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# Women who do not attend parental education classes during pregnancy or after birth

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”The most important knowledge is to understand how little one knows”.

*Plato 300 BC*

*To my aunt Kerstin and my cousin Lotta*

# ABSTRACT

## **Women who do not attend parental education classes during pregnancy or after birth.**

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This thesis focuses on childbirth and parenthood education during pregnancy and the year after childbirth, and investigates attendance rates and factors associated with non-attendance, and women's experiences and possible effects of antenatal education. Also, women with a non-Swedish speaking background are analysed: their uptake of care at the antenatal and child health centres, and their own and their child's physical and emotional well-being up to five years after birth.

For the purpose of Papers I-IV, data from a prospective cohort study in which about 3,000 women were followed by means of questionnaires in early pregnancy, and 2 months, 1 year, and 5 years after the birth were used (the KUB study: Women's Experiences of Childbirth). Women were recruited at their first scheduled antenatal visit in early pregnancy, during a period of three weeks evenly spread over one year (in May and September 1999, and January 2000). Of all antenatal clinics, 593 (97.5%) participated in the recruitment, and 4,600 women were eligible for the study according to the Medical Birth Register. The number of responders to the first questionnaire was 3,061, to the second 2,762, to the third 2,563 and to the fourth 1,721. The representativeness of the sample was assessed by comparing the background characteristics of the study sample with the total Swedish birth cohort in 1999.

Most primiparous women (93%) attended childbirth and parenthood education classes during pregnancy, and 19 per cent of the multiparas. The attendance rate after childbirth was 78 per cent in first-time mothers and 31 per cent in multiparas. Factors associated with non-attendance at *both antenatal and postnatal classes* were having a native language other than Swedish and an inconvenient timing of pregnancy. In primiparous women, smoking during pregnancy was also associated with non-attendance in classes both during and after pregnancy. Additional factors related to non-attendance at *antenatal classes* in primiparas was unemployment; and in multiparas age over 35 years, low education, having had counselling because of fear of childbirth or expressing a need of such counselling. *After childbirth*, additional factors in primiparas were maternal hospital admission and infant health problems (Papers I, III).

Seventy-four per cent of first-time mothers stated that antenatal education helped prepare them for childbirth, and 40 per cent for early parenthood. One year after childbirth 58 per cent of the mothers still met with other class participants. These outcomes were associated with the number of class sessions. However, antenatal education did not seem to affect memory of labour pain, mode of delivery, overall birth experience, duration of breastfeeding, and assessment of parental skills, but participants had a higher rate of epidural analgesia (Paper II).

Women with a non-Swedish speaking background from a poor country of origin did not differ from a reference group of women with a Swedish speaking background regarding number of antenatal and child health centre visits, but they had a lower attendance rate at antenatal and postnatal education classes. Depressive symptoms, parental stress and poor self-rated health were more common in these women, and they reported more psychological and behavioural problems in their five-year olds. Women with a rich country origin did not differ from the reference group regarding maternal and child health, but they had a lower uptake of all outpatient care, except parental classes after the birth (Paper IV).

Keywords: Childbirth and parenthood education, participants, evaluation, antenatal care, child health service, self-rated health, depressive symptoms, child behaviour, parental stress.

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# LIST OF PUBLICATIONS

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

- I. Fabian H, Rådestad I, Waldenström U. Characteristics of Swedish women who do not attend childbirth and parenthood education classes during pregnancy. *Midwifery*, 2004;20(3):226-35.
- II. Fabian H, Rådestad I, Waldenström U. Childbirth and parenthood education classes in Sweden. Women's opinion and possible outcomes. *Acta Obstetricia et Gynecologica Scandinavica*, 2005;84(May):436-43.
- III. Fabian H, Rådestad I, Waldenström U. Characteristics of primiparous women who are not reached by parental education classes after childbirth in Sweden. *Acta Paediatrica*, 2006 Nov;95(11):1360-9.
- IV. Fabian H, Rådestad I, Rodriguez A, Waldenström U. Women with non-Swedish speaking background and their children: a longitudinal study of uptake of care and maternal and child health. *Acta Paediatrica*. (In press).

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# ABBREVIATIONS AND DEFINITIONS

## ABBREVIATIONS

CHC/s	Child Health Centre/s. In Swedish: Barnhälsovårdscentral/er.
CH service/s	Child Health service/s. In Swedish: Barnhälsovård.
CI	Confidence Interval.
KUB	Women's experiences of childbirth.
KUBU	Women's experiences of childbirth a follow-up study.
MBR	The Swedish Medical Birth Register.
NSB	Non-Swedish speaking background.
OR	Odds Ratio.
P-value	Probability-value.
RCT	Randomised Controlled Trial.
RR	Relative Risk.
SB	Swedish speaking background.
SCB	Statistics Sweden.
SD	Standard Deviation.
$\chi^2$	Chi-square.

### *Instruments- questionnaires*

EPDS	Edinburgh Postnatal Depression Scale.
SCWS	Swedish version of the Cambridge Worry Scale.
SDQ	Strengths and Difficulties Questionnaire.
SPSQ	Swedish Parenthood Stress Questionnaire.
SRH	Self-Rated Health.

## DEFINITIONS

Antenatal	The period before childbirth.
Antenatal care	In Swedish: Mödravård.
Antenatal clinic/s	In Swedish: Mödravårdscentral/er.
Few antenatal or CHC visits	Fewer visits than recommended by clinical guidelines.
Multipara/s	Women who had given birth before.
Not few antenatal or CHC visits	The amount of recommended visits or more than recommended.
NSB	Women with other native language than Swedish.
Postnatal	The period after childbirth.
Primipara/s- nullipara/s	First-time mother/s, women expecting the first child.
SB	Women with Swedish as native language.



# INTRODUCTION

Childbirth and becoming a parent are major events in life. Pregnancy is a period characterised by physical changes in the woman's body. The experience of labour and birth is not a fully controllable event, a challenge to look forward to for many and to fear for some (Callister, 2004; Eriksson et al., 2006; Waldenström et al., 2006). Pregnancy is also associated with psychological adaptation to a new life with a baby. The relationship between the woman and her partner alters, and new roles emerge in the family (Ahlborg and Strandmark, 2001; Balsink Krieg, 2007; White et al., 1999).

Even if these changes are to some extent foreseeable, the individual woman and her partner cannot know beforehand how they will cope and experience the situation (Delmore-Ko et al., 2000; Pancer et al., 2000). In the past, women prepared for childbirth and parenthood primarily by listening to the experiences of their mothers and other family members (Zwelling, 1996). Today, many couples live far away from their family of origin and support from the health services has become more important (Nolan, 1997a). Childbirth education became gradually available within the routine antenatal care in Sweden in the 1950s (Lundh, 1972). During the 1970s expectant fathers were also invited, and a shift of the content took place from preparation for childbirth only to a combination of preparation for childbirth and early parenthood. In 1978, national guidelines specified the content of antenatal education (SOU 1978:5). Education classes were also introduced as an offer within the child health services after the birth, now with a focus on parenting and the newborn baby.

The overall aim of the antenatal and postnatal education programmes was to give all expectant and new parents support in preparation for childbirth and parenthood. Over time, the content and structure of these programmes have changed, and they may also differ between clinics and individual educators. Official reports have therefore stressed the importance of evaluating current education practices (SOU 1997:161; Bremberg, 2004).

This thesis aims at investigating the characteristics of women that are not reached by antenatal and postnatal education in Sweden. It also investigates women's experiences, and if childbirth and parenthood education is associated with certain outcomes related to the aim of the education. The uptake of care at the antenatal and child health centres, both visits and education classes, is investigated, and also the mothers' and infants' physical and emotional well-being.

# BACKGROUND

## DEFINITION OF CHILDBIRTH AND PARENTHOOD EDUCATION

Throughout this thesis childbirth and parenthood education (*or* antenatal education) refers to group education given to expectant parents during pregnancy, mostly organised by the public antenatal clinics but also by private clinics. Parental education (*or* postnatal education) refers to group education offered to parents after the birth, organised by the public child health centres (CHCs).

## CHILDBIRTH AND PARENTHOOD EDUCATION

### Historical perspective

In most parts of the world women still learn about childbirth and baby care from their mothers or other female relatives (Nolan, 1997a; Zwelling, 1996), but with the institutionalising of maternity care the professional caregivers became more engaged in antenatal education (Lundh, 1972). In Sweden in the 1940s, physical exercise for pregnant women was introduced as an option at some antenatal clinics, and in the 1950s theoretical components were introduced inspired by the English doctor G. D. Read's theories about natural childbirth. Read's theory was that knowledge about the childbirth process and practical training in relaxation techniques would make women calm and secure, and reduce fear of the approaching birth (Read, 1950).

Psychoprophylaxis was another method developed by the French obstetrician F. Lamaze (Vellay et al., 1961). With some modifications, this method was introduced in Sweden in the 1970s by the midwife Signe Jansson. The aim was similar to Read's theory, to reduce fear of childbirth and help women cope with labour pains, and this should be accomplished by regular training in relaxation, breathing and concentration during simulated contractions, and by knowledge about the childbirth process. The woman's partner was also involved by supporting the woman and giving her massage if she liked (Jansson, 1980). In most antenatal clinics in Sweden, midwives practising in antenatal care were the educators, but physiotherapists led physical exercises in some places. In addition, private childbirth education was an option in some places (Lundh, 1972). In a doctoral thesis published in 1974, Wendela Lundh concluded that antenatal education at the Swedish antenatal clinic had too strong a focus on the somatic aspects of labour, and insufficient time was spent on preparation for parenthood and group discussions (Lundh, 1974).

Preventive childcare started in Sweden in 1901, with the "Drop of Milk Foundation" in Stockholm. This was a charity for mothers based on a French model that gave milk and information about infant care. It also performed health checks in children. In 1937, the government funded the child health centres (CHCs) with the aim of checking infants' somatic health (Fägerskiöld, 2002). Parental education after the birth was first seen as a possibility to prevent child abuse (DS 1997:6). Today the overall aim is to give children and their families a better situation in society (SOU 1978:5).

### Reports, aims and content of education

A report published by the Swedish Ministry of Health and Social Affairs in 1972 suggested that childbirth and parenthood education should be included in the routine antenatal and child health care programmes offered by the antenatal and CH services in

Sweden (Barnstugeutredningen) (SOU 1972:26). After extensive discussion, a final report was published in 1978, which specified three goals for antenatal and postnatal education: 1) to increase knowledge, 2) to stimulate contacts between expectant and new parents, and 3) to increase awareness about social conditions in order to facilitate active involvement in the society (Barnomsorgsgruppen) (SOU 1978:5).

As a result of these reports, the Swedish government decided to introduce childbirth and parenthood education classes as an integrated part of antenatal and CH services in May 1979. The reform, which was allocated special funding, was implemented in 1980. The National Board of Health and Welfare was given the responsibility for the training of the midwives and the CH nurses as educators (SOU 1978:5; NBHW 1984:12).

The funding linked to the Swedish parent allowance also changed in order to compensate for parental leave when parents were absent from work when attending classes during regular working hours (NBHW 1984:12). The antenatal education aimed at being an option for all pregnant women and their partners, and the postnatal education for all new parents. The focus shifted from an emphasis on maternal exercise and relaxation techniques to information and group discussions that included both the woman and her partner. The suggested number of sessions was 8 to 10 during pregnancy, and the same number of sessions during the child's first year. The recommended size of the education groups was 8 to 12 persons. In order for group members to learn to know one another, it was recommended that the same antenatal group continued as a postnatal group at the CHC. Parents who did not attend the classes should be given information individually. Continuous education and supervision of the midwives and CH nurses was suggested (SOU 1978:5). Along with this programme, a psychosocial working method was launched aiming at integrating psychological and social aspects together with the predominantly somatic approach (Gustafsson and Kaplan-Goldmann, 1981).

Regarding the content of the education, the following themes were suggested during pregnancy: pregnancy, childbirth, early parenthood, personal development, partner relationship and psychoprophylaxis. Suggested themes after childbirth were: infant development, infant care, breastfeeding, diet, tobacco risks, accident prevention, illness, the parental role, and the relationship between the woman and her partner. Involvement of the participants should be encouraged, and the educator should be able to adapt the content according to the needs and wishes of the participants. Other personnel working in the antenatal clinics and the CHCs or in the social welfare system could also be invited to give information in classes (SOU 1978:5).

A report in 1997 suggested that the parental education should be labelled "Support in parenthood". The participation of fathers should be encouraged, and the antenatal clinics and CHCs should take responsibility for parents who refrained from participation, and if possible try to encourage their participation (SOU 1997:161).

Since 1978, a few follow-ups and evaluations have been made, but these have not been able to provide valid data about the effects of the ambitious education programmes (NBHW 1984:12; DS 1997:6). In 2005 the Swedish National Institute of Public Health released a report which concluded that more research was necessary in this field (Bremberg, 2004), and in 2008 the Swedish government proposed improvements in the quality of parental support, with an emphasis on evidence-based methods. The National Institute of Public Health was given the task of surveying current practices and parents'

needs for support, with special attention to those who do not attend parental education (MHSA, 2008a; MHSA 2008b).

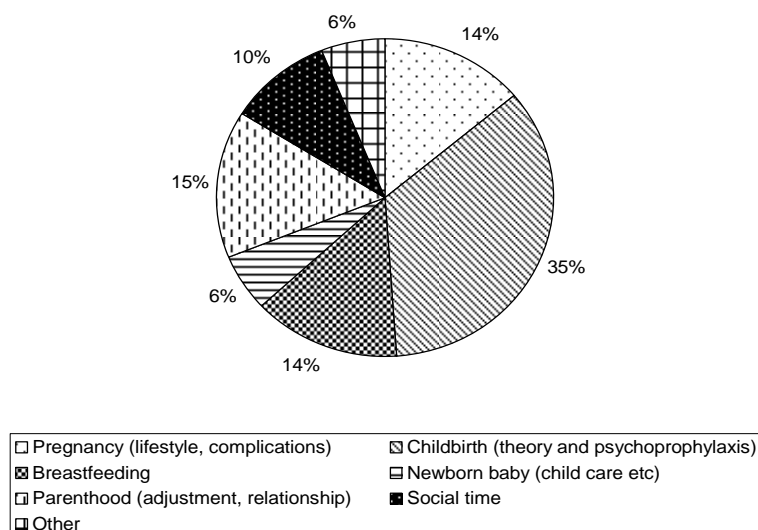
### Current content of childbirth and parenthood education

In order to receive more current information about how childbirth and parenthood education was practised in Sweden, three postal surveys were conducted in 2004 to 2006: to all the 48 antenatal care coordinators in 2004 (response rate 77%), and to all the 44 child health service coordinators (response rate 82%), and to a random sample of 10 per cent of the CHCs (response rate 59%) in 2006. These postal surveys asked about practices during the previous years: 2003 and 2005.

The findings showed that more than 80 per cent of the midwives practising in antenatal clinics and the same percentage of CH nurses led education classes. The average number of education groups (including several sessions) was seven per year and midwife, and five per year and CH nurse. Fourteen per cent of the midwives also taught childbirth and parenting issues in the format of lecturers in larger groups of expectant parents, not as group sessions. Thirty-six per cent of the antenatal care midwives reported that only couples expecting their first baby were invited. Forty-nine per cent also invited multiparas and their partners. The corresponding figures in the CHC were: 65 and 30 per cent respectively. The average number of participants per group was estimated to 13 antenatally and eight postnatally. The average number of sessions was 4.5 antenatally and six during the infant’s first year, and the average time per session were 2.1h and 1.7h, respectively.

External experts were often invited to the antenatal education groups, or to give separate lectures for a larger number of participants. These experts could be psychologists, father group educators, social welfare secretaries, family counsellors, or social insurance officers. In some places the participants could visit the delivery ward. Education groups could also be given to specific groups of expecting parents, such as fathers only, young persons, those expecting twins, multiparas, immigrant groups, and women who were single. More than half of the midwives and CH nurses also gave information individually.

