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BECOMING A FATHER

**Sources of information, birth preference, and experiences of
childbirth and postnatal care**

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ABSTRACT

The period of pregnancy and childbirth is an important and sensitive time for men's upcoming parenthood. Research into fathers' experiences of childbearing has received less attention compared to maternal experiences. The purpose of this thesis was to study the sources fathers use to obtain information about pregnancy and childbirth, fathers' preference for the mode of birth of their baby, and fathers' childbirth experience and their perception of postnatal care quality.

In 2007, 1105 expectant fathers were enrolled in the study when their partner had reached the middle of pregnancy. The fathers were followed until one year after the birth of their baby. The fathers were living in the county of Västernorrland in Sweden and their babies were born in one of the three hospitals in the county. Data was analysed using descriptive and inferential statistics, and content analysis. An index was created from a combination of fathers' experiences of postnatal care quality.

Common sources of information about pregnancy and childbirth used by prospective fathers were the Internet, their partners and the midwife. Fathers who were expecting their first baby (OR 1.4; 1.2-1.7), had a high level of education (OR 1.3; 1.2-1.5) and fathers with previous experience of caesarean section (OR 1.3; 1.1-1.6) were the greatest users of the Internet. Of the prospective fathers 71 (6.4%) desired caesarean section for the birth of their baby. Previous negative birth experience (PR 8.6; 2.6-28.3) and the experience of caesarean section (PR 5.7; 2.8-11.9) were factors associated with the wish that the baby would be born by caesarean section. A desire to plan the day of the baby's birth (PR 6.0; 1.5-24.1) was associated with a preference for caesarean section for the men who were expecting their first baby. Two months after the birth of the baby 604 (74%) of the fathers in this group had had a positive birth experience. A correlation with a less-positive birth experience was with emergency caesarean section (OR 7.5; 4.1-13.6), instrumental vaginal birth (OR 4.2; 2.3-8.0) and if the man was unhappy with the medical care which the partner received (OR; 4.6; 2.7-7.8). Positive experience of healthcare professionals' knowledge and attitudes was related to a satisfactory birth experience. The deficiencies in the postnatal care were mainly related to deficiencies in the information on the baby's care and needs, and fathers' experiences of their partners' inadequate check-ups and medical care. A year after the birth 488 (79%) of the fathers were satisfied with the overall postnatal care, although they had pointed to deficiencies in the provision. Deficiencies in the attitude of the staff (OR 5.01; 2.80-8.98) and the medical care and check-ups their partner received were associated with fathers' dissatisfaction with the overall postnatal care (OR 2.13; 1.25-3.62).

Most fathers in this study had a positive birth experience and were happy with the postnatal care. The thesis highlights, however, opportunities for improvements in intrapartum and postnatal care. Healthcare professionals should be informed regarding the information provided via the web and to discuss the information that expectant fathers receive about pregnancy and childbirth. Prospective fathers should be given the opportunity to discuss their preferences and attitudes to the mode of birth. In addition, professionals should provide supportive information and be present in the delivery room. The information about the newborn baby's care and needs can be strengthened, both before and after birth.

Keywords: Birth experience, Fatherhood, Mode of birth, Postnatal care, Preference, Social support, Transition, Quality of care

SAMMANFATTNING

När män blir fäder utgör deras barns födelse och föregående graviditet en viktig och känslig tid för deras kommande föräldraskap. I forskning om barnafödande har faders erfarenhet fått mindre uppmärksamhet jämfört med mödrars erfarenhet. Syftet med föreliggande avhandling var att studera vilka källor fäder använder för att söka information om graviditet och barnafödande, faders önskemål om förlossningssätt för deras barns födelse, samt faders förlossningsupplevelse och deras uppfattning om eftervårdens kvalitet.

År 2007 rekryterades 1105 blivande fäder när deras partner hade nått mitten av graviditeten. Fäderna följdes fram till ett år efter deras barns födelse. De blivande fäderna var boende i Västernorrlandslän i Sverige och deras barn föddes på något av de tre sjukhusen i länet. Data analyserades med deskriptiv och inferentiell statistik samt innehållsanalys. Ett index skapades utifrån en kombination av fädernas upplevelse av eftervårdens kvalitet.

Vanliga informationskällor om graviditet och förlossning som de blivande fäderna använde var Internet, den blivande modern och barnmorskan. Blivande fäder som väntade sitt första barn (OR 1.4; 1.2–1.7), hade hög utbildningsnivå (OR 1.3; 1.2–1.5) och de med tidigare erfarenhet av kejsarsnitt (OR 1.3; 1.1–1.6) använde i större utsträckning Internet som informationskälla. Det var 71 (6.4%) fäder som önskade kejsarsnitt för sitt barns födelse. Tidigare negativ förlossningsupplevelse (PR 8.6; 2.6–28.3) och erfarenhet av kejsarsnitt (PR 5.7; 2.8–11.9) var associerat med en önskan om att barnets skulle födas med hjälp av kejsarsnitt. En önskan om att planera dag för sitt barns födelse (PR 6.0; 1.5–24.1) hade samband med förstagångsfäders preferens för kejsarsnitt.

Två månader efter barnets födelse beskrev 604 (74 %) fäder att de hade haft en positiv förlossningsupplevelse. En samvariation med en mindre positiv förlossningsupplevelse uppmättes om barnet var fött med akut kejsarsnitt (OR 7.5; 4.1–13.6), instrumentell vaginal förlossning (OR 4.2; 2.3–8.0) och om fadern var missnöjd med den medicinska vård som modern erhållit (OR; 4.6; 2.7–7.8). En tillfredsställande erfarenhet av sjukvårdspersonalens kompetens och bemötande var relaterat till en positiv förlossningsupplevelse. Bristerna i eftervården var främst relaterade till brister i den information som fäderna fått om barnets vård och behov samt fädernas upplevelse av att deras partner fått bristande kontroller och medicinsk vård. Ett år efter barnets födelse var 488 (79 %) av fäderna nöjda med den övergripande eftervården trots att de tidigare pekat på brister i vården. Brister i personalens bemötande (OR 5.01; 2.80–8.98) och i den medicinska vården av modern hade samband med fädernas missnöje med den övergripande eftervården (OR 2.13; 1.25–3.62).

De flesta fäder i den här undersökningen hade en positiv förlossningsupplevelse och var nöjda med eftervården. Avhandlingen lyfter dock fram möjligheter till förbättringar inom förlossnings- och eftervården. Hälso- och sjukvårdspersonal bör vara uppdaterad angående information som ges via webbsidor för att kunna diskutera den information som blivande fäder kan få om graviditet och förlossning. Blivande fäder bör ges möjlighet att diskutera sina önskemål och attityder till förlossningssätt. Vidare bör personalen ge stöd genom information och närvaro i förlossningsrummet. Informationen som vårdpersonalen ger om det nyfödda barnets vård och behov kan stärkas både före och efter förlossningen.

Nyckelord: Eftervård, Faderskap, Förlossningssätt, Förlossningsupplevelse, Stöd, Transition, Vårdkvalitet, Önskemål

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LIST OF PAPERS

This thesis is based on the following four papers, herein referred to by their Roman numerals:

- Paper I Johansson M, Rubertsson C, Rådestad I, Hildingsson I. The Internet: one important source for pregnancy and childbirth information among prospective fathers. *Journal of Men's Health* 2010; 7(3):249-258
- Paper II Johansson M, Rådestad I, Rubertsson C, Karlström A, Hildingsson I. Few fathers-to-be prefer caesarean section for the birth of their baby. *BJOG An International Journal of Obstetrics and Gynaecology* 2010; 117(6):761-764
- Paper III Johansson M, Rubertsson C, Rådestad I, Hildingsson I. Childbirth-an emotionally demanding experience for fathers. *Sexual & Reproductive Healthcare* (Accepted December 12th 2011)
- Paper IV Johansson M, Rubertsson C, Rådestad I, Hildingsson I. Improvements of postnatal care are required by Swedish fathers. *International Journal of Health Care Quality Assurance* (Accepted November 29th 2011)

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1. LIST OF DEFINITIONS

Antenatal care	Antenatal care is also known as prenatal care, and refers to care given during pregnancy, for example health check-ups, information and preparation for birth and parenthood.
Cohort study	Any designated group of individuals who are followed or traced over a period of time to see if they develop the outcome (i.e. the condition) of interest.
Confidence Interval (CI)	The range of values within which a population parameter is estimated to be, at a specified probability. CI indicates the amount of random error in the estimate, and shows the precision of the estimated value. The size of the study sample affects this precision, a small sample study is seen to be less precise.
Confounder	A factor that is associated with both the exposure and the outcome and then may offer an alternative explanation for the observed association between the exposure and the outcome of interest.
Cronbach's alpha	Estimation of the internal consistency of a measure composed of several subparts.
Cross-sectional study	The observation of a defined population at a single point in time or time interval. The exposure and the outcome are determined simultaneously.
Dichotomous variable	A variable having only two categories.

Face validity	Validating if the question is measuring according to its purpose. The validation is assessed by individuals similar to the study participators.
Fetus	The word fetus is from Latin, meaning offspring or bringing forth. In humans, the fetal stage of prenatal development starts at the beginning of the 9 th week after conception and ends with the birth of the baby.
Intrapartum care	Refers to care given during labour and birth.
Labour and birth	Is also called childbirth and is categorized in three different stages from the shortening and dilation of the cervix, the birth of the baby and until the birth of the placenta.
Likert scale	A measure of attitudes comprised of a set of items that respondent's rate for their degree of agreement or disagreement.
Logistic regression	A method for analysing the relationship between one or more independent variables and one categorical dependent variable.
Longitudinal study	A study designed to collect data at more than one point in time.
Mixed methods	Research in which both quantitative and qualitative data are collected and analyzed.
Mode of birth	This concept may also be described as mode of delivery and includes spontaneous vaginal birth, instrumental vaginal birth (either vacuum extraction or forceps) and caesarean section (either elective or emergent).

Odds ratio (OR)	OR is the ratio of the odds of the outcome event in the exposed group compared to the odds in the unexposed group.
ρ-value	The ρ -value represents a probability measure and is used to determine the presence or absence of statistical significance. It is a measure of relative consistency between the null hypothesis and the data of interest. When the data are very discrepant with the null hypothesis, the ρ value is small, and when the data are concordant with the null hypothesis, the ρ value is large.
Postnatal care	The word postnatal is the same as postpartum and this concept is not officially defined. Traditionally this period starts shortly after the birth of the placenta and ends six weeks after birth. In this thesis the models of postnatal care offered were early discharge from the delivery ward, traditional postnatal ward care, care at a family suite in a hotel ward and co-care at a neonatal unit.
Prevalence Ratio (PR)	PR is a ratio value comparing two probabilities; and gives information about the strength of association. The calculation is the same as for Relative Risk.
Relative Risk (RR)	RR is a ratio value comparing two probabilities and gives information about the strength of association. It is an estimate of risk of "being a case" in one group compared to that in another (also called "risk ratio").

Role model	A role model may guide a person in social interactions by providing a common set of expectations and a way in which to think about oneself.
Social support	The concept of social support used in this thesis includes the categories; emotional, appraisal, informational, and instrumental support.
Transition process	The transition process occurs over time and entails an inner orientation in order to incorporate change and adaption into the human life.

2. INTRODUCTION

This thesis has been developed within the area of health sciences and my pre-understanding in these doctoral studies has been my experiences as a clinical midwife. Midwives are acting within the area of women's and men's sexual and reproductive health which includes public health, care and support during pregnancy, labour and birth, and early parenthood. For some decades fathers were neglected during antenatal, intrapartum and postnatal care. This thesis focuses on the sources of pregnancy and childbirth information available to fathers, birth preference, experiences of childbirth and postnatal care.

