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Postnatal care – Outcomes of various care options in Sweden

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Abstract

Postnatal care – Outcomes of various care options in Sweden

Background: In high-income countries, hospital length of stay after a normal birth has gradually decreased correspondingly to length of stay in care of other patients. A short stay provides a greater opportunity for autonomy and an increased sense of participation, but it may involve great challenges satisfying parental guidance as well as on the possibility of preventing, discovering, and treating neonatal medical conditions.

Aim: This study evaluates postnatal care based on cost calculations, risk assessments, and parents' satisfaction with care.

Methods: Questionnaires were sent to 1 122 new mothers and her partner during 1998-1999. For the summary of utilization of health care services during the first 28 days postdelivery, the participants were linked with registry data from the hospital administration system for mothers and newborns (n= 773). The answers were also used to describe new parents' experiences with postnatal care (n = 1 479). The costs for five postnatal care models were estimated, including three care options: Maternity Ward, Family Suite, and Early Discharge. Data about neonatal readmissions and death within 28 days was retrieved from the Swedish Medical Birth Register, the Swedish Hospital Discharge Registry, and the Swedish Cause-of-Death Register between 1999 and 2002 (n = 197 898). This data was related to data about postnatal follow-up practices from all 48 Swedish delivery wards.

Results: The readmission rate for the mothers was similar among the various care options, and there was no difference in utilization of health care or breastfeeding outcome due to type of maternity care. As a proxy for morbidity, the readmission rate for the newborns was influenced by postdelivery follow-up routines as routine neonatal examination timing. Depending on the proportion of mothers receiving care at the Maternity Ward, the costs differed significantly between the various care models, while parents' preferences complied with the cost-minimizing option Family Suite. Most mothers and fathers (70%) were satisfied with the overall impression of the postnatal care, but 72% were dissatisfied with at least one particular topic. A main finding was that the parents experienced a close emotional attachment, an affinity that was not always supported by the staff. The father was not treated as a principal character even though the parents wanted the father's to be involved and recognized.

Conclusions: Since the postnatal care options are not always the most cost minimizing and postnatal routines influence neonatal morbidity and parental satisfaction, the postnatal services need to be improved. Without increasing risks or costs, every postnatal care option ought to meet the families' need for support, security, autonomy, and attachment with each other.

Sammanfattning/Swedish summary

Vård efter förlossning – risker, vårdkvalitet och hälsoekonomisk analys

I många länder har vårdtiden på sjukhus efter en förlossning gradvis minskat, parallellt med minskande vårdtider för annan vård. Kort vårdtid kan främja föräldrarnas autonomi och delaktighet. Samtidigt innebär kort vårdtid också utmaningar för hälso- och sjukvården så att familjernas behov av stöd och vägledning kan tillgodoses, samt att medicinska tillstånd hos det nyfödda barnet kan förebyggas, upptäckas och behandlas. Målet med studien var att analysera och söka kunskap om vård efter förlossning, och baserades på kostnadsanalys, riskbedömning och föräldrars tillfredsställelse med vården. Studien startade som en del i en omorganisation av BB-vård och innefattade tre vårdformer; traditionell BB-vård, Familje-BB respektive Tidig Hemgång. Under perioden mars 1998 till februari 1999 sändes ett frågeformulär till 1 122 nyblivna föräldrar. Enkätsvaren från 773 mödrar kopplades samman med registerdata för mödrarnas och de nyföddas återinläggning på sjukhus samt läkarbesök inom 28 dygn efter födelsen. Synpunkter på och erfarenheter av vården analyserades i 1 479 föräldrars enkät svar. Vidare beräknades personalkostnader för fem olika vårdmodeller, där varje modell innefattade två eller tre av vårdformerna. Nationella data för 197 898 normalförlösta nyfödda hämtades från Medicinska födelseregistret, Patientregistret och Dödsorsaksregistret under åren 1999 till 2002. Uppgifter angående deras återinläggning eller död inom 28 dygn ställdes i relation till uppföljningsrutiner efter normal förlossning på landets samtliga 48 förlossningskliniker. Resultaten visade att för mödrarna fanns inga statistiska skillnader mellan vårdformerna vad gäller återinläggning, läkarbesök eller amningsutfall. Återinläggningsfrekvensen för nyfödda påverkades av rutinerna efter förlossningen, till exempel av rutiner för läkarundersökning. Andelen mödrar som vårdades på traditionell BB-avdelning påverkade personalkostnaderna signifikant, och den mest kostnadseffektiva modellen stämde väl överens med flertalet föräldrars önskemål om vård på Familje-BB. Övervägande delen av föräldrarna var nöjda med sin sammanvägda upplevelse av vården på BB (70 %), men lika många uttryckte missnöje med vissa delar av vården. Ett huvudfynd var föräldrarnas ömsesidiga samhörighetskänsla, vilken inte alltid bekräftades av personalen. Fadern blev inte alltid bemött som den viktiga person som föräldrarna hade önskat. Sammantaget påverkar uppföljningsrutinerna på BB spädbarnssjukligheten såväl som föräldrarnas tillfredsställelse med vården, och BB-vården är inte alltid den mest kostnadsbesparande. Hälso- och sjukvårdens stöd till nyblivna föräldrar behöver därför förbättras och utvecklas. Utan ökande kostnader eller risker, borde alla vårdformer möta familjernas behov av stöd, autonomi, samhörighet och medicinsk säkerhet.

Abbreviations and definitions

AAP	American Academy of Pediatrics.
Antenatal care	Care before birth. Includes education, counselling, screening, and treatment to monitor and to promote the well-being of the mother and foetus [1].
Apgar score	A method of evaluation of the newborn infant at 1, 5, and 10 minutes after birth. The signs evaluated are heart rate, respiratory effort, reflex irritability, muscle tone, and skin colour, each with 0, 1, or 2 points. Infants in poor condition score 0-2, infants in fair condition score 3-7, and infants in good condition score 8-10 [2].
Birth at full term	Gestational age 37 completed weeks or more.
Care category	The study defined two care categories: Home care category (constitutes of the care options limited LOS and ED) and Round-the-clock care category (constitutes of Optional LOS and FS).
Care model	Five care models were defined in the study: California, Parents' preferences, Registry data, Ryhov County Hospital, and County of Västerbotten.
Care option	The three care options in the study were Maternity Ward, Family Suite, and Early Discharge programme.
Caring and nursing	Caring (allmän omvårdnad) aims to satisfy fundamental needs and is independent of illness, medical treatment, or care option. Caring implies a task, a care action, as well as a relation, an attitude. Nursing care (specifik omvårdnad) is related to people's normal functions as well as to the actual illness and its treatment and specific cultural related conditions. Caring is performed by all personnel within the health care services or by a next of kin. Nursing care requires particular knowledge [3, 4].
Chi ² test	The statistical test used to test the null hypothesis that proportions are equal or that factors or characteristics are independent or not associated [5].

Confidence interval (CI)	The interval computed from sample data that has a given probability that the unknown parameter, such as the mean or proportion, is contained within the interval [5].
Early Discharge (ED)	From 1993 to 2005, the Swedish national definition meant that the woman and infant were discharged together no less than six hours and no later than 72 hours postpartum [6]. Since 2005, early discharge means soon after delivery with a minimum of six hours [7]. In this study ED also means a care option.
Family	A social unit composed of members connected through blood, kinship, emotional relations or legal relationships [8].
Family Suite (FS)	In the Family Suite programme, the healthy mother and the newborn are transferred to a hotel for patients at no less than 4 hours after a normal delivery, or after having spent one night at the hospital [9]. In Sweden, family members can stay all hours if desired.
Father	The word father is used throughout the papers, but could be replaced with the word partner.
Gestational age	Gestation is the period of time between conception and birth. Gestational age of a newborn is the time measured from the first day of the woman's last menstrual cycle up to delivery, measured in weeks. A pregnancy of normal gestation is approximately 40 weeks, with a normal range of 38 to 42 weeks.
Healthy newborn	A healthy child diagnosis according to ICD-10 [10] is defined either as a “Liveborn infant according to place of birth” (Z38.0–2) or “Routine infant health examination” (Z00.1).
International Classification of Diseases and Related Problems (ICD)	The ICD is the international standard diagnostic classification for all general epidemiological and health management purposes that classifies diseases and health problems recorded on death certificates and hospital records, etc. [10].
Jaundice	Approximately 50% of newborns have clinically detectable hyperbilirubinemia the first week due to

	the increased bilirubin production and decreased excretion (physiological jaundice). In a minority, jaundice indicates a more serious underlying pathology, and for this reason it is measured in a newborn with obvious jaundice or signs of underlying disease [11].
Kernicterus	Kernicterus, an uncommon disorder with tragic consequences, is the pathologic sequel of severe hyperbilirubinemia [12].
Length of stay (LOS)	The length of the hospital postpartum stay is derived by calculation of the time elapsed between birth and discharge.
Maternity Ward (MW)	Maternity Ward is the traditional care option in hospital for pregnant or delivered women in need of care during pregnancy or after childbirth.
Neonatal morbidity	A diseased condition or state during first 28 days of life.
Neonatal mortality	Death of a newborn within 28 days of birth [13].
Neonatal period	The first completed 28 days after the birth, regardless of gestational age [14].
Normal birth	A normal birth is spontaneous in onset and low-risk at the start of labour and remaining throughout labour and delivery. The infant is born spontaneously in the vertex position between 37 and 42 completed weeks of pregnancy. After birth, mother and infant are in good condition [15].
OR	Odds ratios are ways of expressing a comparison between two proportions. An odds ratio gives the relative risk of something happening in one group compared with the other [5].
Phenylketonuria screening (PKU)	The Swedish national neonatal screening consists of examination for five very rare diseases: phenylketonuria, disorder of galactose metabolism, congenital hypothyroidism, congenital adrenogenital disorder, and late-onset multiple carboxylase deficiency. Newborns with those diseases often have no symptoms, but serious handicap or symptoms develop later without early treatment [16].