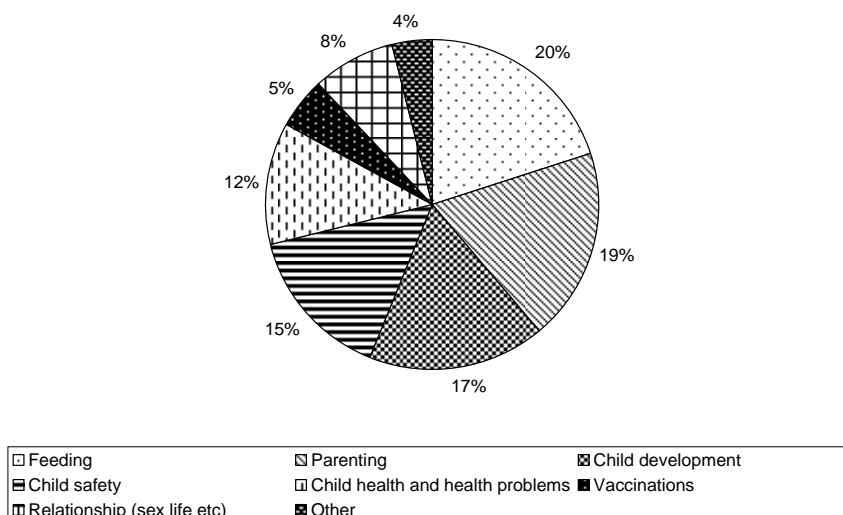
The approximate distribution of time spent on different issues during the antenatal classes is illustrated in the following diagram:



Of the time spent on preparation for childbirth (35%) about one third was about psychoprophylaxis and relaxation techniques, that is, about 10 per cent of the total time.

After childbirth some CHCs also offered classes to specific groups, such as young parents, multiparas and their partners, fathers only, parents with twins, immigrant groups, parents with adopted children, and single parents. In the CHCs, parental education was usually structured with predetermined themes to be discussed. Another model was an “open” group, where the content was guided more by the wishes of the participants. A few groups followed the International Child Development Programme (ICDP), which aims at guiding new parents in their interaction with the child in order to increase the sensitiveness, awareness, and responsiveness to the child’s signals, and to support positive interplay (Hundeide, 2001). About half of the CHCs also gave separate information about baby massage, food, heart and lung rescue, and traffic. Similarly to the antenatal classes, external experts could be invited, for example psychologists, preschool representatives, dental hygienists, librarians, preschool teachers, social welfare secretaries, pharmacy representatives, family counsellors, social insurance officers, father group educators, representatives from the National Road Safety Office, nutrition specialists, speech therapists, medical doctors, or consumer advisors.

The approximate distribution of time spent on different issues during the CHC classes is illustrated in the following diagram:



## OUTCOMES OF CHILDBIRTH AND PARENTHOOD EDUCATION

A Cochrane review of individual or group antenatal education included nine trials and excluded 37 for methodological reasons (Gagnon and Sandall, 2007). Only one out of these nine studies was of high quality. The principal outcome of this study was vaginal birth after Caesarian, and no statistical differences were found between the randomised groups (Fraser et al., 1997). The other eight studies measured knowledge acquisition, sense of control, factors related to infant care competencies, and some also measured labour and birth outcomes (Carter-Jessop, 1981; Corwin, 1998; Corwin, 1999; Davis and Akridge, 1987; Hamilton-Dodd et al., 1989; Klerman et al., 2001; Mehdizadeh et al., 2005; Pfannenstiel and Honig, 1991; Westney et al., 1988). The review concluded that the effect of general antenatal education for childbirth or parenthood, or both, remains largely unknown.

Several Cochrane reviews have examined parent education after the birth, with focuses on maternal psychosocial health, infant emotional and behavioural adjustment, physical abuse or neglect, child injury, and infant massage. Group-based parenting programmes can make a significant contribution to the short-term psychosocial health of mothers according to some studies (Barlow et al., 2002; Barlow et al., 2003), with improvement in self-esteem, depression, and marital adjustment at follow-up. Also individual and/or group-based programmes for teenage parents showed a positive effect on mother-infant interaction, infant language development, parental attitudes, parental knowledge, maternal mealtime communication, maternal self-confidence and maternal identity (Coren and Barlow, 2001). Programmes aiming at improving the emotional and behavioural adjustment (food, sleep and crying) in children under the age of three years may also be effective (Barlow and Parsons, 2003), but there was insufficient evidence about long-term effects (Barlow et al., 2005). Abusive parenting may be reduced by educational programmes (Barlow et al., 2006), but these findings are only suggestive. Child injury may be reduced by parenting interventions provided in the home setting in families at risk (Kendrick et al., 2007). Infant massage may positively affect mother-infant interaction, sleeping and crying, and hormones influencing stress levels (Underdown et al., 2006).

A Cochrane review with a broader and similar aim as the review on antenatal group education will be published in late 2008 (personal communication Gagnon, A). This review will assess the effects of structured postnatal education delivered by an educator to an individual or group, on knowledge acquisition, infant care competence, maternal/paternal self-confidence, maternal anxiety, breastfeeding success, infant growth and development, infant crying, general social support, psychological and social adjustment to parenthood, maternal-infant interaction, maternal or infant infection, preventive care, child abuse and neglect, health services use, and satisfaction with educational intervention.

Some of the support programmes used in different clinical contexts in Sweden, most of which are not addressing early parenting in general, will be briefly described. The *International Child Development Programme* (ICDP) (Hundeide, 2001) includes eight video-based group sessions with different themes, and aims at increasing parents' sensitivity to the infants' signals. It is the most widely used structured parental support method in Sweden (Bremberg, 2004; Hwang and Wickberg, 2001), and it is used in some CHCs, but also with parents of older children. Another structured video-based programme which has been introduced in Sweden is the *Right from the Start*, a parent support programme from Canada which aims at improving infant attachment and maternal sensitivity (Niccols, 2008). *Marte Meo* is a programme developed for families where the child has problems (Hedenbro and Wirtberg, 2000). It is used in some CHCs, but possible effects are not studied (Bremberg, 2004). The *Prevention and Relationship Enhancement Programme* (PREP) (Halford et al., 2001; Markman et al., 1993) is directed at improving the communication and relationship in couples, and it is used in some places, antenatally as well as postnatally.

The women's own opinions about childbirth and parenthood education differ. Some studies from other countries have shown that women find antenatal information about labour and delivery helpful (Handfield and Bell, 1995; Redman et al., 1991; Schneider, 2002). Others have reported that too little time was allocated to the practising of coping strategies (Spiby et al., 1999), and that preparation was only for a

normal delivery (Cliff and Deery, 1997; Leeseberg Stamler, 1998). Antenatal education was associated with satisfaction with childbirth if women had the opportunity to use the techniques taught in classes (Spinelli et al., 2003), and attendees found the delivery less distressing than non-attendees, but not more fulfilling or difficult (Salmon and Drew, 1992).

Antenatal education has been criticised for not spending enough time on postnatal issues, such as preparation for the life with a newborn baby (Cliff and Deery, 1997; Handfield and Bell, 1995; Ho and Holroyd, 2002; Lumley and Brown, 1993; Nolan, 1997b; O'Meara, 1993; Svensson et al., 2006). Also, information about common breastfeeding problems (Britton, 1998; Handfield and Bell, 1995; Ho and Holroyd, 2002) and relationship issues (Matthey et al., 2002) have been insufficient according to some studies.

Opinions about the education classes may be difficult to distinguish from effects of other information sources or services (Handfield and Bell, 1995). Expectant parents' own goals and expectations, hospital routines, and attitudes of the personnel may have a greater impact on women's responses than childbirth and parenthood education classes as such (Shearer, 1996). Furthermore, many studies suffer from poor descriptions of the intervention, such as the number of classes or their content (Nolan, 1999).

## **CHARACTERISTICS OF NON-PARTICIPANTS**

### **Childbirth and parenthood education**

Since the decision to make childbirth and parenthood education a component of the routine antenatal and CH programmes in Sweden in 1980, the financial problems in the health service sector have made many clinics restrict the option to first-time parents only (SOU 1997:161), and to reduce the number of sessions (DS 1997:6; SOU 1997:161). However, some antenatal clinics still offer separate classes for multiparas and for specific groups of expectant parents as mentioned before (Clinical guidelines, 1996; NBHW 1996:7; DS 1997:6). National surveys of Swedish antenatal clinical practices in Sweden in the 1990s showed that almost all first-time parents attended education during pregnancy, but only 20 per cent of the multiparous women attended (Clinical guidelines, 1996; NBHW 1996:7).

Studies conducted outside of Sweden show that women who choose not to attend antenatal education were younger, more often single, and socioeconomically more disadvantaged compared with participants (Cliff and Deery, 1997; Lu et al., 2003; Lumley and Brown, 1993; Michie et al., 1990; Nichols, 1995; Redman et al., 1991; Sturrock and Johnson, 1990). Low level of education (Lee and Shorten, 1997; Lumley and Brown, 1993; Nichols, 1995; Redman et al., 1991) and unemployment (Lee and Shorten, 1997; Michie et al., 1990) were also characteristics of this group. One study found that non-attendees more often rated their mothers, sisters and friends as helpful during pregnancy and birth compared to attendees (Lumley and Brown, 1993). Reasons given for not attending antenatal education classes are difficulties with transport, location of the classes, inconvenient timing (Cliff and Deery, 1997), insufficient time and no need for additional information (Redman et al., 1991).

The education organised by the CHCs in Sweden was unevenly developed and inconsistent according to studies in the 1990s (DS 1992:102; DS 1997:6), half of the

new parents were not invited, and the individual support to non-participants was not extensive. About 30 per cent of the first-time mothers did not attend (SOU 1997:161). More recent studies showed that mainly first-time parents attended postnatal classes (Petersson et al., 2003), and the classes attracted primarily highly educated women (Bremberg, 2004; Friberg, 2001) and women of Swedish background (Friberg, 2001). Two qualitative studies suggested that non-participants differed from participants by being younger and more often single (Petersson et al., 1997), unemployed, less well educated and foreign born (Petersson et al., 1997; Petersson et al., 2004). Still another Swedish study showed that mothers of medium and high socioeconomic status were more in favour of information and parental education than mothers of low socioeconomic status (Jansson et al., 1998a). No information on attendance rates and risk factors for not attending based on nationwide data has been collected.

### **Antenatal and Child Health Centre visits**

The aim of antenatal care in Sweden is to prevent complications by health screening of the woman and the foetus (NBHW 1996:7). The care also aims at promoting health and well-being and coping with childbirth and parenthood via education and psychosocial support (NBHW 1996:7). The national antenatal programme recommends 8-9 outpatient visits to the midwife for primiparous women, and 7-8 visits for multiparas (NBHW 1996:7). In one study primiparas reported an average of 11 antenatal visits, and multiparas 9 visits. About 25 per cent followed the standard visiting schedule for a normal pregnancy, 57 per cent made more visits, and 17 per cent made fewer visits (Hildingsson et al., 2005).

In Finland and England, low uptake of antenatal care, defined as few or no visits, was associated with an increased risk of low birthweight (Murray et al., 2003; Petrou et al., 2003; Raatikainen et al., 2007), and foetal and neonatal death (Raatikainen et al., 2007). A Swedish study (Ny, 2007) found that foreign-born women from Asia, Eastern and Southern Europe, and the Middle East made fewer routine visits at the antenatal clinic than recommended by clinical guidelines (NBHW 1996:7), but they were more likely to make unplanned visits to the delivery ward (Ny et al., 2008). Besides an overrepresentation of immigrants, another study found that women with low uptake of antenatal care were characterised as being young, single, multiparas, unemployed, and having an unplanned pregnancy (Darj and Lindmark, 2002). In other countries women with low socioeconomic status (Low et al., 2005; Murray et al., 2003; Raatikainen et al., 2007; Rowe and Garcia, 2003) and an immigrant background (Kupek et al., 2002; Petrou et al., 2001) were more likely to book late or make fewer visits.

The principal aim of CH services in Sweden is to reduce mortality, morbidity, and handicaps in children. It also aims at minimising harmful stress to parents and children, supporting and stimulating parents in their parenthood, and thereby creating a favourable environment for the child's development (NBHW 1981:4; Sundelin and Håkansson, 2000). Over the years the focus of the CH services has shifted from the child's physical health exclusively to include also psychosocial dimensions. The CH services is increasingly expected to direct the work towards the child's surroundings and the family as a whole, and to boost parents' self-esteem and competence (Hallberg et al., 2005; Sundelin and Håkansson, 2000). The national child health promotion programme in Sweden recommends 12-14 visits to the CHC during the child's first year (NBHW 1991). The programme is reached by almost 100 per cent of all children in Sweden (Hagelin et al., 2001; Jansson et al., 1998b), but first-time parents make more visits (Hagelin et al., 1998). Mothers of low socioeconomic



background and first-time mothers seek advice from the CH nurse more often than others (Jansson et al., 1998b). Mothers of immigrant background are more inclined to seek help at the emergency clinics when their child has somatic problems or when they need advice about preventive measures (Jansson, 2000; Jansson et al., 1998b).

## **WOMEN WITH NON-SWEDISH BACKGROUND**

More than one million foreign-born persons live in Sweden (SCB, 2006). Twenty-five per cent of all children between one and five years of age have at least one parent born outside the country (SCB, 2007). From the 1970s an increasing number of immigrants were refugees from countries in South America, the Middle East, East Asia and Africa (SOU 2004:21). In Sweden the largest group of immigrants come from Finland (180,906). Other countries of origin are in decreasing order: Iraq, Yugoslavia, Iran, Bosnia, Herzegovina, Poland, Norway, Denmark, Germany, Turkey, Chile, Lebanon, Thailand, Somalia, Northern Ireland, Syria, the United States, China, India, Hungary, Romania, Vietnam and Ethiopia (countries with 10,000 immigrants or less are not presented) (SCB, 2006).

Even when factors like sex, age, family structure and education are taken into account, immigrants are at a higher risk of reporting poor self-rated health (SCB, 2002), but there is considerable variation depending of the economic development of the country of origin. Higher rates of poor self-rated health were found in immigrants from Eastern and Southern Europe, the Middle East, and former Yugoslavia, compared with immigrants from Germany, Denmark and Norway, all of who had the same health status as persons born in Sweden (SCB, 2002). The same trend was found in relation to psychological health. Women from Chile, Iran, and Turkey reported more mental health problems than Swedish women (NBHW 2000:3). Poorer health was also reported in female refugees, women from Southern Europe and Finnish women (Iglesias et al., 2003). Both first and second generation immigrant women had an increased risk of long lasting illness (Robertson et al., 2003). The reproductive health of immigrants is a public health challenge, since studies have reported adverse childbirth outcomes in these groups (Essen et al., 2000; Urquia et al., 2007; van Enk et al., 1998). Many of the children with foreign-born parents come from socioeconomically impoverished households (Hjern, 2006), run an increased risk of being born small for gestational age (Dejin-Karlsson and Östergren, 2004), and have a range of other neonatal and infant health problems (Bremberg, 2002; Hjern, 2006).

Immigrant parents may be in great need of parental support due to the new culture and language, as well as isolation due to loss of the extended family (SOU 1997:161). The importance of encouraging these parents' participation in childbirth and parenthood education classes has been stressed in several official reports (SOU 1978:5; NBHW 1984:12; SOU 1997:161). In order to adapt the current form of antenatal and postnatal education to the needs of these women and men, additional resources have been suggested, such as interpreters, more culturally competent health service personnel, supervision of personnel, and different work methods (NBHW 1984:12; Drakos and Höjer, 1981). Stimulating immigrant organisations to develop parental support activities has also been suggested (SOU 1997:161).

## AIMS

This thesis focuses on childbirth and parenthood education during pregnancy and the year after childbirth, and investigates attendance rates and factors associated with non-attendance, and women's experiences and possible effects of antenatal education. Also, women with a non-Swedish speaking background are analysed: their uptake of care at the antenatal and child health centres, and their own and their child's physical and emotional well-being up to five years after birth.

The aims with reference to the respective papers were as follows:

- To investigate the attendance rate at childbirth and parenthood education classes during pregnancy, and to describe the characteristics of women who do not attend (Paper I).
- To investigate first-time mothers' experiences of childbirth and parenthood education during pregnancy, and to explore if such education has an impact on the use of obstetric pain relief, the overall experience of childbirth, early parenting, and contact with other class participants after birth (Paper II).
- To investigate attendance at parental education classes organised by the child health centres (CHCs) during the infant's first year, and to identify factors associated with non-attendance in first-time mothers (Paper III).
- To compare women with a non-Swedish speaking background with a reference group of women with a Swedish speaking background regarding: 1) uptake of care at the antenatal clinic during pregnancy and at the CHC during the child's first year of life; 2) maternal physical and emotional well-being from early pregnancy to five years after the birth; and 3) the child's physical and psychological health during the first five years rated by the mothers (Paper IV).

