data, two researchers (including the first author) independently analysed the data of three participants, after which the inter-rater reliability was checked to ensure consistency and validity. The constant comparative method was used to find similarities and differences within the data in order to generate themes.³⁵ Identified concepts and patterns were discussed by the research team and were combined into themes. We used the qualitative data analysis software package NVivo 8 to manage and analyse the data.

Findings

Twenty-six potential participants were identified. We were unable to contact one woman (after several attempts) and two women did not meet the inclusion criteria (one multiparous women and one women with a medical complication). The other women agreed to participate, resulting in a purposive sample of 23 pregnant women. All of the women were married or had a partner. The women ranged in age from 24 to 39 and in gestational age from 29 to 38 weeks. All women were Caucasian and all but one, who was German, were Dutch born. Three women had previous miscarriages and four women became pregnant with the use of assisted reproductive technologies. Of the 23 women, ten women planned to have a midwife-led home birth, ten women planned to have a midwife-led hospital birth and three women planned to have an obstetrician-led hospital birth. Pseudonyms have been used to ensure confidentiality (Table 1).

Thematic analysis

During the interviews women described their preferences and motivations for their choice for a place of birth. Through an iterative process we identified seven initial themes during the early stage of analysis: conceptualisation of childbirth, expectations of childbirth, key-motivating factors (for place of birth), involvement in decision-making, care and care provider, role of partner and relatives, and the actual choice. We then analysed emerging patterns between and within the themes. As a result, we combined some themes and refined other themes reducing the initial themes to three main themes and five subthemes. The three main themes are (i) beliefs about birth (with subthemes: conceptions about

Table 1 Characteristics participants n=23.

Woman ^a	Preferred place of birth ^b	Age	Gestational age	No. of pregnancy	Method conception
Lisa	Home	28	37	1	spontaneous
Iris	Home	32	36	1	spontaneous
Mira	Home	28	31	2	spontaneous
Ellen	Home	30	34	1	IUI
Katie	Home	32	34	1	spontaneous
Dana	Home	31	37	1	spontaneous
Jill	Home	25	30	1	spontaneous
Emily	Home	28	31	1	spontaneous
Chayenne	Home	24	34	1	spontaneous
Ava	Home	28	36	1	spontaneous
Michelle	MWL hospital	29	38	1	spontaneous
Faya	MWL hospital	38	36	1	spontaneous
Tess	MWL hospital	26	33	1	spontaneous
Ashley	MWL hospital	30	36	1	spontaneous
Gwen	MWL hospital	25	29	1	spontaneous
Marly	MWL hospital	39	37	1	ICSI
Ruby	MWL hospital	31	32	1	spontaneous
Carice	MWL hospital	34	34	1	spontaneous
Jane	MWL hospital	27	29	1	spontaneous
Zoey	MWL hospital	38	34	3	ICSI
Amber	OBL hospital	32	32	1	hormones
Miranda	OBL hospital	38	36	3	spontaneous
Nicole	OBL hospital	26	32	1	spontaneous

^aPseudonym^bMWL= midwife-led; OBL= obstetrician led

childbirth; risk: *being safe* versus *feeling safe*; and care and care provider); (ii) expectations – approaching the unknown; and (iii) choice – preference not demand (with subthemes: consolidating choice; and birth place as continuum) (Figure 1).

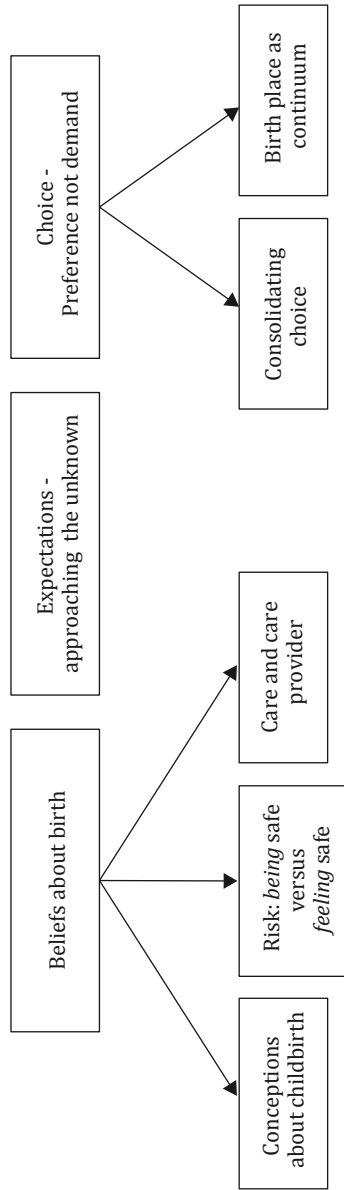


Figure 1 Identified themes with subthemes.

Beliefs about birth

Conceptions about childbirth

In general, all of our respondents believed birth to be a normal, physiological process and felt that their bodies were capable of giving birth. Additionally, labour pain was seen as an unavoidable and obvious part of childbirth. None of the women wanted medical pain relief in advance. Although some women kept the possibility of medical pain relief in the hospital in their minds, for the majority of the women it did not influence their decision for place of birth. Despite their physiological point of view, most women accepted the fact that medical interventions might be needed to ensure a safe outcome for mother and baby or that they might need some form of medical pain relief.

"I would prefer to give birth at home if I can. However, I'm completely open to the fact that medical complications can arise and then I don't necessarily have to give birth at home; then I'll just go to the hospital." [Jill, home]

"I'm just going to try it without [medical pain relief]. If it's necessary....if - at any moment- it doesn't go well, then I'll ask for it." [Michelle, MWL hospital]

In addition to this, most women with a preference for a home birth described the possibility that they might end up in hospital, often referring to statements of their midwife.

"What I experience from the point of view of the midwife [...] is that in fact the medical professionals don't want to take any risks. What perhaps actually means that, well, okay, you think that you're going to give birth at home, but at the slightest thing you're going to the hospital. [...] Does it still make sense to opt for a home birth?" [Iris, home]

A few women thought hospital births, and, in particular, obstetrician-led care, would lead to more interventions. However, the intervention rate did not affect their choice for a place of birth. Women with obstetrician-led care were more medically oriented when talking about childbirth, sometimes driven by their medical history. Frequent medical examinations, like scans or blood tests, were considered important in order to feel safe and to know if everything was alright with the baby. One woman indicated that she lost trust in her body after two previous miscarriages, resulting in the choice for obstetrician-led care.

*"...because at some point, you think: maybe those miscarriages have a reason [...]. That makes you..., anxious and that may give you less confidence in your own body."
[Miranda, OBL hospital]*

Risk: Being safe versus feeling safe

Nearly all women who planned to give birth in hospital (midwife-led as well as obstetrician-led) chose for this option because they wanted to have access to immediate medical attention – equipment and specialized staff - in the event of an emergency. They described the hospital as the safest place to give birth and they did not want to be transferred to the hospital in the midst of labour. Their perceptions of birth were focused on risks and emergency situations, such as an emergency caesarean section or a retained placenta. Some women perceived the common situation of the umbilical cord wrapped around the baby's neck as a risky situation that required immediate medical attention.

"That's why I actually want to go to the hospital. Because if there's something wrong, like the umbilical cord around the baby's neck or the heart rate drops, or who knows what, they can intervene very quickly. [Nicole, OBL hospital]

The women who planned an obstetrician-led hospital birth talked about the same aspects of safety as women who planned a hospital birth with their midwife. However, they emphasized explicitly the expert role of the obstetrician. They also mentioned the familiarity with the hospital or obstetrician through their previous medical history.

Women who planned to give birth at home articulated feeling more free to birth in their own way. They expected to feel safer and to be more relaxed in their own familiar environment, which would facilitate the birthing process. Reasons for choosing a home birth were more intuitive than analytic. For example:

"Because I just want to give birth at home, it just feels better. [...]. Now that you ask me this, I think...yes...why actually? It is just a feeling, but it's not always possible to explain a feeling." [Katie, home]

Care and care provider

Women who preferred midwife-led care felt that the midwife played an essential role in monitoring the progress of labour and the health of mother and baby. In addition, women thought the midwife would support them to cope with contractions and would give them appropriate instructions, especially during the second stage of labour. Women who preferred obstetrician-led care described

largely the same aspects of care during labour. However, they did not relate this to a specific care provider, because they did not know exactly who would attend their birth.

(Q: Which care provider do you expect to attend your birth?)

"I don't really know. I haven't thought about it yet, but I suppose there will be an obstetrician...I think" [Amber, OBL hospital]

All women underlined the importance of being involved in decision-making during labour. This decision making was primarily related to specific medical procedures, like amniotomy, assisted birth or caesarean section. Hoping that their wishes would be respected, most women assigned decision-making authority to the care providers, because they were seen as the experts in this area. This was true for women with midwife-led care and for women with obstetrician-led care. They mainly wanted to know when and why certain choices were made.

"I just hope that she'll support me and follow me in my wishes, but that she'll also be realistic and can say: 'you know, right now I think this is the best thing to do, so we're going to do this.' And then I'll don't have a say in that, because in the end, he or she is the one with knowledge, not me." [Jane, MWL hospital]

"The real decisions are made by the midwives. When it comes to important things, the midwife has the last word anyway." [Mira, home]

Only a few women indicated the importance of having influence on the decision making process itself. However, they struggled with how that should be done in the midst of labour.

"The tricky thing is, what I think, if your focus is on giving birth and then there's some kind of informed consent process, I know that I'm not really going to be bothered with that." [Ashley, MWL hospital]

Some women expected to be more involved in decision making when giving birth at home because they felt they would be more in control of their own birth compared to the hospital. This aspect was more related to type of care provider instead of the actual birth setting: women expected to be less involved in decision-making when giving birth in obstetrician-led care.