Postnatal period	The first 28 completed days after the birth. The words postpartum and postnatal are sometimes used interchangeably [14].
Postpartum period	Also called puerperium. The period from the birth of the placenta until six weeks after the childbirth [14].
Readmission	When a newborn or mother is admitted from home to inpatient care at hospital.
Routine neonatal examination	Routine neonatal examination aims to detect abnormalities or neonatal illnesses to provide reassurance and information and recognise and support parents. Both the examination and its individual components are a form of screening [17].
The Swedish Cause-of-Death Register	Official statistics of causes of death for all deceased registered in a municipality of Sweden at the time of death [18]. (Dödsorsaksregistret)
The Swedish Hospital Discharge Registry	A register on the Swedish populations' in-patient care and its diagnosis according to ICD [19]. (Patientregistret)
The Swedish Medical Birth Registry	A register containing data about pregnancies, deliveries, and newborn infants in Sweden [20]. (Medicinska födelseregistret)
UNICEF	United Nations Children's Fund.
Well Baby Clinic	The Well Baby Clinic offers, free of charge, check-ups for newborns and young children and counselling for their parents.
WHO	World Health Organization.

Original papers

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

I Ellberg L, Lundman B, Persson ME, Högberg U. Comparison of health care utilization of postnatal programs in Sweden. *Journal of Obstetric, Gynecologic, & Neonatal Nursing*. 2005;34(1):55-62.

II Ellberg L, Högberg U, Lundman B, Lindholm L. Satisfying parents' preferences with regard to various models of postnatal care is cost-minimizing. *Acta Obstetrica et Gynecologica Scandinavica*. 2006;85(2):175-81.

III Ellberg L, Högberg U, Lindh V. "We feel like one, they see us as two" – New parents' discontent with postnatal care. Submitted.

IV Ellberg L, Högberg U, Lundman B, Källén K, Håkansson S, Lindh V. Maternity care options influences readmission of newborns. *Acta Paediatrica*. 2008;97(5): 579-83.

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Preamble

Even if childbirth is a natural event, becoming a parent is one of the really great challenges and periods of developments in life, and most parents are in need of support through the maternity health care system. Generally, the postpartum period is a time of remarkable emotional, social, and physical change as women adapt to new roles and alteration in their physiology [21, 22].

In my clinical experience, I now and then have been a little bit bewildered by routines unfamiliar from earlier work places. Often people take these routines for granted and beyond dispute. Also as a new mother, I was reflecting over routines in the postnatal ward and the staff's attitudes about the routines. The day after the birth of my second child, I was supposed to learn how to take care of my baby, although I had been working as a midwife in that particular postnatal ward the week before. The staff told me that they were treating all mothers in the same way, irrespective of their profession or experience. Since I was supposed to learn their way of caring for my newborn, a young summer deputy did not consider my wishes when offering support. Later on, as a recently employed midwife in Umeå in 1990, I had the opportunity to be involved with starting a new postnatal ward and challenging established routines. With the challenges and frustrations associated with being a mother and a midwife in mind, I have tried to look at and describe postnatal care from various aspects: the safety for mother and child, the costs, and the parents' experience.

Introduction

Postnatal care

Caring and nursing in the postnatal period

The midwife's field of activity comprises the woman's reproductive health during her entire life cycle. She has responsibility for the normal pregnancy and childbirth, for the care of the family, and for family planning [23]. Sweden is a safe country to have a baby [24, p 10]. Since most of mothers and newborns are healthy, the care during the pregnancy, delivery, and in the postnatal period is to a large extent built on the midwives' charge – caring and nursing. Caring implies careful desire to care for other people with respect and understanding for the unique person and her life situation. Nursing is an independent function in the hands of the midwife, which implies personal responsibility and a reflecting attitude in the exercise of the profession. Everyone in the staff practices caring, but nursing requires knowledge, skills, and specific qualifications [3].

Organization of postnatal care the recent past

In Sweden, most childbirths took place in the woman's home until the 1930s, but from the 1950s most children were born in hospital [24, p 15]. This institutionalisation had the best of intentions. Nevertheless, for healthy mothers and newborns this was ill-fated, causing medicalization of childbirth and the new mother, separating the newborn from the mother, and separating the mother-child from the father [25]. Traditionally and culturally the postpartum period has been considered a time for convalescence. The mother was confined to bed to promote rest and resistance against puerperal fever. Not until the 1950s, women were allowed to get out of bed the day after birth [25]. During this period, the newborn babies usually were looked after by nursing staff in special nurseries to protect them against infections [26].

In the 1960s, postpartum care focused on breastfeeding, maternal rest, increased infant weight, and learning to care for the baby [27]. During the 1970s, rooming-in was introduced in the postnatal care, not only at breastfeeding time, but during daytime [26]. To avoid disturbing the mothers' sleep at night, the newborns were yet cared for in the nursery [28]. During the 1980s, rooming-in became routine round-the-clock in most hospitals [26]. In 1989, WHO and UNICEF introduced the statement "The Baby Friendly initiative" to promote, support, and protect breastfeeding [29]. One of the ten steps in this initiative recommends that mothers and newborns should remain together day and night during the hospital stay, since rooming-in is an

important factor for initiating breastfeeding. Sweden was here a precursor [30], because the nurseries were closed [31].

In the 1970s, a demand for shorter hospital stays, or Early Discharge (ED), emerged to demedicalize the birth process. Commonly, the pioneers were middle-class women and most ED programmes involved voluntary participation [32]. For some, ED became an alternative to home delivery [33]. Already in 1962, Hellman et al. had described the results of their experimental study with home visits by nurses after a hospital stay of less than 72 hours: “No basic statistical differences were shown in the health or wellbeing of the mothers who were discharged from the hospital early as compared to the controls. It is true that the mothers discharged early were less satisfied with the hospital stay and with the general hospital care than those who stayed longer” [34, p 232].

In the 1980s in Sweden, the demand for ED began to increase, a trend that was prompted by a new law governing parental leave for both parents (SFS, 1973:473). The law also made it possible for fathers to participate in the care of their newborns for the first ten days after the birth. This development was also influenced by regulations concerning antenatal classes (SOU, 1978:5), participation in decision making (HSL, 1982:763) and in pain alleviation (MF, 1969:69) [35, p 8]. The National Board of Health and Welfare became legally responsible for the publication of the guiding principles for discharges that were within 72 hours after birth. The guidelines implied that necessary security requirements were met, such as efficient systems for follow-up and support [36].

Organization of today’s postnatal care

As with the length of stay (LOS) with other medical conditions, LOS for postnatal care has decreased. This has involved more outpatient care and home care for most patients. The exact mechanisms are not quite clear, but gradually the LOS has been reduced, and when no medical disadvantages are apparent, the development has continued [24, p 65]. Although increasing numbers of parents have requested alternatives, economic factors are a major consideration [9, 24, 37-39]. Today, the LOS for postnatal care in hospital after a normal birth in Australia, Canada, the United Kingdom (UK), the United States (USA), and Sweden is around two days [40-43].

Shorter LOS has shifted the setting for much of the immediate postpartum recovery from the hospital to the home [44]. Today the traditional Maternity Ward (MW) is intended mainly for women who have had a complicated

pregnancy or delivery [45]. In addition, alternative care options, such as ED programmes or home-care support workers, offer support for those who are in good health [46]. An alternative to MW and ED, as described in Norway, Sweden, and the USA, is what we refer to here as the Family Suite (FS) [9, 47]. This care option features a more relaxing and home-like environment located near the hospital in which parents are offered information, help, and support during the first few days following childbirth. This option gives the patients a feeling of safety since the hospital is nearby and services are easy to access [9, 48].

ED helps parents recognize their own skills [49], provides a greater opportunity for autonomy, and increases sense of belonging and participation [6, 50, 51]. ED may also promote easier breastfeeding because it provides consistent advice about breastfeeding [24, p 70]. Many parents experience this as positive for themselves as well as for the newborn baby and any siblings [6]. On the other hand, a shorter LOS allows parents less time for the guidance and education they require concerning the infant's needs and can affect the possibility of preventing, discovering, and treating postnatal medical conditions in the infant [9, 52-54]. A shorter LOS means a shorter time during which to establish breastfeeding, less time for the staff to observe the infant, and a greater risk of incomplete neonatal metabolic screening [55].

The mother in postnatal care

The postpartum period is a vulnerable time for the woman [56]. The physical, emotional, and social changes impact quality of life [57], and many mothers, especially first-time mothers, are overwhelmed by the demands of motherhood [58]. Hormonal changes may influence maternal behaviour, such as bonding between mother and young and help the mother interpret and meet the needs of the baby [59].

During this period, the woman's body is expected to return to the non-pregnant state and the family adapt to the new situation [14]. The mother may feel the need to recover and get advice and assistance with physical and emotional health problems [60]. Most parents that are growing into this new role need both emotional support and practical help in the days following childbirth [61, p 429, 62].

The father in postnatal care

In the past, maternity services have been directed primarily at mothers [63], and fathers were marginalized [64]. In the 1970s, fathers were admitted to the

delivery room and became involved in institutionalized childbirth care [64-66]. Since then, fathers have been more involved in the care of their children and have also been encouraged to be active participants in the childbirth experience [6, 65, 67]. The WHO recommends that care after childbirth should include each family member [14]. Yet, it is conceivable that hospital routines can hinder the father's interaction with his child [63] during a period where his experiences could influence his well-being and his attachment to the baby [63, 67].

Internationally, the Swedish policy to establish better gender equality has been particularly successful. It is important to view the couple and their newborn as a unit in the postnatal care [48] because the father's feeling of participating may strengthen to his parent role for the rest of his life, a role that is of great value to the baby and to the overall individual and family well-being [6, 68]. In the future, this can increase gender equality [69]. Both fathers and mothers want the father to be involved [63, 70] and his involvement recognized by care providers [63]. Since the mother and the father may have various needs for information and support after childbirth, it is important to meet the father as well [71].