## METHODS

### STUDY DESIGN

This thesis is based on data from a Swedish national longitudinal study, the KUB study (Papers I-IV), which aimed at investigating women's experiences of pregnancy, childbirth and the first year with a newborn child from a wide range of perspectives (Hildingsson, 2003; Rubertsson, 2004; Rudman, 2007; Schytt, 2006; Örténstrand, 2005), and a five-year follow-up which aimed at investigating maternal and child physical and psychological health after five years, the KUBU study (Paper IV) (Rodriguez and Waldenström, 2008). This prospective cohort study followed women by means of questionnaires in early pregnancy, as well as two months, one year, and five years after the birth.

### RECRUITMENT

All antenatal clinics operating in Sweden were invited to participate in the recruitment. Information about the study was given to the antenatal care coordinators in Sweden (about 50 midwives and 40 obstetricians) at national meetings in the fall of 1998 and spring of 1999. All midwives providing antenatal care were informed by their midwife coordinator and by written information to each clinic, and an advertisement in the Swedish Journal of Midwifery (*Jordmodern*). The National Board of Health and Welfare gave written support for the study.

Women were recruited during three predefined weeks evenly spread over one year (May, September 1999, and January 2000). The midwives informed women about the study at their first scheduled visit in early pregnancy by handing out an information leaflet and asking if they were interested in participating in the study. Women consented to participate by signing a form including their national registration number and contact details. After each recruitment week the list of names, together with each woman's civic registration number and contact details, was sent to the research team. Thereafter, the researchers handled all contact with the participants. Because data were collected by postal questionnaires and there was a lack of resources to translate these into different languages, women who did not understand written Swedish language had to be excluded. The last follow-up was conducted five years after the birth, in which almost all original participants were re-contacted (Rodriguez and Waldenström, 2008).

One or two weeks after the recruitment, women who had consented to participate were posted the first questionnaire. Two letters of reminder were sent to non-responders, the last of which included a new questionnaire. The same procedure was applied for the second, third and fourth questionnaire, two months, one and five years after the birth. The third and fourth questionnaires were not sent to non-responders to the two first questionnaires, to women whose child had died, or to those who had not been registered in the Medical Birth Register. Other women excluded for follow-up were those who had moved abroad or who could not be traced because of protected identities or incorrect addresses. Before the last follow-up five years after birth the women received an invitation letter, with a description of the follow-up study, and they could decline further participation by returning a prepaid postcard.

## DATA COLLECTION

### Questionnaires

The first questionnaire was completed in gestational week 16 (mean) (median 15, range 7-40, SD 3.4), the second at 10 weeks (mean) after the birth (median 9, range 2-25, SD 3.2), the third at 1 year and 3 weeks (mean) after the birth (median 1 year and 1 week, SD 3.0), and the last questionnaire when the child was 5.7 years old (mean) (range 4.3-7, SD 2.0).

The first three questionnaires were designed in A5 format, whereas the fourth questionnaire was both a paper version in A4 format and a Web-based version, and the women could choose which version to fill in.

The included questions originated from similar projects surveying childbearing women with regard to experiences with maternity care and childbirth (Brown and Lumley, 1994; Brown and Lumley, 1997; Georgsson Öhman et al., 2003; Murray and Cox, 1990; Statham et al., 1997; Waldenström, 1999; Waldenström and Nilsson, 1993; Wickberg and Hwang, 1996), parental stress (Östberg et al., 1997), and child psychological health (Goodman, 1997). The questionnaires included both study specific questions and established instruments. Minor adjustments were made to the questionnaires after piloting, using face validation (Hildingsson, 2003; Rubertsson, 2004).

### Swedish Medical Birth Register

To determine generalisation of the study sample, the background characteristics (parity, age, country of birth, marital status, smoking during pregnancy, mode of delivery) of the different samples in Papers I-IV were compared with data from all women who gave birth in Sweden in 1999 according to the Swedish Medical Birth Register (MBR, 2000). The Medical Birth Register at the Swedish National Board of Health and Welfare was developed in 1973 and contains information from the standardised medical records used by all antenatal and delivery units in Sweden. Information from about 97-99% of all deliveries and newborn infants registered as Swedish citizens at Statistics Sweden (SCB) is reported to the MBR. Children born outside of Sweden are only reported to the SCB (Odlind et al., 2003; MBR, 2002).

The samples in Papers I and IV were compared with data from all women, both primiparas and multiparas, who gave birth in Sweden in 1999 (n=84,729), and the samples in Papers II and III were compared with data from the first-time mothers (n=35,455). Information about the number of visits to the antenatal clinic, to midwives as well as doctors, and information about the length of gestation (which was calculated on the basis of the rule of Naegele (First day of last menstruation +7 days -3 months +1 year) was also collected from the MBR.

All dependent and independent variables included in Papers I-IV are shown in the Appendix, with the respective response alternatives, dichotomisations and categorisations.

### Outcome measures (dependent variables) – Paper I

The question about attendance at childbirth and parenthood education classes during pregnancy was measured two months after birth and did not distinguish between classes organised by the public antenatal clinics and the few private clinics operating in Sweden and other services provided by consumer groups or others. However, the

major part of all childbirth and parenthood education in Sweden is organised by the public antenatal clinics (Annual Report 2003).

### **Outcome measures – Paper II**

Two of the outcome measures in Paper II came from the second questionnaire and asked if childbirth and parenthood education classes during pregnancy had helped women to prepare for childbirth and early parenthood. The third questionnaire included a question about whether the participants had contact with other class participants after one year. Additional outcome variables in the second questionnaire were different pain relief techniques: epidural, nitrous oxide, pethidine/morphine, bath/shower, acupuncture, transcutaneous nerve stimulation, sterile water papules, and psychoprophylaxis. Questions about pain intensity, mode of delivery, and overall birth experience were also included. One year after birth women were asked about duration of breastfeeding, both exclusive and partly, and parental skills.

### **Outcome measures – Paper III**

The third questionnaire included a question regarding attendance at parental education classes given by the CHC.

### **Outcome measures – Paper IV**

#### *Uptake of care*

Information about the number of visits to the antenatal clinic, to midwives as well as doctors, was collected from the Swedish Medical Birth Register (MBR, 2000). The information about the number of visits included data from all antenatal clinics in Sweden, the major part of which were operating within the public sector. Some women may have made outpatient visits to a general practitioner or a specialist for non-pregnancy related problems, visits that were not reported in the antenatal records and therefore not included in Paper IV. The CHCs were all operating within the public sector and information about the number of these visits are not included in the Medical Birth Register. This information was therefore based on maternal reports in the third questionnaire. Information about the women's attendance at antenatal education classes was collected in the second questionnaire. Questions about attendance at parental education classes organised by the CHC were asked in the one-year questionnaire.

#### *Maternal health*

The first questionnaire asked about maternal health: physical symptoms, chronic diseases, and depressive symptoms. Depressive symptoms were also measured at one year and five years after birth by the Edinburgh Postnatal Depression Scale (EPDS) (Cox et al., 1987), which has been validated for antenatal use in the United Kingdom (Murray and Cox, 1990), and for postnatal use in Sweden (Wickberg and Hwang, 1996). The scale estimates the intensity of depressive moods experienced during the previous seven days. The items relate to anxiety, suicidal thoughts, not coping, and dysphoria. The items in the EPDS have been understood and completed in similar ways in different languages and cultures (Small et al., 2007). The third questionnaire included questions about maternal self-rated health (SRH), parental stress, and overall child health. Self-rated health is a predictor of future health and mortality (DeSalvo et al., 2006; Idler and Benyamini, 1997; Manderbacka et al., 2003; Manor et al., 2001; Miilunpalo et al., 1997), and was measured by a single-item question: "How would you summarise your state of health at present?", with five response alternatives. This question has a high test-retest reliability (Lundberg and Manderbacka, 1996;

Martikainen et al., 1999). Parental stress was measured by the validated Swedish Parenthood Stress Questionnaire (SPSQ) (Östberg, 1998; Östberg et al., 1997) which was developed from the Parenting Stress Index (PSI), parent domain (Abidin, 1990). The SPSQ consists of 34 questions divided into five subscales: incompetence, role restriction, social isolation, spouse relationship problems, and health problems. The last questionnaire, five years after the birth, also included questions about the women's self-rated health (SRH).

### *Child's health*

One year after birth, questions were asked about the child's overall health, and five years after the birth, we asked about the child's growth and physical health (asthma/allergy, colds, eating problems, sleeping problems, functional handicaps, and overall child health). The children's mental health was measured by the Strengths and Difficulties Questionnaire (SDQ), a brief behavioural screening questionnaire for 3-16-year-olds (Goodman, 1997; Goodman, 1999; Goodman et al., 2003). The SDQ is translated into more than 40 languages and assessed in several countries and cultures (Achenbach et al., 2008), and has been validated and translated into Swedish (Obel et al., 2004; Smedje et al., 1999). The SDQ asks about 25 attributes, some positive and others negative. Each item contains a three-point scale indicating whether symptoms were absent or present most of the time. The 25 items are divided between five subscales: emotional symptoms, conduct problems, hyperactivity/inattention, peer problems, and prosocial behaviour. The prosocial subscale, i.e., strengths, is not included in the total problem score. An additional question of the SDQ asks whether the respondent thinks the young person has a problem and, if so, enquires further about chronicity, distress, social impairment, and burden to others (Goodman, 1999).

### *Maternal attitudes*

In order to better understand the women's attitudes and expectations on maternity care, a question asking about what aspects of antenatal care were most important was analysed. This question included different aspects of antenatal care: information about how to care for one's own health during pregnancy, information about childbirth, breastfeeding and infant care, checking baby's and mother's health, time to talk (e.g., about one's own problems and thoughts), being paid attention and treated with respect (as an unique individual), partner being treated in a way that makes him feel involved, receiving support in order to cope with labour, and being able to participate in parental education classes. The women were asked to rate the importance of each aspect on a five-point scale ranging from 1 (not important) to 5 (very important).

## **Independent variables**

### *Collected in early pregnancy*

The first questionnaire included questions about sociodemographic background (age, marital status, native language, education, residential area, and employment), smoking habits, obstetric background (parity, timing of present pregnancy), maternal health (chronic disease, depressive symptoms), expectations (on approaching birth, pain in labour, and early parenthood), anxiety (worry about the birth and of taking care of the newborn baby), and support from the partner. The Edinburgh Postnatal Depression Scale (EPDS) measured depressive symptoms. Women's worries about the birth and caring of the newborn were two of the 16 items used from the Cambridge Worry Scale, an instrument developed and validated in the United

Kingdom (Green et al., 2003; Statham et al., 1993; Statham et al., 1997). The scale measures worries during pregnancy. The scale has been translated and validated in Sweden, the Swedish version of the Cambridge Worry Scale (SCWS) (Georgsson Öhman et al., 2003).

#### *Collected data two months after birth*

The second questionnaire asked whether women who had attended childbirth and parenthood education classes during pregnancy had contact with other class participants at two months after the birth, how many class sessions the women attended, and the reasons for not attending. Questions were also asked about the number of antenatal check-ups with the midwife, and if the woman had counselling with a midwife because of fear of childbirth. The second questionnaire also included questions about self-rated health (SRH), depressive symptoms (EPDS), worry about caring for the newborn baby (SCWS), satisfaction with support from the partner, and feelings of loneliness and isolation after the birth.

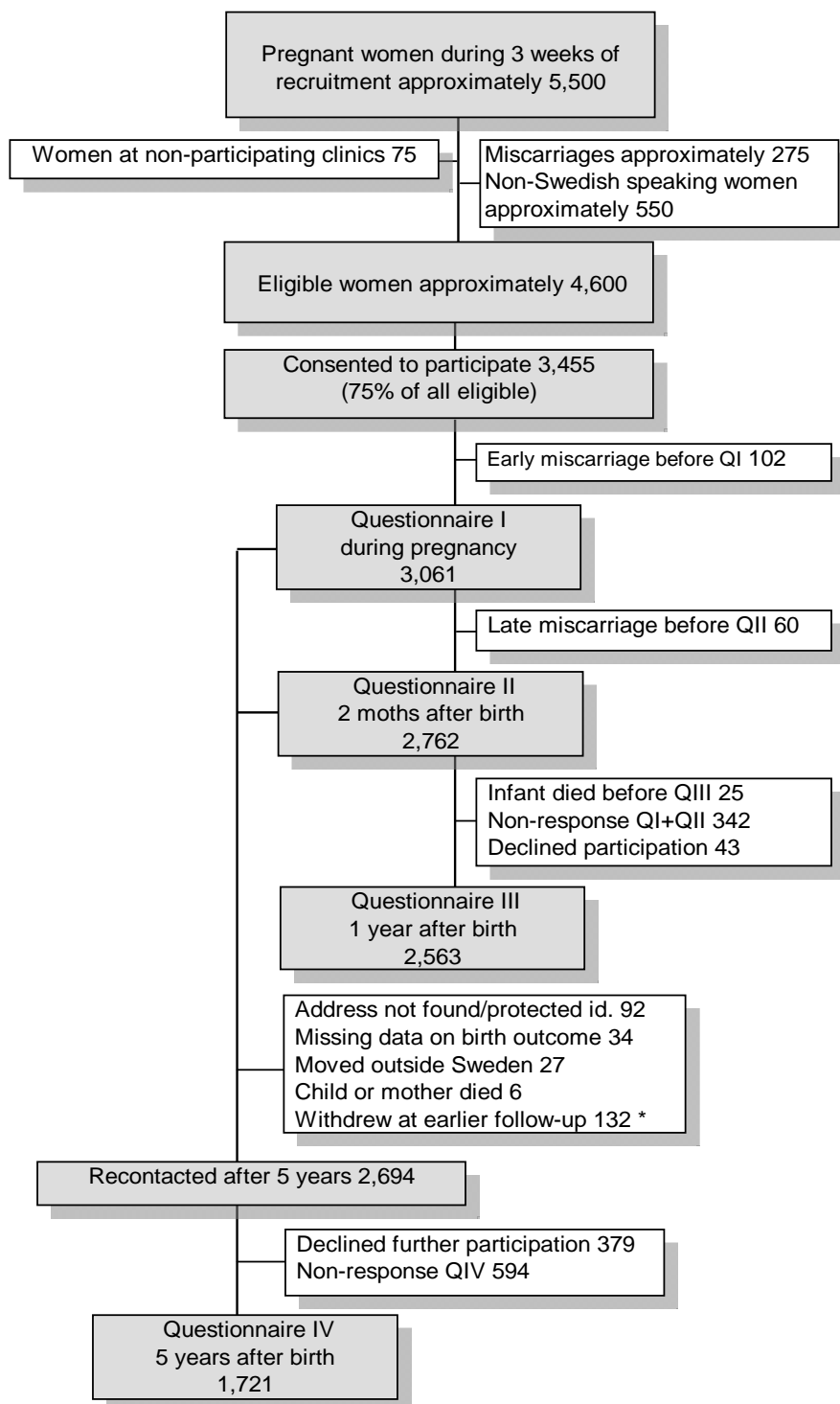
#### *Collected data one year after birth*

The third questionnaire included questions about the number of visits to the CHC, and reasons for not attending parental education classes during the infant's first year. Questions were also asked about smoking habits one year after childbirth, maternal health (SRH), depressive symptoms (EPDS), maternal admission to a hospital during the first year postpartum, and infant health problems (infant treated at neonatal and intensive care units, functional or chronic problems, hospital admission of infant during the first year after birth).