3. BACKGROUND

3.1. A historical view of fatherhood

3.1.1. Changes in Swedish fatherhood

Swedish fatherhood altered a great deal during the 1900s because of changes in society and ideas of fatherhood. At the turn of the century and into the 1900s most households in Sweden were self sufficient and existing within a peasant culture. Fathers had the responsibility to ensure that their sons were brought up to be capable of work and to be submissive to their wishes. After the subsequent industrial revolution men were needed outside their homes and they became the family breadwinners. Primary parenthood was associated with motherhood. Functionalism influenced the decades of 1930-40s. Men and women were thought to complement each other, but women had the main responsibility for the children. During the 1950s there was concern about the problems of absent fathers within families. Boys were thought to be in need of a male model. Sons' lack of contact with their fathers was thought to be leading to social problems [1].

Voices were heard encouraging fathers to be more involved with their children in their spare time. The 1960s was a time of industrial prosperity in Sweden which resulted in women becoming wage earners. Calls were made for increased equality between the parents. Since the 1970s the government subsidised the child care system which leads to an increasing economic security for women. The distribution of power between the parents was questioned and, justice and equality was proclaimed. In 1974 the primary focus was on equality between parents. Both parents were now allowed to receive child allowance, take parental leave and care allowance for a sick child. During the 1980s more fathers participated during antenatal classes, labour and birth. Fathers were expected to support their partner during labour and to create a relationship with the new-born baby. Men during the 1990s stated that they ought to take the same responsibility for children and domestic work. Today the discussion about masculinity and fatherhood has increased both in Sweden and internationally [1].

3.1.2. Fathers' participation in childbirth

The role of fathers during pregnancy and childbirth has changed substantially during the past decades both in Sweden and internationally. Since the beginning of the twentieth-century the medicalisation of birth has increased. Advances in obstetric practice have rendered greater physical health for mothers and babies but has disregarded traditional, cultural, social and psychological aspects of the experience of birth. One of the most serious results of this disregard has been the exclusion of support companions who were often excluded from labour wards, and support was assumed only to be provided by midwives. Furthermore, increased technology in obstetrics has placed greater demands on midwifery staff to oversee equipment, leaving less free time to give support [2]. During the 1960s Lamaze International and other childbirth organisations advocated successfully to introduce fathers into the labour room [2, 3].

The reasons for allowing the fathers to participate were an attempt to establish a positive birth experience for both mothers and fathers and to fill the gaps left by busy medical and nursing staff [2]. Fathers were available when other family members might have been geographically distant. A greater involvement was believed to develop future family bonds [2]. Fathers are nowadays encouraged by healthcare professionals to take part in antenatal visits including parental education classes, which are offered to prospective parents during pregnancy, and to participate during labour and birth. The majority of fathers have attended labour and birth since the 1970s [4], and by the 1990s this practice have been common in western countries [2, 5]. The Swedish National Board of Health and Welfare, and the Swedish Department of Health recommend that the healthcare system encourage fathers to be involved in pregnancy and childbirth [6, 7]. Previous research has emphasized fathers' appreciation of being recognised by professionals and being involved during childbirth because it gave them a feeling of participation. Fathers have stated that full participation in the whole childbirth process had a positive effect on their relationship with their partner [8]. Tiedje and Darling-Fisher [9] argue that healthcare professionals need to be more aware of and include fathers in clinical encounters.

3.2. Becoming a father

The transition into fatherhood has been identified as a critical and significant period, and a critical family turning point. Fathers experience numerous challenges on individual, parental, marital and family levels. Social support is a valuable resource in coping with these challenges [10].

3.2.1. Life transition

Life transition is a human response to change [11]; and has identifiable beginnings, turning points and endings [12]. The transition process occurs over time and entails an inner orientation in order to incorporate change and adaptation into the human life [13]. Different response strategies are pointed out by Brammer [12] for the individual to manage a healthy transition. The *strategy of adjustment* is an automatic adoption response when the consequences are not important for the individual. Furthermore, the *coping response strategy* is an active problem-solving approach to adoption. Coping skills learned earlier in life are mobilised to aid the individual managing the transitions process. Coping also includes support networks such as relatives, friends and healthcare professionals. Cognitive restructuring is a kind of a coping skill which mobilises the individual's own internal thought processes. Another coping skill is stress management which includes relaxation promoting activities or spiritual methods. Within the response *strategy of transformational change*, the transition is viewed as a great tragedy and the individual will suffer for a long time. The *strategy of transcendence* is understood as that the individual experiences the transition as the ultimate meaning of life and this is accompanied by feelings of joy and peace [12].

3.2.2. Transition to fatherhood

Meleis et al. [10] have argued that the concept of transition is complex and multidimensional. They point out that transition includes awareness, engagement, change and difference, time span, and critical points or events. To be in a transition the individual needs *to be aware* of the change that is occurring. This awareness is related to perception, knowledge and recognition of a transition experience. *Engagement* in the process of change may involve seeking information, using role models and preparing activities. All transitions involve *change*, and transitions are both the result of change and result in change [10].

The individual feels *different*, being perceived as different, or seeing the world and others in a different way. Transitions elapse *over time* with an identifiable starting and end point. The period is characterised by feelings of instability, confusion and distress. The event of childbirth is described as a *critical turning point* and is often associated with an increased awareness of change and difference. During the transition from man into fatherhood, fathers tend to be more vulnerable to risks that may affect their health. If the pregnancy was unintentional, if there are previous experience of miscarriage or intrauterine death, or if the environment is strained, this may delay healthy coping strategies and affect negatively on the expectant fathers' health. [10]. In the literature fathers have expressed feelings of distress and an inability to engage in the reality of the pregnancy [14, 15], resulting from the fact that they have to rely on their partners' accounts for it. However, participation in pregnancy confirmation, routine ultra-sound examination, antenatal education, and in labour and birth has been pointed out to help fathers to shape their transition to fatherhood [14]. Genuine and strong emotional responses among fathers have been described during the period of transition to fatherhood. An emotional openness and displaying of emotions is described as a new dimension of being a father [5]. Becoming a father is understood as a process of maturity [4], leading to a broader and more transgendered perspective which may give a more balanced masculine self-image [1]. Mature individuals have been described as having information, skills, values and role perceptions in common. Within a psychological context the terms maturity, mental health or social adjustment are often used interchangeably. Self-acceptance, independence, social feelings like trust and acceptance for others, humanistic values and a stable sense of identity are described as being characteristics of psychological maturity [16].

3.3. Sexual and reproductive health

Reproductive health has been described by the World Health Organization (WHO) to include the aspect of an individual's sexual health [17]. According to the Government Offices of Sweden [18] the concept of reproductive health refers to physical, mental and social well-being in relation to the reproductive system and its function. The concept of sexual health refers, furthermore, to quality of life, personal relationships, counseling and healthcare. Gender equality, social justice, adequate health and medical care and information, all promote a good sexual and reproductive health [18].

3.3.1. Fathers' health

WHO gives priority to fathers' sexual and reproductive health advocating that support and advice should be given by the society's healthcare system, and emphasising that fathers should take control over and improve their own health [19]. Fatherhood is a social role that includes both biological and cultural factors. Fatherhood extends, strengthens and shape men's social network which also contributes to their health [20]. Fathers' involvement in parenthood has increased during the last decades and this can benefit their own health and well-being [4]. The ability to be emotionally aware is supposed to benefit fathers' physical and mental health [5]. Men's health has been described as being stimulated by the relationships between their partners, parents and healthcare professionals. Plantin [4] argues that fathers who engage themselves in their children adopt less negative health behaviour and lower their risk of associated ill health. Social networks may positively influence a father's health [21]. It has been described that those who have been recognised in their new role as fathers and experienced emotional support during pregnancy have better physical and mental health [4].

3.3.2. Fathers' health and involvement make a difference

Men's health and involvement in fatherhood has further been described to have a potentially positive effect on their children's and partners' health [4]. Increased involvement by men in fatherhood may benefit their partners. Giving psychological and emotional support to the partner during pregnancy and childbirth has been seen to reduce her labour pain and exhaustion [4]. Men's positive involvement in fatherhood has been seen to enhance their children's cognitive and social development [22, 23]. However, depression during the postnatal period in fathers has been associated with adverse emotional and behavioural outcomes in children, and an increased risk of developing conduct (behavioural) problems in boys [24].

3.4. Social support

3.4.1. The concept of social support

The concept of social support is complex and has been difficult to define; it is linked to psychological and physical health outcomes and known to protect individuals from the potentially adverse effects of stressful events. Stress is experienced when a person appraises a situation as threatening or otherwise demanding and at the same time does not have an appropriate coping response [25]. Different categories which are consistent with social support have been identified, and House's definition of social support and its categories is one way to view the concept [25]. House [26] defined social support in 1981 as a concept which includes the categories, emotional, appraisal, informational, and instrumental support. Emotional support is described as generally coming from family and close friends and it includes empathy, concerns, caring, love and trust. Appraisal support involves transmission of information in the form of affirmation, feedback and social comparison [26].

Furthermore, informational social support includes support as advice, suggestions, or directives that assist the person to respond to personal or situational demands. Instrumental support is understood as including more concrete aspect of support in the form of money and time [26].

3.4.2. Support for fathers

Pregnancy, labour and birth, and early parenthood seem to be a stressful period in the transition to fatherhood [15, 27]. Social support is known to decrease fathers' distress during times of life crises [21, 28, 29], and may protect from a wide variety of pathological states [30, 31]. Social support is thereby significant for fathers' health and well-being [21, 32]. However, fatherhood today is described as being subject to limited support [33, 34]. Social support may be given through role models such as their own parents, the partner's parents and close friends [35]. Lakey and Cohen [36] point out the importance of role models shared among a group of people. A model may guide fathers in social interactions by providing a common set of expectations and how to think about one-self as a father. Fatherhood has been slow to change due to a lack of identifiable and meaningful role models [20, 37, 38]. Fathers want also to provide a role model to their children in the absence of role models in their own lives [38]. Fathers have been described as being supported by the partner, family and friends, healthcare professionals and the media. Inexperienced parents indicate that they value face-to-face communication and to also appreciate learning from others' experiences [39, 40]. On the other hand, fathers with previous experiences of childbirth have been described as not to be in need of the same amount of information during pregnancy as first-time fathers [41]. Informational support has been described as transmission of knowledge to others or letting others know how to obtain the necessary information [32].

In addition, the important aspect of informational support is the information itself, the content of the information and how the information is presented [34]. If social networks are restricted fathers have fewer opportunities to receive social support [21].

3.4.3. Information

Fathers choose to seek information and some need information more than others in order to cope with a situation. The motive in searching for information may differ and some sources are used more than others. Information-seeking behavior has been described as being relative to age, level of education, ethnicity, and factors related to one's own social role such as a father, available resources and its accessibility and credibility. A lack of knowledge of pregnancy and childbirth may initiate a process of information seeking. Fathers may feel uncertain of the situation through a lack of knowledge. If fathers perceive the information as threatening their information-seeking style may differ in order to cope with emotional responses such as feeling of uncertainty and anxiety [42]. Styles of information-seeking have been argued to be either "monitoring" or "blunting". Monitors are understood as people who seek information to help them cope with stress. Blunters, on the contrary, avoid information when they face a stressful situation [42, 43].

Partner, family and friends

The partner, the family and friends have been pointed out as valuable sources of social support for fathers-to-be [34, 44]. The partner may provide the fathers with information and explain what they had learnt from healthcare professionals [41, 45]. They may also share the baby's intrauterine movements with the expectant father [46, 47], and they may listen to the baby's fetal heartbeats together [46, 48].

Few men have mentioned their own father as a source of support during the transition to fatherhood. If they mentioned their father as not supportive they emphasised that their experiences of fathering would lead them in a very different direction in parenting [34, 37, 44, 49]. If their own father has not been involved and present during their childhood the men do not want to model their own fathers [33]. Fathers have, furthermore, received practical information about pregnancy and childbirth from friends and colleagues with the same experiences as themselves [34, 44, 47, 49-51].

