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ANNE-MARIE WANGEL

MENTAL ILL-HEALTH IN CHILDBEARING WOMEN

Markers and risk factors

MALMÖ UNIVERSITY

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Malmö University
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Malmö University 2012
Faculty of Health and Society

Life is what happens while you are busy making other plans

John Lennon

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Abbreviations

Bidens	Belgium, Iceland, Denmark, Estonia, Norway, Sweden
BMI	Body Mass Index = weight (kg) / height² (m)
CI	Confidence Interval
CS	Cesarean section
Elective	CS planned before delivery of a child
Emergency	CS executed within hours of delivery of a child
EMR	Electronic Medical Records
EDS, EPDS	Edinburgh Depression Scale: Edinburgh Postnatal Depression Scale
DSM-IV	Diagnostics Statistical Manual, version IV, 1994
HPA	Hypothalamus, pituitary, and adrenal cortex
ICD-10	International Classification of Diseases, version 10, 1997
KIKA	Perinatal EMR system of Scania University Hospital (SUS) Malmö (*Kvinnoklinikens Informations och Kvalitets Avdelning*)
NorAQ	Nordic Abuse Questionnaire
OR, aOR	Odds ratios: adjusted OR
PTS, PTSD	Posttraumatic stress: posttraumatic stress disorder

Terminology

Birth: childbirth, delivery, type or mode of birth
Labor: parturition, giving birth
Maternal: from *Mater* (Latin), relating to becoming a mother
Natal: from *Nasci* (Latin) to be born, refers to the baby
Parity: condition of a woman in respect to her having born viable babies
Parous: having borne one or more live infants, number of previously born
Nulliparous: no previous time of giving birth, no child born
Primiparous: one previous birth
Multiparous: more than one previous birth
Grand parous: more than 3 births
Antenatal: before birth
Antepartum: before birth
Prenatal: before birth
Perinatal: around the time of birth
Peripartum: the time around giving birth
Postnatal: the first 6 weeks of life
Postpartum: the first 6 weeks after giving birth
Trimester: a period of three months

ABSTRACT

The awareness of mental health problems in women of reproductive age has increased worldwide in the recent decades. Much research has focused on symptoms of depression in women and the risk of postpartum depression, as a factor of attachment problems and adverse health effects on the newborn and growing child. Less research has explored risk factors for mental problems during pregnancy and childbirth. Pregnancy can be challenging to a woman's mental health as posttraumatic stress, fear of childbirth as well as past and present abuse can surface to influence the perinatal period and delivery outcome. Cesarean sections (CS), which also may be linked to mental health problems, have tripled in Sweden over the past 30 years.

The aim of this thesis was to investigate mental ill-health identified through markers in pregnancy records; mental disorders associated with different modes of delivery; and analyze risk factors associated with mental health status among childbearing women in Malmö, Sweden.

Study 1 investigated the documentation provided in electronic medical records (EMR) of mental health status in 17,443 childbearing women who gave birth at Malmö University Hospital between 2001 and 2006. By performing a free-text search of the perinatal registry system (KIKA), we identified the occurrence of ten selected markers of mental ill-health among pregnant women. Associations with mode of delivery was analyzed in 6467 first-time mothers presenting at term with a singleton cephalic lie baby for vaginal delivery. The result showed that the markers *stress*, *sleep,* and *worry* predicted a significantly increased adjusted risk for emergency CS in first-time mothers, compared with having a spontaneous vaginal delivery. Study 2 linked the national Inpatient Care Register with records from the KIKA-EMR system to investigate types of inpatient care, frequency of psychiatric diagnoses prior to childbirth, and risk of CS. Among the 17,443 women, 39.3% had received

inpatient care within 5 years of index birth, 27.3% had had obstetric care, 10.1% somatic care, and 1.9% (333) psychiatric inpatient care. Paper II showed that women with a history of psychiatric inpatient care and those identified from pregnancy records as having markers of mental ill-health were associated with increased adjusted risks of elective and emergency CS. Both Papers I and II suggest that identifying a woman's mental health status in pregnancy may predict and perhaps prevent CS, especially emergency CS in first-time mothers.

The results of Papers III and IV refer to questionnaire data on pregnant women from a Swedish cohort in Malmö as part of the six-country Bidens study (Belgium, Iceland, Denmark, Estonia, Norway, and Sweden). Mother tongue was indicated by 1003 women, showing 78.6% to be native Swedish speakers and 21.4% non-native Swedish speakers. We identified mental health status and analyzed risk factors for symptoms of depression and posttraumatic stress. In all, 13.8% reported moderate depressive symptoms at seven points or above on the short version of the Edinburgh Depression Scale. The score was significantly higher among non-native Swedish-speaking women. Posttraumatic stress was defined as having at least one of three symptoms. Multivariate modeling, including socioeconomic factors, resulted in increased adjusted odds ratios for symptoms of depression and posttraumatic stress in non-native Swedish speakers, compared to native speakers. For Paper IV the same cohort was used to explore experiences of emotional, physical, and sexual abuse, and associations with depressive and posttraumatic stress symptoms. The prevalence of lifetime and recent abuse was similar between the two groups of Swedish-speaking women. A history of abuse was strongly associated with symptoms of depression and posttraumatic stress in pregnancy and was not explained by age, years of education, or being in financial distress. Assessing the language background and history of three types of abuse might predict symptoms of poor mental health in pregnant women.

Identifying indicators of a woman's mental ill-health and assessing her mental health status in pregnancy is an important objective for perinatal health care, as it provides opportunities for early detection and intervention. Preventing mental ill-health in childbearing women would greatly reduce costs to the individual and to society.

ORIGINAL PAPERS

This thesis is based on the following papers referred to in the text by their Roman numerals. The papers have been reprinted with the kind permission of the publishers.

I. Wangel A-M, Molin J, Östman M, Jernström H. Emergency cesarean sections can be predicted by markers for stress, worry, and sleep disturbances in first-time mothers. *Acta Obstetricia et Gynecologica Scandinavica* 2011; 90: 238–44.

II. Wangel A-M, Molin J, Moghaddassi M, Östman M. Prior psychiatric inpatient care and risk of cesarean sections – a registry study. *Journal of Psychosomatic Obstetrics and Gynecology* 2011; 34 (4): 189–97.

III. Wangel A-M, Schei B, Ryding EL, Östman M. Mental health status in pregnancy among native and non-native Swedish speaking women: A Bidens study. *Acta Obstetricia et Gynecologica Scandinavica* DOI: 10.1111/j.1600-0412.2012.01512.x

IV. Wangel A-M, Ryding EL, Schei B, Östman M. Emotional, physical, and sexual abuse and associations with depressive and posttraumatic stress symptoms in a multiethnic pregnant population: A Bidens study. (In manuscript).

Contributions to the publications listed above: AM Wangel initiated the design, planned and developed the methods, collated data, performed statistical analyses and wrote the reports with support from the co-authors.

INTRODUCTION

The time frame for this dissertation spans over sixteen years. The information on mental health and lifestyle factors relates to childbearing women in Sweden between 2001 and 2006, and in the year 2008, but includes data going back to 1996. In this era personal computers and the development of internet communication became available and connected people globally. Sweden was in the aftermath of a recession and the unemployment rate was unprecedented. The population of Malmö was growing by national and international migration and in addition was changing due to the influx of refugees or asylum seekers from various cultures. At the same time the city was being transformed from an industrial center to one concentrating on communication technology, education, and services.

The Swedish National Public Health report of 2005 included for the first time a special chapter on mental ill-health (*psykisk ohälsa*) and increased levels of poor mental health alike international studies were reported. The mental health status of women was particularly bleak, as every third woman reportedly had felt depressed or became ill with major depression at some point in her life. High levels of stress, distress, sleeping problems, and anxiety were reported, especially among younger women and those of childbearing age. In its broadest meaning 'health' as a concept is the opposite of being ill or sick. Colloquially health is expressed as feeling well. The term mental ill-health, used in the sense of not feeling well, represents a status of less than optimum health and is a prelude to measurable mental health problems.

People born in the 1970s, 1980s, 1990s, referred to in Swedish as the X-Y-Z generations, were coming of age and starting families. Individuals of these generations are said to have different views of life, urbanization, and globalization, and more market-oriented attitudes. The health care system was also changing: patients who had been passive became active consumers who

expected and even demanded freedom of choice in many areas. The right to have a planned cesarean section for cosmetic or personal reasons or as 'a right of postmodern society' was debated, in national media. The phenomenon cesarean section (CS) on demand appeared, and more planned CSs were conducted due to psychosocial reasons. Mental problems and the total CS rate in Sweden also increased, going from 5% in 1973 to 18% by 2006. Since one out of every three or four women who have had a CS will have a second, it becomes important to determine whether CSs are associated with mental ill-health in pregnancy, especially when expectations and composition of the childbearing population are changing.

I am, by training a registered nurse and licensed midwife, and have a Master of Science in Public Health. An opportunity was presented in the fall of 2005 to submit a Ph.D. proposal in the multidisciplinary subject Health and Society and to study mental health issues. It became natural to me to combine my educational background and research interests by investigating mental health status in childbearing women together with risk factors for pregnancy and delivery. As my first research question I proposed to investigate whether the mental health status of a pregnant woman was documented in perinatal records and could be assessed through the electronic medical records system. Second, does the antenatal care system identify a woman's psychiatric history and, if so, is it associated with mode of delivery? The third question related to assessing the mental health status in pregnant women. This was made possible because the Bidens study chose Malmö to be its Swedish site in March 2007. The project also gave me the opportunity of participating in an international research group, developing a questionnaire, and planning and implementing a cross-sectional study of pregnant women in a multicultural clinical setting. In addition to my research studies, since 2006 I have worked for brief periods as a midwife at public antenatal clinics in Malmö. In that capacity I have had the occasion to meet and learn from pregnant women in contemporary society. This has enriched my understanding of mental ill-health in pregnancy.

BACKGROUND

The following pages are intended to introduce the contextual setting of the topic, present background data on mental disorders, describe relevant facts on perinatal health, define mental ill-health, and cite some Swedish dissertations related to this thesis.

Setting and context

The population of Sweden surpassed 9.5 million on 3 May 2012. The majority of these people live in urban areas. The total fertility rate has increased from 2001 to 2011, when it reached 1.94, and the mean age of first-time mothers and fathers was 28.9 and 31.5, respectively (www.scb.se). The political authority of the publically-funded health care system is vested in the County Council and seated by elected party representatives. Their political decisions are implemented by civil servants. Sweden has twenty councils that compose six administrative and geographical regions, each with a university hospital. In the case of this thesis the data comes from childbearing women who delivered at Malmö University Hospital in southern Sweden between 2001 and 2006, and a second group of pregnant women at antenatal clinics in Malmö in 2008.

Multicultural context

Municipal data shows Malmö as the third largest city in Sweden. It has grown in population for 29 consecutive years, reaching 300,000 inhabitants by April 2011. One-third (30%) of these are foreign born (92,000 people), varying from 10% to 60% in the ten municipal boroughs, and representing 174 nationalities. The largest groups originate from Iraq, Denmark, Poland, the former Yugoslavia, and Bosnia-Herzegovina. Ten percent of the population of Malmö has been born in Sweden to parents who were both foreign born (www.malmo.se).

Psychiatric context

Major changes have been implemented in the Swedish public health care system over time, including mental health reforms. Between 1975 and 1985, psychiatric care throughout the country was reorganized into sectors responsible for adult in- and outpatient care within a delimited catchment area [1]. The Psychiatric Reform of 1995 brought about the changes and ended with the closing down of mental hospitals, thereby reducing the number of psychiatric beds from 4.6/1000 inhabitants in 1962 to 0.75/1000 in 1997. The referral system for the mentally ill changed, so that patients were expected to seek outpatient care at the primary health care level instead of at a psychiatric clinic [2]. A survey made in 1996–1997 found the total prevalence of adults with mental disabilities to be 0.63%; in the three major cities of Sweden the figure was 0.96% [1]. Between 1996 and 2006, an average of 634/100,000 women ages 25 to 44 received inpatient care throughout the country because of mental disorders [3]. In the Scania Region, mental health services have been reorganized several times over the years. Public and private sector primary health clinics are available for the adult population. Specialist psychiatric out- and inpatient clinics and emergency services also exist in Malmö and other cities within Scania (www.skane.se).

Although some women diagnosed with a mental disorder receive inpatient care, many more have mental health problems; the rates have increased globally and nationally [4-6]. In 2000, the prevalence of mental disorders in the general population was studied in six European countries. More than 6.0% reported having had a mood disorder of some kind during the previous year, and 4.2% said they had an anxiety disorder. The prevalence was twice as likely in women as in men [7,8].

Perinatal mental disorders and illness

The status of a woman's mental health and subsequent outcomes of pregnancy, delivery, and the period following childbirth (postpartum) has gained attention from various disciplines over the past few decades [9-14]. In a childbearing population, the reported frequency of psychiatric disorders varies according to different study designs, the number of births, and the period of pregnancy being considered (ante-, peri-, post-, /natal, /partum). However, comparing the prevalence of psychiatric and mental disorders is problematic because two major classification systems exist: the Diagnostic and Statistical Manual of Mental Disorder (DSM–IV), of the American Psychiatric Association and the diagnostic codes according to Chapter V (Mental and

Behavioral Disorders) in the International Classification of Diseases (ICD–10) published by the World Health Organization [15,16]. To screen for mental health problems researchers use different kinds of instruments developed from the diagnostic systems, specific questionnaires, or interview guidelines [17-21].

An expert review of maternal illness in pregnancy estimated the prevalence of major depression at 13% to 20%; posttraumatic stress disorder at 3.5%; and other disorders of anxiety, personality, panic, and eating at 1% to 10% [22]. Similar rates were found among women in northern Sweden, where antenatal depression and anxiety was associated with increased risks of obstetric complications and the frequency of health care use [23]. Prevalence of some common mental disorders in women [4,22,24,25] is shown in Table1.

Table 1. Chronological data of selected mental disorders in different populations

Mental disorders and symptoms	Female population Sweden, 2001[a] (%)	EU women in general population 2005[b] (%)	Pregnant women, Sweden 2003[c] (%)	Review, of perinatal studies, 2008[d] (%)
Any psychiatric disorder	13–15	27.4	14.1	–
Anxiety disorder	8–10	6.1	6.6	13–15
Eating disorder	–	0.4	0.3	3.7
Personality disorder	6	6.3	6.4	6.5
Bipolar, psychotic disorders	1–2	2.0	–	unknown
Schizophrenia	1	–	–	–
Major depression	3–5	6.1	3.3	13–20
Depression by EPDS	4–17	–	–	6.5–12.9

Source: [a]National Public Health Report 2001; [b]Wittchen & Jacobi 2005; [c]Andersson 2003; [d]Gold 2008

Stress reactions

The traditional biomedical model looks at the mind and body of a patient as two vital interlinked systems. In earlier (biological) definitions, stress was seen as a natural physiological response to psychological reactions caused by pain, fear, and rage. It was termed the fight-flight reaction and referred to an increased production of adrenaline in the cortex [26,27]. Lazarus and Folkman some years later introduced a definition of stress that emphasizes the relationship between the person and the environment "appraised by the person taxing or exceeding his or her resources and endangering his or her well-being" (1984, p.21) [28]. The stress-research literature in English uses two expressions: *stressors* and *distress*. Stressors are external factors leading a response mechanism of the body to cause distress [29].

Several different neurotransmitters and amino acids are vital to regulation of our emotions and reactions by the central nervous system [30]. After prolonged stress, the receptors become hyposensitized and the system becomes unbalanced, leading to symptoms of anxiety and distress. The knowledge of how neurotransmitters work has led to the development of antidepressant drugs, such as serotonin selective reuptake inhibitors. The amino acid tryptophan is found in food and is a precursor of serotonin. In the form of L-tryptophan it controls our circadian rhythm and sleep. Other regulating substances are hormones. When stress activates the amygdala in the brain, it provides the psychological and physiological reaction we term aggressiveness, which increases the quantity of neurotransmitters in the body. The hypothalamus, pituitary, and adrenal cortex (HPA) are activated by stress. Prolonged stress also affects the activation of the immune system. A reduction in inflammatory reactions and increased HPA activity occurs during the final months of pregnancy [30]. A clinical study found that despite 'immunization' against the effects of stress in pregnancy, increased psychosocial stress was associated with higher levels of cortisol in late pregnancy [31].

Psychosocial reactions

Much attention has focused on depression and the risk of preterm delivery, and on postpartum depression, including the risk of attachment problems and adverse health effects on the newborn and the growing child [32-34]. Less research has explored the effects of antenatal mental problems on pregnancy outcomes [35]. The causal link between psychopathological mediating factors and childbirth is not conclusive. For example, studies have shown that traumatic birth experiences, such as emergency CS, are associated with the increased risk of posttraumatic stress reactions, fear of childbirth in any subsequent pregnancy, postnatal depression, and postpartum psychosis [36-39].

Depressive symptoms

According to the DSM-IV, a diagnosis of major depression requires the presence of a majority of the following symptoms: a depressed mood most of the day on an almost daily basis, either subjectively reported or observed by someone; a lack of or lessening of interest or pleasure in all or almost all daily activities; marked loss or gain of body weight in a month or change of appetite; problems falling asleep or staying asleep, or feeling sleepy during the daytime; agitation or restlessness; fatigue or loss of energy; feelings of

worthlessness or excessive feelings of guilt; concentration problems; and recurrent thoughts of death or a suicide attempt [40].

The Edinburg Postnatal Depression Scale (EPDS) was developed in 1987 by John Cox and colleagues to measure pregnancy-related depression. It is an instrument that screens for symptoms of depression in the past seven days, and has been validated for screening in pregnancy [41,42]. The scale includes ten questions with a maximum score of 30 points (0 to 3 per item). According to the EPDS risk of perinatal depression in women varies from 16% to 52%, depending on the timing of pregnancy and cut-off values [20]. A meta-analysis found point prevalence estimates of depression ranging from 6.5% to 12.9% for different trimesters of pregnancy and the postpartum year [11]. In a Swedish prospective study half of the women with depression during pregnancy measured by EPDS, also scored above the cut-off after giving birth, and had an increased risk of postpartum depression, although no risk for adverse obstetric or neonatal outcomes were found [43,44].

Social stress, life events, and anxiety

The effect of prenatal stress on pregnancy and delivery outcomes is not fully understood [45-48]. Data from a large randomized cross-sectional survey of pregnant women in Sweden showed lack of social support, stressful life events, and being an immigrant to be associated with increased risk for depressive symptoms in early pregnancy [49]. The stress hypothesis postulates that chronic stress caused by lack of social support can influence placental circulation in a woman, and may result in small for gestational age baby, preterm birth, or other postpartum complications [50-53].

Anxiety can be evaluated as two types: state anxiety defines the intensity of a person's current anxiety and includes feelings of tension, nervousness, and worry; trait anxiety is a person's tendency to respond to various situations with increases in state anxiety [35]. To differentiate between depression and anxiety disorders during pregnancy can be challenging because their symptoms overlap [54]. A U-shaped curve characterizing the prevalence of depression and anxiety from the first to third trimester has been reported [55]. Monk et al., has shown that fetuses of depressed women had faster heart rates than of those women with anxiety disorders or healthy low-anxiety women [56]. Antenatal maternal anxiety can also affect placental circulation and the development of the infant; and is associated with an increased risk of preterm birth [47,57,58]. Women with anxiety who express it as worry may have a prolonged first stage of labor [59]. A meta-analysis done in 2010 found a

general association although small, between psychosocial stress and negative birth outcomes [60].

Posttraumatic stress, abuse, and fear

Trying to understand the casual pathway between mental problems before and during pregnancy and birth outcome is perplexing. For example, post-traumatic stress disorder (PTSD) is an anxiety disorder. It occurs in the aftermath of a life-threatening, traumatic situation (such as accidents, rape, war, or natural disasters) and is diagnosed within six months of the event. The DSM-IV describes three distinct symptom clusters associated with PTSD: re-experiencing the event, avoidance and numbing, and hyperarousal [40]. To qualify for a PTSD diagnosis a person has to be exposed to stressors triggering feelings of intense fear, helplessness, or horror, and the symptoms must produce clinically significant distress for a minimum of 4 weeks. In a prospective study of a non-representative sample of 289 pregnant women, the incidence of PTSD was 2.8% at 6 weeks and 1.5% at 6 months postpartum [61]. A literature review in 2006 identified studies confirming that the emotional intensity of childbirth may have "led to the development of PTS or even a PTSD-profile". Contributing factors were a history of psychological problems, trait anxiety, obstetric procedures, negative aspects in staff-mother contact, feeling a loss of control, and lack of partner support [36]. Symptoms of traumatic stress can occur close to the triggering event without qualifying as a disorder. Apart from the above criteria, other PTS symptoms such as physical complaints or ailments also occur [62]. Depression and fear of childbirth in pregnancy have been identified as risk factors for PTS during the postpartum period [63].

A history of physical and sexual abuse is an established risk factor for mental disorders in women [64], whether pregnant or not. Self-reported abuse according to the NorVold Abuse Questionnaire was investigated in a cross-sectional study of women visiting gynecology clinics between 1999 and 2001 [65]. Lifetime prevalence was 19% to 37% for emotional abuse, 38% to 66% for physical abuse, and 17% to 33% for sexual abuse, across the five Nordic countries [66]. A repeated interview study (in 1997 and 1998) of women during pregnancy (n = 1037) and 4 to 20 weeks postpartum identified a 19.4% combined lifetime prevalence of emotional, physical, or sexual abuse [67]. Abuse history and perinatal health is complex and can affect a pregnant woman in different ways. In Norway for example, women reporting childhood abuse were more likely to report seven or more complaints common

to pregnancy, compared to those who did not experience such abuse [68]. A Danish study of pregnant women found correlations between severe fear of childbirth after delivery and reporting lifetime physical and sexual abuse [69]. Fear of childbirth during pregnancy, by contrast, has been associated with increased risk of emergency CS [70]. In addition, the majority of the women undergoing an emergency CS reported it as a traumatic event, and half of them had various forms of PTS reactions [71].

Mental ill-health

The meaning of health in its broadest sense is personal and complex and the definition is subject to change. Larson argues in a 1999 review article that there are four ways in which health is conceptualized. The *medical model* defines health by the absence of disease and disability. The *WHO model* seeks "complete physical, mental, and social well-being and not merely the absence of disease or infirmity". The *wellness model* encompasses health promotion and a progression towards higher functioning and the integration of body, mind, and spirit. Finally, the *environmental model* views health as the adaptation to one's physical and social surroundings in balance, and free from undue pain, discomfort, or disability [72].

The English and Swedish expressions for mental disorders or mental illness do not always mean the same thing. The implications of mental disease, mental disorder, mental illness, mental status, and mental ill-health vary and, therefore, may be lost in translation. The National Public Health Report of 2005 argued that all these terms for mental status (health, ill-health, problems, disease, and dysfunction) could be viewed as aspects of mental suffering [73].

The degree of mental ill-health in a person can be viewed in two dimensions [73]. One is the *health dimension,* which focuses on the subjective experience of having mental symptoms, problems, or worries. These conditions are dependent on interaction with one's environment, the individual's choice of lifestyle, and habits, and the capacity to handle stressful situations. The *disease dimension,* by contrast, explains mental disorders and mental illness as biological factors that cannot be prevented or managed by the individual. The matrix (Figure 1, over) is flexible and depends on the extent to which a person seeks or receives appropriate care. The challenge, therefore, is to identify the people of Group III: a growing segment of the population that experiences mental health problems but does not require psychiatric care [73]. As the matrix indicates (over), women of childbearing age with mental ill-health problems are likely to be found in that group.

		Disease dimension	
		Without psychiatric disease	With psychiatric disease
Health dimension	Mental health	I	II
	Mental symptoms, problems, or worries	III	IV

Figure 1. Matrix of two dimensions of mental health after National Public Health Report, 2005, p.132 [73]

The publication of the *Green Paper – Improving the mental health of the population: Towards a strategy on mental health for the European Union* in 2005 offered this definition: "Mental ill health includes mental problems and strain, impaired functioning associated with distress, symptoms, and diagnosable mental disorders, such as schizophrenia and depression" [74]. In the present thesis, mental ill-heath is taken to mean "not feeling well" hence a condition of less than optimum health, and possibly a prelude to measurable mental problems. Childbearing women in Sweden are not systematically screened for symptoms of depression or other mental problems. It therefore becomes important to investigate other resources of information and try to describe how mental health status of pregnant women is documented.

Registry data

The Inpatient Care Registry (also known as the Hospital Discharge Registry), has been managed by Sweden's National Board of Health and Social Welfare (Socialstyrelsen) since 1987, and covers all publicly run hospitals. By using a unique personal identification number, it is possible to link data on exposure from one source to outcomes in another record system [75]. The Registry is available and accessible after ethics approval for research has been obtained [76]. However, quality problems with the Inpatient Care Registry are known to exist, since not all admissions are accompanied by a diagnosis [77].

Antenatal and perinatal medical data has been registered since 1973. A national system, the Medical Birth Registry (MBR), was implemented in 1982. This registry contains standardized information on the pregnancy and postpartum period from four charts (MHV1–4) and on delivery and baby outcome from two charts (FHV1,2) [78]. Paper copies of charts are regularly sent from the hospital office to the MBR for national surveillance. The

antenatal charts include approximately 150 standard variables covering background and health information on the pregnant woman, although none of them address the mental health status or identify psychiatric illness [79]. At the first antenatal visit (i.e., 'booking'), the midwife takes a routine personal history, during the course of which a woman is expected to disclose any problems or previously diagnosed medical conditions that may affect her pregnancy (i.e., lung, kidney, or liver disease, etc.). The midwife can check off each medical condition and add an abbreviated note in a text box on the booking chart. Such supplementary heath information on the woman is only available from this form and is not systematically registered in the MBR. However, access to such information could be valuable. Self-rated health assessments found on claim files with health care providers predicted mortality better than objective health status, providing empirical confirmation for "the belief that the way a person views his/her health is importantly related to subsequent health outcomes" [80].

Electronic medical records: the KIKA system

At Malmö University Hospital (SUS-Malmö), a computerized antenatal and perinatal patient record system called KIKA (*Kvinnoklinikens Informations och Kvalitets Avdelning*), was developed by a senior obstetrician to replace paper charts and has been in use since 1995. The system is accessible through a password login by all clinical staff involved with pregnant women. Municipal antenatal clinics within the catchment area are linked to the EMR system keeping the data in four modules: 1) antenatal and inpatient care observation charts and records of the mother and child (MHV1-4); 2) labor and delivery (FHV1) and newborn outcome (FHV2); 3) ultrasound and blood flow investigation; and 4) additional free-text clinical notes. Routine pregnancy information is entered for preset standard variables by midwives at the antenatal clinics (charts, see Appendix 1). The KIKA-EMR system contains some 5000 variables and offers unique opportunities for follow-up studies. Data mining from this system has been used in previous studies [81-83]. Computerized record keeping opens new pathways for research, including quality control and patient follow-up [84,85].

