



UNIVERSITY OF  
GOTHENBURG

# **Depression and distress in Swedish fathers in the postnatal period**

**- prevalence, correlates, identification, and support**

**Pamela Massoudi**



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# Abstract

The general aim of this thesis was to examine how fathers, and to some extent mothers, with postnatal depression and distress were identified and supported by nurses in Swedish child health care, and to learn more about postnatal depression in fathers and how it can be identified.

Studies I and II were based on a questionnaire completed by 349 nurses in child health care. Study I investigated how postnatal depressive symptoms in mothers were identified by child health nurses, and what factors were associated with the implementation of screening with the Edinburgh Postnatal Depression Scale (EPDS) and with offering supportive counselling. Study II investigated how child health nurses perceived working with fathers, and to what extent they offered supportive counselling to and included fathers in clinical encounters. Half of all the nurses in the study used the EPDS to detect depressive symptoms in mothers. Having the appropriate training, access to regular supervision and clear pathways to care increased the likelihood of using the EPDS. The vast majority of the nurses estimated that it rarely came to their attention that a father was distressed, and less than one out of five nurses had offered supportive counselling to any distressed father in the previous year. Approximately half of the nurses were ambivalent about fathers' caring capacities as compared with that of mothers.

In Study III we validated the EPDS for new fathers, and investigated the factor structure of the scale for both mothers and fathers. Study IV investigated the prevalence and correlates of depressive symptoms in fathers, and the help-seeking preferences of fathers with depressive symptoms. A population-based sample of 1,014 couples were sent a questionnaire including the EPDS and the anxiety subscale of the Hospital Anxiety and Depression Scale (the HAD-A) 3 months postnatally. All high-scoring fathers and a random sample of fathers scoring low were invited for a diagnostic interview to assess the presence of any depression or anxiety disorders. We found a different factor structure of the EPDS for men, implying that the scale picks up more distress, i.e. worry, anxiety and unhappiness, than depression. The EPDS yielded high sensitivity and

specificity when screening for probable major depression at the optimal cut-off score of 12 or more. The positive predictive value, however, was low. The accuracy of the EPDS was modest for minor depression and low for anxiety disorders. The point prevalence of depressive symptoms (EPDS score 12 or more) was 6.3% in fathers and 12.0% in mothers 3 months postpartum. For fathers, the estimated point prevalence of major depression was 1.3%, and 6.1% when minor depression was included. The strongest correlates of depressive symptoms in fathers were problems in the partner relationship, low partner support, a history of depression, experiencing two or more stressful life events during the past year, and a low educational level. All of the fathers with major depression were either already receiving or interested in receiving treatment. Very few fathers with anxiety disorders, minor depression or more general distress were interested in professional help.

Considering the impact of parental distress on the child as well as on the partner, and fathers' high degree of involvement with their infants in Sweden today, it is important that the child health services make efforts to identify and adapt their support to the varying needs of fathers showing signs of distress. Actively involving fathers in the visits at the child health centre from the beginning is probably essential.

*Keywords:* postnatal depression, fathers, mothers, distress, anxiety, primary health care, screening, attitudes, child health care, involvement, nursing, Sweden

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# List of publications

This thesis consists of a summary and four research papers, referred to in the text by their Roman numerals:

- I. Massoudi, P., Wickberg, B., Hwang, P. (2007) Screening for postnatal depression in Swedish child health care. *Acta Paediatrica*, 96:897-901.
- II. Massoudi, P., Wickberg, B., Hwang, C.P. (2011) Fathers involvement in Swedish child health care – the role of nurses’ practices and attitudes. *Acta Paediatrica*, 100:396-401.
- III. Massoudi, P., Hwang, C.P., Wickberg, B. (2013) How well does the Edinburgh Postnatal Depression Scale identify depression and anxiety in fathers? A validation study in a population-based Swedish sample. *Journal of Affective Disorders*, <http://dx.doi.org/10.1016/j.jad.2013.01.005>.
- IV. Massoudi, P., Hwang, C.P., Wickberg, B. (Unpublished manuscript) Depression and distress in Swedish fathers in the postnatal period: prevalence, correlates, and help-seeking preferences.

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# Abbreviations

BDI	Beck Depression Inventory
CBT	Cognitive behavioural therapy
CHC	Child health centre
CHS	Child health services
CI	Confidence interval
DSM	Diagnostic and Statistical Manual of Mental Disorders
EPDS	Edinburgh Postnatal Depression Scale
GAD	Generalized Anxiety Disorder
HAD-scale	Hospital Anxiety and Depression Scale
HAD-A/D	HAD-anxiety subscale or depression subscale
IPT	Interpersonal therapy
IQR	Interquartile range
LR	Likelihood ratio
NPV	Negative predictive value
OCD	Obsessive Compulsive Disorder
OR	Odds ratio
PDSS	Postpartum Depression Symptom Scale
PDT	Psychodynamic therapy
Prime-MD	Primary Care Evaluation of Mental Disorders
PPV	Positive predictive value
NOS	Not otherwise specified
ROC	Receiver operating characteristics
RR	Relative risk
SPSQ	Swedish Parental Stress Questionnaire
WHO	World Health Organization

# Introduction

The transition to parenthood is one of the most significant events in a person's life and involves dealing with major changes in daily life and a number of challenges. For many parents, feelings of joy and fulfilment outweigh moments of strain and exhaustion and the overwhelming responsibility of caring for an infant. For others, vulnerability and stressors can accumulate and cause emotional distress, and strain on the couple's relationship. Support from the partner, family or professionals can be of great value to parents during this crucial period in the life of their infant. Maternal and paternal well-being is fundamental to the parent-infant relationship and for child development and behaviour.