The newborn in postnatal care

For a long time, postnatal care has focused on medical safety of the child [64]. Today, we can also see improvements in the preventive health care services – such as information on infant sleep position and car safety seat [72]. This improvement also includes a recognition that mothers and infants need secure financial and emotional circumstances to bond emotionally [73]. To maintain safety and the possibility of discovering medical conditions, the decreasing LOS requires specific routines during the hospital stay [74] as well as in the follow-up routines after discharge [75]. The American Academy of Pediatrics (AAP) stresses that the hospital stay should be long enough to allow identification of early problems and to ensure that the family is able and prepared to care for the infant at home [33]. Inadequate follow-up and planning are risk factors for readmission and it is important that providers adhere to strict postpartum discharge criteria and patients comply with home follow-up [76].

The most common method of evaluating short LOS is measurement of readmission [77]. Some studies support ED provided it is accompanied by adequate follow-up care [78-83]; some studies, however, claim that there is an inverse relation between LOS and readmission rate [38, 54, 84-89]. The most common neonatal complications due to short LOS are related to jaundice, but

feeding and infection issues are also common [87]. The AAP guidelines on how to monitor healthy newborns to prevent complications due to jaundice, include that parents must assume a significant part of the responsibility for screening for signs of jaundice since bilirubin concentrations usually peak after discharge from hospital [42].

In Sweden, all newborns are examined by a midwife in the delivery ward before transport to the postnatal ward and again by the paediatrician before discharge. Both examinations aim to detect hidden abnormalities. When none are found, the examinations reassure the parents [17]. Research rarely discusses routine neonatal examinations in the postnatal ward, although a few British studies deal with the issue [90]. One study found that there was no evidence of net health gain from a policy of two hospital neonatal examinations compared with one [91]. A few studies deal with what professional is most appropriate to perform the examination. They found that Advanced Neonatal Nurse Practitioners (ANNPs) are as effective in detecting abnormalities as doctors [92, 93]. Furthermore, overall maternal satisfaction was higher when a midwife rather than a doctor performed the examination, since midwives had a better rapport with mothers, were able to provide continuity of care, and more often discussed health care issues than did doctors [93-95]. Two studies found similar rates of referral by midwives and doctors [93, 96]; however, another study found that the quality of the midwives' examinations was higher [97]. Studies also stressed that the examiner needs to be trained to perform a satisfactory examination irrespective of profession [92, 95-97]. The optimal timing of the examination has not been sufficiently validated and the scarce literature expresses opinions rather than facts [95, 96].

Patient satisfaction with postnatal care

Since the early 1990s, because complaints about health care have increased, professionals have begun to measure patient satisfaction [98]. There are complex links between expectations, preferences, and satisfaction and users' views will inevitably be limited by their experience. Thus there is a tendency to say they prefer the care they have received [99]. A range of specific issues can make patients uncomfortable with their care experience, but key areas of concern for most patients include communication of health care information [100] and being adversely affected by nursing strain and exhaustion [98].

Generally, women are satisfied with their maternity health care, but for some reason, in several studies from various countries, postpartum care is less satisfactory compared to other areas of care provided during pregnancy and

childbirth [101-105]. The postpartum period is characterized by extensive interactions between women and health care providers [21], and in studies that focus on maternity care, most of the factors associated with dissatisfaction were related to this interaction [102, 103]. In an Australian study, midwives described postpartum wards as busy places, and inadequate numbers of staff and staff-patient ratios were major barriers to care [106]. Together with a large turnover of patients, as a consequence of short LOS, these barriers have made it more difficult to respond to the women's needs and more difficult to receive feedback [27, 35, 106].

Costs of postnatal care

Hospital costs are a key requirement for many types of policy decisions. These costs are used to assess the efficiency of various types of treatment. Hospital costs are also essential for budgeting and planning exercises and interventions [107]. Lack of resources is described as one of various driving forces to shorten the LOS in maternity care [9, 38, 39]. However, the impact of a shorter LOS on total costs is complex.

The most intense use of resources in maternity care occurs around labour and delivery, in general on the first day of the hospital stay. As subsequent days usually incur fewer input costs and eliminating them may not significantly reduce total cost of the stay [108]. A measure of the true cost savings from reducing maternity hospital stays needs to account for costs incurred outside the hospital due to the earlier discharge. A critical review of the literature argues in favour of the complexity of calculating the true savings, since the marginal cost of an extra hospital day should be reduced by the costs of home visits, readmissions, visits to emergency rooms or primary care physicians, and consultations with lactation consultants and other health care providers [109].

A recent multi-country analysis trying to explain variations in the hospital costs shows that the cost of an inpatient bed day varies from as low as 2 to as high as 12 times the cost of an outpatient visit. There was also enormous variation in the ratio even for hospitals of the same type in the same country [107]. It is also argued that it is cheaper to provide preventive care to mothers and newborns than to treat them later or to face the consequences of not treating them at all [9, 110, p 8].

Rationale

This study started as an evaluation of the reorganization in clinical practice in the maternity care where the main questions were maternal satisfaction by different options and maternal and child outcome. New care options for postnatal care have been implemented over the past several decades, but some of these care options have not been sufficiently evaluated. The research literature on postnatal care has often focused on pain, breastfeeding, depression, anxiety, ED, and postpartum support [22]. Moreover, studies on short LOS have shown diverse results due to varying criteria and a great deal of existing studies is not transferable to Swedish conditions. Studies on satisfaction have shown that mothers in general are more satisfied with care in connection with labour and delivery compared with postnatal care, and the smaller extent of postpartum research may also reflect the lower status of the postpartum period in comparison to the period in connection with delivery. In addition, the way new fathers experience postpartum care is often ignored, and the increasing participation of fathers increases the need for a more complete care structure than that previously based on the sole needs of the mother-infant dyad.

The basic motive for the thesis was to attain an increased knowledge about postnatal care, care options, and care routines to increase the understanding in how the new care options were received and experienced by parents and to compare various care options according to their costs and consequences.

Aim

This thesis evaluates postnatal care using cost calculations, risk assessments, and parents' satisfaction with care. The specific aims of the papers are listed below:

To describe the utilization of health care services by mothers and newborn infants following discharge after having received care in various postnatal care options (Paper I);

To calculate the cost of a postnatal care model based on new parents' preferences (Paper II);

To describe how new parents experience postpartum care by focusing on dissatisfaction (Paper III); and

To analyse morbidity and mortality in healthy newborn infants in relation to various routines of postnatal follow-up (Paper IV).

Methods

The four papers' designs, study periods, participants and methods are described in Table 1.

Settings

During the study period for Papers I-III, there were three maternity care options – the Maternity Ward (MW), the Family Suite (FS), and Early Discharge (ED) programme – at a hospital in northern Sweden. MW was a traditional hospital ward, intended for mothers and newborns after complicated childbirths, and the fathers had limited possibilities to stay all hours. FS and ED were intended after normal childbirths. FS offered a hotel-like or home-like setting in a specified area near the hospital, allowing the family to spend the night together. In the ED programme, the mother and newborn were discharged together, within 72 hours. The follow-up consisted of home visits, daily phone calls, as well as a final check-up with counselling, phenylketonuria screening, and if required an additional neonatal examination. Figure 1 shows an outline of the care options.

In Paper IV, LOS was a categorizing source of error. As an alternative, all 48 Swedish delivery wards in 2002 were contacted by telephone to obtain information about postnatal follow-up practices. The questions covered a broad field of the routines at the ward, such as LOS limitations if any, and routines for the neonatal examination. Four care options were defined: 1.) MW with optional LOS; 2.) MW with limited LOS (24 or 48 hours); 3.) FS; and 4.) ED programme with <72 hours LOS. Finally, the care options limited LOS and ED (2 and 4) constituted the home-care category, the optional LOS and FS (1 and 3) constituted the round-the-clock care category. Figure 1 shows an outline of the care categories.

Table 1. Overview of study period, design, participants, and methods of the papers.

<u>Paper</u>	<u>Design</u>	<u>Year</u>	<u>Participants</u>	<u>Methods</u>
I	Cross-sectional study	1998-1999	773 women and 782 newborns	Questionnaires sent six months after childbirth (same in Papers I-III); registry data and medical chart notes were used to analyze the use of health care services within 28 days postpartum.
II	Cost analysis	1998-1999	250 women and 92 men	Calculation and comparison of staff costs for five models of postnatal care, each estimated for 1 500 deliveries, comprising the care options MW, FS, or ED programme. The model “parents’ preferences” collected from questionnaires.
III	Cross-sectional study	1998-1999	773 women and 701 men	Data from nine closed and eight open-ended questions, analysed by content analysis and descriptive statistics.
IV	Cross-sectional study	1999-2002 2004-2005	197 898 newborns	Assessment of postnatal follow-up routines after normal childbirth in 48 hospitals, and data from the Swedish Medical Birth Register, Hospital Discharge Register, and Swedish Cause-of-Death Register. Assessment of postnatal follow-up routines after normal childbirth in 48 hospitals, and data from the Swedish Medical Birth Register, Hospital Discharge Register, and Swedish Cause-of-Death Register.

parenthood, ability to influence the care, and to participate in decision-making. Items were rated on a 5-point Likert scale (1= very dissatisfied, and 5= very satisfied). In the open-ended questions, parents' opinions of the topics mentioned above were described in their own words.

Procedure

The questionnaires were mailed to all women 6 months after the delivery, one for herself and one for the father of the newborn, since no records of the fathers were available. Two reminders were sent, the first one after 2 weeks, and the second one, together with new questionnaires, after an additional 2 weeks.

Participants

Between March 1998 and February 1999, 1 277 women gave birth at the hospital and 1 125 women met the inclusion criteria consecutively (Papers I-III). A total of 69% (n = 773) of the women and 62% (n= 701) of the men responded to the questionnaire (Table 2). Exclusion criteria included any serious birth defect or injury or death of the child. As a clarification, Figure 2 includes a flow diagram for Papers I-III. The 352 women who met the inclusion criteria but did not respond to the questionnaire were more likely to be multiparous women. Otherwise, they did not differ from the women who participated (described in Paper I).