Healthcare professionals

Healthcare professionals such as the midwife may be able to involve fathers in pregnancy and childbirth, preparing for the impending transition and to facilitate the process through an understanding of the experience. Involvement and preparation through for example parental education may also enhance a healthy transition [10]. WHO [19] has emphasised that professionals should give prospective fathers childbirth information during antenatal care, and professionals are supposed to give guidance, social support and preparation to prospective parents regarding the upcoming birth of the baby [19, 39]. Expectant fathers often perceive professionals as credible [39, 44, 52, 53] and as valuable sources of information [39, 54]. When the healthcare professionals were perceived as competent and professional the fathers felt secure [47, 55]. The fathers wanted the staff to act empathically, supportively, honestly and in a personal way [50, 56, 57]. When enough time was given for support they felt they were taken good care of [56]. Fathers want detailed and practical, individually tailored, advice from healthcare professionals [34, 49], and information about the health of the partner and the baby in order to feel secure [57]. If healthcare professionals engage fathers in communication they feel more involved and satisfied with the care given [58].

The main areas of concern for parents-to-be has been indicated as continuity, choice and control; these are important issues for their sense of participation in care [44, 59]. Besides receiving information, some fathers also wanted to be invited into discussions with the staff [34]. Furthermore, clear information about the actual situation was needed to address a lack of knowledge, and to be better prepared to participate in decision-making, for example about options for treatment for the mother or the newborn baby [57]. Social support for expectant parents is an important issue during antenatal care [60]. Fathers have been described as wanting to be involved in the pregnancy and to be invited to antenatal appointments with the midwife [46-48]. To be involved in antenatal classes was, furthermore, important to fathers-to-be [44-47, 55]. Through these classes fathers received knowledge, understanding, confidence and an expectation of an active role during labour and birth [47]. Participation in childbirth education during antenatal care has also been indicated as a factor in developing a social network [61]. For some men the classes reduced fear or anxiety about childbirth, however, not for all of them [46]. Some men would like to have a session which only addressed fathers-to-be about their needs in the transition to fatherhood. Foreign-born fathers also suggested having classes in their own native language [55]. Antenatal classes with a focus on fathers needs are desirable as a means to improve their skills and confidence in their role as a father [23]. However, it has been argued that current parental education programmes and family services are not helping fathers to increase their participation in parenthood [23]. The routine ultra-sound examination in mid-pregnancy have been appreciated by fathers-to-be as confirmation of the new life, making the pregnancy more real and is experienced as proof to others that they were to become a father. When they heard that the fetus was normal they felt joy, relief, happiness and pride [46, 56]. The ultra-sound examination reduced their feelings of unreality and exclusion [56].

Furthermore, technical effectiveness provided the fathers with feelings of control and reduced their sense of uncertainty [41].

Media

Fathers have identified books [34, 44, 45, 47], leaflets [34, 44, 48, 57], the Internet [34, 44], radio [45], television programs [44, 45], and DVDs [34] as sources of information. Easily accessible health-related information has rapidly increased within existing media and new sources such as the Internet are developing rapidly [62]. The Internet provides social networking websites for e.g. informational and emotional support in the form of blogging services, 'Facebook', 'Twitter' and online diaries. The use of the Internet as a source of health information has also become increasingly popular among fathers [63]. Easily accessible and evidence-based information through the Internet and email has also been suggested to increase men's involvement in fatherhood [23]. The possibility to take part in interactive online discussions has been identified as an advantage for parents during pregnancy and childbirth [39, 63]. Online discussions have been appreciated as a preparation for a safe childbirth and for giving social support [39], they have been valued for their accessibility, speed of feedback, anonymity and as a platform for democratic discussion [63]. The Internet provides easily accessible health information which is variable in its accuracy and quality [32, 64]. Pregnant women and patients in general have valued the quality of the information on the Internet as high [54, 65]. However, the less-educated responders rated the quality of the Internet higher compared to those with a higher level of education [54]. If parents with sparse previous knowledge found information on the Internet too complex, they were not able to take it all in. Women have rated the reliability of health information from the Internet as high when the website was recommended by healthcare professionals [54].

It has also been reported that it is more likely that parents used the Internet when health care professionals had suggested what to look for. Most of the parents felt that health care professionals should suggest suitable Internet sites to parents [66].

3.5. Birth preferences

Fathers' birth preferences are largely unknown but there are reasons to consider how fathers' attitudes and preferences influence the mode of birth, the birth outcome and the parental experiences [4]. In Sweden, gender equality, including the area of parenting where fathers play an important role, has been a focus of government initiatives for the past 30 years [60]. As fathers are encouraged to be involved in pregnancy and childbirth, it is likely that they have preferences of their own regarding the best circumstances for their baby. Most of the births are vaginal non-instrumental births but the prevalence of caesarean section has increased significantly during recent decades. Birth by caesarean section can either be elective or acute, and the prevalence of caesarean sections has been raised both in Sweden and internationally. In the country of Sweden caesarean sections has increased from 5.3 percent in 1973 to 17.2 percent in 2008, and with similar numbers in the county of Västernorrland which render from 4.1 percent to 18.3 percent [67]. Maternal preferences for the mode of birth have been studied, and it is known that a woman's decision about opting for a caesarean section is influenced by their partners' reactions during a previous birth [68]. Fathers have been described as being worried about the safety for the baby during labour and birth [69], and they have thought that a caesarean section is the only safe method when the situation during labour becomes acute [70]. Healthcare professionals are requested to take into considerations the needs of both mothers and fathers during antenatal, intrapartum and postnatal care [19].

3.6. Fathers' birth experiences

Labour and birth are often viewed as a joint project by the parents-to-be, and fathers prefer to be viewed as a part of the childbearing couple [71-74]. However, participation in childbirth has been described to produce an intense [5, 47], immediate and sometimes unexpected emotional response [5], that is more demanding than expected. Feelings of unpreparedness of an unpredictable process and their own and their partners' reactions have been evoked [47]. Fathers respond emotionally during labour and birth and feelings of anxiety have been reported [69, 75-79], this has also been associated with a negative birth experience [75]. An experience of vulnerability among fathers has been reported and this is linked to an uncertainty about what the expectations are on them during birth [14, 79], and concerns the safety for the partner and baby [69, 80]. Fathers' feelings of powerlessness [47], and helplessness [47, 69, 79] can result from labour and birth when it has been experienced as a difficult and confusing event [79]. Fathers with childbirth related fears are not rare, 13 percent of a Swedish study sample stated intensive childbirth-related fears which included the issues of labour and birth, the baby and the partner's wellbeing and safety, their own and their partner's feelings, and treatment by the professionals [81]. If support was lacking for fathers during childbirth they felt excluded and have expressed that they missed the necessary guidance and information [47, 72]. After the birth of the baby, fathers have expressed feelings such as joy, pride [47, 69, 72], relief, and the best thing ever happened in life [47]. However, some fathers have not been able to feel happiness due to emotional exhaustion [72]. Attending childbirth has mostly been described as having a positive impact on fathers and childbirth is described with feelings of pleasure and pride. The majority of fathers would prefer to be present at a future birth, wanting to participate and provide support for their partner [3].

Mode of birth has an impact on fathers' birth experiences. A spontaneous vaginal birth is most common and has been described by fathers to give a more positive birth experience compare to an instrumental vaginal birth which was more traumatic [8]. If the partner is undergoing a caesarean section the main reasons for fathers being present in the operating theatre has been discussed. The positive aspects of wanting to provide emotional or physical support, to share the family event, attempting to make caesarean section more similar to a vaginal birth, aiding the bonding between father and baby, and the right of the father to be present for birth of his baby have been highlighted [82]. Fathers' also believed that they could be a link between their partner and the medical staff by facilitating the communication [83]. However, during a caesarean birth more fathers have been described to be anxious [8, 70, 76, 84], and experienced it more traumatically compared to those who participated during a vaginal birth [8]. During emergency caesarean section there is limited time to inform and support fathers and this may contribute to psychological distress [28], and they may not feel in control of the situation. It is not always a routine to allow fathers to be present during an emergency caesarean section and this can create reactions of dissatisfaction, inadequacy, stress, anxiety, fear and shock. Many fathers are not prepared for the situation of a caesarean section because of little information or because of limited childbirth preparation. Thus, a father's psychological reaction to the birth of his baby by caesarean section is generally described with relief and happiness [85].

3.7. Fathers' involvement in postnatal care

Key concepts in postnatal care have been pointed out to be social support, involvement of the woman's partner, health promotion and education [59]. Men's expectations about early fatherhood have been shown to be unrealistic. They realised that a lack of skills and experiences were missing and support and recognition is needed [37]. The fathers felt helpless and inadequate in providing care to the baby and guilty about not being supportive enough for the partner. Furthermore, they have experienced feelings of loneliness, with no one to talk to about their feelings, and it has been described as a stressful time. If the birth was experienced as a difficult event with concerns about the partner and the baby this, interfered with their ability to connect with the baby [37]. If healthcare professionals engaged fathers in communication, the fathers' involvement in the partner's and baby's care increased and they became satisfied with the care given. Faith in professionals has been described to be important for fathers. They wanted to rely on the professionals' skill and knowledge, and their ability to show calmness and security [58]. A positive father involvement in parenthood has been found to be associated with marital happiness, parental competence, and closeness to the baby. If fathers experience anxiety, feelings of depression or are tied into traditional child-rearing models this has been described as leading to a poorer adjustment to their babies [23].

3.8. Quality of care

Parents-to-be have expectations of antenatal, intrapartum and postnatal care which may have been developed from conversations with friends and family, previous childbirth experiences, and the more formal insights gained through antenatal classes and reading [86]. There is not one universal definition to the concept of the quality of care [87, 88], but it has been argued to include efficiency, safety, equity and an understanding of families' wishes, needs and values [88].

One important aspect of the concept is how new families' experience the care given during intrapartum and postnatal care. Furthermore, parents' satisfaction has been described as an indicator of quality of care [89, 90] and may be used to improve health care. The literature reports that socio-demographic characteristics are at best a minor predictor of satisfaction [91, 92]. Evaluating given care must be a continuous process to minimise any delay in identifying parts that turn out to be ineffective or even harmful [93].

3.9. Reasons for the present thesis

Men's participation in pregnancy, labour and birth, and early parenthood are important parts of the transition to fatherhood and the involvement has an impact on fathers' experiences and health. Women's emotional health during transition to motherhood has been increasingly investigated but there is now a debate that focuses on illuminating the support needed for men in their transition to fatherhood. Pregnancy and childbirth seems to be a stressful period in the transition to fatherhood and social support may be significant for fathers' well-being. When fathers participate during labour and birth they may harbour and transfer their own anxiety, demands and expectations which may contribute negatively to the course of labour and birth. During the last two decades there has been more focus on fathers in literature and in society. There is now a need to focus on fathers' own perspectives and experiences of parenthood. The focus in this thesis was developed because there is restricted knowledge about the sources of information that fathers' use during the pregnancy of their partner, childbirth information, birth preference, and experiences of birth and postnatal care. One important aspect of this thesis was to find strategies in order to improve the practical clinical approach to the woman's partner. Healthcare professionals may help fathers to enhance satisfaction with care given during pregnancy, labour and birth, and early parenthood.

4. THE AIM

The overall aim was to describe and explore fathers' sources of information, birth preference, and experiences of childbirth and postnatal care.

The specific aims were:

- Paper I** to investigate the sources of pregnancy and childbirth information that expectant fathers used in pregnancy, with a specific focus on the Internet.
- Paper II** to investigate prospective fathers' preferences for caesarean section and associated factors.
- Paper III** to explore Swedish fathers' birth experiences, and factors associated with a less-positive birth experience.
- Paper IV** to explore fathers' postnatal care quality experiences with a specific focus on deficiencies. A second aim was to investigate which deficiencies remained important for fathers one year after childbirth.

5. METHODS

5.1. Study design

The investigations were part of a prospective longitudinal cohort study of expectant and new parents' experiences of pregnancy and during the first year following childbirth. Data were collected by questionnaires at four time-points; in mid-pregnancy, late pregnancy, two months and one year after childbirth. For this thesis data from mid-pregnancy, two months and one year after birth were used. Socio-demographic background variables were collected from mid-pregnancy for all included papers (**Paper I-IV**). The data for the investigations about used sources for information about pregnancy and childbirth (**Paper I**) and birth preferences (**Paper II**) were gathered from mid-pregnancy. Data about birth experiences (**Paper III**) and experiences of the quality of postnatal care (**Paper IV**) were collected two months after birth. For the overall satisfaction with postnatal care data were collected one year after birth (**Paper IV**).