Postnatal depression in both mothers and fathers is associated with negative child outcomes. Services within the public health system play an important part in the identification of distress and in giving support to vulnerable families. Early paternal involvement has been shown to enhance the quality of the relationship between father and child. A recent review of social determinants of health in Europe by the World Health Organisation (WHO) stated that the highest priority was ensuring a good start in life for every child. They recommend that families at risk should be identified, that services should provide support for parents, and that a greater parenting role for men should be supported (Marmot, Allen, Bell, Bloomer, & Goldblatt, 2012).

This thesis begins with a brief presentation of the Swedish context relevant to our studies, namely the child health care system and the parental leave policy. The second part summarizes some research on the transition to fatherhood and early father involvement. This is followed by a section on depression, specifically depression during the postnatal period in terms of prevalence, course, consequences, identification, help-seeking, and intervention. The final section of the thesis comprises a summary of the four empirical studies.



# Background

## Swedish child health care

Sweden has a long tradition of preventive child health care. Local child health centres (CHCs), covering the whole country, were established some 70 years ago. Although immunizations, health surveillance, screening, home visits and individual counselling have been included in the work of the centres from the start, there has been a shift in the aim of the services to a more supportive role for parents, in addition to a focus on the child's development and behaviour (Sundelin, 2000). The degree of parental participation varies between fathers and mothers (Socialstyrelsen, 1997), but has traditionally been very high, almost 100% (Jansson, Isacson, & Nyberg, 1998). The Child Health Services (CHS) are organized by county and are supervised by a team usually including a paediatrician, a coordinating nurse, and a consultant psychologist working in maternal and child health care. The team is a natural forum where new methods can be discussed and implementation organized. The services include immunizations, regular health surveillance and screening as well as support and advice to parents (Sundelin & Hakansson, 2000).

Most CHCs offer a first home visit after the birth of the child, with the subsequent visits usually taking place at the CHC. Child health nurses stated, in a survey, that the home visit makes it easier to develop a closer relationship with the parents, and is especially important for getting to know the father (Almquist-Tangen, Bergström, Lindfors, Holmberg, & Magnusson, 2010). General parental education was introduced in Swedish child health care, after a parliamentary decision in 1979, aiming at increasing parents' knowledge of their children's development and needs, and to create opportunities for network building between parents.

In the year 2000, the Swedish National Council for Medical Research recommended that the CHS should have a stronger focus on the child's first two years of life, stressing the importance of parent-child interaction, with the suggestion that screening for postnatal depression should be included in the services, provided that the staff was offered training and

that pathways to care were established (Sundelin & Hakansson, 2000). The vast majority of child health nurses have access to regular supervision, in most cases from the consultant psychologists working within the organization. The CHS organisation makes it natural for the same consultant psychologist to be involved in the training of the nurses and to take referrals from the child health nurses. In the year 2010, routine screening of women for postnatal depressive symptoms 6-8 weeks after delivery was recommended by The National Board of Health and Welfare (Socialstyrelsen, 2010).

## **Parental leave in Sweden**

Sweden has a generous parental leave policy that includes the father, entitling parents to a benefit, payable for 480 days, that can be shared equally between both parents. Many countries have little or no paternity leave (O'Brien, 2009), whereas Sweden was one of the first countries to introduce paid parental leave for fathers, in 1974. Sweden has historically been concerned about creating a society where children are well cared for and have a right to a relationship with both parents. Sweden has also been attentive to ideals of gender equality. Sweden now has one of the world's most generous parental and paternity leave policies, entitling fathers to paid paternal leave for 10 days in conjunction with the birth of the child, and with another 60 days reserved for the father that can be used until the child is 8 years old. In addition, fathers have access to the 360 days of parental leave that can be shared by both parents. In 2010, approximately 90% of all fathers took some parental leave, and 23% of the total number of parental benefit days was paid out to fathers. This can be compared with 1974, when only 3% of fathers took any parental leave, and then only 0.5% of the total days (Försäkringskassan, 2011). In Sweden, there is an ongoing debate on how to increase fathers' proportion of the parental leave. The parent with the lowest salary tends to stay home to care for the child, and that parent tends to be the mother.

## **Fatherhood and fathers' involvement**

In a historical overview of fathers' involvement, Lamb (2000) reflects upon the diversity of involved fatherhood. Being a "good father" is much more complex than being a "good mother", as the core features of motherhood are more universally recognized. Historically, fatherhood has



encompassed different roles, such as being a moral guide and a breadwinner. It was not until the mid-1970s that fatherhood was also defined in terms of the nurturing aspects of parenthood, and being involved in the day-to-day care of the child was emphasized (Lamb, 2000).

Two studies reviewing the literature on the transition to fatherhood described the role of fathers as having been transformed during the past few decades, with fathers wanting to parent differently than their own fathers did, and to be emotionally connected to their children. Fathers described the postnatal period as associated with mixed feelings, feelings of pride, pleasure, and a strong desire to be emotionally available to their children, but also frustration about feeling less skilled in caring for their infant than their partners. Changes in the couple's relationship were also difficult for some fathers, including having less time with each other, and experiencing a decrease in intimacy and a deterioration of the sexual relationship (Chin, Hall, & Daiches, 2010; Genesoni & Tallandini, 2009). One theme that emerged in many studies is fathers' struggles to achieve a reasonable balance between their personal and work needs and the needs of the family (Chin et al., 2010; Genesoni & Tallandini, 2009; Goodman, 2005; Hamilton & de Jonge, 2010). Some men have changed their priorities, worked less, spent less time on personal interests and made efforts to become skilled in caring for the baby, sometimes resulting in greater concern about the consequences of focusing less on their careers. Others handled the work-family conflict by withdrawing into their traditional roles and not changing their habits (Genesoni & Tallandini, 2009).

