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MODE OF DELIVERY

**DOES IT AFFECT CONTACT WITH THE NEWBORN CHILD,
FUTURE REPRODUCTION AND HEALTH-RELATED QUALITY
OF LIFE FIVE YEARS AFTER THE BIRTH OF THE FIRST
CHILD?**

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**Karolinska
Institutet**

Stockholm 2014

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ISBN 978-91-7549-448-7



**Karolinska
Institutet**

Institutionen för kliniska vetenskaper, Danderyds sjukhus

Mode of delivery – does it affect contact with the newborn child, future reproduction and health-related quality of life five years after the birth of the first child?

AKADEMISK AVHANDLING

som för avläggande av medicine doktorsexamen vid Karolinska Institutet offentligen försvaras i aulan, Danderyds sjukhus.

Fredagen den 14 februari 2014, kl 09.00

av

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Dedicated my mother and father,
Inga Ljungquist 1942-2005 and Per Klint 1942-1994.

“Birth is the sudden opening of a window,
through which you look out upon a stupendous
prospect. For what has happened? A miracle.
You have exchanged nothing for the possibility
of everything.”

~ William MacNeile Dixon

ABSTRACT

Background: major changes have occurred in Swedish maternity care since the early 20th century and is now characterized by an increased medicalisation. The incidence of caesarean section and instrumental vaginal births has risen substantially in Sweden the last decades, which means that fewer women give birth spontaneously. Both caesarean section and instrumental vaginal births are associated with adverse physical as well as physiological consequences for both mother and child. The overall aim of this thesis was to explore and describe the impact of mode of delivery and other aspects related to the birth of the first child.

Methods: three of studies were conducted using a prospective cohort design and one using a qualitative approach. A total of 551 healthy first-time mothers were enrolled in the cohort and divided into five different delivery groups; vaginal delivery, instrumental vaginal birth, caesarean section on maternal request, caesarean section on obstetrical indication and emergency caesarean section. A plurality of self-reported questionnaires were administered at five different time points; in late pregnancy, two days, three and nine months post partum as well as five years after inclusion in the cohort. One of the questionnaires answered by 510 mothers was analyzed in paper I. Follow-up studies were carried out five years after the first birth using questionnaires and were based on answers from 355 (Paper III) respectively 249 (Paper IV) women. Paper II was performed with semi-structured individual interviews with 12 primiparae women requesting a caesarean section in the absence of a medical indication. The women were interviewed between gestational week 26 and 36 weeks.

Results: the contact with the child and the relation to the partner was rated as positive on all occasions and there were no significant differences between the groups. Mothers with a vaginal delivery experienced breastfeeding less stressful than the mothers with a caesarean section. Three and nine months after delivery the mothers with a caesarean delivery on request reported more breastfeeding problems. Women requesting a caesarean section in their first pregnancy described a belief of always knowing that they would not give birth vaginally. A caesarean section was considered as a more controlled and safe way of giving birth. This was described as 'deeply rooted emotions' and reflected that this group of women's emotions towards birth goes beyond fear of childbirth. No differences were observed regarding mode of delivery, factors related to birth and having a second child. Nor was there an association between postnatal depression, fear of childbirth, a negative birth experience and self-estimated contact towards the child and subsequent reproduction. Planning a second child at nine months postpartum was most important in determining to have a second child. The overall health-related quality of life (HRQoL) was perceived to be good five years after the first birth. Suboptimal scores were obtained for the variables sleeping problems, emotional well-being negative effect and sexual functioning. Women having a vaginal birth, an instrumental vaginal delivery or women who underwent caesarean section on maternal request at birth of their first child were more likely to report better perceived HRQoL than women who had undergone an emergency caesarean section or caesarean section due to medical indication.

Conclusions and clinical implications: this thesis provides insights on how mode of delivery and aspects related to birth have different importance to women, depending on the context. Mode of delivery did matter in some respects, and in others it had no meaning. Taking these results into account may assist women and health professionals to better understand how childbirth and mode of delivery may be significant for women from various perspectives.

Keywords: mode of delivery, mother-infant, caesarean section on request, reproduction, birth experience, fear of childbirth, personality, quality of life, health-related quality of life.

LIST OF PUBLICATIONS

This thesis is based on the following four papers, which are referred to in the text by their Roman numerals:

- I. Carlander AK, Edman G, Christensson, K, Andolf E, Wiklund I. Contact between mother, child and partner and attitudes towards breastfeeding in relation to mode of delivery. *Sex Reprod Healthc.* 2010;1(1):27-34.
- II. Sahlin M, Carlander-Klint AK, Hildingsson I, Wiklund. First-time mothers' wish for a planned caesarean section: deeply rooted emotions. *Midwifery.* 2013;29(5):447-52.
- III. Klint Carlander AK, Andolf E, Edman G, Wiklund I. Impact of clinical factors and personality on the decision of having a second child. Longitudinal cohort-study of first-time mothers. *Acta Obstet Gynecol Scand.* 2013 Nov 22 oi: 10.1111/aogs.12306 [Epub ahead of print].
- IV. Klint Carlander AK, Andolf E, Edman G, Wiklund I. Health-related quality of life five years after birth of the first child. In manuscript.

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LIST OF ABBREVIATIONS

BMI	Body Mass Index
CS	Caesarean section
ECS	Emergency caesarean section
EDA	Epidural anaesthesia
EPDS	Edinburgh postnatal depression scale
HRQoL	Health-related quality of life
IVD	Instrumental vaginal delivery/birth
IVF	In vitro fertilisation
KSP	Karolinska scales of personality
OR	Odds ratio
SD	Standard deviation
SVD	Spontaneous vaginal delivery
SWED-QUAL	The Swedish health-related quality of life questionnaire
VAS	Visual analogue scale
VE	Vacuum extraction
W-DEQ	Wijma delivery expectancy/experience scale
WHO	World health organisation

LIST OF DEFINITIONS

Antenatal: the period before childbirth.

Caesarean section: the fetus is delivered by operative opening of the uterus.

Caesarean section due to medical/obstetric indication: refers to an elective birth performed one to two weeks before the fetus due date. In this thesis, the indication for caesarean section due to medical indication was breech presentations.

Caesarean section on maternal request: refers to an elective birth for a singleton pregnancy by maternal request at term, in the absence of any medical or obstetric indications.

Confounding: the confusing of mixing of effects.

Emergency caesarean section: is performed if a maternal or fetal complication occurs during pregnancy or labour.

Instrumental vaginal birth: the fetus is taken out with either vacuum extraction or using forceps. Vacuum extraction is used when shortening of the second stage of labour is necessary due to prolonged labour, suspected fetal distress or an exhausted mother. Vacuum extraction has almost completely replaced forceps for instrumental vaginal births in Sweden. In this thesis, the concepts of instrumental deliveries will therefore mainly refer to vacuum extraction.

Mode of delivery: there are several methods that are used for the actual birth; vaginal birth, caesarean section and instrumental vaginal birth. All these will be referred to throughout the thesis as *mode of delivery*.

Perinal lacerations definitions:

1st degree: involving clitoris, fourchette, hymen, labia, skin, vaginal mucosa

2nd degree: involving pelvic floor; vaginal muscle, perineal muscle

3rd degree: involving anal sphincter, recto-vaginal septum

4th degree: involving complete disruption of internal and external anal sphincter and mucosa

Postnatal: the first 28 completed days after the birth of the infant, referring to the infant.

Power calculation: a power calculation on the sample size is essential in order to maximize the chance of detecting statistically significant differences between the study groups when a difference really exists.

Primiparae: a first time mother.

Vaginal birth: a vaginal birth without operative assistance.

1 INTRODUCTION

Childbirth is a central event in life that raises most people's involvement and that most get to experience. Childbirth is also a time in women's lives filled with physical and emotional changes (1). The birth of the first child is a whole new experience for the woman and her partner and the first period with a newborn child may be experienced as both overwhelming and life changing. Becoming a parent for the first time can be seen as a transition from one living space to another and as a process filled with engagement and changes (2). The first steps into this world for new parents are partly supported by midwives.

The role of the midwife is to care for women and their families and it includes sexual and reproductive health care during the life cycle. Swedish midwives are acting within the public health care system and support during pregnancy, labour and birth as well as early parenthood including care of the newborn child (3). The aims of intrapartum care are a healthy mother and child and a positive birth experience for the woman, with least possible number of interventions that is compatible with safety (4).

The importance of interventions and childbirth outcome and the different ways it affects the woman has been debated in various contexts. Caesarean section and instrumental vaginal deliveries have become more common through the last decades in Sweden and constitute a large proportion of obstetric care. The number of caesarean section on maternal request has also increased, but is numerically only a small fraction of the total number of caesarean sections (5). The Swedish maternity care is medically safe and maternal and infant mortality is at a low level by international standards (6). The medical safety is high, but what aspects may influence a first-time mothers request for a caesarean section? Seen from different points of view, what other factors related to childbirth and mode of delivery may be of importance for the woman? This thesis intends to deepen the understanding and to give different perspectives on how mode of delivery and aspects related to the birth of the first child affect women in different ways, both in the long and short term perspective. This is knowledge that can provide midwives and physicians who meet childbearing women a greater understanding of important aspects related to the birth of the first child, and its impact for the woman and her child. Further, this understanding might fill a gap of knowledge in the debate on different modes of delivery and its importance for the women.

2 BACKGROUND

2.1 HISTORICAL PERSPECTIVES

2.1.1 Changing childbirth practices

Childbirth has evolved over time in parallel with society and medical developments within the health care system. Not long ago in Sweden, childbearing and childbirth was a serious threat to women and their health. Before the 20th century it was not certain that the woman would survive pregnancy and childbirth and mortality related to childbearing was the most common cause of death among women of reproductive age. Hemorrhage, eclampsia and sepsis were the most common causes of maternal mortality (7). In Sweden, there have been trained midwives since the 18th century who handled the maternity care and assisted at home deliveries. The access to trained midwives, as well as an introduction of antiseptic technique that was introduced in the middle of the 19th century successfully contributed to maternal mortality reduction. During the period 1861 - 1900 the maternal mortality decreased from 567 to 227 per 100 000 live births (8). In the late 19th century the family home was the traditional place of birth. However, this came to change in the early years of the 20th century when different forms of maternity clinics were established. In the 1940s almost all women gave birth in a hospital (9). This process has been commonly referred to as the medicalisation of childbirth (10).

2.1.2 Operative births

Caesarean section and use of forceps have been documented for hundred of years. The origin of the term caesarean is from the Latin verb caedere 'to cut'. Children born by post-mortem operations were referred to as caesones. In ancient times, it was performed only when the woman was dead or dying as an attempt to rescue the fetus. There are sporadic reports by caesarean section as a possible operation on a living mother in medieval times. The first recorded case of a mother and a child surviving caesarean section has been said to be in 1500 in Switzerland (11). In Sweden, around ten caesareans were performed between 1758-1875, with deadly outcome for the women in all cases (12). During the 20th, the development of anaesthesia paved the way for a new era for operative obstetrics and the possibility of performing a caesarean section increased. Also, developments in surgical technique, modern aseptic and eventually access to antibiotics improved the outcome of caesarean operations (11). In the early 1950s the Swedish maternal mortality rate was half a percent (8). During the years 1951-1980 the caesarean section rate in Sweden increased from 1.7% to 11% (13). Still during the 1970s, the risk of maternal death from caesarean section in Sweden was 12 times higher than a vaginal birth (14).

In parallel with the progress in surgical births there was also the development of instrumental deliveries, as another way to terminate a delivery. The initial function of instrumental deliveries was to assist the birth of a child in the event of prolonged dysfunctional labour in an attempt to preserve the labouring women. In these cases, saving the life of the women took primacy over possible harm to the fetus (15). The intervention of forceps can be traced back to Europe in the 16th century (16) and the

vacuum extraction was first described in the early 18th century. However, the vacuum extraction did not gain widespread use until the 1950s when the metal cup vacuum system was developed by a Swedish obstetrician (15). Today, the vacuum extractor has almost completely replaced forceps for instrumental vaginal births in Sweden (17). With a development of safer techniques instrumental births nowadays involves a method for facilitating vaginal births of a healthy child while minimizing maternal risk (16).

2.2 CHILDBEARING TODAY

During the 20th century essential changes have taken place in high-income countries, both for women of reproductive age and also in the circumstances related to childbearing and delivery. Mortality and the medical risks associated with pregnancy and childbirth has decreased drastically since the 1930s (12) and women did not have to worry about surviving pregnancy and delivery to the same extent as before. One condition for the reduced mortality was improved general health status of the population. Direct causes were the availability of antibiotics and the possibility of blood transfusions (7). Sweden has a long tradition of antenatal care. In the 1930s there was a growing interest for maternal health during pregnancy and systematic check-ups of pregnant women for early detection of complications during pregnancy was introduced (18). Many conditions that previously involved serious risks for mother and the fetus could now be prevented and treated (7). In the second half of the 20th century attention shifted from the mother to the fetus (19). Developments that allowed this to happen include new methods for fetal monitoring in labour, great progress in the care of preterm born babies (20) as well as the development of obstetric ultrasound (19).

2.2.1 Birth control

Another change that has taken place is the access to birth control, and thus the opportunity for a woman and her partner to plan childbearing. Contraceptive pills became available in the 1960s, with the result that women got a totally different opportunity to control their childbearing than before. The Swedish abortion law reform came into effect in 1975, which means that a woman seeking for an abortion are entitled to have it performed in the Public Health care until 18th weeks of pregnancy (6). Birth control involves not only being able to avoid getting pregnant or to terminate an unwanted pregnancy, but also that one can have children when one wishes. The first pregnancy following an in vitro fertilization (IVF) was performed in 1981. During the 1980s, several new IVF units were established and the number of complete treatments has since then increased gradually (17).

2.2.2 Birth rates

Until the late 19th century the fertility rate was high and women gave birth to an average of 4-5 children during their lifetime (6). During the entire 20th century until today the birth rate has varied over time and there are several explanations for this fluctuation. A large part of the annual variations can be explained by the different generations have had their children at different ages. During certain periods, men and women become parents at a young age and at other times they have waited until later. In addition, the number of births changes with the national economy and different

political incentives. Family policy and conditions of the families with children influence people's willingness to bring children into the world (21). In 1999, Sweden had the lowest birth rate ever at 1.5 children per woman. Up until 2010, the total fertility rate increased continuously and eventually reached 1.98 children per woman (22). In 2012, the fertility declined slightly to 1.91 (23).

2.2.3 Global differences

In Sweden today there are approximately 110 000 deliveries annually (17). All Swedish women have availability to antenatal care during pregnancy and they always have access to trained midwives and obstetricians in labour. The medical safety during pregnancy and childbirth is very high with qualified treatment of complications and maternal mortality is very low in Sweden today (6). The focus of prenatal and obstetric care in high-income countries has expanded from its traditional purpose of preventing, detecting and managing problems and factors that may adversely affect the health of the mother and/or child. It now includes aspects of supporting and encouraging a woman and her partner during childbearing, childbirth and postpartum care (24). By contrast, in low-income countries, maternal mortality is still a major problem. Each year there are more than half a million maternal deaths and the majority of these deaths are avoidable (25). Moreover, the ability to control childbearing is still limited in many parts of the world where access to contraception and safe abortion are lacking (26).