A closed single-group cohort design was chosen with the purpose of identifying factors leading to the outcomes of interest. After the recruitment year of 2007 no more fathers were included in this cohort (i.e. closed cohort). Furthermore, the outcomes were not assessed before they occurred [94, 95].

5.1.1. Inclusion criteria

The inclusion criteria were:

- partners to Swedish-speaking women who were booked for routine ultrasound examination during mid-pregnancy, between 8th of January 2007 and 8th of January 2008, in the county of Västernorrland
- mastery of the Swedish language
- an ultra-sound with identification of a non-malformed living fetus

5.2. Papers included in the thesis

The specific aims, study sample, data collection and methods of analysis for each paper included in the thesis are described in Table 1.

Table 1. Overview of the included papers

Specific aims	Study sample	Data collection	Methods of analysis
I) To investigate the sources of pregnancy and childbirth information that expectant fathers used in pregnancy, with a specific focus on the Internet	1105 fathers in mid-pregnancy	1 st questionnaire	Descriptive statistics, relative risk with a 95% confidence interval
II) To investigate prospective fathers' preferences for caesarean section and associated factors	1105 fathers in mid-pregnancy	1 st questionnaire	Descriptive statistics, prevalence ratio with a 95% confidence interval and logistic regression
III) To explore Swedish fathers' birth experiences and factors associated with a less-positive birth experience	827 fathers two months after birth	1 st and 3 rd questionnaire	Descriptive statistics, relative risk with a 95% confidence interval, chi-square for independence, logistic regression and content analysis
IV) To explore fathers' postnatal care quality experiences, with a specific focus on care deficiencies. To investigate which deficiencies remained important for fathers' dissatisfaction with postnatal care one year after childbirth	827 fathers two months and 655 fathers one year after birth	1 st , 3 rd and 4 th questionnaire	Descriptive statistics, chi-square for independence, paired samples t-test and logistic regression. Index for quality of care was created, based on perceived reality and subjective importance

5.3. Participants and procedure

Pregnant women and their partners were invited during one year (2007 January 8th- 2008 January 8th) to participate in this prospective longitudinal cohort survey when they attended the routine ultra-sound screening. The catchment area included three hospitals in the middle-north part of Sweden. Two weeks prior to the planned routine ultra-sound screening, offered to all prospective parents in gestational week 17-19, written information about the study was sent out. The information to the mothers and fathers-to-be was sent to the pregnant women's home addresses, which were retrieved from the three hospitals' electronic birth records. There was, however, no information about the women's partner in the birth records except for the partners name and if they were cohabiting. Therefore, the invitation letter to the women and their partners was included in the same envelope. A flowchart for the cohort has been described in Figure 1. During the study period 2512 routine ultra-sound screenings were performed in these three hospitals. Data on how many women not participating in ultra-sound screening was not collected, but most of the women usually take part in this examination. One hundred and twenty nine non-Swedish speaking women and 22 non-normal-outcomes of the ultra-sound screenings were excluded. How many of the women's partners were excluded due to not understanding the Swedish language was not known and the judgment about the issue was handled by the midwives in charge of the ultra-sound examinations. Three male partners agreed to participate even when their female partner had not consented to participate. Six couples were not approached and the reasons are not known, another eight couples who moved from the study area shortly after the ultra-sound screening, this left 2347 eligible for the study.

We have no information about how many of the women were single mothers and the number of partners who actually participated during the ultra-sound screening, therefore the eligible partners was estimated on the actual numbers of pregnancies under examination and will serve as a proxy for the partners. When the ultra-sound examination was completed the midwife in charge asked the partners, who were all male, if they wanted to participate. The prospective fathers consented to participate by signing an agreement-form (Figure 1).

Questionnaires

The expectant fathers could complete the first questionnaire at the clinic or choose to send it via a prepaid envelope to the study administration. A letter of reminder was sent to non-respondents after two weeks, and after four weeks a new questionnaire was sent out. The second questionnaire was delivered by post-mail in late pregnancy, the third two months after childbirth, and the fourth one year after childbirth; all the letters included a prepaid envelope, with the same reminder process. Of 1414 expectant fathers who received the questionnaire in mid-pregnancy 1105 (78%) answered. After the delivery of the first questionnaire three men had moved, six men had withdrawn participation and five pregnancies had ended with miscarriages /intrauterine deaths, leaving 1400. Data from the questionnaire in late pregnancy was not used in this thesis. After the delivery of the second questionnaire five fathers had moved, eight fathers withdrew their participation and five pregnancies ended with miscarriages/intrauterine deaths. In addition, 284 fathers who consented to participate but never returned any of the first two questionnaires were viewed as drop-outs and did not receive the third questionnaire, leaving 1112 participants. The questionnaire two months after birth was sent out to 1112 fathers and of these 828 (74%) answered.

The last questionnaire, one year after birth, was sent out only to those who had answered the other three questionnaires (n=766), and 655 of these answered the fourth questionnaire (Figure 1). The reason for sending out the last questionnaire only to those who had answered the first three questionnaires was taken because we considered that the earlier non-respondents were not interested in participating in the cohort and it was also for financial reasons.

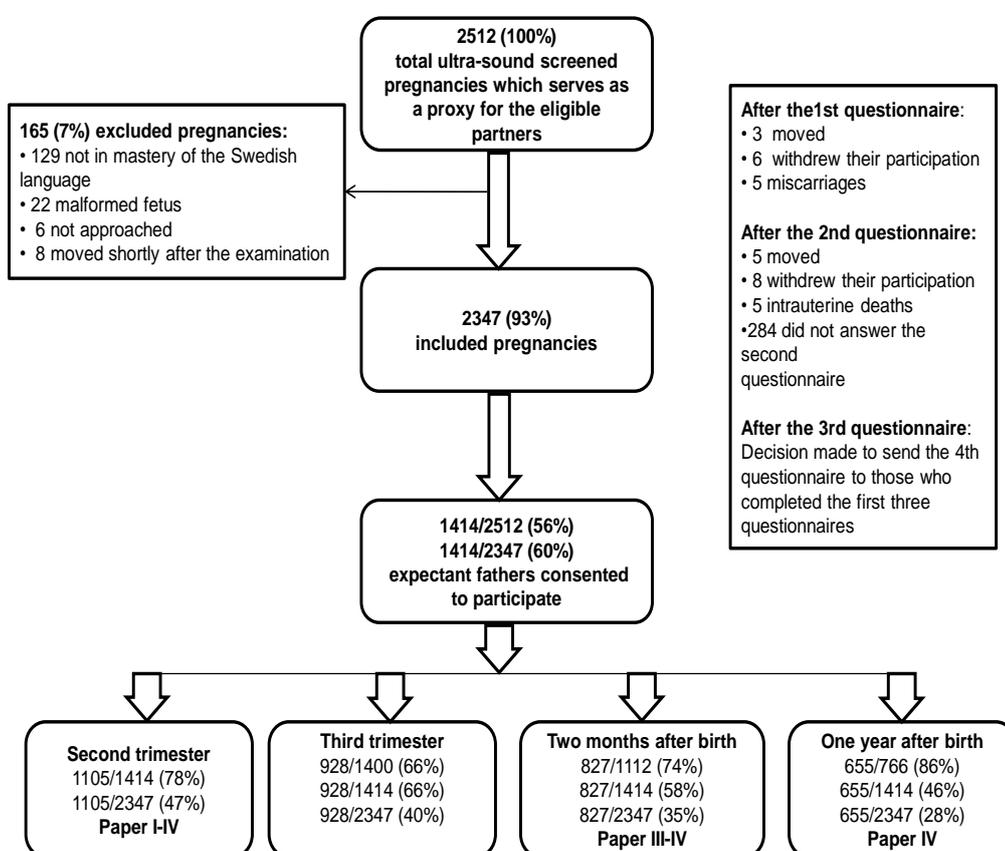


Figure 1. Flowchart of the cohort which was estimated from the actual numbers of included mid-pregnancies which were ultra-sound examined, and these pregnancies serve as a proxy for the participated fathers.

5.4. Context of care in the county of Västernorrland

The county of Västernorrland is one of 24 counties in Sweden and is situated in the middle-north part of Sweden [62]. In Sweden fathers are invited to participate in antenatal, intrapartum and postnatal care.

5.4.1. Antenatal care

Antenatal care is also known as prenatal care, and refers to care given during pregnancy. In Sweden this care includes for example health check-ups, information and preparation for birth and parenthood. During the years of 2007 and 2008 the antenatal care in the county of Västernorrland was mainly within the public health sector but five private alternatives were available during the studied years. Midwives were the primary providers of antenatal care for low risk mothers and physicians were available as consultants. Eight to nine visits were included during pregnancy. During pregnancy the parents-to-be were also offered the opportunity to take part in antenatal classes, priority was given to first-time mothers and fathers. Three to four meetings were included in the parental education. One of the three hospitals invited the expectant parents to one lecture about childbirth and early parenthood. The other two hospitals invited the parents to one visit into the hospitals' delivery ward. These visits were included in the parental education.

5.4.2. Intrapartum care

The intrapartum care refers to care given during labour and birth. In the county of Västernorrland the intrapartum care was within the public health sector. Midwives were the primary caregivers for the parents-to be during labour and birth. When complications arose the obstetrician became involved together with the allotted midwife. The intrapartum care in the county of Västernorrland was offered at three hospitals. In the year of 2008, 2540 births (1622, 611 and 307 births in each hospital) were registered in these hospitals.

5.4.3. Postnatal care

In Sweden, the mean length of postnatal care at hospitals for healthy mothers experiencing a normal birth is approximately two days. If pregnancy and childbirth have been complicated the mothers and the babies are cared for in a traditional or co-care neonatal intensive care (NIC) ward, for at least three days [96]. In the studied cohort early discharge and traditional postnatal wards were available in all the included hospitals, and early discharge was encouraged for uncomplicated births. Care in a family suite was, however, only offered at one of the three hospitals. Family suites allow fathers and siblings to stay overnight. When the families were cared for in a family suite they were formally discharged from the hospital. Midwives were available during daytime for giving postnatal care. If parents had problems at night time they called the traditional postnatal ward for assistance. Furthermore, co-care in a NIC/baby clinic was available at all hospitals but at one of the hospitals the babies were only cared for from Monday to Friday, therefore over the week-ends the babies had to be transferred to another hospital. Only women with uncomplicated pregnancies came to give birth at this hospital, therefore there were not so many babies in need of NIC. When the babies were cared for in a NIC unit/baby clinic and the new mothers still needed postnatal care the midwives at the traditional postnatal ward were in charge of them.

The information about antenatal, intrapartum and postnatal care available in the county of Västernorrland is based on personal communication (2011-05-30) with those in charge of the antenatal and the intrapartum care.

5.5. Data collection

5.5.1. Questionnaires

Data in this thesis were collected by means of questionnaires in three time-points (mid-pregnancy, two months and one year after birth). The questionnaires had closed and open-ended questions. The closed questions were used in all **Papers (I-V)** and involved a number of defined response choices which ranged from e.g. strongly agree to strongly disagree. The fathers were also given an opportunity to express their view about their birth experiences by a comment in **Paper III**.

5.5.2. Outcome variables

In **Paper I** the outcome variable was the sources used for pregnancy and childbirth information. To assess the sources of information 16 questions within the area of family (partner/ mother or mother in law/ another family member), friends (with and without children), professionals (midwife/ general practitioner/ obstetrician/ social worker/ parental education/ antenatal information material) and/or media (such as Internet/ TV or radio/ newspaper/ books/ magazines) were used. Furthermore, the outcome variable in **Paper II** was about birth preference with a focus on a preference for a caesarean section. The question used was worded 'How do you prefer your baby to be born?' with the response alternatives 'vaginal birth' and 'caesarean section'. For **Paper III** the outcome variable was the birth experience and the question asked was worded 'What was your overall birth experience?' The question was assessed on a five-point rating scale and was dichotomised into the categories positive birth experience (very positive and positive), and less-positive birth experience (mixed feelings, negative and very negative). To explore the birth experiences the fathers were also given the opportunity to express their views by 'Please, comment on your birth experience'.