Perinatal health care

Attendance at antenatal care clinics (ANC) and hospital delivery is free of charge for all residents of Sweden. The routine antenatal care program in Sweden consists of eight to ten visits with a nurse-midwife [86]. The

midwifery-led ANCs reach 99% of the pregnant population. They provide regular physical and psychological health check-ups for women during pregnancy and after delivery. Studies show that most women are satisfied with the perinatal services provided [87]. At the labor and delivery ward, midwives employed by the hospital assist the woman through childbirth. Obstetricians are available, either in-house or on-call, for medical consultations and interventions when necessary. Private sector ANC is also available. Presently as of 2012, there are no private hospitals for labor and delivery in Sweden.

In the late 1990s the number of routine visits scheduled with a midwife during pregnancy dropped from 12 or 13 to 8 or 9 and early routine consultation with a medical doctor ceased [86]. The new model also set the interval between check-ups. An initial visit was now recommended at 10 to 13 weeks of pregnancy and a second at 25 weeks. To compensate for fewer checkups, a psychological *basprogram* (basic program) was suggested to facilitate a referral system of counselors, social workers, and psychologists for pregnant women with mental, psychological, or social problems. The recommendations included having a senior psychiatrist supervise midwives and improve their clinical awareness and professional skills in caring for women with mental disorders [88]. During the 1990s psychosomatic and multi-disciplinary support teams became available through referrals from a midwife or other medical staff member for women who expressed fear of childbirth, had had traumatic birth experiences, or for other reasons. Midwife-led clinics offer counseling and support to such women [89,90].

The field is served by the Swedish Society of Obstetrics and Gynecology (SFOG), which publishes expert evidence-based reports for quality assurance, patient safety, and clinical implementation. A medical care program, focusing on preventing pregnancy-related medical complications, was introduced in 2008 in conjunction with the Swedish Midwife Associations [91].

Mode of delivery

The majority of women in Sweden have spontaneous vaginal births and deliver at public hospitals. Less than 1% chose to have a home birth between 1992 and 2004 [92]. Delivery outcome refers to most aspects of labor and delivery, including the health of the newborn. Consequently, it differs for nulliparous (first-time) and parous women (those who have previously given birth). Mode of delivery or type of birth relates to how the baby presents itself, i.e., head first (cephalic) or bottom first (breech), and also how the baby is delivered. The ICD−10 system [93] differentiates between normal vaginal

delivery and spontaneous vaginal delivery; and vaginal instrumental delivery, including low and mid-level forceps and vacuum extractions (VE). Common reasons for VE or the use of forceps is to hurry the last stage of labor, when the baby is showing signs of distress or hypoxia, or the woman is not capable of pushing the baby out herself due to subsiding or weak contractions, exhaustion, or illness [94].

At times more severe complications or risks to the unborn baby arise. Instead of vaginal delivery, a crash or emergency CS is needed to safeguard the life of the baby and the mother. There are many well-established risk factors for a CS: the age of the woman, her weight or an elevated Body Mass Index (BMI = kg/m^2), having twins or triplets, lie, and the estimated weight of the baby. Unexpected or unknown indications include complications or emerging acute situations, such as signs of hypoxia in the baby [95-98]. Another type of CS is termed elective. It may be due to medical indications of the expectant woman or the unborn child; or performed at the request of the woman and planned before labor begins [94]. The ICD-codes for CS on-demand or for personal reasons are not yet universal.

Although elective and emergency CSs are lifesaving interventions, there is evidence of adverse health effects for both the mother and baby after any type of CS, compared to a vaginal delivery [97,99-103].

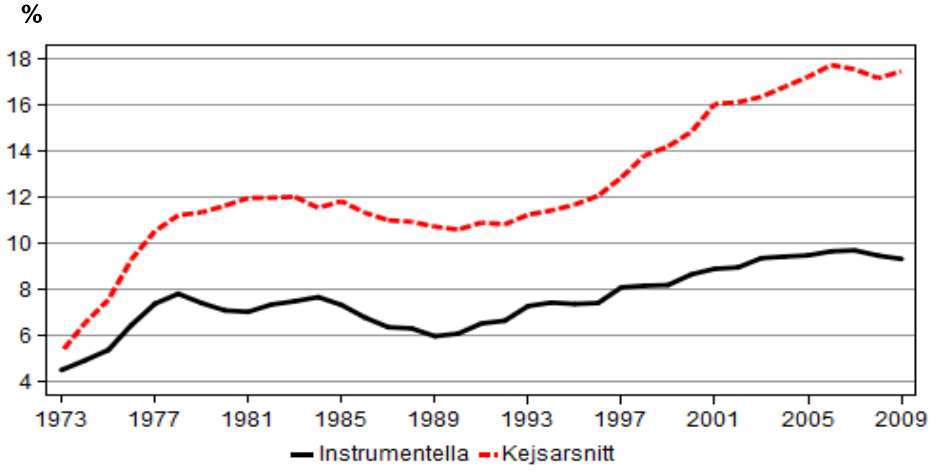


Figure 2. Cesarean sections (dotted line) and vaginal instrumental deliveries 1973 to 2009 Source: *Pregnancies, Deliveries and Newborn Infants, the Swedish MBR.*

Figure 2 shows the percentage of CS and instrumental deliveries between 1973 and 2009 in Sweden. The total frequency of CSs of singleton pregnancies

increased from 5% in 1973 to 18% by 2006. Some of the increase can be explained by twins and triplets (which rose from 10% to 54%); others are related to assisted pregnancies or increasing maternal age. Another reason for the growth in CSs is because of breech presentations (which rose from 10% to 90%) [104], an effect of firm international recommendations to avoid a vaginal delivery, in such cases [105,106].

In the report entitled "Cesarean Sections" issued by SFOG (2010) a study of the total CS rate in Sweden between 1973 and 2009 is presented. The analysis of indications for CS identified 48.7% as due to disproportions between mother and baby, dystocia, babies who weighed > 4500 gram, or obstructed labor; 32.7% had had a previous CS; 31.7% had fetal indication; 21.7% were due to preeclampsia or post-maturity; and 19.0% had a psycho-social indication [98,107]. National data from 2011 shows that the total CS rate among nullipara increased from 17.3% in 2000 to 19.0% by 2008; and that of parous women from 12.9% to 15.7% in the same period [108].

The Department of Obstetrics and Gynecology at SUS-Malmö is one of the five largest delivery clinics in Sweden, counting births per annum. In 2006, 4057 births were performed, of which 78.8% were spontaneous vaginal deliveries, 6.2% VEs, and in 0.4% forceps were used. The total CS frequency was 14.7% [108]. The total number of births at SUS-Malmö increased in the period from 2007 to 2010 (Table 1)

Table 1. Total numbers and distribution of mode of delivery by nulliparous and parous women, 2007– 2010 (Source: KIKA system at SUS-Malmö)

Mode of delivery	2007 n = 4281 (%)		2008 n = 4536 (%)		2009 n = 4702 (%)		2010 n = 5194 (%)	
	Nulli- 2295	Parous 1986	Nulli- 2428	Paous 2108	Nulli- 2402	Paous 2298	Nulli- 2646	Parous 2550
Spontaneous vaginal	73.7	86.2	75.6	86.2	73.4	85.1	71.6	85.2
Forceps/VE[a]	10.7	2.7	10.8	2.2	10.1	2.4	12.9	2.4
Emergency CS[b]	11.3	5.6	9.6	5.9	11.6	6.4	12.0	6.8
Elective CS	4.4	5.3	3.9	5.7	5.0	6.0	3.5	5.6
Total CS	14.7	10.9	13.5	13.6	16.6	12.4	15.5	12.4

[a] VE = vacuum extraction, [b] CS = cesarean section

The childbearing population of Malmö differs somewhat from the national average, in having a lower CS rate (15.2% in Malmö vs. 17.7% nationally, in 2006). Perhaps this is because of the higher proportion of foreign-born women (29% in Malmö and < 14% nationally) [104,109].

Dissertations on related topics

Research in Sweden on issues concerning perinatal mental health or mental illness and mode of delivery has multiplied during the last decade. Midwives, gynecologist, obstetricians, and other health professionals have all contributed to a growing understanding of perinatal mental and psychosocial problems and delivery outcomes. Some dissertations using a quantitative approach have more bearing on the topic of this thesis than others and are, therefore, briefly cited here in chronological order.

In 1998, Elsa-Lena Ryding presented her research on *Psychological aspects of emergency cesarean section*. Using a case-control design (n = 97; n = 1981) and starting with women at 32 weeks of gestation, Ryding found that high levels of anxiety in pregnancy were related to fear of childbirth and associated with increased risks of emergency CS. Those who underwent an emergency CS had more symptoms of PTSD after delivery than women with elective CSs, or those in the control group who delivered vaginally [110].

Ann Josefsson followed prospectively a cohort of pregnant women (n = 1489) and studied *Postpartum depression: Epidemiological and biological aspects* (2003). She found depressive symptoms measured by an EDPS of ≥ 10 to be 17% in late pregnancy, and 13% at 6 to 8 weeks and 6 months postpartum. In women with a high EPDS score before birth, one-third still scored above the cut-off after delivery, indicating a predictive value of antenatal screening for postpartum depression [111].

Using the Swedish Annual Standard of Living Survey and national health registries from different years, Eva Robertson studied *Aspects of foreign-born women's health and childbirth-related outcomes* (2003). She found that between 1980 and 1990 labor immigrants and refugees had higher adjusted risks of poor self-reported health and psychosomatic complaints than Swedish women. Among childbearing women between 1996 and 1998, foreign-born women had fewer antenatal visits and a lower prevalence of non-normal births than Swedish women did [112].

A cross sectional and follow-up study was conducted by Liselott Andersson who used the PRIMED-MD, a DSM-IV interview guide, to identify *Implications of psychiatric disorders during pregnancy and the postpartum period: A population-based study* (2004). Of 1550 women studied, 14.1% were identified with one or more psychiatric diagnoses in their second trimester of pregnancy. This was more likely to occur in women who lived alone, smoked, had low socioeconomic status, and had a BMI > 30. Women

with depressive symptoms, anxiety, and fear of childbirth had more ANC visits and were more likely to have an elective CS [113].

Christine Rubertsson included cross-sectional and longitudinal data on 3000 women in *Depression and partner violence before and after childbirth* (2004). An EPDS ≥ 15 was found in 8% of the women during pregnancy and in 12% two months postpartum (EPDS ≥ 12). Two percent of the women reported "being hit" by their partner in the first postpartum year [114].

Mental illness: Relation to childbirth and experience of motherhood (2005) was researched by Karin Börjesson. Study participants came from a multi-ethnic area in a region of southern Stockholm: 26% were immigrant women. The prevalence of personality disorder was 6.4% (n = 40/625). Twelve percent of the women had had psychiatric or psychological treatment as an adult, and 3% reported currently in treatment during pregnancy [115].

Annika Karlström studied *Cesarean section without medical indication: Attitudes, prevalence and request* (2010). The ICD code for CS reported to the MBR between 1997 and 2006 was investigated by comparing the northern with the capital region of Sweden. Of 6796 records, the code O828 for a CS without medical reason was identified in 34.9%; a code for childbirth-related-fear in 12.7%; a prior CS in 27.9%; disproportion between mother and child in 8.9%; psychiatric diagnoses in 1.4%; and a breech presentation in 4.6% of the CSs. The registered code indicating CS without medical reason increased three-fold during the study period to 15.3%, and the code childbirth-related fear increased from 0.3% to 14.0% most of all in the capital area [116].

The research cited above from Sweden and similar studies conducted elsewhere (not mentioned) have added a broader understanding of perinatal and mental health problems to our knowledge base. However, a lack of research characterizes the occurrence and risk factors of mental ill-health in pregnant women and the associations of inpatient psychiatric care with mode of delivery. Studies from Sweden are also lacking with regard to the mental health status of pregnant women in a multicultural context.

AIM

The overall aim of this dissertation was to identify mental ill-health, examine prior psychiatric inpatient care, in association with mode of delivery, and investigate mental health status and explore risk factors in a multicultural population of childbearing women in southern Sweden.

Sub-aims:
To identify markers of mental ill-health documented in electronic medical perinatal registry system for pregnant women.

To analyze markers for mental ill-health associated with mode of delivery in nulliparous women.

To examine a history of inpatient care and identify psychiatric diagnoses by ICD−10 codes in childbearing women.

To analyze risk factors associated with cesarean sections in women with prior psychiatric inpatient care and the occurrence of markers of mental ill-health in pregnancy records.

To explore risk factors for symptoms of depression and posttraumatic stress among native and non-native Swedish speaking women.

To describe the frequency of emotional, physical, and sexual abuse, analyze associations with symptoms of depression and posttraumatic stress in pregnancy, comparing native and non-native Swedish speaking women.

METHODS

The research aim and study objectives of this thesis were developed from potential exposure factors affecting a woman's mental health during pregnancy and mode of delivery.

Data collection and design

The thesis builds on two populations of childbearing women within the catchment area of the Department of Obstetrics and Gynecology at SUS-Malmö. Table 2 provides an overview of the four studies.

Table 2. Overview of study population, design, methods, and time period

	Study 1	Study 2	Study 3	Study 4
Population	22,053 births 17,443 women	Inpatient care records	Bidens,Malmö, Sweden	Bidens,Malmö, Sweden
Participants	10,662 nulli-parous, 6467 w/ complete EMR	42,713 records, 17,443 women	1025 pregnant women, 22 were excluded	1003 pregnant women
Design	Retrospective registry study	Retrospective registry study	Unselected cross-sectional	Unselected cross-sectional
Method of analysis	Chi square, Kappa test, binary, and multivariable regressions	Chi square, binary, and multivariable regressions	Student's *t*-test, chi square, binary, and multivariable regressions	Student's *t*-test, chi square, binary and multivariable regressions
Type of data	Registry	Registry	Cross-sectional questionnaire	Cross-sectional questionnaire
Exposure	Markers of mental ill-health	Psychiatric inpatient care and markers	Mother tongue, socioeconomic status (SES)	Types of abuse, mother tongue, SES
Main outcome	Mode of delivery	Cesarean section	EDS-5 and PTS-symptoms	EDS-5 and PTS-symptoms
Setting	ANC within catchment area of SUS-Malmö	Childbearing women at SUS-Malmö	6 public and 2 private ANC of SUS- Malmö catchment area	6 public and 2 private ANC of SUS-Malmö catchment area
Time period	1 Jan 2001 to 31 Dec 2006	1 Jan 1996 to 31 Dec 2006	1 March to 30 November 2008	1 March to 30 November 2008

The first two are registry studies emanating from the total population of women who gave birth between 2001 and 2006. Information in the perinatal EMR system of these women was linked with the Inpatient Care Registry for the period 1996 to 2006. The second population is the 2008 Swedish cohort of unselected pregnant women in Malmö who responded to the Bidens questionnaire.

Markers of mental ill-health and mode of delivery (Study 1)

The aim of Study 1 was to identify markers for mental ill-health from a perinatal record system and analyze associations between selected markers and risk factors for mode of delivery. Two separate methods were used. First we used an inductive approach and qualitative methods to perform a content analysis of clinical documentations in the KIKA system in order to develop markers of mental ill-health. Then the selected markers were applied to statistical analyses for risk estimates of emergency CS in first-time mothers.

Material and methods

KIKA-EMR perinatal records from 1 January 2001 to 31 December 2006, including delivery data, were obtained. Records without a complete personal identification number (452) were excluded, leaving 22,053 births (17,443 women) for the free-text analysis of the electronic records.

Markers

We developed an instrument to facilitate the analysis of patient records. First we explored free-text entries for mental health-related status recorded in the KIKA database. We identified all perinatal records between 2001 and 2006 with ICD−10 psychiatric diagnostic codes (F00-F99) and the word "anti-depressants" in truncated format, i.e., antidepr*. These records were systematically read and analyzed for possible mental health status expressions. New theoretical concepts in Swedish for mental ill-health were then identified by counting and sorting adjectives, nouns, and descriptive words reported by women to clinicians. These semantic concepts were compared with validated instruments for mental health problems [117]. Thereafter we performed a content analysis and condensation [118] into Swedish word units reflecting mental ill-health. The next step, face validity testing, was conducted with clinical staff, counselors, a psychiatrist, and obstetricians, by discussing usage and recognition of selected expressions in clinical practice.

Second, free-text searches for thirty truncated words were processed through 528,728 record entries of the KIKA dataset. For example, the truncated word, anxiety (*ångest*) was anxie* (ånges*). A few of the expressions were occurring in more than half of the records (too common), and were discarded along with those occurring in less than 20 records. The markers (word units) used in the final analyses translate into English as follows: stress* (including words like distress, stressed, etc.), sleep* (including sleepless, sleep disturbances, sleep/-ing problems), worry (including worried, worrying), anxie* (including anxiety, anxious), depress* (including depression, depressed, depressive), deject* (including dejected, dejection, feeling low or blue), panic* (including panicky, panicked), and antidepress* (including anti-depressant, anti-depressive). Markers reflecting professional support were indicated by the word unit psychiat* (including psychiatric, psychiatrist) and psychol* (including psychologist, psychological). Since none of these expressions are routinely used in free-text documentation in this patient group, the finding of one of these expressions is a positive marker for the existence of a specific condition. Figure 3 shows examples in Swedish of documented text condensed into truncated words and into markers through face validity testing.

Record wording	Face validity	Marker
stress, stressad, stressigt stressrelaterad	stress, stressa, stressigt	stress*/*stress*
oro orolig	oro orolig	oro*/ *worry*
sömnproblem sömnbesvär sömnsvårighet sömnbrist, svårt att sova, sover dåligt	sömnproblem sömnbesvär sömnsvårighet	sömn*/*sleep*

Figure 3. Condensation process for markers from Swedish expressions found in electronic medical records into truncated words* with English translation (reads left to right)

Background and perinatal data

We selected 110 standard variables for background and for delivery outcome from the KIKA-EMR system. Continuous variables such as birth weight, gestational weeks, and BMI of women at the time of delivery were recoded into categorical variables. Since background variables such as country of birth, social status, and employment status were string variables, they were all recoded as categorical variables and included. We also used bivariate variables

for consultations with a counselor (social worker) and for fear of birth-team, indicating use of psychosocial support.

Mode of delivery

Prior to logistic regression analyses, all records of women giving birth for the second time or more (46.7%, parous and multiparous) were excluded [95], resulting in 11,761 nulliparous women (74% spontaneous deliveries, 11.1% emergency CS, and 9.5% instrumental deliveries). The records of 605 elective CS, 223 breech presentations, 120 multiple births, and 38 records without live births were then excluded (e.g. stillborn babies, pregnancies 23 < 28 weeks, and overlapping records). Having reduced the study populations to 10,662 first-time mothers, an additional 4195 women without complete EMR data were excluded. Figure 4 shows the final group of 6467 nulliparous women with EMR records.

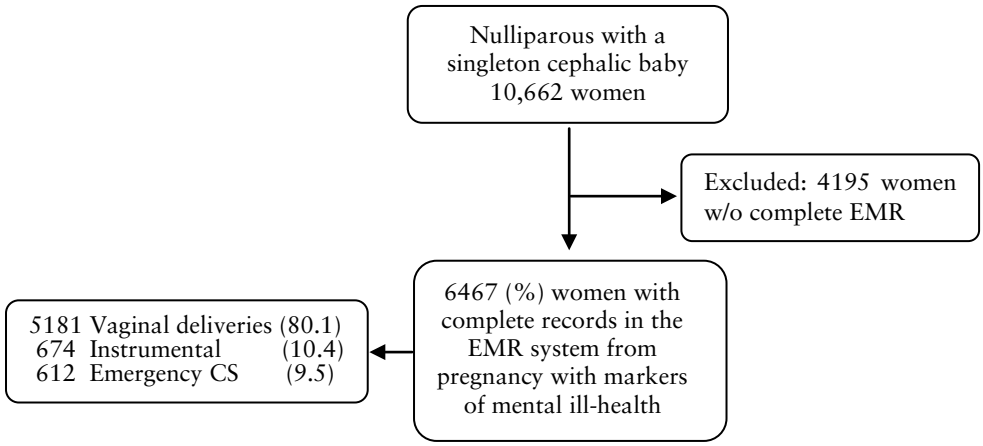


Figure 4. Flow chart of first-time mothers with complete electronic medical records (EMR) during pregnancy (n = 6467) giving birth between 1 January 2001 and 31 December 2006 at SUS-Malmö, Sweden

Type of delivery was regrouped by ICD codes [93,94]. Spontaneous vaginal delivery and vaginal delivery with abdominal pressure were grouped as 'spontaneous delivery' (ICD–10 code O80). Vaginal instrumental delivery, including low- and mid-level forceps and vacuum extractions was grouped as 'instrumental delivery'. 'Vaginal delivery', consisting of spontaneous and instrumental delivery combined, was then used as a reference group. Crash CS

(n = 54) and emergency CS was regrouped into 'emergency CS' (code O82.1–4). Known risk factors (i.e., plausible confounders) were tested for emergency CS and compared with vaginal delivery by binary logistic regression for first-time mothers. The binary variable 'induced labor' was also added to the model as a plausible confounder [119,120]. For the multivariate logistic regressions, emergency CS was used as the dependent variable. We calculated adjusted odds ratios for emergency CS in relation to the markers as independent variables and used a separate multivariate logistic regression model for each marker. Each model was adjusted for maternal age (continuous variable) and binary variables: diabetes (ICD–10 code 024), epidural anesthesia (EDA) at vaginal delivery, and gestational age category < 37 and > 42 gestational weeks, i.e., known risk factors for emergency CS [96]. Although BMI is a risk factor for CS and for diabetes, we did not adjust for it, since BMI data was missing for more than 30% of the records. Information on country of birth was also incomplete in many records and therefore was not used in the analysis.

Prior inpatient care and risk of CS (Study 2)

After identifying markers of mental ill-health, we sought to confirm the findings of Paper I, which had indicated an increased risk of emergency CS in women with markers of mental ill-health. We did this by investigating occurrences and types of psychiatric diagnoses at admission for inpatient care prior to the index delivery, markers of mental ill-health in pregnancy, and risks of CS.

Material and methods

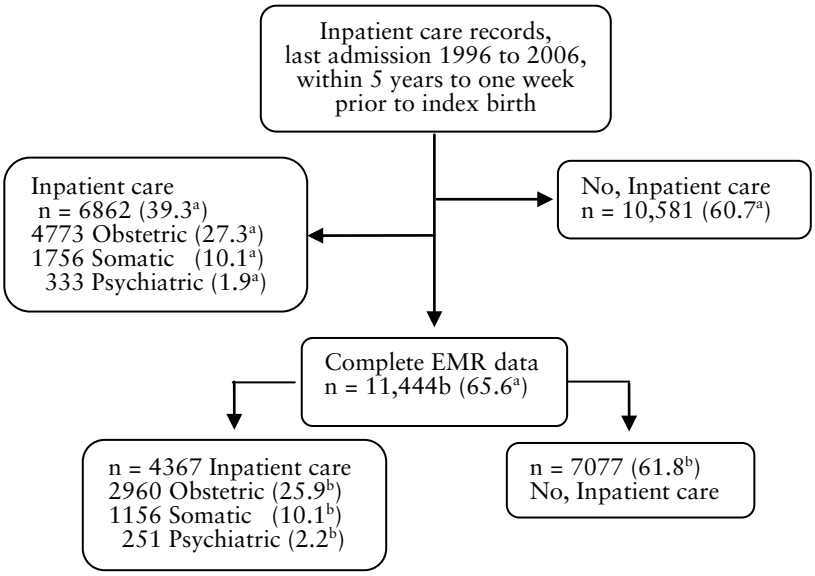
In May 2008, we received approval (Dnr34-5056/2007) from the Swedish National Board of Health and Welfare along with access to the linked dataset. Childbirth data on 17,443 women linked with the Inpatient Care Registry resulted in 42,713 admission records for the period 1 January 1996 to 31 December 2006. Based on the principal diagnosis, the first additional diagnosis [16], or the type of care or unit, four mutually exclusive groups were established: 1) prior psychiatric inpatient care (any code F according to ICD–10); 2) obstetric inpatient care (any code O); 3) somatic inpatient care (any ICD–10 code except F or O); 4) those women who had not had any inpatient care. Categorized by their principal ICD-code, 78.4% were obstetric admissions, 19.3% somatic, and 2.3% had psychiatric codes. The inpatient file was then merged with the KIKA-EMR file. Because of overlapping time periods, the records were aggregated and matched at an individual level by a

woman's last admission within a period of five years to one week prior to her first (index) delivery occurring between 2001 and 2006.

Psychiatric diagnoses

The psychiatric diagnostic codes were then scrutinized by principal and first additional psychiatric diagnoses. Records before 1998 had codes 290 to 319 of the ICD–9 format and others had ICD–10 codes F00–99. Initially, an automatic translation key for the ICD–9 codes into ICD–10 codes was used. Subsequently, an independent senior psychiatrist reviewed and validated each translated diagnosis with regard to the correctness of the ICD–10 F-code [12,15]. Women with records of inpatient care at psychiatric units that lacked an ICD code were assigned a dummy code. An additional 55 women who had had psychiatric inpatient care were identified as having 'observation' (Z036) or 'suicide attempt or self-harm' codes (X60–X84). Each F-code and its numeric interval were then categorized into five mutually exclusive disorder groups: 'substance use' (F10–9), 'schizophrenia' (F20–5+9), 'mood disorders (F30–8) and suicide attempt', 'neurotic or somatoform' (F40–8), and 'personality, behavioral, and unspecified' (F09, F50–1, F60+8, F90–8, F99). The last named included those without a principal code but had still been admitted to psychiatric units.

Figure 5 shows the process of selecting records, the frequency of types of care for all women (n = 17,443), compared to types of care for those with complete perinatal EMR data (n = 11,444).



[a]Percentage based on 17,443 women; [b]Percentage based on 11,444 women

Figure 5. Flow chart of 17,443 childbearing women by type of inpatient care less than five years to one week prior to index birth, and subgroups of women with complete electronic medical records (EMR)

Background and markers

We used the same background and perinatal data as in Study 1, but added information obtained from the KIKA-file on smoking habits at the time of the first ANC visit. We then explored the relationship between occurrences of eleven markers of mental ill-health and two variables from specific clinical records indicating consultations a) with a counselor (social worker); b) for 'fear of birth'; and c) in conjunction with each of the four groups of prior inpatient care.

Mode of delivery

In Paper II we tested associations between having a history of a psychiatric disorder by five groups and types of prior inpatient care and mode of delivery. The categories from Paper I were used for the dependent variable mode of delivery, with the addition of elective CS. We kept spontaneous delivery (78.4%) as a reference vis-à-vis emergency CS (9.2%), elective CS (6.0%), and instrumental delivery (6.4%). We adjusted emergency CS and instrumental delivery for known confounders, such as maternal age (continuous variable) and nine binary variables: breech presentations, twins, gestational age < 37

and > 42, nulliparous, diabetes (ICD–10 code O24), induced labor, epidural anesthesia (EDA) at vaginal birth, and consultation for 'fear of birth', all identified from the KIKA system. Information on smoking was available for 68% of the women. In order not to lose women in the multivariate analysis, smoking was modeled in three categories: yes, no, and missing. With regard to elective CS we adjusted for the same variables but excluded induced labor and EDA at vaginal birth. The selected confounders are established risk factors for mode of delivery [96]. We then applied all markers of mental ill-health and tested them one by one in combination with fear of birth for associations with mode of delivery in the same multivariate regression models as described above.