2.3 INCREASING RATES OF OPERATIVE BIRTHS

Worldwide rise in the caesarean section rates during the last three decades are of concern. The opinions are, however, divided on whether the generally increasing caesarean rate reflects an increased proportion unnecessary operations, or if it instead a sign of improved security (27). A consensus recommendation for optimal caesarean section rate of 10-15% was made by WHO in 1985 (28). However, there is disagreement as to whether this is a medically justified level (5). In 2010 it was pointed out that the suggestions by WHO in 1985 could be less valid nowadays considering changes of the population in high-income countries, such as mother's age at the first child and birth weight (29). Nevertheless, the caesarean rates are well over 15 % in many countries. The proportion of caesarean sections in the western world as a whole is 21 percent, but the frequency varies between countries. Countries like the United States and Australia have reported figures around 30 %, while in middle-income countries only 2 % of deliveries are performed by caesarean section (27). Cultural factors, as well as socio-economic factors may also affect the rate of caesarean section.

The caesarean sections rates in Sweden and the other Scandinavian countries have historically been low compared with other high-income countries (5). However, for three decades there has been a substantially increase in the caesarean section rate in Sweden. This increase has remained stable in recent years. The proportion of caesarean section in singleton births was 17 % in 2011 and the corresponding number for 1973 was 5 %. Nevertheless, there is a wide regional variation in the number of caesarean sections in the nation, e.g. in 2011 the number of caesarean section varied between 9 % and 23 % between different hospitals. However, these figures are not adjusted for differences in the population. For multiple deliveries the proportion of caesarean sections was 55 % and almost 91 % of all breech presentations were delivered by

caesarean section in 2011. Instrumental births have also increased, but not as rapidly as the proportion of caesarean sections. Almost 9 % of the women were delivered by vacuum or forceps in 2011 compared with just over 4 % in the early 1970s (17).

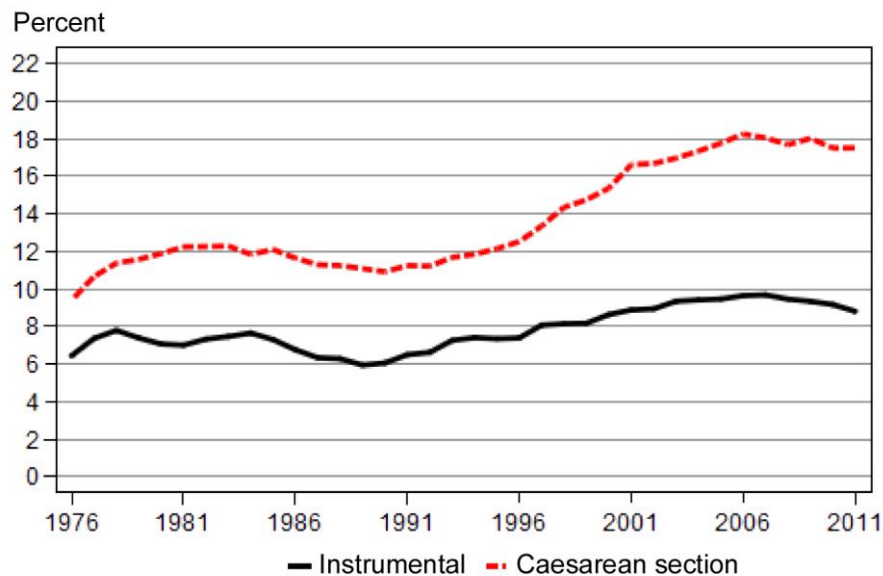


Figure 1. Rates of caesarean section and instrumental vaginal births in Sweden, 1976 – 2011.

(Figure from the Statistics from the Swedish Medical Birth Register, 2013)

2.3.1 Reasons for the increasing rates of caesarean section

There are several reasons for the increase in caesarean section rate. Kallen and et al. (5) showed in a report a rise by 60 % between 1990 and 2001 and explained parts of the increase by socio-demographic factors, such as higher age among childbearing women and increasing BMI. These factors are related to a higher risk of being delivered by a caesarean section. Caesarean section on fetal indication, i.e. the possibility of earlier diagnosis of impending asphyxia of the fetus, also contributed to the increase. When the first delivery results in a caesarean section, this increases the risk of a caesarean in the next pregnancy. Therefore, another explanation for the increase was the group of women who have previously had a caesarean. The largest increase was seen among women with full-term pregnancies with the fetus in cephalic presentation. The indication group that increased the most was the caesarean section due to psychosocial indication (80%), yet this group was small and contributed very modestly to the overall increase. The authors also concluded that perinatal morbidity, a measure of the health of the newborn, was relatively unchanged during the same period and therefore, the drastic increase in the caesarean section rate may not be medically justified (5).

2.3.2 Reasons for the increasing rates of instrumental vaginal births

The rate of instrumental births have also increased, although not as rapidly as the proportion of caesarean sections. The reasons for the rise, as well as what impact an instrumental vaginal birth have on women, have not been studied to the same extent as for caesarean sections. In a large population-based Swedish study, the increase of

instrumental births over the last decades was mainly explained by increasing maternal age and increased use of epidural analgesia (30), whereas another large population-based study conducted in Australia demonstrated that rates of operative births did not rise despite increases in maternal age and use of epidural analgesia (31). Moreover it was shown that instrumental birth was strongly associated with epidural analgesia. Another Swedish population based register study reported an increase in the indication "signs of fetal distress" among the instrumental births between 1990-2010. Both the total rate of epidural analgesia and women being induced increased during the same period of time. These factors were suggested to have influenced the rate of operative births (32).

2.3.3 Caesarean section on maternal request

There is a marked variation in the incidence of caesarean section on maternal request worldwide. International estimate report prevalence rates between 4-18 % of all caesarean sections (33). To estimate the prevalence of caesarean section based on mother's request is difficult due to an insufficient diagnostic setting procedure, making it difficult to interpret the true causes of the birthing method. Caesarean section on maternal request has no precise diagnosis, but is covered in the diagnostic code for caesarean section for "psychosocial indication" (code 0828). In a Swedish register study of 6796 births it was concluded that this code is not specific enough and is being used in combination with secondary indications such as previous caesarean section or breech position (34). However, this code was the diagnostic code that increased the most with 80 %, from year 1990 to 2001 (5). The diagnostic code O828 is more common in the capital area (34). Although caesarean section is not an option that Swedish women can choose for themselves, it has been shown that nearly half of those who preferred a caesarean section in early pregnancy also had an operative birth (31% elective and 15% emergency) (35), suggesting that preferences do have an impact on the caesarean section rates in Sweden. In addition, it has been shown that the dominant indication for an elective caesarean section in a major hospital in Stockholm was a psychosocial indication, defined as maternal fear of childbirth or maternal request without medical indication. Considering this, it has been suggested that the increased rate of caesarean section for psychosocial reasons would reflect altered attitudes towards mode of delivery among obstetricians and in the childbearing population (36). Moreover, it has been found that few Swedish women preferred to have a caesarean section and that more than 90 % preferred a vaginal birth (37, 38).

One of the most common reasons for women to choose a caesarean section are a previous caesarean section or a previous negative birth experience (37-39). Fear of childbirth is another indication for requesting a caesarean section (38, 40, 41). Other reasons are a wish to avoid maternal complications that may be caused by a vaginal birth, such as vaginal prolapsed, urinary incontinency, sexual dysfunction (41-43). For many women a caesarean section is seen as a more controlled and safe way of giving birth compared to a vaginal birth, especially for the fetus (40, 42-45).

2.4 WHAT ARE THE CONSEQUENCES OF OPERATIVE BIRTHS?

2.4.1 Consequences following caesarean section

A birth by caesarean section may result in negative consequences for women and children's health, both in the short and long term. In a major data base study 46 000 planned caesarean sections performed due to breech position were compared with 2.3 million planned vaginal births in an analysed according-to-intention to treat (46). The result showed a higher post partum risk of maternal morbidity of 27/1000 for the caesarean section group compared to 9/1000 for the vaginal birth group. Another major database study (47) showed an odds ratio (OR) for maternal morbidity of 2.0 for emergency caesarean section and 2.3 for planned caesarean section compared with vaginal births. The risk of antibiotic treatment after delivery for women having either type of caesarean was five times that of women having vaginal deliveries.

Common causes of distress following caesarean section are wound complication, endometritis, thrombosis and postpartum hemorrhage (46, 48). In a retrospective review of the Swedish Medical Birth Register, bleeding more than 1000 ml was observed in 13 % of all caesarean sections, compared with 3.5 % of non-instrumental vaginal births (5). It was also found that the risk for thromboembolic complications such as pulmonary embolism, deep vein thrombosis or cerebral thrombosis increased by about 3.5 times.

Previous surgery on uterine musculature increases the risk of uterine rupture during the subsequent birth. In the retrospective review of the Swedish Medical Birth Register, uterine rupture occurred in 5.4 per mille after a caesarean section (i.e. about 1 per 185 pregnancies/births) and less than <0.2 per mille (i.e. 1/5000) following a vaginal birth (5). Placental problems, such as placenta preavia and placenta accreta are known to be more frequent after caesarean section and these are conditions that may increase the risk for poor obstetric outcome (43).

In addition to consequences for the mother, the newborn child may also be affected by delivery method in both the short and long term. Previous research has shown that elective caesarean section increases the risk of various respiratory morbidities in the newborn near term compared with vaginal delivery respiratory disorder (43, 49). Moreover, there is evidence that caesarean sections cause increased risks to children, in terms of asthma, gastroenteritis and diabetes, compared with vaginal births (43, 50, 51).

2.4.2 Consequences following instrumental vaginal births

Vacuum extraction is an important instrument in obstetric care, although also associated with injury and complications for both infant and mother. Maternal complications include postpartum hemorrhage, severe lacerations to the vagina and anal sphincter (5, 52-54) that could result in long-term complications such as fecal incontinence and sexual complaints (55). In addition, research has found that instrumental births are associated with an increased risk of negative birth experience and secondary fear of childbirth (57, 58). For the newborn child, use of vacuum extraction has been shown to be associated with a risk for complications such as intracranial hemorrhage, facial nerve injury and brachial plexus injury (54, 59).

2.5 BENEFITS OF CAESAREAN SECTION AND INSTRUMENTAL VAGINAL BIRTHS

Both caesarean section and instrumental births can, when done with a medical indication such as prolonged labour or suspected fetal distress, minimize the medical risk for both the fetus and the mother. Other conditions of when a planned caesarean is of value are placenta praevia, severe pre-eclampsia, maternal disease or a viral infection, if the fetus is in a transverse position or if there is a restricted growth of the fetus (7). Caesarean sections can also reduce the risk of rare but severe complications associated with a vaginal birth, such as serious consequences of meconium aspiration and hypoxia (39). Studies indicate that the risk of stress urinary incontinence and pelvic floor prolapse after elective caesarean delivery is lower than for vaginal delivery (60-62) although the longer-term outcomes of this effect are not clear. A recent large, population-based survey in Australia showed that disorders of the pelvic floor are associated with aging, pregnancy and instrumental births. Caesarean delivery was not associated with a significant reduction in pelvic-floor disorders over the long term as compared with vaginal delivery (63). Personality factors, such as a need to be in control of the birth process, may be paramount for some women. Another potential maternal benefit of elective caesarean section is the avoidance of emergency caesarean section. Avoiding an emergency caesarean section has been shown to enhance the pregnant woman's involvement and satisfaction with the process of childbirth (64).

2.6 PSYCHOLOGICAL ASPECTS OF MODE OF DELIVERY

Issues of psychological aspects of birth and birth experience have received much attention in the western world during the last decades. This could probably be due to the fact that medical complications have reduced and thereby allowing more space for women to explore their expectations on the birth and to put considerable emphasis on the process of birth. How an individual reacts to the delivery and experience the childbirth can be complex and influenced by individual, medical and social issues. Factors related to the birth experience have been investigated and some research has shown that the delivery method has an impact on the experience. Both emergency caesarean section and instrumental vaginal births has been found to be a risk factor for a negative birth experience and secondary fear of delivery (57, 58) compared with a vaginal birth (65) as well as planned caesarean section (66, 67). In addition, when separating the psychological outcomes for women who have forceps-assisted births from vacuum extractions, it has been shown that the risk of reduced wellbeing was higher among the women who had forceps-assisted vaginal births (66). In contrast to these findings, a recent large, population-based study from Norway focusing on antenatal and postnatal emotional health, suggested that mode of delivery was not associated with a change in emotional distress. It was found that women with instrumental vaginal, emergency caesarean or elective caesarean deliveries had similar changes in emotional distress as compared with women with unassisted vaginal delivery (68).

In summary, major changes have occurred in Swedish maternity care since the early 20th century and is now characterized by an increasingly medicalisation. The incidence of caesarean section and instrumental births has increased substantially in Sweden the

last decades, which means that fewer women give birth spontaneously. Both caesarean section and instrumental vaginal births are associated with adverse physical as well as physiological consequences for both mother and child.

2.7 RESEARCH PROBLEM

There is a growing amount of research that shows an increase in interventions in the normal birth process, such as rising numbers of caesarean section and instrumental vaginal deliveries. The birth of the first child is a new experience for the woman and her partner and what importance mode of delivery, as well as aspects related to childbirth, may have is therefore an area of interest. Despite an increasing amount of research within the area there are still many aspects that are only moderately studied. Whether there is a difference in the perceived contact between mother and child, as well women's subsequent reproduction in relation to mode of delivery and aspects related to the birth of the first child needs to be explored further. Few have studied first-time mothers only and what the motives are for a caesarean section without any medical indication. Furthermore, there is a gap in the evidence in the perceived health later in life and effects of different modes of delivery in the longer term. Altogether, this is knowledge that can be used by providers of obstetric care as well as women and their families, either postpartum or during the decision-making process regarding mode of delivery. From a societal perspective, the caesarean section rate impacts public health, health care organization and finance. A greater understanding of how this affects women in different ways is therefore a significant area of research.

3 AIMS

The overall aim of this thesis was to explore and describe the impact of mode of delivery and other aspects related to the birth of the first child. This was approached with the following specific aims:

3.1 SPECIFIC AIMS

- to investigate the contact between first-time mothers and their newborn child in relation to mode of delivery. We aimed to study if there are differences between women who requested a caesarean section compared to those who had a vaginal birth and those who underwent an elective caesarean section due to medical indication (primary aim). The second aim was to investigate the psychometric properties of a self-reported scale design to measure the contact between the mother and child **(I)**.
- to describe the underlying reasons for the desire of a caesarean section in the absence of medical indication in healthy pregnant first-time mothers **(II)**
- to investigate which factors related to the first birth influence a woman's subsequent reproduction within five years after the birth **(III)**.
- to describe the overall health-related quality of life (HRQoL), as well as the HRQoL in relation to mode of delivery, in women five years after the birth of their first child **(IV)**.

MATERIAL AND METHODS

3.2 OVERALL STUDY DESIGN

Four studies are included in this thesis. Quantitative (Paper I, III and IV) and qualitative (II) methods have been combined to investigate the research questions. Data was collected through interviews and questionnaires. A major part of the data used in two of the investigations in the thesis (Paper I, III) was originally collected for a cohort study (the Caesarean Section trial), with the intention of investigating the obstetrical and psychological outcomes among first-time mothers (69). Three of the studies were conducted using a prospective cohort design; investigating the contact between mothers and their newborn child (Paper I), to examine factors that influence a woman's subsequent reproduction (Paper III) and when describing the health-related quality of life (Paper IV). The study examining women's thoughts concerning their requests for a caesarean section was implemented using a qualitative approach (Paper II). Table 1 shows an overview of each paper included in the thesis.