In **Paper (IV)** the outcome variable was quality of postnatal care, which was assessed by 11 questions about received information and support, the woman's and the baby's check-ups/medical care, and how the fathers were treated by the staff. For each question the perceived reality and subjective importance were assessed. An index was created which was categorised into 'deficient care', 'balanced care' and 'excessive care', and the focus was on deficiencies in care. In addition, the overall satisfaction of postnatal care was assessed with the question worded 'What is your overall assessment of the postnatal care?'

5.5.3. Explanatory variables

The explanatory variables used in this thesis were socio-demographic background (age, country of birth, marital status, tobacco habits and level of education), previous number of children, previous mode of birth, previous birth experiences, if the pregnancy was planned or not, birth preferences, attitudes about birth, childbirth-related fears; actual mode of birth, birth experiences, need for neonatal intensive care, model of care and staying around the clock at the postnatal ward. The used socio-demographic background factors are commonly included in scientific research investigations to see if they have any influencing effect on the outcome variable. However, the variables: marital status and tobacco habits, did not further affect the outcome variable.

5.5.4. Index for quality of care

The index created in **Paper IV** indicated the quality of the postnatal care. The questions used were inspired by the scale 'Quality from the patient's perspective' (QPP) which required that the fathers had to evaluate each question in two ways. First they were asked about their own experience (perceived reality) and then to evaluate how important this aspect of care was (subjective importance).

The response categories for perceived reality (PR) were ranging from 'do not agree at all' (=1) to 'totally agree' (=4); and for the subjective importance (SI) 'of little importance' (=1) to 'of very great importance' (=4). An index was created by combining the answers of PR and SI of each question. 'Deficient care' was described to contain aspects that are considered important by the fathers, but the actual care was judged as less than good. 'Balanced care' reflected the needs of the respondents and was described when the fathers rated high or low scores on both PR and SI. 'Excessive care' was about aspects which were considered as not important but the care was beyond their expectations ('too much care') [97, 98] (Figure 2.).

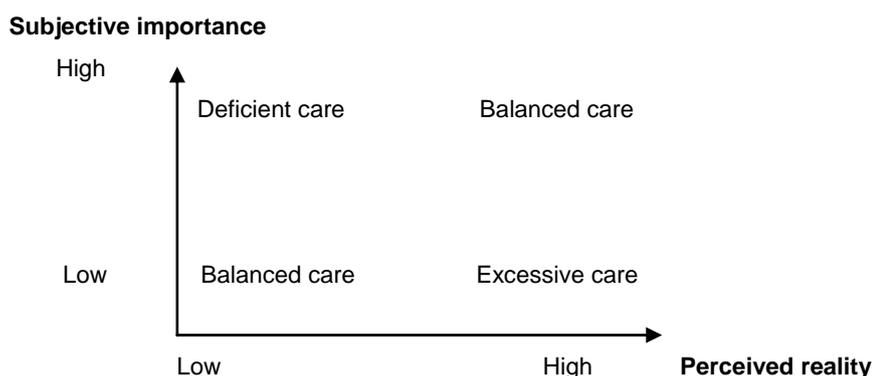


Figure 2. The index for quality of care was created by a combination of the answers of PR and SI of the postnatal care.

5.6. Data analysis

5.6.1. Analysis for the quantitative data

To analyse the data within this cohort study, epidemiological methods were used to examine associations between the outcome and the explanatory variables. Epidemiological statistical methods were used to assess variability in the data and to estimate effects after adjusting for biases such as confounding factors [95].

Relative risk (RR) and prevalence ratio (PR) are ratio values comparing two probabilities and the calculation is the same. In **Paper I** RR values were calculated for the differences between the sources of pregnancy and childbirth information, and the explanatory variables. PR was used in **Paper II** when the probability of the preference for caesarean section in relation to the independent variables was under investigation. Furthermore, the RR was used in **Paper III** for the differences between repeat and first-time fathers, and a less-positive and positive birth experience for the different levels of the explanatory factors. In epidemiological studies where an exposed group is compared with an unexposed group the RR is an indicator of the strength of the association between the exposure and the outcome [99]. In **Paper I-IV** a 95 percent confidence interval (CI) for the RR/PR was estimated using the method described by Mantel & Haenzel in Rothman [95]. The interpretation of a 95 percent CI was that the results contain the true population mean to 95 percent [100].

Logistic regression was a chosen method due to its statistical description of the association between two or more variables [100]. Logistic regression was used in order to find which factors most strongly associated with a preference for caesarean section (**Paper II**); for factors associated with a less-positive birth experience (**Paper III**); and factors related to overall dissatisfaction with postnatal care one year after childbirth (**Paper IV**).

The technique of logistic regression has been described to be a method to assess the association between a set of independent variables on a dependent variable [101]. The statistical analysis of the binary outcomes was based on odds ratio (OR) which is a reflection of the β -coefficient in the logistic regressions. OR is the ratio of the odds of the outcome event in the exposed group compared to the odds in the unexposed group. The interpretation of OR is the same as that for RR/PR, but the OR is always further away from 1 than corresponding RR/PR. For rare outcomes like a preference for a caesarean section in **Paper II** and factors for a less-positive birth experience in **Paper III** the OR is approximately equal to the RR/PR and then the OR was interpreted and presented as PR/RR [99].

To assess the differences between the fathers' perceived reality (PR) and subjective importance (SI) for the questions asked about postnatal care (**Paper IV**) a paired samples t-test was used. This method has been reported to be used when there are one group of people and the data are collected under two different conditions. Paired samples t-test determines if there are significant differences between the mean values [101].

Chi-square test for independence (χ^2) was used in **Paper III** and **IV** for the differences between first-time and repeat fathers in relation to background characteristics. When the variable had only two categories in each variable a 2 by 2 table was created and 'Yates continuity correction' was used in order to compensate for overestimation of the p -value [101].

The probability (ρ)-value has been described to be used in measuring the probability of recording a difference between two groups. The level of statistical significance was set in this thesis to 0.05, which is a commonly used level in medical and psychological research. This interpretation is considered to be small enough to justify rejection of the null hypothesis [99]. A ρ -value is the probability of a Type I error, that the obtained results are due to chance alone. The smaller the estimated ρ -value, the stronger is the evidence against the null hypothesis [99]. The ρ -value has been estimated in all included papers (**Paper I-V**).

5.6.2. Content analysis for the qualitative data

Essential contributions to the method of content analysis took place in the 1930s and 1940s during the time of the development of electronic media such as radio and television. Sociologists started to use survey research wherein public opinion was analysed and statistical methods were also beginning to be used. The concept of 'attitude' emerged in the area of psychology which added the dimensions of 'pro versus con', and 'favourable versus unfavourable', in the content analysis [102]. The method of content analysis includes a quantitative and qualitative form and its analytic techniques facilitate both manifest and/or latent content of communication [103-105].

According to Elo and Kyngäs [105] a content analysis results in a description of a phenomenon, and the approaches of inductive or deductive analysis may be used. These approaches include a preparation, organising, and reporting phase. The preparation phase starts with selection of the unit of analysis and then the text is read through several times in order to become familiar with the data. A deductive analysis is a structured analysis, which is operationalised on the basis of previous knowledge, and the testing of a theory. The data is then organised to include a development of a categorisation matrix [105].

The categorisation matrix may be based on earlier theories, models, mind maps or literature reviews. The next step in the analysis is to review and code the data into identified categories [105].

For the inductive approach the concepts are derived from the data and this approach may be chosen when the knowledge about the phenomenon is fragmented or limited. The organising phase includes an open coding which describes all aspects of the content. Categories are created in which the process of analysis is reduced into higher order categories. The next step after the open coding is a general description of the research topic through generating subcategories with similar events/incidents, generic categories and main categories. The process of abstraction continues as far as reasonable and possible. The last step in the approaches of inductive or deductive analysis is the reporting phase which includes a description of the analytic process and the results. The result of the content analysis may result in a model, conceptual system, conceptual map or categories [105].

An inductive content analysis according to Elo and Kyngäs [105] was used to analyse the fathers' comments on the birth experience in **Paper III**. To analyse the data the authors separately read through all the statements, several times, in order to obtain a sense of the whole. The statements were divided into smaller parts which were labelled with different codes. The codes were grouped into subcategories according to their content. The subcategories with similar events were finally grouped together into five generic categories which all included the meaning of the birth experience. The generic (comprehensive) categories described the characteristics of the included subcategories (Figure 3).

The fathers' comments on the birth experience did range from a couple of words to a couple of sentences. Because of the short comments the abstraction process was not able to reveal main categories.

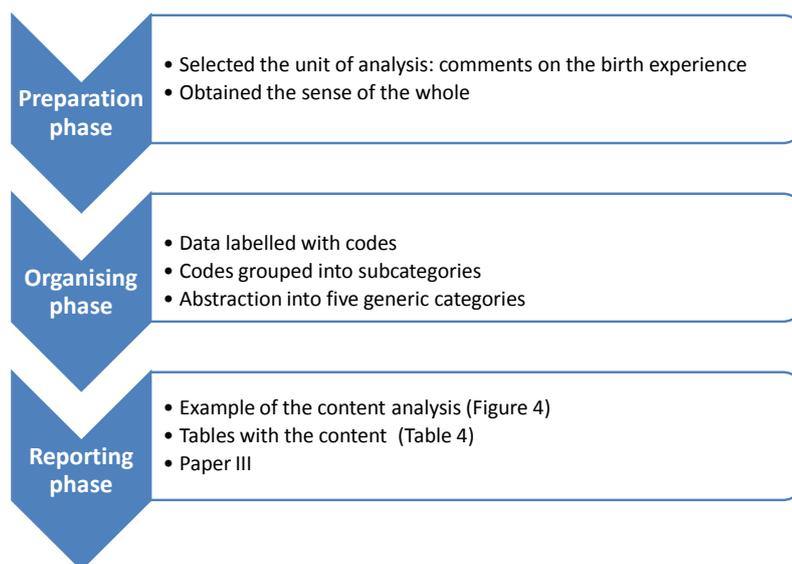


Figure 3. Preparation, organising and reporting phases in the process of content analysis

5.6.3. Integrating quantitative and qualitative data

A mixed method is a strategy employed when collecting quantitative and qualitative data at the same time point, and within the same group of participants [106-109]. To be able to more fully explore the fathers' birth experiences in **Paper III**, quantitative and qualitative data were collected at the same time from the same group of participants. The result from the quantitative and qualitative data analysis was integrated and corroborated the findings in the interpretation phase [106-109].

5.7. Ethical considerations

The investigations included in this thesis were approved by the Regional Research and Ethics Committee at Umeå University, Sweden (Registration number 05-134 Ö). A letter with information about the cohort study and an invitation to be part of it was sent out to all pregnant women, including the partner, who got invited to the routine ultra-sound examination in the second trimester. The letters were sent out two weeks before the ultra-sound examination with written information about the study, the voluntary nature of participation was pointed out and the confidentiality of data as well [94]. Furthermore, anonymity and confidentiality were promised in order to protect their right to privacy. The participants' agreement to be included in the study was voluntarily and free from duress. In addition, telephone numbers and addresses of the researchers in the team were explicit in the questionnaires and could be used if the participants had any comments or questions.

The Declaration of Helsinki [110] is a statement of ethical principles to provide guidance in medical research involving human subjects. The ethical principles promote respect for all human beings and protect their health and rights. Some populations are more vulnerable and need special protection. The study subjects must be volunteers and informed; it should also be possible to withdraw their participation at any time without reprisal. Furthermore precautions must be taken to protect the subjects' integrity, privacy, and the confidentiality of the information. This guideline was followed in this research.

6. RESULTS

6.1. Background characteristics for the participants

In total, 1105 fathers answered the first questionnaire in mid-pregnancy and of these 577 (52.2%) had previous children and 528 (47.8%) were expecting their first baby. The fathers with previous children were more often older and experienced the pregnancy as less-positive compared to fathers expecting their first baby. Furthermore, they were less likely to have infertility problems, assisted conceptions, and childbirth-related fears in comparison to fathers expecting the first baby. Country of birth, marital status, tobacco habits, level of education, planned pregnancy and the situation on the labour market did not differ between first-time and repeat fathers-to-be. Fathers expecting the first baby preferred a vaginal birth more often compared with men with previous children (p -value 0.05). Background characteristics for the men in mid-pregnancy are presented in Table 2.