Mental health status, mother tongue, abuse: The Bidens (Studies 3,4)

In the third and fourth stages of this investigation we aimed to describe mental health status in pregnant women defined as symptoms of depression and PTS, and explore associations and risk factors. The data used was part of the Bidens study: an investigation of life experiences, fear of childbirth, delivery expectations, abuse, and outcome [121].

Material and methods

An unselected population of pregnant women at six public and two private sector ANCs within the catchment area of the SUS-Malmö participated. The data of the Swedish cohort was collected between 1 March and 30 November 2008. At gestational week 24 the attending midwife gave each consecutive pregnant woman a letter entitled "Pregnancy and birth – A time of joy and worry?" explaining the study. Only those who could communicate fluently in Swedish with their midwife received such invitation. Women judged their ability to understand written Swedish by themselves, and chose whether or not to participate. The Bidens questionnaire (in Swedish) and an informed consent form were distributed to each woman at the routine glucose intolerance test done around gestational weeks 28 to 29. The questionnarie was filled out by each woman during the two-hour test while she sat in a quiet room separated from partners or other clients. The questionnaire and signed consent form were handed back in a sealed envelope before leaving the clinic. Because of ethical considerations, recording information of non-participants was not allowed. In all, 1025 women participated, 22 did not specify their mother tongue and were later excluded from further analysis. The majority of the women filled in the study questionnaire between gestational weeks 27 and 30.

The Bidens questionnaire

An eight-page questionnaire was developed for the study by the Bidens group and was modified to the language of each of the six participating countries. It included questions validated and applied among gynecological patients in a Nordic study addressing socio-demographics, abuse history, self-estimated health, anxiety, psychosomatic, and PTS, symptoms. The wording of the questions was already available in Swedish [66]. The Nordic Abuse Questionnaire (NorAQ) was also used; it had been previously validated in Swedish [65]. Other questions pertaining to background characteristics, social support, and the use of medications were adapted from the Norwegian Mother and Child Study [122]. The Swedish version of the modified questions about life events and additional background items that had been used by others were also included [49,123,124]. The full Bidens questionnaire is available in Appendix 2. It includes eight domains, each containing a set of questions. The items (#) used are referred to by their numbers (#1.01, #1.05, #7.01, etc.) in the questionnaire.

Background and other independent variables

Being a first-time mother was coded 'Yes' for nullipara and 'No' for parous women. General health status was grouped into 'poor' or 'good' (#1.01). The replies to "Have you smoked/do you still smoke?" were coded 'never', 'previously', 'currently'. "How often do you drink alcohol?" was coded No for 'never', and Yes for 'sometimes' or 'regularly' drinking alcohol(#1.06-.07).

A history of seeking professional support due to personal problems was investigated (#1.05). Contacts with a psychiatrist or psychologist prior to pregnancy were categorized as No (if the answer was 'no', or 'yes, while pregnant') or Yes (if the answer was 'yes, prior to pregnancy'). An additional four items investigated medications taken during the past year (#1.08), such as the use of sleeping pills, tranquilizers, antidepressants, or other psychotropic drugs. Answers were categorized as No (if the response was 'not at all' or 'rarely') or Yes ('for a short time', 'for a long period', or 'regularly').

Life events (#3.06) were investigated by nine predefined negative situations about serious illness, accidents, injuries, death, divorce, problems with family and friends at home or work, financial or employment problems of one's own or of a relative. The item was introduced as "Have you experienced any of the following in the past 12 months? If yes, how difficult was it for you?" A stressful life event was coded No for 'not too bad' versus

Yes for 'rather difficult/bad' or 'very bad/difficult'. A cut-off at ≥ 2 life events was used for analysis [49].

Social support (#4.02-03) was measured by two questions: "Are you living with a partner or not?" was coded Yes or No, and "Do you have someone besides your husband or partner to confide in?" was coded No (having no one) or Yes (for having one or more such persons). Potential financial problems (#4.7) were investigated by asking, "If you received a bill of SEK 20,000.00, how easy would it be for you to pay it within a week?" [124]. Those indicating they would have no or some difficulty were recoded as No before statistical analysis. Others indicating it would be 'very difficult' were defined as experiencing financial distress [123].

The term 'mother tongue' was used as a proxy measure of ethnicity or cultural background, as has been done previously [125]. The question (#4.04) read, "Is your mother tongue Swedish? If no, please state the language." Those indicating Swedish as their mother tongue were categorized as native Swedish speakers. Those reporting a language other than Swedish were all categorized as non-native Swedish-speakers.

Mental health status

Self-reported symptoms of depression during the last seven days were assessed. We used the EDS-5 (#5.6), the short version of the EPDS. The five question short-matrix version was developed and validated in Norway. It has a Cronbach's alpha of 0.76, in comparison to the full version containing ten items [126]. The EPDS has been validated in Swedish for the detection of depressive symptoms during pregnancy with an optimal cut-off at ≥ 13 [127,128]. We used the five Swedish questions corresponding to the EDS-5 with a maximum score of 15 points (0 to 3 points per item).

Symptoms of PTS were investigated by using questions from the NorAQ about symptoms of flashbacks, avoidance, and numbness [66,129]. The questions read, "During the last 12 months have you suffered from: intrusive memories; avoidance of certain situations; or numbness of emotions?" (#5.3-5). Two self-estimating questions measuring physical complaints and anxiety (#5.01-2) during the last twelve months were also included. The answer alternatives were coded No (for 'no or 'yes, but rarely') or Yes (for 'yes, sometimes' or 'yes, often'). Records with at least one of three symptoms were coded Yes symptoms of PTS [129].

Abuse

Self-reporting experiences of three types of abuse were measured as mild, moderate, or severe abuse, according to the NorAQ. Each item or question describes a situation of abuse, to which a woman can reply 'no', or 'yes, as a child', 'yes, as an adult', or 'yes, as both a child and adult'. Three items describe emotional abuse (#3.07-9), three physical abuse (#3.12-14), and four sexual abuse (#3.17-20). One question measuring mild physical abuse (#3.12) was excluded from our analysis because it has previously shown to have low specificity [65]. Those experiencing at least one kind of emotional, or physical, or sexual abuse at any age were recoded into a grouped variable 'lifetime' abuse of an emotional, or physical, or sexual kind. Women were coded No who reported no abuse or had missing values [66]. Following the abuse items, the question "Have you experienced any of this during the last 12 months?" was addressed to those who had reported some abuse. The reply was coded No or Yes for recent emotional, or physical, or sexual abuse.

Outcome

In Paper III our aim was to investigate mental health status in pregnancy, including its prevalence, and analyze risk factors for symptoms of PTS and depression as defined by the short EDS-5. The category native Swedish-speakers was used as the reference in the multivariate regression model because that group had a significantly lower prevalence of symptoms of depression and PTS. We designed four models for the multivariate regression analyses. Model 1 included three background variables: age of participant (continuous in years), ≤ 13 years of education, and experiencing financial distress. Model 2 included age and two variables of social support: not living with a partner, and no one to confide in. Model 3 included age and one variable of professional support: consultation with a psychiatrist or psychologist prior to pregnancy. Model 4 included all of the above factors.

The aim of Paper IV was to study associations between symptoms of depression and PTS and describe the frequency of emotional, physical, and sexual abuse among native and non-native Swedish-speaking women. Types of abuse were recoded into lifetime abuse and successively applied to the multivariate logistic regression model, controlling for a priori selected variables. The same confounding factors were used as those of Model 1 in Paper III, described above.

Statistical analyses

Descriptive statistics were derived from the occurrence of markers (Papers I & II), inpatient diagnostic codes (Paper II), frequency of background, socioeconomic variables (all papers), mental health indicators (Papers III & IV), three types of abuse (Paper IV), and mode of delivery (Papers I & II). All string variables were recoded into categorical variables and into bivariate (0/1) format before statistical analysis. The Chi-squared tests and Student's *t*-test were used to examine differences between groups. The one-way ANOVA was used to test differences in means.

The Cohens's Kappa measure of agreement was used to determine any overlapping markers (Papers I & II). A level of agreement from 0.21 to 0.40 was considered fair, 0.41 to 0.60 moderate, and > 0.61 substantial [130].

More than 30% of the women had least one PTS symptom. The cut-off of having at least one of three PTS symptoms has been used by others [129]. A score of 7 points or more in EDS-5 was used to define moderate depression [126](Papers III & IV).

The bivariate logistic regression included a dependent and an independent variable or covariate, one at a time. Multivariable logistic regression modeling included a dependent and multiple independent variables or covariates, all added at the same time.

Missing data from the KIKA registry (Papers I & II) were either: 1) excluded from the analysis, 2*)* dichotomized into the category 'No', or 3) made into a dummy variable for lack of admitting diagnosis or for smoking habits (Paper II). Missing data from the Bidens questionnaire were treated in a similar fashion (1 and 2 above in Papers III & IV). All analyses were two-sided at $\alpha = .05$. Power was set at 0.80. We reported 95% Confidence Intervals (CI) for crude odds ratios (OR) and adjusted odds ratios (aOR).

Ethical considerations

The fundamental principles of medical research are stated in the Helsiniki Declaration for medical research on human subjects from 1964 latest revision 2008 by the World Medical Associations (www.wma.net). There are three primary principles on which standard of ethical conduct in research are based on: beneficence and nonmaleficence; respect for human dignity and freedom of coercion; justice as the right to fair treatment and the right to privacy [118]. In addition to above principles there is the International Ethic Code for Midwifes, guiding midwifes in education, practice and research, latest revision 2008 (www.internationalmidwives.org).

The ethical vetting for this research adhered to the Act 2003:460 on ethical review of research involving humans, and Patient Records Act of 1980, and the Secrecy Act of 1985. The Regional Ethics Committee of Lund, Sweden, approved the studies for Papers I and II (Dnr350/ 2007). In order to obtain passive consent for the retrospective use of the registry data of childbearing women between 2001 and 2006, we published a letter describing the research project in a regional daily newspaper. Seven women requested to be excluded from the dataset and their personal identification code was deleted. All personal identification numbers were replaced by anonymous numerical codes after data linkage and before any statistical analysis was applied. All physical data has been kept securely locked in a waterproof, fire-resistant cabinet. Electronic data was kept on an identity-protected hard disk and stored in a locked safety cabinet.

The Regional Ethics Committee of Stockholm approved the Bidens study for Sweden (Reg. no. 2006/354-31). The Bidens six-country study was conducted in accordance with the "Ethical and Safety Recommendations for Research on Domestic Violence Against Women" [131]. The importance of ensuring the confidentiality and privacy of women who participate in scientific studies are highlighted. A woman living with a violent partner may be subjected to violence if her participation became known. Women who were in the Swedish cohort in Malmö completed the form at the clinic, and measures were taken not to allow any accompanying person to be with her at the time of the survey. Posters and calling cards with telephone numbers and e-mail addresses of local organizations and institutions supporting battered women were displayed in the general waiting area.

The guiding principle for research is 'to do good' and not to harm individuals. Since statistical analysis is reported at group level the integrity of each individual woman is protected. In addition, the Swedish Act 2001:99 states that official statistics are provided for general information, inquiry and research, and will be objective and publicly available.

RESULTS

One of the main results of this thesis builds on the method of free-text search applied in electronic records (Paper I). Markers of mental ill-health and psychiatric care were both associated with an increased risk of CS compared to having a vaginal delivery (Papers I & II). Prevalence of self-reported mental health status and emotional, physical, and sexual abuse during pregnancy varied between the two groups of Swedish-speaking women. Symptoms of depression and PTS were found to be associated with mother tongue status and a report of lifetime abuse (Papers III & IV).

Markers of mental ill-health and emergency CS (Paper I)

The perinatal KIKA-EMR system allowed us to explore records of 22,053 childbirths between 2001 and 2006 at SUS–Malmö. A free-text search analysis of clinical documentations resulted in truncated words (marked *) reflecting mental health-related problems in pregnancy. Markers of mental ill-health and professional support were tested with Cohen's kappa for agreement and used as exposure variables. Nulliparous women presenting with a singleton cephalic baby for vaginal delivery at term were selected for the analysis. Mean age of 10,662 first-time mothers was 28.6 (range 13 to 46, Std. ± 5.14). Of the total, 23.8% were foreign born, 2.4% had a diabetes code, and 35.1% had a BMI of 25 < 30 (missing data = 28.8%). Women with complete perinatal EMR data (n = 6467) were younger ($p < 0.001$), fewer had a BMI of 25 < 30 ($p = 0.005$), more had a gestational diabetes code ($p = 0.011$), and fewer were Swedish-born than non-EMR women (w/o complete records, n = 4195). The majority of first-time mothers had a vaginal delivery (80.1%), 10.4% had an instrumental delivery, and 9.5% (n = 612) had an emergency CS. The occurrences of markers were significantly more common in women having an emergency CS than in women with a vaginal delivery (Table 3).

Table 3. Marker frequency for nulliparous women in EMR system, comparing vaginal delivery and emergency cesarean section

Markers	EMR-women n = 6467	(%)	Vaginal n = 5855	Emergency CS n= 612	*p*-value
Mental ill-health					
stress*	917	14.2	13.4	21.4	0.000
worry*	720	11.1	10.6	15.8	0.000
depress*	476	7.4	7.2	9.3	0.061
sleep*	366	5.7	5.4	8.5	0.002
anxie*	275	4.3	4.0	6.7	0.003
panic*	196	3.0	2.9	4.1	0.108
PanicAnxie*	342	5.3	5.0	7.5	0.013
deject*	241	3.7	3.6	5.2	0.043
anti-depress*	102	1.6	1.5	2.5	0.085
Professional support					
psychol*	181	2.8	2.7	3.9	0.092
psychiat*	157	2.4	2.4	2.8	0.580

*Truncated words translated into English
[a] Pearson's Chi-squared test, level of significance at $p < 0.05$.
[b] Markers anxie* and panic* had a Kappa value of 0.537 and were combined

The mutually adjusted ORs (95% CI) of emergency CS was 1.05(1.04–1.07) for increasing maternal age, 1.43 (1.18–1.74) for EDA with vaginal birth, 3.62 (2.51–5.20) for registered diabetes, and 3.85 (3.69–4.69) for gestational weeks < 37 and > 42. We therefore adjusted for these factors in the multivariate logistic regression model with vaginal delivery as the reference vs. emergency CS. The analysis resulted in a significantly increased aOR for emergency CS and the markers stress*, sleep*, and worry*, after controlling for pre-selected variables (Table 4).

Table 4. Six markers for mental ill-health and adjusted odds ratios for emergency CS compared with vaginal delivery in nulliparous EMR women (n = 6467)

Markers for mental ill-health	Vaginal delivery n = 5855	Emergency CS n = 612	
	Ref	aOR[a] (95% CI)	*p*-value
stress*	1.0	1.66 (1.34–2.06)	< 0.001
sleep*	1.0	1.57 (1.14–2.16)	0.005
worry*	1.0	1.41 (1.10–1.79)	0.006
PanicAnxie*	1.0	1.36 (0.97–1.91)	0.070
depress*	1.0	1.27 (0.95–1.72)	0.11
deject*	1.0	1.31 (0.88–1.95)	0.18

[a]Adjusted for maternal age, EDA, diabetes and gestational weeks < 37 and > 42

Psychiatric inpatient care and mode of delivery (Paper II)

To examine whether women with mental ill-health in pregnancy (Paper I) and the increased risk of CS were related to a history of psychiatric illness the hospital-based KIKA-records of 17,443 childbearing women (2001 to 2006) were linked with the Inpatient Care Registry from the years 1996 to 2006. We investigated hospital admissions within five years to one week prior to index birth, type of mental disorders by ICD−10 codes, and risk factors for mode of delivery. Of all the women, 39.3% had had inpatient care prior to index birth (27.3% obstetric, 10.1% somatic, and 1.9% psychiatric inpatient care). Diagnoses of mental disorders at psychiatric admission (n = 333) were categorized into five groups: 1) personality, behavioral, or unspecified disorder (30.9%), 2) affective disorders and 'suicide attempt' (28.9%), 3) neurotic or somatoform disorders (18.9%), 4) substance use (17.1%), and 5) schizophrenia (4.2%). Table 5 shows some of the characteristics of the above women by inpatient care status. Those with a history of psychiatric inpatient care were more often single or divorced ($p < 0.001$), below age 24 at the time of the index birth ($p < 0.001$) than women without inpatient care, and fewer were first-time mothers ($p < 0.001$). More women with prior psychiatric admissions reported that they were smokers at the booking visit than those without any type of care (30.9% vs. 7.1%, not shown). Statistical differences were found for Sweden as country of birth, twins, pregnancy-related diabetes, induced labor, EDA, and mode of delivery between the care groups, compared to psychiatric inpatient care.

Table 5. Characteristics and delivery outcomes of 17,443 (%) women with psychiatric inpatient care, compared to other types of, and without inpatient care

	w/o n = 10,581	Obstetric n = 4773	Somatic n = 1756	Psychiatric n = 333
Age at delivery				
< 24 years	17.6	11.6	20.0	[a]33.6
25–34 years	63.8	65.7	60.8	48.9
≥35 years	18.6	22.8	19.1	17.4
Nulliparous	[a]70.2	[a]31.6	54.9	[a]56.5
Parous	39.8	68.4	45.1	43.5
EDA at vaginal	[b]15.6	[a]8.7	[a]13.1	[a]17.7
Spontaneous delivery	77.6	[a]80.5	74.7	[a]76.9
Instrumental delivery	[a]7.8	3.9	5.5	[b]4.5
Emergency CS	9.0	8.8	10.8	[a]11.1
Elective CS	5.3	6.5	8.8	[a] 7.5

[a] $p < 0.05$, [b] no significance

Note: Pearson's Chi-square test; the prevalence of variables of those with psychiatric inpatient care were compared with those of obstetric, somatic, or w/o inpatient care (significant factors for psychiatric care, shaded)

In the multivariable regression analysis women without inpatient care was retained as a reference group compared to other types of prior care and risk of CS. The model for elective CS controlled for factors of breech, twins, gestational age < 37 and > 42, maternal age, diabetes, nulliparous, and smoker. Elective CS was significantly associated with prior psychiatric care (aOR 2.10, p = 0.000) and somatic care (aOR 2.16, p = 0.002). For the analysis of emergency CS induced labor and EDA at vaginal birth were added to the model. The relationship between emergency CS and prior psychiatric care (aOR 1.60, p = 0.017) and obstetric care (aOR 1.15, p = 0.050) was within the 95% CI, but did not reach the conservative significance level of $p \leq$ 0.01. The occurrence of markers of mental ill-health in pregnancy records among women with a history of psychiatric care was between two- and ten-fold that of women with other types of care (p < 0.001). Records of consultations for 'fear of birth' in pregnancy were twice as high for women with prior psychiatric inpatient care (8.4%), compared to women in obstetric inpatient care, and those without inpatient care (3.8%, respectively; < 0.001). The adjusted risk estimates between mode of delivery and markers of mental ill-health in pregnancy are shown in Table 6. Reporting psychosocial support seems indicative of mode of delivery.

Table 6 Relationship between markers for mental ill-health, counseling in pregnancy, and mode of delivery of 11,444 women with complete EMR data

Markers for mental ill-health[a] and consultations	Elective CS vs. Spontaneous		Emergency CS vs. Spontaneous	
	[c]aOR (95% CI)	p-value	[d]aOR (95% CI)	p-value
'Fear of birth' consultation[b]	9.72 (7.34–12.88)	0.000	1.78 (1.28–2.48)	0.001
Counselor[b]	1.64 (1.16–2.33)	0.005	1.50 (1.17–1.92)	0.001
Counselor & fear			1.45 (1.23–1.86)	0.004
Stress	1.33 (1.01–1.77)	0.044	1.78 (1.48–2.13)	0.000
Stress & fear			1.74 (1.44–2.09)	0.000
Worry	2.99 (2.34–3.83)	0.000	1.49 (1.22–1.82)	0.000
Worry & fear	1.69 (1.28–2.23)	0.000	1.39 (1.13–1.72)	0.002
Panic/anxiety	3.45 (2.54–4.68)	0.000		
Panic/anxiety & fear	1.65 (1.17–2.34)	0.000		
Psychologist	2.85 (1.85–4.40)	0.000		
Psychologist & fear	1.74 (1.10–2.76)	0.018		
Psychiatrist	1.98 (1.21–3.25)	0.006		
Psychiatrist & fear	1.28 (0.76–2.18)	0.348		
Dejected	1.66 (1.08–2.56)	0.022		

[a]Markers identified by free-text search of EMR (shaded); [b]Specific clinical records;
[c]Elective CS, adjusted for breech, twins, gestational age < 37 and > 42, mother's age (continuous), diabetes, nulliparous, and smoker; [d]Emergency CS, adjusted for 'c' & induced labor, and EDA at vaginal delivery, multiple logistic regressions, each marker entered one by one to the models and by adding consultation for 'fear of birth'.

Mental health status and mother tongue (Paper III)

The cross-sectional design of the Bidens study allowed us to explore risk factors for symptoms of PTS and depression. The questionnaire was filled out in gestational weeks 27 and 30 (mean 28.6, SD ± 1.73) by 1025 women with a mean age of 30.3 (SD ± 4.68). Among all the women, 788 (76.9%) were native Swedish speakers and 237 (23.1%) reported a mother tongue other than Swedish. In total, 41 languages were found and collated into five geographical or linguistic groups: 28 women spoke Nordic languages other than Swedish (2.7%); 48 spoke a West Germanic/Northern European language (4.8%); 60 spoke a Slavic or Central European (5.9%); 45 spoke Arabic, Turkish, or Kurdish (4.4%); 34 spoke Asian languages (3.4%); 22 did not specify any language (2.1%) and were then excluded. Because each group included several different languages and was too small for further analysis, we created two categories: native and non-native Swedish speakers (n = 215). The non-native speakers were more likely to be younger, had fewer years of education and were experiencing financial problems (Table 7). More non-native Swedish speakers lacked social support (p = 0.004) and did not live

Table 7 Characteristics of study population comparing native and non-native Swedish-speaking women (n = 1003)

	All N = 1003	Native n = 788	Non-native n = 215	p-value[a]
Age in years	(%)	(%)	(%)	
< 25	112 (11.2)	8.4	21.4	0.001
25–29	321 (32.0)	31.5	34.0	
30–35	443 (43.2)	46.1	32.6	
> 35	137 (13.7)	14.1	12.1	
Education (n = 990)				
≤ 13 years	339 (34.2)	30.8	47.1	< 0.000
≥ 14 years	651 (65.8)	69.2	52.9	
Financial distress (n = 977)				
No	701 (69.9)	77.5	50.5	
Yes, some	186 (18.5)	16.4	28.8	
Yes	90 (9.0)	6.1	20.7	0.002
EDS-5[b] (n= 981)				
≥ 7 points	138 (13.8)	11.5	21.9	< 0.001
≥ 8 points	89 (9.1)	6.7	18.4	< 0.001
PTS[c]-symptoms				
No, PTS	697 (69.5)	72.3	59.1	
Yes, PTS	306 (30.5)	27.7	40.9	< 0.001

[a]Comparing native and non-native Swedish-speaking women by Pearson chi-square or Fisher's exact test, level of significance $p < 0.05$
[b]EDS-5 = Edinburg Depression Scale short version
[c]PTS = Posttraumatic stress

with their partner (p = 0.002) compared to native Swedish women. Having more than two negative life events during the last 12 months was as common in native as in non-native Swedish speakers (27.2% and 25.9%, respectively). More non-native Swedish speakers self-reported symptoms of depression, PTS, anxiety, and psychosomatic symptoms (p < 0.001), and fewer had consulted with a psychiatrist or psychologist than native Swedish women had. In all, 13.8% of the women had depressive symptoms that were defined by EDS-5 as 7 or above. Non-native status was associated with statistically increased risks of depressive symptoms and having ≥ 1 PTS symptom, compared to native-speaking women. Four models of multivariable regressions were performed, including background variables, and social or professional support. The fourth model which included all factors, resulted in an aOR for depressive symptoms of 1.75 (95% CI: 1.11–2.76) and PTS symptoms of 1.56 (95% CI: 1.10–2.34) for non-native Swedish speakers.

Self-reported depression, PTS, and abuse (Paper IV)

The stronger association between symptoms of depression and PTS among non-native Swedish speakers found above was not explained by psychosocial factors. To further explore risk factors of poor mental health, the self-reported experience of abuse was included (Paper IV). The prevalence of emotional, physical, and sexual abuse was available from the Bidens cohort (n = 1003). Lifetime abuse was about twice as likely among women with symptoms of depression and PTS compared to those without those symptoms (Table 8).

Table 8 Distribution of depressive and PTS symptoms by types of lifetime abuse

Depressive symptoms [a]	*Total*	*No*	*%*	*Yes ≥7*	*%*	*p-value*[c]
No	811	717	88.4	94	11.6	
Yes, lifetime emotional abuse [d]	152	111	73.0	41	27.0	<0.000
No	851	735	87.4	106	12.6	
Yes, lifetime physical abuse [e]	135	102	76.1	32	23.9	0.001
No	819	716	87.4	103	12.6	
Yes, lifetime sexual abuse [d]	149	115	77.2	34	22.8	0.002
PTS symptoms [b]	*Total*	*No*	*%*	*Yes ≥1*	*%*	*p-value*[c]
No	826	615	74.5	211	25.5	
Yes, lifetime emotional abuse [d]	158	70	44.3	91	55.7	<0.000
No	857	632	73.7	225	26.3	
Yes, lifetime physical abuse [e]	140	63	43.6	79	56.4	<0.000
No	838	612	73.0	226	27.0	
Yes, lifetime sexual abuse [d]	151	75	49.7	76	50.3	<0.000

[a] EDS = Edinburgh Depression Scale ≥7 points moderate symptoms during last week
[b] Yes, PTS = at least one of three posttraumatic stress symptoms in the last 12 months.
[c] p-value Fisher's Exact test, 2- sided
[d] Lifetime abuse as any kind of abuse in the prior 12 months grouped variable of mild, moderate, or severe abuse [e] except physical abuse

Abuse reported during the last 12 months (= recent abuse) was 2.1% emotional, 1.7% physical, and 0.3% sexual; no significant difference was found between the two groups of Swedish speakers.

We added lifetime experience of three types of abuse as exposure to the model to analyze associations with mental health status. The crude risk for symptoms of depression among all women was OR 2.82 for lifetime emotional abuse, OR 2.18 for physical abuse, and OR 2.06 for sexual abuse. The crude estimates for PTS were OR 3.66 for lifetime emotional abuse, OR 3.64 for physical, and OR 2.74 for sexual abuse. These crude estimates of depressive and PTS symptoms were more elevated for emotional and physical abuse in non-native Swedish speakers, but not for sexual abuse, where the symptoms above were higher in native Swedish-speaking women. After controlling for the background factors applied in the multivariable regression model (Table 9), the differences in the risk between non-native and native Swedish-speaking women remained significant.