"I think that it's easier to have some kind of influence with home birth, because you have to rely on yourself to give birth...And I think that, in hospitals, they (the staff) are quicker in saying 'no, we're going to do it this way...' [Emily, home]

"I think you have more influence over your own birth at home than in hospital. [...] Although, when you're having a midwife-led hospital birth, the same midwife [as home] is attending your birth. I think it's mainly the medical setting [obstetrician-led care] that gives you less influence." [Zoey, MWL hospital]

Expectations: approaching the unknown

Most women in this study, being nulliparous, indicated that they did not know what to expect from birth. They wanted to keep an open mind about their upcoming childbirth. The unknown nature of childbirth made them feel that they needed to be flexible. Women believed labour would likely proceed differently from what they expected. Therefore they saw limited value in thinking thoroughly about childbirth. Some women called themselves a 'down to earth' person in this context. According to a few women, having high expectations can only lead to disappointment, so it would be better not to have many expectations in advance.

"I now notice that I haven't thought about many things yet, but, I mean...I'll wait and see what happens and take it as it comes." [Nicole, OBL hospital]

"I'm trying to have an open mind about what will happen during birth. And yes, I think, the more you plan, the less likely it will happen that way, because it just isn't possible to plan your birth." [Lisa, home]

"What do I expect? Well, I don't want to have too many expectations, because then you can't be disappointed either." [Marly, MWL hospital]

Some women had experienced that they were capable of more than they had realized, during a life event in the past, or an extreme sports performance. This had given them a strong confidence that they could cope with labour, no matter how labour would proceed.

I've come to the realisation that there's a power or will that goes above and beyond the power you need for 'everyday life', that you can tap into, like in an emergency or some such. I think giving birth might be a bit like that and if that's how it is, knowing that you can tap into something...well, that reinforces me in...in what I can expect, yes... [Carice, MWL hospital]

Women who preferred a home birth more often mentioned aspects related to excitement and curiosity when talking about childbirth. Women who preferred a hospital birth considered birth more as something painful that has to be done. This was not necessarily related to a higher level of anxiety: most women we interviewed in this study indicated that they were not afraid of giving birth and that they had confidence in their own body.

“Actually, I’m very curious, not really anxious – my husband is though-, but I’m particularly curious how I will react, how it will feel and...yes, I’m actually looking forward to it.”[Chayenne, home]

“It will be very painful, difficult and, um, yes..., intense, I think. [...]But I’m confident, I don’t think: ‘God, I will not succeed’, but no, I’m not looking forward to it.”[Ruby, MWL hospital]

Preference not demand

Consolidating choice

We observed that most women in this study had made their decision for place of birth before pregnancy. Importantly, they described the process of information gathering about childbirth and place of birth during pregnancy as a tool to *support* and *consolidate* their decision, not to *make* a decision. A woman with a preference for a home birth articulated that her choice fits with her way of viewing life in general: childbirth as part of the natural cycle of life. Opinions and birth stories from friends and family were used to validate women’s own ideas and had little impact on their final choice. When they encountered viewpoints that did not align with their own (for example, when a woman with a preference for a hospital birth was told a positive home birth story), they emphasized the fact that it could work out quite differently for them. Partners opinions were considered important, but most women indicated that their own opinion was decisive. In case of a contrary preference, women with a preference for a home birth were more open to their partners’ preference than women with a preference for the hospital.

“Then we would have to talk about it and in the end, I think, we would have gone with my choice. Because I have to give birth, and he doesn’t have to!” [Tess, MWL hospital]

“Look, if he had really said ‘I find it a bit too tense and I don’t like it at all [giving birth at home]’; yes, of course I would go to the hospital.”[Ava, home]

Birth place as a continuum

For most of the women a choice for one place – home or hospital – did not automatically mean a rejection of the other place. Some women who preferred to give birth at home mentioned the advantage of the hospital as being a safe place in an emergency situation. But this advantage was outweighed by the benefits of their home environment. Women explained it as not having a *resistance* against the hospital, but also no having a sound reason that advocates the hospital. If anything would happen, they would immediately go to the hospital. On the other hand, women who preferred a hospital birth said that they recognized the advantages of being in their own home environment when giving birth. This resulted for some women in the desire to stay at home as long as possible.

“I just hope that, for example with all the contractions, that for the most part, I can stay here (home)...and then when I am x-centimetres, then I can go to there (the hospital). Naturally, I hope that I can just labour at home and then drive there (to the hospital).” [Ashley, MWL hospital]

Being their first child, uncertainty about how labour would proceed played an important role in the final choice for a hospital birth. If everything would go well this time, some would consider giving birth at home next time.

“I’m sure if I knew that everything would be fine, I would give birth at home. If I knew that I won’t need that [medical assistance], giving birth in hospital would never have entered my head. I can imagine that if everything goes well this time, I might give birth at home next time.” [Carice, MWL hospital]

Women who preferred obstetrician-led care were less flexible about their choice for a place of birth with the hospital as the only safe option. They thought they would experience much more stress at home, resulting in not being able to relax.

DISCUSSION

This study explored women's cognitions about childbirth and how these cognitions influenced women's choices for place of birth. Three main themes emerged from the data: beliefs – conceptions about birth, risk and care; expectations – approaching the unknown; and choice – preference not demand. We observed how women's beliefs about childbirth resulted in certain expectations. Preferences for place of birth were based on these expectations and were checked against beliefs of others. In the end, women moved from shaping a preference to making a (tentative) choice for a place of birth.

Childbirth was mainly seen as a normal, physiologic process, irrespective of their birth place preference. However, even though women talked about the normality of childbirth, they incorporated in some way the language of risk. They were continuously aware that they might need some kind of pain relief or a medical intervention. As a result of this, women were more likely to speak of 'trying a home birth' or 'trying to give birth without pain relief' instead of 'giving birth at home' or 'giving birth without pain relief'. Regan and McElroy³⁰ described a group of women with similar beliefs, who saw birth as a normal process, but only to a degree that it did not impinge on the perceived needs of the unborn child. In their narrative study, Coxon et al.³⁷ found that women who planned birth in alternative birth settings also emphasised their intention, and obligation, to seek medical care if necessary.

Birth is increasingly seen as a risky event, not only by women but also by health professionals and society in general.³⁸ Midwifery is seen as a profession that promotes trust in normal birth. However, there is a tension between striving to promote normality and paying attention to the potential risks involved in childbirth.³⁹ The focus of birth is shifting from fate to risk⁴⁰, from accepting uncertainty towards risk prevention, resulting in risk-management strategies and clinical governance with protocols and guidelines. Maternity care providers may try to reassure women by discussing statistics and explaining how they monitor birth and manage risks, but the ubiquity of 'risk talk' about birth cannot help but influence women's beliefs about birth.

Safety played an important role in the choice of birth place. Women who chose hospital birth wanted to be safe, while women who chose home birth wanted to feel safe. This is in accordance with the study of Borelli et al.⁴¹ where women reported various perceptions of safety of childbirth in different places of birth. Being safe in hospital was often related to the occurrence of urgent obstetrical

complications. Women expressed concerns about transfer time in the event of complications at a home birth. However, the most common reasons for specialized, obstetric care during birth in the Netherlands – like meconium-stained amniotic fluid, prolonged labour during the first stage, and the request for pain relief – are typically not urgent.⁴² Interestingly, none of these common indications for referral were mentioned by the women we interviewed. In addition, the oft-mentioned concern with the umbilical cord wrapped around the baby's neck is an unrealistic fear, as this is rarely associated with adverse perinatal outcomes.^{43,44}

In general, women had low expectations of birth, resulting in a 'take it as it comes' attitude without strict demands or firm choices. This pragmatic approach can be an ideal strategy for facing something unfamiliar: being flexible and adaptable in changing circumstances. But it may also relate to a kind of self-protection: having high expectations is a set up for disappointment and feelings of failure when those expectations are not met. Rijnders and colleagues⁴⁵ discovered that nearly 25% of primiparas in the Netherlands had a negative recall of their birth experience three years postpartum, suggesting that the "low expectation strategy" does not work for all women. Green et al.⁴⁶ found that women with low expectations were more likely to have poor psychological outcomes. Exploring and discussing a woman's expectations about birth will probably result in better psychological outcomes.

Women's birth place preferences were primarily based on their beliefs and circumstances that existed before pregnancy. Other studies have found that women perceive themselves as the main decision maker for place of birth with choices mostly made before pregnancy or during the first trimester.^{47,48} Women do value the beliefs and opinions of close relatives and friends, and they seek for consistency between their own beliefs and those of others. When women experienced contradictory beliefs, they attempted to reduce this cognitive dissonance by finding ways to align those beliefs with their own beliefs.

Murray-Davis and colleagues²⁸ described a decision-making framework by which women chose a home birth. However, most women we interviewed – except women who chose to give birth in obstetrician-led care – talked about a *preference* rather than a *choice* for a place of birth. Birth place preferences were not always viewed from a strictly binary perspective – with a polarisation between a home or hospital birth, but rather were seen as a continuum, making permeable the boundary between a preference for a home or hospital birth. According to Vroom's expectancy theory⁴⁹, the strength of the motivation to achieve a certain

decision depends partially on the expectations people have and the value they attach to their final choice. The fact that most women in our study expressed no clear expectations about birth, suggests a more moderate motivation for their preferred place of birth. This may be a consequence of the easy availability of home birth in the Netherlands. Other studies focusing on women's choices for place of birth describe women who are highly motivated to achieve their preferred place of birth, especially those who preferred to give birth at home.^{26,28,29} However, these studies have been done among women living in a system where home birth is not readily available and where they have to overcome barriers to fulfil their preference. Because the option of a home or hospital birth are both accepted and integrated in the Dutch maternity care system, the need for a highly motivated choice is reduced.

In a recent synthesis of qualitative evidence on birth place choices in the UK, Coxon et al.⁵⁰ discovered that, as a result of the attitudes of the care providers, the choice to give birth outside the hospital was often experienced as tentative and uncertain. In an earlier study, Coxon et al.³⁷ argued that planning place of birth is mediated by cultural and historical associations between birth and safety. These observations raise interesting questions about 'choice' of birth place in the Dutch context. While structurally Dutch women still have the possibility of a choice for place of birth, the changing socio-cultural context of childbirth there – with negative media coverage of home birth^{51,52} and increased referrals to obstetric care by midwives⁵³ – appears to be placing cognitive, rather than structural limitations on limiting that choice.