The participants in the investigations of this thesis consisted of fathers aged between 16 and 66, and were more likely to live with the partner, to have high level of education and to use snuff more often compared to men in the county of Västernorrland. The numbers of spontaneous vaginal births, instrumental vaginal births and caesarean sections in the investigations were similar to those reported from the county of Västernorrland and the country of Sweden. The numbers of elective and emergency caesarean section were not stated in statistical data bases so comparison with the county of Västernorrland and the country of Sweden was not possible (Table 3) [111-113].

Table 2. Background characteristics for the prospective fathers in mid-pregnancy

	Fathers in total n= 1105 n (%)	First-time fathers n= 528 n (%)	Repeat fathers n= 577 n (%)	χ^2 p-value
Age groups				
< 25 years	64 (5.8)	56 (10.7)	8 (1.4)	
25-35 years	742 (67.6)	383 (73.1)	359 (62.7)	
>35 years	291 (26.5)	85 (16.2)	206 (36.0)	0.000
Country of birth				
Sweden	1037 (95.6)	488 (94.6)	549 (96.5)	
Other	48 (4.4)	28 (5.4)	20 (3.5)	0.167
Marital status				
Living with partner	1070 (97.1)	504 (96.0)	566 (98.1)	
Living without partner	32 (2.9)	21 (4.0)	11 (1.9)	0.059
Tobacco habits				
None-users	711 (64.3)	342 (64.8)	369 (64.0)	
Users	394 (35.7)	186 (35.2)	208 (36.0)	0.824
Level of education				
Comprehensive school	67 (6.2)	31 (6.0)	36 (6.3)	
High-school	614 (56.5)	301 (58.1)	313 (55.0)	
College/University	406 (37.4)	186 (35.9)	220 (38.7)	0.784
Infertility problems				
No	935 (85.8)	425 (82.2)	510 (89.0)	
Yes	155 (14.2)	92 (17.8)	63 (11.0)	0.002
Assisted conception				
No	1016 (93.6)	468 (90.9)	548 (96.1)	
Yes	69 (6.4)	47 (9.1)	22 (3.9)	0.001
Childbirth-related fears				
None or a little	1037 (94.4)	484 (92.5)	553 (96.2)	
Much or very much	61 (5.6)	39 (7.5)	22 (3.8)	0.013

Birth preference

Vaginal birth	981 (93.3)	471 (95.0)	510 (91.7)	
Caesarean section	71 (6.7)	25 (5.0)	46 (8.3)	0.050

Planned pregnancy

Yes	728 (75.4)	289 (73.0)	439 (77.2)	
No	237 (24.6)	107 (27.0)	130 (22.8)	0.160

Experiences of pregnancy

Very positive or positive	1036 (95.8)	495 (97.2)	541 (94.6)	
Both positive and negative, negative or very negative	45 (4.2)	14 (2.8)	31 (5.4)	0.041

Categories may not sum to the total number owing to missing data.

Percentages calculated are based on respondent numbers in each category from data were reported.

Table 3. Background characteristics in comparison between the study population, men in the county of Västernorrland and men in the country of Sweden

	Study population	County of Västernorrland	Country of Sweden
	n (%)	n (%)	n (%)
Age 16-66 years	1105 in mid-pregnancy	80 688	3 130 566
Country of birth			
Sweden	1 040 (95.6)	(93.6)	(86.5)
Other	48 (4.4)	(6.4)	(13.5)
Marital status (with children aged 0-17 years for the men in the county of Västernorrland and the country of Sweden)			
Living with partner	1 073 (97.1)	20 877 (77.0)	836 155 (77.0)
Living without partner	32 (2.9)	1 558 (5.0)	52 247 (5.0)
Other		(18.0)	(18.0)
Level of education			
	(age of 16-66 years)	(age of 16-66 years)	(age of 16-64 years)
Comprehensive school	67 (6.1)	18 541 (23.4)	671 173 (23.0)
High-school	616 (56.5)	42 612 (53.9)	1 415 128 (48.4)
College/University	407 (37.3)	17 929 (22.7)	833 992 (28.6)
Tobacco use			
		(for the years of 2004-2006)	(for the years of 2004-2006)
Smoking	75 (6.9)	(10.0)	(13.0)
Snuff using	360 (33.2)	(28.0)	(21.0)

Number of births in total	813	2 363	106 115
Spontaneous vaginal birth	598 (73.6)	1 734 (73.4)	79 161 (74.6)
Instrumental vaginal birth	69 (8.5)	196 (8.3)	8 701 (8.2)
Caesarean section in total	146 (17.9)	432 (18.3)	18 251 (17.2)
Elective caesarean section	57 (7.0)	not in records	not in records
Emergency caesarean section	89 (10.9)	not in records	not in records

Statistics for age, country of birth, marital status, level of education and tobacco use in the study population was collected in mid-pregnancy; and about the delivery two months after birth.

Statistics for age, country of birth, marital status, level of education and delivery in the county of Västernorrland and the country of Sweden was collected in the year of 2008 (Statistics Sweden).

Statistics for tobacco use in the county of Västernorrland and the county of Sweden was for every day users aged 16 to 84 and between the years 2004-2006 (Swedish National Institute of Public Health).

Statistics for the delivery in the study population was from year 2007-2009, and for the county of Västernorrland and the country of Sweden in year 2008 (The National Board of health and Welfare).

Statistics for marital status in the county of Västernorrland and the country of Sweden for those men who had children aged 0-17 years (Statistics Sweden).

6.2. Sources used for pregnancy and childbirth information

The midwife and the pregnant partner were the most important sources of information for the expectant fathers during mid-pregnancy and were used by 86 percent and 85 percent respectively. The midwife was more often used by fathers with a high education (RR 1.05; 1.0-1.1), and less used by expectant fathers with previous children (RR 0.9; 0.8-0.9), fathers with childbirth-related fears (RR 0.8; 0.7-1.0), and fathers not born in Sweden (RR 0.8; 0.7-1.0). Furthermore, there were no differences between the background characteristics of fathers who used the pregnant partner as a source of pregnancy and childbirth information, compared to those who did not use their partner. Additionally, the Internet was used by 58 percent of the fathers for pregnancy and childbirth information. The Internet as a source of information was more often used by fathers expecting their first child (RR 1.4; 1.2-1.7), fathers with a high level of education (RR 1.3; 1.2-1.5) and those who had a previous experience of caesarean section (RR 1.3; 1.1-1.6). Fathers over 35 years of age (RR 0.8; 0.7-0.9) used the Internet to a lower extent compared to those under 35 years of age.

6.3. Birth preference

In total, 71 fathers-to-be (6.4%) preferred a caesarean section as the mode of birth for their baby in mid-pregnancy. The repeat fathers who preferred a caesarean section were more likely to have previous negative birth experience (PR 8.6; 2.6-28.3), have experienced a caesarean section (PR 5.7; 2.8-11.9) and less likely to agree that the doctor should decide whether a woman has a caesarean section under any circumstances (PR 0.2; 0.1-0.5). First-time fathers had the attitude of wishing to plan the date of the baby's birth (PR 6.0; 1.5-24.1) compared to those who preferred a vaginal birth for the baby.

Other attitudes among both first-time fathers and repeat fathers who preferred caesarean section for the birth of their baby were that they did not want a most natural birth as possible, and if the woman wants to have a caesarean section they thought she should be able to have one under any circumstances.

6.4. Birth experiences

In total, 604 (74%) of the fathers, two months after birth, indicated that they had a positive or very positive birth experience. A less-positive birth experience was associated with emergency caesarean section (RR 7.5; 4.1-13.6), instrumental vaginal birth (RR 4.2; 2.3-8.0), and dissatisfaction with the partner's medical care (RR 4.6; 2.7-7.8). Healthcare professionals' competence and approach to the fathers also impacted on the quality of the birth experience.

Of the 827 fathers, 111 (13%) commented on their birth experience. Five generic categories were revealed during the content analysis and were described as 'Competence of healthcare professionals', 'Professionals' approach and to be involved', 'Experiences of childbirth', 'Expectations of childbirth' and 'The organization'.

An example of the content analysis is showed in Figure 4 and the description of the revealed generic categories including the subcategories is presented in Table 4.



Figure 4. Example of the content analysis

Table 4. Description over the generic categories including subcategories of the fathers' birth experiences

Generic categories	Competence of healthcare professionals (n=73)	Professionals' approach and involvement in care (n=46)	
Subcategories	Professionalism n=44 Informational support n=15 Technical competence n=7 Emotional support n=7	Empathic approach n=21 Fathers being involved n=13 Respectfully treated n=12	
Generic categories	Experiences of childbirth (n=31)	Expectations about childbirth (n=11)	The organization (n=11)
Subcategories	Overall experience of childbirth=15 Perception of control n=12 Experiences of the physical environment n=4	Expectations about childbirth n=11	Familiar professional n=7 Overloaded professionals n=4

n= number of codes included

The analysis revealed that the fathers who commented on their birth experience were more likely to have a college/university education (19 %; $p=0.0003$) compared to those with a high-school (11 %) and comprehensive school education (6 %); and more likely to be between 25-35 years (15 %; $p=0.052$) or over 35 years old (14 %; $p=0.068$) compared to those younger than 25 years (3 %). In addition, those who had experienced an emergency caesarean section (16 %) and a spontaneous vaginal birth (14 %) were slightly more likely to comment on the birth experience compared to those with experience of elective caesarean section (11 %) or an instrumental vaginal birth (10 %). There were nearly no differences between first-time (15 %) and repeat (13 %) fathers, and if they were cohabiting (14 %) or not (14 %) regarding if they gave a comment on the birth experience.

6.5. Fathers' experiences of postnatal care

In total, 827 fathers answered the questionnaire two months after the birth and 655 returned the follow-up questionnaire after one year. One year after birth, 131 (21%) were dissatisfied with the overall postnatal care. The most important dissatisfying factors were in the way fathers were treated by staff (OR 5.01; 2.80-8.98) and the woman's check-ups/medical care (OR 2.13; 1.25-3.62). Two months after the birth, information given about the baby's care and needs were most deficient when they parents had been cared for in a hotel ward. Furthermore, information about the baby's needs and the woman's check-ups/medical care was most deficient when the fathers had been present during an emergency caesarean section.

6.6. Summary of the results

The midwife, the pregnant partner and the Internet were common sources of pregnancy and childbirth information for the prospective fathers. The midwife was more often used by fathers with a high level of education and less often by repeat fathers, fathers with childbirth-related fears and fathers not born in Sweden. The Internet was more often used by first-time fathers, fathers with a high level of education and fathers with previous experience of caesarean section and to a lower extent by older fathers. Few fathers-to-be preferred a caesarean section for the birth of their baby. A wish to plan the date of the baby's birth was associated with a preference for a caesarean section for first-time fathers and a negative birth experience and a previous experience of caesarean section were factors associated with a preference for caesarean section among fathers with previous children. Most of the fathers had a positive birth experience. The birth experiences were related to the mode of birth, the woman's medical care, the support received from the midwife, involvement in the decision-making process and the perceived competence of the professionals. Most of the fathers were satisfied with the overall postnatal care. Factors causing dissatisfaction were the way fathers were treated by the staff and the woman's check-ups/medical care. Information about the baby's care and needs were judged as most deficient when they had been cared for at a family suite. Furthermore, information about the baby's needs and the woman's check-ups/medical care were judged as most deficient when the fathers had been present during an emergency caesarean section.

7. RESULT DISCUSSION

The findings of this thesis shed light on fathers' experiences of pregnancy, childbirth and postnatal care. The fathers' experiences were further understood and discussed by the theory of transition [10].