Table 9. Symptoms of depression in last week and PTS symptoms in last 12 months and aOR[a] for three types of lifetime abuse in native and non-native Swedish-speaking pregnant women (n = 1003)

Lifetime abuse	Depressive cases/N	All women aOR(95% CI)	Native aOR(95% CI)	Non-native aOR(95% CI)
Emotional abuse	41/963	2.64 (1.70–4.10)	1.98 (1.15–3.43)	5.04 (2.19–11.61)
Physical abuse	32/975	1.82 (1.23–2.95)	1.36 (0.74–2.50)	3.41 (1.44–8.08)
Sexual abuse	34/968	1.97 (1.24–3.12)	2.04 (1.20–3.48)	2.35 (0.86–6.46)
Lifetime abuse	PTS cases/N	All women aOR(95% CI	Native aOR(95% CI	Non-native aOR(95% CI)
Emotional abuse	88/984	3.55 (2.47–5.10)	3.44 (2.27–5.21)	3.91 (1.80–8.48)
Physical abuse	79/997	3.56 2.40–5.19)	2.69 (1.74–4.18)	13.33 (4.39–40.50)
Sexual abuse	76/989	2.67 (1.85–3.87)	3.15 (2.09–4.75)	1.59 (0.65–3.91)

[a]Adjusted odds ratios (aOR) for increasing age in years, ≤ 13 years of education, and experiencing financial distress
CI = Confidence Intervals
PTS = Posttraumatic stress

DISCUSSION

In epidemiological studies, like those of this thesis, limitations may be found in study design, measurements of exposure and outcome, and include methodological and analytical aspects that may have affected the interpretation of the results. This will be discussed below.

Methodological aspects

Epidemiological studies typically use variety of methods to investigate public health problems. Descriptive studies describe pattern of disease occurrence in relation to variables of person, time, and place [132]. Identifying the characteristics of a population constitutes an important step in search of risk factors that can be altered or eliminated. In cohort studies, which may be prospective or retrospective, subjects are classified on the basis of presence or absence of exposure [132]. Cross-sectional studies collect all information of interest at one time, making temporal relationship between exposure and disease difficult to proof [133]. Thus, analytical statistical methods make it possible to compare groups, calculate risk estimates, and discern correlations between variables of exposure (independent) and disease (dependent), or by adjusting for confounding factors [133].

Studies that derive from registries are by definition observational studies. Records from different sources may be linked to broaden their usefulness [134]. The use of registries is suitable for situations where experimental research is not feasible. Conventional models of cohort, case-control, and case-cohort are commonly applied to register data [135]. Since the aim of this thesis was to identify mental ill-health, examine prior psychiatric inpatient care, and seek associations with mode of delivery, registry studies seemed a reasonable approach. The most suitable design to

investigate mental health status and to explore risk factors in pregnancy appeared to be a cross-sectional study.

Confounding

The Latin word *confundere* means to mix together. Confounding is a result of the strength of the association between a confounder and both exposure and outcome variables [136]. It is often measured by the Chi-squared test. In the four papers, upon which this study is based, we analyzed the distribution of independent and dependent variables and tested differences between groups by Pearson's Chi squared test or Fisher's exact test (when $n < 50$). In *Practical Statistics for Medical Research*, Altman remarks that the size of p or the Chi-square test does not necessarily indicate a causal relation between variables. The strength of an association is rather evidence against the null hypothesis i.e., no association [133]. Although most independent variables and covariates were carefully selected a priori differences observed in the distribution between groups were discussed before they were applied in logistic regression and the multivariable regression models. In reproductive epidemiology, problems can occur in analyzing risk models, and over-adjustment may in itself produce a bias [134]. Plausible confounding factors for exposure and outcome will be further discussed under the section "Interpretation of the results".

Strength of association

There are two types of error relating to the strength of an association. Type I or *alpha* is the error of rejecting a true null hypothesis by declaring that a difference exists when it does not. It relates to level of statistical significance commonly set in advance at 5%. Type II or *beta* is the error of failing to reject a false null hypothesis and declaring that a difference does not exist when in fact it does. Beta depends on the size of the effect and the sample size. The power of a study to detect an effect of a specified size and that shows a wide confidence interval is an indication of low power [133].

The population for Study 1 included 6474 nulliparous women in exploring risk factors for emergency CS. Applying power calculation to the rate of 612 emergency CS cases required 5508 control patients. Prior analysis indicated a probability of exposure among controls of 0.087. Since the true OR for disease in exposed subjects relative to unexposed subjects was 1.66, we were able to reject the null hypothesis that this OR equals 1 with a probability (power) 96%. The Type I error probability associated with this

test and the null hypothesis is 0.05. We used continuity-corrected chi-squared statistics or Fisher's exact test to evaluate the null hypothesis. Paper II, included linked data of all 17,443 childbearing women and those with complete EMR data (n = 11,444) to test associations with mode of delivery. After adjusting for confounders in Papers I and II we compensated for the probability (power) by increasing the level of significance to $p \leq 0.01$ for the risk estimates.

The power calculation performed for the main Bidens project was a comparison between victims of violence and four controls within a cohort of unselected women, where the outcome was instrumental delivery (including CS). Given a difference in the rate of instrumental deliveries between 25% and 18% (cases versus controls, estimates from a study in Trondheim) a total of 2500 women were needed, resulting in 500 per country [137]. Mental health status was not an objective of the main study so the power calculation did not include a risk analysis of CS associated with symptoms of depression and PTS or abuse. However, by applying national data [49] we calculated the probability based on severe symptoms of depression by Edinburgh Depression Scale in pregnancy among native Swedish-born and forging-born women. A similar difference between 15.3% versus 6.9% would require a sample of 190 in each group. Resulting in 0.80 power at $p < 0.05$ for the population of 1025 women of Swedish Bidens cohort.

Validity and generalizability

The term validity is derived from Latin *validus,* strong, and has many meanings and is usually accompanied by a qualifying word or phrase. For example, measurement-validity is defined as an expression of the degree to which a measurement measures what it implies to measure. External validity or generalizability refers to whether a result is applicable to other populations, and have some bearing on our studies.

In Study 1 a qualitative method with an inductive approach [118] was used to identify markers of mental ill-health by a free-text search of perinatal electronic records. We used face validity to test content and construct validity [118] of the identified expression from records with a psychiatric diagnostic F-code or the word 'antidepressant'. The result led to thirty truncated words, and these were processed in a single file. After a second benchmarking discussion, twenty truncated word units were chosen to represent markers of mental ill-health. These were processed thru the files of 22,053 deliveries by 17,443 women. Although the markers are reported in English, the original

text was in Swedish. Applying these markers to patient records in other languages must be done with caution.

In addition, the writing of clinical notes is regulated by the Swedish Patient Record Act and the Secrecy Act. These acts allow patients to read their records and file complaints about the wording. The notes must convey information pertinent only to the health status. Hence a certain degree of 'documentation culture' was likely to be present in the records. The results of Papers I and II apply to women within the catchment area who attended public antenatal clinics during their pregnancy and delivered at SUS-Malmö. Mode of delivery was classified according to distinct and mutually exclusive ICD codes and was gathered as string variables from the KIKA-EMR system. The increased risk of emergency CS that was associated with certain markers in Paper I with prior inpatient care in Paper II were not analyzed in records of women who attended other clinics during their pregnancy and hence are not generalizable for that segment of the population. Nevertheless, the rate of the main outcome (CS) was higher among women without complete EMR compared to those included in the analyses. Further investigation exploring risk factors for CS among the former would be needed.

Other issues of validity and reliability that relate to questionnaire studies include information and recall bias, selection, and misclassification bias (Papers III and IV). The Bidens questionnaire used questions and instruments that were validated in Swedish, and specified coding that other researchers have used previously [65,122,123,126,128,138]

A questionnaire-based study requires the informed consent of each participant and builds on the willingness of self-reporting background information, incidence and experiences. Results may be influenced by internal, external, or personal factors such as social desirability [80,139,140]. A review concluded that self-rated health "measures something more – and something less – than objective medical rating" and an individual's health cannot be assessed without using self-rating [141]. Although the women in our study responded in Swedish, we cannot ascertain how well they understood each question. However, no significant differences were found in frequency of missed values between the native and non-native Swedish speakers regarding background data and items for EDS, PTS, or abuse (Papers III and IV).

When using the ten-item EPDS to assess antenatal depression, the cut-off '15 or more' (instead of ≥ 15) has been suggested for probable major depression, and 13 or more (instead of ≥ 13) probable minor depression in English-speaking women. We chose the short matrix EDS-5 and used a score 7

points or more to define moderate depression [126]. The concepts of measuring depression as in the full EPDS has been translated and validated in 30 languages, but fewer validation studies are found for antepartum depression [42,142-147]. We opted for the same three questions: symptoms of intrusion, avoidance, and numbness, as used for PTS in similar earlier research [129,138]. Since the co-morbidity of perinatal depression and PTS is well known the PTS symptom of numbness may partly overlap with symptoms of depression in this study [148]. Another longer instrument reflecting PTS disorder could have been used instead [18,148].

In seeking a definition for ethnicity that would be applicable to all six countries of the Bidens project, country of birth as a category seemed inadequate as it does not differentiate between individuals and offspring of first, second, or third generation immigrants. We chose mother tongue as a proxy for ethnicity as others have done before [125,149]. We are aware that studies in the US and the UK often describe segments of populations by skin color (i.e., white, black, and brown), heritage, or combination of these when defining minority African-American, Caribbean, Latino, Mexican, Chines, Asian or European ethnic groups [150]. Canadian and Australian studies on health and migration prefer country of birth or origin, citizenship, native vs. non-native, or language spoken [151,152]. We might have asked for country of birth, as Statistics Sweden does; however, given the multicultural complexity of the population of Malmö and its different generations of immigrants, the variable 'mother tongue' seemed a more reasonable choice. We attempted to categorize the languages reported by women into linguistic and geographical groups similar to those used by earlier studies in Sweden [112,153]. However, the numbers within each of these groups were too small for statistical analyses leading us to choose two groups: native versus non-native Swedish-speaking women. One-third of all women at childbearing age in Malmö are foreign born. Because of ethics restrictions we could not collect data on non-participants. The inclusion criterion was a self-assessed capability to understand Swedish; a selection biased towards that ability is possible. The proportion of women with a mother tongue other than Swedish might be underrepresented, so that the Malmö Bidens cohort may only reflect those who are native or non-native speakers of Swedish.

Reliability

The term 'reliable' refers to the degree of stability achieved when a measurement is repeated under identical conditions. Lack of reliability may

arise from divergences between observers, instruments, measurements, and procedures in handling data. Reliability issues may have affected the results of Studies 1 and 2.

The perinatal data used in Papers I and II were derived from registries whose available information has high level of stability, lack problems with recall bias since it is recorded prospectively, but limited to the information that is recorded [135]. Data in the perinatal KIKA-EMR system was recorded from 2001 to 2006. The linked Inpatient Care Registry has been determined to have high validity for most diagnoses [154]. We also analyzed information from 1996 to 2006 referring to the date and diagnostic codes at admission for inpatient care. Since women had multiple births and the two periods above overlapped we chose a five-year window for inpatient care and childbirth as clinically relevant. The linked data was then aggregated at the individual level with regard to an admission for inpatient care a maximum of five years to one week prior to the index birth.

In the KIKA registry all the data was electronic and entered during pregnancy and before childbirth by skilled clinical staff. The outcome measure and mode of delivery were categorized according to the ICD−10 codes in collaboration with a senior obstetrician [93-95]. For Paper II we used the National Inpatient Registry to identify admitting diagnoses for inpatient care. Based on principal, first additional diagnosis, or type of admitting clinic, four types of inpatient care were identified in the records of women: 1) without inpatient care; 2) with prior obstetric care; 3) with prior somatic care; or 4) with prior psychiatric inpatient care. An unknown degree of misclassification may be present in Paper II since women with pregnancy-related complications could have been admitted for somatic or obstetric inpatient care, while pregnancy-related admissions were categorized based on obstetric codes 'O'. In the analysis we only adjusted for data on pregnancy-related diabetes. We assumed that other conditions, such as hypertension, were accounted for indirectly by an O-code at admission.

Electronic translation keys were used for converting records with ICD−9 codes into ICD−10 and F-codes [15,16]. A senior psychiatric consultant confirmed or modified each translated code for correctness and supervised the collation of the five groups of mental disorders presented in Paper II. ICD–10 codes of self-inflicted injuries were classified under mood disorders since signs of depression are common in suicidal ideation or attempts. Some degree of misclassification may have been present within the groups. No significant

associations or modes of delivery were identified in respect to the small numbers of each F-code or how the disorder groups were categorized.

Interpretations of the results

The goal of antenatal care is an optimal birth experience for the mother and child. While various biological, psychological, and social factors influence the process of childbearing, knowing a woman's obstetric and psychiatric history and the state of her health can aid clinical intervention. Occurrences of mental ill-health in childbearing women and risk factors were reported in four papers.

Markers of mental ill-health

The KIKA-EMR system allowed us to identify truncated words of self-reported mental health problems in the records of 17,443 women who gave birth between 2001 and 2006 at SUS-Malmö. The added value of this study rests in it being population-based, with the potential exposure variables documented prior to delivery outcome, eliminating recall bias [133]. Furthermore, since none of the words are routinely used in free-text documentation for this patient group, finding such expressions are a positive marker for the existence of that specific condition. In essence the truncated words, describe common psychosocial symptoms that can affect a pregnant woman [155]. Although the markers reported in Paper I and II have not been further validated they indicate a range of self-reported mental problems in pregnancy that are not unlike the distributions of DSM–IV or ICD–10 mental disorders in other studies [7,156]. The occurrence of markers in Table 3 among first-time mothers (7.4% *depressed*, 3.7% *dejected*, and 5.3% *panic/anxiety*) was similar to the point prevalence of major and minor depression, and anxiety disorders found in pregnant women in a previous Swedish study (3.3%, 6.9%, and 6.6%, respectively) [25]. Additionally, only a few women (5.5%) in the study cited reported receiving treatment for mental illness; the majority were undiagnosed. In the EMR we found a similar level of treatment defined as markers of psychosocial support with psychologist (2.8%) and psychiatrist (2.4%).

A statistical relationship was found between a history of psychiatric inpatient care within five years of giving birth and documented symptoms of mental ill-health during pregnancy. Psychiatric symptoms in pregnancy in women with personality disorders has been reported previously [157]. Despite the lack of any correlating evidence, a relationship between the diagnoses and markers of mental ill-health appeared in our study in women with a history of

psychiatric admissions. For example, the frequency of ICD−10 F code versus that of markers in records of women with prior psychiatric inpatient care was 14.7% mood disorders (F30-38) versus 42.2% *depressed* or 16.3% *anti-depressant;* 11.4% had a distress reaction-code (F43) versus *stress* (21.9%) recorded*;* 14.1% had a self-harm admitting code versus *suicide* (12%) documented in the EMR. These frequencies of markers may be an indication that women with prior psychiatric problems do express symptoms in pregnancy, and that a woman's antenatal health status was documented in the EMR by clinical staff during the years analyzed (2001 to 2006). On this basis, we believe that our method of identifying markers of mental ill-health as indicators of measurable mental health problems, despite its novelty, is valid. No other studies of free-text data mining have been published to our knowledge. However, researcher have identified mental problems by merging sets of records in an obstetric setting, and psychiatric hospital records have been correlated with somatic comorbidity by a stratified analysis of electronic records [117,158].

Prior psychiatric illness

Using the same population as in Paper I, we investigated inpatient care and psychiatric diagnoses by ICD−10, F-codes in records between 1996 and 2006. The socio-demographic characteristics of women admitted for psychiatric inpatient care was compared with those without such care and found to be similar to women in other studies (i.e., single, of younger age, smokers, and nulliparous) [12,159]. Shortcomings to this study may be an underestimation of psychiatric morbidity, since the exposure variable 'psychiatric admission' was collected for a period when national psychiatric reform had reduced the number of hospital beds for the mentally ill [2]. There are also known problems with the National Inpatient Registry, as not all psychiatric admissions are assigned a diagnosis [77]. In addition, one-third of the admissions examined by our study had unspecified diagnoses or lacked a principal psychiatric diagnosis. Therefore, an unknown level of misclassification and an underestimation of the exposure psychiatric admission or F-diagnosis may have affected the estimates. Nevertheless, our results showed that 1.9% of the women (mean age 28.0 SD ± 6.18 at index birth) had had a history of psychiatric inpatient care.

The level of admissions found is comparable with a 1989 to 2001 study of first-time mothers in Sweden that reported 0.37% psychiatric hospitalization within 42 weeks before delivery, excluding behavioral, personality

disorders, and substance use [12]. Since we used a five-year window prior to the index birth, it was difficult to compare our results with population studies reporting point, 12-month, or lifetime prevalence. Still, one discrepancy in the result was found in relation to other studies, in that 4.2% of 333 women with psychiatric inpatient care had a schizophrenic diagnosis compared to a mean prevalence of 0.54% in females identified from a systematic review [160]. The prevalence in our study would require further investigation to clarify this difference. However, one explanation may be that women with a known psychotic diagnosis received antenatal care by specialists [29,161] at the Department of Obstetrics and delivered at SUS-Malmö, and thus were recorded in the KIKA-EMR. In such cases, instead of seeking ANC and delivering elsewhere, women with schizophrenia may be overrepresented in our hospital-based population.

The proportions of other psychiatric illnesses reported in Paper II (i.e., groups of mental disorders) are in agreement with that of women from a hospital catchment and a primary care study [162,163]. Although, we only analyzed inpatient records, our findings indicated a range of severe psychiatric morbidity in this childbearing population. Since a woman's mental illness can affect her pregnancy, delivery outcome, and newborn child, our results highlight the importance of a systematic assessment of a woman's mental health during pregnancy [22,164-167].

Risks factors for cesarean section

Of all first-time mothers presenting with a singleton cephalic lie baby at term (n = 6467), 9.5% had an emergency CS (Paper I). The occurrences of markers indicating stress (14.2%), worry (11.1%), and sleep disturbances (5.7%) were associated with mode of delivery. Although these markers are not linked to any specific mental disorder, they were the strongest predictors for an increased adjusted risk of emergency CS (aOR 1.66 for stress, for worry 1.57, and for sleep disturbances 1.41) compared to having a spontaneous vaginal delivery. The significantly increased risk remained after controlling for the confounding factors of maternal age, gestational weeks, EDA, induced labor, and gestational diabetes – all established risk factors for CS [96,120,168,169]. These ordinary complaints in pregnancy may have been overlooked during the period of our study. Women presenting with such symptoms might, therefore, need closer monitoring in the future. This particularly applies to those reporting sleep disturbances, since they may be both symptomatic of and factors that might exacerbate depression [170-172]. The meaning of the

Swedish noun, adjective, or verb format for worry (*oro*) or anxiety (*ångest*) in our documentation may also have been an expression of actual distress (*ängslan/lig*). Thus a biological explanation could be found in studies of maternal stress, anxiety (state or trait), or neuroendocrine pathways affecting the placenta and the heart rate of the unborn baby [57,173,174]. However, other studies on antenatal depression and anxiety are inconclusive as to correlation with mode of delivery [33,35,175].

A limitation to the observed risk is that we only included pregnancy-related diabetes. Additional medical conditions such as preeclampsia or other maternal medical indications for emergency CS were not controlled for in the analysis. We adjusted for gestational weeks but not for the birthweight of the newborn or the BMI of the mother at time of delivery [176,177]. The frequency of ANC visits or seeking medical attention was not accounted for, although it might relate to a woman's health status and could vary between ethnic groups [44,82]. Given these limitations we can only suggest that the indications of stress, worry, and sleep disturbances correspond with a theoretical stress-hypothesis affecting the newborn, the mother or both, and may affect the ability to cope with the situation, leading to an emergency CS. Nevertheless, the findings are in agreement with national data showing that 67% of the emergency CSs analyzed had fetal indications (distress) or were due to insufficient contractions (dystocia) [98].

Among the women of Paper II (n = 11,444), a higher frequency of elective (7.5%) and emergency CS (11.1%) was identified in those with prior psychiatric inpatient care, compared to those without prior inpatient care (5.3% and 9.0%, respectively). After adjustment for established confounding factors (including smoking) and a history of psychiatric or somatic inpatient care, the increased risk for CS remained, as compared to spontaneous vaginal delivery. Emergency CS associated with antenatal depression and psychiatric diagnosis during pregnancy and with elective or emergency CS have been reported in other Swedish populations [23,178]. Data from the National Birth Registry (2006 to 2009) has shown that women without a psychiatric diagnosis were slightly more likely to undergo emergency CS than an elective one (67% versus 33%) than those with diagnoses of depression or anxiety (60% emergency, 40% elective). Women with psychosis more often had elective CS (54%) than emergency (46%) [179]. The strongest indicator of elective or emergency CS in Paper II was the presence of a clinical record for a 'fear of birth' consultation, which was twice as common in records of women who had previously been in psychiatric care than those who were not, or who

had only received obstetric inpatient care. The frequency of fear of childbirth, as clinically measured by its severity or intensity ranges from 5% to 15% in pregnant women, can be influenced by a woman's preference for a CS [180-182]. Self-reported or clinically defined fear of childbirth is not uncommon in women with mental health problems or anxiety, or among women who report a history of abuse [183-185]. These experiences are associated with elective or emergency CS deliveries, whether or not psychological counseling has taken place, as our results also suggest [182,186,187]. Fear of childbirth and psychiatric disorders in pregnant women may go underdiagnosed and undertreated [159,188]. A referral to a multidisciplinary psychosocial team is recommended for such women in Sweden [29,189]. Our result from Paper II shows that in addition to assessing a history of mental ill-health, antenatal care givers need to pay special attention to younger, single women, who are smokers. Those reporting fear of childbirth should be offered psychological support during pregnancy and perhaps referred for further evaluation [190,191].

Risk factors for depression and PTS

In the Bidens study in Malmö we assessed the prevalence of and explored risk factors influencing the mental health status of 1003 women (mean age 30.3) attending ANC in the third trimester of pregnancy (Papers III & IV). There are some shortcomings to this study. The Swedish-speaking ability was self-declared and language background of non-responders was not accounted for and so non-native Swedish-speaking women may have been underrepresented in the sample. In addition, since the prevalence of depression and PTS was more elevated among non-native Swedish speakers (including those with a Nordic or Western background), as compared to native Swedish-speaking women, it is plausible that the estimates are underestimated.

This is the first study to our knowledge using the five-item EDS in the Swedish language and to use a score of ≥ 7 to define depressive symptoms in third trimester of pregnancy [126]. We found the prevalence of depression to be 21.9% in non-native versus 11.5% in native Swedish-speaking women ($p < 0.001$). A similar difference between non-native and native born Swedish women was reported in early pregnancy in a national sample using the EPDS at ≥ 14 (15.3% and 6.9%, respectively) [49]. The discrepancy between the two studies may be due to a ten year difference and their cut-off was quite high (i.e., reflective of a high level of depression). The level at ≥ 7 of our study for moderate symptoms corresponds to EPDS ≥ 10 in pregnancy [126,192].

The cut-off scores vary between countries and cultures [193]. Among Jordanian women in their third trimester, the Arabic version of EPDS identified 19% with probable antenatal depression at score ≥ 13 [194]. Few studies are found that compare mental health between native and non-native women, especially during pregnancy. One study entitled "Mothers in a New Country" identified a young age, homesickness, loneliness, and inadequate English as factors contributing to maternal depression for immigrant women in Australia (EPDS ≥ 13) [195]. The strongest predictor for depressive symptoms in our study was 'usually or always feeling lonely', and was more commonly found in non-native than in native Swedish-speaking women. In addition, not living with a partner was more common among the non-native speakers of Swedish (7.9%, and 2.9% in native Swedish-speakers).

Instead of using a longer PTSD instrument we chose three questions and defined PTS as having at least one of these symptoms. More non-natives than native Swedish-speaking women were identified with having PTS (40.9% versus 27.7%). A high frequency of PTSD (32.6%; Harvard Trauma Questionnaire ≥ 2.5 of 16 items) and depression (16.0%; Beck Depression Inventory ≥9) was identified among women in an area of instability and violence in southern Lebanon [196]. This is cited because major proportion of the foreign-born population in Malmö originates from areas of war and conflict. Although we do not know country of birth of the women in our study sharing such history may explain some of the higher frequency of symptoms of depression and PTS in women with an ethnic language other than Swedish.

Childhood sexual abuse, domestic or physical violence, and intimate partner violence are established risk factors and contribute to consequences of mental and physical health problems before and after childbirth [64,197-199]. A review study has demonstrated domestic violence, life stress, and lack of social support to be significantly associated with antenatal depression [155]. We used the NorAQ and assessed the prevalence of three types of lifetime abuse and associations with mental health symptoms between the two groups of Swedish-speaking women. The NorAQ instrument has been translated into several languages and used in a variety of cultures [66,200]. The prevalence of lifetime and recent abuse that we found in pregnant women was comparable to previous national studies [66,67]. We determined that all lifetime abuse was associated with symptoms of depression and PTS as opposed to instances of women without such symptoms. The associations remained after controlling for socio-demographic factors. We are not aware of any other studies showing

such correlations between depression and PTS and three types of abuse measured by NorAQ in an unselected population of pregnant women. The results highlight the need to ask pregnant women about all types of abuse, and not just sexual abuse or partner violence, since the effect of abuse is longstanding and can be detrimental to both mother and child [201-205].

A changing society

The composition of the population of Malmö differs from other cities in Sweden in that Malmö uses the term 'foreign-born' or of 'foreign background', to define the diversity of its population, including the children of foreign-born parents. More than one-third of the childbearing women of Malmö are foreign-born, compared to the national average of 20% [104]. In the KIKA-EMR system, country of birth is documented, and at times mother tongue is indicated when a woman does not speak Swedish, in order to identify a language for interpretation. Among the 17,443 women who make up our cohort 32% were documented as born in a country other than in Sweden. No differences were found as to country of birth and the risk of CS in first-time mothers (Paper I). A higher frequency of foreign-born women was found among those without inpatient care (31.0%) than among women with prior psychiatric care (28.8%; $p < 0.001$). The percentage was lower among women in prior obstetric or somatic inpatient care (28.5% and 24.4%, respectively). Differences between ethnic groups and mental health utilization, and in natives versus non-natives in seeking medical treatment, have been reported by others [206,207].

International studies on migration and health use different categories to define background status [150,151,208,209]. We chose mother tongue for our cross-sectional study whereas the national registries use country of birth to categorize by geographical areas [123,210], not unlike employment of our linguistic groups. In this regard, an expert panel recently recommended country of birth, followed by time in the country, and language fluency [152]. We did not collect data on years of residence in Sweden, a factor that might have caused some differences in health between the groups of Swedish speakers [211].