## **SAMPLES AND RESPONSE RATES**

Of all 608 antenatal clinics approached, 593 (97.5%) chose to participate in the study. One region with seven antenatal clinics withdrew because of other ongoing studies and another eight clinics declined to participate because of a heavy workload. The total number of women scheduled for antenatal care during the three weeks of recruitment was approximately 5,500, an estimation based on data from the Swedish Medical Birth Register (MBR, 2000) and information from the antenatal care midwives (Figure 1). Of these women, 4,600 were eligible for the study after excluding 275 women who were estimated to have suffered an early miscarriage, women who were booked at a non-participating clinic (n=75), and about 550 non-Swedish speaking women. The last group may also have included some women who were not approached for other than language reasons, such as administrative errors. A total of 3,455 women (75% of all eligible) consented to participate and 3,113 answered at least one of the two first questionnaires. The number of responders to the first questionnaire was 3,061, to the second 2,762, and to the third 2,563. At follow-up when children were five years old, participants were traced by their current addresses using their unique personal identification numbers used by all national population-based registers in Sweden, which makes it possible to locate persons anywhere within national borders. After exclusion of late miscarriages (n=60), infant deaths (n=25), and women who declined participation (n=43) in the 3,113 women who answered at least one of the two first questionnaires, 2,985 women were eligible for the last follow-up after five years. All of these women for whom confirmation could be made that both mother and child were alive and resided in Sweden were invited to participate (n=2,694). A mailed invitation letter described the follow-up study and included a stamped and addressed postcard in which the woman could

decline further participation. Original participants were lost if they had protected identities or could not be traced (n=92), had missing birth outcome data (n=34), had moved abroad (n=27), mother or child had deceased (n=6), or had declined further participation during a previous follow-up of a sub-sample of KUB-mothers and their children (n=132). Of the 2,694 eligible women 379 declined further participation during the current follow-up and 594 were non-responders. In total, 1,721 participated in this last follow-up (64% of all eligible) (Figure 1).



\* Subsamples were followed-up at 2 and 4 years.

Figure 1. Recruitment and Samples.



For the purpose of **Paper I**, only women who answered the question about class attendance during pregnancy in the second questionnaire (two months after birth) were included. After exclusion of women who had given birth before 37 weeks of gestation, 2,546 women were included in the analyses, corresponding to 77 per cent of those who consented to participate and 55 per cent of all eligible women.

In **Paper II**, the study population consisted of the 1,197 first-time mothers who had answered the question about class attendance during pregnancy (including those who had preterm births, <37 weeks). The response rate was 82 per cent of the first-time mothers who consented to participate in the study and approximately 62 per cent of the first-time mothers who were eligible for the study.

For the purpose of **Paper III**, women who filled in all first three questionnaires (during pregnancy to one year after birth), and the question about attendance at parental education classes at the CHC in the third questionnaire (one year after birth) were included, n=2,440. This was 71 per cent of those who consented to participate and 53 per cent of all eligible women, although the focus of Paper III is mainly on the 1,076 first-time mothers.

The study population in **Paper IV** consists of the 3,061 women who completed the first questionnaire during pregnancy. Of these women 2,710 completed the second questionnaire at two months after birth, 2,534 the third at one year after the birth, and 1,707 completed the last follow-up at five years. Of those who answered the first questionnaire (n=3,061), 56 per cent completed the last five-year follow-up.

A comparison was made between the original study sample (n=3,061) and the cohort of all women who gave birth in Sweden 1999 (n=84,729), registered by the Swedish Medical Birth Register (MBR, 2000). No statistical differences were observed regarding parity and mean age, but more women in the study group were aged 25-35 years (74.5% versus 71.9%). Fewer women in the study group were older than 35 years (10.3% versus 11.7%), single (1.3% versus 3.4%), and smokers (11.0% versus 12.9%). Ten per cent of the study sample was not born in Sweden versus 18 per cent in the national birth cohort. The majority of the foreign-born women in the study sample (58%) had lived in Sweden for more than eight years, and a few (15%) had lived in Sweden less than three years (Hildingsson, 2003).

Table 1 shows sociodemographic characteristics of the KUB sample and the 1999 birth cohort, stratified by parity. The KUB sample had lower rates of women born in other European countries (excluding the Nordic countries), Asia, and Africa.

Table 1. Sociodemographic characteristics of women in the KUB study (n=3,061), and all women who gave birth in Sweden in 1999 (n=84,729), according to the Medical Birth Register (MBR).

	Primiparas		Multiparas	
	KUB n=1,302 %	MBR n=35,455 %	KUB n=1,759 %	MBR n=49,274 %
<b>Mean age</b>	27.4	27.6	31.0	30.8
<b>Age groups</b>				
<25 years	35.3	27.4	9.4	8.5
25-35 years	59.8	66.6	76.2	75.8
>35 years	4.9	6.0	14.3	15.7
<b>Civil status</b>				
Married/cohabiting	93.3	93.3	95.9	95.8
Other family situation	5.2	3.0	3.0	1.0
Single	1.5	3.7	1.1	3.2
<b>Country of birth</b>				
Sweden	90.4	84.1	90.0	81.24
Other Nordic countries	2.6	1.9	2.1	2.64
Other European countries	3.1	4.2	3.5	4.5
Canada and the United States	0.2	0.4	0.1	0.32
South and Central America	1.0	0.9	1.1	0.91
Asia	2.1	6.9	2.3	7.51
Australia	0.2	0.05	0.3	0.05
Africa	0.4	1.55	0.6	2.83
<b>Education</b>				
High school	5.7		8.6	
Elementary school	54.7		54.5	
College/university 1-3 years	18.7		21.0	
College/university >3 years	20.8		15.9	
<b>Smoked in early pregnancy</b>	11.5	12.0	10.3	13.5

The comparison of the respective sample in Papers I-IV with the national cohort showed no differences in parity (Papers I, IV), mean age (Papers I-IV), mode of delivery (Papers II-III), and percentage of smokers during pregnancy (Paper II). However, the sample in Paper I included more women younger than 25 years (20% versus 16.4%), the sample in Paper III included a higher proportion of women aged 25-35 years (69.9% versus 66.6%), and Paper IV had more women aged 25-35 years (74.5% versus 71.9%), and fewer women older than 35 years (10.3% versus 11.7%). All samples included fewer mothers being single, born in another country (Papers I-IV), and smokers during pregnancy (Papers I, III, IV).

## **ANALYSES**

Statistical analyses were conducted using the Statistical Package for Social Sciences software for Windows (SPSS), version 11.0-15.0 (Norusis, 2007; Norusis and SPSS Inc, 2000). Descriptive statistics and epidemiological methods were used. Comparisons between the samples in Papers I-IV and the 1999 birth cohort were calculated by Chi<sup>2</sup> test and Student's *t*-test. In the bivariate analyses, associations between independent variables and the outcome variables were estimated by Relative Risks (RR) (ratio of percentages) and 95 per cent confidence intervals with a variance described by Mantel and Haenszel (Rothman, 2002). The effect estimate Relative Risk was calculated in an Excel programme, and variables were stratified into subgroups. Separate effect estimates were calculated from each stratum (Rothman and Greenland, 1998). To further control for confounding, multivariate logistic regression models were used (Rothman, 2002), including independent variables that were statistically significant in the bivariate analyses (Papers I and III). The dichotomous dependent variables were dummy coded 1= for case and 0= for non case (Cohen et al., 2003).

### **Paper I**

Attendance rates and reasons for not attending childbirth and parenthood education classes during pregnancy were analysed separately for all women and for primiparas and multiparas. Factors associated with attendance and non-attendance were analysed separately for primiparas and multiparas. Non-attendees included women who had not attended classes during the current pregnancy or earlier. Attendees included women who had attended classes during the current pregnancy or earlier. Women who had given birth before 37 weeks of gestation were excluded since they may not have had the possibility to attend any classes. Relative Risks and 95 per cent confidence intervals estimated differences between groups. In the multiple logistic regression models, we included variables that were statistically significant in the bivariate analyses. The factor "expectations on early parenthood" was statistically significant in primiparas but was excluded in the logistic regression due to few women in one of the categories. Two separate models were calculated, one including only the sociodemographic variables and one including variables related to the pregnancy.

### **Paper II**

Only first-time mothers were included in Paper II, because they most likely had been exposed to childbirth and parenthood education classes for the first time. Attendees were defined as women who had attended classes during the current pregnancy, and non-attendees as those who had not. Relative Risks and 95 per cent confidence intervals estimated differences between the groups. Comparisons between attendees and non-attendees were adjusted for differences in background characteristics between these two groups (which were observed in Paper I) such as native language, unemployment, smoking, preterm birth (<37 weeks), having few antenatal check-ups with a midwife (<8), and having considered an abortion. The selection of women into participants and non-participants was in this way adjusted for in the multivariate logistic regression models.

### **Paper III**

The analyses in Paper III included only the primiparous women, with one exception: the attendance rates and reasons for not attending classes were analysed in both primiparas and multiparas. Regarding the dependent variable "attendance at parental

classes given by the CHC”, two groups of non-attendees were each compared with a reference group of attendees: Group A which included women who did not attend classes after birth regardless of whether they had attended antenatal education or not, and Group B which included women who had not attended any classes either during pregnancy or after birth. The reference group included women who attended classes after the birth, regardless of whether they attended antenatal classes or not. Relative Risks and 95 per cent confidence intervals estimated associations between independent variables and the outcome variables. Statistically significant variables were then tested by multivariate logistic regression analyses in two separate models in Groups A and B, respectively. The first model included only sociodemographic variables, and the second included the remaining variables, which were related to psychosocial factors in early pregnancy, maternal health postpartum, experience of support postpartum, and infant health problems. However, this last model was not performed in Group B because only one variable from the bivariate analyses was statistically significant (having considered an abortion). The different reasons for non-attendance at classes in the CHC were categorised “objective” reasons which included: not invited, attended earlier or no education was available; and “subjective” reasons: not interested, lack of time, inconvenient timing or other reasons. In first-time mothers the “objective” and “subjective” categories were each compared with the reference group of attendees.

#### **Paper IV**

Women with a native language other than Swedish, irrespective of country of birth, were defined as being of a non-Swedish speaking background (NSB). While health problems in immigrants increase with the economical and cultural distance from Sweden (SCB, 2002), women with NSB were stratified into a “rich” and “poor” country of origin depending on the economic development of each country (IMF, 2008). “Rich” included women with a native language from other Nordic countries (n=89), Western and Southern Europe (n=29), Australia (n=3), Canada and the US (n=3), and Japan (n=1), in total 125 women. “Poor” included women with a native language from a non-rich country from Eastern Europe (including former Yugoslavia) (n= 84), the Middle East (n=37), South and Central America (n=26), Asia (n=15), and Africa (n=13). In total, 175 women were defined as having a family background from a poor country. In all analyses women from a “poor” or “rich” country of origin were analysed separately, and compared with the reference group of women with a Swedish speaking background (SB). Relative Risks and 95 per cent confidence intervals estimated associations between independent variables and the outcome variables. Comparisons in sociodemographic variables were estimated with Chi<sup>2</sup> tests.

#### **ETHICAL CONSIDERATIONS**

The study was approved by the regional Research and Ethics Committee at Karolinska Institutet, Stockholm, Sweden (Dnr 98-358) after approval had been obtained from all other Ethics Research Committees in Sweden (Lund, Göteborg, Linköping, Uppsala/Örebro, and Umeå). The National Board of Health and Welfare approved use of data from the Medical Birth Register. The five-year follow-up was approved by the regional Ethics Review Board, Uppsala (Dnr Ups 03-718).

Informed consent was obtained from all participants after having received both oral and written information about the study. Attached to each mailing of the first three questionnaires was a cover letter explaining the aim of the study and including information about how to contact the research team. The researchers were also

available for questions by e-mail, phone, and personal beepers. If a woman expressed physical or emotional problems, triggered by the questions asked in the questionnaires, a referral to an appropriate health care service was suggested.

Since the registration of records in the MBR was delayed, we were not able to identify women who had lost their child before, during or after delivery, and the postpartum questionnaire scheduled at two months postpartum could therefore accidentally be mailed to these women. Therefore, the following sentences were included in the cover letter:

*'Of all women who answered the first questionnaire in the KUB study, there may be some who have lost their child, during pregnancy or after the birth and other whose baby is not in full health. If you belong to this group we would like to express our sympathy and we are sorry if this letter causes further pain. However, your experiences are most valuable for the study, and we would be very grateful to receive your answers. Leave the questions that are not applicable unanswered and please make a note of what has happened to your child'.*

Also, women who did not contact the research team to notify withdrawal were sent the second questionnaire.

Women were not sent the third questionnaire if they had not answered the first or the second questionnaire or if women had not been registered for a delivery in the MBR, if they had declined participation, or to women who were known to have had an infant who had died. In the five-year follow-up, all women who participated during pregnancy or two months after birth for whom confirmation could be made that both mother and child were alive and resided in Sweden were invited to participate. A mailed invitation letter described the follow-up study and included a stamped and an addressed postcard in which the woman could decline further participation. In both the postal questionnaire and the Web-based version, contact details to the research team were available by e-mail and telephone. There was also technical support available for users of the Web-based questionnaire.

## RESULTS

### ATTENDANCE AT CHILDBIRTH AND PARENTHOOD EDUCATION DURING PREGNANCY AND AFTER CHILDBIRTH

(Papers I, III)

During pregnancy, 93 per cent of the primiparous women attended education classes organised by the antenatal clinics, and 19 per cent of the multiparas (Table 2). In most cases the woman was joined by her partner: eight per cent of both primiparas and multiparas were alone.

After the birth, 78 per cent of the first-time mothers and 31 per cent of the multiparas attended parental education classes organised by the CHCs (Table 2). When primiparas and multiparas were combined, the education classes reached about half of the pregnant women and new mothers, respectively.

Table 2. Attendance at childbirth and parenthood education classes during pregnancy (antenatal care), and after childbirth (CHC).

Attendance at education classes	Primiparas		Multiparas		All	
	n	%	n	%	n	%
<b>During pregnancy</b>	n=1,101		n=1,445		n=2,546	
Yes, with partner	928	84.3	160	11.1	1,088	42.7
Yes, alone	91	8.3	112	7.8	203	8.0
No	82	7.4	1,173	81.1	1,255	49.3
<b>After childbirth</b>	n=1,076		n=1,364		n=2,440	
Yes	843	78.3	425	31.2	1,268	52.0
No	233	21.7	939	68.8	1,172	48.0

Seventy-four per cent of the primiparous women attended classes both during pregnancy and after the birth, and three per cent (n=37) did not attend any classes, either during pregnancy or after the birth (Figure 2).

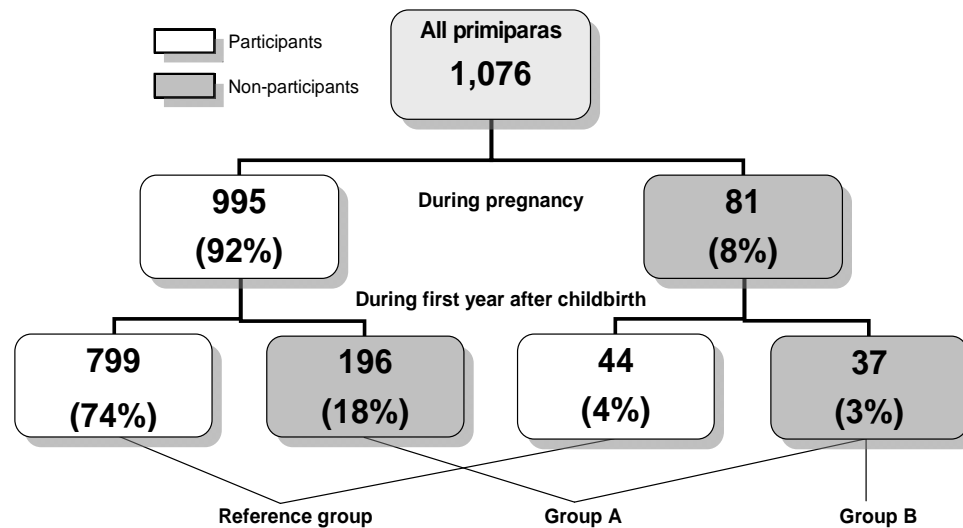


Figure 2. Participation in education classes during pregnancy and the first year after childbirth in first-time mothers.

### Reasons for non-attendance

Some of the non-participating women gave reasons why they did not attend education classes. In multiparous women, the most common reason both during and after pregnancy was that they had participated in classes before. Other reasons were not having been invited or lack of interest. During pregnancy the most common reason in primiparas was lack of interest, followed by inconvenient timing, and not having been invited. After pregnancy the reasons were: not having been invited, lack of interest, and no education available.

In the 37 primiparous women who did not attend classes either during pregnancy or after the birth (Figure 2), the most common reason was lack of interest, followed by not having been invited, and inconvenient timing.