Several studies stress the importance of encouraging fathers' early involvement in their child's care in general as well as in their child's health care (Fagerskiold, 2006; Lewis & Lamb, 2003; Moore & Kotelchuck, 2004; Sarkadi, Kristiansson, Oberklaid, & Bremberg, 2008). In their review, Sarkadi et al. (2008) concluded that there is evidence supporting the positive influence of fathers' involvement, in terms of direct interaction with the child. Positive outcomes were found concerning social, behavioural and psychological outcomes.

It was not until the mid-1980s that the idea of paternal involvement was introduced and conceptualized. Earlier studies focused mainly on fathers as residents in the household and not much on their roles in their children's development. Pleck (2010) proposed a construct for paternal involvement including three primary components: "(a) positive engagement activities, interaction with the child of the more intensive kind

likely to promote development; (b) warmth and responsiveness; and (c) control, particularly monitoring and decision making” (p.67). Two additional components of the Pleck model are (d) indirect care; and (e) process responsibility, referring to a father’s making sure the child’s needs in the first four domains are met, as opposed to meeting those needs himself. Changing cultural expectations concerning fathers, and dual earner families becoming the norm, at least in Western societies, has resulted in fathers taking on increasing responsibility for their children. In Sweden, for example, mothers’ participation rate in the workforce is almost the same as fathers’, and conditions for fathers’ involvement are favourable. Pleck’s (2010) review of the available data concerning fathers’ involvement suggests that fathers in Western societies have gradually increased the total amount of time they spend with their children, or on activities concerning their children. Furthermore, fathers have a relatively high rate of positive engagement activities with their young children, in absolute terms, as well as relative to mothers, even though mothers’ rates were generally somewhat higher. In addition, a relatively high proportion of fathers reported behaviours such as hugging and showing affection and appreciation, suggesting a high degree of warmth and responsiveness. In one Swedish study, fathers considered themselves to be highly involved with their toddlers, and they reported participating more in caring activities than in playing with their children (Hallberg et al., 2007).

Lamb and Lewis (2010) summarized the research on the relative competences of mothers and fathers concerning infant care, and found that most studies point to more similarities than differences between the sexes, suggesting that parenting skills are learned through experience, by both mothers and fathers, and not by mere instinct. New fathers behave just as mothers do, they are equally nurturing and attentive when introduced to their newborn. Several studies have shown no differences between maternal and paternal sensitivity during the first year, while others have found some differences in specific situations. However, most of these fathers had interacted much less with their infants than the mothers had. The authors conclude that spending time with the infant, for example by taking leave after the birth, increases fathers’ involvement, and fathers who have more contact with their infants adapt more easily to parenthood.

Over the years, fathers have increased the amount of time they spend with their children, but so have mothers, and in general a father spends significantly less time with his child than the mother. Consequently, he may feel less confident about his abilities, and not develop the same

sensitivity to his child's cues and needs as the mother (Elek, Hudson, & Fleck, 2002; Lamb, 2000). This can result in fathers preferring activities such as play, education and recreational activities to more nurturing activities. As these activities are more appropriate when the child is older, the father may not feel that he has a role to play early on (Craig, 2006). Spending less time with the infant may also lead to a downward spiral, with less confidence in one's parenting abilities, sometimes resulting in taking even less responsibility, and thus consolidating the imbalance between the parents (Lamb, 2000). Bonding, opportunities for paternal care, and engagement trigger the biological base for fatherhood and give the experience necessary for a more positive spiral of confidence, parenting skills and sensitivity as well as responsibility (Lewis & Lamb, 2003). Different aspects of positive fathers' involvement, such as emotional investment and warmth or closeness in the relationship, are associated with the well-being, social competence, and cognitive development of the child, as well as with the development of the child's emotional regulation system (Cabrera, Tamis-LeMonda, Bradley, Hofferth, & Lamb, 2000). Conversely, disengaged and remote interactions between fathers and their infants as early as 3 months postpartum have been found to be associated with negative outcome in the child at the age of one year (Ramchandani et al., 2013).

## **Perinatal mental health disorders in mothers and fathers**

In recent decades there has been a shift from mainly focusing on depression (or the less frequent psychosis), in mothers after the birth of the child toward a wider range of psychological reactions, including anxiety, during the perinatal period, encompassing pregnancy, childbirth, and the period after childbirth (usually up to the first 3-6 months). And in the last few years the number of studies of fathers has increased as well.

### **Definitions**

The meanings and definitions of the term depression have varied over the years. In the early twentieth century, depressive states were considered to consist of two separate conditions, the endogenous (melancholic/psychotic) depression and the neurotic (reactive) depression. Endogenous depression was considered a biological condition with low lifetime prevalence and better response to antidepressant drugs, whereas neurotic

depression was explained in terms of stress and vulnerability. With the introduction of DSM-III (APA, 1980) these two conditions were merged into one depressive condition varying in severity, referred to as major and minor depression. These concepts have been criticized for being over-inclusive and non-specific, resulting in non-differentiated treatments and medicalizing normal distress (Parker, 2005, 2007). Others asserted that people diagnosed as having major depression generally have more severe disorders, are help-seeking or attempt self-harm, and that most doctors can differentiate normal sadness and distress from the more severe conditions (Hickie, 2007).

The current diagnostic criteria for a major depressive episode according to the DSM-IV (APA, 2000) consists of at least five of the following symptoms nearly every day during the same two-week period, and with at least one of the symptoms being either (1) depressed mood or (2) loss of interest or pleasure: 1.) Depressed mood; 2.) Markedly diminished interest or pleasure in all or almost all activities; 3.) Significant weight loss or weight gain, or increase or decrease in appetite; 4.) Insomnia or hypersomnia; 5.) Psychomotor agitation or retardation; 6.) Fatigue or loss of energy; 7.) Feelings of worthlessness or inappropriate guilt; 8.) Diminished concentration or indecisiveness; and 9.) Recurrent thoughts of death or suicide. When there is no history of manic, hypomanic, or psychotic symptoms, the diagnosis of major depressive disorder is made. The World Health Organisation has an alternative classification system (ICD-10) with similar criteria for a depressive episode (WHO, 2009).