Table 2. Total number of parents responding to the questionnaire, the total numbers of parents giving negative response, the total numbers of comments in open-ended questions, and comments with negative content.

	n	Responses to any open-ended question	Responses with negative content	Total number of comments	Comments with negative content
Women	773	755 (98%)	622 (80%)	2 744	1 996 (62%)
Men	701	586 (84%)	179 (26%)	1 285	199 (15%)

Registry data

Data from electronic medical charts for the women and newborns were linked with registry data from the hospital administration system where all care episodes were diagnosed according to the International Classification of Diseases and Related Health Problems (10th Revision, ICD-10) [10]. In Paper I, this data served as the basis for the summary of use of health care services during the first 28 days postpartum.

In Paper IV, a healthy newborn was defined either as a “Liveborn infant according to place of birth” (Z38.0–2) or “Routine infant health examination” (Z00.1), according to ICD-10 [10]. An infant was placed in the pre-defined care category irrespective of what routines the family actually met since the latter information is not present in the register (Figure 1). A readmission was defined as a newborn admitted from home to any hospital within 28 days of birth.

Registers at the National Board of Health and Welfare

The aim for The Epidemiological Centre (EpC) is to follow, analyze, and report on the Swedish populations’ health, diseases, social problems, and risk factors. To fulfil this charge, the EpC is responsible for several registers, such as The Medical Birth Registry, The Swedish Medical Birth Register, and The Hospital Discharge Register [19].

The Swedish Medical Birth Registry

In 1973, the Swedish Medical Birth Registry was established by an act of the Swedish parliament. The purpose of the register is to compile information on ante- and perinatal factors and their importance for the health of the infant [20, 112]. Between 1976 and 2001, the quality of the register has been evaluated three times. The results of the first two evaluations are summarized in one report. This report shows that the register was suitable for the evaluations of “hard” data like perinatal survival or birth weight distribution [113]. In the third evaluation, it was shown that the register is a valuable source of information for reproductive epidemiology, but in order to make full use of it, an understanding of its deficiencies is necessary [114]. Even if important data on mothers is lacking in very few cases, a main problem is the validity and the lack of infant diagnoses, more or less depending on varying and inexact diagnostic criteria in clinical practice [113, 114]. The lack of infant diagnoses was relatively rare in the beginning, but has increased by 10-15%. To a large extent, these cases probably represent newborns that were transferred to neonatal units, and there was no feedback of discharge

diagnoses when they were reported to the register. However, this occurrence is unevenly distributed among hospitals. For 1998, some hospitals lacked such information for up to 79% of cases, a figure that cannot be explained by neonatal transfers [114].

The Hospital Discharge Register

The Hospital Discharge Register is a national register for the inhabitant consumption of inpatient and outpatient care. The register supplies data about care use used in statistics, research, and public civic information. The most important variables are diagnoses, gender, age, home district, hospital, department, and mode of admission and discharge. The annual under registration is estimated to be less than 1% for somatic care. In just under 1% of the patients, the identification number was not available or incorrect. Most of these patients were children or living abroad. The main diagnosis is lacking in approximately 1% of the admissions [19].

The Cause-of-Death Register

The Cause-of-Death Register provides official statistics of causes of death of all those deceased who were registered in Sweden the day of death. Among other things, the statistics can be used for follow-up and evaluation of various efforts in health care and in research. The variables include underlying cause of death, date of death, information about autopsy, gender, age, and home district. For classification of causes of death, the ICD-10 is used. All deceased are included in the register, but in 0.5% of the cases cause of death was not reported [18].

Analysis

Statistical analysis

The statistical analyses were conducted using SPSS for Windows [115]. For prevalence and odds ratios (ORs), a 95% confidence interval (CI) was calculated and differences were considered statistically significant at $p < 0.05$. In Paper I, descriptive statistic processing with the χ^2 analysis was used. In Paper II, a model was created, using Excel [116], to compare the staff costs of various care models. The statistic analysis in Paper III was based on data from the closed questions. The variables were dichotomized into two groups: 1.) "satisfied" and "very satisfied" (variables 4 and 5) and 2.) "other than very satisfied" (variables 1-3.9) also called "dissatisfied". To test differences in outcome between groups by χ^2 test and for OR in Paper IV, bivariate logistic regression was applied and was adjusted for parity.

Content analysis

The data from the open-ended questions (Paper III) was analysed using qualitative content analysis [117]. First, all data was classified from the questions in the questionnaires and imported in OpenCode [118]. The first author read through the data several times and with the specific issue in mind to get a sense of the whole. Content that did not address postpartum care and dissatisfaction was excluded. The original statements were condensed and no further handling was required before the coding process. The codes were discussed and the categories revised by the authors. By the end of the coding process, no new themes or views emerged. There were eight final categories: emotional attachment as partners and parents; feelings of rejection and omission; stressed and indifferent staff; being unprepared at discharge; staff's paternalistic attitude; feelings of subordination; feelings of insult and abuse; and a women-dominated world. An example from one of the categories is shown in Table 3.

Table 3. Example of codes and categories in Paper III.

Category	Codes	Quotation
Emotional attachment as partners and parents	accessible staff breastfeeding support to be together resources	Our biggest problem was breastfeeding, which was problematic from day one... we don't feel that we got the help we should have been given...
	responsibility father important for family to be together resources	Everybody talks about the role of the father and how important it is that he's involved, but I feel that fathers are often overlooked, both during the delivery and in the maternity ward. Why can't he eat and stay over on the same conditions as the mother?
	responsibility to be together	This was to be our third child, so we knew what we were doing when it came to giving birth.

Cost calculation

Paper II focuses on the change in resource consumption when the FS and the ED programme options were introduced and when the allocations of mothers-newborns varied among the care options. In performing the calculations, we confined the calculations to staff costs, since staff cost constitutes approximately 80% of total costs in nursing centred-care such as postnatal care. All variables in the cost calculation are described in detail in Paper II.

To receive an appropriate variation in the allocation of mothers among the care options, five various models for cost calculations were developed. Two of the models – “Parents’ preferences” and “Registry data” – consisted of a combination of three care options. The remaining three models consisted of two care options: “California”, “Ryhov County Hospital”, and “County of Västerbotten”. Figure 1 shows an outline of the care models.

Ethics

The participants received an explanatory letter by post that described the purpose of the study together with the questionnaires. They were assured of confidentiality and informed that participation was voluntary. The participants were asked to note whether they did not want their medical chart notes and answers from questionnaires linked. To prevent parents whose infant had died from being contacted, data were controlled through the national registration before sending the letter.

The participants had no immediate use of the results of the study, but may have used it in an event of a new pregnancy. The results can also be of use to other parents. There may be a risk that participants who receive information about the study and had problems themselves may understand the results as if their own problems were related to LOS or due to care option. This may lead to a feeling of being treated wrong even if there may be several other possible causes of problems. The study was approved by the Research Ethics Committee at Umeå University in 1998 (Papers I-III) and by the Regional Ethical Review Board in Umeå in 2004 (Paper IV).

Health

Health is the purpose of caring – to support health, prevent ill-health, and to re-establish and preserve health from the patient's individual possibilities and needs [3]. There are various ways of health. Health can be seen as a condition or as a process, and health could be an intrinsic value. It means that health itself is a goal.

The Swedish care model relies to a great extent on midwives and nurses and their individual responsibility as care providers. Historically, midwives and the maternity care organization have had important roles in the enhancement [24, p 14]. The aim of the postnatal care is to provide the highest possible quality of physical and emotional care and to achieve a healthy mother and child with the least possible level of intervention that is compatible with safety [15, 43].

The mother

During the first 28 days postpartum, 15% of the women had physician visits and 1.7% were readmitted, generally because of signs of infection, bleeding and anaemia, or breastfeeding problems (Paper I). At some time during the first six months, 43% of all mothers contacted the health care system for help and support related to breastfeeding.

A lot of the parents had comments on the mother's physical health as well as her psychological health (Paper III). They thought that they had had need for more medical care and had lacked information about complications, caesarean delivery, or the mother's hormonal shifts. There were parents that thought that their responsibility on the newborn's health was too large, while others took the opposite view:

I am responsible for my body – my health – my child. (Mother)

The staff do their best but the overall impression is that cut backs and other issues together impact the quality of care for the worse because there aren't enough staff. They are risking the life and health of not just the child but also the mother. (Father)

Depending on the follow-up period, the readmission rate varies a lot in nonexperimental studies [5-8]. In a Cochrane review [40], eight randomized trials were examined and showed a readmission rate of 0 to 5% within six weeks. Since the criteria for readmission are not identical in these studies, it is difficult to draw any general conclusions from the comparisons. In medical terms, healthy women most likely are not being deprived of short LOS after a normal childbirth, and due to high hospital costs, it is not possible to lengthen the LOS. Waldenström [24, p 68] emphasizes that women can have various

needs according to LOS after childbirth, and if information about the optimal LOS for women after birth had been known to caregivers and families, the variation in praxis over the country probably had been lesser.

In Sweden almost all mothers breastfeed at the time of discharge from the postnatal care [121]. Since almost half of all mothers at some point had turned to the health care provider in breastfeeding issues (Paper I), it emphasizes that the midwives and other care providers play an important role for the new mothers.

The newborn

Of the newborns, 2.9% were readmitted in Paper I, and 2.1% in Paper IV, mostly because of jaundice, infections, and feeding related problems. Jaundice was the most common diagnosis for early readmissions, and infections the most common later on. At discharge from the maternity care, 19% of the 197 898 infants had no diagnosis and no healthy child diagnosis, probably due to substandard routines (Paper IV). In general, heart disease was not a common cause of readmission, but was the most frequent cause of death, causing 11 of a total of 26 newborns deaths. Nineteen of the 26 deceased newborns had previously been diagnosed as healthy and seven of them had no diagnosis.

In earlier reports, the readmission rates vary quite a lot (0-10%) depending on follow-up period and gestational age [40, 52, 54, 73, 83, 122-124]. Opinions differ regarding the impact of LOS on readmissions for healthy newborns. Some studies show that ED increases the risk of readmission compared with later discharge [38, 54, 84-87, 89], while others report that there is no evidence of this [81-83]. Due to variable study design [40], insufficient power [32, 40], and different methodologies [40, 78, 109], it is difficult to draw any general conclusions about neonatal effects of a short LOS [40]. Moreover, Richardus et al. [125], in a review article, provide simple figures expressing the success of birth and the delay of death in a population are considered to be very important, but the construction of these figures becomes increasingly delicate. They are often based on small numbers and thus very dependent on precise definition of terms and variations in local practices and circumstances of health care and registration systems [125]. If this is the case also in relation to readmission, it could be a contributory cause to varying readmission rate as well.