### FACTORS ASSOCIATED WITH NON-ATTENDANCE

#### *Factors during pregnancy*

(Paper I)

In the bivariate analyses four factors were associated with non-attendance in both primiparous and multiparous women: native language other than Swedish, low level of education, present pregnancy being unplanned, and negative expectations on the approaching birth. In the primiparas, unemployment, smoking prior and during pregnancy, having considered an abortion, having had less than eight antenatal visits with the midwife, and negative expectations on early parenthood were also associated with non-attendance. Factors associated with non-attendance only in the multiparas were being older than 35 years, worry or fear of childbirth, and having depressive symptoms.

No statistically significant associations were found between non-attendance and marital status, residential area, having a chronic illness, expectations of pain in labour, worry about caring for the baby, and support from the partner.

In the multivariate analyses, which included the statistically significant variables from the bivariate analyses, native language other than Swedish was still associated with non-attendance in primiparas as well as multiparas (Table 3). In the primiparas, unemployment and smoking during pregnancy were statistically significant, and in the multiparas, age over 35 years and a low level of education. The second regression model, including aspects related to this pregnancy, non-attendance in primiparas was associated with having considered an abortion and having had less than eight antenatal visits with the midwife. In the multiparas, non-attendance was associated with pregnancy being unplanned, and counselling because of fear of childbirth or a need for such counselling.

Table 3. Factors associated with non-attendance at childbirth and parenthood education classes in primiparas and multiparas, analysed by multivariate logistic regression. Four different regression models: Sociodemographic factors in primiparas and multiparas, and pregnancy factors in primiparas and multiparas.

	Primiparas			Multiparas		
	OR	95% CI	p-value	OR	95% CI	p-value
<b>Sociodemographic factors</b>						
Age						
<25 years				0.8	0.5-1.5	0.47
>35 years				1.6	1.1-2.3	<0.01
Non-Swedish as native language	2.7	1.3-5.4	<0.001	2.1	1.4-3.1	<0.001
Education						
High school	1.5	0.9-2.7	0.15	1.1	0.8-1.4	0.64
Elementary school	0.9	0.3-3.1	0.89	3.6	2.3-5.7	<0.001
Unemployed	2.0	1.1-3.8	0.04			
Smoked prior to pregnancy	1.0	0.5-1.9	0.87			
Smoked during pregnancy	2.7	1.2-5.8	0.02			
<b>Pregnancy factors</b>						
Present pregnancy						
Unplanned but welcome	1.6	0.9-2.8	0.08	1.5	1.1-2.0	<0.01
Timing could have been better	2.4	0.8-7.3	0.12	1.4	0.8-2.6	0.25
Abortion considered	4.3	1.2-16.1	0.03	0.7	0.3-2.1	0.58
Antenatal visits to midwife <8	2.0	1.1-3.7	0.02			
Counselling at a clinic for fear of childbirth						
Yes				1.6	1.1-2.4	0.02
No, but would have needed				1.9	1.1-3.1	0.01
Many depressive symptoms				1.5	1.0-2.4	0.08
Negative expectations on birth	1.8	0.9-3.5	0.11	1.3	0.8-2.2	0.29
Major worry about the birth				0.9	0.6-1.4	0.75



## *Factors after childbirth*

### (Paper III)

Two groups of non-attending first-time mothers were each compared with a reference group of attendees: Group A which included women who did not attend classes after birth regardless of whether they had attended antenatal classes or not, and Group B which included women who had not attended any classes either during pregnancy or after birth (Figure 2). The reference group included first-time mothers who attended classes after the birth, regardless of whether they attended antenatal classes or not. In the bivariate analyses five sociodemographic factors were associated with non-attendance in Group A as well as in B: a native language other than Swedish, a low level of education, unemployment, and smoking during and after pregnancy. In Group B, the Relative Risks were consistently higher than in Group A. For instance, the risk of not attending was 12 times higher if a woman's educational level was elementary school only, compared with a college or university education, whereas the corresponding figure in Group A was three times higher. Additional risk factors that reached statistical significance in Group A but not in group B were young age (<25 years), single status, and living in a rural area.

Furthermore, in the bivariate analyses including factors related to psychosocial background, maternal and infant health, and experience of support, the following reached statistical significance in Group A: inconvenient timing of pregnancy, maternal hospital admission during the first year after the birth, infant health problems requiring hospital care, and functional or chronic health problems. In Group B, high Relative Risk scores were found in most of the variables, but only consideration to have an abortion was statistically significant.

When testing all the statistically significant variables simultaneously by multivariate logistic regression analyses, a non-Swedish speaking background, a low level of education and smoking during pregnancy remained as risk factors for non-attendance in both groups (Table 4). In Group B, unemployment was also statistically significant. The second regression model including psychosocial background, and maternal and infant health, was only conducted in Group A, because only one variable from the bivariate analyses was statistically significant in Group B. The regression model showed that timing of pregnancy, maternal hospital admission, and having an infant with functional or chronic health problems was associated with non-attendance in Group A (Table 4).

Table 4. Factors associated with first-time mothers' non-attendance at parental education classes.

Risk factors for non-attendance *	Group A †			Group B ‡		
	OR	95% CI	p-value	OR	95% CI	p-value
<b>Sociodemographic background</b>						
Native language						
Non-Swedish	1.9	1.1-3.3	0.02	2.9	1.1-7.5	0.04
Education						
High school	1.8	1.2-2.6	<0.01	2.5	0.9-6.4	0.06
Elementary school	2.4	1.2-5.0	0.01	4.4	1.1-17.5	0.04
Unemployed	1.5	0.9-2.6	0.11	3.4	1.4-8.1	<0.01
Smoking						
During pregnancy	1.7	1.0-2.9	0.04	4.5	1.8-11.7	<0.01
<b>Psychosocial factors, maternal and infant health problems</b>						
Timing of pregnancy						
Unplanned but welcome	1.6	1.1-2.3	<0.01			
Inconvenient timing	2.0	0.9-4.3	0.10			
Abortion considered	3.3	1.1-9.7	0.03			
Maternal health						
Hospital admission	1.9	1.1-3.3	0.02			
Infant health						
Functional or chronic problems	2.6	1.2-5.7	0.01			

\* Multivariate logistic regression models included 1) Sociodemographic variables, and 2) Psychosocial variables, maternal and infant health problems.

† Group A: women who did not attend parental education in CHCs (196+37) n=233 (Figure 2).

‡ Group B: women who did not attend parental education during pregnancy or in CHCs n=37 (Figure 2).

The different reasons for non-attendance at classes organised by child health centres were stratified into two categories. The first included “objective” reasons, such as not having been invited, attended earlier or no education classes offered (n=116). The second included “subjective” reasons, such as lack of interest, lack of time, inconvenient timing or other reasons (n=94). The “objective” and “subjective” groups were each compared with the reference group of attendees regarding sociodemographic background, psychosocial factors and maternal and infant health. The result showed that mothers who gave “subjective” reasons seemed more disadvantaged in terms of sociodemographic background. To a greater extent they were single, of non-Swedish speaking background, unemployed, and smokers. They also expressed more worry about caring for the baby. The first-time mothers who gave more “objective” reasons for not attending classes also seemed to have more objective reasons for not attending classes, such as living in rural areas, and maternal health problems, hospital admissions, and poor self-rated health were more common in this group.

## WOMEN'S OPINION AND POSSIBLE OUTCOMES OF ANTENATAL EDUCATION

(Paper II)

The majority of the first-time mothers (74%) said the classes helped to prepare them for childbirth, and a minority (40%) said the classes helped to prepare them for early parenthood (Table 5). Two months after the birth, more than one-third of the women met with other class participants, and after one year this figure increased to 58 per cent.

Table 5. First-time mothers' opinion about whether antenatal classes were helpful or not and their contact with other participants after the birth.

	Primiparas	
	n	%
<b>Helped to prepare for childbirth</b>	n=1,057	
Yes	777	74
No	150	14
Don't know	130	12
<b>Helped to prepare for early parenthood</b>	n=1,055	
Yes	420	40
No	464	44
Don't know	171	16
<b>Still meets with any of the class participants two months after childbirth</b>	n=1,055	
Yes	414	39
No	641	61
<b>Still meets with any of the class participants one year after childbirth</b>	n=989	
Yes	576	58
No	413	42

### Number of classes in relation to women's opinion

Number of classes was associated with all three outcomes, and the Relative Risks for stating that classes were helpful increased almost continuously up to six sessions (Table 6a-b). A threefold increase (from one to six sessions) was observed in women who believed the education helped them with their role as a new parent (Table 6b). To meet other participants, five or more class sessions seemed to increase the possibility the most (Table 6c).

Table 6a. First-time mothers' assessment of whether the antenatal classes helped to prepare for childbirth, in relation to number of class sessions.

Number of class sessions	Helped to prepare for childbirth				
	n	%	RR for being helpful	95% CI	p-value
1	24	44	1.0	Reference	
2	83	64	1.5	0.9-2.4	0.08
3	184	70	1.6	1.0-2.6	0.01
4	344	74	1.7	1.1-2.7	0.001
5	254	78	1.8	1.1-2.9	<0.001
6	73	82	1.9	1.2-3.1	<0.001
7 to 11	41	83	1.9	1.2-3.1	0.001
Total	1,003				

Table 6b. First-time mothers' assessment of whether the antenatal classes helped to prepare for early parenthood, in relation to number of class sessions.

Number of class sessions	Helped to prepare for parenthood				
	n	%	RR for being helpful	95% CI	p-value
1	24	17	1.0	Reference	
2	83	25	1.4	0.5-3.7	0.46
3	183	30	1.7	0.7-4.3	0.21
4	344	41	2.3	1.0-5.7	0.03
5	253	44	2.5	1.0-6.3	0.01
6	73	56	3.2	1.3-8.1	0.001
7 to 11	41	56	3.2	1.3-8.2	0.003
Total	1,001				

Table 6c. Number of first-time mothers' who still met with class participants one year after birth, in relation to number of class sessions.

<b>Meeting with other class participants at 1 year</b>					
Number of class sessions			RR	95% CI	p-value
	n	%	to meet other participants		
1	22	32	1.0	Reference	
2	73	37	1.0	0.5-1.8	0.89
3	164	50	1.3	0.8-2.3	0.30
4	317	59	1.6	0.9-2.7	0.06
5	234	64	1.7	1.0-2.9	0.02
6	70	73	1.9	1.1-3.4	0.003
7 to 11	35	77	2.0	1.1-3.6	0.004
<b>Total</b>	<b>915</b>				

### **Risk factors for not finding classes helpful**

First-time mothers who did not find the antenatal classes helpful in preparing them for childbirth were younger, more often single, less well educated, more often living in a small city, and more often smoking before and during pregnancy than women with the opposite view of being helpful. However, no statistical differences were found regarding native language or unemployment. The same analyses were conducted concerning whether classes were helpful as a preparation for early parenthood and if the participants had contact or not with other participants one year after childbirth. Two of the background variables were statistically significant: mothers who smoked before pregnancy and those who continued to smoke during pregnancy were less likely to have any contact with other participants one year after childbirth.

### **Possible outcomes of education during pregnancy**

The women who attended antenatal classes generally used more pain relief during labour, pharmacological as well as non-pharmacological, compared to non-attendees (Table 7). However, in the bivariate analyses (RR), statistically significant differences were only found regarding the use of nitrous oxide, bath/shower, and psychoprophylaxis. No statistical differences were observed in experience of pain during labour, duration of breastfeeding, and women's assessment of their own parental skills. However, non-attendees were more likely to have an emergency Caesarean section and a less positive birth experience. When adjusting for differences in background characteristics between attendees and non-attendees, that is, native language, unemployment, smoking, preterm birth (<37weeks), few antenatal check-ups with a midwife (<8), and having considered an abortion, only one statistically significant difference remained: a lower rate of epidural anaesthesia in non-attendees.

Table 7. Attendees and non-attendees at antenatal childbirth and parenthood education classes and their use of pain relief techniques, experience of pain, mode of delivery, overall birth experience, duration of breastfeeding and assessment of parental skills.

	<u>Non-attendees</u>		<u>Attendees</u>		RR			Adjusted OR		
	101	%	1,096	%	in non-attendees	95% CI	P-value	in non-attendees	95% CI	P-value
<b>Pain relief techniques</b>										
Epidural	41	41	543	50	0.8	0.5-1.1	0.09	0.6	0.4-0.9	0.03
Nitrous oxide	73	72	883	81	0.9	0.8-1.0	0.05	0.8	0.5-1.3	0.34
Pethidine/Morphine	18	18	137	13	1.4	0.9-2.2	0.13	1.6	0.8-2.9	0.16
Bath/shower	33	33	497	45	0.7	0.5-1.0	0.01	0.8	0.5-1.2	0.27
Acupuncture	24	24	291	27	0.9	0.6-1.3	0.54	1.0	0.6-1.7	0.90
Transcutaneous nerve stimulation	10	10	184	17	0.6	0.3-1.1	0.07	0.6	0.3-1.3	0.22
Sterile water papules	4	4	51	5	0.9	0.3-2.3	0.75	0.6	0.1-2.6	0.49
Psychoprophylaxis	9	9	178	16	0.6	0.3-1.0	0.05	0.7	0.4-1.5	0.42
<b>Pain intensity</b> (1=No pain at all; 7=Worst imaginable pain)										
1 to 6	74	76	761	71						
7	23	24	304	29	0.8	0.6-1.2	0.31	0.8	0.4-1.4	0.37
<b>Mode of delivery</b>										
Vaginal delivery/elective										
Caesarean section	82	82	974	89						
Emergency Caesarean section	18	18	119	11	1.6	1.1-2.6	0.03	1.7	0.9-3.1	0.08
<b>Overall birth experience</b>										
Positive	43	45	601	55						
Negative or mixed	53	55	487	45	1.2	1.0-1.5	0.05	1.5	1.0-2.4	0.08
<b>Duration of breastfeeding</b>										
0-6 months	28	38	326	35	1.1	0.8-1.5	0.51	0.9	0.5-1.5	0.57
>6 months	45	62	617	65						
<b>Assessment of parental skills</b>										
I am a good parent	76	92	909	91						
I am an average parent/ have difficulties in being a good parent	7	8	94	9	0.9	0.4-1.9	0.78	0.6	0.2-1.5	0.25

Relative Risk calculated by comparison with attendees at education classes (reference). Bivariate analyses presented as RRs, and multivariate analyses as ORs, adjusted for preterm birth, native language other than Swedish, unemployment, smoking during pregnancy, having considered abortion, and having few checkups with midwife (<8).

## WOMEN WITH A NON-SWEDISH SPEAKING BACKGROUND

### Uptake of antenatal and child health service

(Paper IV)

Women with a non-Swedish speaking background were stratified into a “rich” or “poor” country of origin. Women with a poor country of origin did not attend antenatal and postnatal parental education classes to the same extent, but had the same amount of antenatal and CHC visits as women with a Swedish speaking background. Women with a rich country of origin had a low uptake of all services offered, both visits and education classes, with the exception of postnatal parental education.

### Maternal health

Physical and emotional problems were more common in women with a non-Swedish speaking background from a poor country of origin compared with the reference group (Table 8). Depressive symptoms were at least twice as common, both during pregnancy, and one and five years after the birth. The risk of reporting many physical symptoms during pregnancy, and health in general as less than “good”, was also higher, both at one and five years after the birth. Parental stress in mothers originating from a poor country was also more common one year after the birth, compared with mothers with a Swedish speaking background. Women from a rich country of origin did not have more physical or emotional health problems than the reference group.

Table 8. Physical and emotional well-being among women with a non-Swedish speaking background, stratified by poor and rich country of origin, compared with women with a Swedish speaking background.

Physical and emotional well-being	Non-Swedish speaking background						Swedish speaking background
	Poor country of origin			Rich country of origin			%
	%	RR	CI	%	RR	CI	
<b>During pregnancy *</b>							
Number of physical symptoms >5	84.0	1.1	1.0-1.2	76.6	1.0	0.9-1.1	75.1
Chronic disease	11.5	0.8	0.6-1.3	16.8	1.2	0.8-1.9	13.5
EPDS score >14	18.9	2.7	1.9-3.8	9.6	1.4	0.8-2.4	6.9
<b>1 year after birth †</b>							
Self-rated health less than "Good"	28.3	2.1	1.5-2.8	19.4	1.4	0.9-2.2	13.6
EPDS score >11	32.7	2.5	1.9-3.3	19.1	1.5	0.9-2.2	13.1
Parental stress >=90th percentile	19.3	2.0	1.3-3.0	11.8	1.2	0.7-2.2	9.5
<b>5 years after birth ‡</b>							
Self-rated health less than "Good"	24.3	1.6	1.0-2.5	21.0	1.4	0.8-2.3	15.2
EPDS score >11	26.8	2.7	1.8-4.0	14.5	1.4	0.8-2.7	10.0

Relative Risk calculated by comparison with women of Swedish speaking background (reference).