In cohort studies, participants are selected for a common characteristic. Prospective cohort studies can be conducted such that the participants are recruited to the study and are then followed over time, usually for years. Data can be collected in a number of forms for example: structured interviews, questionnaires and records (70). In this thesis, data from the cohort studies were analyzed using quantitative methods.

Qualitative method involves an interpretive, naturalistic approach to the world (71,72). Researchers using a qualitative design study things in their natural setting and are interested in understanding the meaning people have constructed, that is, how people make sense of their world and the experiences they have (73). Qualitative research encompasses a range of philosophies, research designs and specific techniques including interviews, observations, focus groups, document analyses and a number of other methods of data collection (71,72).

Title	Study sample	Data collection	Methods of analysis
Contact between mother, child and partner and attitudes towards breastfeeding in relation to mode of delivery (I)	510 primiparous women	Questionnaire 2 days, three and nine months postpartum	Descriptive statistics, Chi-square-test/Fischer Exact test, Principal component analysis, Scree-test Kruskal–Wallis test, Wilcoxon rank sum test
First-time mothers' wish for a planned caesarean section - deeply rooted emotions (II)	12 primiparous women	Individual interviews in late pregnancy	Content analysis
Impact of clinical factors and personality on the decision of having a second child. Longitudinal cohort-study of first-time mothers (III)	451 consented to participate in a five year follow-up study	Questionnaire at inclusion in the cohort, three months, nine months and five years after the birth of the first child	Descriptive statistic, Kendell's tau, Logistic regression
Health-related quality of life five years after birth of the first child (IV)	372 women consented to participate in a five year follow-up study	Questionnaire five years after the first birth	Descriptive statistic, Kruskal-Wallis H test, Tukey's HSD test, Chi-square test

Table 1. Overview of included papers.

3.3 STUDY SETTING

All studies in this thesis were conducted at a hospital in the northern part of Stockholm, the capital of Sweden with two labour wards and an approximately total of 10 000 deliveries per year. The caesarean section rate in the two labour wards including both primiparous and multiparous women were 16 % and 23 % respectively in 2012. Elective caesarean section accounted for approximately 10 % of all deliveries. The percentages of instrumental vaginal deliveries in the two labour wards were 6 % and 8 % respectively

The socio-economic and health indicators in Sweden differ between different geographical areas. The population in the area where the studies in this thesis were conducted are in general healthy and well educated compared to other municipalities and districts in Stockholm county (74, 75).

3.4 PARTICIPANTS AND PROCEDURE

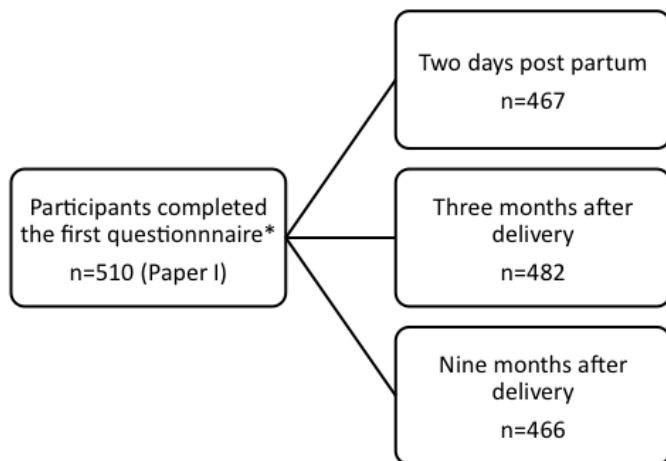
The recruitments of samples in paper **I**, **III** and **IV** was originally collected for a trial (the Caesarean Section trial) designed as a cohort study where both obstetrical and psychological outcomes among first-time mothers were studied (69). Pregnant women scheduled for elective caesarean section were recruited for the trial. In order to find participants, one of the researchers identified patients scheduled for elective caesarean section at the hospital. One of the researchers telephoned the women scheduled for elective caesarean section, provided them with information about the study and asked if they were willing to participate. Inclusion criteria were healthy primiparae with an uncomplicated pregnancy, a BMI less than 30 and that the indication for the planned caesarean section was due to breech presentation or maternal request. To be included in the study the women had to be fluent in Swedish since questionnaire used in the trial was only available in Swedish. Women with a psychiatric illness were excluded. Women were recruited in gestational week 37 - 39. For every woman scheduled for a caesarean section one to two controls living in the same geographical area as the case group and planning a vaginal birth were consecutively telephoned and asked to participate. If one of the controls declined participation, there was not another control asked to participate in the study. The controls fulfilled the same inclusion- and exclusion criteria as the women scheduled for elective caesarean section. Five years after inclusion in the Caesarean Section trial, the women in the cohort were invited to participate in a follow up study (Paper **III** and **IV**).

Women in paper **II** were recruited at the obstetrical practice when they consulted an obstetrician in order to discuss their request for a caesarean section. At the end of the consultation and when the decision about the caesarean section was taken, the obstetrician gave brief information about the study and invited them to participate. If the woman agreed to participate, one of the midwives in the research group phoned the woman a couple of days after the consultation and provided her with more detailed information about the study. If the woman still agreed to participate, a time and place for the interview that was suitable for the woman was organised. Inclusion criteria were primiparae woman with a normal pregnancy, scheduled for a planned caesarean section without medical indication. At the time for the interview the length among gestational ages varied between 26 and 36 weeks.

3.5 PARTICIPATING WOMEN

In total, 551 healthy women with normal pregnancies were enrolled in the cohort. A flowchart of the participants and dropouts in paper **I**, **III** and **IV** is presented in Figure 2. Out of those women who were invited to take part in paper **II**, 17 agreed to participate. At the time when the women were phoned by one of the researcher, two of them answered that they had changed their minds and declined participation. Their reason for not participating was lack of time. Two of the women could not be reached by phone and therefore were excluded from the study. One of the participants gave

birth before the interview date. In the end, 12 women remained of the 17 who initially agreed to participate.



* The whole scale or part of the scale at either of the three occasions

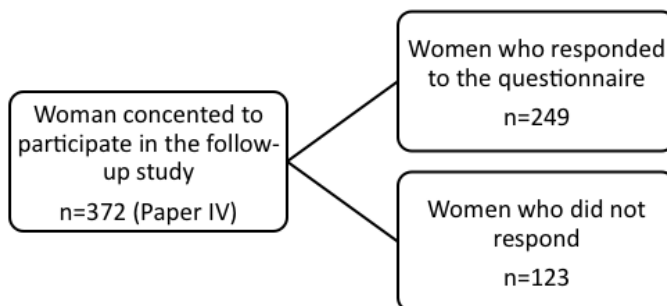
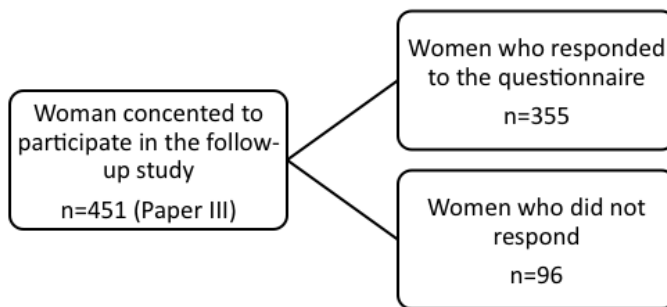


Figure 2. Flowchart over participants and dropouts in paper I, III and IV.

3.6 DATA COLLECTION

3.6.1 Quantitative data

Data for the cohort study was collected between; January 2003 and June 2005 (Paper I & III), for the qualitative study (Paper II); February 2009 to June 2010 and for the follow-up study (Paper III and IV); January 2008 and June 2010. Data for paper I, III and IV were collected by means of questionnaires at five time points; in late pregnancy,

two days, three months and nine months post partum as well as five years after inclusion in the cohort. The questionnaires were posted to the participants after the research team had received the woman's consent. All letters included a prepaid return envelope and the women were instructed to fill in the questionnaire at home as soon as possible. If questionnaires were not returned within three weeks, a reminder was sent out. At two days post partum, the participants completed the second questionnaire at the clinic. Parts of the data used in this thesis (Paper I, III and IV) was originally collected for the Caesarean Section trial (69) that was carried out between January 2003 and June 2005. The time points/questionnaires used in this thesis was the following;

In late pregnancy, when the women were enrolled in the study, they received the first questionnaire. The questionnaire included issues regarding socio-demographic background such as age, place of birth, native language, education and a general question regarding perceived health, infertility and apprehensions when considering a vaginal delivery as well as a questionnaire screening for childbirth expectation: the Wijma Delivery Expectancy/Experience Questionnaire (W-DEQ A) (Paper III). Data concerning medical outcome before and after birth was collected from the medical records.

On day two the participants were given The Alliance Scale, a self-reporting questionnaire aimed to measure the contact between mother and child and her partner (Paper I).

At three months after birth the participants received a screening instrument for postnatal depression (EPDS), the W-DEQ B questionnaire asking about the experience of giving birth (Paper III) as well as The Alliance Scale (Paper I).

Nine months after birth the participants received a questionnaire regarding family planning, sexual life and birth experience (Paper III). They also received The Alliance Scale (Paper I) and a personality trait questionnaire, known as Karolinska Scales of Personality (KSP) (Paper III).

Five years after the birth of the first child, a letter with information about the follow-up study and an inquiry for participation was distributed to the cohort (Paper III and IV). If the woman accepted to continue to participate in the study questionnaires regarding their reproductive health and reproduction as well as the Swedish health-related quality of life questionnaire were sent out (SWED-QUAL). The participants were asked to complete the forms and to return them in a closed envelope. The same procedure as previously was used for the reminders of the questionnaires.

3.6.2 Qualitative data

In paper II, data was collected through individual interviews. During the analysis process, it became clear that after about ten interviews no new information appeared to emerge, indicating that twelve interviews was sufficient to meet the aim of the study. The interviews were performed by two of the authors (MS and AKK) and the interviewer had not met the participants before. Based on the participants' preference, the interviews took place in the participants' home or in a private room at the clinic.

The interview lasted on average 50 minutes and the durations ranged from 30 to 60 minutes.

The interviews were semi-structured and an interview guide, developed by the authors, was used to cover the main research topics. The guide included twenty questions covering thoughts and feelings concerning the woman's requests for a caesarean section. The questions were open-ended to allow the participant to thoroughly describe their opinions and experiences. The initial question was as follows: what are your spontaneous thoughts about your desire for a caesarean section? Examples of other questions asked are: Can you tell me what the main reason is for your desire to have a caesarean section? When did you arrive at your decision about a caesarean section? Has anyone else influenced your decision? What do you see as the disadvantage/benefits of a caesarean section?

The interviews were performed with flexibility and sensitivity to what participants were saying. If needed, the interviewer simplified the language. During the interviews, the interviewer took notes to provide comments for the data analysis. To verify that the information given by the participant was correctly and completely understood, the researcher ended the interview with a brief summary, inviting the participant to correct or add information if needed. Each interview were tape-recorded and transcribed verbatim soon after the interview.

3.7 INSTRUMENTS

3.7.1 Wijma Delivery Expectancy/Experience Scale

The Wijma Delivery Expectancy/Experience Questionnaire (W-DEQ) is a questionnaire screening for childbirth anxiety (76). The questionnaire has been developed to measure fear of childbirth based on expectations during pregnancy (version A) as well as fear of childbirth based on experience after birth (version B). W-DEQ containing 33 items on various feelings and cognitive appraisal before and after childbirth such as; "How do you think you will feel during labour and delivery?" ("extreme panic" to "no panic at all"), "Have you during the last month had fantasies that your child will be injured during labour/delivery?" ("never" to "very often"), "How did you feel in general during the labour and delivery?" ("extremely afraid" to "not at all afraid") and "How was the very moment you delivered the baby?" ("extremely dangerous" to "not at all dangerous"). Answers are given on a 6-point Likert scale ranging from 'not at all' (0) to 'extremely' (5), yielding a maximum score of 165 and a minimum score of 0. The women who scored higher than 84 were considered to be suffering from fear of childbirth (76). In questionnaire B, a modified version with 20-items suitable for both women who had a caesarean section or a vaginal birth was used. The maximum of the 20-item modified version was thus 0, and the maximum 100. This 20-item version has been validated and used before (77,78). W-DEQ has been shown to have high reliability as an instrument that estimates childbirth fear (76, 79).

3.7.2 The Alliance Scale

The Alliance Scale is an instrument designed to estimate the mother's contact with her child and also with her partner. The scale consists of 18 items assessing the following

four domains: contact with the child, contact with the partner, feelings towards breastfeeding and mood (80). The contact between the mother and the newborn child is measured according to several statements e.g.; “close” – “far away”, “warm - cold”, “confident” - “insecure” and “easy” - “difficult”. A seven-point scale was used and the participants rated how often they agreed with these statements. Both positive and negative items are scored in the same direction with low scores denoting good contact. The scale was named “The Alliance Scale” by the research group as the term alliance stands for both the relation between the mother and child as well as between the mother and the partner. However, the attitudes towards breastfeeding are not directly associated with alliance, and neither are the mood items, although there is an indirect correlation. For example, if the mother has a problematic relation towards her partner or if her mood or feelings towards breastfeeding are negative this could possibly result in a more complicated contact towards their child. The scale has been used before (80) but, to our knowledge, not been tested for reliability or validity.

3.7.3 Edinburgh Postnatal Depression Scale

The Edinburgh Postnatal Depression Scale (EPDS) is a scale designed to screen a broad population for postnatal depressive symptoms (81). The scale has been translated into several languages, including Swedish (82). EPDS uses a 10-item four-point scale with scores ranging between 0 and 3 on each item and a total score of between 0 and 30; the higher the score, the more depressive symptoms. Items concerning somatic symptoms that might occur during the postpartum period, such as fatigue and appetite variations are not included in the scale. The items are concerned with psychological symptoms of depressive illness, including apparent and reported sadness, feelings of anxiety, pessimism and suicidal ideation. A Swedish validation of the instrument led to a recommended cut-off at 11/12 (82). In the included papers, a cut-off of 12 was used for depressive symptoms. The scale has been shown to be a valid clinical screening instrument for detecting postpartum depression (83, 84)

3.7.4 Karolinska Scale of Personality

The Karolinska Scale of Personality (KSP) comprises an inventory constructed to estimate personality traits (85). The scale consists of 135 items with four-point Likert response scales ranging from 1 (strongly disagree) to 4 (strongly agree). Higher scores indicate a higher degree of the trait measured. The items are sorted into 15 subscales that are classified into three main groups:

1. The Anxiety Proneness Scales; Somatic anxiety (autonomic disturbances, diffuse stress, panicky), Muscular tension (tense and stiff, not relaxed), Psychic anxiety (cognitive-social anxiety, worrying, insecurity), Psychasthenia (easily fatigued, feeling uneasy when urged to speed up), Inhibition of aggression (unexpressed anger and inability to speak up or to be self-assertive in social situations).
2. The Extraversion Scales; Impulsiveness (acting on the spur of the moment, non-planning, impulsive), Monotony avoidance (avoiding routine, need for change and action, sensation-seeking behaviour), Detachment (avoiding involvement in others, withdrawn), Socialization (relation between the respondent and her

parents and other significant others during childhood), Social desirability (socially conforming, friendly, helpful).