The term minor depression is used to describe a depressive episode where some of the symptoms listed above (at least two) are present but the criteria for major depression are not fulfilled. Even subthreshold depression, not fulfilling the diagnostic criteria for major depression, however, may still have a significant impact on psychosocial and cognitive functioning (Gotlib, Lewinsohn, & Seeley, 1995), and there is also an increased risk of a minor depression developing to a major depressive episode (Cuijpers, de Graaf, & van Dorsselaer, 2004). Dysthymia is a more chronic condition, with depressed mood most of the day, more days than not, for at least 2 years.

The term postnatal depression (in the US postpartum depression) is commonly used to describe a non-psychotic depressive disorder in women within the first year following childbirth. Postnatal depression is characterised by low, sad mood, lack of interest, anxiety, sleep difficulties, reduced self-esteem, and difficulty coping with day-to-day tasks (Cox & Holden, 2003). For women, the theoretical model for developing postnatal depression seems to correspond to the general vulnerability-stress model

of depression. For women predisposed to depression, the normal stressors and changes associated with childbirth and the postpartum period can trigger the onset of a depression, or affect a pre-existing disorder, in terms of symptoms, course and severity (Riecher-Rössler & Rohde, 2005). There is no evidence suggesting the disorder to be fundamentally different from depression occurring at other times, but the timing of the depression is an important factor, since the depression may affect the interaction with the infant.

The ICD-10 has a category, F53 for “psychiatric disturbances occurring during the postnatal period”, where both depression and psychosis can be included if the onset is within the first six weeks after delivery and the condition does not fulfil criteria for other psychiatric disease classifications (WHO, 2009). As this classification is rather unspecific, classification under one of the main depression categories is sometimes chosen instead. There is no category of postnatal depression in the DSM-IV, but a postnatal onset specifier can be applied if the depressive episode begins within four weeks after childbirth. The onset limitations of 4 vs. 6 weeks have not, however, been considered to be clinically motivated. Instead, it has been suggested that an onset specifier of 3 or 5 months would better reflect the epidemiological evidence (Wisner, Moses-Kolko, & Sit, 2010). In both clinical practice and research it is common to use the term postnatal depression when referring to depressive episodes occurring up to the first 3 to 6 months, and the term perinatal depression when also including the prenatal period. Global research has shown that depression following childbirth is not limited to Western societies (Halbreich & Karkun, 2006).

Puerperal psychosis is a serious condition affecting about 1-2 women per 1,000 deliveries, and is characterized by delusions and serious behavioural disturbances. Puerperal psychosis has an early onset, commonly within the first few weeks after delivery, and is significantly more frequent among women with a history of bipolar disorder or prior puerperal psychosis (Brockington, 2004; Leight, Fitelson, Weston, & Wisner, 2010). For women with bipolar disorder there is a very high risk of experiencing a mood episode in the immediate postnatal period (Leight et al., 2010), as well as an elevated risk of first psychiatric hospitalisation and readmission, during days 10-19 in particular (Munk-Olsen, Laursen, Pedersen, Mors, & Mortensen, 2006).

Postnatal “blues” refers to a mild condition, characterized by emotional lability, tearfulness and anxiety. The blues are common, affecting 25-40% (in some studies up to 80%) of women during the first postnatal week,

(Edhborg, 2008; Riecher-Rössler & Rohde, 2005), and considered a “normal” transitory condition.

While the most important risk factors associated with postnatal depression are psychosocial, hormonal factors seem to be involved in the onset of blues and puerperal psychosis in genetically vulnerable women (Riecher-Rössler & Rohde, 2005). These conditions have not been known to affect men.

Post-traumatic stress disorder (PTSD) can be a result of a traumatic birth experience or memories of earlier trauma being reactivated by childbirth. In a large Swedish study, post-traumatic stress related to childbirth was found in 1.7% of the women at 1 to 4 months postpartum (Soderquist, Wijma, & Wijma, 2006).

Anxiety disorders during the postnatal period are common in both mothers and fathers and are often comorbid with depressive episodes (Figueiredo & Conde, 2011a; Heron, O'Connor, Evans, Golding, & Glover, 2004; Matthey, Barnett, Howie, & Kavanagh, 2003). Comorbidity is also common among men and women in general, with anxiety disorders usually having an earlier onset (Andrade et al., 2003). Cox suggests that if anxiety is present during the postnatal period, one should assume the presence of depression as well (Cox & Holden, 2003) and for women with more severe postnatal depression or anxiety a thorough assessment is essential so that any other co-existing disorder can be identified (Brockington, Macdonald, & Wainscott, 2006). For many women, previous symptoms of anxiety are exacerbated by the responsibility brought on by having a baby, whereas for others the perinatal onset is a first. Panic disorders, fear of cot death, excessive worry about the health and safety of the child and obsessions about harming the child are some examples of how anxiety disorders can manifest during the perinatal period (Brockington, 2004; Brockington et al., 2006).

Alcohol and other substance abuse may also co-exist with depression, as there is significant comorbidity between depressive disorders and substance abuse (Kessler et al., 2003).

## **Prevalence and incidence**

In international reviews, point prevalence estimates of 10-15% of women experiencing depressive symptoms after childbirth have been reported (Gavin et al., 2005; Gaynes et al., 2005; O'Hara & Swain, 1996). For major depression only, Gaynes et al. (2005) estimated a rate of 1-6 % at different times during the first postpartum year. In one Swedish population-based

sample the point prevalence of women with postnatal depressive symptoms (scoring 12 or more on the EPDS) at 8 weeks postpartum was 12.5%. By 12 weeks postpartum the rate was down to 8.3% and the period prevalence for 8 to 12 weeks postpartum was 4.5% (Wickberg & Hwang, 1997). These figures are consistent with other studies that show that the majority of postnatal depressive symptoms remit within the first few months, suggesting adjustment difficulties during the transition to parenthood. The prevalence rate was almost identical in a Swedish national sample nearly 10 years later: 12.3% at 2 months postpartum, 6.5% postpartum only and 5.8% both in early pregnancy and postpartum (Rubertsson, Waldenstrom, Wickberg, Radestad, & Hildingsson, 2005).