7.1. Mode of birth matters

The result of the present study emphasised how the mode of birth affected the fathers in different ways. The birth of the baby has been described as a critical point for men in the transition to fatherhood [10]. When fathers have been distressed by labour and birth, and experienced the birth as a negative event it may affect their attitudes, this has become clear in this thesis. Fathers with a previous negative birth experience were more likely to indicate a preference for caesarean section as mode of birth for the upcoming birth of their baby. According to our findings the fathers who had an experience of caesarean section were more likely to search for pregnancy and childbirth information on the Internet, and they were more likely to prefer caesarean section for the upcoming birth of their baby. The fathers who participated during an emergency caesarean section judged the woman's check-ups and medical care as most deficient in postnatal care compared to participation during other modes of birth. The finding about fathers' less-positive birth experiences when they had participated in an emergency caesarean section is consistent with previous research about how fathers have found this experience as traumatic. Previous research has emphasised that many fathers experience feelings of anxiety during an emergency caesarean section [8, 70, 76, 84] which in turn have been related to feelings of helplessness [84]. Cohen [25] argues that the concept of stress is closely linked to feelings of helplessness and the possible loss of self-esteem. The feeling of fathers' helplessness may arise because of an inability to cope with these situations that demand an effective response [25].

The unfamiliar environment of the operating theatre room, theatre clothes, the temperature in the operating theatre room and the presence of their partner bleeding during the surgical intervention, has also been described as evoking feelings of anxiety. The fathers themselves felt excluded, as if they were forgotten or had not been told what they were supposed to do [34]. Fathers' traumatic experiences during emergency caesarean sections in the present study might be understood as a result of their concerns about the safety of their partner and baby. In addition, there is limited time for health care professionals to give informational and emotional support during urgent situations which may contribute to the fathers' psychological distress-as explained by Boyce et al. [28]. Fathers have previously reported feelings of unpreparedness and a lack of knowledge when the childbirth resulted in an emergency caesarean section, and therefore they did not feel in control of the situation. On the other hand, if they understood the reason for the caesarean section, they felt more in control [114]. Perceived control of a specific event is related to the individual's ability to cope. It is important for health care professionals to aid fathers' coping with the situation of labour and birth. To receive social support is known to enhance an individual's capacity to cope. Coping skills can also be learned in highly concentrated workshops sessions [12], and this may be offered to expectant fathers as a preparation for labour and birth.

7.2. Social support

The findings of this thesis revealed that the Internet, the partner and the midwife were important sources for pregnancy and childbirth information. Informational and emotional support was also highlighted to be needed during childbirth and postnatal care.

7.2.1. The Internet

The Internet was found to be an important source for pregnancy and childbirth information for fathers-to-be. The fathers who had a previous experience of caesarean section were more likely to search for information on the Internet. One can only speculate about the reason behind this. If the previous caesarean section was because of an emergency situation, the father's experience may include a negative experience of childbirth, which could have led to feelings of discomfort and anxiety about the event. The Internet may then be a useful tool in clarifying certain situations and in giving support and advice [115]. Taking part in interactive online discussion has been identified as an advantage for parents during pregnancy and childbirth [39, 63], and is appreciated as a source of social support [39]. Pregnant women have previously described the Internet as the second most useful source for health information [54]; and mothers have stated that they received emotional and social support from the Internet [116]. These results about mothers might be similar to prospective fathers. The expectant fathers with high level of education were found to more often use the Internet as a source of pregnancy and childbirth information. A high level of education has previously been associated with an increased use of the Internet. Research on pregnant women showed that highly educated women use the Internet more often compared to those with a lower level of education [54, 65, 117]. Similar findings revealed that parents who had searched the Internet for medical information were likely to have completed college or to have a university degree [52]. Research on how patients in general search for medical information showed that those who were younger and those with a knowledge of the English language were searching the Internet more frequently [118]. It has also been reported that there were no differences in Internet use and the respondents' sex [52].

7.2.2. The partner

The pregnant partner was one of the primary sources for pregnancy and childbirth information for the fathers. Previous research has pointed to the partner as a valuable source of social support for fathers-to-be [34, 44], expectant mothers have also been eager to involve their partners in the pregnancy [119]. The most reasonable explanation for this result is that expectant fathers and the pregnant partners share information and this has an impact on each other [120]. Fathers have less role models in fathering which may lead to more need of the support of their partner to enhance their parenting role [121]. A healthy relationship tends to act as a buffer against negative circumstances or to facilitate recovery from a life crisis and to promote the effective management of stress [122].

7.2.3. Healthcare professionals

WHO [19] has emphasised that professionals should give prospective fathers childbirth information during antenatal care, and the result of the present thesis confirmed that the midwife was one of the primary sources of childbirth information. Fathers with a high level of education were more likely to use the midwife as a source of information, and highly educated individuals are probably experienced in searching for information in different ways. Pregnant women with a high level of education have previously pointed out their need for more in-depth information [117].

First-time fathers used the midwife to a lower extent than fathers with previous children to search for childbirth-related information. However, the time of answering the first questionnaire could be one explanation of this finding. For first-time fathers it was maybe too early in mid-pregnancy to be asked about the midwife as a source of information because they had only met the midwife once or twice at the antenatal clinic.

Fathers with previous children had probably met a midwife during their previous pregnancy and because of that identified the midwife as a source of childbirth information.

Fathers born in other countries than Sweden used the midwife for pregnancy and childbirth information to a lesser extent compared to those who were born in Sweden. It has been found that fathers from other countries participate in antenatal care to a lesser extent than fathers born in Sweden. Earlier research based on fathers and their partners born in the Middle East and now living in Sweden, showed that sometimes these pregnant women preferred a female friend at the midwife appointments. Their opinion could sometimes be that “antenatal care was not a place for men” [55]. Furthermore, Australian Thai women married to Asian men thought that their partners played a limited role in childcare and fathering. Most of these women were expected to take the entire responsibility for childcare [123].

The fathers who reported childbirth-related fears were using the midwife as a source of childbirth information to a lower extent compared to fathers with no such fears. These fathers maybe found it difficult to communicate their fears with the midwife and chose not to attend the antenatal visits. Reports from Sweden reveal that 13 percent of fathers have intense childbirth-related fears [81, 124]. Difficulties in expressing and talking about childbirth-related fears and feeling childbirth as a risky and potentially dangerous event were reported to a higher extent by fathers with intensive fear compared to those with mild or moderate fear [124]. Fathers may feel uncertain of pregnancy and childbirth and may interpret the information about it as threatening. Uncertainty of a situation is known to be linked to feelings of anxiety [42].

Fathers with childbirth-related fears maybe tend to adopt a style of “blunting” and then avoiding information about pregnancy and childbirth information. Blunters are understood to avoid information in order to maintain uncertainty, which then provides them with increased comfort [42].

The fathers with a less-positive birth experience described the birth as ‘*distressing*’ or ‘*grotesque*’. They were more likely to disagree about receiving enough support from the midwife during labour and birth, and about the midwife being present in the labour room as much as needed. Existing literature is not explicitly applicable to this result but fathers have earlier expressed that they felt supported when the midwife was present in the delivery room [71, 79], and they felt safe when she was with them [71]. The midwife’s guidance and support has been valued as important and has helped fathers’ ability to cope with the process of labour [47, 125]. When the fathers in the included investigations were treated with respect and empathy during labour and birth they thought they were cared for in an excellent way. The trusting relationship helped the fathers to cope with the situation. When the fathers experienced the healthcare professionals as supportive they felt safe and gained a sense of control. Healthcare professionals are supposed to give guidance, social support and preparation to prospective parents regarding the upcoming birth of the child [19, 39].

The findings about dissatisfaction of the overall postnatal care were connected to how the fathers were treated by the staff. First-time fathers have previously expressed a need for support during postnatal care to enhance their new role as a father [126]. During the postnatal care the fathers judged the information about the baby’s care and needs as most deficient. Previous research pointed out that fatherhood today has limited support [33, 34].

Fathers would like to be an active carer for the baby but are often lacking in knowledge which leads to an uncertainty of how to take care of the baby [126-130]. Previous research has shown that fathers would like information about basic care of the baby [131, 132] and they have been dissatisfied when they did not receive this information [74]. Fathers want to share the care of the newborn baby with the partner and they have expressed a need for communication with health care professionals about the baby [58]. Furthermore, fathers have described feelings of jealousy and exclusion when their partners were better at baby care during the first weeks after the birth of their baby [86]. The feeling of exclusion has not only been by their partner but also by society in general. Fathers have found that practical information about baby care during antenatal education is limited. They have emphasized how useful it would have been to have heard from new parents about their experiences and to gain perspectives on coping with a newborn baby. First-time fathers have, furthermore, asked for guidelines to follow to help them to take care of their baby [34, 132].

7.3. Participation in decision-making

The fathers in the present study expressed opinions about decision-making regarding labour and birth. Those who had a preference for caesarean section had the view that a caesarean section should be decided by the partner. Fathers with a less-positive birth experience were, furthermore, dissatisfied with involvement in decision-making during labour and birth. To feel involved in a decision-making process fathers need relevant and correct information from healthcare professionals. However, fathers have previously expressed that the information given is inconsistent [86, 133], and they have been confused when they needed to take part in decisions based on conflicting information [86].

A father's stating of his desire to be involved in the decision-making process may be understood as a way to be in control of the actual situation of labour and birth. Fathers have been described previously as being more comfortable about the decision about a caesarean section if they had been involved in the decision-making process [84]. A discussion may be necessary as to whether fathers really have the choice to decide about the circumstances of a mode of birth. Probably the circumstances are beyond their control and they are not able to make decisions. Howard [134] argues that a distinction must be made between situations in which there is a decision to be made and situations in which individuals simply are worried about a bad outcome. Probably the most important factor for fathers is a good outcome like a healthy baby and a healthy mother. Fathers with a trustful relationship to caregivers and those who are involved in the decision-making process have been reported to be less concerned with issues of control in childbirth [85]. The issue of control was found to be one aspect of a father's birth experiences. Having control and being able to plan ahead is central for individuals; and a lack of control might affect both psychological and mental health [135]. In the process of childbirth it is nowadays possible to control and plan fertility [136]. It is also possible to control and plan the pregnancy, labour and birth with, for instance, fetal diagnostics, ultra-sound examinations and the induction of labour. These actions of control and planning ahead may influence fathers' preferences in childbirth and can add understanding to the result of the fathers' birth preferences. According to the findings, the first-time fathers with a preference for caesarean section had a wish to plan the date of the birth of their baby. Similar findings of a wish to schedule the birth have been found when women had a preference for a caesarean section [137]. The desire to plan the date for the birth of their baby did not become significant for fathers with previous children and a preference for caesarean section. This may be further understood by their previous experiences of childbirth and their maturing aspect of the transition.

The outcome of a transition to fatherhood has been described as increasing knowledge of self and as such an experience may reduce fear of future transitions by giving a measure of predictability to and understanding of such a change in life [12]. Giddens [138] points out a strong awareness of risk in a post-modern society which may influence a person's thoughts and actions in their daily lives. Life has become uncertain and risky; individuals can no longer rely on earlier generation's knowledge and attitudes. Now, there is more dependency on expert knowledge, but experts are, however, not always in agreement with each other, which makes life much more complicated [138]. This awareness about risk may influence the fathers' view of childbirth as an unnatural process, and childbirth may then be viewed as a risky project.

7.4. Further understanding by the theory of transition

The included investigations in this thesis described and explored the fathers' experiences of labour and birth, and the quality of postnatal care. Watson [139] argues that the concept of experience involves the exposure of people to a particular event, emotion, information or situation. The findings within this thesis can be related to the fathers' exposure to the event of pregnancy, labour and birth, and early parenthood. Experiences and learning were developed and were manifest in emotions, knowledge or skills. The outcome of a transition to fatherhood is increased knowledge of self and such an experience may reduce fear of future transitions by giving a measure of predictability to and understanding of such a change in life [12]. This aspect was pointed out when repeat fathers expressed their previous experiences of childbirth as facilitating the sense of control in the situation of childbirth. Healthcare professionals may help fathers to put feelings and experiences into words and to make sense out of their transition. Fathers often think their experiences are unique but people share many experiences in common with others [12].