In the Malmö Bidens cohort, more than one in five women spoke a mother tongue other than Swedish (Papers III & IV). Significant differences in mental health status and health-seeking behavior were found between native Swedish-speaking women and non-native Swedish speakers. Controlling for age, years of education, and financial distress did not explain the increased

risk symptoms of depression and PTS. Although the non-native group showed more evidence of mental ill-health and greater use of tranquilizers, more native Swedish-speaking women reported a greater frequency of consulting a psychiatrist or psychologist (Paper III). The stronger association between depressive symptoms and (a lower frequency) of consulting psychiatrist or psychologist in the non-native group may be due to a higher threshold to seek psychiatric health care, as reported in interviews with foreign-born individuals in a Malmö study [212]. Other individual factors influencing the health of a pregnant woman that we did not investigate are type of occupation, level of employment, disposable income, contextual factors (such as the frequency of sick-leave during pregnancy), trust in the health care system, institutional discrimination, and social capital [213]. As previous studies have shown correlations with self-reported health that would be an area worth investigating in the future, especially from a multicultural perspective.

A stressful society

One in six childbearing women reported experiencing stress, and one in seven reported to worry in that extent that it was documented in their perinatal records. Since we did not interview the women whose data we analyzed, we do not know the causes of these symptoms affecting delivery outcome in first-time mothers. In seeking to further understand the meaning of stress other fields of sciences may be consulted. For example, the social theorist Harmut Rosa has analyzed the consequences of a high speed society, the development of social acceleration, power and modernity [214]. According to him there are three kinds of acceleration. The first, the technological acceleration includes transportation, communication, and production. Thus, we fly to the capitals of Europe in an hour or two, use smartphones and Skype in real time, and access goods and services that are produced faster than ever before. The second is called social acceleration and infers to how we try to increase our possibilities and experiences in order to relax and enjoy more, so we do not to miss out on anything. However, the quantity and speed of these experiences makes them empty and hollow. The third mode of acceleration is the pace itself and the feeling of never having enough time to do all the things we want to. Although, these theories do not relate to the goal of antenatal care it is plausible in such a high speed society that pregnant women and medical personnel are affected when resources are cut at the same time delivery rates increase.

Ill-health may also be considered from the perspective of social epidemiology. There is a general susceptibility hypothesis that builds on linking evidence from biomedical research in neuroendocrinology. The mechanisms and mediators of stress, such as cortisol and catecholamines, can explain the biological pathway for a variety of disorders in a social context [215]. Other pathways for mental health problems, pregnancy outcomes, and maternal health suggest associations with workplace stress, BMI levels, and obesity [216-219].

Challenges to perinatal care

Women with a previous CS and those with a non-medical indication contributed the most to the increase in CS between 1996 and 2005 [98]. Internationally and in Sweden there are ongoing debates about CS on demand or by choice as a woman's right [106,220]. Some suggest that the indications for CSs have changed and that attitudes of obstetricians to perform CS may play a role [221,222]. In *Läkartidningen,* the Journal of the Swedish Medical Association, the debate over CS on request was exemplified by a statement of postmodernism: 'Since in the 1960s we started having sex without having babies and in the 1980s could have a baby without having sex, it seems natural that in the 21st century, we could have a baby without giving birth' (Original text: "Eftersom man på 1960-talet kunde börja ha sex utan att få barn och på 1980-talet kunde få barn utan att ha sex, känns det för en del helt naturligt att man på 2000-talet kan få barn utan att föda") [223].

A CS is not without complications for mother or child. There are also great differentials costs relating to mode of delivery. Comparing the cost of a vaginal delivery and CS is complicated if not impossible since perinatal resources and ethical aspects should be included [107]. Nevertheless, based on national cost-per-patient estimates (www.skl.se), the median cost for a spontaneous vaginal delivery may be half that of CS [107]. For publicly financed health care, priorities and the availability of psychosocial support in the event of mental problems ought to carry more weight than risking a first-time emergency CS.

Women in Sweden have earlier expressed to be satisfied at large with the antenatal care program that was offered to them, but one third also expressed a desire of a more flexible schedule of visits with the midwife than the eight to nine offered [224]. In Malmö, both the antenatal care program and providers of ANC have changed after 2000. While our data covers the period from 2001 to 2008, since then the numbers of births have increased annually by 10%. A

reorganization of perinatal care within the Scania Region commenced in September of 2011. A shift was implemented of the publicly funded ANC clinics, from an organization under the authority of tertiary Departments of Obstetrics at the delivery hospitals, to the primary care authority, instead. This led to the closing or transformation of public clinics into private sector production accredited and contracted for a specified amount of antenatal care. Also, there is no longer a senior obstetric advisor at SUS-Malmö who is responsible for the antenatal care within the catchment area and the institutional connection with the obstetrics departments in the Region has ceased. The reorganization has also affected the perinatal records system linked with all public ANC clinics within the SUS-Malmö catchment area. A different electronic records system was enforced and is separated from other care records, such as ultrasound investigations. This new system does not allow data mining, quality control, or follow-up studies as before.

Electronic health care records (EHR or EMR) offer numerous advantages over paper records, which are at times illegible and often not available when the patient is seen. International research suggests that shared electronic information can improve patient safety and therapeutic effectiveness. It can also identify undiagnosed illnesses such as diabetes, and can reduce healthcare cost [85]. The use of shared electronic or summary care records is complex, often depending on the attitudes of staff and patients [225]. The legal aspect surrounding this issue is currently being debated at the EU level [226]. The implementation of shared patient records (Nationell patientöversikt, NPÖ) is ongoing in Sweden (Center för eHälsa i samverkan, www.cehis.se/). Whereas we identified markers of mental ill-health through a free-text search in pregnancy records, a similar study would not be possible within the new records system.

CONCLUSION

The present study was motivated by international data showing increasing levels of poor mental health in women of childbearing age, especially depression and posttraumatic stress. Simultaneously, CS rates have increased worldwide in the last decade. From a midwife's perspective a pragmatic recognition of mental ill-health, together with additional factors influencing a pregnant woman's well-being and her risk of a non-vaginal delivery, appeared essential.

Our findings indicate that more than one in six women suffers from mental ill-health in pregnancy. Psychiatric disorders are commonly encountered in childbearing women. First-time mothers reporting pregnancy complaints such as stress, sleep disturbance, and worry had a significantly increased risk of emergency CS as opposed to having a spontaneous vaginal delivery. Women with a record of prior psychiatric inpatient care and those with identified mental ill-health in their pregnancy records were also associated with an increased adjusted risk of CS. Identifying mental ill-health in pregnancy may anticipate and thereby forestall emergency CS in first-time mothers.

Women whose ethnic background is other than native Swedish seem to have more mental health problems in pregnancy than women with Swedish as their mother tongue. The significantly higher risk of symptoms of depression and PTS in women with a non-native background could not be explained by social status, level of education, or financial difficulty. The prevalence of lifetime and recent abuse was similar between the groups of Swedish-speaking women. Abuse history was strongly associated with symptoms of depression and PTS in pregnancy among all women surveyed, although a history of sexual abuse did not seem to increase the risk of depression or PTS in non-native Swedish speakers.

Studies, 1 and 2, using an electronic pregnancy record registry, mental symptoms, problems and worries as dimensions of mental health, with and without psychiatric disease, can be identified. In the absence of systematic screening for mental problems in pregnant women an awareness of typical complaints in clinical practice could serve as markers for further assessment. This is especially true for reporting stress, worry or sleep disturbances and for anyone who has inpatient psychiatric care. Women who smoke, have been in psychiatric inpatient care, are relatively young, and do not live with their partner are at increased risk of poor mental health during pregnancy. In addition, a pregnant woman able to speak Swedish, but whose mother tongue is other than Swedish, is at increased risk for symptoms of depression and PTS, compared with native Swedish-speaking women (Studies 3 and 4). This difference in risk could not be explained by her age, years of education, or financial status, and may need to be further assessed by other methods, including a prospective design.

CLINICAL IMPLICATIONS

The mental health status of a woman prior to and during pregnancy is correlated to both symptoms of mental ill-health and experiences of abuse, and being a native or non-native Swedish speaker. It might also affect the delivery outcome.

Suggestions

Perinatal health-care providers are, therefore, encouraged to:

- Systematically assess a pregnant woman's mental health status, in addition to her biological, medical, and social well-being.
- Investigate her history of inpatient care, especially psychiatric care.
- Document complaints of stress, sleep disturbance, and worry, particularly in first-time mothers.
- Identify symptoms of depression and posttraumatic stress during pregnancy and enquire about mother tongue and social status, despite the presence of Swedish language skills.
- Ask her about lifetime experience of emotional, physical, and sexual abuse of any kind in childhood, adulthood or both.
- Institute a referral system for women with symptoms of psychosocial stress and fear of childbirth; and establish multidisciplinary teams across boundaries of primary and inpatient care, and among producers of private and public care, for psychological support or psychiatric assessment.
- Identify and address risk factors for emergency CS in first-time mothers by early intervention.

FURTHER RESEARCH

Health issues relating to childbearing women merit the attention and support of the government. The association between symptoms of mental ill-health and mode of delivery should be further clarified.

By exploring the outpatient data of the women who comprised this study, a wider picture of mental ill-health among childbearing women and their use of various psychiatric services may be drawn. Such result could guide health authorities in providing care to better meet the needs of those women.

The large KIKA-EMR database allows us to determine associations between symptoms of mental ill-health on the part of mothers and the impact on their offspring. Delivery outcomes and the influence of gender may also be explored and hypotheses tested.

The extent to which markers of mental ill-health may provide early recognition of mental problems and risk factors for CS during pregnancy can be explored by a validation study. This would require a free-text search for key words in KIKA perinatal records so that correlations between signs of depression, anxiety, and worry and EDS and PTS items might be established.

An intervention study for women with mental problems in pregnancy, or a longitudinal follow-up mother and child study would be helpful in assessing whether mental problems during pregnancy affect the health of the mother and the development of the child. Such a study would require the approval of a research ethics board.

Finally, the availability of shared electronic medical records for quality assessment and clinical follow-up of the perinatal health and newborns needs to be assured. The decision in 2011 by Region Scania to discontinue the existing system linked to departments of obstetrics and gynecology and implementing instead a separate system at the antenatal clinics within the primary level for care may require reconsideration.

POPULÄRVETENSKAPLIG SAMMANFATTNING

Avhandlingens titel är *Psykisk ohälsa hos barnafödande kvinnor: markörer och riskfaktorer*. Föreliggande avhandling består av fyra studier av gravida kvinnor, förlossningssätt, och tecken på samt riskfaktorer för psykisk ohälsa. Tidsramen för avhandlingen spänner över sexton år. Tiden före och efter millenniumskiftet, med data från 1996 till 2006 och 2008 ingår. Under dessa år har mycket skett med vårt samhälle. Persondatorer och Internet utvecklades och vi blev ständigt tillgängliga och kunde kommunicera globalt. I början av perioden var Sverige i efterdyningarna av en lågkonjunktur och arbetslösheten var utan motstycke. Befolkningen i Malmö växte med inhemsk och utländsk migration och förändrades genom att flyktingar och asylsökande från olika kulturer blev bofasta. Personer födda på 1970, 1980, eller 1990-talet, de så kallade generation X-Y-Z, blev vuxna och bildade familjer. Individer från dessa generationer anses ha en annan syn på livet, på urbanisering och globalisering, och mer marknadsorienterade attityder än tidigare generationer. Hälso- och sjukvården förändrades också, mot mer privat produktion av vård service, och patienter som ansetts vara passiva blev aktiva konsumenter som förväntades och krävde valfrihet inom flera områden.

I den svenska Folkhälsorapporten från 2005 fanns för första gången ett särskilt kapitel om psykisk ohälsa som visade ökade nivåer av psykiska problem i likhet med internationella studier. Det psykiska hälsotillståndet för kvinnor lyftes fram eftersom var tredje kvinna rapporterade att de känt sig deprimerade eller drabbats av depression någon gång i sitt liv. Höga nivåer av stress, oro, sömnproblem och ångest rapporterades, särskilt bland yngre kvinnor och de i barnafödande ålder. Kunskapsläget om psykiska problem hos kvinnor i fertil ålder har ökat under de senaste decennierna. Omfattande forskning har studerat symtom på och risk med förlossningsdepression hos

nyblivna mammor. Färre studier har undersökt riskfaktorer för psykiska problem under graviditet och i samband med förlossning. För många kan en graviditet vara en glädjens tid men den kan även vara en utmaning för kvinnors psykiska hälsa. Symtom av posttraumatisk stress, förlossningsrädsla, och effekter av tidigare eller nuvarande övergrepp kan komma upp till ytan. Detta kan påverka hälsan kring graviditet och förlossning (perinatalt) för både mor och barn. Psykisk ohälsa men också andelen kejsarsnitt ökade i Sverige, från 5 % år 1973 till 18 % år 2006, och allt fler planerade kejsarsnitt genomfördes på grund av psykosociala skäl. Eftersom nationella rapporter visar att en av fyra kvinnor som har haft ett kejsarsnitt kommer att ha ett andra blev det intressant att undersöka om samband fanns mellan förlossningssätt och kvinnors psykiska ohälsa.

Syftet med denna avhandling var att undersöka psykisk ohälsa hos barnafödande kvinnor, anlysera om psykiska problem är relaterat till förlossningsätt, samt analysera riskfaktorer för psykisk ohälsa under graviditet bland kvinnor i Malmö.

I studie 1 och 2 användes registerdata med perinatal information från kvinnoklinkens journalsystem (KIKA) vid universitetssjukhuset i Malmö mellan 2001 och 2006, samt data om slutenvård från 1996 till 2006. I studie 1 undersöktes dokumentation av psykisk ohälsa i elektroniska journaler (EMR) för 17 443 förlösta kvinnor. Genom fritextsökning i registersystemet KIKA med information från mödravård och förlossning identifierades slutligen tio markörer som uttryck för psykisk ohälsa hos gravida kvinnor. Vidare analyserades förlossningsätt för 6467 förstföderskor. Resultatet visade en bred förekomst av markörer i graviditetsjournaler, som deprimerad, nedstämd, ångest eller panik. Förstföderskor med markörer för stress, sömn och oro hade dessutom en signifikant ökad justerad risk för akut kejsarsnitt jämfört med spontan vaginal förlossning. Länkad data mellan nationella slutenvårds-registret och den perinatala databasen analyserades i studie 2. Av 17 443 kvinnor hade 39,3% varit inlagda i slutenvård mellan fem år till en vecka före en förlossning. Av dessa hade 27,3% haft obstetrisk slutenvård, 10,1% somatisk slutenvård, och 1,9 % (333 kvinnor) haft psykiatrisk slutenvård. Resultatet visade en bredd av allvarlig psykiatrisk sjuklighet hos barnafödande kvinnor som haft psykiatrisk slutenvård och var förknippat med svenskfödda, ensamstående kvinnor, som röker, och yngre än 24 år vid förlossningen. De som hade haft psykiatrisk slutenvård hade högre andel markörer för psykisk ohälsa under graviditet, anteckningar om psykolog, psykiatriker, och stödsamtal på grund av förlossningsrädsla. Dessa markörer var relaterat till en

ökad justerad risk för kejsarsnitt jämfört med kvinnor utan tidigare slutenvård. Slutsatsen för artikel I och II är att om kvinnors psykiska ohälsa identifieras under graviditet kan en ökad risk för kejsarsnitt identifieras och därmed förebyggas, särskilt hos förstföderskor.

Studie 3 och 4 (Artikel III och IV) är en tvärsnittsstudie från 2008 med svenska deltagare som del av Bidens-projektet med sex länder (Belgien, Island, Danmark, Estland, Norge och Sverige). Svensktalande kvinnor som samtyckt att delta besvarade ett frågeformulär i graviditetsvecka 27 till 29, i samband med ett rutinbesök inom mödravården i Malmö. Av 1003 kvinnor angav 78.6% svenska som modersmål och 21,4% hade ett annat modersmål än svenska. Självrapporterad psykisk ohälsa undersöktes och riskfaktorer för symtom på depression och posttraumatisk stress analyserades. Av alla kvinnor uppmättes 13.8% ha moderat depression som sju poäng eller högre, enligt kortversionen av Edinburgh Depression Scale (0 till 3 poäng/fråga, max 15). Förekomsten av depressiva symtom var betydligt högre bland svensktalande kvinnor med annat modersmål än svenska, jämfört med infödda svensktalande kvinnor. Posttraumatisk stress definierades som att ha åtminstone ett av de tre symtomen påträngande minnen, känslomässigt bortdomnad och undvikande av situationer. Efter statistisk flermodellsanalys, med flera socioekonomiska faktorer, kvarstod en ökad justerad risk för symtom på depression och posttraumatisk stress hos svensktalande kvinnor med annat modersmål, jämfört med de som hade svenska som modersmål.

I artikel IV användes samma gruppindelning som ovan för att studerar samband mellan självrapporterade symtom av depression och posttraumatisk stress och emotionella, fysiska och sexuella övergrepp. Andelen svensktalande kvinnor som rapporterade att de någonsin varit utsatta för övergrepp eller under det senaste året var lika mellan grupperna, baserade på modersmål. Övergrepp som barn eller vuxen eller både och, var starkt förknippade med symtom på depression och posttraumatisk stress under graviditet och kunde inte förklaras av ålder, utbildning eller av ekonomisk utsatthet. Resultatet av artikel III och IV visar att en bedömning av en kvinnas språkbakgrund och erfarenheter av tre typer av övergrepp kan förutsäga en ökad risk för symtom på psykisk ohälsa hos gravida svensktalande kvinnor i Malmö.

Mödrahälsovården rekommenderas därför att identifiera tecken på kvinnors psykiska ohälsa. Att bedöma detta under graviditeten är ett viktigt mål för perinatal vård, eftersom det ger möjligheter till tidig upptäckt och intervention. Att förebygga psykisk ohälsa hos barnafödande kvinnor skulle kunna minska kostnaderna för den enskilde och för samhället.

ACKNOWLEDGEMENT

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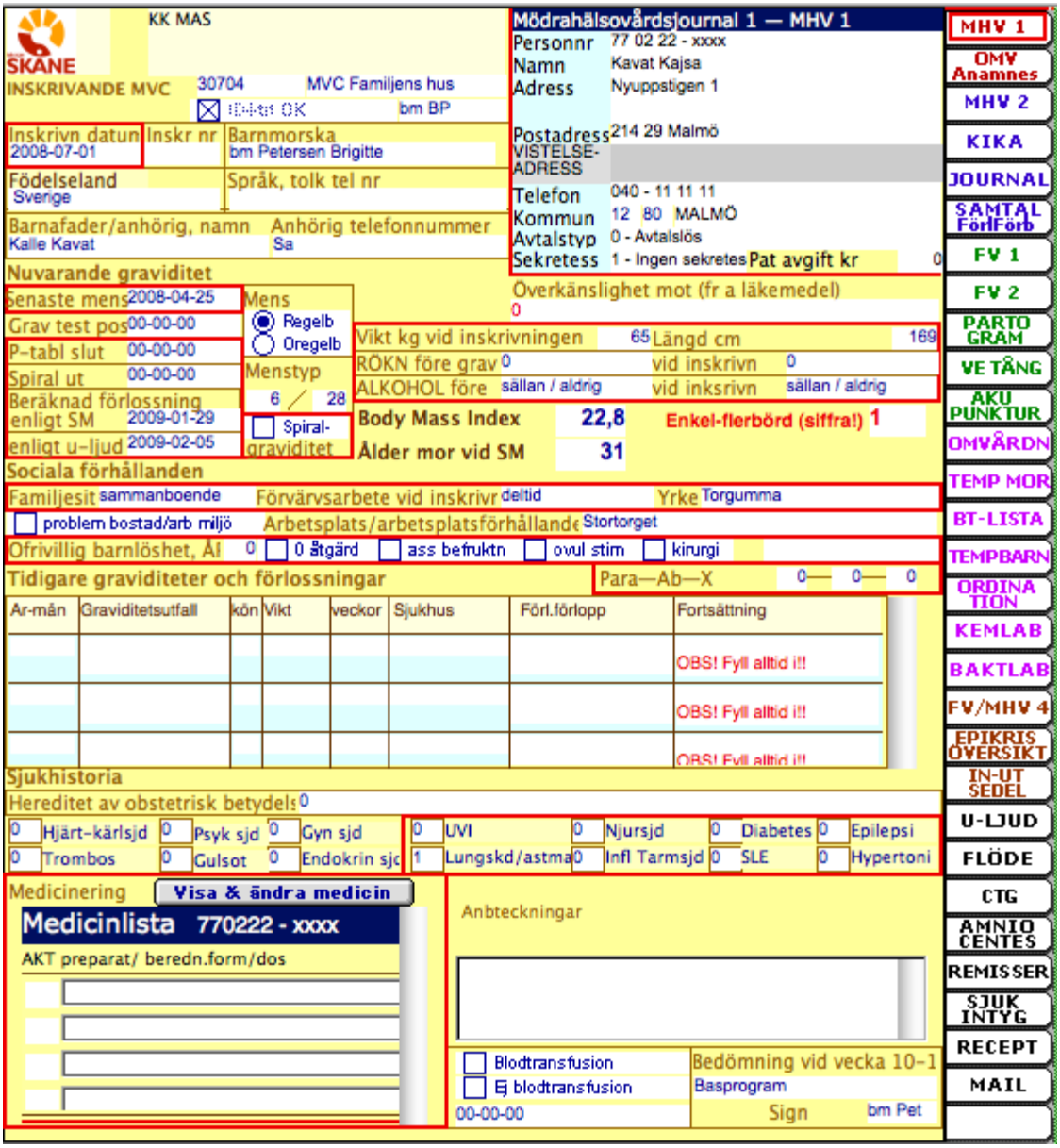
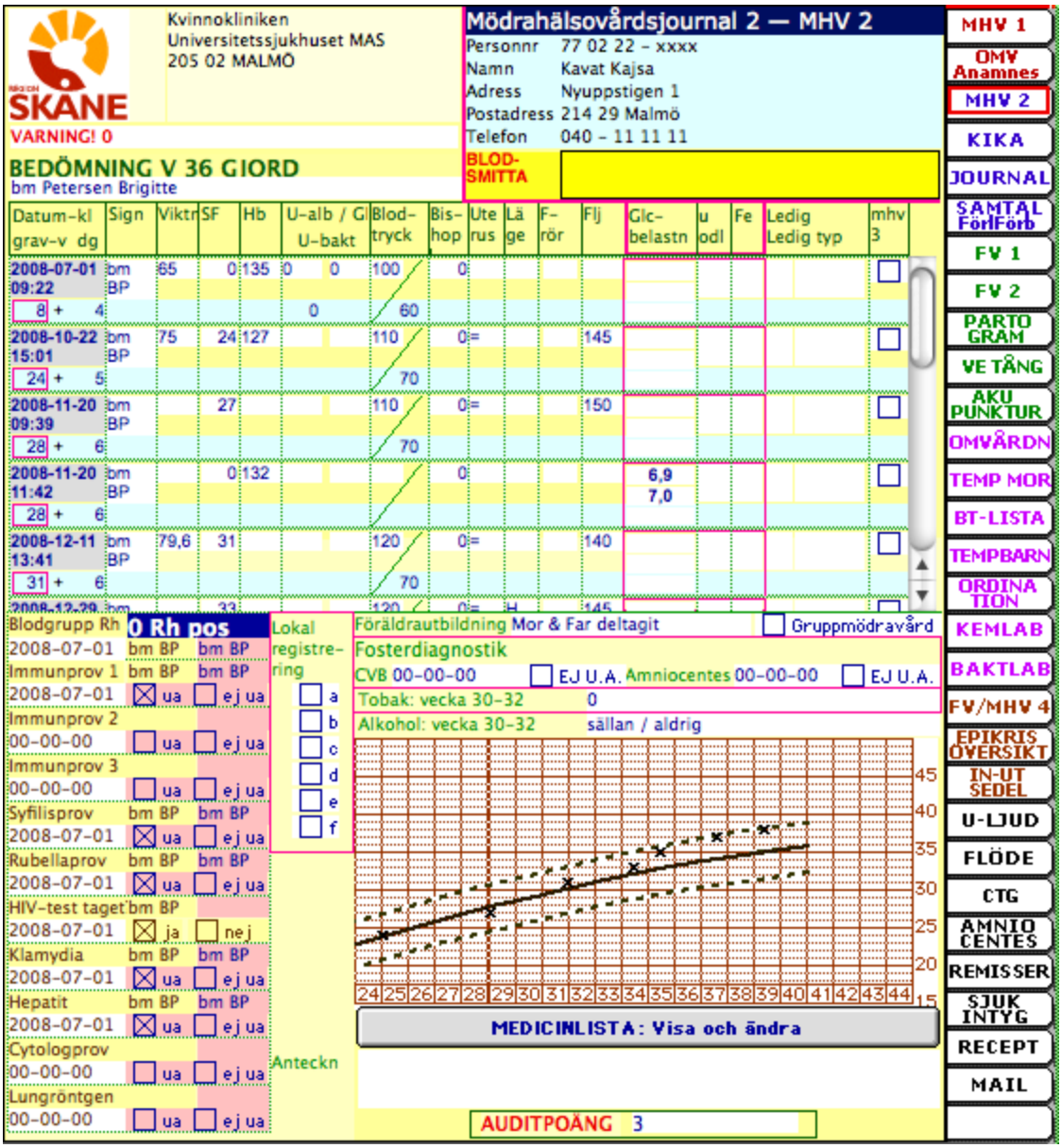
APPENDICIES

1. **KIKA – EMR**
   The perinatal charts I – IV
2. **The Bidens study**
   The questionnaire in Swedish