Prevalence rates of depression are higher in populations with higher degrees of social adversity. In the US, Tandon, Cluxton-Keller, Leis, Le, and Perry (2012) reported a prevalence of 28% for major depression, and 34% when minor depression was included, in low-income African-American women, and Gress-Smith, Luecken, Lemery-Chalfant, and Howe (2012) found clinically significant depressive symptoms in 33-38% of low-income Hispanic women. In a peri-urban settlement in South Africa, Cooper et al. (1999) reported a 35% point prevalence of major depression.

Several studies have compared the prevalence of depression in postnatal and non-postnatal women. Most of the studies did not find a significantly higher prevalence of depression during the postnatal period (Cox, Murray, & Chapman, 1993; Eberhard-Gran, Eskild, Tambs, Samuelsen, & Opjordsmoen, 2002; O'Hara, Neunaber, & Zekoski, 1985), but one study from the US did find a higher risk (OR 1.5, CI 1.1-2.2) in postnatal women (Vesga-Lopez et al., 2008). When Eberhard-Gran et al. (2002) controlled for the identified risk factors for depression in their study, the OR for depression during the postnatal period increased, in relation to the non-postpartum women. Their interpretation was that women choose to become mothers when they are in a stable phase of life. While most studies have shown that depression rates among women are not higher during the postnatal period, there is a higher risk of more severe major depression requiring psychiatric treatment during the first 5 months after childbirth (Munk-Olsen et al., 2006).

A review by Gavin et al. (2005) concluded that there were few studies with incidence estimates of postnatal depression in mothers, but that the limited data suggest that 14.5% of women have a new episode of major or minor depression during the first 3 months after childbirth. The incidence of depression seems to be higher for mothers during the first 2-3 months after childbirth than in other periods (Areias, Kumar, Barros, & Figueiredo, 1996; Cox et al., 1993).

There is some evidence that for women who experience their first depression episode during the postpartum period, there is an elevated risk of recurrence after childbirth, but not at other times, whereas women whose postnatal depression is a recurrence of a previous depressive disorder have an increased risk of recurrence of non-postnatal depression (Cooper & Murray, 1995).

Depression rates among new fathers vary depending on the type of sample, measures used, and time point chosen, but seem to be significantly lower than the rates for women. A meta-analysis estimated a prevalence rate of around 10% (Paulson & Bazemore, 2010). This overall mean was derived from 43 studies based on self-report measures and interviews combined into an estimated prevalence rate for “depression”, but only two of the included studies were population-based. One of these, a large UK study, found a 4% rate of depressive symptoms in a community sample of fathers with cases defined using a self-rating scale (Ramchandani, Stein, Evans, O'Connor, & team, 2005). The other study, from Brazil, reported depression symptoms in almost 12% of the fathers, with 4% estimated as having moderate to severe depression (Pinheiro et al., 2006). The highest rates were reported in US studies. One study found symptoms of depression in 10% of fathers at nine months postpartum (Paulson, Dauber, & Leiferman, 2006). When cases defined using diagnostic interview methods were singled out in the meta-analysis, a depression rate of 5% was estimated. A recent Australian population-based study, using another measure of distress than the EPDS, reported a point prevalence of distress of 1.9% within a clinical range, and 7.8% within a symptomatic range, for fathers with infants 3-12 months old (Giallo, D'Esposito, Christensen, et al., 2012). In this study, fathers with infants 3-12 months old had increased odds (1.38, CI 1.1-1.7) of distress as compared with men in the general population, after controlling for age and socio-demographic factors.

## **Course**

Although episodes of postnatal depression in women usually remit within six months, some women remain depressed for up to 2 years and many women whose depressive episodes remit may continue to experience adjustment difficulties (Campbell, Cohn, Flanagan, Popper, & Meyers, 1992). Having several psychosocial risk factors as well as perceiving less partner support has been associated with more chronic depressions (Campbell et al., 1992; Klier et al., 2008). Similarly, Milgrom & McCloud (1996) reported that negative effects associated with postnatal depression, such as elevated levels of parenting stress, poor partner



relationship and negative perceptions of the child persisted even when symptoms of depression decreased. Women who experienced depression for the first time postnatally have been found to be at increased risk of recurrence after their next childbirth (Cooper & Murray, 1995) and are more likely to experience later emotional difficulties and psychiatric problems (Kumar & Robson, 1984). Partners of women with depressive symptoms also reported more difficulties, worsening over time, as compared with partners of non-depressed (low EPDS score) controls (Milgrom & McCloud, 1996).

The course of early paternal depression is not as well-studied but it seems that a substantial percentage of fathers have symptoms at more than one assessment point. Matthey et. al (2000) found that 50-67% of fathers who experienced depressive symptoms prenatally also had symptoms at a later assessment point during the first year, and that couple morbidity seemed to increase over time (Matthey, Barnett, Ungerer, & Waters, 2000). A recent population-based study found that approximately 30% of fathers reporting distress at 3-12 months postpartum continued to report symptoms at a similar or worse level at 2-3 years and 4-5 years, and with greater persistence for fathers with scores above a cut-point defined as probable clinical diagnosis (Giallo, D'Esposito, Christensen, et al., 2012). The incidence of depressive symptoms in fathers is not well studied but one study reported that that the incidence does not seem to be elevated during the first few months after the birth of the child (Areias et al., 1996).