There are limitations in this research. The study included only Dutch-speaking women with a Caucasian background, which is not a realistic reflection of Dutch society. In 2015, 26% of all nulliparous women in the Netherlands had a non-Dutch background.⁵⁴ Thus, while our research captures the attitudes of Dutch nulliparous women, we have missed a significant group of women who likely have different attitudes about childbirth because of their different cultural backgrounds. In addition, we chose to interview only nulliparous women to avoid the influence of previous experiences. It would certainly be interesting to explore the attitudes of multiparous women regarding place of birth, where other factors also play a part. However, that was outside the aim of our study. Further research is needed to understand factors that are important to women when choosing their preferred birth setting, including participants with a variety of characteristics.

CONCLUSION

Woman-centred care rests on the principle of respecting a woman's choices. But respecting choice requires an understanding of the many factors that shape and motivate that choice, as well as the level of commitment to the choices that have been made. We found that women in the Netherlands, in general, are flexible in their preference for place of birth and have low expectations about childbirth. This attitude offers an ideal strategy for approaching the unknown, but it also may lead to unfulfilled desires and negative experiences. Our findings underscore the importance of talking with each woman about her expectations during pregnancy in order to find the sources of those expectations and to offer a realistic strategy for achieving the desired pregnancy and birth. It is critical that midwives pay attention to a woman's knowledge about childbirth when providing information. Correcting personal, societal, and cultural misperceptions about birth and providing up-to-date information will empower women to make realistic, informed and well-considered choices. This is no easy task. The provision of woman-centred care requires that midwives and other maternity care providers find a way to promote trust in normal birth in the context of an organisational and cultural environment concerned with risk management.

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7

General Discussion

‘The answer to the very concerning issue of adverse birth outcomes is not more intervention, it is continuity of midwifery models of care, appropriate place of birth, and seamless services where respect and collaboration thrive, and consultation and referral is supported so the balance is achieved between “too little too late and too much too soon” (Hannah Dahlen, Women and Birth 2017)

THE PLACE TO BE: HOME OR HOSPITAL?

The aim of this thesis was to gain more insight into women’s motives, preferences, expectations and experiences regarding place of birth and their influence on outcomes of care.

First, we explored the characteristics and motives that play a part in women’s preference for place of birth (chapter 2). Subsequently, we studied the strength and relative importance of women’s preferences for different aspects of intrapartum care in relation to their birth place preference (chapter 3). We then looked at the influence of women’s birth place preferences on pregnancy and birth outcomes and on women’s expectations and experiences regarding duration of labour and labour pain (chapter 4 and 5). Using the insights of these quantitative studies, we conducted a qualitative study to explore in depth women’s cognitions regarding childbirth and place of birth (chapter 6).

In this concluding chapter, we discuss the main findings of this thesis, reflect on these findings, consider the methodological limitations and strengths of our research, and describe the implications of our findings for maternity care practice. We conclude by making some suggestions for future research on this topic.

MAIN FINDINGS

In our cohort study, using a questionnaire survey, we observed that women who preferred to give birth in hospital, particularly women with a preference for obstetrician-led care, differed in their characteristics compared to women who preferred to give birth at home. These women were older, were more frequently pregnant after assisted reproduction, and had a higher rate of previous miscarriage. In addition, women who preferred to give birth in hospital had a greater likelihood of symptoms of major depressive disorder and worries about health issues. In this survey, we also found that women’s preference for a hospital birth, either midwife- or obstetrician-led, was driven by the assumed safety of the hospital, whereas women’s choice for a home birth was driven by a desire for

greater personal autonomy. This also emerged in our qualitative study, where women preferring a hospital birth indicated that the main reason for them to give birth in hospital was the access to immediate medical interventions in the event of an emergency. Women preferring a home birth articulated feeling more free to birth in their own way and they stated that they felt safer and more relaxed in their own familiar environment. In line with this, in our Discrete Choice Experiment (DCE) we found that a home-like birth setting was the most important aspect for women who preferred a home birth, whereas the ambience of the birth setting was not considered important to women with a preferred hospital birth. In addition, the DCE showed that *all* women want to be involved in the decision-making process, regardless of their birth place preference. Also, women in our qualitative study underlined the importance of involvement in decision-making during labour, but this aspect did not affect their choice for a place of birth.

In our exploratory survey, we found that women who preferred a home birth were less likely to be worried about the duration of labour and were less likely to expect difficulties in coping with pain. Postpartum, however, women who initially preferred a midwife-led birth – either home or hospital - were less likely to report that it was possible to make their own choices regarding pain relief compared to women who preferred obstetrician-led care. In addition, women who initially preferred a home birth had an increased likelihood of being dissatisfied about the management of pain relief. In our DCE experiment we found that the possibility of pain-relief treatment was considered significantly important by all groups of women, although this preference was not as strong for women who intended to give birth at home as compared to women who intended to give birth in hospital.

In our qualitative study, childbirth was mainly seen as a normal, physiologic process and women indicated they wanted to try to give birth without pain-relief treatment. Nevertheless, they were well aware that they might need some kind of pain relief or a medical intervention.

The results of our cohort study showed an association between birth place preference and the extent to which medical indications and interventions occur. Women who initially preferred a birth in midwife-led care, experienced lower rates of interventions, such as epidural analgesia and induction of labour. Interestingly, women who initially preferred a home birth were also less likely to be diagnosed with a medical indication during pregnancy.

In our qualitative study we saw that women generally were not dogmatic in their expectations about birth, resulting in a ‘take it as it comes’ attitude without having too many demands or firm preferences. In this regard, the birth place preferences for most women were not strongly polarised between a preference for a home or a hospital birth.

REFLECTION ON THE FINDINGS

In the modern world, we are inclined to think in dichotomies. What is best: home or hospital birth? Is a pregnant woman ‘low-risk’ or ‘high-risk’? Do we adhere to a psychosocial model or a biomedical model of care? We need to free ourselves from this black and white thinking. A critical analysis for ‘good’ maternity care and childbirth requires a tolerance of complexity and an ability to think beyond simplistic dichotomies.

The new standard *Integrale Geboortezorg* [Integrated Maternity Care], introduced in 2016 to improve the Dutch maternity care system, states that every pregnant woman should have freedom of choice in place of birth.¹ Woman-centred care is an important starting point in this new standard of care, i.e. care that is agreed on by all parties. Key to woman-centred care is the principle of respecting a woman’s choice. But respecting choice requires an understanding of the many factors that shape and motivate that choice.

Every woman is unique. What a woman brings to her experience of birth – including her background and characteristics, previous experiences, the people who will support her during birth, the society she is living in – is different for each woman. In addition, no birth process is the same. The place of birth a woman prefers, the choices she makes, and the outcomes of her birth are therefore influenced by personal, physical, emotional, supportive, environmental, and social aspects. All of these elements have an influence on the choices a woman will make and the way she will experience childbirth. To reduce the outcomes of this thesis to a simple ‘home or hospital birth?’ ignores the many different factors that shape the experience of birth.

BIRTH OUTCOMES

Birthplace research shows that home is a safe place to give birth for healthy women with straightforward pregnancies in countries with good access to high quality midwifery and maternity care.²⁻⁸ Women with planned births in

midwife-led care, especially at home, are more likely to have a normal birth with fewer interventions when compared with women in obstetrician-led care (this study, chapter 3).^{3,4,7-13} In addition, we found that healthy women who preferred a home birth were less likely to experience a medical indication for referral during pregnancy (chapter 4). Differences in interventions and medical indications are often related to differences in birth setting and the attitudes of care providers. Reime et al.¹⁴ described that, compared to midwives, obstetricians were more attached to technology and interventions. This may be because they have easier access to interventions, but it is also likely to be a consequence of the fact that each professional acts from his or her own paradigm. The difference in medical indications between midwife-led care and obstetrician-led care is no doubt related to differences in clinical judgement. Medical sociologists have pointed out that differences in opinion or judgement between the maternity care providers are part of the wider phenomenon of the social construction of concepts of health and illness.^{15,16}

However, different from most studies, our results are based on the *initial* preferred place of birth at the beginning of pregnancy, instead of the planned place of birth at the onset of labour, or the actual place of birth. This means that differences in outcomes between the groups were not only attributable to the birth setting or the care provider, but also to attitudes and characteristics of women themselves.¹⁷ Our findings accord with those of Van der Hulst et al.¹⁸ who observed that women with more receptive attitudes toward medical technology, were more likely to opt for a hospital birth and are more likely to experience an obstetrical intervention. The degree of medicalization of pregnancy and childbirth is therefore a complex interplay between model of care, birth setting, care provider, and women themselves.

WOMEN'S CHARACTERISTICS

Healthy women in the Netherlands who have a straightforward pregnancy are free to follow their preferences and give birth at home or in hospital in midwife-led care. This also applies to women with a previous miscarriage or to women who become pregnant after assisted reproduction; these women are classified as healthy or 'low-risk' with no indication for obstetrician-led care according to the *Verloskundige Indicatielijst* [List of Obstetric Indications].¹⁹ In our research, we found that women who preferred a hospital birth with obstetrician-led care were more frequently pregnant after assisted reproduction and had a higher rate of previous miscarriage. In addition, more women in this group were worried about health issues (chapter 2). These women might not see themselves as

healthy women with a normal pregnancy. It is likely that these women will think more in terms of risks rather than normality and wish to be closer to medical technology.

In a Dutch ethnographic study on patient-centred IVF, Gerrits showed that providing lay people with more information and knowledge (about the treatment and implications of IVF) may actually increase their “clinical gaze” and intensify the medicalization of their condition.²⁰ Research on psychological aspects of IVF pregnancies and previous miscarriages showed that these women also experience more stress and anxiety about losing the pregnancy.²¹⁻²⁴ The following quote from a woman in our qualitative study (chapter 6) who preferred obstetrician-led care is illustrative; “...because at some point, you think: maybe those miscarriages have a reason. That makes you..., anxious and that may give you less confidence in your own body.”