Appendix 1: KIKA – EMR, The perinatal charts I – IV




SKANE
Kvinnokliniken
Universitetssjukhuset MAS
205 02 MALMÖ
Mödrahälsovårdsjournal 2 — MHV 2
Personnr 77 02 22 - xxxx
Namn Kavat Kajsa
Adress Nyuppstigen 1
Postadress 214 29 Malmö
Telefon 040 - 11 11 11
BLOD-SMITTA
VARNING! 0
BEDÖMNING V 36 GIORD
bm Petersen Brigitte
Datum-kl grav-v dg
Sign
Viktr
SF
Hb
U-alb / G U-bakt
Blod-tryck
Bis-hop
Ute rus
Läge
F-rör
Flj
Glc-belastn
u odl
Fe
Ledig Ledig typ
mhv 3
2008-07-01 09:22 bm BP 65 0 135 0 0 100 0
8 + 4 0 60
2008-10-22 15:01 bm BP 75 24 127 110 0= 145
24 + 5 70
2008-11-20 09:39 bm BP 27 110 0= 150
28 + 6 70
2008-11-20 11:42 bm BP 0 132 0 6,9 7,0
28 + 6
2008-12-11 13:41 bm BP 79,6 31 120 0= 140
31 + 6 70
Blodgrupp Rh 0 Rh pos
Immunprov 1
Immunprov 2
Immunprov 3
Syfilisprov
Rubellaprov
HIV-test taget
Klamydia
Hepatit
Cytologprov
Lungröntgen
Lokal registre-ring
a
b
c
d
e
f
Föräldrautbildning Mor & Far deltagit
Gruppmödravård
Fosterdiagnostik
CVB 00-00-00
EJ U.A.
Amniocentes 00-00-00
EJ U.A.
Tobak: vecka 30-32 0
Alkohol: vecka 30-32 sällan / aldrig
MEDICINLISTA: Visa och ändra
Anteckn
AUDITPOÄNG 3
MHV 1
OMV Anamnes
MHV 2
KIKA
JOURNAL
SAMTAL FörlFörb
FV 1
FV 2
PARTO GRAM
VE TÅNG
AKU PUNKTUR
OMVÅRDN
TEMP MOR
BT-LISTA
TEMPBARN
ORDINATION
KEMLAB
BAKTLAB
FV/MHV 4
EPIKRIS ÖVERSIKT
IN-UT SEDEL
U-LJUD
FLÖDE
CTG
AMNIO CENTES
REMISSER
SJUK INTYG
RECEPT
MAIL

simplex

KK MAS

Inskr Datum	InskrKl	Inskriven av
2009-02-09	21:55	bm Eriksson Anne

Inskrivn Nr:
Förvårdande Instans: MVC Familjens hus

Orsak till intagning
Värkar

Inskrivningsstatus

Gravv + dgr 40 3 ○ SM ◉ UL
BT 140 95 ◉ AT u.a. ○ anm.
ViktKg 0 | u-Prot/Glc | Odem extremiteter/Ansikte 0 0
SF-mått Fosterläge 0Huvud | Ffd fixerat | 0 - i b-ing

VU: Cx pos 1 - mediumposition | Text VU:
Längd cm 0 Öppen cm 2
Konsistens 1 - halvfast

Förlossning (OBS! En blankett per barn)

Förlossn startar: spontant

-intracerv gel	0...ggr	Indikation f induktion
-vaginal gel	0...ggr	
-vagitorium	0...ggr	
-oxytocin	0...ggr	Amniotomi för induktion
-cytotec	0...ggr	○ ja ◉ nej

	Datum	Kl	CTG	öppn skedet	ua-susp-patol
Värkar började	2009-02-09	13:00	☑		
Etabl värkar	2009-02-09	23:00			
Öppet 3-4 cm	2009-02-10	01:30		☑	☐ ☐

Oxytocin INFUSION ö-sk ☐ | Fostervatten klart

Vattenavgång	2009-02-10	03:30	CTG krystskedet	ua-susp-patol
Amniotomi	00-00-00	00:00	☑	☐ ☐
Fullvidgat	2009-02-10	05:25	☑	☐ ☐
Krystar aktivt	2009-02-10	05:50	STAN	-ua-ej ua

Oxytocin INFUSION kryst ☐ | ☐ ☐ ☐

BARNET FÖDDES 2009-02-10 06:18 | Barnets NR M09-0496

Börd	Kön
simplex	flicka

Vikt g	Längd	APGAR SCORE
3760	51	9- 10- 10

Förlöst i: mjuk säng
Förlossn ställning: sida
Bjudning / läge oavsett förlossningssätt: Framstupa kronbjudning

Placenta avgick	Vikt g	Antal navelkärl
06:25	0	3

Placenta hel	Hinnor hela
fullständig	fullständiga

Placenta utseende: ua

Moderns diagnoser i sbd med graviditet, förlossning & puerperium

Mor utskr datum	Sjukhus nr
00-00-00	

Utskriven från KK till

ICD	Diagnoser (ICD 8—12 + KVÅ) Inga fler finns
O800A	Framstupa kronbjudning, vaginalförlöst
O268W	ASTMA, vaginalförlöst
O701	Perinealbristning gr 2, vaginalförlöst

Förlossningsjournal – FV 1

Pers nr	77 02 22 - xxxx
Namn	Kavat Kajsa
Adress	Nyuppstigen 1
Postadress	214 29 Malmö
Tel nr	040 - 11 11 11

Ev kommentarer, anamnes denna graviditet

Största segment	Fosterljud ☑ ua	Frekvens 145
Ryggresistens	CTG ☑ ua ☐ susp ☐ patol	
Smådelar	doortest ☐ ej kontrollerat	

ROBSON-SCORE ☐ Tidigare sectio 1

Förlossningen avslutas: Spontanförlöst
Operatör | Op dag 00-00-00
OP Indikation

Förlossningsoperationer

Sutur av perinealbristning	MBC30

Smärtlindring	☐ INGEN	☑ N2O - O2			
☐ Narkos sectio	☐ bad	☐ PCB			
☐ EDA sectio	☐ TNS	☐ pudendus	☐ Pud PP		
☐ EDA Sufenta	☐ kvaddlar	☐ infiltration	☑ Inf PP		
☐ EDA vag övr	☐ akupunktur	☐ slemhinneanalgesi			
☐ spinal sectio	☐ apozepam	☐ kort fullnarkos			
☐ morfinspinal	☐ morfin	☐ övrigt			
☐ spinal övr	☑ petidin				

Postpartum

Blödn t.o.m. plac avgång	250	TOTALT ML
Blödn plac avgång - 2 tim pp	100	350

Bristningar ☐ clitoris/lab ☐ vagina ☑ perineum ☐ sfinkter ☐ rectum
Klipp

Suturer inre	yttre	material	borttagna
enstaka	3	Vicryl Rapid	00-00-00

Ansvarig BM: bm Eriksson Anne
Ansvarig DR
USK / stud: usk Tumpach Eva

ID-ktrl	Ktrl flyttn	Till avd	Datum	Kl
			2009-02-10	10:10

Föd Anm Datum / Sign 00-00-00

MHV 1 | OMV Anamnes | MHV 2 | KIKA | JOURNAL | SAMTAL FörlFörb | FV 1 | FV 2 | PARTO GRAM | VE TÅNG | AKU PUNKTUR | OMVÅRDN | TEMP MOR | BT-LISTA | TEMPBARN | ORDINATION | KEMLAB | BAKTLAB | FV/MHV 4 | EPIKRIS ÖVERSIKT | IN-UT SEDEL | U-LJUD | FLÖDE | CTG | AMNIO CENTES | REMISSER | SJUK INTYG | RECEPT | MAIL

förlossning Spontanförlöst

Framstupa kronbjudning, vaginalförlöst

KK MAS Barnets nr

Barnet föddes 2009-02-10 06:18 M09-0496

Börd	Levande?
simplex	Levande fött

Kön	Fulla veckor		Osäker datering
flicka	40	4	☐

Födelsevikt	Födelselängd	Huvudomfång
3760	51	35

Utskr vikt	Utskr längd	H-omf ut	ID-ktrl ut
0	0	0	

	VEN	ARTAR	NYFODD 00:00
pH	7,29	0	0
Laktat mmol/l	0	0	0
pO2 kPa	0	0	0
pCO2 kPa	0	0	0
BE mmol/l	-6,7	0	0
HCO3 mmol/l	0	0	0

☐ Neonatal personal vid partus

Blodgrupp barn — Hb nyfödd 0

Förlossningsjournal 2 — FV 2

Enkel-flerbörd simplex

Barn reservnr -

BVC Sorgenfri

Personnr 77 02 22 - xxxx

Namn Kavat Kajsa

Adress Nyuppstigen 1

Postadress 214 29 Malmö

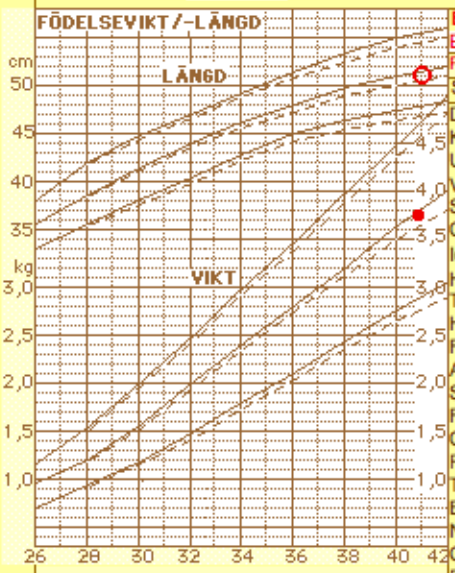
Telefon 040 - 11 11 11

Apgar min	1	5	10
Hjärtfrekv	2	2	2
Andning	2	2	2
Hudfärg	1	2	2
Muskeltonu	2	2	2
Retbarhet	2	2	2
SUMMA	9	10	10

Upplivningsåtgärder	min
Flöde O2 min	☐ 0
Ventilation på mask	☐ 0
Intub ventilation	☐ 0
Hjärtmassage	☐ 0
Acidos korrektion	☐

Gom hel	Anus öppen	Barn temp	K-vitamin
☒	☒	0	☒

Andra åtgärder BLODGRUPP MOR: 0 Rh pos.
1 mg Konakion i.m. / bm AE.



BARNET OVERFORT TILL, DATUM

Ej överlag 00-00-00

PROJEKT

STATUS (NY) (Slopa kolumn) (Ändra text) (Slopa text)

Dag		2009-02-11 kl 10:00 dr
Klockan		Olsson Marcel
US av		KK MAS BB-RÖD
Vitalitet		0 v 1 dgr
Spont rörl		----------
Cyanos		
Icterus		Status u a.
Hud		==========
Turgor		
Hjärta		
Fem puls		
Andning		
Skallform		
Fontanell		
Ogon		
Reflexer		
Tonus		
Buk		
Navel		
Genitalia		
Rygg		
Skelett		
Höfter		
Munhåla		

(KONSULTREMISS) (RTG)

☐ NEONATALPERIODEN U.A. (ETT FRISKT BARN)

OgonSCR ☐ Remiss

OronSCR ☒ Remiss

BCG ☐ Hepatit B-vaccination Missb Rpt ☐ SoS ☐ Uljud

Kontakt MVC önskas	Rek ktrl BVChembesök	Barnspec datum	Annan spec datum	PKU datum	OK	Avliden Datum Klockan	Obduktion
☐	☐	☐ 00-00-00	☐ 00-00-00	☐ 00-00-00	☐	00-00-00 00:00	☐ Ja

Barnets diagnoser över sjukdomar och tillstånd under neonatalperioden. Huvuddiagnos först.

	Inskr datum	Utskr datum	Sjukhus	ICD-kod	Diagnos Inga fler finns
KK	2009-02-10	00-00-00			
	00-00-00	00-00-00			
BARN	00-00-00	00-00-00			
	00-00-00	00-00-00			

MHV 1 | OMV Anamnes | MHV 2 | KIKA | JOURNAL | SAMTAL FörlFörb | FV 1 | FV 2 | PARTOGRAM | VE TÅNG | AKUPUNKTUR | OMVÅRDN | TEMP MOR | BT-LISTA | TEMPBARN | ORDINATION | KEMLAB | BAKTLAB | FV/MHV 4 | EPIKRIS ÖVERSIKT | IN-UT SEDEL | U-LJUD | FLÖDE | CTG | AMNIOCENTES | REMISSER | SJUKINTYG | RECEPT | MAIL

daphne

Bidens

Belgien, Island, Danmark, Estland, Norge och Sverige

Finn en plats där du kan sitta ensam i lugn och ro. Svara på alla frågor efter bästa förmåga, utan att tänka alltför mycket på varje fråga. Om du inte hittar ett alternativ som passar, välj ett som är närmast det du skulle vilja svara. Både positiva och negativa svar är viktiga.

Frågeformuläret ska läsas av en dator/scannas. Det är därför viktigt att du tänker på följande när du fyller i det:

- Använd blå eller svart bläckpenna.
- Sätt ett kryss i den lilla rutan för det svar som du tycker passar bäst, som så här ☒
- Om du har kryssat i fel ruta, så kan du rätta till det genom att svärta hela rutan, som så här ■
- Sifferrutan har två eller fler rutor. Då du skriver ental använd rutan längst till höger Exempel: 5 som så här | 5
- Vänligen skriv klart och tydligt med STORA bokstäver då du skriver fri text.

DATUM FÖR IFYLLANDE AV FRÅGEFORMULÄRET Dag ☐☐ Månad ☐☐ Årtal ☐☐☐☐

1. OM DIN HÄLSA

1.01 **Hur bedömer du ditt allmänna hälsotillstånd?**
Ett kryss

- ☐ Mycket bra
- ☐ Någorlunda bra
- ☐ Någorlunda dåligt
- ☐ Mycket dåligt

1.02 **Hur många gånger har du besökt en läkare för din egen skull <u>de senaste 12 månaderna</u>?** Ett kryss

- ☐ 0 gång
- ☐ 1 – 3 gånger
- ☐ 4 – 6 gånger
- ☐ 7 gånger eller fler

1.03 **Har du varit sjukskriven eller inte kunnat sköta dina dagliga uppgifter under mer än två veckor sammanlagt under <u>de senaste 12 månaderna</u>?**

☐ Nej ☐ Ja

Om JA, antal veckor *(sammanlagt ungefär)* ..... ☐☐

1.04 **Har du varit inlagd på sjukhus de senaste 12 månaderna?**
Förutom i samband med förlossning.

☐ Nej ☐ Ja

Om JA, antal veckor *(sammanlagt ungefär)* ..... ☐☐

1.05 **Har du pga egna problem <u>någon gång</u> haft kontakt med psykiater eller psykolog?** Ett kryss

- ☐ Nej
- ☐ Ja, tidigare, men inte under det senaste året
- ☐ Ja, under det senaste året, innan jag blev gravid
- ☐ Ja, under det senaste året, under graviditeten

1.06 **Har du rökt/röker du dagligen?** Ett kryss

- ☐ Ja, fortfarande
- ☐ Ja, tidigare
- ☐ Nej, har aldrig rökt

1.07 **Hur ofta dricker du alkohol?**

- ☐ Aldrig
- ☐ Ibland
- ☐ Regelbundet
- ☐ Inte sedan jag visste att jag var gravid

1.08 **Kryssa i de läkemedel som du har använt under det senaste året** Ett kryss för varje rad

	Aldrig	Sällan	Kort tid	Längre tid	Alltid
Sömntabletter	☐	☐	☐	☐	☐
Smärtstillande	☐	☐	☐	☐	☐
Lugnande	☐	☐	☐	☐	☐
Antidepressiva	☐	☐	☐	☐	☐
Annan medicin mot psykiska besvär	☐	☐	☐	☐	☐

1.09 **Var denna graviditet oplanerad?**

☐ Nej ☐ Ja

1.11 **Väntar du tvillingar (eller ännu fler barn)?**

☐ Nej ☐ Ja

1.10 **I vilken graviditetsvecka är du i nu?**

antal veckor ☐☐

2. VILKA FÖRVÄNTNINGAR HAR DU PÅ DIN KOMMANDE FÖRLOSSNING?

Följande frågor handlar om olika känslor och tankar kvinnor kan ha inför förlossningen. Svaret på varje fråga är konstruerat som en skala från 0 till 5. Graderingen på skalan (0 resp. 5) motsvarar de motsatta ytterligheterna av en viss känsla eller tanke.

Observera att svaren är formulerade så att ibland betyder ”mycket” något mycket positivt och ibland betyder ”mycket” något mycket negativt. Därför behöver Du för varje fråga tänka efter var Du skall sätta Ditt kryss!

Du svara på varje fråga genom att sätta ett kryss för den siffra som bäst motsvara hur du föreställer dig att din förlossning kommer att bli. Svara så som du nu föreställer dig att din förlossning kommer att bli - inte som du hoppas att den skall bli!

2.01 **Hur tror Du att Din förlossning kommer att bli som helhetsupplevelse?**

	0	1	2	3	4	5	
Oerhört fantastisk	☐	☐	☐	☐	☐	☐	Inte alls fantastisk
Oerhört hemsk	☐	☐	☐	☐	☐	☐	Inte alls hemsk

2.02 **Hur tror Du att Du kommer att känna Dig under förlossningen?**

	0	1	2	3	4	5	
Oerhört ensam	☐	☐	☐	☐	☐	☐	Inte alls ensam
Oerhört stark	☐	☐	☐	☐	☐	☐	Inte alls stark
Oerhört säker	☐	☐	☐	☐	☐	☐	Inte alls säker
Oerhört rädd	☐	☐	☐	☐	☐	☐	Inte alls rädd
Oerhört utlämnad	☐	☐	☐	☐	☐	☐	Inte alls utlämnad
Oerhört svag	☐	☐	☐	☐	☐	☐	Inte alls svag
Oerhört trygg	☐	☐	☐	☐	☐	☐	Inte alls trygg
Oerhört självständig	☐	☐	☐	☐	☐	☐	Inte alls självständig
Oerhört uppgiven	☐	☐	☐	☐	☐	☐	Inte alls uppgiven
Oerhört spänd	☐	☐	☐	☐	☐	☐	Inte alls spänd
Oerhört glad	☐	☐	☐	☐	☐	☐	Inte alls glad
Oerhört stolt	☐	☐	☐	☐	☐	☐	Inte alls stolt
Oerhört övergiven	☐	☐	☐	☐	☐	☐	Inte alls övergiven
Oerhört samlad	☐	☐	☐	☐	☐	☐	Inte alls samlad
Oerhört avspänd	☐	☐	☐	☐	☐	☐	Inte alls avspänd
Oerhört lycklig	☐	☐	☐	☐	☐	☐	Inte alls lycklig

2.03 **Vad tror Du att Du kommer att känna under förlossningen?**

	0	1	2	3	4	5	
Oerhörd panik	☐	☐	☐	☐	☐	☐	Inte alls någon panik
Oerhörd hopplöshet	☐	☐	☐	☐	☐	☐	Inte alls någon hopplöshet
Oerhörd längtan efter barnet	☐	☐	☐	☐	☐	☐	Inte alls någon längtan efter barnet
Oerhört stort självförtroende	☐	☐	☐	☐	☐	☐	Inget självförtroende alls
Total tillit	☐	☐	☐	☐	☐	☐	Ingen tillit alls
Oerhörd smärta	☐	☐	☐	☐	☐	☐	Inte alls någon smärta

2.04 **Vad tror Du kommer att hända när förlossningsarbetet är som intensivast?**

	0	1	2	3	4	5	
Bär mig oerhört illa åt	☐	☐	☐	☐	☐	☐	Bär mig inte alls illa åt
Vågar utlämna mig helt till det som sker i kroppen	☐	☐	☐	☐	☐	☐	Vågar inte alls utlämna mig till det som sker i kroppen
Tappar totalt kontrollen över mig själv	☐	☐	☐	☐	☐	☐	Tappar inte alls kontrollen över mig själv

2.05 **Hur tror Du att det kommer att kännas att föda fram barnet?**

	0	1	2	3	4	5	
Oerhört roligt	☐	☐	☐	☐	☐	☐	Inte alls roligt
Oerhört naturligt	☐	☐	☐	☐	☐	☐	Inte alls naturligt
Oerhört självklart	☐	☐	☐	☐	☐	☐	Inte alls självklart
Oerhört farligt	☐	☐	☐	☐	☐	☐	Inte alls farligt

2.06 **Har Du den senaste månaden haft...**

	0	1	2	3	4	5	
...fantasier om att barnet dör under förlossningen?							
Aldrig	☐	☐	☐	☐	☐	☐	Mycket ofta
...fantasier att det skulle kunna hända att barnet skadas under förlossningen?	0	1	2	3	4	5	
Aldrig	☐	☐	☐	☐	☐	☐	Mycket ofta

3. OM OLIKA UPPLEVELSER

Följande frågor handlar om övergrepp i sjukvården. Vi ber dig markera om du varit med om någon eller några av följande händelser; som barn eller som vuxen. Om du svarar ja på någon av frågorna 3.01-3.03 kallar vi det - i den här studien - för att du varit utsatt för övergrepp i sjukvården.

3.01 **Har du någon gång i sjukvården känt dig kränkt eller grovt förnedrad, känt att någon utövat utpressning mot dig eller inte visat respekt för dina åsikter – på ett sådant sätt att du efteråt plågats eller störts av upplevelsen?** Ett kryss

- ☐ Nej
- ☐ Ja, som barn (under 18år)
- ☐ Ja, som vuxen (över 18 år)
- ☐ Ja, både som barn och vuxen

3.02 **Har du varit med om att en "normal" händelse i sjukvården plötsligt blivit en oerhört hemsk och kränkande upplevelse, utan att du riktigt kunde förstå hur det gick till?** Ett kryss

- ☐ Nej
- ☐ Ja, som barn (under 18år)
- ☐ Ja, som vuxen (över 18 år)
- ☐ Ja, både som barn och vuxen

3.03 **Har du varit med om att någon i sjukvården medvetet - som du uppfattat det - gjort dig illa kroppsligt eller psykiskt, grovt skändat dig eller utnyttjat din kropp och ditt underläge för eget syfte?** Ett kryss

- ☐ Nej
- ☐ Ja, som barn (under 18år)
- ☐ Ja, som vuxen (över 18 år)
- ☐ Ja, både som barn och vuxen

Om du svarat ja på någon av frågorna 3.01- 3.03 fortsätter du med fråga 3.04.
Om du svarade nej på alla tre frågorna 3.01- 3.03, gå direkt till fråga 3.06.

3.04 **Har du varit med om något av detta under de senaste 12 månaderna?**

☐ Nej ☐ Ja

3.05 **Hur mycket plågas du nu av följderna efter det/de övergrepp du upplevt i sjukvården?** Svara genom att sätta ett kryss för den siffra som bäst motsvarar hur mycket du för närvarande plågas.

Plågas inte alls	0	1	2	3	4	5	6	7	8	9	10	Plågas oerhört mycket
	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	

3.06 **Har du under de senaste 12 månaderna upplevt något av det följande? Om ja, hur besvärligt eller svårt var det för dig?**

	Nej	Ja	Om ja: Inte så svårt	Om ja: Ganska svårt/ besvärligt	Om ja: Väldigt svårt/ besvärligt
Blivit skild, separerat eller avbrutit samlevnad	☐	☐	☐	☐	☐
Haft allvarliga samlevnadsproblem	☐	☐	☐	☐	☐
Haft problem eller konflikter med familjen, vänner eller grannar	☐	☐	☐	☐	☐
Haft problem på arbetsplatsen eller där du utbildar dig	☐	☐	☐	☐	☐
Haft ekonomiska problem	☐	☐	☐	☐	☐
Varit allvarligt sjuk eller skadat dig	☐	☐	☐	☐	☐
Varit utsatt för trafikolycka, brand eller stöld	☐	☐	☐	☐	☐
Att en av dina närmaste har varit allvarligt sjuk eller skadat sig	☐	☐	☐	☐	☐
Mist en nära anhörig/vän	☐	☐	☐	☐	☐
Annat: _____	☐	☐	☐	☐	☐

Följande frågor handlar om psykiska övergrepp. Vi ber dig markera om du varit med om någon eller några av följande händelser, som barn eller som vuxen. Om du svarar ja på någon av frågorna 3.07-3.09 kallar vi det - i den här studien - för att du varit utsatt för psykiskt övergrepp.

3.07 **Har du upplevt att någon systematiskt och under en längre tid försökt att kuva, förnedra eller förödmjuka dig?**
Ett kryss

- ☐ Nej
- ☐ Ja, som barn (under 18år)
- ☐ Ja, som vuxen (över 18 år)
- ☐ Ja, både som barn och vuxen

3.08 **Har du upplevt att leva i skräck på grund av att någon systematisk och över längre tid har hotat att skada dig eller någon som står dig nära?**
Ett kryss

- ☐ Nej
- ☐ Ja, som barn (under 18år)
- ☐ Ja, som vuxen (över 18 år)
- ☐ Ja, både som barn och vuxen

3.09 **Har du upplevt att någon systematisk och under hotelser tvång försökt att begränsa din kontakt med andra eller helt reglerat vad du får eller inte får göra?**
Ett kryss

- ☐ Nej
- ☐ Ja, som barn (under 18år)
- ☐ Ja, som vuxen (över 18 år)
- ☐ Ja, både som barn och vuxen

Om du svarat ja på någon av frågorna 3.07 – 3.09, fortsätter du med fråga 3.10
Du som svarat nej på alla tre frågorna 3.07 – 3.09, gå direkt till fråga 3.12

3.10 **Har du varit med något av detta under de senaste 12 månaderna?**

☐ Nej ☐ Ja

3.11 **Hur mycket plågas du nu av följderna efter det/de psykiska övergrepp du upplevt?** Svara genom att sätta ett kryss för den siffra som bäst motsvarar hur mycket du för närvarande plågas

Plågas inte alls	0	1	2	3	4	5	6	7	8	9	10	Plågas oerhört mycket
	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	

Följande frågor handlar om kroppsliga övergrepp. Vi ber dig markera om du varit med om någon eller några av följande händelser, som barn eller som vuxen. Om du svarar ja på någon av frågorna 3.12-3.14 kallar vi det - i den här studien - för att du varit utsatt för kroppsligt övergrepp.

3.12 **Har du varit med om att någon slagit dig, gett dig en örfil eller hållit fast dig hårt mot din vilja?** Ett kryss

- ☐ Nej
- ☐ Ja, som barn (under 18år)
- ☐ Ja, som vuxen (över 18 år)
- ☐ Ja, både som barn och vuxen

3.13 **Har du varit med om att något slagit dig med knytnäven/ knytnävarna eller med något hårt föremål, sparkat dig, knuffat till dig våldsamt, gett dig "ett rejält kok stryk", "klått upp" dig eller gjort något annat liknande med dig?** Ett kryss

- ☐ Nej
- ☐ Ja, som barn (under 18år)
- ☐ Ja, som vuxen (över 18 år)
- ☐ Ja, både som barn och vuxen

3.14 **Har du varit med om att någon hotat dig till livet genom att t.ex. försöka kväva dig, visa vapen, ha en kniv tillhands eller något annat liknande?** Ett kryss

- ☐ Nej
- ☐ Ja, som barn (under 18år)
- ☐ Ja, som vuxen (över 18 år)
- ☐ Ja, både som barn och vuxen

Om du svarat ja på någon av frågorna 3.12 – 3.14, fortsätter du med fråga 3.15
Du som svarat nej på alla tre frågorna 3.12 – 3.14, gå direkt till fråga 3.17.

3.15 **Har du upplevt något av detta under de senaste 12 månaderna?**

- ☐ Nej
- ☐ Ja

3.16 **Hur mycket plågas du nu av följderna efter det/de kroppsliga övergrepp du upplevt?** Svara genom att sätta ett kryss för den siffra som bäst motsvarar hur mycket du för närvarande plågas.

Plågas inte alls	0	1	2	3	4	5	6	7	8	9	10	Plågas oerhört mycket
	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	

Följande frågor handlar om sexuella övergrepp. Vi ber dig markera om du varit med om någon eller några av följande händelser, som barn eller som vuxen. Om du svarar ja på någon av frågorna 3.17-3.20 kallar vi det - i den här studien - för att du varit utsatt för sexuella övergrepp.