Recently, methodological issues in some reviews concerning postnatal depression have been put forward, suggesting that the basis for estimates in many reviews is weak (Mann, Gilbody, & Adamson, 2010). Matthey (Matthey, 2010) points out that single high scores on a validated self-rating scale such as the EPDS is the most common method used in studies reporting the prevalence of probable postnatal depression. The properties of the EPDS, however, are such that this method will result in a high number of false positives. If these cases are interpreted as cases of depression, the rates of depression will be highly overestimated, with the subsequent risk of motherhood being overpathologized (Matthey, 2010). This is important to take into consideration both in clinical practice and in research on prevalence rates. The overall mean prevalence rate reported in the meta-analysis by Paulson et al. (2010) suggests that this is important in studies of both mothers and fathers.

## **Correlates**

The strongest predictors of postnatal depression in women are a history of depression (before pregnancy), depression or anxiety during pregnancy, a poor marital relationship, lack of social support and experiencing stressful life events during pregnancy or the early postnatal period, low social support, and low socio-economic status (Heron et al., 2004; O'Hara, 2009; Rubertsson, Waldenstrom, et al., 2005; Wisner et al., 2010). Poverty and social adversity have been shown to be strongly predictive of postnatal depression, with depression rates around 20-30% or more in some low-income communities (Cooper et al., 1999; Gress-Smith et al., 2012; Segre, O'Hara, Arndt, & Stuart, 2007; Tandon et al., 2012).

For fathers, the most commonly reported factors associated with depressive symptoms are: maternal depression (prenatal, postnatal or both) (Giallo, D'Esposito, Cooklin, et al., 2012; Matthey, Barnett, Kavanagh, & Howie, 2001; Pinheiro et al., 2006; Ramchandani, Stein, et al., 2008; Schumacher, Zubaran, & White, 2008; Wee, Skouteris, Pier, Richardson, & Milgrom, 2011), and difficulties in the partner relationship (Deater-Deckard et al., 1998; Figueiredo et al., 2008; Giallo, D'Esposito, Cooklin, et al., 2012; Ramchandani et al., 2011; Wee et al., 2011).

A few studies have shown associations with prenatal depression (Matthey et al., 2000; Morse, Buist, & Durkin, 2000), a history of depression (before expecting the child) (Morse et al., 2000; Ramchandani, Stein, et al., 2008), having more than one child (Figueiredo & Conde, 2011b; Ramchandani, Stein, et al., 2008), being unemployed (Bronte-Tinkew, Moore, Matthews, & Carrano, 2007), low educational level (Bronte-Tinkew et al., 2007; Ramchandani, Stein, et al., 2008) and higher age (Deater-Deckard et al., 1998). Associations between a depression diagnosis and less social support (Deater-Deckard et al., 1998), and more stressful life events (Deater-Deckard et al., 1998) have also been found.

## **Consequences for the child**

Depression during the postnatal period is a major health problem associated with adverse impacts on the affected parent, on the couple's relationship and on the child. There is evidence that postnatal depression significantly reduces the likelihood of secure mother-infant attachment, with a higher risk of developing an avoidant or disorganised attachment style, and is associated with negative effects on the child's socio-emotional and cognitive development (Martins & Gaffan, 2000; McMahon, Barnett, Kowalenko, & Tennant, 2005; Murray & Cooper, 1996). Prenatal and recurrent depressive symptoms (Luoma et al., 2001), as well as family

adversity (Murray et al., 2011) have been found to increase the risk of negative outcome.

Milgrom and McCloud (1996) reported that mothers with postnatal depressive symptoms (scoring high on the EPDS) rated themselves as less competent and less emotionally attached to the child than non-depressed (low-scoring) mothers. The mothers themselves as well as their partners rated both their relationship and the child more negatively than non-depressed controls (Milgrom & McCloud, 1996). Similarly, Goodman (2008) found that partners of women with depressive symptoms showed less than optimal interaction with the infant, thus not compensating for the negative effects of the mother's depression on the child. In another study Mezulis, Hyde, and Clark (2004) found that some, but not all types of fathers' involvement may compensate for the effects of major depression in the mother during the postnatal period. The effects were found on later child internalizing, but not externalizing behaviour problems. Although it could not be concluded that non-depressed fathers buffer the negative effects of maternal depression on the child, the results did show that depression in both parents does predict negative outcome in the child (Mezulis et al., 2004).

Various mechanisms seem to mediate the effects of maternal depression on child outcomes. In a low-risk Cambridge sample, Murray, Fiori-Cowley, Hooper, and Cooper (1996) found that depressed mothers were less likely to pick up on their infants' social cues or to attune to and support their emotions and distress. Furthermore, these mothers were less affirming and more negating (rejecting or emotionally discordant) than non-depressed mothers. Morrell and Murray (2003) suggested, when referring to the Cambridge study, that some depressed mothers were more likely to express hostility towards their child and that this is an important component in the development of emotional and conduct problems in the child. Maternal depression increased the odds of insecure attachment, in most cases classified as insecure-avoidant, as well as ongoing difficulties in the mother-child relationship, even if the mother recovered from her depression and was no longer insensitive to the child. These mother-infant difficulties were also associated with later problems with peer relationships and peer play, particularly if marital conflict had been present. The authors reason that children who are insecurely attached are less likely to form relationships where they can acquire effective support. Many of the children may also be exposed to continuing problems in the family.