3. The Aggression Hostility Scales; Indirect aggression (sulking, slamming doors when angry), Irritability (irritable, lacking patience), Verbal aggression (getting into arguments, berating people when annoyed), Suspicion (suspicious, distrusting people's motives, Guilt (remorseful, ashamed of bad thoughts).

Raw scores can be transformed into T-scores (mean = 50 and SD = 10) to allow for comparisons across scales. The scale has shown evidence for stability over a time period of 9-10 years (86, 87). The scale has been used in a study for personality changes during pregnancy (88).

3.7.5 The Swedish health-related quality of life questionnaire

The health-related quality of life (HRQoL) was measured with the Swedish health-related quality of life questionnaire (SWED-QUAL), a questionnaire that was developed by Brorsson and colleagues (89) based on the Medical Outcomes Study (90, 91). SWED-QUAL consists of 61 items summarized into seven scales which measuring the following aspects of HRQoL:

1. *Physical functioning*; (perform activities such as work, sports, stairs, dressing); Mobility (need for assistance), Satisfaction with physical ability (satisfaction with ability to do what wanted).
2. *Pain*; (pain frequency, intensity and interference with daily activities, sleep and mood)
3. *Role limitations due to*: Physical health (extent to which physical problems interfere with activities of daily living) and Emotional health (extent to which physical health problems interfere with activities of daily living).
4. *Emotional well-being*; Positive effect (a happy person, harmonic, feel liked, optimistic) and Negative effect (feel nervous, tense, down, sad, impatient, annoyed)
5. *Sleep problems* (sleep initiation, maintenance, somnolence).
6. *General health perception*; Current health (overall rating of health), Prior health (been sick for a long time), Resistance to illness (ones body resist illness quite well), Health concern (concerns about own health).
7. *Family functioning*; Satisfaction with family (satisfaction with cohesiveness, talking things through, understanding), Marital functioning (express wishes, sharing feelings, being supportive), Sexual functioning (Lack of interest, inability to enjoy sex).

The questions are designed as both questions and statements with both positive and negative responses. Scale scores are constructed by summing items measuring the same construct and are then transformed linearly into a 0–100 health index for each scale, 0 and 100 being assigned the poorest and the best possible health respectively. A cut off was set at 70 and women who scored below 70 were considered to have suboptimal quality of life. In a general population sample the reliability, which was calculated by using Cronbach's α , coefficients, ranged from 0.79 to 0.89. Preliminary support for the construct validity has also been reported (89).

3.7.6 General questionnaire

This questionnaire was designed by the research team and consists of 32 questions about socio-demographic background, the overall health and issues related to pregnancy and childbirth. The questions are designed as both questions and statements. A four-point scale was used and the participants rated how often they agreed with the statements. The questionnaire included topics such as; estimation of health the past three months, miscarriage or abortion after the first pregnancy and complications during previous pregnancies.

3.7.7 Visual Analogue Scale

The experience of delivery was measured with a Visual Analogue Scale (VAS) in order to get a global rating of the delivery. The VAS-scale is an instrument used to measure subjective phenomena (92). Women were asked to rate their birth experience on a scale ranging from 1 to 10. VAS-score 1 was considered the most negative, and 10 the most positive experience. A negative experience of delivery was defined as a VAS-score ≤ 5 .

3.8 DATA ANALYSIS

3.8.1 Analysis of the quantitative data

Various analyses of the quantitative data were conducted in the studies summarized in this thesis. The statistical data were performed using the Statistical Package for Social Sciences (IBM SPSS® software version 20.0/22.0 for Windows) or the Predictive Analytic Software (upgraded version of SPSS 17.0). Descriptive statistics (e.g. mean, standard deviation and range) were used for background data and to summarize the variables. Groups differences in age were analyzed with Student's t-test and Chi-square (χ^2) analyses for categorical data (or Fisher's exact test when the expected frequency in one cell was less than 5). The level of statistical significance was set at $p < 0.05$. Two-tailed tests were applied.

In paper I, the distributions of the ratings were positively skewed, i.e. only few subjects had high ratings, analyses of differences between groups (vaginal delivery, caesarean on maternal request, and caesarean on medical indications) were performed with the Kruskal–Wallis test and with the Wilcoxon rank sum test for changes over time. Intercorrelations between ratings were expressed as Kendall's rank coefficients. The Alliance Scale was analysed with a principal component analysis (PCA) applying the oblimin procedure in order to extract the components of the factor structure (Paper I). PCA is a reduction procedure that results in a relatively small number of components that account for most of the variance in a set of observed variables (93). The number of extracted factors was determined according to the scree test, a test for determining the number of factors to retain in the PCA by scrutinizing the communalities. In the first factor analysis, the number of factors extracted was equal to the number of eigenvalues above 1.0 and yielded a factor structure with four factors. However, for some of the items the communalities (h^2), i.e. the proportion of explained variance, were unsatisfactory low (six items had a communality < 0.65). Accordingly, in a second step five factors were extracted, which left just one communality below 0.65. Subscales based on factor analysis were calculated by simple summation of the scores of the items

loading in a scale. Internal consistency was calculated as a Cronbach alpha (α) coefficient and the mean inter-item correlation.

In paper **III**, forty-five variables were selected from a database with a total of 531 variables. In order to study the associations between these variables and the dependent variable (delivery of at least a second child) the rank-order correlation Kendall's tau (τ) was used. All variables that were statistically significant with the dependent variable at the 5 percent level (two-tailed) were dichotomized and entered in a logistic regression analysis. Logistic regression was used in order to find which variable was most strongly associated with having a second child within five years after the first birth. Logistic regression describes the association between a set of independent variables on a dependent variable (94). The relationships are expressed as an odds ratio, which is a reflection of the b coefficient in the logistic regressions. An OR below 1.00 indicates a negative association, while $OR > 1.00$ indicates a positive.

Statistics for analysis of differences between types of delivery and the HRQoL variables were performed with oneway analysis of variance and Kruskal-Wallis H test for severely skewed variables (Paper **IV**). Post-hoc tests were conducted with Tukey's HSD test. Chi-square tests were used for analyses of categorical data (e.g. drop-out vs. mode of delivery). Relationships between the HRQoL variables were expressed as non-parametric Kendall's rank order correlation coefficients.

3.8.2 Analysis of the qualitative data

In paper **II**, content analysis described by Graneheim and Lundman (95) was used to analyse the textual data. Content analysis is a research technique for making replicable and valid inference from texts to the context of their use (96). Analysis of the data consists of a stepwise, objective and systematic process of categorisation and coding, based on the expressions that are described in the text. The analytic techniques facilitate both manifest and/or latent content in a text (95). For this study, the analysis focused on the manifest content (the visible, obvious components) and the theme is as an expression of the latent content (an interpretation of the underlying meaning).

As a first step when analysing the data (Paper **II**), the two authors who conducted the interviews read the transcribed interviews separately. The interviews were read at several times to get a sense of the whole and obtain an overall understanding of content related to the aim of the study. In the next step, meaning units were created comprising words and sentences related to each other through their context and central meaning. Then each meaning unit was condensed, a process of reducing the text without losing the core content. These condensed units were shortened into codes, a labelling that allows the data to be understood in relation to the context. The codes were then grouped into categories, depending on similarities and differences in content. Four categories related to the aim of the study were identified.

The two authors who performed the interviews (MS and AKK) also performed the analysis throughout the whole analytical scheme. During this process MS and AKK worked both in parallel as well as together. The codes and the categories were continuously reflected on and discussed, as means to ensure trustworthy interpretations. In the final critical review of the content of the categorization, all authors scrutinized

and discussed the findings until consensus was reached. In the concluding process, the categories were formulated into an overall theme, at an interpretative level.

Even if the above description point to a linear process, the analytic process involved moving back and forth between the steps described above and the original parts of the text, in order to get at comprehensive understanding of the material and to ensure trustworthiness.

3.9 SAMPLE SIZE

A power calculation was done for the original cohort trial (the Caesarean Section trial) on physical parameters such as bleeding and infection, which was the primary outcome in the study (69). In order to make the power calculation the record of the hospital and the Swedish Medical Birth Registry (MBR) were used to estimate blood loss and rate of infections after caesarean section and vaginal delivery in presumed healthy primiparae. It was estimated that there would be a 20 % rate in complications after caesarean (10 % blood loss over 1000 mL 10 % rate of infections) whereas 10 % would be reasonable in vaginally delivered (5 % large blood loss, 5 % infections). Power analysis showed that 219 women would be needed in each group to detect a difference of 10 % (power 80 %, significance 5 %). Since the scale used in paper **I** was new it was difficult to achieve an acceptable power calculation. No power calculation was done in paper **II** since this is a qualitative study. Paper **III** and **IV** are follow-up studies of all the participants in the previous caesarean section study.

4 ETHICAL CONSIDERATIONS

All papers in this thesis were approved by the Research Ethics Committee in Karolinska Institute (Paper I: Dnr 03-408; Paper II: 2008/1686-31/3; Paper III: and Paper IV: 2007/1614-31). A separate ethical permission was needed in order to complement with data regarding mode of delivery at second birth (Paper III). Therefore an ethical supplementing was made where permission was given to use information from the medical journals. The participants were informed about the overall purpose of the study both in writing and verbally and gave their verbal (Paper I, II) or written (Paper III, IV) consent. According to the principal of autonomy, which recognizes a set of rights of one's right to self-determination (97), the women were informed that their participation was voluntary and that they could withdraw their participation at any time without stating a reason. In addition, telephone numbers and email addresses of the researchers in the team were explicit in the information letter and could be used if the participants had any comments or questions. The questionnaire responses and interviews were provided with codes to avoid the possibility of deriving to any individual participant. Moreover, the four studies in this thesis have been conducted in accordance with applicable law for research on involving humans (98). Storage of data is done in accordance with the ethical guidelines for clinical research. Address information and data from questionnaires were handled in different databases. Permission to use data was obtained by the participants.

Paper II consisted of individual interviews. The participants were informed that the interview was to be audio-taped and that their complete confidentiality and anonymity was guaranteed. Confidentiality was maintained by presenting data on group level so that no particular woman could be identified. Moreover, participants' names were replaced with codes and the interviews could not be traced to individual participants. The informants were able to select the location of the interview as a way to make them feel as comfortable as possible with the interview situation. The interviews in paper II dealt with issues that could have evoke unpleasant emotions. This was taken into consideration and how this would be handled was discussed in the research group. If needed, the participant was to be offered time for further discussions and help to establish contact with a health professional. None of the participants were considered to be in need of this support. As a way to preserve the integrity and respect the different needs of the person being interviewed, the interviewer strived for a balance between being flexible and maintaining a structure during the interviews (99).

5 RESULTS

5.1 BACKGROUND CHARACTERISTICS OF THE PARTICIPANTS

There were some socio-demographic differences between the groups participating in the cohort (Table 1). The three groups that had a caesarean section were older than the two groups with a vaginal delivery ($p < 0.001$). There were a higher proportion of women born outside Sweden ($p = 0.003$) in the groups of women undergoing a caesarean section. In late pregnancy fewer women in the group requesting caesarean section regarded their health as good ($p < 0.001$), although most of the mothers reported that they were healthy.

		SVD (n = 198)	VE (n = 35)	ECS (n = 65)	CS obstr ind (n = 116)	CS mat req (n = 96)	F/ χ^2	p
Age	M	30.8	30.4	32.9	31.6	33.6	8.92	<0.001
	Range	21–41	22–38	25–42	18–43	17–43		
Native Swedes	n (%)	165 (84)	34 (97)	33 (77)	105 (81)	71 (70)	16.19	0.003
	University education	n (%)	135 (69)	24 (69)	26 (61)	74 (57)	62 (61)	5.12
Smoking	n (%)	11 (6)	3 (9)	5 (12)	20 (16)	11 (11)	8.52 ^a	0.074
	IVF	n (%)	5 (3)	2 (6)	1 (3)	8 (6)	10 (10)	6.43 ^a
Perceived good health ^b	n (%)	183 (100)	32 (94)	38 (100)	111 (98)	74 (84)	40.05 ^a	<0.001

Table 2. Socio-demographic background of the respondents in the cohort at baseline.

The women in paper II were between 25 and 39 years of age. All of them were native Swedes and spoke fluent Swedish. Examples of occupations were registered nurse, chief executive officer, purchasing manager, designer, guardian and project manager. All of the women who participated in the study were living with a partner. None of participating women were smokers.

5.2 CONTACT BETWEEN MOTHER AND CHILD

In paper I, contact between mother and their newborn child among first-time mothers from five groups were studied; women undergoing caesarean section on maternal request, women undergoing caesarean section on obstetrical indication, women with a vaginal delivery, women who underwent instrumental vaginal birth and women who had an emergency caesarean section. The psychometric properties of the self-reported scale, design to measure the contact between the mother and the newborn child as used in paper I, was also investigated.

The contact with the child was rated as positive on day two, three and nine months after birth. No significant differences were found between the delivery groups. The relation to the partner was in general also rated as positive on all occasions with no statistically significant differences between the groups. All mothers experienced breastfeeding as stressful and uncomfortable at the second day. Women with a vaginal birth experienced less strain ($\chi^2 = 25.67$, $p < 0.001$) than the women with a caesarean section. Three and nine months after delivery the women with a caesarean section on maternal request had more problems with breastfeeding than women in both of the other groups (strain, 3 months: $\chi^2 = 14.28$, $p = 0.006$; strain, 9 months: $\chi^2 = 16.05$, $p = 0.003$; discomfort, 3 months: $\chi^2 = 10.92$, $p = 0.027$; and discomfort, 9 months: $\chi^2 = 14.52$, $p = 0.006$). Women with a vaginal delivery rated less sadness at all occasions (2 days: $\chi^2 = 17.09$, $p = 0.002$; 3 months: $\chi^2 = 9.68$, $p = 0.046$; and 9 months: $\chi^2 = 10.34$, $p = 0.038$).

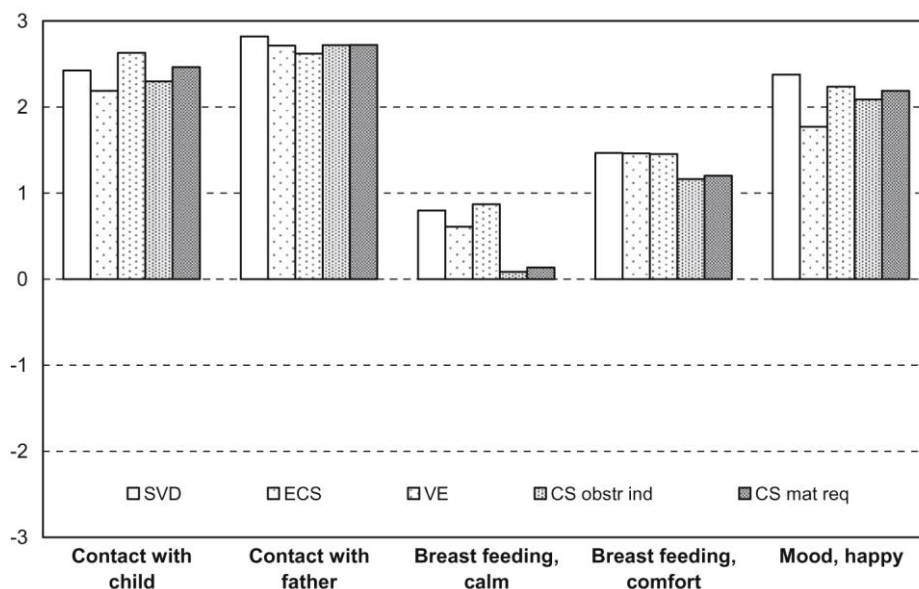


Table 3a. The contact between the child in relation to mode of delivery two days post partum.