Early neonatal readmission is generally caused by jaundice. Since LOS now are short and physiological jaundice generally appears between the third and fifth

day of life, a great part of the responsibility for screening is assumed by the parents [42]. To minimize the risk of complications, in particular of jaundice, they need both instructive information and an early follow-up by a skilled healthcare professional [42, 53]. Recent studies report the recurrence of kernicterus among term born infants in both Europe and North America [53, 126]. It means that the decision and planning for discharge and follow-up should be based on an extremely careful individual assessment of each child [38]. AAP recommends that the LOS should be based on the unique characteristics of each mother-infant dyad, including the health of the mother, the stability of the infant, the ability and confidence of the mother to care for her infant, the adequacy of support systems at home, and access to appropriate follow-up care [33]. In Canada, it is recommended that care providers telephone the mother the day after discharge and visit the home within three days [42], a recommendation that Sweden does not seem to live up to [127]. A large and recent study from US describes that lack of timely follow-up may explain increased odds of readmission for jaundice [122]. Irrespective of costs, it is clearly not possible to extend the LOS in hospital of today that readmissions can be completely avoided [38]. However, opinions differ about the influence of economic restraints [128].

The Family

Patients, by definition, have a health issue. Generally, that is not the case with maternity care, where most women and newborns are healthy. In the postnatal care model, “The family” means the new family containing one or two parents, the newborn or newborns, and any siblings. In addition, this model sees childbirth and parenting as a joint project.

In the closed questions, fathers were more dissatisfied than mothers, but in the open-ended questions more mothers answered and more mothers left negative answers (Paper III) (Table 2). The parents described childbirth as a vulnerable period when parents are easily hurt that resulted in feelings of loneliness and abandonment. In this vulnerable period, they expressed a need for each other – supporting one another, sharing the birth experience, and planning for the near future. The parents described their emotional attachment as a couple and family.

My partner was not allowed to stay over night even though we had just welcomed a new member to the family. He should not have had to be separated from us the first days. We share responsibility for care of the child, not just financial responsibility!
(Mother)

The parents talked about “we” when describing breastfeeding and related problems, a view that was also recently shown in a Swedish interview study with new fathers [129]. This emotional attachment implies that parents provide one another support and share responsibility and practical chores [6, 69]. Parents experience a sense of security with the baby and jointly take care of him or her [6, 48, 130]. The child is their mutual interest, and they want to experience early parenthood together [129].

A number of recent studies show that fathers generally wish to be involved in newborn care [64, 129, 131], although this involvement is not constantly supported by the staff. In focus groups interviews, midwives have expressed a feeling of irritation when fathers and siblings take time from the mother’s learning about parenting or from her “woman to woman” chats. The midwives thought that they had an obvious role in “mothering” the new mother without interference from the father [35] and in this respect excluding the father instead of inviting him. The need to explore early fatherhood has become more important as society and midwifery practices have changed, including new care options, less extended family support, and increased responsibility for the parents [131]. A drawback in present circumstances is the absence of national family centred guidelines for postnatal care involving shared parenthood.

The care provider and the multiprofessional team

In postnatal care, a group of carers with various professions – midwives, physicians, welfare officers, physiotherapists, nurses and enrolled nurses – could compose a care team. Co-workers are often involved, even if encounters in health care usually take place between a family member and a care provider. In a well functioning team, all professions are co-operating for the best of the family. The ability of nursing staff to strengthen and support the positive forces associated with being a family member can be decisive for whether positive and fruitful or negative and detrimental experiences will dominate [132, p 10].

Almost half of the mothers had turned to the health care providers to achieve breastfeeding support after birth, and 80% of families received a home visit by the public health nurse during the first 10 days postpartum (Paper I). The care provider and the multiprofessional team in general were highly esteemed and seemed to play an important role for most parents, but the parents’ expectations were not always met by the staff (Paper III).

The staff were nearly invisible. (Mother)

Even if the care provider and the multiprofessional team played an important role for most parents, some parents considered the staff as nearly invisible. They could feel abandoned in spite of the fact that they were cared for in a hospital, and since the newborn was rooming-in with the mother round the clock, the mother may need support. When LOS is short, parents should be able to have staff at hand to a greater extent, or at any rate to an equivalent extent, compared with former routines. New circumstances in postnatal care—such as the increasing caesarean section rate, rise in multiple births, and declining LOS—have resulted in different demands for staff [62]. According to an Australian review, little evidence exists about how early postnatal care should be provided. The authors consider that given the relatively short LOS it is not surprising that care providers find it difficult to meet expectations of care [133]. According to midwives guiding principles, the midwife's work should bear the stamp of an ethical and holistic attitude, to be based on science and experience, and to be performed in accordance with existing constitution and other guiding principles. A patient shall be offered competent and careful health care that fulfils these demands [134]. Several instances – such as the employers, the university education system, and the midwives federation – share the responsibility in this matter and ought to contribute to necessary changes.

Relation and task

In nursing care there are two interacting parts: the task that is to be performed and the relation where the task is accomplished. These two are each other's prerequisite and are always simultaneously present. Sometimes the task is in focus, sometimes the relation, while the task can for a moment be put aside [119]. The relationship between those involved depends on various conditions, such as the task, the family's needs, the caregiver's competence, and the external situation. The relationship is maintained through interaction in the form of verbal and non-verbal communication. The relationship influences the communication; the communication influences the relationship [119]. Norms, values, behaviour, language, ethics, and the view on health and care are essential parts in people's culture and influence the encounter between the caregiver, the family, and the professional care [132, p 120].

The mothers and fathers gave a diverse picture of experiences of their postnatal care (Paper III), since fathers were significantly more dissatisfied in five of seven topics, mostly in ability to influence care and to actively participate in decision-making. Most of the parents were satisfied with the overall impression (70%), but it was all the same quite common that they

made comments on dissatisfaction with one or more particular topic (72%). As one mother explained it:

Overall good, but the negatives dominate. (Mother)

Several mothers and fathers had expected to rest, to adjust to parenthood, and to achieve breastfeeding support and practical instruction on how to take care of the baby (Paper III). They had also expected a sensitive, respectful, and supporting relation with the staff.

The maternity care was better than I had expected. Everyone was a great support except for the midwife. (Mother)

One of the most important concerns for both women and men was the staff's attitude to them as a couple. They wanted to be seen and respected as parents to the newborn. There were mothers that thought that the staff were very busy with documentation or other administration things and did not have enough time for the parents. Both experienced and inexperienced parents expressed their disappointment with the postnatal information and that they had to pick up information by themselves to a large extent.

In the closed questions (Paper III), 75% of the parents were very satisfied with the approach by caregivers. They described the staff as capable, kind, and supportive, and found them confidence-inspiring. On the other hand, dissatisfied parents described the staff as boorish, insolent, and conservative, and found their attitude to be paternalistic.

The expertise and dedication of the staff gave a great impression. (Father)

“Get a dummy when you get home, otherwise you’ll be unhappy”, crowed an older nurse when she was going to “help” out. She wanted to give formula to my baby at night without any apparent reason. (Mother)

The quality of relationships is fundamental to the quality of maternity care [135] and the shorter the stay, the shorter time was available to provide adequate care and to put things right when things went wrong. Even within the same organization, a range of approaches to supporting women is evident when observing different midwives. In some cases, the encounters are authoritative and didactic and in others more facilitative [136]. Satisfactory experiences in postnatal care, described by adolescent mothers, include having the sense that the nurse has an unhurried manner and a friendly demeanour [137]. In a British team midwifery reform programme, described by Waldenström [24, p 114], it was shown that the encounter was more central than to be acquainted with the midwife in advance. The main thing was the

midwife being competent and caring and that the woman felt she was treated as a unique individual instead of one in a row of pregnant wombs. In addition, certain groups, as for example adolescent mothers, are much more dependent on the midwives ability to place them “at ease” in the new situation [137].

Our findings agree with studies that examined women’s needs for emotional, esteem, informational, practical, and network support often were unmet [136], that women felt that the care was not individualized and their own wishes were not respected [138], or that the staff was reluctant to help mothers to take care for the baby [106]. In view of the fact that numerous were dissatisfied with at least one particular topic, there are areas to improve. These areas include information on early parenthood and in the decision-making process.

Environment

Environment means both the physical and the psychosocial environment. Care environment is the environment where the families exist and the caregiver’s work, an environment for those receiving care, and a working environment. People’s behaviour is influenced by their environment. A part of the concept environment affects the care atmosphere, what is “attached to the walls”, affecting both families and caregivers.

The environment in the postnatal ward was sometimes described by parents as chaotic with bothersome noise and rushing and tearing about (Paper III). Others described it as calm and pleasant and appreciated the single rooms and the opportunities to be left to oneself. Several parents mentioned that the environment did not facilitate spontaneous meetings among parents, and they did not like to share dining facilities with other guests or patients other than obstetric patients. Numerous patients expressed the importance of the environment to achieve privacy and no one wanted to disturb others or be disturbed by them.

I think it was good. You could do as you like. Have visitors, eat, shower when you want. And it didn’t matter if the child cried since it didn’t bother anyone else. (Mother)

Quite a few parents had noted substandard working conditions for the staff, and thought that this had affected their care (Paper III). They explained that they felt sorry for the staff and that the employer should value and take better care of their employee.

It is really a pity that this work is not taken seriously by the politicians and that the staff are forced to work until they are burnt out. (Father)

I think it is tragic that the politicians don't "dare" prioritise what is important in life. What do we want? Are we to have good health care where the staff don't feel worked to death because of staff cuts? I want to say that the staff do a great job even in such circumstances. (Father)

The hospital environment can be experienced as unfamiliar for parents, since it can be experienced as an institution where certain routines have to be followed. Parents in our study did not like sharing premises with non-maternity patients. According to staff, it can be difficult to provide postnatal care in such wards as well [106]. The postnatal environment have earlier been described as never calm and quiet [106], where staff is coming and going all the time [139]. The interruptions may leave little time for rest and sleep and may also leave too little time for rest or relaxed breastfeeding sessions. Mothers have reported decrease breastfeeding success in the presence of so many interruptions that occur repeatedly throughout the first day [140].