\* Poor n=175, Rich n=125, Swedish speaking n=2,761.

† Poor n=113, Rich n=94, Swedish speaking n=2,328.

‡ Poor n=71, Rich n=63, Swedish speaking n=1,563.

## Mothers' assessment of child's health

Children with a family background from a poor country had more problems compared with children from a Swedish family background (Table 9). The problems were predominantly related to conduct, peer relationships, and general difficulty. Colds were also more common in children whose family originated from a poor country. Non-Swedish speaking mothers from rich countries reported more asthma and allergy problems in their child, and prosocial behaviour was less common.

Table 9. Ratings of child physical and psychological health at one and five years by mothers of a non-Swedish speaking background, stratified by poor and rich country of origin, compared with women of a Swedish speaking background.

Child health and behaviour	<u>Non-Swedish speaking background</u>						<u>Swedish speaking background</u>
	Poor country of origin			Rich country of origin			n=1,566 %
	n=71 %	RR	CI	n=63 %	RR	CI	
<b><u>Child health at 1 year</u></b>							
Child health overall not "Very good"	36.6	1.2	0.9-1.5	27.7	0.9	0.6-1.2	30.9
<b><u>Child health at 5 years</u></b>							
Child health overall not "Very good"	22.9	1.2	0.8-1.9	15.9	0.8	0.5-1.5	19.0
<b><u>Physical problems at 4-5 years</u></b>							
Non-normal growth (at 5 years) *	24.3	0.8	0.5-1.2	31.7	1.0	0.7-1.5	31.6
Asthma and/or allergy	5.9	1.0	0.2-1.2	22.6	1.7	1.1-2.8	13.1
Colds	20.3	1.9	1.2-3.1	6.6	0.6	0.2-1.6	10.7
Eating problems	25.0	1.4	0.9-2.2	24.2	1.4	0.9-2.2	17.2
Sleeping problems	7.5	0.7	0.3-1.7	14.5	1.4	0.7-2.6	10.4
Functional handicaps	0	(not calculated)		1.6	0.9	0.1-6.4	1.8
<b><u>Psychological health at 5 years</u></b>							
Emotional symptoms (SDQ >2)	19.7	1.4	0.9-2.3	11.1	0.8	0.4-1.6	14.2
Conduct problems (SDQ >4)	26.8	2.0	1.4-3.1	14.3	1.1	0.6-2.0	13.1
Hyperactivity/inattention (SDQ >2)	15.5	1.3	0.7-2.2	14.3	1.2	0.6-2.2	12.1
Peer relationship problems (SDQ >2)	16.9	1.7	1.0-3.0	11.1	1.1	0.5-2.3	9.8
Total difficulties score (SDQ >9)	28.2	2.3	1.6-3.5	9.5	0.8	0.4-1.7	12.1
Lack of prosocial behaviour (SDQ <6)	7.0	1.0	0.4-2.3	15.9	2.2	1.2-4.0	7.3
Emotional or behavioural problems	26.9	1.9	1.3-2.9	16.1	1.2	0.6-2.1	13.8

Relative Risk calculated by comparison with women of a Swedish speaking background (reference).

\* Deviation in height (shorter or longer) or weight (less or more).

## Attitudes to maternity care

Women with a poor country of origin assessed the instrumental content of antenatal care as more important than issues related to psychological aspects of care, compared to women with a Swedish speaking background. They rated information about one's own health, labour, breastfeeding, infant care, and receiving support in order to cope with labour as more important, whereas making their partner feel involved, being treated 'with respect, and receiving time to talk about their own problems and thoughts were rated lower. Non-Swedish speaking women originating from a rich country only differed from women with a Swedish speaking background by assessing the checking of their own health during pregnancy as less important.



# DISCUSSION

## METHODOLOGICAL CONSIDERATIONS

When the KUB sample was compared with the total Swedish birth cohort of 1999 (MBR), the major difference was a lower rate of women born outside Sweden. This was expected because non-Swedish speaking women were excluded at onset. The study sample also included more women aged 25-35 years, and fewer who were single and smokers, suggesting that the sample was slightly skewed towards women with a more stable social situation. Women with social and psychological problems may also have been less inclined to participate in the study, but no data were available on these outcomes in the MBR to allow comparisons. As a consequence of these differences, the findings of this study can only be generalised to women with Swedish as a native language and to women with a foreign origin who have mastered the Swedish language. Also, the proportion of women who thought childbirth and parenthood education was less helpful, and the problems identified in women with a poor country of origin may have been underestimated.

The exclusion of non-Swedish speaking women was due to economical and practical reasons. Despite this limitation the study reached more than half of the foreign born women giving birth in Sweden in 1999, showing that the majority mastered the Swedish language well enough to complete questionnaires in Swedish. However, it is possible that some of the respondents may have filled in the questionnaires with the help of someone more fluent in Swedish.

The risk of not attending classes was twice as high in women of a non-Swedish speaking background. The calculated non-attendance rate would probably have been much higher if all non-Swedish speaking women had been reached. We did not access information about the number of non-Swedish speaking women who were excluded from this study, and who participated in antenatal and postnatal education. Neither did we have any information available concerning the number of classes given in other languages, or with assistance by an interpreter. To our knowledge this option was rare.

### **Data collection methods**

The women were recruited during three predefined weeks evenly spread over one year (May and September 1999, and January 2000) in order to increase the effectiveness of the study due to the variation in number of deliveries over the year, which may have impacted on the staff workload, the number of classes offered, and the women's satisfaction.

### *Questionnaires*

Data were collected by postal questionnaires which is a feasible method when a large number of respondents is required (Edwards et al., 2002; Larroque et al., 1999). The first questionnaire was sent in early pregnancy and this time point was chosen in order to obtain information about the women's expectations on antenatal care and childbirth overall, with a minimum of exposure to antenatal care. The second time point (two months after birth) was regarded as an appropriate time point to ask questions about memories of childbirth and care received. The women would then have adapted

reasonably well to their new situation, yet still remember details about pregnancy and childbirth. The third time point (one year after birth) was considered appropriate to measure experiences of early parenting and satisfaction with care at the CHC, and the last time point (five years after birth) was adapted to obtain information about the preschool child, and long-term adaptation of the mother.

Questions were not asked about the content or different types of childbirth and parenthood education. Such information could have provided a more comprehensive overview of available options and whether some models were more successful than others in recruiting women who were more disadvantaged from a social and psychological perspective (Papers I, III). The questions were only about attendance or not, as well as the number of class sessions, and the women were only asked about whether the classes had helped them without any further questions about specific details (Paper II). The expectant father/partner also participates in childbirth and parenthood education, and shares the responsibility for the child, but data about the partner was only collected via the women - not the partner himself. Only one question was asked about the partner's attendance in antenatal classes (Paper I), and no question about the partner's participation in postnatal classes, or about the opinions of the partner. In order to compensate for some of these limitations in the KUB study, additional data collection was made by three postal surveys to antenatal care coordinators, child health service coordinators, and to a random sample of 10 per cent of the CHCs. In this way more detailed information about the content of the education classes was obtained.

Physical and emotional health was measured by self-report. This approach does not necessarily underestimate the women's problems (Paper IV), since measures such as "self-rated health" can have a high predictive value (DeSalvo et al., 2006; Idler and Benyamini, 1997; Manderbacka et al., 2003). A problem with our measures may be that the instruments used may be interpreted differently according to cultural background. Ideally, the questionnaires should have been translated into different languages (Polit and Beck, 2004).

### **Misclassification**

If a questionnaire/instrument measures what it is meant to measure, the risk of misclassification is decreased (Andersson, 2006). The instruments used in this thesis are widely used and validated in both Sweden and other countries. Self-report questionnaires and instruments provide standardised and structured information since all participants are asked to answer the same questions, in the same order, and have the same response alternatives to choose from.

Recall bias may be a problem when respondents are asked to remember events or feelings long after the event, leading to overestimation or underestimation of the real experience (Beaglehole et al., 1995). Questions regarding the experience of childbirth and pain relief methods, number of antenatal and CHC visits, attendance at education classes, number of sessions attended, and maternal and child hospital admission during the first year after birth were all asked in retrospect, either at two months or one year after birth. Some of these experiences may be more easily remembered than others. The number of visits is probably more difficult to remember than whether one has attended education classes or been admitted to hospital. This was also the reason why, in Paper IV, we took the opportunity to use information about the number of antenatal visits from the Medical Birth Register (MBR) where such information is available. Even if

many questions by necessity were retrospective, most questions used in this thesis were not; they asked about present status.

Misclassification occurs when a person is coded into an incorrect category. We cannot exclude the possibility that this occurred in Paper I, where both primiparas and multiparas were divided into two groups: attendees at antenatal education now or earlier and non-attendees at any time. Non-attendees were asked to give the main reason for not attending, and one of the given response alternatives was “attended earlier”. However, some women who had attended earlier may have been misclassified as non-attendees because they could have chosen another response alternative than “attended earlier”. This risk was only applied to multiparas, however.

Another possible misclassification was related to the stratification of the women of a non-Swedish speaking background (NSB) into poor and rich countries of origin (Paper IV). We used the variable native languages other than Swedish to define women as being of a non-Swedish speaking background (NSB), and this was done irrespective of country of birth. NSB women were then stratified into native languages from poor or rich country of origin, because health problems in immigrants increase with the economical distance from Sweden (SCB, 2002). All NSB women in the “rich” category were born in a rich country, and 37 were born in Sweden. In the “poor” category, 15 were born in Sweden, and all the others (n=160) were born in a poor country. We cannot exclude the possibility that some women in the poor group came from the rich upper class of their country, and some in the rich group possibly came from a poor family background. We did not ask for detailed information about family income, and could therefore not conduct more detailed analyses. Another limitation with the poor and rich definitions is that cultural traditions are likely to vary within groups.

### **Statistical analyses**

The numbers of antenatal and CHC visits were dichotomised into “few” and “not few”, and the cut-off levels chosen were based on the clinical guidelines for primiparous and multiparous women (Paper I) (NBHW 1991; NBHW 1996:7), as well as analyses of the response distributions, and aimed at obtaining meaningful entities as well as sufficiently large groups to allow comparisons (Paper IV). In the analyses of Paper IV all women with “few” visits constituted of 10-15 per cent of the total sample, which was considered a sufficient number of women for analyses. Furthermore, we chose to study low uptake of care versus normal or high uptake of care, because the focus was on women who avoid antenatal and CHC care, and immigrant women had been shown to make fewer visits (Ny, 2007).

In the analyses of the characteristics of women who said the antenatal classes had not been helpful (Paper II), the response alternatives “No” and “Don’t know” were merged. We examined these women regarding their sociodemographic backgrounds in order to see if the backgrounds differed extensively. Women who responded “No” and “Don’t know” to the question about childbirth did not differ statistically in any of the sociodemographic background variables studied, but women who responded “Don’t know” to the question about parenthood had on average a lower education and were more often smokers than those who responded “No”, which indicated only minor differences between groups.

The multivariate approach of logistic regression was used to examine potential confounding effects of interrelated explanatory variables. Explanatory variables are often related to one another, for instance education level, employment status, and

smoking habits (Campbell, 2004). We performed different regression models including only sociodemographic variables and models including the remaining variables, such as psychosocial pregnancy factors, maternal health, experience of support (Papers I, III), and infant health problems (Paper III). The reasons for doing so was that we were interested in describing women from a sociodemographic point of view, in order to facilitate an easy identification of these women. Combining sociodemographic variables with all the others would have made this more difficult, since psychosocial factors would then possibly have accounted for the majority of variance and perhaps obscured important and easily identifiable social descriptors.

To indicate the precision of the point estimate of Relative Risk (RR) or Odds Ratio (OR), confidence intervals (CI) were calculated, which are a range of values around the point estimate. A wide confidence interval indicates low precision, and a narrow interval indicates high precision. The confidence interval indicates the amount of random error in the estimate (Rothman, 2002). When the sample is small the precision is small, which is shown especially in Paper III in Group B, including the 37 women who did not attend either antenatal or postnatal classes, and the results must be interpreted cautiously. Low statistical power may also explain why factors with a higher Relative Risk in this group, compared with Group A, were not statistically significant.

Furthermore, in Paper III, Group B was included in Group A, despite the possibility that this would dilute possible differences between these two groups. However, the aim of Paper III was to investigate differences between attendees and non-attendees at postnatal classes, and not differences between Groups A and B. The interest in Group B was primarily in relation to the reference group.

### **Confounding factors**

Confounding means that the effect of the exposure is mixed together with the effect of another variable, leading to bias of the point estimate of the effect measure we calculated (Rothman, 2002). Childbirth and parenthood education classes have been the focus in this thesis, and a possible confounding factor in the analyses could be parity, which could correlate with the exposure (attending classes) and outcome of the education classes. Primiparas and multiparas were thereby analysed separately (Papers I-III), and only first-time mothers were included in Paper II, and mainly so in Paper III. This restriction was made in order to control for possible effects of previous pregnancy experiences, and exposure to childbirth and parenthood education classes in a previous pregnancy. The effect from possible confounding factors has also been made by stratification of age, education, native language, and civil status and by multivariate analyses. Also, by stratifying the non-Swedish speaking women into a “rich” and “poor” country of origin in Paper IV, we tried to control for differences in health related to country of birth (SCB, 2002). The limitation of this approach was that power was limited by the small number of women in each group.

A limitation of Paper II was that the comparison between attendees and non-attendees might have been biased by the selection of women into these two groups. Even when controlling for all the known differences observed in Paper I, it cannot be excluded that important differences were overlooked, since attendees at antenatal education are highly selected compared with non-attendees. The optimal design to study the effect of childbirth education would have been a randomised controlled trial, and the findings must therefore be interpreted cautiously. As a result of the findings in Paper II, and the limitations of the study design, a randomised controlled trial of antenatal

education started in Sweden in 2005. The findings will probably be published by the end of 2008 (Bergström et al., 2008).

### **Selection**

A limitation of this study was that non-Swedish speaking women were excluded. Those with other native languages than Swedish, who participated in the study, were probably more integrated into the Swedish society due to their knowledge of the Swedish language, and the majority (58%) had lived in Sweden for more than eight years. Furthermore in Paper IV, the NSB responders to the five-year follow-up may have been even more selected, in a positive way, even if our attrition analyses could not identify any major differences between responders and non-responders to the follow-up questionnaire. As a consequence, the problems identified in women with a poor country of origin in this study were probably underestimated. The study sample also included a slight overrepresentation of women who were married and non-smokers. We cannot exclude the possibility that some midwives might have been less inclined to invite women from poorer social and psychological conditions, believing that they would not consent to participate (Larroque et al., 1999). Others have reported that studies of women's experiences of antenatal education may suffer from systematic errors because of self-selected samples. Women who choose not to attend are often younger, single, and socioeconomically more disadvantaged than those who attend (Cliff and Deery, 1997; Lu et al., 2003; Lumley and Brown, 1993; Michie et al., 1990; Nichols, 1995; Redman et al., 1991; Sturrock and Johnson, 1990).

### **MAIN OUTCOME FINDINGS**

In summary the results from the four Papers show that during pregnancy most first-time mothers attend antenatal education, but have lower attendance at CHC classes. Having a native language other than Swedish was associated with non-attendance at both antenatal and postnatal education. Other characteristics for not attending during pregnancy were low education, unemployment, smoking, unplanned pregnancy, few visits at the antenatal clinic, and counselling a midwife due to fear of childbirth. Additional factors associated with non-attendance during the child's first year were maternal and infant health problems. First-time mothers thought the education had helped to prepare for childbirth, but fewer for early parenthood. One year after childbirth more than half had contact with other class participants. Attendees at antenatal classes used more epidural pain relief during childbirth, compared to non-attendees. Mothers with a non-Swedish speaking background (NSB) from a poor country of origin had more depressive symptoms, parental stress and poor self-rated health, and they reported more psychological and behavioural problems in their five-year old child.