The y-axis goes from 1-7 but has been inverted from negative to positive. The figure is presented in its full range (-3 is the lowest possible score and +3 is the highest).

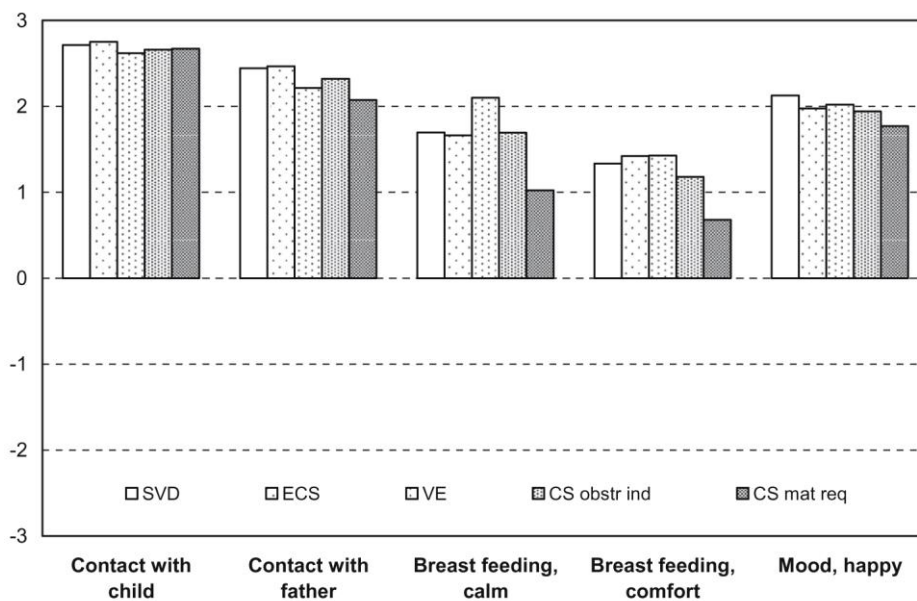


Table 3b. The contact between the child in relation to mode of delivery three months post partum.

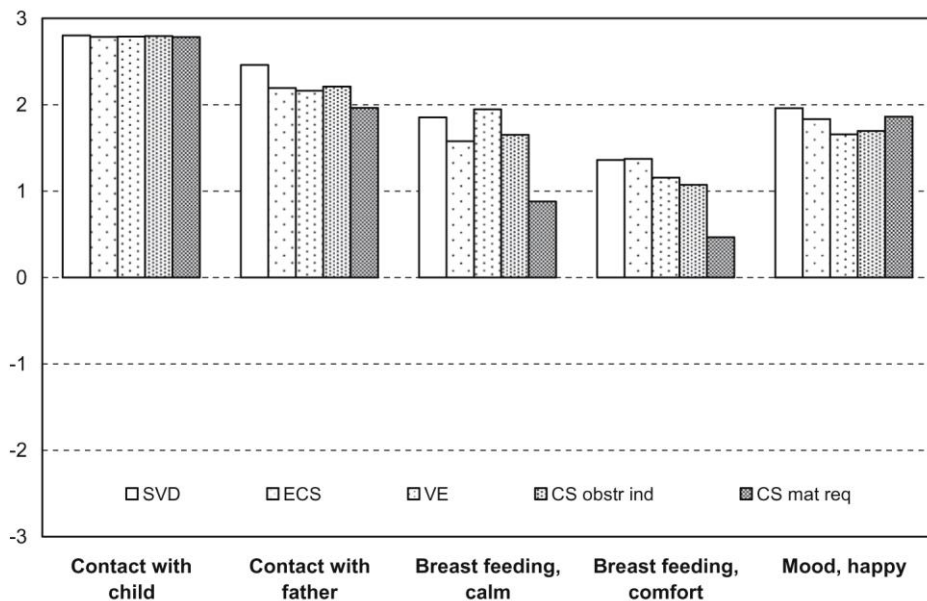


Table 3c. The contact between the child in relation to mode of delivery nine months post partum.

Women with a vaginal delivery and mothers that had expected a vaginal delivery but who had either an emergency caesarean delivery or an instrumental vaginal delivery were compared in a subgroup analysis. No significant differences between the groups was found except for a difference at the second day in sadness; mothers with an emergency caesarean section scored significantly lower on the Mood subscale ($\chi^2 = 6.96, p = 0.031$).

When comparing the changes in ratings of the contact with the child on the second day and at nine months, the relation to the child became more positive ($M = 1.60$ and $Md = 1.25$ vs. $M = 1.21$ and $Md = 1.00$; $z = 10.29, p < 0.001$) while the contact with the partner was positive at nine months but not as positive as at the second day ($M = 1.24$ and $Md = 1.00$ vs. $M = 1.72$ and $Md = 1.25$; $z = 10.34, p < 0.001$). As compared to the ratings at the second day breastfeeding was experienced as less stressful at nine months ($M = 3.51$ and $Md = 3.40$ vs. $M = 2.37$ and $Md = 1.80$; $z = 10.91, p < 0.001$) but almost as uncomfortable ($M = 2.64$ and $Md = 2.50$ vs. $M = 2.89$ and $Md = 2.86$; $z = 1.99, p = 0.047$).

The most salient solution was obtained with five components or factors (Table 4), which explained 74.2% of the total variance. The first factor was related to attitudes to breastfeeding, the second factor to attitudes to the partner, the third factor to the attitude to the child, the fourth factor was a second breastfeeding factor, and the fifth a mood factor. Thus, five subscales were aggregated based on the factor analysis. The intercorrelations between the scales and their internal consistency are presented in Table 5. All intercorrelation coefficients were all highly significant ($p < 0.001$) but some of them only modestly strong. The strongest correlation was found between negative attitude to the child and sad mood ($s = 0.42, p < 0.001$).

Item	Component					h ²
	I	II	III	IV	V	
Emotions to breastfeeding, difficult	0.90	-0.06	-0.27	0.42	0.35	0.81
Emotions to breastfeeding, worried	0.85	-0.13	-0.26	0.51	0.30	0.75
Emotions to breastfeeding, overstrained	0.85	-0.15	-0.28	0.53	0.37	0.77
Emotions to breastfeeding, safe	-0.84	0.04	0.30	-0.33	-0.25	0.72
Emotions to breastfeeding, learn	0.81	0.00	-0.20	0.29	0.24	0.66
Contact with father, distant	0.06	-0.90	-0.26	0.05	0.23	0.81
Contact with father, insecure	0.04	-0.89	-0.22	0.04	0.25	0.79
Contact with father, warm	-0.02	0.89	0.28	-0.14	-0.22	0.81
Contact with father, difficult	0.10	-0.87	-0.31	0.12	0.26	0.76
Contact with child, distant	0.18	-0.22	-0.82	0.10	0.43	0.68
Contact with child, warm	-0.14	0.32	0.81	-0.23	-0.40	0.68
Contact with child, difficult	0.39	-0.30	-0.78	0.33	0.48	0.65
Contact with child, insecure	0.36	-0.19	-0.77	0.21	0.40	0.61
Emotions to breastfeeding, not free	0.44	-0.09	-0.27	0.89	0.30	0.80
Emotions to breastfeeding, discomfort	0.43	-0.09	-0.19	0.88	0.35	0.78
Mood, sad	0.31	-0.32	-0.53	0.21	0.89	0.82
Mood 3, blue	0.31	-0.18	-0.34	0.33	0.87	0.77
Mood, happy	-0.24	0.27	0.52	-0.34	-0.81	0.69

Table 4. Principal component analysis of the items, rating of the mother at the second day, of the Alliance Scale with oblimin rotation, Kaiser normalization.

The highest factor loading for each item or correlation with the component is highlighted in bold. h² is the communality, i.e. the proportion of variance that is explained by the five-factor solution.

Subscales	1	2	3	4	5	α^a	mic ^b
1 Contact with the child	-	0.34	0.30	0.27	0.42	0.79	0.52
2 Contact with the father	-	-	0.14	0.14	0.29	0.91	0.72
3 Breast feeding is calm	-	-	-	0.38	0.28	0.91	0.66
4 Breast feeding is comfortable	-	-	-	-	0.31	0.76	0.61
5 Happy mood	-	-	-	-	-	0.81	0.61

Table 5. Intercorrelations expressed as Kendall's rank correlation coefficients between five subscales of the Alliance scale.

^a α is the internal consistency or Cronbach alpha of the subscale. ^b mic is the mean-inter correlation.

5.3 FIRST-TIME MOTHERS' WISH FOR A PLANNED CAESAREAN SECTION

Paper II addressed pregnant first-time women mothers desire for a caesarean section in the absence of medical indication. The findings in the study were represented by one overarching theme: the underlying desire for a planned caesarean section is based on deeply 'rooted emotions'. The theme illustrate the central interpreted meaning of the extensive description of the various aspects that emerged during the interviews and reflected that the described thoughts and emotions towards birth goes 'beyond fear of childbirth'. The theme contained of four categories comprised the content areas found in the interviews: no other option than a caesarean section, a wish for control and

safety, management of own and others opinions and reactions and finally experience of health care.

It was described by the respondents that they had always known that they would not give birth vaginally and that there was no other option than a caesarean section. These thoughts had been there since childhood or early adulthood. There was a difficulty in being more specific about the reason for the feeling of not being able to give birth in a natural way. It was mentioned by the respondents that the reason for their wish for a caesarean section was not about fear of giving birth, it was described as something deeper than that. These feeling resulted in that pregnancy was something that they had avoided. Factors such as their age or that their partners had a strong desire to have children was decisive and led to the final decision to become pregnant.

A caesarean section was regarded as a more controlled and safe way to give birth compared to a vaginal birth, especially in view of the fetus safety. The respondents expressed a fear that a vaginal birth would result hypoxia for the fetus. It was considered that the situation in general is more controlled during a planned caesarean in comparison with a vaginal birth. The respondents described a caesarean section in terms of being in control of pain during birth and the postpartum period as well as the fact that a caesarean section means a given date for birth, which in turn means that there is no risk of being referred from 'your hospital'. A caesarean section meant that there was a medical team waiting for the woman, which gave a sense of being in control.

The participants mentioned that many people had opinions about their wish for a planned caesarean section and it was considered to be unwomanly, not good enough, provocative and a way of cheating. The participants felt like common property and that people were free to comment on their choice. Some of the participants chose not to talk about their wish for a caesarean section because of people's reactions. Several participants argue that it is up to every single individual to decide mode of delivery and that it is a modern way of thinking.

An earlier experience that the participants or their close relatives had been severely ill was highlighted in many of the interviews. For an example one of them was diagnosed with lyme disease and another woman had a severe bone fracture as a teenager. Several had parents who had been diagnosed with cancer and had been ill for many years. Many of the respondents had felt that their needs as patients were not always met during previous contacts with the health-care system. Emotions as loneliness, omitted, ignored, not trusted and communications difficulties was described in the encounter with health-care providers, which in turn had resulted in a lack of trust. In contrast to previous experience, the majority of the participants stated that they had received good support from health-care providers in their wish for a caesarean section.

5.4 FACTORS OF IMPORTANCE FOR THE DECISION OF HAVING A SECOND CHILD

In paper **III**, the impact of clinical factors and personality on the decision of having a second child was investigated.

Correlations between the 45 variables and having a second child within five years after the first birth are presented in Table 6. Five variables were significantly correlated to having a second child namely; a plan for a second child at nine months postpartum was more likely to result in a second delivery ($p < 0.001$) and women with a higher score on the personality variable socialization (reflecting attachment to significant adults during childhood) ($p = 0.035$) were more likely to have a second child. Less likely to have a second child were women aged ≥ 31 years ($p = 0.002$), women with re-established sex life at nine months postpartum ($p = 0.048$) and women with a higher score on the personality variable monotony avoidance (experience-seeking behaviour) ($p = 0.002$).

In order to investigate which factors were most strongly associated with having a second child within five years after birth, the significant variables from Table 6 were entered in a logistic regression. The result of the logistic regression analysis showed that three variables, namely planning a second child, restored sex life and monotony avoidance, had a significant and independent association (positive or negative) with delivery of a second child. The strongest predictor was “planning a second child” at nine months after the first birth (OR= 5.15; 2.89-9.17) and the weakest predictor was the personality trait of monotony avoidance (OR= 0.96; 0.93-0.99). The associations indicated that the women who were more likely to give birth to a second child were; women who planned another child, women who had not restored their sex life and women who had lower scores in the monotony avoidance scale.

Variable	τ	p	n
Background characteristics before birth of the first child			
31 years or older	-0.15	0.002	450
Born in Sweden	-0.03	0.536	393
University/college education	0.03	0.543	444
In vitro fertilization	-0.06	0.232	402
Having concern for pain	0.02	0.694	392
Having concern for gynecological examination	0.04	0.459	393
Having concern for the safety of the child	0.04	0.418	392
Having concern for lack of control	-0.02	0.628	394
Fear of childbirth ^a	0.00	0.952	235
Circumstances related to birth of the first child			
Spontaneous vaginal delivery	0.03	0.466	448
Cesarean section on medical indications	0.06	0.231	448
Cesarean section on maternal request	-0.04	0.442	448
Emergency cesarean section	-0.07	0.119	448
Instrumental vaginal delivery	-0.03	0.486	448
Epidural anesthesia	0.01	0.863	448
Perineal lacerations of third and fourth degree	0.02	0.703	450
Postpartum hemorrhage > 1000 mL	0.00	0.968	450
Status, 3 months after birth of the first child			
Postpartum depression ^b	0.00	0.975	295
Fear of childbirth ^c	0.03	0.600	308
Status, 9 months after birth of the first child			
A negative experience of birth (VAS \leq 5)	-0.05	0.287	402
Planning a second child	0.31	<0.001	395
Sex life re-established	-0.10	0.048	393
Satisfactory sex life	-0.03	0.550	271
Alliance scale, 9 months after birth of the first child			
A negative contact with the child	0.05	0.260	394
A feeling of strain towards breastfeeding	0.03	0.560	383
A feeling of discomfort towards breastfeeding	-0.03	0.474	383
A sad mood	0.04	0.375	394
A negative contact with the father	0.03	0.536	393
Personality			
Somatic anxiety	0.03	0.431	388
Muscular tension	0.01	0.907	388
Psychic anxiety	0.01	0.903	388
Psychasthenia	0.01	0.785	386
Inhibition of aggression	0.01	0.734	384
Impulsivity	0.00	0.981	387
Monotony avoidance	-0.13	0.002	388
Detachment	-0.01	0.824	388
Socialization	0.09	0.035	378
Social desirability	0.02	0.641	388
Indirect aggression	-0.07	0.124	385
Verbal aggression	-0.01	0.848	387
Irritation	0.02	0.577	386
Suspicion	-0.05	0.264	386
Guilt	-0.04	0.414	387
Reproductive health, 5 years after the birth of the first child			
Miscarriages	0.05	0.427	231
Terminations of pregnancies	-0.04	0.596	230

Explanations to table 6

τ = a non-parametric correlation coefficient, thus representing the degree of association between ranked data. p = P-value for differences between those who had one child and those who had a second child (or more). n = women with available information on the special subject. ^a

Wijma Delivery

Expectancy/Experience

Questionnaire A. ^b Edinburgh

Postnatal Depression Scale. ^c Wijma

Delivery Expectancy/Experience

Questionnaire B.