Maternity care providers should pay attention to these psycho-emotional feelings in case of a subsequent normal, intact pregnancy. We should give these women confidence in their own body, without ignoring their feelings and experiences of the past and without pigeonholing them as low- or high-risk. When care providers use medical interventions to address women’s emotional stress and anxiety, trust in their own bodies decreases and reliance on medicine and obstetrics increases.²⁵

WHY DO WOMEN CHOOSE A HOME OR HOSPITAL BIRTH?

Most women based their decision for place of birth primarily on aspects of safety (chapter 2, chapter 6). All women want to give birth safely, but women – even those living in the same cultural context – vary in their perceptions of safety. We learned that for Dutch women, giving birth in hospital, especially with obstetrician-led care, was associated with *being safe* – in terms of the availability of immediate medical attention – while giving birth at home was associated with *feeling safe* – women felt safer and more relaxed when giving birth in their own way and in their own environment. In the literature, the preference for a home birth is often associated with a natural, non-technical approach to childbirth^{18,26,27} and a greater desired level of autonomy, control and responsibility.²⁸⁻³⁴ Women who opt for hospital birth were more often medically oriented and concerned about safety issues.^{28-30,34,35} Coxon et al.³⁶ and Borrelli et al.³⁷ have challenged the tendency to see women’s choices of birth place as polarised between a preference for a ‘natural’ or a ‘medical’ birth claiming that this

dichotomy fails to capture the nuances of women's expectations, experiences and the contextual influences. Most women in our research described childbirth as a normal physiologic process, irrespective of their birth place preference. Generally, women desired to have a birth as normal as possible, without interventions or demands for medical pain relief in advance. Regardless of birthplace preference, women saw the benefits of both settings and valued similar aspects of intrapartum care, like having a say in decision-making or the possibility of pain-relief treatment, something different from the intention to use medical pain relief.^{38,39} The preference for a place of birth is best thought of as a continuum: women want the best of both – or all – worlds.⁴⁰ This might lead some to conclude that the best solution is to create a 'home-like' environment within the hospital, but this ignores the fact that choosing for a specific place of birth and having a satisfying birth experience goes beyond the appearance of the setting. Foureur et al.⁴¹, for example, described the complex relationship between birth unit design, communication, models of care, and stress and examined their collective and individual influence on a safe and satisfying birth. Furthermore, in our DCE study, the ambience of the birth setting was not considered important to women with a preferred hospital birth (chapter 3). It also appears that women are unaware that the chance of an intervention in birth increases – with no consequent improvement in outcome – when in a medical setting, no matter how home like.^{3,4,7-13}

EXPECTATIONS AND EXPERIENCES

Every woman deserves a positive birth experience, at home or in hospital, as the experience of giving birth has long-term implications for a woman's health and wellbeing. Regardless of their place of birth, the quality of care as experienced by Dutch women is high. However, the quality of care scores are higher when women give birth in midwife-led care, when they are assisted by their own midwife, and when they give birth at home.⁴² Women's experience of a home birth is often described a positive one, with feelings of empowerment, control, trust, involvement in decisions, and familiarity with their environment.⁴³⁻⁴⁹ Many of these elements are easier to realize at home. For example, the question must be asked to what extent a woman is supported in her choices when exposed to the hectic atmosphere of a labour ward as compared to a calm and familiar home environment.

Birth experiences are also related to women's attitudes and expectations regarding childbirth. Christiaens et al.⁵⁰ showed that the most important factor contributing to a woman's satisfaction with birth was having her expectations

fulfilled. Interestingly, nulliparous women in our qualitative study indicated having no or low expectations regarding childbirth. They had a pragmatic ‘take it as it comes’ attitude toward birth, with a minimum of demands or firm choices (chapter 6). This pragmatic approach can be an ideal strategy for facing something unfamiliar: being flexible and adaptable in a situation of changing circumstances. It also offers a kind of self-protection: having high expectations could lead to disappointments and feelings of failure when expectations are not met. However, Green et al.⁵¹ found that women with low expectations were more likely to have poor psychological outcomes. When expectations are low and choices are motivated by external factors, women might be guided by what is happening during birth and caregiver attitudes, fears, and preferences, diminishing their sense of control. This could result in unfulfilled choices and negative experiences. Strongly motivated women, making choices based on their own internal expectations, are more likely to realize those choices and feel in control of their birth.

NAVIGATING NORMALITY, RISK AND CHOICE

Birth is increasingly seen as a risky event, not only by women but also by health professionals and society in general.⁵² Midwifery is seen as a profession that promotes trust in normal birth. But there is a tension between striving to promote normality and paying attention to the potential risks involved in childbirth.⁵³ The focus of birth is shifting from accepting uncertainty towards risk prevention, resulting in risk-management strategies and clinical governance with protocols and guidelines.⁵⁴ Maternity care providers try to reassure women by discussing statistics and explaining how they will monitor birth and manage risks, but we do not know how this affects women’s beliefs about birth. Hannah Dahlen, Professor of Midwifery at the Western Sydney University, Australia, describes the power of language. The language we use to talk about childbirth is very important: indeed, language itself is an intervention. The socio-cultural context of childbirth is changing and the way we educate and prepare women for birth is becoming much more medicalized. When we talk about risk selection, risk management and methods of medical pain relief we are speaking the language of risk. Do we see a woman in pain or do we see a woman in labour? A woman in our qualitative study, who preferred to give birth at home, calls attention to the influence of risk talk:

“What I experience from the point of view of the midwife [...] is that in fact the medical professionals don’t want to take any risks. What perhaps actually means

that, well, okay, you think that you're going to give birth at home, but at the slightest problem you're going to the hospital. [...] Does it still make sense to opt for a home birth?"

Previous studies focusing on women's choices for place of birth describe women who are highly motivated to achieve their preferred place of birth, especially those who preferred to give birth at home.⁵⁵⁻⁵⁷ However, these studies are often about women who give birth in a system where home birth is an alternative choice and not mainstream, forcing them to overcome a number of barriers to fulfil their preference. Exposure to negative attitudes and the worries about home birth on the part of health care providers and others is one of the challenges these women must overcome.^{49,58} In a recent synthesis of qualitative evidence on birth place choices in the UK, Coxon et al.³⁴ found that choosing to give birth outside the hospital was often experienced by women as a tentative and uncertain choice, mainly influenced by the attitude of care providers. Although the social and cultural context is changing, we assume that Dutch women still have the possibility of a real choice for place of birth. Coxon et al.³⁶ argued that planning place of birth is mediated by culture and historical associations between birth and safety. In light of the previously described quote, the increase in protocol driven health care, and the declining rate of home birth in the Netherlands, it may well be that Dutch women no longer have a real choice of place of birth – rather it is now a tentative choice, like elsewhere in the developed world. The Dutch maternity care system is often referred to as a birth model that works⁵⁹, especially from the point of view of *normality*. However, a recent cross-national comparison of birth settings in England and the Netherlands showed a higher rate of transfer (during labour), augmentation and episiotomy in the Netherlands compared to England for all midwife-led groups.⁶⁰ If we want to keep a 'future-proof' birth model that really works, with emphasis on normality and freedom of choice, we need more insight into the cognitions and motives that drive choices regarding childbirth on the part of both women and care providers.

STRENGTHS AND LIMITATIONS

Data for this prospective study were largely collected about ten years ago. There has been a lot of change in maternity care since then. For example, the home birth rate declined from around 30% in 2006⁶¹ to 13% in 2015⁶², and the overall epidural rate increased from 9.6% in 2007 to 21.8% in 2015.^{62,63} The introduction of the national guideline *Medicamenteuze pijnbehandeling tijdens de bevalling* [Medical pain relief during childbirth] in 2008 has, among other things, contributed

to this increase.⁶⁴ In this guideline, the 24-hour availability of medical pain relief, especially epidural anaesthesia, was presented as a quality indicator of intrapartum care. In addition, after many discussions about optimizing maternity care, the new standard *Integrale Geboortezorg* [Integrated Maternity Care] was introduced in 2016 in the Netherlands.¹ This policy has resulted in new models of maternity care, which are allowed to vary by region and which, in most cases, eliminate constraints on the medicalization of maternity care. It is to be expected that these cultural and societal changes will affect women's beliefs, preferences, and choices regarding birth. However, we used the data of our prospective, quantitative study as input for our qualitative study, done in 2015, and we did not observe significant changes in women's perspectives on childbirth and place of birth.

Our data are also limited by the fact that we had little direct control over the inclusion processes by care providers. Consequently, we do not know the exact number of women who were eligible during the inclusion period and we do not have information about the characteristics of women who refused to participate. As only women who understood the Dutch language were enrolled in the study, the percentage of women with a non-Dutch background was small in the study population, which is not an accurate reflection of Dutch society. In our study only 3.1% of the women had a non-Dutch background, compared to 20% of all nulliparous women in the Netherlands in 2008.⁶⁵ Thus, while our research captures the preferences, motives and attitudes of Dutch nulliparous women, we have missed a significant group of women who are likely to have different and diverse attitudes about childbirth and place of birth because of their different cultural backgrounds.

We chose to include only nulliparous women to avoid the influence of previous birth experiences, so it is not possible to generalize the results to multiparous women. It would certainly be interesting to explore the preferences and attitudes of multiparous women regarding place of birth, but that was outside the aim of our study.

The Netherlands is one of the few places in the Western world where home and hospital births are both seen as a normal place to give birth and where both options are realistically accessible. This makes it an ideal and unique environment to conduct such a study. A major strength of our study is that we included healthy women with a straightforward pregnancy in midwife-led care and in obstetrician-led care. The inclusion period for women in obstetrician-led care was much longer than expected, a likely indication that obstetrician-led care for healthy women is still uncommon in the Netherlands.