Rooming-in is a requirement for Baby Friendly Hospital Accreditation [29] and is considered to be important in terms of establishing of breast feeding, mothering skills, and maternal-baby attachment [133]. However, rooming-in also means that rather often two, three, or four babies contribute to a busy, noisy environment. Such an environment provides challenges to care providers in ensuring women have opportunities for rest and privacy [133]. A single room is a desire for many parents, since among other things it enables the father to stay round-the-clock. Even if a single room is not a necessity for night rooming-in, this is found to be more common in small rooms [31]. Sleep disruption is normal postpartum [141] and it is shown that it is not evidently that mothers sleep longer or better when their infants are cared for in the nursery during the night [142]. Parents can also feel that they sleep better at home [48, 143] where there is no nursery. New mothers are found to compensate with multiple sleep episodes in the first week postpartum, when total sleep duration is low [141].

A single room enables a greater possibility to privacy in peace and quiet but does not facilitate spontaneous meetings among parents. Sharing a room with another mother could build up a fellowship and make support and information from an experienced mother possible [6], even if today's routines aim to support the attachment within the couple more than the contact among new mothers. As a compensation for the contact among women in a shared room, today's parents can make contact with one another through parent classes. A recent study from Sweden found that more than half of the women had contact with other participants from the childbirth classes one year after the birth [144].

A number of parents had observed poor working conditions for the staff. This has also worried mothers in earlier studies, where they judged the staff to be overworked since they rushed from one to another [130]. This can refrain mothers from disturbing the staff [6] and imply a negative effect on their satisfaction of care. According to a review article, the most frequently reported major factors that cause workplace distress for nursing staff is workload, leadership style, professional relationships, and emotional demands. Lack of understanding of how personal and workplace factors interact and lack of predictive power of assessment tools is contributing causes, and the authors emphasise the individuals need for better support [145].

Organization

The organization structure of health care reflects the prevailing values in society and influences the quality of the care as well as the outcomes. A model that focuses on the task is expected to deal with another outlook on people than care that focuses on the individual.

Care options

Nationally, in almost all hospitals only one type of postnatal care was offered after normal childbirth, care that does not allow mothers to decide between home care and hospital care (Paper IV). Many mothers and fathers wanted to choose care option and LOS, but were disappointed when the care organization did not allow them to take each day as it came (Paper III). Parents also complained that care providers sometimes pressured them to agree to a short LOS, at times immediately after birth. The majority of the parents (Paper II) preferred the FS in the event of a future birth.

I think the most important thing is that there are alternatives that parents can feel they can choose from. (Mother)

There are many challenges to the way in which care is provided during the postpartum period [146]. Sometimes the ability to support women in a facilitative way may be hindered by organisational constraints [136]. Few hospitals offer elective choices involving care option or allow parents having an active say in decisions about timing of discharge. Health care providers often declare that no one forces the mothers to a short hospital stay. Yet several mothers express that they felt obliged to leave hospital early. Previous studies found that most new parents want to choose care option and LOS [70] but are not allowed to do so [143]. The parents may feel that freedom of choice is restricted by a number of circumstances that are beyond their control [48]. Staff may also suggest that beds are limited and force the

mothers to discharge themselves early [48, 139, 143]. Women may also receive signals from their family that they should remain in hospital [147]. The Swedish Law of Health care states that the care should be of good quality, and the patient's need for security should be based on respect for the patient's self determination and integrity [148]. Perhaps the staff could assist mothers in becoming assertive in their decisions [147].

In general, parents receive information on the postnatal period during the pregnancy, and applicable routines and options are made clear. In Sweden, most parents are familiar with the limited LOS that follows a normal birth. The majority adjust to the routines, accept them, and seem to be satisfied with them. van Teijlingen et al. [99], in "What is, must be best", originally published by Porter and Macintyre [149], noted that women tend to assume that whatever system of care is provided has been well-thought out and is therefore likely to be the best one. Where women express a preference, it is generally for whatever arrangements they have experienced rather than for other possible arrangements [149, p 1197]. Also van Teijlingen et al. [99] found a tendency for women to say they preferred the care they had received. In other words, asking women if they would like to stay longer in hospital may result in an underestimation of desire for this type of care if this is not currently available because of a tendency to prefer the status quo. In addition, everyone probably wants to be judged as "normal". It is possible that the parents want to live up to expectations of a normal birth, and leaving hospital early confirms this normality. Accordingly, satisfaction with care does not always mean the best possible care.

If there are differences in quality of care, these differences may reveal what factors related to the organisation of care contribute to women and couples having more positive experiences [111]. In the evaluation of the Alternative Birth Centre care, it was shown that the environment and the organization made the midwives less authoritative and the parents were left with more responsibility [150]. The increasing autonomy for the new parents involves a change in the professional autonomy; the professionals still know the most, but they do not always know what is best for the individual family.

The majority of the parents in this study preferred the FS in the event of a future birth irrespective of earlier experience [cf. 99]. According to an American study, FS can be a medically safe alternative to the ED programme, emphasizing the autonomy and participation of parents and meeting their needs for safety, privacy, and childcare education [9]. Another study, however, notes that FS has not been as successful because of it is impersonal, isolated, and an inappropriate environment for the newborn baby [27]. Nevertheless, if

FS – a cost effective care option that allows parents to use and develop their own skills – can safely offer healthy mothers and their newborns medical options [9] that parents appreciate, everyone involved should benefit.

Care routines

In Paper I, 20% of the mothers and newborns were discharged within 48 hours, and in Paper IV, 55% of the newborns. The latter population included solely healthy newborns and more recent data.

Care options and policies influenced the neonatal readmission rate (Paper IV), since MW with limited LOS had a higher readmission rate than MW with optional LOS [OR 1.2 (95% CI 1.07–1.35)]. Hospitals in the home care category had a higher readmission rate than hospitals in the round-the-clock care category. The readmission rate was also significantly influenced by the timing of the routine neonatal examination since an examination at no less than two days of age was associated with a lower readmission rate than earlier examination. The combination of an early neonatal examination with home care had the highest readmission rate [OR 1.3 (95% CI 1.16–1.48)].

The timing for the final routine neonatal examination (Paper IV) varied from 6 to 72 hours of age, and the examination was always performed by a paediatrician. About half of the hospitals routinely offered two examinations, and half offered one examination. Of the newborns (Paper IV), 58% were born in hospitals that routinely offered one examination within 48 hours. The proportion of infants with no diagnosis among the participating hospitals ranged from 1% to 57%.

The routine neonatal examination was often experienced as impersonal by mothers and fathers (Paper III), and 28% were dissatisfied with the overall impression of the examination. The parents complained about the doctor being hasty and lacking time to reply to questions or to provide information or reassurance. The organization of the examination led to feelings that they were one family of thousands of other families that the doctors had to help.

Parents expressed their disappointment on the care organization because it did not allow them to take each day as it comes. That is, the care was provided as if everything was predetermined (Paper III). Things were described as just a matter of routine for the staff even if it was a unique event for the parents.

Things are often done according to routine within healthcare. Once you step through the doors, the hospital's rules are law. (Mother)

Even if mothers meticulously inspect their newborn infants, routine neonatal examination is universally accepted as good practice [17]. Many mothers and fathers experience this examination as impersonal and stressful, thus missing an opportunity for sharing information on newborn behaviour and care issues [94]. Generally, in Sweden, it is taken for granted that the newborn's first examination in the postnatal ward is a contact with a doctor [151]. In Sweden, training midwives or nurses to carry out this examination might result in several improvements in care: increased effectiveness [92], higher quality of the examination [97, 152], improvement of the service available to women [153], and higher overall maternal satisfaction [93]. In addition, midwives and their profession may benefit from this training [152]. An extension of education and training would be needed were midwife examination to become general policy [96]. In UK, this can be carried out through a university education unit aimed to develop the midwife's knowledge and skills in order to analyse and evaluate a structured history, comprehensive physical examination, and assessment of the newborn [154]. A strong argument in favour of retaining the examination as a medical task is that generations of paediatric residents have learned the range of normality by performing many examinations [90]. However, if the mothers are as satisfied with the midwife's examination as the paediatrician's examination since midwives provide parents with information on newborn behaviour and care issues [94], and this would slightly reduce overall health service costs [93], the issue should be discussed.

The assessment of the hospital routines showed great differences among hospitals according to timing as well as number of routine neonatal examinations. This great variation presumably is because the lack of validation. In the UK, The National Health Services recommends an examination within 72 hours, usually undertaken between six and 24 hours of life [155]. In two British studies, most units considered six hours an acceptable minimum [95, 96], probably a generally expressed opinion rather than a fact since this issue has not been sufficiently evaluated.

In recent years, the proportion of mothers discharged within 48 hours after childbirth have increased to more than 50% [41]. Along with this trend, in Sweden there has been an increase in the proportion of infants discharged with an undiagnosed critical heart defect [74]. In part, the reduced LOS could explain the increase, but since 99% of full-term infants who die in the neonatal period are symptomatic within the first 18 hours after birth [156], there may be other contributory causes. Our results show that an early routine neonatal examination in combination with the home care category had a higher readmission rate than later examination and the round-the-clock care category, implying that the care routines influence neonatal morbidity. Two

earlier studies have found that mothers were worried that the staff did not pay enough attention to their newborn [71, 138]. In addition, the Swedish authors mentioned above wonder if today staff do not pay enough attention to newborns during the hospital stay [74]. In the 1990s, most postnatal wards in Sweden discontinued routine weighing of newborns [157], and perhaps as a result newborns are to a smaller amount observed by a skilled healthcare professional. Even if a routine with good reasons is questioned [158], changes may have future consequences not always taken under consideration and attended to while there is still time.