Table 6. Variables assumed to be of importance for the decision to have another child.

5.5 QUALITY OF LIFE FIVE YEARS AFTER BIRTH OF THE FIRST CHILD

Paper IV addressed health-related quality of life (HRQoL) within women five years after the birth of the first child. The participants had five different mode of deliveries: vaginal birth, instrumental vaginal birth, emergency caesarean section, caesarean section on maternal request and caesarean section due to medical indication.

Of the participants who responded to the questionnaire, more than half reported maximum values on the following variables; Physical functioning (M = 95,74 and Md = 100), Mobility (M = 71.58 and Md = 100), Satisfaction with physical ability” (M=89.26 and Md = 100), Pain (M = 88.46 and Md = 100), Role limitations due to physical health (M = 93.20 and Md = 100), Role limitations due to emotional health (M = 94.10 and Md =100), General health perceptions – prior health (M = 93.65 and Md = 100), General health perception – resistance to illness (M = 83.94 and Md = 100), General health perception – health concern (M = 86.01 and Md = 100). Figure 3 provides an overview of the perceived HRQoL among all women included in the study.

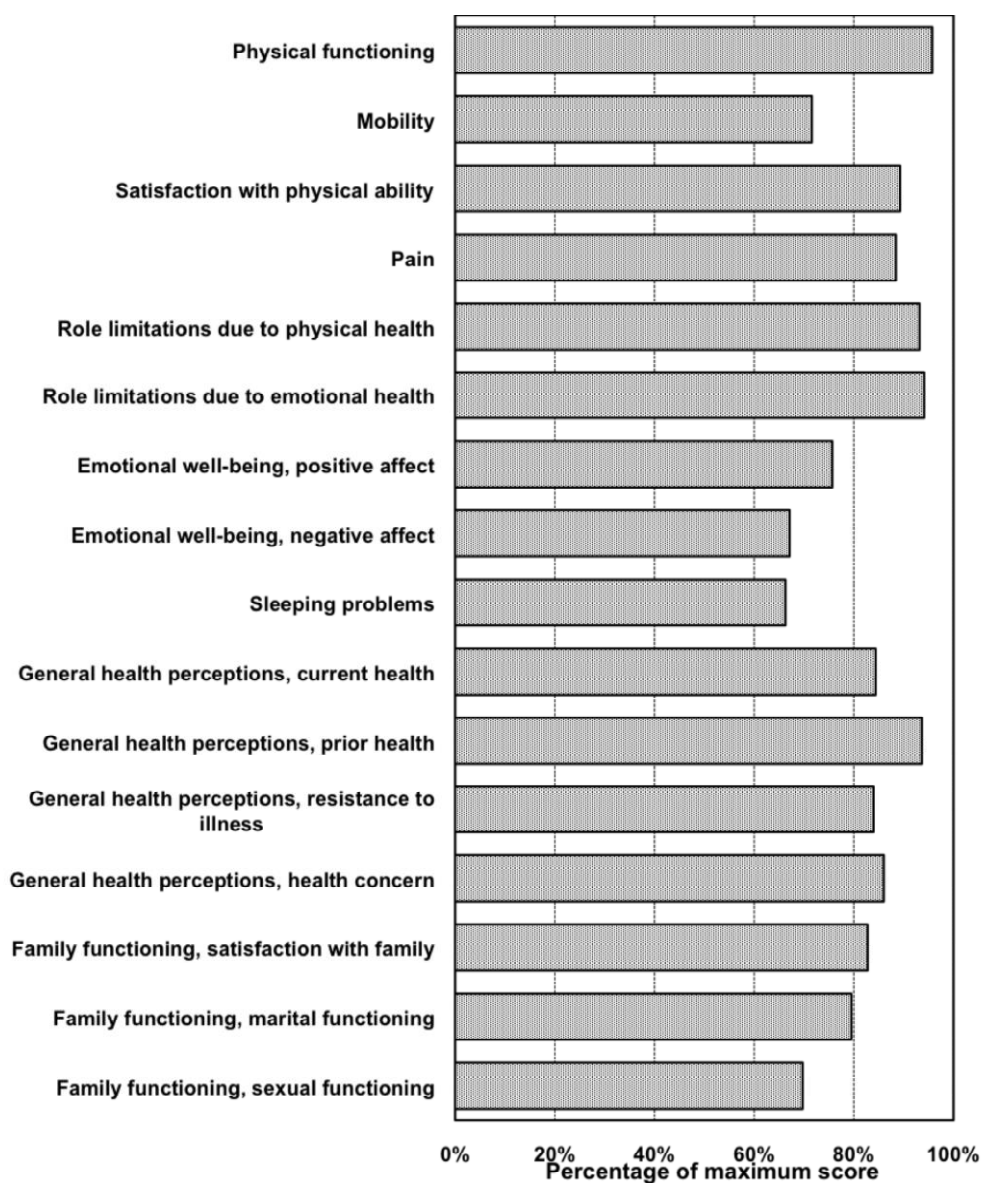


Figure 3. The overall perceived HRQoL among all women included in the study according to the HRQoL survey.

Three of the variables had a maximum score below 70 percent, namely the variables “Sleeping problems, Emotional well-being - negative effect and Family functioning - sexual functioning. Thirty-four percent of the women reported sleeping problems (M = 66.28 and Md = 70.83), 33 % reported Emotional well-being, negative effect (M = 67.11 and Md = 75) and 30 % of the women reported lower scores on Family functioning, sexual functioning (M = 69.71 and Md = 81.25).

A separate analysis was performed in order to investigate if there were any factors that were related to the variables with a maximum score below 70 percent using some of the variables from the general questionnaire as explanatory variables (bandage for leakage of urine the last seven days, leakage of urine the last seven days, leakage of faeces the last seven days, coital pain and parity). The result shows that leakage of urine for the last seven days ($p=0.028$) or having a second child or more ($p=0.041$) was related to a poorer Family functioning – sexual functioning. The analysis also showed a negative association between more than one child and the variable Role limitations due to physical health ($p=0.039$). A significant negative association was observed between coital pain and the variables Emotional well-being – negative effect ($p = 0.036$), Family functioning – sexual functioning ($p < .001$) and Mobility ($p = 0.040$).

Means, standard deviations, chi square (χ^2) and p-values for the items in SWED-QUAL, five years after the birth of the first child, are presented in Table 7. As shown in the table, statistical differences in terms of perceptions of HRQoL were found. Women with a vaginal birth and women in the group who requested a caesarean section at birth of the first child were significantly more likely to agree with the statement regarding a resistance to illness (“my body resists illness quite well”; $p < .001$) in comparison with women having undergone a instrumental vaginal birth or women who had undergone an emergency caesarean section or caesarean section due to medical indication. Women with a vaginal birth, an instrumental vaginal birth or caesarean section on maternal request were less likely to report health concerns (“my health worries me”; $p=0.029$) compared with women who had undergone an emergency caesarean section or a caesarean section due to medical indication. Women who had undergone a vaginal birth, an instrumental vaginal birth or a caesarean section on medical indication were significantly more likely to report higher scores on the variable “General health perceptions - prior health” (rating of prior and current health; $p=0.043$) compared with the other groups.

<i>Variable</i>	<i>Mode of delivery</i>	<i>M</i>	<i>SD</i>	χ^2	<i>p</i>
Physical functioning	Vaginal birth	95.6	12.23	0.64	0.959
	Instrumental vaginal birth	95.8	7.14		
	CS on medical indication	96.6	7.90		
	CS on maternal request	94.4	13.10		
	Emergency CS	95.4	11.79		
Mobility	Vaginal birth	67.8	46.74	3.07	0.546
	Instrumental vaginal birth	75.0	44.72		
	CS on medical indication	76.1	42.27		
	CS on maternal request	77.1	42.60		
	Emergency CS	60.9	49.90		
Satisfaction with physical ability	Vaginal birth	91.5	21.53	1.61	0.807
	Instrumental vaginal birth	89.6	20.07		
	CS on medical indication	86.8	28.09		
	CS on maternal request	88.9	25.91		
	Emergency CS	89.4	18.93		
Pain	Vaginal birth	90.1	14.89	3.72	0.445
	Instrumental vaginal birth	89.5	14.45		
	CS on medical indication	86.9	17.39		
	CS on maternal request	88.5	16.57		
	Emergency CS	86.5	11.61		
Role limitations due to physical health	Vaginal birth	94.4	15.42	5.13	0.274
	Instrumental vaginal birth	93.8	13.44		
	CS on medical indication	90.5	20.37		
	CS on maternal request	92.9	15.97		
	Emergency caesarean	97.6	8.18		
Role limitations due to emotional health	Vaginal birth	93.8	14.70	4.26	0.372
	Instrumental vaginal birth	98.6	5.56		
	CS on medical indication	92.2	16.13		
	CS on maternal request	96.9	8.23		
	Emergency CS	94.2	14.16		

Table 7. Quality of life five years after the birth of the first child according to the SWED-QUAL survey in relation to mode of delivery.

<i>Variable</i>	<i>Mode of delivery</i>	<i>M</i>	<i>SD</i>	χ^2	<i>p</i>
Emotional well-being, positive effect	Vaginal birth	74.4	21.79	5.31	0.257
	Instrumental vaginal birth	77.3	16.45		
	CS on medical indication	74.2	21.12		
	CS on maternal request	82.6	16.62		
	Emergency CS	74.0	18.37		
Emotional well-being, negative effect	Vaginal birth	65.7	26.68	9.16	0.057
	Instrumental vaginal birth	70.1	29.78		
	CS on medical indication	64.9	28.08		
	CS on maternal request	77.5	25.06		
	Emergency CS	61.6	26.47		
Sleeping problems	Vaginal birth	67.3	22.11	4.21	0.379
	Instrumental vaginal birth	74.5	16.02		
	CS on medical indication	63.0	22.83		
	CS on maternal request	67.1	26.39		
	Emergency CS	66.1	21.07		
General health perceptions, current health	Vaginal birth	86.4	18.34	3.70	0.448
	Instrumental vaginal birth	84.9	23.02		
	CS on medical indication	80.4	23.67		
	CS on maternal request	87.7	14.70		
	Emergency CS	83.3	14.43		
General health perceptions, prior health	Vaginal birth	96.8	10.41	9.87	0.043
	Instrumental vaginal birth	95.3	12.81		
	CS on medical indication	89.5	20.69		
	CS on maternal request	94.4	18.53		
	Emergency CS	91.8	17.11		
General health perceptions, resistance to illness	Vaginal birth	88.4	20.12	20.26	0.000
	Instrumental vaginal birth	80.5	35.05		
	CS on medical indication	77.0	28.14		
	CS on maternal request	92.7	18.27		
	Emergency CS	76.6	27.26		
General health perceptions, health concern	Vaginal birth	90.6	22.09	10.77	0.029
	Instrumental vaginal birth	90.6	25.62		
	CS on medical indication	79.0	31.85		
	CS on maternal request	92.4	15.61		
	Emergency CS	77.2	33.64		

Table 7. Continued

6 DISCUSSION

6.1 DISCUSSION OF RESULTS

In this thesis, four studies examined various aspects of mode of delivery and variables related to the birth. The results of these findings are discussed in the text below.

6.1.1 Contact between mother and child and attitudes towards breastfeeding related to mode of delivery

It was found that the contact with the child in general was estimated as positive at all occasions and no differences were observed between the delivery groups related to mode of delivery (Paper I). The relation to the child became more positive in all groups over time. This result indicates that mode of delivery does not seem to affect how mothers experience their contact with the newborn. This finding is in agreement with Figueiredo et al. (100). It has been found that some socio-economic and psychological factors affect bonding between mother and child in a negative way (100-103). Some of the background characteristics differed between the groups in this study (Paper I), for example a larger proportion of women in the group who requested a caesarean section had an IVF. In vitro fertilisation mothers have been shown to be attached to their unborn children to the same extent as other mothers (104). Despite some socio-demographic differences, the participants were a rather homogenous group since they were physically and psychologically healthy. This fact might have contributed to positive effects in terms of perceived contact between the mother and the newborn child and may be one explanation for the results.

There are probably many aspects that are significant for the contact between mother and child, both circumstances during birth and the period thereafter. One aspect is that routines during a caesarean section may have contributed to improve the initial contact between mother and child. Mothers in this study (Paper I) had regional anaesthesia during the caesarean section and if the mother and the newborn showed no complications, the mother received the child skin to skin shortly after birth. Previous research has shown positive effects of skin-to-skin contact with the fetus immediately after a caesarean section, such as promoting vocal interaction (105) and infants being comfort (106).

The findings related to breastfeeding show that breastfeeding was experienced as stressful and uncomfortable for all mothers experienced on the second day (Paper I). Mothers with a vaginal delivery, however, experienced less strain than the mothers with a caesarean delivery. Previous research indicates that difficulty with breastfeeding after caesarean section presents for several reasons such as postoperative pain (107), later mother-infant first contact (108), maternal postpartum emotional distress (109) and less maternal oxytocin and prolactin in response to suckling (110). We also found that the group requesting a caesarean section experienced more problems with breastfeeding than mothers in both of the other groups at three and nine months after delivery. Additionally, previously published data on this cohort show that this group of women was breastfeeding to a lesser extent at three and nine months (43). Based on these

results, women requesting caesarean section seem to be more vulnerable in a breastfeeding situation.

The relationship to the partner was experienced as positive on all occasions with no differences between delivery groups (Paper I). Successful adaptation to the maternal role might have a positive effect on mothers ability to nurture and care for her infant. Emmanuel et al. (111) showed that social support is the most important factor in maternal role development. Another study found that others reporting greater adaptation during pregnancy reported greater adaptation postpartum (112). Mothers who believed themselves adapted indicated that they had a better relationship with their partner and perceived greater participation in childcare from their partner.

Mothers with a vaginal delivery experienced less sadness than the other groups at all occasions (Paper I). We also found that women planning a vaginal birth, but who had an emergency caesarean section or an instrumental birth, experienced more sadness on the second day post partum. These findings are in agreement with previously research showing symptoms of anxiety and depression in women undergoing emergency caesarean section (113-115), albeit other research exists that have come to the opposite conclusion (116). An emergency caesarean section or an instrumental vaginal birth results in an unanticipated mode of delivery for the woman and her partner. Saisto et al. (117) found that one of the strongest predictors of disappointment with birth was an emergency caesarean section.

The Alliance Scale was found to have sufficient reliability (all coefficients expressing internal consistency) and validity according to the factor analysis (118). Five subscales were aggregated based on the factor analysis. The first factor was related to attitudes to breastfeeding, the second factor to attitudes to the partner, the third factor to the attitude to the child, the fourth factor was a mood factor, and the fifth a second breastfeeding factor.