CONCLUSION AND IMPLICATIONS FOR PRACTICE AND EDUCATION

Given what we and others have learned regarding birth outcomes in relation to place of birth – that compared to home birth, hospital birth is no safer or more dangerous for babies – there appears to be no reason to restrict women’s birth place choices. However, it must be noted that healthy women giving birth in the hospital will have more interventions and morbidity. Women need to be fully informed before making a choice of birth setting, a position that is endorsed by the recently published standard *Integrale Geboortezorg* [Integrated Maternity Care].¹ In this context, we need to ask ourselves if it is useful to keep thinking in different paradigms, like the social or the medical paradigm. When we can combine elements of all paradigms, as opposed to solely embracing one and rejecting the other, we have a unique opportunity to create an effective, integrated maternity care system that respects each individual woman.^{66,67} The place a woman chooses to give birth reflects a combination of personal characteristics, beliefs, preferences, expectations, and social factors. Generally, Dutch women still see birth as a normal, physiological process and they value the ability to make their own choice regarding birth setting positively. It is part of ‘good’ maternity care that a woman is encouraged to examine her own assumptions and beliefs about childbirth and place of birth. Together with a midwife who provides her with up-to-date and complete information, offers her a realistic strategy for achieving her desired pregnancy and birth, and respects her choice, she will be empowered to choose a setting that will be most supportive and comfortable to her. In this, midwives need to strengthen their role in promoting trust in normal birth, while balancing the demands of risk management with the principle of woman-centred care. In order to realize ‘good’ maternity care, new competencies are needed from midwives including a deeper understanding of normality, pain, safety, risk, and the complex relation between these elements. Midwives must also be prepared to take into account a wide variety of attitudes among women when discussing pregnancy and childbirth. The development of these competencies must begin during midwifery education. The demands on modern midwives are evolving constantly and they now face more complex and wide-ranging challenges than ever before. Women’s birthing choices are more diverse and this is placing greater demands on what a midwife needs to know and be prepared for. We need to make sure that the midwives of the future are ready for the challenges ahead of them to create a strong, future-proof midwifery.

RECOMMENDATIONS FOR FUTURE RESEARCH

Future research on this topic must recognize the variety of childbearing women in the Netherlands by including women with a non-Dutch background. In addition, it is important to explore the preferences and attitudes of multiparous women regarding place of birth, where other factors, such as personal experience, also play a part. We must also identify what women need to make good decisions about place of birth in order to optimize the likelihood of a positive birth experience. This means that more and continuous research is needed on women's cognitions about pain, safety, and risk and how these cognitions are affected by the experiences and social location of women.

In the light of the changing culture around childbirth in the Netherlands, including the development of other models of maternity care and the shift in place of birth, it is also important to learn more about the attitudes of the different maternity care providers regarding childbirth and place of birth.

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Summary | Samenvatting

SUMMARY OF THIS THESIS

Chapter 1

This chapter describes the background, rationale and aim of this thesis.

Place of birth is an important factor in the way a woman experiences her childbirth. It is known that women's birth place choices are influenced by their childbirth beliefs, motivated by their ideas regarding the competence of the body to perform birth, the need to control birth, and the desire to ensure the safety of the child. Studies on women's preferences, expectations and experiences regarding place of birth have often been conducted in countries with maternity care systems where home birth is not mainstream and is not widely and easily available. In the Netherlands, where all options for place of birth are more or less realistically accessible, women's preferences are likely driven by other factors. As part of the move toward 'women-centred care', women's preferences with regard to maternity services have become increasingly important to policy makers. To realize optimal women-centred care, knowledge of women's preferences is essential.

The aim of this thesis was to gain more insight into women's motives, preferences, expectations, and experiences regarding place of birth in the Netherlands, and to examine the influence of these on outcomes of care. The research focused on healthy nulliparous women with straightforward pregnancies.

Chapter 2

In this study we explored the characteristics and motives of women that play a part in their preference for a place of birth. As part of a prospective cohort study, we collected data using self-administered questionnaires among 550 healthy nulliparous women with a preference for a midwife-led home or hospital birth or an obstetrician-led hospital birth. We found significant differences in demographic, psychosocial and pregnancy-related characteristics between women who preferred obstetrician-led care and women who preferred midwife-led care. We observed no significant differences between women with a preference for a home birth and a midwife-led hospital birth. Women with a preference for a birth in obstetrician-led care were older, had a higher family income, were more frequently pregnancy after assisted reproduction and had a higher rate of previous miscarriage. They also differed on some psychological aspects: more women in obstetrician-led care had symptoms of a major depressive disorder and were worried about health issues. Women's choice for a home birth was driven by a desire for greater personal autonomy, whereas women's choice for a hospital birth was driven by a desire to feel safe and control risks.

The preference for a hospital birth was largely motivated by fear of something going wrong and it appeared that for these women, the assumed safety of the hospital setting was more important than type of care provider. This brings up the question whether women are fully aware of the possibilities of maternity care services. Women might need concrete information about the availability and the characteristics of the services within the maternity care system and the risks and benefits associated with either setting, in order to make an informed choice where to give birth.

Chapter 3

This chapter describes the results of a discrete choice experiment (DCE) at 16 weeks of gestation. We conducted this study to assess the strength and relative importance of women's preferences for different aspects of intrapartum care with regard to their preferred place of birth. We analysed the responses per intended place of birth of 562 questionnaires, with a total of 4,441 choice observations. An advantage of the DCE was, that it not only indicated which attributes of care were considered important, but it also provided information about the relative importance or value attached to the different attributes of intrapartum care. Place of birth was one of the most important aspects for women in our study. In addition, women in *all* groups preferred the possibility of influencing decision making and pain-relief treatment during birth (including women with an intended home birth) and no co-payment for childbirth. Women with an intended home birth preferred a home-like birth setting with the assistance of a midwife and transport during birth in case of complications. Type of birth setting and transport during birth were not considered important to women with an intended midwife- or obstetrician-led hospital birth.

Policies aimed at the improvement of maternity care must take into account that all women would benefit from a high level of involvement in decision making and should include efforts to explore options of pain-relief treatment in all settings of maternity care, including home birth. Furthermore, place of birth is one of the most important aspects of intrapartum care for all women; therefore it is not advisable to restrict women's birth place choices. The Dutch situation shows that freedom of choice about place of birth and caregiver stimulates women to be active in decisions about how and where they will give birth. The preferences of Dutch women range across the possibilities offered by the system. In other maternity care systems in the developed world, few women prefer a birth outside the hospital. Those who wish to promote less medical approaches to childbirth must consider how to counter the culturally embedded nature of women's preferences.

Chapter 4

This chapter presents the results of a prospective study on pregnancy and birth outcomes in relation to women's initial preferred place of birth at the beginning of pregnancy. We compared medical indications during pregnancy, and birth outcomes of 576 women who were healthy and had a normal pregnancy at the start of their care. Data were obtained by a questionnaire before 20 weeks of gestation and by medical records of both midwives and obstetricians. Analyses were performed according to the initial preferred place of birth instead of the actual place of birth. Healthy nulliparous women who preferred a home birth with midwife-led care were less likely to be diagnosed with a medical indication during pregnancy compared to healthy women who preferred a birth with obstetrician-led care. Preferring a birth with midwife-led care – both at home and in hospital – was associated with lower odds of induced labour and epidural analgesia. In addition, women who preferred a home birth were less likely to experience augmentation of labour and narcotic analgesia compared to women who preferred a birth with obstetrician-led care. We observed no significant association between preferred place of birth and mode of birth in this study.

Our study demonstrated significant differences in the course of pregnancy and labour in relation to the preferred place of birth, as showed by the fewest number of diagnosed medical indications during pregnancy and the fewest intrapartum interventions among women who preferred a home birth. Although some differences can be attributed to the model of care, we suggest that characteristics and attitudes of women also play an important role.

Chapter 5

In the study described in this chapter, we examined the relationship between birth place preference and expectations and experiences regarding duration of labour and labour pain in healthy nulliparous women. For this prospective study we collected data using three questionnaires (before 20 weeks gestation, 32 weeks gestation and 6 weeks postpartum) and medical records. Analyses were performed according to the initial preferred place of birth. We found that, compared to women who preferred a birth with obstetrician-led care, women who preferred a home birth were significantly less likely to be worried about the duration of labour and coping with pain, and they less often experienced their labour pain as unpleasant. These findings suggest a more natural orientation toward birth with the acceptance of labour pain as part of giving birth in women with a preference for a home birth. On the other hand, women who preferred a midwife-led birth – *either home or hospital* – were more likely to report that it was

not possible to make their own choices regarding pain relief and women who preferred a home birth were less satisfied about the management of pain relief.

When caregivers know what women expect from their upcoming birth, they will be better equipped to prepare women for childbirth and to help them to set realistic expectations. This knowledge can also be used to help women choose a setting for birth that fits their cognitive frame, increasing their chance of a positive birth experience.

Chapter 6

In this study we used a qualitative descriptive design to gain a further understanding of how women's cognitions about birth influence their choice of birth place. We interviewed 23 healthy nulliparous women with straightforward pregnancies in their third trimester of pregnancy. Using a modified form of framework analysis we identified three main themes: (i) beliefs – conceptions about birth, risk and care; (ii) expectations – approaching the unknown; and (iii) choice – preference not demand. Women based their decisions for place of birth primarily on aspects of safety, but women vary in their perceptions of safety. Women who chose hospital birth wanted to be safe, while women who chose home birth wanted to feel safe. In general, women had low expectations of birth, resulting in a 'take it as it comes' attitude. This pragmatic approach can be an ideal strategy for facing something unfamiliar: being flexible and adaptable in changing circumstances. But it may also relate to unfulfilled desires and negative experiences. Birth place preferences were not always viewed from a strictly binary perspective – with a polarization between a home or hospital birth –, but rather were seen as a continuum between home and hospital, making permeable the boundary between a preference for a home or hospital birth. Our findings underscore the importance of talking with women about their expectations and paying attention to women's knowledge about childbirth. Providing up-to-date information will empower women to make realistic, informed and well-considered choices.