Changes in postnatal care routines must be thoroughly evaluated to ensure that the health, satisfaction, and involvement in decision making of mothers are maximized, given the available resources [158]. In our assessment of routines of follow-up after birth, comments on restricted LOS as a consequence of inadequate number of beds in the postnatal ward frequently recurred in the conversations. The organizational limitations, a short LOS, staffing constraints, lack of resources, the business of the postnatal environment, and especially low prioritization and low status can make it difficult to achieve all the aims of postnatal care [35, 133]. Research on the prestige ordering of medical specialities conducted over many years has shown that medical specialities are informally ordered in a hierarchy, with surgery highly valued [159]. In a Norwegian study, the existence of prestige rank order of diseases may have implications for medical organization, setting priorities and planning and allocating work. The study also discussed that there were differences in hierarchy that had to do with the patient's gender [160]. In a similar way there are differences within the maternity care service, with a low position of postnatal care within the techno-medical hierarchy [136]. Postnatal care is sometimes referred to as the "Cinderella" of the maternity service owing to its impoverished resources and staffing [136].

Parents in our study described the care as just a matter of routine for the staff and as if everything was predetermined. Information available to midwives to "guide" their practice in the postnatal period is very limited, and according to the randomised controlled trial of protocol-based midwifery-led care, current postnatal care consists of much unnecessary activity [161]. Indeed, Sweden has lately challenged old-fashioned routines concerning rooming-in at night [30], but to our knowledge no national guiding principles for postnatal care exists. Possibly this is one contributory cause for diverse views on postnatal care routines among hospitals [127].

Two earlier studies have shown that rooming-in [162, 163] and breastfeeding on demand [163] are favourable for the establishment of lactation. Uvnäs-

Moberg's neuroendocrinology study notes that early contact between mother and newborn may hasten bonding as well as increased interactive behaviours in a short- and long-term perspective and lengthen the breastfeeding duration [59]. Compared with not rooming-in, rooming-in increases feeds per day while decreasing supplementary feedings [31]. Care routines also have a strong impact on the outcome of milk ingestion and production. Infants staying in the nursery at the maternity ward ingested less milk than infants who were rooming-in and thus allowed breastfeeding on demand [163]. WHO and UNICEF have included these findings in their joint statement to maternity units worldwide to protect, promote, and support breastfeeding [29].

Fathers too have expressed that rooming-in with the newborn is positive [63]. As earlier mentioned, parents' emotional attachment with each other is essential, and this attachment together with the father's active participation ought to be supported in postnatal care [69]. In interviews with new fathers, it was confirmed that certain hospital routines can hinder the father's interaction with his child [63]. Since his experiences during this period can influence his well-being and his attachment to the baby for all time [63, 67], it is important for caregivers to countercheck routines that may get in the way. It is shown that the staff does not always understand that fathers considered themselves a resource for the infant's wellbeing, a resource that may need supporting and confirming [64]. Moreover, the care must meet the need for both parents to participate in decisions relating to their baby [48].

Costs of postnatal care

The staff costs were greatly dependent on the allocation of mothers among care options (Paper II). The cost decreased if more mothers used the ED programme or the FS instead of MW. Comparing the model "Ryhov County Hospital" with a high proportion of ED with the "Registry data" with a high proportion of FS (despite just about the same proportion using the MW), the total costs were almost similar. The mothers could accordingly receive care in either the FS or the ED programme with comparable costs. Table 4 shows the cost calculation of the care models if ED is counted as discharge within 48 hours.

Table 4. Distribution of 1 500 mothers and newborns (expressed as percentages) among five care models of postnatal care and staff cost in US\$ (in 2003) on each model. The care models are California*, Parents' preferences, Registry data from Umeå Health Care District, the Ryhov County Hospital, and the County of Västerbotten. US\$1 = 8 SEK.

	Maternity Ward	Family Suite	Early Discharge	Staff costs if ED <48 h
California, 1995*	15%	–	85%	\$448 000
Parents' preferences, 1999	20%	74%	6%	\$476 000
Registry data, 1999	39%	37%	24%	\$560 000
Ryhov County Hospital, 2001	41%	–	59%	\$583 000
County of Västerbotten, 2001	76%	–	24%	\$751 000

*Danielsen et al. 2000 [54].

As long as all needs and desires in society are not fulfilled, we are forced to choose how public as well as private resources are used. Consequently, prioritizing must take place. The Swedish Law of Health Care [148] demands that health care services provide care to those with greatest needs. Accordingly, individuals with less needs have to take more responsibility for their health. Today health economic constraints are a reality in all countries. Thus there is an eagerness to save health care costs, constraints that increase the risk of medical mistakes. Large differences in costs ought to lead to an added value that needs to be justified, either by greater satisfaction or by increased safety. Investment in quality maternal and newborn health care leads to saving time, costs, and lives [110, p 8].

Economic evaluations can be defined as the comparative analysis of alternative courses of action in terms of both costs and consequences [164, p 8-9]. Our cost calculation showed that the higher share of MW, the higher costs; however, there were no real differences in costs if mothers were cared for in FS or ED. Many authors agree on the lack of resources as a driving force to shorten the LOS in maternity care [9, 38, 39], and a common suggestion is to decrease health care costs through shortening the LOS [165]. Decision makers are usually interested in cost-minimizing solutions [108], but

since the greater part of the services is concentrated on the first day of the admission, the potential savings may be overestimated [108, 166]. Also, it is probably cheaper to prevent health problems than to treat them later [9, 110, p 8]. In fact, an increase in patient dissatisfaction and the reduction in and health outcomes is also a cost in some way [108].

Living conditions

Everybody has certain fundamental needs. The physiological needs constitute the base, while self-fulfilment constitutes the highest level in this hierarchy. Ill-health or dysfunction can be a threat to fundamental needs. Caring identifies and compensates for the fundamental needs that are threatened or are not met. Humans have various living conditions. From various prerequisites in society, we construct ourselves as human beings, as women and men.

Parents expressed that it was important for them that the staff was able to enter into the feelings of becoming a new parent and what needs new parents may have (Paper III). They wanted the staff to be empathic and not take for granted that others experience the world as they do. However, the gendered pattern of care marginalized the fathers.

Please ask if they need help. You hardly have enough energy to make it through the day. (Mother)

It's a woman's world, run by women, for women. Men have no place there. (Father)

Generally, we all take for granted that the world is as we perceive it, and others experience the world the same way as we do. We are all aware of those situations when people experience the same world very differently [cf. 167, p 33]. Some of the discontent with postnatal care might depend on an organizational failure to acknowledge parents' efforts for equal opportunities between men and women and for their view of parenting as a joint project. Among others, WHO states that policies, programmes, and interventions must be based on gender equality [110, p 8]. Hence, midwives need to be aware of these gender aspects so their support to parents encourages the father to be involved with his child [168]. They also need to reflect on the context of their practice, including promoting gender equality [169]. Increased knowledge of father's needs of a maintained integrity and need for support to build an independent relationship with the child can guide their encounter with the fathers [168].

So far, research has focused mainly on motherhood, but fathers are one of two parents, and therefore are important for their child's growth and

development, emotional health, and cognitive development [129]. Gender equality has given the fathers an increasingly obvious space in maternity care. This had led to the inclusion of men in the maternity services and to an examination of changing gender roles and adjustment to fatherhood [66]. It is necessary to invite the fathers into the traditional female sphere near the newborn baby to sustain the father's transition to fatherhood [168].

Philosophy of care

Depending on our view of life, our opinions, and experience of health, care and ethics may vary. Western culture originates in the major part from classic antiquity and Christianity, but is influenced by other cultures in connection with an increasingly multicultural society.

From the parents view, the care at the postnatal ward was not guided by an explicit philosophy of care (Paper III). They thought that the care became a business merely between the mother and the individual midwife or enrolled nurse, and they lacked continuity and concordance. The multips often mentioned that the service had been insufficient if they had been primips. In addition, the care had no obvious philosophy that promoted the parents need for togetherness and the father and possible siblings were not always included in the care strategy.

Expecting and giving birth to a child is the most amazing thing that can happen. It has to be taken seriously and be shown understanding. (Mother)

The principal purpose of maternity care services is not care in connection with illness but to support parents to organize their everyday life. The goal of postnatal care should be good health and well-being for mothers and newborns [170] and a positive childbirth experience [26] and ought to facilitate participation of each family member [14]. Nevertheless, the focus of work on a postnatal ward is often the care of the newborn [43]. A vital part of midwife's philosophy of postnatal care is a supervising and listening attitude. The midwife ought to take up a role of individualized and non-authoritarian guidance and to support and follow families' learning process in their new situation.

It is not unusual that women lack information in postnatal care, especially on maternal issues. Several parents experience that staff give diverse information and messages [71, 147] or that the staff lack common approach, co-ordination and co-operation [171]. Other midwives may still be partly caught up in the past; they may have difficulties performing family-centred care with the whole family in the ward [35]. Caregivers are responsible for equitable prioritization,

and share with society the responsibility for initiating and supporting action to meet the health and social needs of the public, in particular those of vulnerable populations [8]. It is also logical to emphasize conditions that help caregivers focus on parents' individual needs and preferences, but structural changes need to be made. The staff may need supervision, constructive criticism, and be encouraged, acknowledged, and appreciated for their work. The staff also need adequate staffing levels and good administrative support [27], stress prevention, and help tackling organizational issues [145], so they can live up to their expectations and their work can find meaning [35]. Hospitals have earlier shown that administratively support breastfeeding through written policies can lead to better breastfeeding outcomes [172]. National guidelines could be a way to improve postnatal care, an improvement that starts with adequate resources for staff, resources that will help staff find meaning in their work.

Ethics

Ethics is a dimension of existence that patients easily can perceive and understand, since it is conveyed through the caregivers' actions and attitudes while they can be really unaware about what they convey themselves. Most professions have ethical codes for the guidance of their professional exercise, and the nurses' ethical guiding principles point out the important issues in caring. Ethics is the vision of the good things of life, counteracting injustice and human degradation. Ultimately, ethics is a matter of what makes life worth living.