#### **Attendance at childbirth and parenthood education**

About half (51%) of all of the pregnant Swedish speaking women attended childbirth and parenthood education classes during pregnancy, and the majority of these women expected their first baby. Many of the multiparas had attended classes before, but 11 per cent said they were not given the option. These findings suggest that the aim of the maternity services to reach *all* expectant parents in Sweden, as defined in 1978 (SOU 1978:5), was not attained. This conclusion is also supported by the finding that a non-Swedish speaking background (NSB) was associated with non-attendance, showing that women with an immigrant background were less often reached. A similar focus on expectant first-time parents as in this thesis has also been reported

from other Western societies (Lee and Shorten, 1997; Lumley and Brown, 1993), and this may be a deliberate priority when financial resources are limited. However, not reaching women with NSB is an issue, which needs further research. One may ask if this is because of language difficulties and lack of interpreter services, or if it is explained by cultural factors that make these women less interested in childbirth and parenthood education.

Parental education classes after the birth reached about the same proportion of women (52%) as the antenatal classes, but only 78 per cent of the first-time mothers. This last figure is higher than reported in 1994 (73%) and 1995 (71%) (NBHW 1994:19). However, this discrepancy may be explained by the selection of women who participated in this study: fewer women with NSB and smokers, both being variables associated with non-attendance. The lower attendance rate in first-time mothers, compared with antenatal classes, could be explained by more unevenly developed services (DS 1992:102; NBHW 1994:19; DS 1997:6). Also preparation for childbirth may have higher priority among expectant parents than classes after the birth. It may also be easier to come to classes during pregnancy than after birth with a newborn baby.

### *Non-participants during pregnancy*

#### Sociodemographic factors

This thesis shows that women who do not attend antenatal education seem to constitute a more vulnerable group than attendees, by having a lower level of education, being more often unemployed, smokers, and with a NSB. Similarly, studies from Finland, England, the United States, Australia, and New Zealand have reported that non-attendees are younger and less well educated (Cliff and Deery, 1997; Lumley and Brown, 1993; Nichols, 1995; Rautava, 1989; Rautava et al., 1992; Redman et al., 1991; Sturrock and Johnson, 1990), more often unemployed (Lee and Shorten, 1997; Michie et al., 1990; Rautava, 1989), and smokers (Lumley and Brown, 1993; Redman et al., 1991). A Finnish study reported that primiparas with little knowledge about childbirth participated less frequently and needed more health counselling during pregnancy (Rautava, 1989; Rautava et al., 1992). Young women were not overrepresented among non-attendees in general in this thesis, but when primiparas who gave birth before 37 weeks of gestation were included in the analysis, young age was a statistically significant predictor of non-attendance.

It seems like some women who may need extra support during their transition to parenthood avoid the traditional childbirth and parenthood education classes, and this is a great challenge to the maternity services. The classes may not be adapted to these women's needs. Group discussions with other expectant couples who are more vocal and have less problems may raise feelings of embarrassment and inadequacy (Nolan, 1997a).

A British study reported that non-attendees who were single and of working class background thought the childbirth and parenthood education classes were not for people like them and expressed fears of being stigmatised and looked down on (Cliff and Deery, 1997). Another study found that socially disadvantaged women experienced more difficulty in finding out what kind of information they really needed about pregnancy, labour, and delivery (Jacoby, 1988). Women may also avoid antenatal care, and childbirth education, because of perceptions about the attitudes of the personnel. Single and unsupported mothers' perceived health visitors from the

child health centres as judgmental and not interested in the mothers as individuals (Knott and Latter, 1999).

### Fear of childbirth

Another reason for not attending antenatal classes and even antenatal check-ups may be that it triggers women's anxiety about the approaching birth. In this thesis, non-attendance was associated with few antenatal visits (<8) in primiparas, and in multiparas non-attendance was associated with fear of childbirth. A British study reported that non-attending mothers thought that avoiding classes was a way of coping with pregnancy and birth, although the level of fear did not differ between attendees and non-attendees (Michie et al., 1990).

Other factors associated with not attending antenatal classes such as NSB and inconvenient time of classes may be easier to deal with as these reasons are more related to economic and logistic issues. The attendance rate could possibly increase if classes more often were offered in different languages and at different times of the day such as in the evenings.

### *Non-participants after birth*

Women who did not attend parental classes after the birth showed similar characteristics as those who did not attend antenatal classes: low level of education, unemployment, and NSB distinguished this group from the participants. Thus, the pattern was the same: the antenatal and CHC classes did not reach those who may have the greatest need of support.

### Immigrant background

Similarly to the findings in this thesis, other Swedish studies have reported a lower participation rate in women with an immigrant background (Friberg, 2001; Petersson et al., 2003; Petersson et al., 1997; Petersson et al., 2004). As with antenatal classes, communication problems may be the main reason, but differences in attitudes to parental support outside of one's own family may also be important. Foreign-born mothers may value information, advice and support less than Swedish-born mothers (Jansson et al., 1998a), and they may have more doubts about their future contacts with the CHC than Swedish-born mothers (Jansson et al., 2002). In some cultural groups, immigrant mothers were more inclined to seek help at the emergency clinics and the CHC was primarily regarded as a place for infant health surveillance (Jansson, 2000; Jansson et al., 1998b). Attitudes of the nurses at the CHCs could also influence the participation rate, since foreign-born mothers were less often invited to the classes according to one study (Lagerberg et al., 2005).

### Young age and single status

As with antenatal education, group sessions with participants of very diverse backgrounds may not be the optimal model of support for new parents who belong to vulnerable groups. Young age and single status were only statistically significant in the bivariate analyses in this thesis, but these characteristics have been associated with low attendance rates in other studies (Petersson et al., 2003; Petersson et al., 1997), and in this thesis also with not finding antenatal classes helpful to prepare for childbirth. It may, for example, require a lot of strength and confidence to participate in a group with couples if you are a single mother, or to be in a group of experienced parents if you are a teenage mother. Furthermore, the average age when having the first child has increased and, as a consequence, social differences between young and

older mothers may be even more obvious. In these cases, individual support may be more appropriate (Olsson et al., 2004) or separate classes for young and/or single mothers. Such classes are offered in some places in Sweden, but not in others (DS 1997:6). Also, socially less advantaged women seem to favour information from informal sources, such as from their mother, husband, relatives, or friends, rather than from professional sources or from childbirth classes (Jacoby, 1988; Lumley and Brown, 1993).

The Internet has become another source of information about childbirth and parenthood than education classes organised by the antenatal and CH services. It is also a forum for discussions and contacts between parents. One study showed that such discussion groups were appreciated by single parents and by less educated parents (Sarkadi and Bremberg, 2005). These parents used the website as their primary source for advice and information, had regular contact with other parents, and found other parents to be better resources than professional experts (Sarkadi, 2003). Maternal hospital admissions during the child's first year, as well as infant health problems, such as functional or chronic problems, were also associated with non-attendance at postnatal education. One explanation of this finding could be that health problems may make it more difficult to go from home and join classes. This may also be a group of parents that may benefit more from individual rather than group support.

#### *Non-participants neither during pregnancy nor after birth*

The small group of primiparas and first-time mothers (3%) who did not participate in classes either during pregnancy or after the birth constituted an even more disadvantaged group. However, lack of statistical power made it difficult to draw conclusions about the association between non-attendance and other variables than the sociodemographic. The findings suggest that these women, besides having a difficult social situation, for instance by being unemployed or having an unwanted pregnancy, also had emotional problems.

### **Outcomes of childbirth and parenthood education**

#### *Women's opinion*

The majority of first-time mothers (74%) stated that antenatal education helped prepare them for childbirth, but only a minority (40%) said it helped prepare them for parenthood. Historically, antenatal education has been preparation for labour and birth, but this focus was broadened by the Swedish guidelines in 1978 (SOU 1978:5) in order to include topics related to adaptation to early parenthood. When the data collection regarding the content of antenatal education was conducted, a few years after the time of data collection in the KUB study, about equal time was spent on issues related to childbirth as to parenthood in antenatal classes run by the Swedish public antenatal services.

When expecting a first baby, the pending birth is the greatest challenge and concern for most women, and women may find it difficult to see beyond this event (Svensson et al., 2007a; Wiener and Rogers, 2008). Therefore, they may be more receptive to information about labour than to postpartum and parental issues (Renkert and Nutbeam, 2001; Sullivan, 1993). Studies have also reported that women seem most concerned about how to cope with labour and birth (Rydén, 1997). In Australian studies, primiparous women were most satisfied with the information about labour and delivery (Handfield and Bell, 1995; Redman et al., 1991; Schneider, 2002), and in studies from the United Kingdom women requested more information about childbirth, such as



coping strategies (Spiby et al., 1999) and medical complications (Cliff and Deery, 1997; Leeseberg Stamler, 1998).

Getting the right balance between childbirth and postnatal issues may not be easy, since women's preferences during pregnancy and after the birth are affected by their needs at the time. It is not until after the birth, when encountered with the new challenges of parenthood, that women may realise that it would have been helpful to have discussed parental issues during pregnancy (Wiener and Rogers, 2008). Studies have shown that first-time parents would have preferred more postnatal topics when asked after the birth compared with their wishes during pregnancy (Nolan, 1997b; Schneider, 2001). Studies have reported less satisfaction after the birth with the time spent in antenatal education on postnatal issues, such as preparation for life with a newborn (Cliff and Deery, 1997; Handfield and Bell, 1995; Ho and Holroyd, 2002; Lumley and Brown, 1993; Nolan, 1997b; O'Meara, 1993; Svensson et al., 2006), information about breastfeeding problems (Britton, 1998; Handfield and Bell, 1995; Ho and Holroyd, 2002), and relationship issues (Matthey et al., 2002). One study reported that parents found information about infant care and infant feeding more important than the educators did (Beger and Beaman, 1996). Parr (Parr, 1998) compared parents who participated in childbirth and parent-infant preparation classes with parents who only attended childbirth classes. Parents in the first group had better outcomes regarding confidence as parents, sense of well-being, and parent-infant relationships. Furthermore, they found the parent-infant support programmes more helpful for adjustment to parenthood than the childbirth education classes.

#### *Circle of contacts*

Another aim of childbirth and parenthood education is to increase parents' circle of contacts (SOU 1978:5). Two months after the birth, 39 per cent of the women in this thesis had contact with other participants in the antenatal class, and this figure increased to 58 per cent one year after birth. Women who attended five or more sessions were more likely still to be in contact with other participants one year after the birth. This suggests that the number of sessions was important for continued contact. Other studies have pointed at the importance of connecting new parents. To get new contacts was appreciated by parents who attended antenatal and postnatal education in Sweden (Berntsson et al., 1993; Rydén, 1997). British studies have also noted that the chance to meet other expectant parents was one of the major benefits from classes (Cliff and Deery, 1997) and women had hoped to make supportive friendships during the classes (Nolan, 1997b). After childbirth, parental education programmes have also been shown to increase the parents' social network (Fielden and Gallagher, 2008; Friberg, 2001). Our finding that participants in antenatal education continued to meet other parents in the group long after birth suggests that antenatal education has a positive impact on new parents' social network. One condition, though, seems to be a sufficient number of sessions.

#### *Experience of childbirth*

In contrast to the finding that most women said antenatal education was helpful, no statistical differences were found regarding experience of labour pain, mode of delivery or satisfaction with the childbirth experience between participants and non-participants, suggesting that the education had little or no effect on these outcomes. The fact that women who attended the classes used even more pain relief during labour than non-attendees suggests that the classes, by exposing women to information about different methods of pain relief, increased their use rather than

helped women to cope with pain without pain relief. The reported effect of antenatal education on the use of pain relief during labour varies, some have reported that attendees use more pain relief (Lumley and Brown, 1993), others that they use less (Hetherington, 1990; Lumley and Brown, 1993), and some did not find any difference (Nichols, 1995; Quereshi and Schofield, 1996; Redman et al., 1991; Sturrock and Johnson, 1990). An absence of association between antenatal education and the women's overall satisfaction with childbirth is supported by one previous study, where risk factors for remembering childbirth as a negative experience at one year after the birth were investigated (Waldenström et al., 2004). However, one Italian study reported that antenatal education was associated with satisfaction with childbirth if women had the opportunity to use the techniques taught in classes (Spinelli et al., 2003), and British attendees found the delivery less distressing than non-attendees, but not more fulfilling or difficult (Salmon and Drew, 1992).

Our seemingly contradictory findings may have two major explanations. One is that childbirth education does not prepare women for childbirth. The fact that a majority stated that it was helpful could then be explained by the "what is must be best" phenomenon. That is, people tend to justify their actions when asked in retrospect (van Teijlingen et al., 2003). The other explanation is that childbirth education does prepare women for childbirth, not necessarily by reducing the use of pain relief, but in other ways that were not captured by the questions about memory of pain and overall experience of childbirth, but only by the question about women's own views about helpfulness. The fact that women's appreciation increased with the number of class sessions, at least up to six sessions, suggests that they may have become more confident the more they were exposed to antenatal education.

### *Experience of parenthood*

Similarly to the first aim of antenatal education (preparation for childbirth), we found a discrepancy between many women's views that antenatal education had helped prepare them for early parenthood on the one hand, and no statistically significant differences in duration of breastfeeding and the women's assessment of their own parental skills on the other hand. However, this discrepancy was not as obvious as in the first case, since only a minority stated that the classes had helped prepare them for parenthood. A lack of effect of childbirth education on postpartum issues is supported by other studies (Gagnon and Sandall, 2007; Handfield and Bell, 1995; Nichols, 1995). However, a recent trial conducted in Australia aimed to determine whether a new antenatal education programme with increased parenting content could improve parenting outcomes in new mothers, compared with the regular antenatal education programme (Svensson et al., 2007b). This randomised controlled trial found improved maternal self-efficacy and parenting knowledge in the intervention group.

The interpretation of our findings may be the same as the one previously discussed; either the antenatal education did not have any effect on early parenthood or it did have some effect that we were unable to measure (except by showing that 40 percent said it was helpful).

### **Women of non-Swedish speaking background**

The uptake of outpatient care during pregnancy and at the CHC after the birth, education classes as well as outpatient visits, was lower in women with a NSB compared with a reference group of women with a Swedish speaking background (SB). However, stratification by country of family origin showed that a poor country of origin

was only associated with low attendance at education classes, not with fewer clinic visits. A rich country of origin, on the other hand, was associated with fewer clinic visits, but attendance at parental classes after the birth did not differ from the SB women.

The NSB women in this study may have been more integrated into the Swedish society than others from their country of origin, as previously suggested, because they were able to communicate in the Swedish language well enough to complete the questionnaires. Still, the lower attendance at education classes could be explained by cultural differences. Today's antenatal and postnatal classes in Sweden have a strong focus on psychological support, and women with a family origin from a poor country did not seem to expect this form of support from the maternity services, when asked in early pregnancy. For some, expectations of emotional support may be limited to the private family sphere (Ny et al., 2007). Also, discussion groups including both women and men may not be a culturally appropriate option for some (Ny et al., 2007). A pilot study reported that non-Swedish speaking pregnant women were interested in participating in antenatal education classes once the aim was explained to them, and if the classes were given in their own language, and with women and men separated (Fäldth, 2004). In another study parents with an immigrant background stressed the value of participating in groups of mostly Swedish-born parents, but this was also a selected group able to complete a questionnaire in Swedish (Bremberg, 2004; Olsson et al., 2004).

Our finding that a poor country of origin was not associated with fewer clinic visits does not necessarily mean that the use of maternity services in these women was the same as by native Swedes. Total uptake of care may have been even higher since recent studies reported that women with low education and those who are foreign born in Sweden were more inclined to seek acute hospital care (NBHW 2008; Ny, 2007), and depressive symptoms after childbirth were associated with more visits at the CHC (Örtenstrand and Waldenström, 2005). However, the total uptake of maternity care was not investigated in this study, only care offered by the antenatal and the CH services.

The lower uptake of care in NSB women with a rich country of origin was probably not explained by cultural diversity to the same extent. Many of these women had a Finnish family background (n=57), and these women were more often smokers and less educated. They may have avoided clinic visits and antenatal education classes for this reason. When assessing the different components of antenatal care, "checking one's own health" was rated as less important. However, the group of NSB women originating from rich countries was not homogeneous. Highly educated women were also over-represented which may explain why attendance at postnatal education classes was similar to the reference group. Parental groups after the birth are more popular among highly educated women (Bremberg, 2004).