Stein, Lehtonen, Harvey, Nicol-Harper, and Craske (2009) suggest that one key mechanism in the transmission of psychiatric disturbance from parent

to child is maternal preoccupation, where preoccupation is defined as “a state of narrowed or self-focused attention in which one’s mind is dominated by recurrent negative intrusive thoughts that are difficult to control, difficult to dismiss and recur even when dismissed.” In their review they reason that preoccupation appears to be a characteristic of a wide range of psychiatric disorders, with worry being the core component in GAD and rumination more characteristic of depression. Although all parents can be preoccupied at times, mothers with psychiatric disorders risk being preoccupied for longer periods, even when interacting with their children. As preoccupation has profound effects on a person’s attention, a mother preoccupied with her own recurrent negative thoughts may have a limited capacity to attend to and respond to the child’s signals, in other words, to have problems with sensitive responsiveness. Maternal sensitivity, in turn, has been shown to be essential to infant development, more specifically, sustained infant attention, joint attention, infant emotional regulation and infant learning.

There is now a large body of research pointing to the risks associated with anxiety, stress and depression in the mother during pregnancy (Field, Diego, & Hernandez-Reif, 2010). There is evidence of early neurobiological transmission from mother to foetus. Anxiety and stress during pregnancy can cause elevated cortisol levels in the mother’s neuro-endocrine system to be transmitted to the foetus and reduced blood flow through the umbilical cord. Distress may also result in an unhealthy lifestyle that may affect the intra-uterine environment. These negative effects on the foetus, in turn, may result in increased risks of preterm delivery, negative effects on organ development, low birth weight and long-term effects on the child’s neurodevelopment and physical health. Low birth weight is associated with a higher risk of developing metabolic diseases (for example type 2 diabetes, cardio-vascular diseases and obesity) later in life (Glover, Bergman, & O’Connor, 2008). One recent study found that the negative effects of biological risk exposure seem to be moderated by sensitive parenting and a secure mother-infant attachment (Bergman, Sarkar, Glover, & O’Connor, 2010), which highlights the importance of early parent-child relationship interventions.

Although not many studies have explored the consequences of early paternal depression on the infant, a few large studies have found that symptoms in new fathers may have adverse and persistent impacts on the child’s mental health and development, independently of maternal postnatal depression. A longitudinal cohort study from the UK has resulted in several published papers concerning the effects of paternal postnatal depression. Ramchandani et al. (2005) found that depressive symptoms in

the father at two months postpartum independently predicted a higher risk of behavioural problems in the child at 3½ years and an increased risk of behavioural and conduct disorders, including peer relationship difficulties, by the age of 7 years (Ramchandani, Stein, et al., 2008). The risk was found to be somewhat higher for boys, and for children whose fathers had more chronic depressions (Ramchandani, O'Connor, et al., 2008). In another study, depressive symptoms in the father at 9 months postpartum was associated with a poorer expressive vocabulary in the child (Paulson, Keefe, & Leiferman, 2009). A recent study from Australia found that depressive symptoms above a clinically significant level, in fathers of children aged 3-19 months were associated with problems with behaviour, and social and emotional difficulties in the child at age 4-5 years (Fletcher, Freeman, Garfield, & Vimpani, 2011). Furthermore, a study of health care resource use demonstrated that depression in fathers during the postnatal period was associated with significantly higher community care costs (Edoka, Petrou, & Ramchandani, 2011).

One recent study of fathers, exploring the mechanisms of transmission of risk from fathers with depressive symptoms, found that disengaged and remote interactions between fathers and their 3-month old infants were associated with externalizing behaviour at the age of 1 year, even when several other factors, including maternal sensitivity, were accounted for (Ramchandani et al., 2013).

Depression in fathers during the postnatal period has been noted to exacerbate maternal depression effects on later child behaviour problems but only if the father has spent significant amounts of time caring for the child during infancy (Mezulis et al., 2004).

The consequences of anxiety disorders in mothers or fathers are less well studied but children of mothers or fathers with anxiety disorders seem to be at increased risk of developing the same disorder. Several other factors than parental behaviours, including genetic transmission and shared environmental stressors could, however, account for part of this increased risk (Connell & Goodman, 2002; Ramchandani & Psychogiou, 2009).

## **The Edinburgh Postnatal Depression Scale**

Although various self-report scales, such as the Postnatal Depression Screening Scale (PDSS) (Beck & Gable, 2000, 2001), the Beck Depression Inventory (BDI), and the General Health Questionnaire (GHQ) (Goldberg, 1972), have been used to identify postnatal depression, the Edinburgh Postnatal Depression Scale (EPDS) is by far the most common (Hewitt, Gilbody, Mann, & Brealey, 2010). The EPDS is a 10-item self-report scale, scored on a four-point scale (0-3), designed for use in primary health care (Cox, Holden, & Sagovsky, 1987). It is widely used in research and practice in many countries and has been validated for postnatal mothers in at least 25 countries (Gibson, McKenzie-McHarg, Shakespeare, Price, & Gray, 2009), including Sweden (Wickberg & Hwang, 1996b). The EPDS is considered more suitable for women during the postnatal period than other depression scales, such as the BDI, that include items referring to somatic symptoms normal after childbirth (changes in sleep, appetite and energy). However, the screening scale must not be used on its own. The screening procedure should always include an interview so that a clinical assessment can be made. For women with possible major depression, there should always be a referral to a physician or clinical psychologist for further assessment (Wickberg & Hwang, 2003).

Only four validation studies of the EPDS have been published concerning fathers: in Australia for depression (major or minor) as well as for distress (depression or anxiety) (Matthey et al., 2001); in the UK for major depression (Edmondson, Psychogiou, Vlachos, Netsi, & Ramchandani, 2010); in Hong Kong for depression (major or minor) (Lai, Tang, Lee, Yip, & Chung, 2010); and in Vietnam for major depression, general anxiety disorder (GAD) or panic disorder (Tran, Tran, & Fisher, 2012). Three of these studies suggest lower cut-off scores for fathers than for mothers in the same population, the Hong Kong study of Chinese fathers being the exception. One explanation given for these differences is the general assumption that men express emotions differently from women, mainly that they are less expressive with their negative emotions (Cochran & Rabinowitz, 2003). Therefore, it is important to establish reliable cut-off scores for fathers as well as for mothers in each cultural context.