Chapter 7

In this chapter we discuss the main findings of this thesis and the implications for maternity care practice. To reduce the outcomes of this thesis to a simple 'home or hospital birth?' ignores the many different factors that shape the experience of birth. A critical analysis for 'good' maternity care and childbirth requires a tolerance of complexity and an ability to think beyond simplistic dichotomies. We need to ask ourselves if it is useful to keep thinking in different paradigms, like the social or the medical paradigm. When we can combine

elements of all paradigms, we have a unique opportunity to create an effective, integrated maternity care system that respects each individual woman. The place of birth a woman chooses to give birth reflects a combination of personal characteristics, beliefs, preferences, expectations, and social factors. Generally, Dutch women still see birth as a normal, physiological process and they value the ability to make their own choice regarding birth setting positively. Given what we and others have learned regarding birth outcomes in relation to place of birth, there appears to be no reason to restrict women's birth place choices. It is part of 'good' maternity care that a woman is encouraged to examine her own assumptions and beliefs about childbirth and place of birth. Together with a midwife who provides her with up-to-date and complete information, offers her a realistic strategy for achieving her desired pregnancy and birth, and respects her choice, she will be empowered to choose a setting that will be most supportive and comfortable to her. In this, midwives need to strengthen their role in promoting trust in normal birth, while balancing the demands of risk management with the principle of woman-centred care. The development of these competencies must begin during midwifery education. Women's birthing choices are more diverse and this is placing greater demands on what a midwife needs to know and be prepared for. We need to make sure that the midwives of the future are ready for the challenges ahead of them to create a strong, future-proof midwifery.

Further research is needed to identify what women need to make good decisions about place of birth in order to optimize the likelihood of a positive birth experience. This means that more and continuous research is needed on women's cognitions about pain, safety, and risk and how these cognitions are affected by the experiences and social location of women.

SAMENVATTING VAN DIT PROEFSCHRIFT

Hoofdstuk 1

Dit hoofdstuk beschrijft de aanleiding en het doel van dit proefschrift.

De plaats van de bevalling speelt een belangrijke rol in hoe vrouwen hun bevalling ervaren. De keuze voor een plaats wordt mede beïnvloed door de opvattingen en denkbepelden die vrouwen hebben ten aanzien van de bevalling. De mate waarin vrouwen vertrouwen hebben in hun eigen lichaam om te baren, de ideeën die zij hebben ten aanzien van het hebben van controle over de bevalling en de wens voor een goede uitkomst voor hun kind dragen hier aan bij. Eerdere studies over voorkeuren, verwachtingen en ervaringen met betrekking tot de plaats van de bevalling zijn vaak uitgevoerd in landen waar een ziekenhuisbevalling de norm is en waar de mogelijkheid van een thuisbevalling beperkt of moeilijk te realiseren is. In Nederland spelen bij de voorkeur voor een bepaalde plaats van de bevalling mogelijk andere factoren een rol, omdat zowel een thuis- als een ziekenhuisbevalling een geaccepteerde en toegankelijke optie is. In het kader van de ontwikkelingen op het gebied van cliëntgerichte zorg wordt het voor zorgprofessionals en beleidsmakers steeds belangrijker om inzicht te hebben in de voorkeuren en keuzes van vrouwen. Anders gezegd: om optimale zorg te leveren, waarbij de vrouw daadwerkelijk centraal staat, is het essentieel om inzicht te hebben in de voorkeuren van vrouwen.

Het doel van dit proefschrift was om meer inzicht te krijgen in de keuzes die vrouwen maken ten aanzien van de plaats van de bevalling in Nederland en welke voorkeuren, verwachtingen en ervaringen hierbij een rol spelen. Het onderzoek richtte zich op gezonde nulliparae met een normaal verlopende zwangerschap.

Hoofdstuk 2

In deze studie hebben we onderzocht welke karakteristieken en beweegredenen een rol spelen bij de voorkeur van vrouwen voor de plaats van de bevalling. De studie was onderdeel van een prospectieve cohortstudie. Voor de dataverzameling hebben we gebruik gemaakt van vragenlijsten die door 550 gezonde nulliparae werden ingevuld. De onderzoeksgroep bestond uit vrouwen die een voorkeur hadden voor een thuisbevalling, een poliklinische bevalling onder leiding van een eerstelijns verloskundige of een klinische bevalling in de tweede lijn onder leiding van een klinisch verloskundige of gynaecoloog. Vrouwen die bij aanvang van de studie onder controle waren in de tweede lijn hadden hiervoor geen officiële medische indicatie. We vonden significante verschillen in demografische, psychosociale en zwangerschapsgerelateerde karakteristieken tussen vrouwen met een voorkeur voor eerstelijns zorg – met een voorkeur voor

een thuis- of poliklinische bevalling – en vrouwen met een voorkeur voor tweede-lijns zorg. Vrouwen met een voorkeur voor de tweede lijn hadden gemiddeld een hogere leeftijd, een hoger inkomen, waren vaker zwanger na een fertiliteitstraject en hadden vaker een miskraam in de voorgeschiedenis. Daarnaast vertoonden deze vrouwen vaker symptomen van een depressie en maakten zij zich meer zorgen om gezondheidsgerelateerde problemen. We zagen geen verschil in karakteristieken tussen vrouwen met een voorkeur voor een thuisbevalling of een eerstelijns poliklinische bevalling.

De wens om zelf de regie te behouden tijdens de bevalling was de voornaamste reden om voor een thuisbevalling te kiezen. Vrouwen die voor een ziekenhuisbevalling kozen, deden dit vooral uit een gevoel van veiligheid en – externe – controle.

De voorkeur voor een ziekenhuisbevalling werd voornamelijk ingegeven door de angst dat er iets mis zou gaan tijdens de bevalling. Voor deze vrouwen was de veronderstelde veilige omgeving van het ziekenhuis belangrijker dan de uiteindelijk zorgprofessional die hen zou begeleiden. Dit roept de vraag op of vrouwen wel voldoende op de hoogte zijn van de mogelijkheden die het verloskundige systeem in Nederland biedt en wat bijvoorbeeld de verschillen zijn tussen een poliklinische of klinische bevalling. Meer concrete informatie over de mogelijkheden binnen het systeem, met voor- en nadelen van de verschillende settings, zou kunnen bijdragen aan een beter geïnformeerde keuze van vrouwen voor de plaats van de bevalling.

Hoofdstuk 3

Dit hoofdstuk beschrijft de resultaten van een *discrete choice experiment* (DCE), uitgevoerd bij 16 weken zwangerschap. Dit experiment stelde ons in staat om te meten voor welke specifieke aspecten of kenmerken van natale zorg vrouwen een voorkeur hebben en hoe belangrijk vrouwen deze specifieke kenmerken ten opzichte van elkaar vinden (relatieve belang). Hierbij vergeleken we drie groepen: vrouwen met een voorkeur voor een thuisbevalling, vrouwen met een voorkeur voor een poliklinische bevalling onder leiding van een eerstelijns verloskundige en vrouwen met een voorkeur voor een klinische bevalling in de tweede lijn onder leiding van een klinisch verloskundige of gynaecoloog. Voor de analyse gebruikten we 562 vragenlijsten wat een totaal van 4.441 keuzeopties binnen het *discrete choice experiment* opleverde. De daadwerkelijke plaats van de bevalling was voor de vrouwen in onze studie één van de belangrijkste aspecten. Daarnaast vonden vrouwen in alle groepen het belangrijk om invloed te kunnen hebben op beslissingen tijdens de bevalling, geen eigen bijdrage te hoeven betalen en een mogelijkheid voor pijnbestrijding te hebben. Dit gold ook voor vrouwen met een voorgenomen thuisbevalling. Vrouwen die een voorkeur

hadden voor een thuisbevalling vonden het belangrijk om een huiselijke omgeving te hebben met een verloskundige als zorgprofessional en de mogelijkheid van een transfer tijdens de bevalling in het geval van complicaties. Vrouwen met een voorkeur voor een ziekenhuisbevalling – zowel poliklinisch als klinisch – vonden de bevallingsomgeving (huiselijk of klinisch) en de mogelijkheid van een transfer tijdens de bevalling niet belangrijk.

Bij het ontwikkelen van beleid gericht op het verbeteren van de geboortezorg moet rekening gehouden worden met het feit dat vrouwen er baat bij hebben om betrokken te worden bij besluitvorming rondom hun bevalling. Ook zouden (nieuwe) mogelijkheden van pijnbestrijding binnen alle settings onderzocht kunnen worden. Hierbij valt bijvoorbeeld te denken aan het toedienen van lachgas bij een thuisbevalling, zoals mogelijk is bij thuisbevallingen in het Verenigd Koninkrijk. De plaats van de bevalling bleek één van de meest belangrijke aspecten van natale zorg voor alle vrouwen en dit pleit voor het behoud van keuzevrijheid voor de plaats van de bevalling.

De resultaten binnen het Nederlandse verloskundige systeem laten zien dat vrijheid van keuze voor plaats van bevalling en zorgprofessional maakt dat vrouwen actief een keuze maken over waar en hoe zij willen bevallen. De voorkeuren van vrouwen weerspiegelen hierbij de mogelijkheden die er zijn binnen het systeem. In verloskundige systemen buiten Nederland kiezen vrouwen minder vaak voor een bevalling buiten het ziekenhuis, omdat deze keuze minder geaccepteerd is. Degenen die een minder gemedicaliseerde benadering van zwangerschap en geboorte willen bevorderen, moeten rekening houden met de wijze waarop de voorkeuren van vrouwen maatschappelijk en cultureel bepaald zijn.