3.17 **Har någon mot din vilja tagit på dina könsorgan, använt din kropp för att tillfredsställa sig själv sexuellt eller tvingat dig att ta på någon annans könsorgan?** Ett kryss

- ☐ Nej
- ☐ Ja, som barn (under 18år)
- ☐ Ja, som vuxen (över 18 år)
- ☐ Ja, både som barn och vuxen

3.18 **Har någon mot din vilja fört in penis i din slida, mun eller ändtarm eller försökt något av detta; fört in eller försökt föra in föremål eller annan kroppsdel i din slida, mun eller ändtarm?** Ett kryss

- ☐ Nej
- ☐ Ja, som barn (under 18år)
- ☐ Ja, som vuxen (över 18 år)
- ☐ Ja, både som barn och vuxen

3.19 **Har någon mot din vilja rört vid din kropp på andra delar än könsorganen på ett "sexuellt sätt" eller tvingat dig att beröra andra delar av hans eller hennes kropp på ett "sexuellt sätt"?** Ett kryss

- ☐ Nej
- ☐ Ja, som barn (under 18år)
- ☐ Ja, som vuxen (över 18 år)
- ☐ Ja, både som barn och vuxen

3.20 **Har du på något annat sätt blivit sexuellt förnedrad; t. ex att du mot din vilja tvingats se på porrfilm eller liknande, tvingats medverka i porrfilm eller liknande, tvingats visa upp din kropp naken, eller tvingats se på när någon annan visade upp sin kropp naken?** Ett kryss

- ☐ Nej
- ☐ Ja, som barn (under 18år)
- ☐ Ja, som vuxen (över 18 år)
- ☐ Ja, både som barn och vuxen

Om du svarat ja på någon av frågorna 3.17 – 3.20, fortsätter du med fråga 3.21
Du som svarat nej på alla tre frågorna 3.17 – 3.20, gå direkt till fråga 4.01.

3.21 **Har du upplevt något av detta under de senaste 12 månaderna**

☐ Nej ☐ Ja

3.22 **Hur mycket plågas du nu av följderna efter det/de sexuella övergrepp du upplevt?** Svara genom att sätta ett kryss för den siffra som bäst motsvarar hur mycket du för närvarande plågas.

Plågas inte alls	0	1	2	3	4	5	6	7	8	9	10	Plågas oerhört mycket
	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	

4. LITE OM DIN BAKGRUND

4.01 **Hur gammal är du?**

År..... |__|

4.02 **Vad är ditt civilstånd?** Ett kryss

☐ Gift/sammanboende/fast partner
☐ Ensamstående
☐ Annat:.....

4.03 **Har du någon utom din make/sambo/partner som du verkligen kan vända dig till?** Ett kryss

☐ Nej
☐ Ja, 1 – 2 personer
☐ Ja, fler än två personer

4.04 **Är ditt modersmål svenska?** Ett kryss

☐ Ja
☐ Nej

Nej, vilket är ditt modersmål?:.....

4.05 **Hur många års utbildning har du?** Ett kryss

☐ Grundskola (6- 9år)
☐ Gymnasium eller folkhögskola eller yrkesskola eller liknande (10-13år)
☐ Högskola eller universitet, mindre än 4 år (totalt upptill 15år)
☐ Högskola eller universitet 4 år eller fler (totalt 15 eller mer)

4.06 **Vad är din huvudsakliga sysselsättning/försörjning?** Ett kryss

☐ Yrkesarbetande
☐ Egen företagare/frilansare
☐ Studerande/praktikant
☐ Barn/föräldraledig
☐ Hemmafru
☐ Arbetslös
☐ Socialhjälp/sjukbidrag/förtidspensionär

4.07 **Om du plötsligt skulle hamna i en oförutsedd situation, där du på en vecka måste skaffa fram 20 000kr skulle du klara det?** Ett kryss

☐ Inget problem
☐ Med viss svårighet
☐ Med stora svårigheter

5. NÅGRA FLER FRÅGOR OM DIN ALLMÄNNA HÄLSA

5.01 **Har du under de senaste 12 månaderna haft olika kroppsliga besvär (kan t ex vara ont i magen, huvudvärk, yrsel, muskelsvaghet) i en sådan grad att du har haft svårt att fungera i ditt dagliga liv?** Ett kryss

☐ Nej
☐ Ja, men sällan
☐ Ja, ibland
☐ Ja, ofta

5.02 **Har du under de senaste 12 månaderna lidit av ångest i en sådan grad att du haft svårt att fungera i ditt dagliga liv?** Ett kryss

☐ Nej
☐ Ja, men sällan
☐ Ja, ibland
☐ Ja, ofta

5.03 **Har du under de senaste 12 månaderna upplevt att obehagliga minnesbilder tränger sig på och stör dig, utan att du kan göra någonting åt det?** Ett kryss

☐ Nej
☐ Ja, men sällan
☐ Ja, ibland
☐ Ja, ofta

5.04 **Har du under de senaste 12 månaderna undvikit situationer för att slippa obehagliga minnesbilder eller känslor, så att detta stört dig i vad du vill göra?** Ett kryss

☐ Nej
☐ Ja, men sällan
☐ Ja, ibland
☐ Ja, ofta

5.05 **Har du under de senaste 12 månaderna någon gång känt det som om du varit förlamad i dina känslor under en längre tid?** Ett kryss

- ☐ Nej
- ☐ Ja, men sällan
- ☐ Ja, ibland
- ☐ Ja, ofta

5.07 **Känner du dig ensam?** Ett kryss

- ☐ Aldrig
- ☐ Sällan
- ☐ Av och till
- ☐ Som regel
- ☐ Nästan alltid

5.06 **Läs varje påstående och markera det som närmast visar hur Du har känt dig den senaste veckan**

	Ja, nästan hela tiden	Ja, av och till	Nej, sällan	Nej, aldrig
Jag har känt mig ledsen och nere	☐	☐	☐	☐
Jag har känt mig rädd och orolig utan egentlig anledning	☐	☐	☐	☐
Jag har känt mig så ledsen och olycklig att jag haft svårt att sova	☐	☐	☐	☐
Jag har lagt skulden på mig själv onödigt mycket när något har gått snett	☐	☐	☐	☐
Jag har glatt mig åt saker som skall hända	☐	☐	☐	☐

6. NÅGRA FLER FRÅGOR OM DIN GRAVIDITET

6.01 **Hur önskar du att föda?** Ett kryss

- ☐ Vaginalt
- ☐ Troligen vaginalt
- ☐ Troligen kejsarsnitt
- ☐ Kejsarsnitt

6.02 **Har Du gått på stödsamtal p.g.a. förlossningsrädsla?**

- ☐ Nej
- ☐ Ja, under denna graviditet
- ☐ Ja, före denna graviditeten

6.03 **Har du varit gravid tidigare?** (Detta gäller också graviditet som slutade med abort eller missfall)

- ☐ Nej - Gå direkt till fråga 9.01
- ☐ Ja - Fortsätt med 6.04

6.04 **Hur många barn har du fött?**

Antal barn ..... |_|

6.05 **Hur många barn lever idag?**

Antal barn ..... |_|

6.06 **Har du någon gång haft ett missfall?**

☐ Nej ☐ Ja

Om JA, antal gånger ..... |_|

6.07 **Har du någon gång genomgått en abort?**

☐ Nej ☐ Ja

Om JA, antal gånger ..... |_|

7. OM DIN FÖRSTA FÖRLOSSNING

7.01 **Hur gammal var du när du fick ditt första barn?**

Ålder ..... |_|

7.02 **Var det tvillingar (eller ännu fler barn)?**

☐ Nej ☐ Ja

7.03 **Hur var din första förlossning?**

- ☐ Normal
- ☐ Planerat kejsarsnitt
- ☐ Akut kejsarsnitt
- ☐ VE /sugklocka
- ☐ Tång
- ☐ Säte vaginalt

7.04 **Hur upplevde du din första förlossning?** Ett kryss

- ☐ Enbart positiv upplevelse
- ☐ Övervägande positiv upplevelse men med negativa inslag
- ☐ Övervägande negativ upplevelse, men med positiva inslag
- ☐ Enbart negativ upplevelse

8. OM DIN SENASTE FÖRLOSSNING

(om du endast har fött en gång fortsätt till fråga 9.01.)

8.01 **Hur gammal var du när du födde barn senast?**

Ålder ..... |__|

8.02 **Var det tvillingar (eller ännu fler barn)?**

☐ Nei ☐ Ja

8.03 **Hur var din senaste förlossning?**

☐ Normal
☐ Planerat kejsarsnitt
☐ Akut kejsarsnitt
☐ VE /sugklocka
☐ Tång
☐ Säte vaginalt

8.04 **Hur upplevde du din senaste förlossning?** Ett kryss

☐ Enbart positiv upplevelse
☐ Övervägande positiv upplevelse men med negativa inslag
☐ Övervägande negativ upplevelse, men med positiva inslag
☐ Enbart negativ upplevelse

9. ALLMÄNT OM FÖRLOSSNING

9.01 **Har du andra upplevelser knutna till graviditet eller förlossning som är viktiga?**

☐ Nej ☐ Ja

Om ja, specificera vad:

Behöver du mer utrymme, fortsätt under kommentarer

TILL SLUT

Avslutningsvis: Har du kommentarer till frågorna vill vi gärna att du skriver dessa här. Om du efter att du har fyllt i frågeformuläret känner behov av att prata med någon ber vi dig kontakta din barnmorska eller kurator på Kvinnokliniken. För olika telefonnummer se din mödravårdslista för mer information se Informationsbrevet om BIDENS-studien.

Kommentarer

Lägg ifyllt frågeformulär och undertecknad samtyckeblankett i kuvertet, klistra igen det och lämna det till din barnmorska på mottagningen.

REFERENCES

[1] Stefansson C-, Hansson L. Mental health care reform in Sweden, 1995. Acta Psychiatr Scand 2001;104:82-88.

[2] Silfverhielm H, Kamis-Gould E. The Swedish mental health system: Past, present, and future. Int J Law Psychiatry 2000;23(3-4):293-307.

[3] Official statistics of Sweden. Sjukdomar i sluten vård 1987-2009 [In Swedish]. (Inpatient diseases in Sweden, 1987-2009). Centre for Epidemiology 2010; 2010-10-20.

[4] Wittchen HU, Jacobi F. Size and burden of mental disorders in Europe–A critical review and appraisal of 27 studies. Eur Neuropsychopharmacol 2005;15(4):357-376.

[5] Persson G, Danielsson M, Rosén M, Alexanderson K, Lundberg O, Lundgren B, et al. Health in Sweden: The National Public Health Report 2005. Scand J Public Health 2006;34(3):3-10.

[6] Prince M, Patel V, Saxena S, Maj M, Maselko J, Phillips MR, et al. No health without mental health. Lancet 2007;370(9590):859-877.

[7] Alonso J, Angermeyer M, Bernert S, Bruffaerts R, Brugha T, Bryson H, et al. Prevalence of mental disorders in Europe: Results from the European study of the epidemiology of mental disorders (ESEMeD) project. Acta Psychiatr Scand 2004;109(s420):21-27.

[8] Kessler RC. Epidemiology of women and depression. J Affect Disord 2003;74(1):5-13.

[9] O'Hara M, Neunaber DJ, Zekoski EM. Prospective study of postpartum depression: Prevalence, course, and predictive factors. J Abnorm Psychol 1984;93:158-171.

[10] O'Hara MW, Swain AM. Rates and risk of postpartum depression–A meta-analysis. International Review of Psychiatry 1996;8(1):37-54.

[11] Gavin NI, Gaynes BN, Lohr KN, Meltzer-Brody S, Gartlehner G, Swinson T. Perinatal depression: A systematic review of prevalence and incidence. Obstet Gynecol 2005;106(5):1071-1083.

[12] Harlow BL, Vitonis AF, Sparen P, Cnattingius S, Joffe H, Hultman CM. Incidence of hospitalization for postpartum psychotic and bipolar episodes in women with and without prior prepregnancy or prenatal psychiatric hospitalizations. Arch Gen Psychiatry 2007;64(1):42-48.

[13] Deave T, Heron J, Evans J, Emond A. The impact of maternal depression in pregnancy on early child development. BJOG 2008;115(8):1043-1051.

[14] Grote NK, Bridge JA, Gavin AR, Melville JL, Iyengar S, Katon WJ. A meta-analysis of depression during pregnancy and the risk of preterm birth, low birth weight, and intrauterine growth restriction. Arch Gen Psychiatry 2010;67(10):1012.

[15] Andrews G, Slade T, Peters L. Classification in psychiatry: ICD–10 versus DSM-IV. Br J Psychiatry 1999;174(1):3-5.

[16] WHO. The ICD–10 Classification of Mental and Behavioural Disorders Clinical description and diagnostic guidelines. Geneva: World Health Organization; 1997.

[17] Spitzer RL, Williams JBW, Kroenke K, Hornyak R, McMurray J, for the Patient Health Questionnaire Obstetrics-Gynecology Study Group. Validity and utility of the PRIME-MD patient health questionnaire in assessment of 3000 obstetric-gynecologic patients: The PRIME-MD patient health questionnaire obstetrics-gynecology study. Am J Obstet Gynecol 2000;183(3):759-769.

[18] Ayers S. Assessing psychopathology in pregnancy and postpartum. J Psychosom Obstet Gynaecol 2001;22(2):91-102.

[19] Strand BH, Dalgard OS, Tambs K, Rognerud M. Measuring the mental health status of the Norwegian population: A comparison of the instruments SCL-25, SCL-10, SCL-5 and MHI-5 (SF-36). Nord J Psychiatry 2003;57(2):113-118.

[20] Austin M-, Lumley J. Antenatal screening for postnatal depression: A systematic review. Acta Psychiatr Scand 2003;107(1):10-17.

[21] Gorman LL, O'Hara MW, Figueiredo B, Hayes S, Jacquemain F, Kammerer MH, et al. Adaptation of the structured clinical interview for DSM-IV disorders for assessing depression in women during pregnancy and post-partum across countries and cultures. Br J Psychiatry 2004;184(46):s17-23.

[22] Gold JK, Marcus MS. Effect of maternal mental illness on pregnancy outcomes. Expert Rev Obstet Gynecol 2008;3(3):391-401.

[23] Andersson L, Sundstrom-Poromaa I, Wulff M, Astrom M, Bixo M. Implications of antenatal depression and anxiety for obstetric outcome. Obstet Gynecol 2004;104(3):467-476.

[24] Socialstyrelsen. Folkhälsorapport 2001 [In Swedish]. (The Public Health Report, 2001). Stockholm: Socialstyrelsen; 2001.

[25] Andersson L, Sundström-Poromaa I, Bixo M, Wulff M, Bondestam K, Åström M. Point prevalence of psychiatric disorders during the second trimester of pregnancy: A population-based study. Am J Obstet Gynecol 2003;189(1):148-154.

[26] Baum A, Revenson TA, Singer JL. Handbook of health psychology Mahwah, N.J.: Lawrence Erlbaum Associates; 2001.

[27] Sepa A. The stress hypothesis: implications for the induction of diabetes-related autoimmunity in children? [dissertation]. Linköping: Linköping University; 2004.

[28] Lazarus RS. Stress, appraisal, and coping. New York: Springer; 1984.

[29] SFOG. Barnafödande och psykisk sjukdom, Nr. 62 [In Swedish]. Stockholm: Svensk förening för obstetrik och gynekologi (The Swedish Society of Obstetrics and Gynecology); 2009.

[30] Dencker K. Elementär klinisk psykofarmakologi [In Swedish]. 1 uppl ed. Malmö: Dema hälsa; 1999.

[31] Sandman CA, Wadhwa PD, Chicz-DeMet A, Dunkel-Schetter C, Porto M. Maternal stress, HPA activity, and Fetal/Infant outcome. Ann N Y Acad Sci 1997;814(1):266-275.

[32] Dayan J, Creveuil C, Herlicoviez M, Herbel C, Baranger E, Savoye C, et al. Role of anxiety and depression in the onset of spontaneous preterm labor. Am J Epidemiol 2002;155(4):293-301.

[33] Alder J, Fink N, Bitzer J, Hösli I, Holzgreve W. Depression and anxiety during pregnancy: A risk factor for obstetric, fetal and neonatal outcome? A critical review of the literature. J Matern Fetal Neonatal Med 2007;20(3):189-209.

[34] Martins C, Gaffan EA. Effects of early maternal depression on patterns of infant-mother attachment: A meta-analytic investigation. J Child Psychol Psychiatry 2000;41(6):737-746.

[35] Littleton HL, Breitkopf CR, Berenson AB. Correlates of anxiety symptoms during pregnancy and association with perinatal outcomes: A meta-analysis. Obstet Gynecol 2007;196(5):424-432.

[36] Olde E, van der Hart O, Kleber R, Van Son M. Posttraumatic stress following childbirth: A review. Clin Psychol Rev 2006;26(1):1-16.

[37] Saisto T, Ylikorkala O, Halmesmaki E. Factors associated with fear of delivery in second pregnancies. Obstet Gynecol 1999;94(5):679-682.

[38] Koo V, Lynch J, Cooper S. Risk of postnatal depression after emergency delivery. J Obstet Gynaecol Res 2003;29(4):246-250.

[39] Nager A, Sundquist K, Johansson LM, Ramírez-León V. Obstetric complications and post-partum psychosis: A follow-up study of 1.1 million first-time mothers between 1975 and 2003 in Sweden. European Psychiatry 2008;23(Supplement 2):S388-S389.

[40] American Psychiatric Association. MINI-D IV diagnostiska kriterier enligt DSM-IV (1995) [In Swedish], Pilgrim. 1999.

[41] Cox J, Holden J, Sagovsky R. Detection of postnatal depression. development of the 10–item Edinburgh Postnatal Depression Scale. Br J Psychiatry 1987;150(6):782-786.

[42] Cox JL, Chapman G, Murray D, Jones P. Validation of the Edinburgh Postnatal Depression Scale (EPDS) in non-postnatal women. J Affect Disord 1996;39(3):185-189.

[43] Josefsson A, Berg G, Nordin C, Sydsjö G. Prevalence of depressive symptoms in late pregnancy and postpartum. Acta Obstet Gynecol Scand 2001;80(3):251-255.

[44] Larsson C, Sydsjö G, Josefsson A. Health, sociodemographic data, and pregnancy outcome in women with antepartum depressive symptoms. Obstet Gynecol 2004;104(3):459-466.

[45] Costa DD, Brender W, Larouche J. A prospective study of the impact of psychosocial and lifestyle variables on pregnancy complications. J Psychosom Obstet Gynaecol 1998;19(1):28-37.

[46] Mulder EJH, Robles de Medina PG, Huizink AC, Van den Bergh BRH, Buitelaar JK, Visser GHA. Prenatal maternal stress: Effects on pregnancy and the (unborn) child. Early Hum Dev 2002;70(1-2):3-14.

[47] de Weerth C, Buitelaar JK. Physiological stress reactivity in human pregnancy–a review. Neurosci Biobehav Rev 2005;29(2):295-312.

[48] Field T, Diego M, Hernandez-Reif M. Prenatal depression effects on the fetus and newborn: A review. Infant Behav Dev 2006;29(3):445-455.

[49] Rubertsson C, Waldenström U, Wickberg B. Depressive mood in early pregnancy: Prevalence and women at risk in a national Swedish sample. J Reprod Infant Psychol 2003;21(2):113-123.

[50] Barker DJ, Martyn CN. The maternal and fetal origins of cardiovascular disease. J Epidemiol Community Health 1992;46(1):8-11.

[51] Dejin-Karlsson E, Hanson BS, Östergren P, Lindgren A, Sjöberg N, Marsal K. Association of a lack of psychosocial resources and the risk of giving birth to small for gestational age infants: A stress hypothesis. BJOG 2000;107(1):89-100.

[52] Wadhwa PD, Culhane JF, Rauh V, Barve SS. Stress and preterm birth: Neuroendocrine, Immune/Inflammatory, and vascular mechanisms. Matern Child Health J 2001;5(2):119-125.

[53] Austin M, Leader LR, Reilly N. Prenatal stress, the hypothalamic–pituitary–adrenal axis, and fetal and infant neurobehaviour. Early Hum Dev 2005;81(11):917-926.

[54] Austin M-P, Priest SR. Clinical issues in perinatal mental health: New developments in the detection and treatment of perinatal mood and anxiety disorders. Acta Psychiatr Scand 2005;112(2):97-104.

[55] Lee AM, Lam SK, Sze Mun Lau SM, Chong CSY, Chui HW, Fong DYT. Prevalence, course, and risk factors for antenatal anxiety and depression. Obstet Gynecol 2007;110(5):1102.

[56] Monk C, Sloan RP, Myers MM, Ellman L, Werner E, Jeon J, et al. Fetal heart rate reactivity differs by women's psychiatric status: An early marker for developmental risk? J Am Acad Child Adolesc Psychiatry 2004;43(3):283-290.

[57] Van den Bergh BRH, Mulder EJH, Mennes M, Glover V. Antenatal maternal anxiety and stress and the neurobehavioural development of the fetus and child: Links and possible mechanisms. A review. Neurosci Biobehav Rev 2005;29(2):237-258.

[58] Orr ST, Reiter JP, Blazer DG, James SA. Maternal prenatal pregnancy-related anxiety and spontaneous preterm birth in Baltimore, Maryland. Psychosomatic Medicine 2007;69(6):566-570.

[59] Sjöström K. Some effects of maternal anxiety on the fetus and on pregnancy outcome [dissertation]. Malmö: Universitetssjukhuset MAS; 2002.

[60] Littleton HL, Bye K, Buck K, Amacker A. Psychosocial stress during pregnancy and perinatal outcomes: A meta-analytic review. J Psychosom Obstet Gynaecol 2010;31(4):219-228.

[61] Ayers S, Pickering AD. Do women get posttraumatic stress disorder as a result of childbirth? A prospective study of incidence. Birth 2001;28(2):111-118.

[62] Foa EB, Stein DJ, McFarlane AC. Symptomatology and psychopathology of mental health problems after disaster. J Clin Psychiatry 2006;67(Suppl 2):15-25.

[63] Söderquist J, Wijma B, Thorbert G, Wijma K. Risk factors in pregnancy for post-traumatic stress and depression after childbirth. BJOG 2009;116(5):672-680.

[64] Campbell JC. Health consequences of intimate partner violence. Lancet 2002;359(9314):1331-1336.

[65] Swahnberg K, Wijma B. The NorVold abuse questionnaire (NorAQ): Validation of new measures of emotional, physical, and sexual abuse, and abuse in the health care system among women. Eur J Public Health 2003;13(4):361-366.

[66] Wijma B, Schei B, Swahnberg K, Hilden M, Offerdal K, Pikarinen U, et al. Emotional, physical, and sexual abuse in patients visiting gynaecology clinics: A Nordic cross-sectional study. Lancet 2003;361(9375):2107-2113.

[67] Stenson K, Heimer G, Lundh C, Nordström ML, Saarinen H, Wenker A. The prevalence of violence investigated in a pregnant population in Sweden. J Psychosom Obstet Gynaecol 2001;22(4):189-197.

[68] Lukasse M, Schei B, Vangen S, Øian P. Childhood abuse and common complaints in pregnancy. Birth 2009;36(3):190-199.

[69] Schroll AM, Tabor A, Kjaergaard H. Physical and sexual lifetime violence: Prevalence and influence on fear of childbirth before, during and after delivery. J Psychosom Obstet Gynaecol 2011;32(1):19-26.

[70] Ryding EL, Wijma B, Wijma K, Rydhstrom H. Fear of childbirth during pregnancy may increase the risk of emergency cesarean section. Acta Obstet Gynecol Scand 1998;77(5):542-547.

[71] Ryding E, Wijma B, Wijma K. Posttraumatic stress reactions after emergency cesarean section. Acta Obstet Gynecol Scand 1997;76(9):856-861.

[72] Larson JS. The conceptualization of health. Medical Care Research and Review 1999;56(2):123-136.

[73] Stefansson C. Chapter 5.5: Major public health problems – mental ill-health. Scand J Public Health 2006;34(67 suppl):87-103.

[74] European Commission. Green Paper: Improving the Mental Health of the Population: Towards a Strategy on Mental Health in the European Union. : OOPEC; 2005.

[75] Rosén M. National health data registers: A Nordic heritage to public health. Scand J Public Health 2002;30(2):81-85.

[76] Olausson O, Spetz C, Rosén M. Stor användning av registerdata i svensk forskning – en nordisk konkurrensfördel [In Swedish]. 2004.

[77] Socialstyrelsen. Kvalitet och innehåll i patientregistret : Utskrivningar från slutenvård 1964-2006 och besök i öppenvård (exklusive primärvårdsbesök) 1997-2006 [In Swedish]. (Quality and content of Inpatient Care Register, hospital discharges 1964-2006 and outpatient visits 1997-2006. The Swedish National Board of Health and Welfare). 2008; 2008-125-1.

[78] EpC. The Swedish medical birth register - A summary of content and quality. 2003.

[79] Socialstyrelsen. Hälsa och sjukdomar. graviditeter, förlossningar och nyfödda barn. medicinska födelseregistret 1973-2006 [In Swedish]. (Pregnancy, deliveries and new born babies, Medical Birth Register 1973-2006. The Swedish National Board of Health and Welfare). 2008; 2008-42-5.

[80] Mossey JM, Shapiro E. Self-rated health: A predictor of mortality among the elderly. Am J Public Health 1982;72(8):800-808.

[81] Gudmundsson S, Bjorgvinsdottir L, Molin J, Gunnarsson G, Marsal K. Socioeconomic status and perinatal outcome according to residence area in the city of Malmo. Acta Obstet Gynecol Scand 1997;76(4):318-323.

[82] Ny P, Dykes AK, Molin J, Dejin-Karlsson E. Utilisation of antenatal care by country of birth in a multi-ethnic population: A four-year community-based study in Malmo, Sweden. Acta Obstet Gynecol Scand 2007;86(7):805-813.

[83] Lindqvist PG, Molin J. Does antenatal identification of small-for-gestational age fetuses significantly improve their outcome? Ultrasound Obstet Gynecol 2005;25(3):258-264.

[84] Raleigh VS, Cooper J, Bremner SA, Scobie S. Patient safety indicators for England from hospital administrative data: Case-control analysis and comparison with US data. BMJ 2008;337;a17021(oct17):1-6.

[85] Tannen RL, Weiner MG, Xie D. Use of primary care electronic medical record database in drug efficacy research on cardiovascular outcomes: Comparison of database and randomised controlled trial findings. BMJ 2009;338;b81(jan27):1-9.

[86] Socialstyrelsen. Sos-rapport: Hälsovård före, under och efter graviditet [In Swedish]. (Health care before, during and after pregnancy). 1996.

[87] Hildingsson I, Rådestad I. Swedish women's satisfaction with medical and emotional aspects of antenatal care. J Adv Nurs 2005;52(3):239-249.

[88] Wickberg B. Psykologiska insatser under graviditet och postpartumtid - en metod för mödrahälsovården In: Sjögren B, editor. Förlossningsrädsla [In Swedish] Lund: Studentlitteratur; 2005. p. 71-81.

[89] Stein-Gustavsson L. Aurora helps women with fear of childbirth [In Swedish]. Läkartidningen 1993;41:3557-3558.