It is important to make fathers aware that they are not alone, they can learn much from the experience and they may emerge as a stronger person than they were before the change [12]. The concept of transitions is complex and multidimensional and includes awareness, engagement, change and difference, time-span, and critical points or events. To be in a transition a father must be involved in the life change that is occurring during pregnancy and childbirth [10]. The findings about the sources of information on pregnancy and childbirth used by expectant fathers can be related to the involvement described in this theory. The fathers' engagement was also demonstrated by their participation in childbirth and postnatal care. The transition is characterised as a time-span from pregnancy to the event of the birth of the baby and finally adapting to the new status as a father. This period includes instability, confusion and distress [10]. Individuals' reactions to change within a life transition depend upon whether it was chosen or not. An unplanned transition such as an unplanned pregnancy may provoke a response of shock and early feelings of fear and despair [12]. This may give understanding to why more fathers with an unplanned pregnancy did not want to continue to answer the questionnaire two months after birth. There were 25 percent (n=237) of the fathers in mid-pregnancy who stated that the pregnancy was unplanned and two months after birth this group was represented by three percent (n=20). The facilitating factors in achieving a healthy transition are receiving adequate social support through information and advice and, furthermore, providing a methodology for, asking questions and being respectfully treated. Social conditions like gender equality and fathers not being marginalised by the partner, healthcare professionals and society are also of importance to enhance a healthy transition [10, 12]. The strategy of possessing a coping response is an active problem-solving approach to manage a healthy transition. Coping skills learned earlier in life are mobilised to aid the individual managing the transition process [12].

Coping may consist of support networks such as relatives, friends and healthcare professionals [12]. In order to cope with the situation of pregnancy and childbirth support through a doula explicit for men may facilitate a healthy transition into fatherhood. The results of this thesis highlights the importance for fathers to be involved and supported by sufficient and relevant information, and to be emphatically and respectfully treated by the healthcare professionals.

8. METHODOLOGICAL CONSIDERATIONS

Generalisation refers to the extent to which the findings can be applied to other groups or settings. Important factors to support generalisations are a study strong in design, high reliability and validity, and a study carried out amongst a representative selection of participants [140]. Unfortunately all empirical studies tend to deviate from a perfect experiment because of the risk of including systematic errors. The person-time under study may differ from a perfect experiment, the lack of a follow-up may lead to underrepresentation, and the study group may not be representative. However, through analysis restriction, stratification and regression, misrepresentation may diminish [141]. The included studies in this thesis were parts of a prospective longitudinal cohort study. Missing values are a problem in longitudinal surveys due to the loss of information and lower power in the statistical analysis which may lead to bias [95, 140, 142]. Of those who consented to participate (n=1414) in this cohort 78 percent (n=1105) answered the questionnaire in mid-pregnancy, 58 percent (n=827) at two months after birth, and 46 percent (n=655) at one year after birth. The questionnaires two months and one year after birth were only sent out to those who had answered all previous questionnaires. This decision was made because of practical and economical reasons. However, an advantage of included studies in the present thesis was the reasonably high response rate of those who had actually received the questionnaires (74-85%).

The response rate of the present study may be compared to other quantitative longitudinal studies including questionnaires. A study by Kingdon et al. [143] a group of women were followed from early to late pregnancy. Of the initially recruited participants 87 percent answered the first and 56 percent the last questionnaire. Another study by Greenhalgh et al. [144] followed fathers from shortly after the birth of their baby until six weeks after birth. The response rate of those who fulfilled the inclusion criteria decreased from 84 to 69 percent between the two time-points. Systematic errors such as confounding and misrepresentation have been taken under consideration through logistic regression analysis, adjusted for confounders, and stratified analysis. Furthermore, the method of logistic regression only takes into account those who had answered all the included variables. Because of the large sample size, logistic regression was an appropriate method for analysing the quantitative data [101]. The findings of this thesis were specific in time and place, which restricts its generalisation to other groups or settings. However, a beneficial factor was in fact the cohort design with a one-year invitation to all women and their partners who met the inclusion criteria. With this strategy it was more likely to reach individuals with different socio-demographic backgrounds and individuals with different experiences in life. A limitation was that those who did not want to participate could not be further investigated due to lack of information in medical records. The cohort included both women and their partners. For the women it was possible to investigate those who did not want to participate and these women were younger than 25 years of age, older than 35 year of age, had previous children, were not cohabiting with the partner, had less than a college or university level of education, using tobacco and not born in Sweden. If the picture is the same for the fathers it is not possible to know. When comparing the fathers from mid-pregnancy until two months after birth the fathers with an unplanned pregnancy were more likely to drop off in the follow-up.

In Greenhalgh et al.'s [144] study about fathers' attendance in antenatal classes they found those in lower socio-economic groups to fail to return follow-up questionnaires compared to those in higher socio-economic groups. No differences in follow-up were found regarding other socio-demographic background and obstetrical factors. A limitation with the included investigation was that only fathers who were fluent in the Swedish language were included, and this judgment was made by the midwife in charge of the ultra-sound examination in mid-pregnancy. How many of the fathers who were not sufficiently fluent in the Swedish language, were however, not known. Furthermore, it was not possible to know which fathers did not participate in this prospective longitudinal cohort due to a lack of information in the women's medical records. We have no information about the actual numbers of partners who participated or did not participate during the ultra-sound screening, and how many of the women were single mothers. This mean that the eligible fathers were estimated by the actual numbers of mid-pregnancies that had been ultra-sound examined and this served as a proxy. A beneficial factor was the presence of the reasonably high number of participants who actually participated in the cohort and that the sample was recruited from a total population of one county in Sweden including the catchment area for three hospitals. In addition, the participants represented both urban and rural areas. The special strength of a cohort study design lies in establishing the relations between antecedent events and outcomes, and following the group over time [94, 95]. Questionnaires were chosen as the method of data collection. This method, in contrast to interviews, made it possible to reach out to more individuals and they then had more time to reflect when answering the questions. It was also an anonymous situation in which they were not distracted by an interviewer (interview bias) [140].

It has been found that answers in questionnaires were less positive compared to answers in telephone interviews. This understanding may lead to more truthful answers in the questionnaires compared to if interviews had been carried out [145]. The dichotomisation of the birth experience and the overall satisfaction with postnatal care could have been carried out differently. However, the large number of very positive and positive, respectively very satisfied and satisfied made the responses much skewed. 'Mixed feelings' was included in the group 'less-positive'; and 'neither satisfied nor dissatisfied' were included in 'dissatisfied' in order to identify essential factors that could be improved. The strategy of mixed methods by collecting quantitative and qualitative data at the same time point, and within the same group of participants, did substantially facilitate the findings and produced a deeper understanding of the fathers' birth experiences [108, 109]. The use of mixed methods did also reveal the consistency between the answers of the closed and the open-ended question which enhanced the internal validity of the study [146]. To increase the trustworthiness of the process of content analysis, when the birth experiences were under investigation we had a dialogue and discussion among the co-researchers until we achieved agreement on the labelling of data and on the emerging categories. Furthermore, authentic quotations are stated to strengthen our findings [105].

8.1. Validity and reliability

Different strategies to enhance rigor by minimizing biases of the data analysis are used and discussed in this thesis.

8.1.1. Statistical conclusion validity

Statistical conclusion validity refers to the ability to detect true relationships among variables. In this thesis there was a built in statistical control mechanism through adjusting for confounders in the logistic regression analysis in order to detect the true relationship between the outcome and the explanatory variables [147]. When the fathers' birth preference was investigated the logistic regression analysis was adjusted for the possible confounders of childbirth-related fears and country of birth. Furthermore, when a less-positive birth experience was under study the logistic regression was adjusted for age, childbirth-related fears and level of education. The logistic regression used for the investigation related to factors associated with dissatisfaction of the overall postnatal care was adjusted for age, mode of birth, model of care, and where the fathers had previous children and if the fathers stayed around the clock at the postnatal ward [147].

To strengthen the statistical conclusion validity, we also standardised the fathers' birth preference by country of birth based on data from Statistics Sweden [62]. The number of foreign-born fathers was small and to be able to compare we standardised the groups. Standardisation is a method for comparing groups with the same standard [95], by combining category-specific rates into a single summary value by taking a weighted average. It weights the category-specific rates using weights that come from a standard population which in this case was the county of Västernorrland.

8.1.2. Construct validity

Construct validity refers to the degree to which inferences can legitimately be made from the operationalisations used in research. The construct validity included testing the used questions in the questionnaires. The question about the birth preference has previously been used in a Swedish study [148] and in a British study [143]. However, the purpose was then to study prospective mothers' preference for the mode of the upcoming childbirth. It is a limitation that no validated questions have been developed and used earlier to discover prospective fathers' birth preference. The kind of questions used to assess fathers' perceived reality and subjective importance of postnatal care and the created index for deficiency, balanced and excessive care have previously been evaluated and used in other research studies which enhanced the construct validity in this investigation [149-151].

Face validity of the used questionnaires was done prior to the investigations and this strategy strengthened the construct validity. The judgment was carried out on 12 fathers and only minor words needed to be changed due to their comments. Face validity measure the questionnaires whether it appeared to be a valid measure or not [140].

8.1.3. Internal consistency

Cronbach's alpha coefficient is an indicator of a question's reliability and assesses the degree to which the items that make up the question are all measuring the same underlying attribute. Cronbach's alpha is the most common way to measure the internal consistency and provides an indication of the average correlation amongst all the items that make up the question. Values range from 0 to 1, with higher values indicating greater reliability. A recommended minimum level is 0.7 [101].

The internal consistency of the questions used regarding sources of pregnancy and childbirth information, birth preference, and the quality of postnatal care was measured using Cronbach's alpha and the questions had alphas values varying from 0.75 to 0.90 depending on the question.

9. CONCLUSIONS

The expectant fathers were involved in searching for pregnancy and childbirth information; giving a statement for the birth preference; and participating in childbirth, and in postnatal care.

Mode of birth did matter. The expectant fathers who had an experience of a caesarean section were more likely to search pregnancy and childbirth information on the Internet and they were more likely to prefer caesarean section for the upcoming birth of their baby. An experience of emergency caesarean section was associated with a less-positive birth experience. The fathers who had participated in an emergency caesarean section were more likely to judge the received information about the baby's need and the woman's check-ups/medical care during the postnatal care as most deficient compared to fathers with experience of other mode of births.

Beside the midwife and the pregnant partner, the Internet was an important source for pregnancy and childbirth information. The fathers with a less-positive birth experience were more likely to disagree about having received enough needed support from the midwife during labour and birth, and disagree about the midwife have being present in the labour room as much as they wanted. During the postnatal care the fathers judged the information about the baby's care and needs as most deficient.

The fathers had opinions about the decision-making processes. Those who had a preference for a caesarean section stated the opinion that a caesarean section should be decided by the partner. Furthermore, fathers with a less-positive birth experience were dissatisfied with involvement in decision-making during labour and birth.

10. CLINICAL IMPLICATIONS

Healthcare professionals need to:

- be updated about preferable web sites for pregnancy and childbirth information
- be encouraged to develop web based information for parents-to-be
- encourage fathers-to-be to discuss their previous childbirth experiences and their attitudes towards mode of birth
- better engage fathers during the intrapartum period through involvement and support, in order to enhance a positive birth experience
- provide high quality care, including optimal medical and emotional competence, and to interact with fathers in a respectful, empathetic way
- organize the postnatal care to support the needs of both parents

11. FURTHER RESEARCH

More knowledge is needed to understand why fathers with childbirth-related fears and fathers born outside Sweden used the midwife to a lower extent. Furthermore, to more fully explore the reasons behind fathers' preference for caesarean section and if this preference changes over time e.g. from early pregnancy to early fatherhood. Research is also needed to highlight factors during labour and birth which contribute to the fathers' feelings of distress and which areas of support help to regulate these experiences of distress. In addition, what practices comprise a high quality of maternity care according to fathers, and how to best support fathers when their babies are being born. Knowledge is also needed about differences and similarities between fathers and their partners about how to search for pregnancy and childbirth information, birth preference, and experiences of birth and postnatal care. A randomised controlled study with or without a doula, especially for fathers, could explore if fathers' experiences of labour and birth, and postnatal care differs between the two groups.

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