Hoofdstuk 4

Dit hoofdstuk beschrijft de resultaten van een prospectieve studie waarin we onderzochten wat de invloed was van de voorgenomen plaats van de bevalling op het verloop van de zwangerschap en de bevalling. In deze studie vergeleken we de zwangerschaps- en bevallingsuitkomsten van 576 gezonde, nullipare zwangere vrouwen die vóór 20 weken zwangerschap de voorkeur gaven aan een bevalling thuis, poliklinisch of klinisch. Voor de dataverzameling maakten we gebruik van vragenlijsten en van de medische dossiers van de betrokken verloskundigen en gynaecologen. De analyses werden uitgevoerd op basis van de voorgenomen plaats van de bevalling aan het begin van de zwangerschap. Vrouwen onder zorg in de eerste lijn en met een voorkeur voor een thuisbevalling, bleken significant minder vaak een medische indicatie tijdens de zwangerschap te krijgen dan vrouwen met een voorkeur voor een klinische bevalling in de tweede lijn. Vrouwen met een voorkeur voor eerstelijns zorg (thuis en poli- klinisch) werden minder vaak ingeleid en kregen minder vaak een epiduraal tijdens de bevalling.

Daarnaast kregen vrouwen met een voorkeur voor een thuisbevalling minder vaak bijstimulatie en medicamenteuze pijnbestrijding tijdens de bevalling dan vrouwen met een voorkeur voor een klinische bevalling. Wij vonden geen significante associatie tussen de voorgenomen plaats van de bevalling en de wijze van bevallen (spontaan, kunstverlossing, of sectio).

Onze studie toonde verschillen aan in het verloop van de zwangerschap en bevalling in relatie tot de voorgenomen plaats van de bevalling. Hierbij hadden vrouwen met een voorkeur voor een thuisbevalling het laagste aantal medische indicaties en interventies tijdens zwangerschap en baring. Hoewel een deel van de gevonden verschillen toegeschreven kan worden aan de setting en de betrokken zorgprofessionals, suggereren we dat karakteristieken en attitudes van vrouwen zelf ook een belangrijke rol spelen.

Hoofdstuk 5

In deze studie onderzochten we de relatie tussen de voorgenomen plaats van de bevalling en de verwachtingen en ervaringen van gezonde, nullipare zwangere vrouwen ten aanzien van de duur van de bevalling en bevallingspijn. Dataverzameling vond plaats door middel van 3 vragenlijsten (20 en 32 weken zwangerschap en 6 weken post partum) en de medische dossiers. De analyses werden uitgevoerd op basis van de voorgenomen plaats van de bevalling aan het begin van de zwangerschap. Vergeleken met vrouwen die een voorkeur hadden voor een klinische baring in de tweede lijn, maakten vrouwen met een voorkeur voor een thuisbevalling zich tijdens de zwangerschap minder vaak zorgen over de duur van de bevalling en hoe zij om zouden gaan met bevallingspijn. Daarnaast hadden vrouwen met een voorkeur voor een thuisbevalling de bevallingspijn minder vaak als 'vervelend' ervaren. Deze uitkomsten suggereren dat vrouwen met een voorkeur voor een thuisbevalling een meer natuurlijke benadering hebben van zwangerschap en geboorte waarbij bevallingspijn meer geaccepteerd wordt als iets wat erbij hoort. Aan de andere kant gaven vrouwen met een voorkeur voor een bevalling in de eerste lijn – zowel thuis als poliklinisch – vaker aan dat het niet of nauwelijks mogelijk was om hun eigen keuzes te maken ten aanzien van pijnbestrijding tijdens de bevalling. Vrouwen met een voorkeur voor een thuisbevalling bleken daarnaast het minst tevreden over de zorg rondom pijnbestrijding.

Wanneer een zorgprofessional goed op de hoogte is van wat een vrouw verwacht van haar bevalling zal hij of zij beter in staat zijn om de vrouw te ondersteunen in haar voorbereidingen en te komen tot meer realistische verwachtingen. Hierdoor wordt een vrouw in staat gesteld om een goede keuze voor een plaats van de bevalling te maken die past bij haar denkbeelden, met een grotere kans op een positieve bevallingservaring.

Hoofdstuk 6

In deze studie hebben we een kwalitatief onderzoek uitgevoerd om meer inzicht te krijgen in de denkbeelden en opvattingen van vrouwen over zwangerschap en bevalling en op welke manier dit van invloed is op hun keuze voor de plaats van de bevalling. We interviewden 23 gezonde, nullipare zwangeren vrouwen in het derde trimester van de zwangerschap. Voor de data-analyse maakten wij gebruik van een aangepaste vorm van thematische analyse (*modified form of framework analysis*) waarbij we 3 hoofdthema's identificeerden: (i) overtuigingen – opvattingen over geboorte, risico en zorg; (ii) verwachtingen – het aangaan van het onbekende; (iii) keuze – voorkeur, niet een eis.

De keuze voor de plaats van de bevalling werd vooral ingegeven door aspecten van veiligheid, maar vrouwen verschilden in hun perceptie hiervan. Vrouwen die voor een ziekenhuisbevalling kozen wilden vooral in een veilige omgeving zijn; vrouwen die voor een thuisbevalling kozen gaven aan zich thuis veiliger te voelen. Over het algemeen hadden vrouwen weinig verwachtingen ten aanzien van de bevalling: ze lieten het over zich heen komen en zagen wel wat er zou gaan gebeuren. Deze pragmatische houding kan een ideale strategie zijn om om te kunnen gaan met een onbekende situatie: flexibel zijn en je makkelijk aan kunnen passen in wisselende omstandigheden. Maar het zou ook kunnen leiden tot onvervulde wensen en negatieve ervaringen wanneer vrouwen zich te zeer laten leiden door wat er op dat moment gebeurt. De keuze voor een plaats van de bevalling werd niet altijd gezien als een dichotome keuze – met een polarisatie tussen een thuis- of ziekenhuisbevalling –, maar meer vanuit een continuüm. Vrouwen noemden vaak persoonlijke voor- en nadelen van beide locaties.

Onze bevindingen ondersteunen het belang om in gesprek te gaan met vrouwen over hun kennis en verwachtingen ten aanzien van de bevalling. Dit gaat verder dan alleen te vragen naar de voorkeur of de gemaakte keuze. Realistische, up-to-date informatie zal vrouwen beter in staat stellen om een goed geïnformeerde en weloverwogen keuze te maken die bij hen past.

Hoofdstuk 7

In dit hoofdstuk bespreken we de hoofdbevindingen van dit proefschrift en de implicaties voor de verloskundige praktijk. Om de uitkomsten van dit proefschrift te reduceren tot een simpel 'thuis of ziekenhuis?' gaat voorbij aan de complexiteit van het onderwerp en de vele factoren die een rol spelen bij hoe keuzes en bevallingservaringen tot stand komen. Een kritische analyse van 'goede' geboortezorg en een 'goede' bevalling betekent dat we voorbij simpele dichotomieën moeten kijken. We moeten onszelf hierbij de vraag stellen of het zinvol is om te blijven denken in verschillende paradigma's, zoals het sociale of het biomedische paradigma. Als we waardevolle elementen van alle paradigma's

zouden kunnen combineren, hebben we de unieke kans om een effectief, integraal verloskundig zorgsysteem te creëren met respect voor iedere zwangere vrouw. De gekozen plaats van de bevalling weerspiegelt een combinatie van persoonlijke karakteristieken, opvattingen, voorkeuren, verwachtingen en sociale factoren. Over het algemeen zien Nederlandse vrouwen de bevalling nog steeds als een normaal, fysiologisch proces en hechten ze belang aan de mogelijkheid om zelf een keuze te kunnen maken voor de plaats van de bevalling. Gegeven wat er bekend is uit andere studies en onze resultaten ten aanzien van bevallingsuitkomsten in relatie tot de plaats van de bevalling, is er geen reden om de vrije keuze voor de plaats van de bevalling te beperken. Goede geboortezorg betekent dat een vrouw wordt aangemoedigd om haar ideeën en opvattingen over zwangerschap en bevalling te verkennen. Samen met een verloskundige die haar voorziet van goede informatie en die haar respecteert in haar keuze, zal een vrouw in staat gesteld worden om een setting te kiezen die het beste bij haar past. Verloskundigen zouden hierbij moeten streven naar het bevorderen van het vertrouwen in een normale, fysiologische bevalling en daarbij een balans zien te vinden tussen risicomangement en de principes van cliëntgerichte zorg (de zwangere centraal). Met de ontwikkeling van deze competenties zou al begonnen moeten worden tijdens de opleiding voor verloskundigen. De keuzes die vrouwen moeten maken tijdens hun zwangerschap of bevalling worden steeds complexer en verloskundigen moeten hier de benodigde kennis, het inzicht en de vaardigheden voor hebben. We moeten ervoor zorgen dat de verloskundigen van de toekomst klaar zijn om deze uitdagingen aan te gaan zodat ze bij kunnen dragen aan een toekomstbestendige verloskundige zorg: *creating the future of midwifery*.

Verder onderzoek is nodig om meer inzicht te krijgen in wat vrouwen nodig hebben om een goede keuze te kunnen maken voor de plaats van de bevalling en zo de kans op een positieve bevallingservaring te vergroten. Dit betekent dat er behoefte is aan meer onderzoek naar de cognities van vrouwen ten aanzien van pijn, veiligheid, risico en risicoperceptie en hoe deze cognities worden beïnvloed door ervaringen als ook de sociale positie van vrouwen.



Valorisation

VALORISATION

The findings of our research have important implications for improving the care given to mothers and their babies. Our research has contributed new knowledge regarding the preferences of expectant mothers and their partners, the outcomes of care in different settings and their expectations and beliefs about birth, all of which can be used to create policies that will promote better, more satisfying care during pregnancy, birth and postpartum.

RELEVANCE

The current Dutch maternity care service is changing. From a clear and rational division in maternity care between midwife-led care for healthy women with straightforward pregnancies and obstetrician-led care for women with a medical or obstetrical complication we are moving towards a system of integrated maternity care. The aim of this change – promoted by the Dutch government – is to improve the quality of care for mothers and babies by stimulating a better collaboration and communication between the professionals involved in maternal and perinatal care *and* between the health care providers and pregnant women. The goal is high-quality maternity care at acceptable costs that meets the individual health care needs of each woman.