The most striking finding was low ratings of psychological health in women originating from a poor country. The EPDS scores were above the cut-off used to indicate signs of depression at all three time periods. High rates of depressive symptoms have also been reported from other countries, for instance Canada, when comparing immigrants, asylum seekers and refugees with native born (Stewart et al., 2008). The reliability and validity of the EPDS have been tested in non-western cultures, but the results are inconclusive (Hanlon et al., 2008; Lee et al., 1998; Montazeri et al., 2007; Pollock et al., 2006). The cut-off scores can be culturally sensitive (Halbreich and Karkun, 2006), and because EPDS is designed in western cultures we cannot exclude the possibility

that the meaning and interpretation of the included items may have differed, depending on the women's cultural background (Laungani, 2000). However, our finding that self-rated health was lower supports the interpretation that these women were at a much higher risk of suffering from emotional problems. Self-rated health, which is a predictor of future health and mortality (DeSalvo et al., 2006; Idler and Benyamini, 1997; Manderbacka et al., 2003; Manor et al., 2001; Miilunpalo et al., 1997), is not only related to physical problems, but also to depressive symptoms (Schytt and Waldenström, 2007), ethnic origin (2002; Iglesias et al., 2003; Petrou et al., 2007; Wiking et al., 2004), low income (Petrou et al., 2007), and lack of support (Rodriguez et al., 1999; Schytt and Waldenström, 2007). These mothers also reported high parental stress, an outcome which has been linked to a poor psychosocial situation (Östberg, 1998), depressive symptoms (Östberg, 1999), and insensitivity to the child's signals (Östberg, 1998).

The NSB women with a family background from a poor country were obviously reached by the antenatal and CH services, but one may question if they received anything but physical check-ups. Because these women did not expect psychological support from the maternity services, they may not have expressed their emotional needs.

The NSB mothers rated their children's overall health as good as did the SB mothers in the reference group, both when their children were one year and five years old. When responding to a question about overall health the mothers most likely referred to their children's physical health, since only small differences were found between the groups in relation to specific physical symptoms, but major differences in relation to psychological problems. Again, these problems were mainly over-represented in children with a family background from a poor country.

A major challenge for the child health services is to reach the children at risk of developing behavioural problems (Sundelin and Håkansson, 2000). Our data do not allow any conclusions about when the mothers of a poor country origin observed behavioural problems in their children, only that such problems were apparent at the age of five years. However, our data on maternal emotional well-being suggests that these mothers had been under stress over a long period of time, from early pregnancy up to five years after the birth. Many of them also seemed to lack social support because they were single or unemployed. Identifying these mothers during pregnancy, and also at the CHC after the birth (Massoudi et al., 2007), in order to offer psychological and social support, could be one way of providing indirect support also to their children (Barlow et al., 2002; Barlow et al., 2005; Dennis and Creedy, 2004). It is well established that maternal mental health is associated with behavioural problems in children (Civic and Holt, 2000; Josefsson and Sydsjö, 2007; Luoma et al., 2001; Murray et al., 1999), as is high parental stress (Hwang and Wickberg, 2001; Örténstrand, 2005).

## GENERAL CONCLUSIONS

This thesis showed that childbirth and parenthood education reaches a large majority of Swedish speaking primiparous women (93%), but slightly fewer after the birth (78%). The majority of multiparas do not attend antenatal education (81%) or parental education after the birth (69%). The total national attendance rates are somewhat lower, as non-Swedish speaking women were not included in the study sample.

Women who are not reached by antenatal education and parental education after the birth constitute a less privileged group in terms of social circumstances as well as physical and emotional well-being. These women may benefit from other forms of support during pregnancy and after the birth, such as individual support or group education with participants sharing similar experiences, such as single parents or persons with the same ethnic background. However, the effects of these forms of support need further evaluation.

The current form of antenatal education may not be effective by increasing first-time mothers' satisfaction with the experience of childbirth or assessment of parental skills. Today's form of antenatal education may stimulate the use of epidural analgesia, rather than helping women to cope with labour pain. In spite of this, women may find antenatal education helpful as preparation for childbirth, but less so as preparation for early parenthood. Antenatal education can expand the mothers' social network if the number of sessions is more than five.

Women of a non-Swedish speaking background with a family origin from a poor country are under greater stress during pregnancy and the child's first years, compared with women with a Swedish speaking background. These women's children may also have more psychological and behavioural problems at the age of five years. These women were reached by the visiting schedule of the antenatal and child health services, but they did not seem to be aware of, or expect, psychological support.

## CLINICAL IMPLICATIONS AND FUTURE RESEARCH

This thesis suggests that the current form of childbirth and parenthood education during pregnancy does not reach its goal in terms of improving women's satisfaction with the childbirth experience or assessment of parenting skills. It may still be helpful as preparation for childbirth, according to women's own evaluation, suggesting that this study did not include sufficiently sensitive measures to capture the reasons behind their evaluation. The change in focus of antenatal education in Sweden, from preparation for childbirth to preparation for both childbirth and early parenthood, does not seem to have been successful, since parental skills were not improved and only a minority of the mothers said the education had helped them prepare for parenting. Possibly, the content regarding parenthood issues has been too diffuse, and educators may have put emphasis on different aspects, making it difficult to choose the relevant outcome measures in a quantitative study like the KUB study. The most important benefit of antenatal education according to this thesis is the stimulation of contacts between participants, which lasted a long time after childbirth. Such contacts may provide important support in the new role as a parent.

The design of this thesis was observational, and definite conclusions about cause and effect can therefore not be drawn. However, the observational findings suggest that further evaluation of antenatal education in Sweden is important in order to establish whether it is effective or not in reaching its goals, and also to establish which goals are realistic to obtain. Also, economic evaluations would be important considering that antenatal education is an important component of the routine antenatal care programme in Sweden, covering approximately 10 per cent of the midwives' workload (NBHW 1996:7).

As a consequence of this thesis, a randomised controlled trial comparing the standard form of antenatal education with a new model, which focuses mainly on preparation for childbirth including hands-on training in breathing and relaxation techniques to cope with labour pains, has been conducted (Bergström et al., 2008). Analyses of data are ongoing. Additional research into what is taught and discussed in relation to preparation for parenthood would also be of great value. What do educators want to achieve, and what do expectant parents expect? Such studies would be exploratory in nature and would preferably have a qualitative design.

Effects of the postnatal education provided by the child health centres were not investigated in this thesis, and here the outcome measures may be even more difficult to define than in relation to antenatal education, since the goal is wider. Previous research suggests that postnatal education programmes with a specific focus may be effective, but more general programmes as the one offered by the Swedish child health services are not sufficiently evaluated. More research is therefore needed to establish the cost effectiveness and public health relevance of current programmes (Olds et al., 2007).

This thesis identifies the same problem as shown in studies from other countries: the women who seem most vulnerable are not reached by antenatal and postnatal education. Group education may not be the optimal format for these women. A more individualised approach and possibly also education groups with a special focus seem more appropriate. The health care providers should pay special attention to women

with a family background from a poor country, low educated women, young women, women who are depressed and women who fear childbirth. This is a challenge for midwives, nurses and doctors who often come from another background, and may have difficulties interpreting the needs of these women. One relatively simple measure is to offer appropriate interpreter services to non-Swedish speaking women, and also to inform these women about the fact that maternity and child health services in Sweden do not only offer physical health surveillance but also psychological support. Screening for postpartum depression by the EPDS (Massoudi et al., 2007; Wickberg, 2000) has been introduced in about half of the child health centres, which is a way of identifying women who may need emotional support. Regarding fear of childbirth, Sweden is in the forefront by having established counselling services for these women in most parts of the country. Additional research focussing on the needs of the women just mentioned could provide more information about their own views and expectations on the maternity and child health services.

# SUMMARY IN SWEDISH - POPULÄRVETENSKAPLIG SAMMANFATTNING

Avhandlingens titel är *"Kvinnor som inte deltar i föräldrautbildning under graviditeten eller under barnets första år"*.

Att få barn är en stor händelse i livet. Graviditeten är en period av både fysiska och psykiska förändringar och förlossningen är något som både kvinnor och män kan se fram emot och ibland också känna obehag inför. Graviditeten innebär också en psykologisk förberedelse inför ett liv med ett barn. Tidigare förberedde sig kvinnor inför förlossning och föräldraskap genom att ta del av erfarenheter från sina mödrar eller andra familjemedlemmar. Förlossningsförberedelse i mer organiserad form har funnits i Sverige under flera decennier, och utvecklingen av innehållet har gått från mödragympastik, information om förlossningens förlopp, andning och avslappningsträning till en bredare ansats där både fysiska och psykologiska aspekter av såväl födande som föräldraskap diskuteras, och som riktar sig till både den gravida kvinnan och hennes partner.

Nationella riktlinjer formulerades 1980 då Sverige startade föräldrautbildning för alla blivande och nyblivna föräldrar inom mödra- och barnhälsovården. Syftet var att ge stöd inför förlossning och föräldraskap genom att öka kunskaper och stimulera kontakt mellan blivande föräldrar. Sedan dess har innehållet och strukturen förändrats och kan skilja sig mellan olika kliniker och utbildare. Inom mödrahälsovården har man uppgett att närmare 100 procent av förstagsångsföräldrarna nås av utbildningen, men färre nås efter barnets födelse av barnhälsovårdens föräldrautbildning. Statliga utredningar har under åren eftersökt utvärderingar av effekterna av föräldrautbildningen. Man har visat att deltagandet är lägre bland kvinnor med utländsk bakgrund, men det har varit svårt att studera effekter av föräldrautbildningen.

Den här avhandlingens studiepopulation bestod av cirka 3.000 svensktalande kvinnor från hela landet som svarade på fyra enkäter: under tidig graviditet och två månader, ett år och fem år efter barnets födelse. Kvinnorna blev tillfrågade om de ville delta i studien vid sitt första inskrivningsbesök hos barnmorskan i mödrahälsovården, under tre veckor spridda över ett år (maj, september 1999 och januari 2000). Nästan alla 608 mödravårdscentraler i Sverige (97.5 %) deltog i rekryteringen. Enligt det medicinska födelseregistret var ungefär 4.600 kvinnor möjliga att rekrytera och av dessa tackade 3.455 ja till att medverka. Det första formuläret besvarades av 3.061 kvinnor, det andra av 2.762 och det tredje av 2.563. Det fjärde formuläret som skickades ut när barnet var fem år besvarades av 1.721 kvinnor.

Två av avhandlingens studier handlar om deltagande i föräldrautbildning, under graviditeten respektive efter barnets födelse, och vad som utmärker kvinnor som inte deltar. Resultatet visade att flertalet kvinnor som väntar sitt första barn (93 %) gick föräldrautbildning, men färre deltog i barnhälsovårdens föräldrautbildning efter barnets födelse (78 %). Bland omfödorskor deltog endast 19 procent under graviditeten och 31 procent under barnets första år. Först- och omfödorskor som hade ett annat modersmål



än svenska hade två gånger högre risk att inte delta i föräldrautbildning, vare sig under graviditeten eller under barnets första år, jämfört med kvinnor som hade svenska som modersmål. En initialt önskad graviditet ökade också risken för att inte delta. Rökning under graviditeten och arbetslöshet hade likaså samband med att inte delta under graviditeten bland förstföderskor. Bland omföderskor var hög ålder (>35 år), låg utbildning och förlösningsrädsla ytterligare faktorer som hade samband med icke-deltagande. Sjukdom hos mor och barn minskade också deltagandet i föräldrautbildning efter barnets födelse.

I en annan av avhandlingens studier jämfördes förstföderskor som deltog i föräldrautbildning under graviditeten med dem som inte deltog beträffande användning av smärtlindring under förlossningen, minnet av förlossningssmärta, förlossningssätt, förlossningsupplevelse, amningslängd, samt uppfattning av föräldraskap. Deltagarna tillfrågades också om de hade fått någon hjälp av utbildningen inför förlossningen, tidigt föräldraskap och om de hade fortsatt kontakt med deltagare. Olikheter mellan deltagares och icke-deltagares bakgrund kontrollerades för med statistisk metodik.

Resultaten visade att 74 procent av deltagarna tyckte att föräldrautbildningen hade hjälpt dem inför förlossningen, och 40 procent att den varit till hjälp inför tidigt föräldraskap. Ett år efter barnets födelse hade 58 procent av kvinnorna kontakt med någon av deltagarna. Chansen att tycka att utbildningen hade hjälpt och att ha kontakt med andra deltagare även efter barnets födelse ökade kontinuerligt med antalet utbildningstillfällen och var som störst efter att ha deltagit sex gånger. Inga skillnader observerades mellan deltagare och icke-deltagare beträffande förlossningssätt, minnet av förlossningssmärtan, förlossningsupplevelsen eller amningens längd. Däremot använde deltagarna mer epiduralbedövning under förlossningen. Förstföderskor tyckte i mindre utsträckning att utbildningen hade hjälpt dem inför förlossningen om de var unga, ensamstående, hade låg utbildning, bodde i en liten stad, eller var rökare.

I den sista studien i avhandlingen följdes en specifik grupp av kvinnor, nämligen kvinnor med annat modersmål än svenska, från graviditeten tills barnet var fem år. Dessa kvinnor jämfördes med kvinnor med svenska som modersmål beträffande antal besök i mödra- och barnhälsovården, moderns fysiska och psykiska hälsa, föräldrastress samt barnets fysiska och psykiska hälsa. Kvinnorna med annat modersmål än svenska delades in i två grupper beroende på om deras modersmål härrörde från ett fattigt eller ett rikt land.

Kvinnor med annat modersmål än svenska med ursprung från ett fattigt land skiljde sig inte från kvinnorna med svenska som modersmål vad gällde antal mödra- och barnhälsovårdsbesök, men de deltog i mindre utsträckning i föräldrautbildning under graviditeten och under barnets första år. De hade fler depressiva symtom, högre föräldrastress och sämre självskattad hälsa och rapporterade fler beteendeproblem hos sina femåringar. Kvinnor med ett annat modersmål än svenska med ursprung från ett rikt land skiljde sig inte från kvinnor med svenska som modersmål vad gällde moderns och barnets hälsa, men de hade färre mödra- och barnhälsovårdsbesök, och de deltog i mindre utsträckning i föräldrautbildning under graviditeten.

Sammanfattningsvis var deltagande i föräldrautbildning högt bland förstföderskor i Sverige under perioden 1999-2000, speciellt under graviditeten. Det totala nationella deltagandet är sannolikt något lägre än vad denna avhandling visar eftersom kvinnor som inte behärskade svenska språket tillräckligt för att besvara enkäterna inte inkluderades.

De kvinnor som inte nås av föräldrautbildning under graviditeten och efter barnets födelse utgör en mer utsatt grupp vad gäller sociala, fysiska och känslomässiga omständigheter. Dessa kvinnor kan gynnas av andra former av stöd i föräldraskapet såsom individuellt stöd eller gruppträffar med deltagare med liknande bakgrund eller situation. Men speciella grupper för invandrare, unga föräldrar eller ensamstående föräldrar behöver likaså utvärderas.

Föräldrautbildning under graviditeten verkade sakna effekt på upplevelsen av förlossningen och det tidigare föräldraskapet. Föräldrautbildning verkade stimulera till användning av epiduralbedövning snarare än att hjälpa kvinnor att själva klara av förlossningssmärtan. Trots dessa resultat verkade kvinnor tycka att utbildningen var till hjälp inför förlossningen och i viss mån inför det tidiga föräldraskapet. Föräldrautbildningen ökade mammans sociala nätverk om hon deltog på fler än fem utbildningstillfällen.

Kvinnor med ett annat modersmål än svenska från ett fattigt land visade sig leva under större stress under graviditeten och under barnets första år, jämfört med kvinnor med svenska som modersmål. Deras barn kunde också ha mer psykologiska och beteendemässiga problem vid fem års ålder. Dessa kvinnor nåddes av mödra- och barnhälsovårdens besöksprogram men de verkade inte, eller förväntade sig inte, få något känslomässigt stöd. För att underlätta för kvinnor med annat modersmål än svenska bör tolk erbjudas vid behov och kvinnorna bör informeras om att mödra- och barnhälsovården också kan erbjuda känslomässigt stöd. Screening med EPDS kan vara ett sätt att identifiera kvinnor som mår psykiskt dåligt. Ytterligare forskning behövs om de utsatta kvinnornas egen syn och förväntningar på mödra- och barnhälsovården.

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