6.1.2 Reasons for a wish for a caesarean section

The main finding in paper II was that the participating women requesting a caesarean section always had known that they would not give birth vaginally and this was described in the theme ‘caesarean section on maternal request—deeply rooted emotions’. Different characteristics based on women's ways of choosing delivery method have been described. According to Davis-Floyd (119) there are three different ways of looking at the body when giving birth: the technocratic, the humanistic and the holistic approach. The technocratic model describes a mind–body separation and it sees the body as a machine, the humanistic accentuate mind–body connection and see the body as an organism and the holistic model insist the body, mind and spirit are one unit and define the body as an energy of interaction with other energies. It was found that several of the participants described that giving birth was separated from them and their body, something that just needs to be done. Their bodies were not able to manage a vaginal birth and what they considered ‘the natural way’ to give birth was not an alternative. It might be that women who objectify their bodies are more attracted to a surgical birth. In view of these aspects, it appears that the technocratic model according to Davis-Floyd would fit within these women's world view of how to give birth.

Similarly, Andrist (120) hypothesises that women who objectify their body are more likely to be interested in surgical childbirth.

The participants considered no other option than a caesarean section and described the belief that they were not being able to give birth vaginally (Paper II). This feeling had been there for a long time. The interviewed women had difficulties in describing the reason for these feelings. Pregnancy was something that they had avoided just because of the fear of having to give birth vaginally. This result provides an insight in how some women reason about giving birth and how it can affect and worry them from an early age. It may be that these feelings concerning choice of mode of delivery may have existed in previous generations but has become more acceptable to discuss. However, based on the caregiver's point of view, it has been found that both midwives and obstetricians considered the management of caesarean section on maternal request difficult, and that their attitude balanced between resistance and respect (121). In addition, mode of delivery was considered an issue of autonomy and several of the participants (Paper II) stated that everyone should have the freedom to choose how to give birth. This result is in line with a Canadian study (122). Caesarean section is not an option that Swedish women can choose for themselves. However, it has been shown that nearly half of those who preferred a caesarean section in early pregnancy also had an operative birth (31% elective and 15% emergency) (35) suggesting that women's antenatal preferences are of importance.

Several of participants had problems dealing with the pregnancy and they had difficulties with preparing themselves for their parenthood prior to the decision to give birth by the means of a caesarean section (Paper II). When the operation was scheduled it appeared as a huge relief and they could take in the pregnancy in a different way. Hellmark-Lindgren (123) found that the women felt like they had to argue and it felt in some cases as a power struggle between medical care and patient. This in contrast to the result in this study (Paper II) since the women stated that the path to have a caesarean section granted was much easier than they had expected. In contrast to this result, Kingdon et al. (124) shows that women did not have autonomous choice over the actually birth method, but neither did they necessarily want it.

It was also found that the participants regarded a planned caesarean section to be a more controlled and safe way to give birth, especially for the fetus. This result is similar to others of women opting for caesarean section (40-44, 122, 125). Moreover, it was shown that a caesarean section was considered a possibility to control and manage the unpredictability and uncertainty that follows a vaginal birth. These results are supported by Hellmark-Lindgren (123). Being in control was mentioned in terms of control of pain, not being referred from 'your hospital' and knowing when and where the birth would take place. This result is in agreement with a Swedish study showing that women worried during pregnancy about having to be referred when labour had started (126).

The participants expressed feelings concerning other people's opinions and reactions' about them having a planned caesarean section without medical indication (Paper II). The participants felt like common property and that people surrounding them were free to comment on their choice of mode of delivery the way they felt like. The participants

felt contested and marred by the fact that others had opinions about their choice of delivery method. Requesting a caesarean section in a culture where vaginal birth in a hospital is the norm challenges both the health-care system and engages the society and is not without controversy. There are also ethical and moral issues to consider. The practice of Midwifery as a profession is governed by the International Code of Ethics for midwives (127). The code declares that ‘the midwives are to respect a woman’s right to informed choice and support a woman’s acceptance of responsibility of her choice’. When there are no medical reasons to perform a caesarean section, the procedure usually involves a higher risk for mother and child in both the short- and long-term compared to a vaginal birth (39). The ethics of exposing mothers to these risks, additionally performing surgery on what are otherwise a healthy patient as well as the increasing financial strain on the healthcare system, complicates the issue regarding the demand for patient choice (128). When taking a course of action, the health professional should be convinced that it has the greatest chance of benefit with the least risk of harm (129).

Some of the participants had a negative past experiences with health-care (Paper II). Coulter and Cleary (130) found high rates of problems during inpatient hospital stays, e.g. problems with information, respectability for patients’ preferences, emotional support and physical comfort. There is no previous study showing that earlier health-care experience would influence the choice of mode of delivery. Nevertheless this result highlights the importance of how interaction with patients may be significant for future decisions.

6.1.3 Are there links between clinical factors, personality and future reproduction?

Planning a second child at nine months postpartum was the most important factor in deciding to try to have a second child (Paper III). Mode of delivery or circumstances during the first birth was not decisive for future reproduction. These results suggest that what the women/couples have decided is a more important factor than different aspects related to the birth of the first child. Women who had restored sex life at nine months postpartum and women who scored higher in monotony avoidance at nine months postpartum were less likely to give birth to a second child. This personality trait is a part of the personality that relates to a capacity for change and an experience-seeking behaviour (85). The result that woman with higher scores in monotony avoidance were less likely to give birth to a second child is difficult to explain. An interpretation of this result could be that life with children is perceived as an existence with set routines, which in turn might not be pleasing to this personality type. The result revealed that having re-established sex life was related to a decreased likelihood of having a second child certainly depends on several factors. One is that the question concerning the resumption of the sex life was not specified in the questionnaire, therefore the answer describes the participants' own perception of what ones sex life entails and do not need to solely imply intercourse. In addition, the woman’s access to birth control, such as contraception and IVF, makes the connection between sex life and childbearing less evident.

The result revealing that mode of delivery was not associated with subsequent reproduction (Paper III) is both in line with previous research (131, 132), and in contrast to research showing that having a caesarean section is associated with fewer subsequent pregnancies and births (132-136) or an increased waiting time to next pregnancy (137). Information about the indication for the caesarean section is limited in some of these studies. A lower fertility may reflect conditions that existed prior to the caesarean section and therefore the caesarean section might not be the reason for the lower fertility reported after the caesarean section (138-139).

In addition to the result that mode of delivery was not decisive for future reproduction, nor was there a correlation between complications during birth, such as postpartum haemorrhage or a perineal laceration (degree three and four), and having a second child. This result may partly be explained by the Swedish childbirth context. Generally, it is a routine that, if a complication occurs during birth, the woman and her partner are offered to talk through the experience with a midwife or an obstetrician. All women are also offered a standard 6-8 week postnatal visit where they are given an opportunity to discuss the experience of childbirth. Different opportunities to work through feelings and in assisting women to reconcile negative birth experiences might in turn make the step to have a second child less fearful. The effect of counseling has been found to reduce symptoms of trauma and enhance women's confidence about a future pregnancy (140, 141) while other research reported no effects on group counseling for mothers after emergency caesarean on their views of the recent delivery or prevent symptoms of posttraumatic stress or postnatal depression (142).

Fear of birth or concerns when thinking of approaching childbirth of the first child did not have an impact on subsequent reproduction (Paper III). This result is in line with previous research (131). Neither did fear of childbirth three months after the birth of the first child have an impact on future reproduction. On the contrary, a recent study found that secondary fear of childbirth after a previous traumatic delivery experience prolonged the time to subsequent delivery (143). Nor did a negative experience of the first birth have an influence on subsequent reproduction (Paper III). The opposite result has previously been described (131). Potential causes why results between studies differ include variation in the design and methods to measure fear of childbirth and the experience of childbirth. Also, the women in our cohort have been cared for at the same hospital, and it is possible that postpartum care and follow-up for the women differ from other studies. No correlation between postpartum depression after the birth of the first child and subsequent reproduction was found (Paper III), which is in line with a previous study (144).

6.1.4 HRQoL in a long-term perspective

The women in the cohort generally experienced their HRQoL as relatively good (Paper IV). Since the population in the area of the study is healthy and well educated compared to other municipalities (74), this result is not surprising. However, sleeping problems, emotional well-being - negative effect and family functioning - sexual functioning indicated problems for the cohort. Previous studies have demonstrated that both physical and emotional health problems like tiredness, urinary incontinence and depressive symptoms following childbirth are common (145-149) and that some

symptoms even appear to increase during the first year of parenthood (146-148). It seems that these suggestions do not only apply to the first year after birth but, as demonstrated in paper **IV**, also seems to persist in the long term.

The result in paper **IV** showed that leakage of urine or parity (more than one child) had a negative association with sexual functioning. Parity was also negatively related to role limitations due to physical health. Coital pain had a negative association with the variables “emotional well-being – negative effect”, “family functioning – sexual functioning” and “mobility”. It is difficult to prove that these variables are causally related to childbirth, however, these results give an indication that some factors related to childbearing do have an impact on women's quality of life in the long term. In a prospective cohort study it was suggested that physical health problems commonly persist or recur throughout the first 18 months postpartum, with potential long-term consequences for women's satisfaction with their life (150). A qualitative study conducted in Sweden showed that the women had hoped to be able to discuss physical changes after childbirth and its consequences at the postpartum check-up but were disappointed when their problems were not addressed (151). Based on these results, an alternative approach to post partum check up might be valuable.

Mode of delivery was associated with differences in HRQoL outcomes five years after birth (Paper **IV**). Women with a vaginal birth, an instrumental vaginal birth or a caesarean section on maternal request in first birth were in some respects more likely to report better perceived HRQoL than women who had undergone an emergency caesarean section or caesarean section due to medical indication. These findings are to some extent consistent with previous research indicating that women who had caesarean section or instrumental vaginal birth report poorer postpartum HRQoL than women with a vaginal birth (145, 147,149, 152). However, our results distinguish themselves by showing differences depending on the indication for caesarean section since women who underwent a caesarean section on maternal request reported more favourable HRQoL than those who had an emergency caesarean or a caesarean section due to medical indication. The risk of experiencing psychological reactions after childbirth is suggested to be higher after emergency caesarean section births and instrumental vaginal birth (153-155). Based on our findings, emergency caesarean section even appear to be associated with long-term consequences on the HRQoL.

6.2 METHODOLOGICAL CONSIDERATIONS

Both quantitative and qualitative data was integrated into this thesis with the intention that different methods would complement one another and add depth and nuance to the results. The data collection through questionnaires and qualitative interviews provides an increased knowledge and understanding of women's self-perceived views on various aspects of childbirth. Limitations as well as strengths of paper **I-IV** included in this thesis that are worth some considerations are reflected upon in the text below.

6.2.1 Issues of trustworthiness

In qualitative research, the concepts of credibility, dependability and transferability have been used to describe trustworthiness (95, 156). Credibility, corresponding to internal validity in quantitative research, refers to the confidence in how well data and

process of analysis address the intended focus (95). To ensure that the specific topics of the study were covered and that the participants were asked the same questions throughout the course of the study, a semi-structured interview guide with open-ended questions was used (157). To verify that the information given by the participant was correctly and completely understood (158) the researcher ended the interview with a brief summary, inviting the participant to correct or add information if needed. Selecting the most appropriate data collection is also important in establishing credibility (95). For paper **II**, individual interviews were considered to be the most appropriate method for data collection given that the topic could be perceived as sensitive and therefore unsuitable for a qualitative method such as focus groups.

Transferability, or external validity, indicates to what extent the findings can be transferred to other settings or context (95, 159). By doing a thick description of the research context the qualitative researcher enhance transferability. Then the reader can decide whether or not the findings are transferable to another social context or subjects (95). The Swedish birth context, setting and the participants was carefully described in order to make it possible for the readers to judge to what extent the findings are applicable to other settings (Paper **II**). Further, rich and vigorous presentations of the findings together with appropriate quotations will also strengthened transferability (95). Detailed descriptions of the categories were made, and these were provided with quotations from the participants in order to contribute to supporting the relationship between the empirical data and the categories.

Dependability, corresponding to reliability in quantitative research, involves the ability of the researcher to account for the constantly changing conditions of the phenomenon studied (95). The researchers kept field records about impressions and issues that emerged during the interviews in order to provide comments for the data analysis. Moreover, an ongoing open dialogue within the research team addressed dependability since the extent to which judgements about similarities and differences of content can be consistent over time.

In order to establish qualitative rigour and openness, an awareness of the authors pre-understanding were considered. All four co-authors had pre-understanding as midwives and the authors tried to be aware of any assumptions that might have been taken for granted in order to avoid premature explanations. A process of discussing the findings resulted in agreement within the research group, as a means to achieve trustworthiness. The confirmability (160) of the study (Paper **II**) was strengthened by the fact that some of our findings were confirmed by previous studies.

6.3 VALIDITY, RELIABILITY AND GENERALIZATION

Validity describes to what extent an instrument measures what it set out to measure (161). Both qualitative and quantitative research can address internal and external validity. Internal validity seeks to demonstrate that the explanation of a particular event, issue or set of data, which a piece of research provides, can actually be sustained by the data (162). External validity asks the question; to what populations or settings can these demonstrated results be generalized? To achieve validity, most of the questionnaires used in paper **III** and **IV** were well-validated instruments that have been used in

previous studies (76-78, 83-87, 89). The instruments used in this thesis were easy to fill in and taking approximately 15 minutes of the respondent's time.

Cronbach's alpha coefficient is an indicator of a question's reliability and assesses the internal consistency or average correlation amongst of items that make up the question. Values range from 0 to 1, with higher values indicating greater reliability (163). Cronbach's alpha was used to evaluate the internal consistency of the scale used in paper I. Through adjusting for confounders, logistic regression analysis was performed (Paper III) in order to detect the true relationship between the outcome and the explanatory variables.

Generalisation refers to the extent to which the findings can be applied to other groups or settings. Since the women in the cohort (Paper I, III and IV) were drawn predominantly from one area that happened to be wealthy, the respondents in this thesis are not representative of Swedish women in general in some socio-demographic background variables. The educational level, as one example, is higher in the area where the study was conducted than the average of the nation. The results in this study are hence possible to generalize only to populations in similar contexts. On the other hand, only first-time mothers were included in the original study (Paper I, III and IV) as well as the qualitative study (Paper II). This means that they did not have any earlier experience of childbirth and motherhood, which in turn decreased the risk for confounding. Findings based on a qualitative study are not possible nor meant to generalise (156). The settings around these women as well as their attitudes might not be similar to women living in other areas of Sweden. However, the findings in paper II provide valuable insight into how some first-time mothers conceptualise mode of delivery. Considering that Sweden is a country with low child mortality as well as with highly developed maternal-health and child-health services, the results of this thesis may be difficult to generalize to other countries.

6.4 SELECTION BIAS

Cohort studies have the disadvantages of possible bias over time (70). This is because as studies proceed, participants may become less interested in the research or cannot afford the time to take part in the study. The demographic and socioeconomic composition of those who initially agreed to participate could change the composition of the comparison groups. However the response rate of 82 % (Paper III) respective 67 % (Paper IV) is very good in a long time follow-up. A strength of the study include the recruitment of first-time mothers in late pregnancy as well as frequent follow-up of participants up to five years after their first birth.