Woman-centred care focuses on the woman's unique needs, expectations and aspirations; recognises her right to self-determination in terms of choice and control, and addresses her social, emotional, physical, psychological, spiritual, and cultural needs and expectations.¹ This view of integrated maternity care, emphasizes the value of shared-decision making, involving women's preferences. Looking at place of birth as one of the choices, previous Dutch studies focused primarily on the outcomes of care. In other words: what is the best place to give birth in terms of outcomes of care? Although important, it takes no notice of women's thoughts and motives about what they perceive as the best place to give birth. As numbers are changing – with a decrease in the number of home births and an increase in hospital births – it is essential to gain deeper knowledge about women's birth place preferences. Place of birth or birth setting is an important factor in the way a woman and her partner experience childbirth. Previous research suggests that planning a birth in midwife-led care or at home contributes to a positive birth experience.²⁻⁵ The outcomes of this thesis contribute to the body of knowledge about women's birth place preferences, providing the information necessary to provide compassionate care that fits with the individual needs and preferences of each woman.

TARGET GROUPS

Our research focused primarily on healthy women with a straightforward pregnancy, which means our results are mainly of interest to midwives who provide care to women who are able to choose their place of birth. However, in the context of the current developments in maternity care, the results are important for *all* professionals including policy makers. There is no such thing as *'the woman who gives birth at home'* or *'the low-risk woman'*. We need to free ourselves from thinking in different paradigms and dichotomies, and combine elements of all paradigms. If we are able to do this, we will have the unique opportunity to create an effective, integrated maternity care system that respects each individual woman.

The place a woman chooses to give birth reflects a combination of personal characteristics, beliefs, preferences, expectations, and social factors. It is part of 'good' maternity care that a woman is encouraged to examine her own assumptions and beliefs about childbirth and place of birth. Working together with a health care provider who provides her with up-to-date information, offers her a realistic strategy for achieving her desired pregnancy and birth, and respects her choice, she will be empowered to choose a setting that will be most comfortable to her. Decision aids are an important support for shared decision making and the results of this thesis can be used to develop a decision tool about place of birth or birth setting that includes information about birth outcomes and the role of women's preferences and expectations. Our study is especially useful for the education of student midwives. Women's birthing choices are more becoming more diverse and this is placing greater demands on what a midwife needs to know and be prepared for. The development of these competencies must begin during midwifery education. In order to create a strong, future-proof midwifery we need to make sure that tomorrow's midwives are ready for the challenges ahead of them.

Our results show that freedom of choice about place of birth and birth setting stimulates women to be active in decisions about how and where they will give birth. The preferences of Dutch women range across the possibilities offered by the system. In other maternity care systems in the developed world, few women prefer a birth outside the hospital. Those who wish to promote freedom of choice for place of birth must consider how to counter the culturally embedded nature of women's preferences. The Dutch maternity system is often referred to as a birth model that works,⁶ especially from the point of view of promoting physiological birth. However, the social and cultural context of the Netherlands

is changing. We are facing a declining rate of home birth and higher rates of interventions compared to comparable other midwifery-led care settings – the UK, for example – we should not hesitate to look beyond our borders to learn from each other.⁷

INNOVATIVE CHARACTER OF THE STUDY

Most studies of place of birth used either *planned* place of birth at the onset of labour or the *actual* place of birth. We chose to use the *preferred* place of birth during pregnancy which allowed us to gain more insight into how women's characteristics and preferences influenced their choices and their birth outcomes. In addition, many studies regarding place of birth have been conducted in countries with maternity care systems where home birth is not mainstream and is not widely and easily available. It seems likely that women preferring a home birth in those countries belong to a select and highly motivated group. Our study is done in the context of the Dutch maternity care system, where home and hospital birth are both seen as a normal place to give birth. This makes it an ideal and unique environment to conduct such a study.

We limited our study population not only to women in midwife-led care, but we also included healthy women with a straightforward pregnancy who preferred to give birth with obstetrician-led care. This gave us a broader perspective from which to examine women's birth place preferences. To explore the topic at different levels we applied multiple research methods. We used a qualitative study to assist in explaining and interpreting the findings of our quantitative data and we conducted a discrete choice experiment that gave us information about the importance of women's preferences.

ACTIVITIES

We disseminated the knowledge we had gathered by presenting our findings – including oral and poster presentations – at a variety of national and international conferences. We reached a multidisciplinary audience of professionals involved in maternity care and education. Four of the five studies of this thesis are published in peer reviewed scientific journals and available for an (inter)national audience. The fifth study has been submitted to an international journal. Details of our activities are listed below.

POSTER PRESENTATIONS

Van Haaren – ten Haken TM, Hendrix MJC, Nieuwenhuijze MJ, Budé L, de Vries RG, Nijhuis JG. Preferred place of birth: characteristics and motives of low-risk nulliparous women in the Netherlands. Conferentie Kennispoort Verloskunde, Utrecht, February 2012.

Van Haaren – ten Haken TM, Hendrix MJC, Nieuwenhuijze MJ, Budé L, de Vries RG, Nijhuis JG. Preferred place of birth: characteristics and motives of low-risk nulliparous women in the Netherlands. Congres 'De toekomst van de thuisbevalling in Nederland', Maastricht, September 2012.

Van Haaren – ten Haken TM, Pavlova M, Hendrix MJC, Nieuwenhuijze MJ, de Vries RG, Nijhuis JG. Eliciting preferences for key attributes of intrapartum care in the Netherlands. 1st European Congress on Intrapartum Care, Amsterdam, May 2013.

ORAL PRESENTATIONS

Van Haaren – ten Haken TM, Hendrix MJC, Nieuwenhuijze MJ, de Vries RG, Nijhuis JG. Home or hospital birth for low-risk nulliparae: does it matter? Normal Labour and Birth: 6th Research Conference, Grange-over-Sands, UK, June 2011.

Van Haaren – ten Haken TM, Pavlova M, Hendrix MJC, Nieuwenhuijze MJ, de Vries RG, Nijhuis JG. Eliciting preferences for key attributes of intrapartum care in the Netherlands. 13th Annual Interdisciplinary Research Conference, Dublin, Ireland, November 2012.

Van Haaren – ten Haken TM, Pavlova M, Hendrix MJC, Nieuwenhuijze MJ, de Vries RG, Nijhuis JG. Voorkeuren van zwangeren voor aspecten van intrapartum zorg. Conferentie Kennispoort Verloskunde, Utrecht, February 2014.

Van Haaren – ten Haken TM, Pavlova M, Hendrix MJC, Nieuwenhuijze MJ, de Vries RG, Nijhuis JG. Eliciting preferences for key attributes of intrapartum care in the Netherlands. 30th International Confederation of Midwives Triennial Congress, Prague, Czech Republic, June 2014.

Van Haaren – ten Haken TM, Hendrix MJC, Nijhuis JG, de Vries RG, Nieuwenhuijze MJ. Thuis of in het ziekenhuis? Een kwalitatieve studie naar de voorkeuren en

motivaties om thuis of in het ziekenhuis te bevallen. Conferentie Kennispoort Verloskunde, Utrecht, January 2016.

Van Haaren – ten Haken TM, Hendrix MJC, Nijhuis JG, de Vries RG, Nieuwenhuijze MJ. Why Home or hospital birth? A qualitative study exploring women’s motives and preferences about place of birth in the Netherlands. European Congress of Perinatal Medicine, Maastricht, June 2016.

Van Haaren – ten Haken TM & Offerhaus P. Thuis bevallen in Nederland. PAS festival, Maastricht, September 2017.

Van Haaren – ten Haken TM, Hendrix MJC, Nijhuis JG, de Vries RG, Nieuwenhuijze MJ. Home or hospital birth? Choosing place of birth in the Netherlands: a qualitative study on women’s beliefs, expectations and preferences. Normal Labour and Birth: 12th Research Conference, Grange-over-Sands, UK, October 2017.

Van Haaren – ten Haken TM & Offerhaus P. Thuis bevallen in Nederland. Gastcollege studievereniging M.S.V. Hera, Academie Verloskunde Maastricht, November 2017.

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Dankwoord

DANKWOORD

Beste lezer,

Het is voltooid! Dit proefschrift is na jaren van onderzoek, analyseren, schrijven en herschrijven, met bloed, zweet en tranen tot stand gekomen. Nu het klaar is realiseer ik mij dat promoveren niet alleen een proeve van bekwaamheid is, maar zeker ook een proeve van volharding. Dit proefschrift zou niet tot stand zijn gekomen zonder de hulp en de ondersteuning van vele anderen. Op deze plaats zou ik deze mensen dan ook willen bedanken voor hun hulp.

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Curriculum Vitae

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	RK basisschool St Ludgerus Loenen a/d Vecht	1980
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	Spreekbeurt 'biotechnologie', ATC, Hilversum	1991
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	Verhuizing naar de van Spilbergenstraat, Amsterdam	
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2000	Buitenland stage verloskunde Kenia	
	Winnaar Door Spronken prijs, afstudeerscriptie 'Is Shit Shit?' (meconiumhoudend vruchtwater) met Hilde Perdok	
	Waarnemend verloskundige, praktijk Hillegom	
	Verloskundige eerste lijn, Banne Buik, Amsterdam	2000-2002
2002	Verhuizing naar de Merelhof, Bussum	
	Verloskundige tweede lijn, Meander Medisch Centrum, Amersfoort	2002-2008
	Master of Science in Midwifery, Universiteit van Amsterdam	2002-2006
2003		
2004	Huwelijk met Emil van Haaren, theekoepel, Loenen a/d Vecht	
	Geboorte Thijs van Haaren, 3105 gram, geslaagde versie, niet vorderende uitdrijving, Ter Gooi ziekenhuis Blaricum	
	Begeleiden afstudeeropdrachten Academie Verloskunde Amsterdam	2004-2006
2005		
2006	Geboorte Nout van Haaren, 3240 gram, zeer snelle thuispartus, Bussum	
	Masterthesis 'Is de koek op?' Onderzoek naar inleiden bij 42 weken zwangerschap versus afwachten tot 43 weken	
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2008	Geboorte Karst van Haaren, 3750 gram, vlotte thuispartus, Bunde	
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	Module Systematic literature review, Health Science Research Master, Maastricht University	
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