At times, the encounters between parents and the staff resulted in feelings of frustration, insecurity, and shame (Paper III). Parents felt that they were treated as if they were inexperienced, uneducated, or too young. Sometimes they thought the staff made decisions for them, and on occasion these decisions were in conflict with their own wish. Parents complained about staff acting as they were more capable at promoting the family's well-being than the parents themselves. Because of the staff's attitudes, parents could feel exposed and lack integrity and respect.

Giving birth is painful and a huge upheaval in many respects, and I think that it would be in the interests of the health care system to help in these circumstances so that the mother, child and father come through it strengthened in these situations. They shouldn't feel worse. (Mother)

The ethical platform described by the Ministry of Health and Social Affairs in Sweden is based on equal rights and that resources ought to be allocated according to requirements [173]. The Code of Ethics for Nurses makes it clear

that inherent in nursing is respect for human rights, including the right to life, dignity, and respect [8]. The Code of Ethics for Midwives speaks about midwives respect for a woman's informed choice and to promote the woman's acceptance of responsibility for the outcome of her choices [174]. The core of the ethics in postnatal care is the encounter between the family and the caregiver, earlier described in relation to "The postnatal care model", and to the team midwifery programme [24, p 114]. Our result shows that the encounter between a parent and the caregiver sometimes might result in negative feelings, and the patient is always the person in the disadvantageous position.

Generally, people trust one another, have implicit confidence in one another – it is part of being an human being [175, p 41]. Confidence means being exposed and vulnerable, trusting that another person is looking out for their well-being. We lay bare to the other and expect that the other will respond in a way that protects our dignity. To not fulfil this silent expectation is an assault on our dignity, an assault that makes us invisible or unacknowledged as a person worth acknowledgement [175, p 42]. By means of ethical awareness and reflection one can, in various ways, practise confirming people's dignity.

Ethical awareness helps people stand up for themselves and helps them evaluate whether actions are bad or good. Empirical research of nursing ethics supports that ethical awareness helps nurses understand and reflect on the awareness of another individual's vulnerability and increases a nurses' desire to do the best for their charges [176, p 49f]. Ethical awareness also includes understanding that human beings are fallible. Ethical awareness helps people understand how to behave when something goes wrong and to re-establish confidence of others and oneself.

Methodological considerations

As the first author, I was familiar specifically with caring and the environment in the care options and the postnatal care, and it was necessary to reflect on how this influenced the interpretation. An awareness of pre-understanding and distance to the studied event was of importance. This included the uniqueness of people's life world and the environment in which the event took place. An objective understanding was not possible, but the cooperation between the authors was an asset to this process.

The study's result is always influenced by the size of the population, since a too small population implies a decreased statistical power and an increased population involves a greater risk for systematic errors. At the beginning, the data collection in Papers I-III was intended to be an evaluation of clinical practise. By way of constant modifications in maternity services, the quality in the data would have suffered from a longer data collection period. In hospital-based evaluations from small maternity units, such as this, there is a limited selection, but the population was sufficient to evaluate satisfaction with care. The design was not developed to test a hypothesis the way a randomized control trial can compare one treatment regime to another.

Strengths

The strength in Paper I was the accuracy in follow-up via the register and the medical charts, as well as the fact that conditions, procedures, and classifications were identical throughout the study period. It was also possible to include all those factors that, according to critics of register studies, are often not taken into consideration: the infant's diagnosis, whether home visits are carried out, and whether the child has been breastfed, all of which may affect the outcome [86].

The questionnaires used in Papers I-III were sent six month after childbirth to both the mother and the father. The parents returned the questionnaires to the research team to avoid reluctance to criticise their caregivers. Six months after the care episode means that the parents were not dependent on the caregivers any more. Also, they have had time to adapt to a new family situation and generally it is only later that women and their partners report the less desirable aspects of the maternity care they experienced [99]. The number of potential fathers taking part in the survey in Papers I-III was not clearly demonstrated since two questionnaires were sent to the woman irrespective of her civil status. For that reason, the percentage of answers could be counted as too low. This study comprised of 1 474 returned questionnaires. In

comparison with other studies that evaluate maternity care, it is one of the larger. In other studies, earlier referred in this thesis, the number of answered questionnaires differed: 75-250 [46, 66, 67], 500-1000 [101, 104], over 1000 [111], and over 2000 [102].

In the sensitivity analysis in Paper II, a number of variables were raised plus or minus 50%; this showed that the costs were just somewhat influenced, and the relative order among the five care models never changed.

In Paper III, the population included all new mothers and fathers, primips as well as multips, from rural parts as well as cities and with various ages and ethnic backgrounds. A further strength was the total number of answers, the combination of closed and open-ended questions, and a high number of comprehensive answers. The codes and categories used in the analysis were discussed in the research team and subsequently modified. Several quotations were added to give the reader the opportunity to make alternative interpretations.

The use of linked registry data in Paper IV was requisite to generate a sufficiently large sample sizes to examine rare events. The strict exclusion criteria reduced the risk of including infants with any underlying pathological conditions, and most likely, it was the healthy newborn's neonatal diagnosis that was missing. The methodological approach used a homogenous study population to achieve good internal validity and a reasonable external validity although the result may underestimate the true effect. The strict exclusion criteria reduced the risk of including infants with any underlying pathological conditions. More stringent criteria were used for ED than in many hospitals. All but one hospital were contacted more than once to verify the information given. The possibility of systemic error due to a great number of participating hospitals and inconsistencies in the diagnosis was reduced by the large sample size to allow for adequate statistical power. The relatively short study period lessens the risk of variations in routines and practices. These measures were employed to counteract possible imperfections inherently associated with retrospective register studies. In an earlier study, it was shown that LOS was a confounder for neonatal readmission. The study showed that there was a increase in hospital readmission rate after longer LOS when compared to short LOS if newborns were categorized by LOS in connection with birth [177]. To compensate for this source of error, the categorization in Paper IV was based on dialogues with all 48 Swedish delivery wards to obtain information about postnatal follow-up practices.

Weaknesses

One of the shortcomings in Papers I-III might be recall bias; this is especially true if the child is healthy and everything went well. At the same time, after six months the parents are not dependent on the caregivers any more. Various schools of thought exist on whether research on patient satisfaction is best conducted using standardised questionnaires that have been rigorously evaluated in terms of their validity and reliability or whether the disadvantages of standardisation outweigh the assumed advantages of greater reliability [111]. Overall satisfaction with care changes with time [178] and a newly-produced instrument inspired by the work of Brown and Lumley was chosen to help make comparisons with this particular study [111].

Non-Swedish-speaking parents had limited possibility to contribute since the questionnaire was available only in Swedish (Papers I-III). Parents of premature or unhealthy newborns were excluded since parents who pay attention to the health or survival of a baby could have difficulties thinking about their own needs during the hospital stay [179].

In Paper I, the population was too small to draw any decisive conclusions. To be able to show the risk for readmissions with ED compared with the FS with 80% power and 95% certainty, a study including 3 400 individuals would have been required. Such a study would have taken four years to carry out under the given conditions and consequently not feasible since the routines most probably had changed during the study period. It is even more difficult to show the risks of not discovering severe heart defects, which would have required a study of 50 000 newborns.

Unlike a randomized controlled study, this study had a selection bias since parents who opted for the FS or an ED did so based on individual choice. This may mean that the parents tended to choose care options based on their own terms; because of this, the groups may not be completely comparable.

The data collection in Papers I-III started as a clinical follow-up study, aimed to assess specific clinical outcomes and experiences of care. The non-randomized design can constitute a bias in comparison to satisfaction by care option, but we do believe that randomizing the women to a care option could be confounded by the women's preferences since being assigned to a care option not preferred could have an impact on parents' answers.

The varying reports of dissatisfaction in Paper III can be due to how questionnaires are created since questions of a detailed and specific nature [180] and open-ended questions [181] generate greater levels of dissatisfaction.

Given that few patients are dissatisfied with the care, some surveys lack variability of satisfaction when comparing positive with less positive responses. For this reason, it can be suitable to focus on dissatisfaction [180]. Such a focus can better highlight problems that may need consideration [102].

The interpretation of the results in Paper IV may have been influenced by definition and selection bias. To address this problem, the classifications of maternity care options and routines were made after the telephone survey was completed, but before the data were analysed. The proportion of infants without a healthy diagnosis varied enormously among the participating hospitals. Together with no statistical differences between the groups with and with no diagnosis, we assume that the lack of diagnosis was random [114].

The data collection in Papers I-III took place nearly ten years ago, but the results are still relevant: it is the same generation childbearing women, the midwife education is on the whole the same, and the care routines or the structural conditions are not radically different even if the LOS has decreased.

Conclusions and Recommendations

The main finding of this thesis was that postnatal routines influence neonatal morbidity, parental satisfaction, as well as staff costs. A key result was the parents' sense of emotional attachment with each other, a connection not always supported by the staff. The parents were satisfied with the overall impression of the postnatal care, but there was an explicit dissatisfaction with particular topics according to received care.

The aim of the postnatal care is to provide the highest possible quality of care with the least possible level of intervention to achieve a healthy mother and child. Not only in the health professional literature but also in the public media there are growing concerns throughout the world about the state and the changes of maternity care. During a vulnerable period in life, the parents' responsibility has increased. The length of hospital stay has decreased and the postnatal care routines may influence neonatal morbidity. Organizational limitations, staffing constraints, lack of resources, and low prioritization and low status can make it difficult to achieve all the aims of postnatal care.

The core of the ethics in postnatal care is the encounter between the family and the caregiver to understand and take up a reflecting awareness of another individuals' vulnerability and the desire to do the best for her. The increasing autonomy for the new parents involves a change in the professional autonomy; caregivers still know the most, but they do not always know what is best for the individual family. Midwives need to be aware of the gender aspects so their support to parents does not hinder the father's transition into being an involved father. Increased knowledge of the father's needs of a maintained integrity and need for support to build an independent relationship with the child can guide their encounter with the fathers.

Postnatal services need to be improved and would benefit from national family-centred guidelines. Without increasing risks or costs, every postnatal care option ought to meet the families' need for support, security, autonomy, and emotional attachment with each other.

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