[90] Sjögren B, Ryding E, Magnusson B. Psykologiska och medicinska stödåtgärder vid förlossningsrädsla. In: Sjögren B, editor. Förlossningsrädsla [In Swedish] Lund: Studentlitteratur; 1998. p. 88-110.

[91] SFOG. Mödrahälsovård, Sexuell och Rerpoduktiv Hälsa, Nr.59 [In Swedish]. Stockholm: Svensk förening för obstetrik och gynekologi (The Swedish Society of Obstetrics and Gynecology); 2008.

[92] Lindgren HE, Rådestad IJ, Christensson K, Hildingsson IM. Outcome of planned home births compared to hospital births in Sweden between 1992 and 2004. A population-based register study. Acta Obstet Gynecol Scand 2008;87(7):751-759.

[93] WHO. International Statistical Classification of Diseases and Related Health Problems, Tenth Revision (ICD-10). Geneva: World Health Organization; 1997.

[94] SFOG. Diagnoshandbok för kvinnosjukvården 2003 [In Swedish]. Stockholm: Svensk förening för obstetrik och gynekologi (The Swedish Society of Obstetrics and Gynecology); 2003.

[95] Robson M. Classification of caesarean sections. Fetal and Maternal Medicine Review 2001;12(01):23-39.

[96] Patel RR, Peters TJ, Murphy DJ, the ALSPAC Study Team. Prenatal risk factors for caesarean section. analyses of the ALSPAC cohort of 12 944 women in England. Int J Epidemiol 2005;34(2):353-367.

[97] Villar J, Carroli G, Zavaleta N, Donner A, Wojdyla D, Faundes A, et al. Maternal and neonatal individual risks and benefits associated with caesarean delivery: Multicentre prospective study. BMJ 2007;335(7628):1025.

[98] Källén K. Den ökande andelen kejsarsnittsförlossningar och dess orsaker 1973-2009. In: Högberg U, editor. Kejsarsnitt, Rapport nr. 65 [In Swedish] Stockholm: Svensk förening för obstetrik och gynekologi (The Swedish Society of Obstretrics and Gynecology); 2010. p. 11-18.

[99] MacDorman MF, Declercq E, Menacker F, Malloy MH. Infant and neonatal mortality for primary cesarean and vaginal births to women with" no indicated risk," United States, 1998-2001 birth cohorts. Birth 2006;33(3):175.

[100] Liu S, Liston RM, Joseph KS, Heaman M, Sauve R, Kramer MS, et al. Maternal mortality and severe morbidity associated with low-risk planned cesarean delivery versus planned vaginal delivery at term. CMAJ 2007;176(4):455-460.

[101] Richter R, Bergmann RL, Dudenhausen JW. Previous caesarean or vaginal delivery: Which mode is a greater risk of perinatal death at the second delivery? Eur J Obstet Gynecol Reprod Biol 2007;132(1):51-57.

[102] Tollånes MC, Moster D, Daltveit AK, Irgens LM. Cesarean section and risk of severe childhood asthma: A population-based cohort study. J Pediatr 2008;153(1):112-116.

[103] Kamath BD, Todd JK, Glazner JE, Lezotte D, Lynch AM. Neonatal outcomes after elective cesarean delivery. Obstet Gynecol 2009;113(6):1231-1238.

[104] Socialstyrelsen. Graviditeter, förlossningar och nyfödda barn, medicinska födelseregistret 1973-2007 [In Swedish]. (Pregnancy, deliveries and newborn infants. The Swedish Medical Birth Register). 2009; 2009-125-5.

[105] Hannah ME, Hannah WJ, Hewson SA, Hodnett ED, Saigal S, Willan AR. Planned caesarean section versus planned vaginal birth for breech presentation at term: A randomised multicentre trial. Lancet 2000;356(9239):1375-1383.

[106] National Institutes of Health. NIH state-of-the-science conference: Cesarean delivery on maternal request. NIH Consens Sci Statements 2006;23(1):1-29.

[107] SFOG. Kejsarsnitt, Rapport nr. 65 [In Swedish]. Stockholm: Svensk förening för obstetrik och gynekologi (The Swedish Society of Obstretrics and Gynecology); 2010.

[108] Socialstyrelsen. Graviditeter, förlossningar och nyfödda barn, medicinska födelseregistret 1973-2009 [In Swedish] (Pregnancy, deliveries and newborn infants. The Swedish Medical Birth Register). 2011; 2011-3-19.

[109] Karlström A, Rådestad I, Eriksson C, Rubertsson C, Nystedt A, Hildingsson I. Cesarean section without medical reason, 1997 to 2006: A Swedish register study. Birth 2010;37(1):11-20.

[110] Ryding EL. Psychological aspects of emergency cesarean section [dissertation]. Linköping: Linköping University; 1998.

[111] Josefsson A. Postpartum Depression: Epidemiological and biological aspects [dissertation]. Linköping: Linköping University; 2003.

[112] Robertson E. Aspects of foreign-born women's health and childbirth-related outcomes: An epidemiological study of women of childbearing age in Sweden [dissertation]. Stockholm: Karolinska Institutet; 2003.

[113] Andersson L. Implications of psychiatric disorders during pregnancy and the postpartum period: a population-based study [dissertation]. Umeå: Umeå University; 2004.

[114] Rubertsson C. Depression and partner violence before and after childbirth [dissertation]. Stockholm: Karolinska Institutet; 2004.

[115] Börjesson K. Mental illness: relation to childbirth and experience of motherhood [dissertation]. Stockholm: Karolinska Institutet; 2005.

[116] Karlström A. Kejsarsnitt utan medicinsk indikation [dissertation, in Swedish]. Sundsvall: Mid Sweden University; 2010.

[117] Bentley SM, Melville JL, Berry BD, Katon WJ. Implementing a clinical and research registry in obstetrics: Overcoming the barriers. Gen Hosp Psychiatry 2007;29(3):192-198.

[118] Polit DF, Beck CT. Essentials of nursing research : methods, appraisal, and utilization. 6th ed. Philadelphia: Lippincott; 2006.

[119] Caughey AB, Nicholson JM, Cheng YW, Lyell DJ, Washington AE. Induction of labor and cesarean delivery by gestational age. Obstet Gynecol 2006;195(3):700-705.

[120] Thorsell M, Lyrenäs S, Andolf E, Kaijser M. Induction of labor and the risk for emergency cesarean section in nulliparous and multiparous women. Acta Obstet Gynecol Scand 2011;90(10):1094-1099.

[121] Lukasse M, Vangen S, Øian P, Schei B. Fear of childbirth, women's preference for cesarean section and childhood abuse: A longitudinal study. Acta Obstet Gynecol Scand 2011;90:33-40.

[122] Rosand G, Slinning K, Eberhard-Gran M, Roysamb E, Tambs K. Partner relationship satisfaction and maternal emotional distress in early pregnancy. BMC Public Health 2011;11(1):161.

[123] Iglesias E, Robertson E, Johansson SE, Engfeldt P, Sundquist J. Women, international migration and self-reported health. A population-based study of women of reproductive age. Soc Sci Med 2003;56(1):111-124.

[124] Statistiska centralbyrån. ULF - undersökning av levnadsförhållanden [In Swedish]. 2007.

[125] Malin M, Gissler M. Maternal care and birth outcomes among ethnic minority women in finland. BMC Public Health 2009;9:1-14.

[126] Eberhard-Gran M, Eskild A, Samuelsen S, Tambs K. A short matrix-version of the Edinburgh Depression Scale. Acta Psychiatr Scand 2007;116(3):195-200.

[127] Wickberg B, Hwang CP. The Edinburgh Postnatal Depression Scale: Validation on a Swedish community sample. Acta Psychiatr Scand 1996;94(3):181-184.

[128] Rubertsson C, Börjesson K, Berglund A, Josefsson A, Sydsjö G. The Swedish validation of Edinburgh Postnatal Depression Scale (EPDS) during pregnancy. Nord J Psychiatry 2011;65(6):414-418.

[129] Swahnberg K, Schei B, Hilden M, Halmesmäki E, Sidenius K, Steingrimsdottir T, et al. Patients' experiences of abuse in health care: A Nordic study on prevalence and associated factors in gynecological patients. Acta Obstet Gynecol Scand 2007;86(3):349-356.

[130] Landis J, Koch G. The measurement of observer agreement for categorical data. Biometrics 1977;33:159-74.

[131] World Health Organization (WHO). Putting women first: Ethical and safety recommendations for research on domestic violence against women. 2001.

[132] Hennekens CH, Buring JE, Mayrent SL. Epidemiology in medicine. Boston: Little, Brown and Company; 1987.

[133] Altman DG. Practical statistics for medical research. London: Chapman and Hall; 1991.

[134] Rothman KJ. Modern epidemiology. 2nd ed. Philadelphia: Lippincott-Raven; 1998.

[135] Gliklich R, Dreyer N. Chapter 3 Registry Design. In: Gliklich R, Dreyer N, editors. Registries for Evaluating Patient Outcomes: A User's Guide. 2nd ed. Rockville (MD): Agency for Healthcare Research and Quality (US); 2010.

[136] Rothman KJ. Epidemiology: An introduction. New York: Oxford University Press; 2002.

[137] Lukasse M. Childhood abuse: Pregnancy and childbirth [dissertation]. Tromsø: Institutt for samfunnsmedisin; 2011.

[138] Hilden M, Schei B, Swahnberg K, Halmesmaki E, Langhoff Roos J, Offerdal K, et al. A history of sexual abuse and health: A Nordic multicentre study. BJOG 2004;111(10):1121-1127.

[139] Fisher RJ, Katz JE. Social-desirability bias and the validity of self-reported values. Psychology and marketing 1999;17(2):105-120.

[140] Martin L. Social capital, anticipated ethnic discrimination and self-reported psychological health: A population-based study. Soc Sci Med 2008;66(1):1-13.

[141] Idler EL, Benyamini Y. Self-rated health and mortality: A review of twenty-seven community studies. J Health Soc Behav 1997;38(1):21-37.

[142] Guedeney N, Fermanian J. Validation study of the French version of the Edinburgh Postnatal Depression Scale (EPDS): New results about use and psychometric properties. European Psychiatry 1998;13(2):83-89.

[143] Garcia-Esteve L, Ascaso C, Ojuel J, Navarro P. Validation of the Edinburgh Postnatal Depression Scale (EPDS) in Spanish mothers. J Affect Disord 2003;75(1):71-76.

[144] Ip WY, Martin CR. The factor structure of the Chinese version of the Edinburgh Postnatal Depression Scale (EPDS). J Reprod Infant Psychol 2007;25(1):83-86.

[145] Pitanupong J, Liabsuetrakul T, Vittayanont A. Validation of the Thai Edinburgh Postnatal Depression Scale for screening postpartum depression. Psychiatry Res 2007;149(1–3):253-259.

[146] Adewuya AO, Ola BA, Dada AO, Fasoto OO. Validation of the Edinburgh Postnatal Depression Scale as a screening tool for depression in late pregnancy among Nigerian women. J Psychosom Obstet Gynaecol 2006;27(4):267-272.

[147] Montazeri A, Torkan B, Omidvari S. The Edinburgh Postnatal Depression Scale (EPDS): Translation and validation study of the Iranian version. BMC Psychiatry 2007;7(1):11.

[148] Söderquist J, Wijma K, Wijma B. Traumatic stress in late pregnancy. J Anxiety Disord 2004;18(2):127-142.

[149] Vasiliadis H, Lepnurm M, Tempier R, Kovess-Masfety V. Comparing the rates of mental disorders among different linguistic groups in a representative Canadian population. Soc Psychiatry Psychiatr Epidemiol 2012;47(2):195-202.

[150] Mead N, Roland M. Understanding why some ethnic minority patients evaluate medical care more negatively than white patients: A cross sectional analysis of a routine patient survey in English general practices. BMJ 2009;339(sep16_3):b3450.

[151] Gagnon AJ, Zimbeck M, Zeitlin J. Migration to Western industrialised countries and perinatal health: A systematic review. Soc Sci Med 2009;69(6):934-946.

[152] Gagnon AJ, Zimbeck M, Zeitlin J. Migration and perinatal health surveillance: An international Delphi survey. Eur J Obstet Gynecol Reprod Biol 2010;149(1):37-43.

[153] Statistics Sweden. Född i sverige– ändå olika? Betydelsen av föräldrarnas födelseland [In Swedish: Born in Sweden–but still different? The significance of parents' country of birth]. 2010; 2010:2:11-251.

[154] Ludvigsson JF, Andersson E, Ekbom A, Feychting M, Kim JL, Reuterwall C, et al. External review and validation of the Swedish National Inpatient Register. BMC Public Health 2011;11:450.

[155] Lancaster CA, Gold KJ, Flynn HA, Yoo H, Marcus SM, Davis MM. Risk factors for depressive symptoms during pregnancy: A systematic review. Obstet Gynecol 2010;202(1):5-14.

[156] Cook CAL, Flick LH, Homan SM, Campbell C, McSweeney M, Gallagher ME. Psychiatric disorders and treatment in low-income pregnant women. J Womens Health 2010;19(7):1251-1262.

[157] Börjesson K, Ruppert S, Bågedahl-Strindlund M. A longitudinal study of psychiatric symptoms in primiparous women: Relation to personality disorders and sociodemographic factors. Arch Womens Ment Health 2005;8(4):232-242.

[158] Roque FS, Jensen PB, Schmock H, Dalgaard M, Andreatta M, Hansen T, et al. Using electronic patient records to discover disease correlations and stratify patient cohorts. PLoS Comput Biol 2011;7(8):e1002141.

[159] Vesga-Lopez O, Blanco C, Keyes K, Olfson M, Grant BF, Hasin DS. Psychiatric disorders in pregnant and postpartum women in the United States. Arch Gen Psychiatry 2008;65(7):805-815.

[160] Saha S, Chant D, Welham J, McGrath J. A systematic review of the prevalence of schizophrenia. PLoS Medicine 2005;2(5):413.

[161] Cantwell R, Cox JL. Psychiatric disorders in pregnancy and the puerperium. Current Obstetrics and Gynaecology 2006;16(1):14-20.

[162] Andrade L, Walters EE, Gentil V, Laurenti R. Prevalence of ICD–10 mental disorders in a catchment area in the city of São Paulo, Brazil. Soc Psychiatry Psychiatr Epidemiol 2002;37(7):316-325.

[163] Ansseau M, Dierick M, Buntinkx F, Cnockaert P, De Smedt J, Van Den Haute M, et al. High prevalence of mental disorders in primary care. J Affect Disord 2004;78(1):49-55.

[164] Oates M. Perinatal psychiatric disorders: A leading cause of maternal morbidity and mortality. Br Med Bull 2003;67(1):219-229.

[165] Marcus SM, Flynn HA, Blow FC, Barry KL. Depressive symptoms among pregnant women screened in obstetrics settings. J Womens Health 2003;12(4):373-380.

[166] Marcus SM, Heringhausen JE. Depression in childbearing women: When depression complicates pregnancy. Primary Care: Clinics in Office Practice 2009;36(1):151-165.

[167] NHS. Clinical guideline 45. Antental and postnatal mental health. London: National Collaborating for Mental Health: National Institute for Health and Clinical Excellence; 2007.

[168] Peipert JF, Bracken MB. Maternal age: An independent risk factor for cesarean delivery. Obstet Gynecol 1993;81(2):200-205.

[169] Ecker JL, Chen KT, Cohen AP, Riley LE, Lieberman ES. Increased risk of cesarean delivery with advancing maternal age: Indications and associated factors in nulliparous women. Obstet Gynecol 2001;185(4):883-887.

[170] Ross LE, Murray BJ, Steiner M. Sleep and perinatal mood disorders: A critical review. J Psychiatry Neurosci 2005;30(4):247-256.

[171] Posmontier B. Sleep quality in women with and without postpartum depression. J Obstet Gynecol Neonatal Nurs 2008;37(6):722-737.

[172] Wiebe S, Cassoff J, Gruber R. Sleep patterns and the risk of unipolar depression: A review. Nature and Science of Sleep 2012;4:63-71.

[173] Sjöström K, Valentin L, Thelin T, Marsal K. Maternal anxiety in late pregnancy: Effect on fetal movements and fetal heart rate. Early Hum Dev 2002;67(1-2):87-100.

[174] Dierckx B, Tulen JH, van den Berg MP, Tharner A, Jaddoe VW, Moll HA, et al. Maternal psychopathology influences infant heart rate variability: Generation R study. Psychosom Med 2009;71(3):313-321.

[175] Chung TKH, Lau TK, Yip ASK, Chiu HFK, Lee DTS. Antepartum depressive symptomatology is associated with adverse obstetric and neonatal outcomes. Psychosom Med 2001;63(5):830-834.

[176] Wilkes PT, Wolf DM, Kronbach DW, Kunze M, Gibbs RS. Risk factors for cesarean delivery at presentation of nulliparous patients in labor. Obstet Gynecol 2003;102(6):1352-1357.

[177] Sebastián Manzanares G, Ángel Santalla H, Irene Vico Z, López Criado MS, Alicia Pineda L, José LG. Abnormal maternal body mass index and obstetric and neonatal outcome. J Matern Fetal Neonatal Med 2012;25(3):308-312.

[178] Josefsson A, Angelsiöö L, Berg G, Ekström CM, Gunnervik C, Nordin C, et al. Obstetric, somatic, and demographic risk factors for postpartum depressive symptoms. Obstet Gynecol 2002;99(2):223.

[179] Socialstyrelsen. Somatisk vård och sjuklighet vid samtidig psykisk sjukdom - förlossning [In Swedish]. (Somatic care and morbidity with concurrent mental disorder - childbirth. The Swedish National Board of Health and Welfare). 2011; 2011-11-12.

[180] Wijma K, Wijma B, Zar M. Psychometric aspects of the W-DEQ: A new questionnaire for the measurement of fear of childbirth. J Psychosom Obstet Gynaecol 1998;19(2):84-97.

[181] Kjaergaard H, Wijma, K.,Dykes, A-K., Alehagen S. Fear of childbirth in obstetrically low-risk nulliparous women in Sweden and Denmark. J Reprod Infant Psychol 2008;26(4):340-350.

[182] Nieminen K, Stephansson O, Ryding EL. Women's fear of childbirth and preference for cesarean section – a cross-sectional study at various stages of pregnancy in Sweden. Acta Obstet Gynecol Scand 2009;88(7):807-813.

[183] Rouhe H, Salmela-Aro K, Gissler M, Halmesmäki E, Saisto T. Mental health problems common in women with fear of childbirth. BJOG 2011;118(9):1104-1111.

[184] Handelzalts JE, Fisher S, Lurie S, Shalev A, Golan A, Sadan O. Personality, fear of childbirth and cesarean delivery on demand. Acta Obstet Gynecol Scand 2011;91(1):16-21.

[185] Heimstad R, Dahloe R, Laache I, Skogvoll E, Schei B. Fear of childbirth and history of abuse: Implications for pregnancy and delivery. Acta Obstet Gynecol Scand 2006;85(4):435-440.

[186] Waldenstrom U, Hildingsson I, Ryding EL. Antenatal fear of childbirth and its association with subsequent caesarean section and experience of childbirth. BJOG 2006;113(6):638-646.

[187] Sydsjö G, Sydsjö A, Gunnervik C, Bladh M, Josefsson A. Obstetric outcome for women who received individualized treatment for fear of childbirth during pregnancy. Acta Obstet Gynecol Scand 2012;91(1):44-49.

[188] Saisto T, Halmesmäki E. Fear of childbirth: A neglected dilemma. Acta Obstet Gynecol Scand 2003;82(3):201-208.

[189] SFOG. Förlossningsrädsla, Nr. 51 [In Swedish]. Stockholm: Svensk förening för obstetrik och gynekologi (The Swedish Society of Obstretrics and Gynecology); 2004.

[190] Hildingsson I, Rådestad I, Rubertsson C, Waldenström U. Few women wish to be delivered by caesarean section. BJOG 2002;109(6):618-623.

[191] Karlström A, Nystedt A, Johansson M, Hildingsson I. Behind the myth – few women prefer caesarean section in the absence of medical or obstetrical factors. Midwifery 2011;27(5):620-627.

[192] Bergink V, Kooistra L, Lambregtse-van den Berg MP, Wijnen H, Bunevicius R, van Baar A, et al. Validation of the Edinburgh Depression Scale during pregnancy. J Psychosom Res 2011;70(4):385-389.

[193] Halbreich U, Karkun S. Cross-cultural and social diversity of prevalence of postpartum depression and depressive symptoms. J Affect Disord 2006;91(2-3):97-111.

[194] Mohammad KI, Gamble J, Creedy DK. Prevalence and factors associated with the development of antenatal and postnatal depression among Jordanian women. Midwifery 2011;27(6):e238-e245.

[195] Small R, Lumley J, Yelland J. Cross-cultural experiences of maternal depression: Associations and contributing factors for Vietnamese, Turkish and Filipino immigrant women in Victoria, Australia. Ethn Health 2003;8(3):189-206.

[196] Farhood L, Dimassi H. Prevalence and predictors for post-traumatic stress disorder, depression and general health in a population from six villages in South Lebanon. Soc Psychiatry Psychiatr Epidemiol 2012;47(4):639-649.

[197] Benedict MI, Paine LL, Paine LA, Brandt D, Stallings R. The association of childhood sexual abuse with depressive symptoms during pregnancy, and selected pregnancy outcomes. Child Abuse Negl 1999;23(7):659-670.

[198] Sharps PW, Laughon K, Giangrande SK. Intimate partner violence and the childbearing year. Trauma Violence Abuse 2007;8(2):105-116.

[199] Valentine J, Rodriguez M, Lapeyrouse L, Zhang M. Recent intimate partner violence as a prenatal predictor of maternal depression in the first year postpartum among Latinas. Arch Womens Ment Health 2011;14(2):135-143.

[200] Haddad LG, Shotar A, Younger JB, Alzyoud S, Bouhaidar CM. Screening for domestic violence in Jordan: Validation of an Arabic version of a domestic violence against women questionnaire. Int J Womens Health 2011;3:79--86.

[201] Roberts LG, Williams GM, Lawerence JM, Raphael B. How does domestic violence affect women's mental health? Women Health 1999;28(1):117-129.

[202] Pico-Alfonso MA, Garcia-Linares MI, Celda-Navarro N, Blasco-Ros C, Echeburúa E, Martinez M. The impact of physical, psychological, and sexual intimate male partner violence on women's mental health: Depressive symptoms, posttraumatic stress disorder, state anxiety, and suicide. J Womens Health 2006;15(5):599-611.

[203] Ellsberg M, Jansen HA, Heise L, Watts CH, Garcia-Moreno C. Intimate partner violence and women's physical and mental health in the WHO multi-country study on women's health and domestic violence: An observational study. Lancet 2008;371(9619):1165-1172.

[204] Lukasse M, Vangen S, Øian P, Kumle M, Ryding EL, Schei B. Childhood abuse and fear of Childbirth–A Population-based study. Birth 2010;37(4):267-274.

[205] Murphy CC, Schei B, Myhr TL, Du Mont J. Abuse: A risk factor for low birth weight? A systematic review and meta-analysis. CMAJ 2001;164(11):1567-1572.

[206] Al-Krenawi A, Graham JR, Ophir M, Kandah J. Ethnic and gender differences in mental health utilization: The case of Muslim Jordanian and Moroccan Jewish Israeli out-patient psychiatric patients. Int J Soc Psychiatry 2001;47(3):42-54.

[207] Wamala S, Merlo J, Boström G, Hogstedt C. Perceived discrimination, socioeconomic disadvantage and refraining from seeking medical treatment in Sweden. J Epidemiol Community Health 2007;61(5):409-415.

[208] Small R, Gagnon A, Gissler M, Zeitlin J, Bennis M, Glazier R, et al. Somali women and their pregnancy outcomes postmigration: Data from six receiving countries. BJOG 2008;115(13):1630-1640.

[209] Gavin AR, Melville JL, Rue T, Guo Y, Dina KT, Katon WJ. Racial differences in the prevalence of antenatal depression. Gen Hosp Psychiatry 2011;33(2):87-93.

[210] Statens folkhälsoinstitut. Födelselandets betydelse: en rapport om hälsan hos olika invandrargrupper i Sverige [In Swedish]. Stockholm: Statens folkhälsoinstitut; 2002.

[211] Lindström M, Moghaddassi M, Merlo J. Individual and contextual determinants of self-reported poor psychological health: A population-based multilevel analysis in southern Sweden. Scand J Public Health 2006;34(4):397-405.

[212] Ingvarsdotter K, Johnsdotter S, Östman M. Normal life crises and insanity: Mental illness contextualized. European J Social Work 2011:1-14.

[213] Martin L. Ethnic differences in social participation and social capital in Malmö, Sweden: A population-based study. Soc Sci Med 2005;60(7):1527-1546.

[214] Rosa H, Scheuerman WE. High-speed society: Social acceleration, power, and modernity. Pennsylvania State University Press; 2009.

[215] Berkman LF, Kawachi I. Social epidemiology. Oxford: Oxford University Press; 2000.

[216] Virtanen M, Honkonen T, Kivimaki M, Ahola K, Vahtera J, Aromaa A, et al. Work stress, mental health and antidepressant medication findings from the health 2000 study. J Affect Disord 2007;98:189-197.

[217] Kivimaki M, Lawlor DA, Singh-Manoux A, Batty GD, Ferrie JE, Shipley MJ, et al. Common mental disorder and obesity: Insight from four repeat measures over 19 years: Prospective Whitehall II cohort study. BMJ 2009;339:b3765.

[218] LaCoursiere D, Barrett-Connor E, O?Hara M, Hutton A, Varner M. The association between prepregnancy obesity and screening positive for postpartum depression. BJOG 2010;117(8):1011-1018.

[219] Cedergren MI. Maternal morbid obesity and the risk of adverse pregnancy outcome. Obstet Gynecol 2004;103(2):219-224.

[220] Högberg U, Lynöe N, Wulff M. Cesarean by choice? Empirical study of public attitudes. Acta Obstet Gynecol Scand 2008;87(12):1301-1308.

[221] Stjernholm YV, Petersson K, Eneroth E. Changed indications for cesarean sections. Acta Obstet Gynecol Scand 2010;89(1):49-53.

[222] Habiba M, Karninski M, De Fre M, Marsal K, Bleker O, Librero J, et al. Caesarean section on request: A comparison of obstetricians' attitudes in eight European countries. RCOG 2006;113(6):647-656.

[223] Andolf E. Bör antalet kejsarsnitt minskas? [In Swedish]. Läkartidningen 2007;104(12):930-931.

[224] Hildingsson I, Rådestad I, Waldenström U. Number of antenatal visits and women's opinion. Acta Obstet Gynecol Scand 2005;84(3):248-254.

[225] Greenhalgh T, Stramer K, Bratan T, Byrne E, Russell J, Potts HWW. Adoption and non-adoption of a shared electronic summary record in England: A mixed-method case study. BMJ 2010;340:c3111.

[226] Gartner. eHealth for a Healthier Europe! Oopportunities for a better use of healthcare resources. Edita, Västerås, Sweden: The Ministry of Health and Social Affairs in Sweden.; 2009.

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