6.5 DATA COLLECTION BIAS

By asking certain questions, the researchers have in one way already defined the meaning of various aspects in advance of the responses. Moreover, the question asked may be interpreted in different ways which may also be of importance for the outcome. In addition, measuring a woman's experience of childbirth (Paper III) in an objective manner may be associated with difficulties. The answers might change if asked during the actual birth, immediately after or some time after birth. Another problem when examine women childbirth experience is that the event is very multifaceted. One way to

capture such an experience is by the women herself telling in her own words through an interview some time after giving birth. A further aspect is that some of the questions may have been perceived as sensitive. There is therefore a possibility that some of the respondents did not reply completely honestly when answering the questionnaires, and this should be considered as a possible bias. Most data in this thesis is based on self-rated questionnaires and many forms were used during a number of occasions over a long time period. It is therefore possible that the respondents became tired of filling in the forms and for this reason did not complete the questionnaire.

Since paper **IV** was implemented five years after the first birth, no conclusive explanations regarding the causal relationship between HRQoL and mode of delivery can be made. Differences in quality of life depend on a number of factors other than the birth method. Also, factors affecting HRQoL may change over time. Seventy-five percent of the women in the cohort had given birth to a second child within five years after the birth of the first child. Accordingly, some women were more likely pregnant or had recently given birth at the time when the study was conducted, which possible influenced their current HRQoL. Nevertheless, our results provide suggestions on how women perceive their HRQoL five years after giving birth to the first child. Only first-time mothers were included in the cohort. From this aspect, the results demonstrate HRQoL in a long term perspective within women with the same starting point in terms of childbearing.

In addition to the wide range of variables studied in paper **III**, there are probably many other factors that have an effect on women's subsequent reproduction, and we cannot exclude other important variables that may have been overlooked. Therefore this study has a limitation in not having measured a variety of variables of importance for having a second child.

Data for paper **II** were collected after the participants had been informed that they were granted a caesarean section. It is possible that the result would have been different if the questions were asked before they knew they were granted a caesarean section. Another consideration is that since pregnancy and childbirth is a major event in many people's life and first-time mothers are, based on our experience, a very motivated group of respondents. The written response forms were generally complete and the answers during the individual interviews were very extensive and detailed.

A strength of the studies within this thesis include that all women in the cohort gave birth to their first child at the same hospital, ensuring uniformity of routines for the pregnant and birthing women as well as labour management.

7 CONCLUSIONS AND CLINICAL IMPLICATIONS

This thesis provides insights on how mode of delivery and aspects related to birth has different importance to women, depending on the context. Mode of delivery did matter in some respects, and in others it had no meaning.

The perceived contact between the mother and the newborn child did not differ between different delivery groups (Paper I). Neither did mode of delivery and clinical factors related to the first birth affect future reproduction. Planning for a second child at nine months after birth was the most important factor related with having another child (Paper III).

Women with a vaginal delivery experienced less sadness after the delivery than the other groups. In addition, women planning a vaginal birth but who ended up having an emergency caesarean section or an instrumental vaginal birth experienced significantly more sadness postpartum. The group of women requesting a caesarean section experienced more problems with breastfeeding than mothers in the other delivery groups (Paper I). The overall HRQoL was reported as relatively good five years after the first birth within women in the cohort. However, mode of delivery was associated with differences in HRQoL five years after birth of the first child (Paper IV).

Finally, a wish for a planned caesarean section was formulated as deeply rooted emotions and reflected that this group of first-time mothers emotions towards birth goes 'beyond fear of childbirth'. Requesting a caesarean section described the matter of mode of delivery as a complex question from a social level (Paper II).

The results of this thesis assist women and health professionals to better understand how childbirth and mode of delivery may be significant for the woman seen from different perspectives. In the light of the evidence about the risks associated with an operative birth, providers of obstetric care need to explore these perceptions with women and develop strategies in order to support and promote vaginal birth as a healthy and meaningful event in women's lives.

Our results have clinical implications for providers of maternity care, demonstrating that differences in mode of delivery is of importance concerning certain aspects, such that women requesting a caesarean section experienced more problems with breastfeeding than other delivery groups and that differences in health-related quality of life occurs within women who had given birth even in the long-term perspective. This information could help care giving staff to identify these mothers and supply support prior to them leaving the maternity ward or upon the return visit at the midwives clinic.

Additionally, the results in this thesis indicating that the mode of delivery and aspects related to birth is of less importance can be used by providers of maternity care when informing and counselling women and their families on future reproduction. Moreover, there exists a widespread belief that a caesarean section means a poorer contact with the child. Therefore the result indicating that mode of delivery not seems to affect how mothers experience their contact towards the newborn child may be of clinical importance for women who give birth by caesarean section.

8 FUTURE RESEARCH

Despite rising caesarean section rates, the number of women who prefer a caesarean section is relatively low and the causes of rising caesarean section rates appear to be related to other aspects than women's preferences. Further understanding about the reason for the increasing rates of caesarean section and instrumental births would be of interest for future research as well as to highlight the causes for variations between different hospitals within the nation.

It would be of high value to get a greater understanding for women requesting a caesarean section in order to find strategies for support as well as individual planning of birth. In addition, to examine the experience of their caesarean section and postpartum period and to investigate whether the request for a caesarean section was considered to be the correct decision, would also be an area of interest and might give further understanding for this group of women.

Further studies, both large-scale as well as studies with qualitative design, are needed to address the lack of knowledge and to get a deeper understanding for women's health and quality of life after childbirth as well as aspect of importance for women's future reproduction. This knowledge could further contribute to the understanding of mode of delivery and its importance for the woman, both in a short and a long-term perspective.

9 SUMMARY IN SWEDISH

9.1 BAKGRUND

Att vänta och föda barn är en central händelse i livet som väcker de flesta människors engagemang och intresse. Detta är också en tid i kvinnors liv fylld med fysiska och känslomässiga förändringar. Målet med svensk förlossningsvård är en frisk mor och ett friskt barn samt för kvinnan en positiv upplevelse, med minsta möjliga antal ingrepp under graviditet och förlossning och med bibehållen säkerhet.

Stora förändringar har skett i svensk förlossningsvård sedan början av 1900-talet. Dödlighet och de medicinska riskerna i samband med graviditet och förlossning har minskat drastiskt och vården kring den födande kvinnan har kommit att präglas av en alltmer ökad medikalisering. Kejsarsnitt och instrumentella vaginala förlossningar har blivit allt vanligare de senaste decennierna och utgör numera en stor del av svensk förlossningsvård. Ökningen av antalet kejsarsnitt har till viss del förklarats av demografiska förändringar hos kvinnor i barnafödande ålder, som t.ex. högre ålder och ett ökat BMI hos kvinnor som föder barn idag. Dessa faktorer är relaterade till en ökad risk för kejsarsnitt. Äldre barnafödorskor och en uppgång av användandet av epiduralbedövning är faktorer som visat sig ha betydelse för ökningen av instrumentella förlossningar. Antalet kejsarsnitt på kvinnans önskan utan att medicinsk indikation föreligger har också ökat, men utgör numerärt bara en liten del av det totala antalet kejsarsnitt. Både kejsarsnitt och instrumentella vaginala förlossningar är förknippade med negativa fysiska och psykologiska konsekvenser för såväl mor och barn.

Vilka aspekter bidrar till att en frisk förstföderska med en normal graviditet önskar ett kejsarsnitt, trots att den medicinska säkerheten kring den födande kvinnan är hög idag? Sett från olika synvinklar, vilka andra faktorer relaterade till förlossningssätt och barnafödande kan vara av betydelse för kvinnan? Detta är perspektiv som studeras närmare i denna avhandling.

9.2 SYFTE

Avhandlingens övergripande syfte var att undersöka och beskriva betydelsen av olika förlossningssätt och huruvida olika aspekter i samband med födelsen av det första barnet kan ha betydelse för kvinnan, både på lång och kort sikt.

9.3 METOD

I tre av studierna användes en prospektiv kohort design (Delarbete **I**, **III** och **IV**) och i studie kvalitativ metodik (Delstudie **II**). Totalt 551 friska förstföderskor rekryterades i kohorten och delades i fem olika grupper beroende på förlossningssätt; kejsarsnitt på egen önskan utan föreliggande medicinsk indikation, kejsarsnitt på obstetrisk indikation, spontan vaginal förlossning, assisterad vaginal förlossning och akut kejsarsnitt. Ett flertal självuppskattande frågeformulär administrerades vid fem olika tidpunkter, i slutet av graviditeten, två dagar, tre och nio månader post partum samt fem år efter inkluderingen i kohorten. En av dessa enkäter gällande den självupplevda kontakten till barnet besvarades av 510 av deltagarna i kohorten och analyserades i

delarbete I. Två uppföljningsstudier baserat på svar från ett antal frågeformulär genomfördes fem år efter att deltagarna fött sitt första barn. Data från den ena av dessa studier (Delarbete III) innefattade sexuella, reproduktiva och förlossningsrelaterade faktorer, personliga egenskaper, postnatal depression, rädsla för förlossningen och kontakten mellan mor/barn samt data från medicinska journaler och baseras på svaren från 355 kvinnor. Den andra studien (Delarbete IV) inkluderade data gällande uppskattad livskvalitet, sociodemografiska variabler samt obstetrisk bakgrund och besvarades av 249 kvinnor. Delarbete II genomfördes med semistrukturerade individuella intervjuer. Totalt ingick 12 friska förstfödorskor med normal graviditet med en önskan om kejsarsnitt utan föreliggande medicinsk indikation. Kvinnorna intervjuades i graviditetsvecka 26-36.

9.4 SAMMANFATTNING AV RESULTATEN

Kontakten med barnet och relationen till partnern bedömdes som positivt vid alla undersökningstillfällen och det fanns inga signifikanta skillnader mellan förlossningsgrupperna (Delarbete I). Kvinnor med en vaginal förlossning upplevde amningen som mindre stressande än de kvinnor som genomgått ett kejsarsnitt. Tre och nio månader efter förlossningen rapporterade kvinnorna som genomgått planerat kejsarsnitt på egen önskan mer amningsproblem än de andra förlossningsgrupperna. Kvinnor som efterfrågade kejsarsnitt i sin första graviditet beskrev en övertygelse om att alltid vetat att de inte skulle föda vaginalt och att det inte fanns några andra alternativ (Delarbete II). Ett kejsarsnitt ansågs som ett mer kontrollerat och säkert sätt jämfört med en vaginal förlossning. Kvinnornas tankar beskrevs som 'djupt rotade känslor' och avspeglade hur dessa kvinnors reflektioner kring barnfödande går utöver förlossningsrädsla. Inget samband observerades avseende förlossningssätt eller andra faktorer relaterade till födseln av det första barnet och om kvinnan födde ytterligare barn (Delarbete III). Inte heller fanns det ett samband mellan förlossningsdepression, förlossningsrädsla, en negativ förlossningsupplevelse och den självskattade kontakten till barnet och efterföljande reproduktion. Att planera ett andra barn när deltagarna tillfrågades nio månader efter första förlossningen var den viktigaste faktorn för att kvinnan skulle föda ytterligare barn. Den övergripande hälsorelaterad livskvaliteten rapporterades som bra fem år efter den första förlossningen (Delarbete IV). Suboptimala poäng erhöles för variabler som sömnproblem, känslomässigt välmående och sexuell funktion. Kvinnor som genomgått en spontan vaginal förlossning, en instrumental vaginal förlossning eller kvinnor som genomgick kejsarsnitt på egen önskan vid födseln av deras första barn var mer benägna att rapportera bättre upplevd livskvalitet än kvinnor som hade genomgått ett akut kejsarsnitt eller kejsarsnitt på grund av medicinsk indikation.

9.5 SLUTSATS OCH KLINISKA IMPLIKATIONER

Denna avhandling bidrar med ökad kunskap om hur förlossningssätt och aspekter relaterade till förlossningen har olika relevans för barnafödande kvinnor beroende på sammanhang. Förlossningssätt hade betydelse i vissa avseenden, och i andra fall var det av mindre vikt för kvinnan. Avhandlingens resultat kan användas som stöd för personal inom sjukvård när information ges till gravida och födande kvinnor, samt för att bättre

förstå vilken betydelse förlossningssätt och aspekter relaterade till förlossningen kan ha för kvinnor som har fött barn.

10 ACKNOWLEDGEMENTS

Many are those who have supported me during the process of writing. This thesis had not been possible to write if it were not for all of you who have been by my side during these years, and I am sincerely grateful to all of you. Particularly, I wish to express my sincere gratitude to:

All the women who participated and generously shared their time, thoughts and feelings with us. You made this thesis possible!

My three supervisors, who I have had the privilege to share this journey with. You have in different ways contributed to guide me through the doctoral education. Each and every one of you has a broad knowledge, analytical sharpness and research skills that have been of great value to me. The combination of your sharp intellect and great sense of humour has been unbeatable!

Ingela Wiklund, my main supervisor, for your support, patience and for your words of encouragement along the way. Thank you for all the time you have dedicated to me during these years and for sharing your scientific knowledge and experience with me with never-ending energy. Your positive attitude has been inspiring and has often helped me to find direction when I felt lost.

Ellika Andolf, my co-supervisor, for having enriched me with your great knowledge in different areas in research. Thank you for all the encouragement you have given me and for always being incredibly supportive.

Gunnar Edman, my co-supervisor, for all support you has given me, especially with the statistics. Thank you for sharing your enormous knowledge and for all the practical help with statistical analyses.

My co-others, *Kyllike Christensson* and *Ingegerd Hildingsson* for valuable feedback and to each of you for generously sharing of your vast knowledge and experiences in research.

Gudrun Abascal, for being so generous and always encouraging me in my work with research. For that and for giving me the opportunity to do research, I am eternally grateful.

Staffan Josephsson, my mentor, for your advice that you shared with me as a new postgraduate student. All this advice I have carried with me during this journey.

Nina Ringart, for administrative support and for always being very helpful.

Hilde Larsson, for helping me with data files and questionnaires, and for taking time to answer my questions.

Josefin Wiklund, for helping with proofreading, which you have done with tremendous accuracy as well as an analytical skill. I am eternally grateful that you accepted and carried out this task.

Thanks also to all my *colleagues at BB Stockholm* for supporting me in my work with this research and for sharing your professional experiences with me. Thanks also to *Britta Wernolf* for being supportive and for the encouragement.

Maria Sahlin, the first time we met was through a "blind date" that our common supervisor had arranged. It clicked instantly! I am so grateful for our friendship and heart-to heart conversations where not only research has been discussed, but also great and small things in life.

Tiina Murto, for being a wonderful and supportive friend. I am so glad we found each other at BB Stockholm, you immediately became a close friend and later we also came to share research together. Also, thanks to Skype that made it possible for us to continue our conversations, now that the Baltic Sea divides us.

To all of my other lovely *friends*, for every time I meet each one of you I am filled with warmth and positive energy. Thanks for just being you.

My wonderful family who in different ways supported me during this journey. My brothers *Stefan*, for listening and sharing your wise thoughts with me and *Anders*, because you got me thinking about other things than research. *Bengt-Uno*, for always believing in me, from the moment you came into my life. My *parents in-law*, for always being there helping out.

Finally and most importantly,

Anton and Ingrid, my wonderful beloved children and the sunshine of my life. You are my source of love, happiness and inspiration. Thanks for the constant reminder of what really matters in life.

Michael, my beloved husband. Your patience and ability to support me during these years have been invaluable to me. The road on this journey has been rocky to say the least, but no matter what, you have always been by my side. For that and for everything else that you have given me in life, I love you forever.

The studies presented in this thesis were supported by grants from *BB Stockholm AB* and grants from *Praktikertjänst AB*.

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