The EPDS was originally designed to screen for postnatal depression only. However, in studies where the factor structure of the EPDS has been studied for mothers, both a depression factor and an anxiety factor have been identified (Matthey, 2008; Pop, Komproe, & van Son, 1992; Ross, Evans, Sellers, & Romach, 2003), suggesting that the EPDS could be used to detect anxiety as well. For mothers, items 3, 4 and 5 cluster together as an anxiety factor, and it has been suggested that these items could be used as

a separate subscale or score, the “EPDS-3A score”, to screen for anxiety (Matthey, 2008; Swalm, Brooks, Doherty, Nathan, & Jacques, 2010). For fathers, however, the only study investigating the factor structure of the EPDS yielded a different factor structure, one depression factor and one factor consisting of various items, both depression and anxiety (Matthey, 2008). It was concluded that further studies were needed to determine whether the factor structure is, in fact, different in the EPDS for fathers, or if the findings were unique to that particular sample. It has been suggested that the anxiety subscale of the Hospital Anxiety and Depression Scale (Zigmond & Snaith, 1983), (the HAD-A), may be better suited than the EPDS to detect anxiety in fathers (Matthey et al., 2001).

In the Swedish validation, Wickberg et al. (1996) tested the validity of the EPDS against the DSM-III-R criteria for major depression, while in several other validations probable or minor depression was included. The Swedish validation classed these as non-cases, which may explain the higher proportion of false positives than in several other validations. Reviews of validation studies of the EPDS have found sensitivity and specificity estimates varying between 65 and 100% and 49-100%, respectively, and with wide confidence intervals, reflecting the small number of women included. The positive predictive values presented in many of the studies were considered to be misleadingly high due to over-representation of depressed women in the study samples (Eberhard-Gran, Eskild, Tambs, Opjordsmoen, & Samuelsen, 2001; Gibson et al., 2009). The fact that the EPDS will yield a high number of false positives can be compensated for by including a follow-up interview in the screening procedure, the recommended routine for using the scale in clinical practice (Cox & Holden, 2003; Matthey, 2010).

## **Principles of screening**

Before screening for a condition in the general population, certain criteria should be met. The WHO has proposed the following principles for screening (Wilson & Jungner, 1968):

- The condition sought should be an important health problem.
- There should be an accepted treatment or useful intervention, and treatment started at an early stage should be of more benefit than treatment started later.
- The natural history of the disease should be adequately understood.
- There should be a latent or early symptomatic stage.

- There should be a suitable and acceptable screening test or examination.
- Facilities for diagnosis and treatment should be available.
- There should be an agreed policy on whom to treat as patients.
- The cost of case-finding should be economically balanced in relation to possible expenditure on medical care as a whole.
- Case finding should be a continuing process and not a “once and for all project”.

The suitability of screening all new mothers with the EPDS has occasionally been questioned. Some authors have argued that women prefer talking about their feelings to filling out a questionnaire, that they find screening intrusive and that routines and screening circumstances have been unsatisfactory and unethical (Shakespeare, 2002; Shakespeare, Blake, & Garcia, 2003). On the other hand, the high prevalence of depressive symptoms during the postnatal period, around 12% (Gavin et al., 2005; O'Hara & Swain, 1996; Rubertsson, Waldenstrom, et al., 2005), the negative consequences for the child and for the family, and the evidence of the acceptability of screening (Segre, O'Hara, Arndt, & Beck, 2010; Vik, Aass, Willumsen, & Hafting, 2009), as well as of the effectiveness of treatment (Holden, Sagovsky, & Cox, 1989; Morrell, Slade, et al., 2009; Wickberg & Hwang, 1996a), also economically (Morrell, Warner, et al., 2009), all speak in favour of screening women in the postnatal period.

### **Screening in clinical practice**

A UK study of the detection and treatment of postnatal depression in primary care, demonstrated that using the EPDS without having the appropriate training did not improve detection rates, and that treatment was not always related to the presence of depression (Murray, Woolgar, & Cooper, 2004). In contrast, a more recent randomised cluster trial found that training nurses to identify depressive symptoms not only improved detection rates in mothers with depressive symptoms (Morrell, Slade, et al., 2009), but also had universal, preventive, and enduring effects on depression in women who screened negative (EPDS below 12) at 6 weeks postpartum, when followed up at 6, 12 and 18 months postpartum (Brugha, Morrell, Slade, & Walters, 2011). Universal screening for postnatal depression in mothers is recommended in national guidelines in countries including Australia, the UK, Scotland, and Sweden (Beyondblue, 2011; NICE, 2007; SIGN, 2012; Socialstyrelsen, 2010).



The Australian national depression initiative has published comprehensive clinical practice guidelines for depression and related disorders in the perinatal period, with detailed recommendations concerning screening, assessment of both the mother and the mother-infant relationship, psycho-education, support and various therapies (Beyondblue, 2011). The Swedish National Board of Health and Welfare recommend universal screening of women for depression 6-8 weeks after childbirth in their national guidelines for the treatment of depression and anxiety disorders (Socialstyrelsen, 2010). The Swedish National Institute of Health has published recommendations on screening for postnatal depression. These recommendations stress that the screening procedure should involve a routine where the mother completes the EPDS and is followed up with an interview on the same occasion where a clinical assessment can be made (Wickberg & Hwang, 2003).

Brockington (2004) emphasises the importance of further assessment of the symptoms of depression and any co-existing psychiatric conditions as well as exploring vulnerability factors, current circumstances, and availability of support (Brockington, 2004). In some cases it is appropriate to have a second follow-up after one or two weeks for a new assessment, as a single high score may merely reflect a transient stressful situation (Matthey & Ross-Hamid, 2012; Morrell, Slade, et al., 2009; Wickberg & Hwang, 1997). This was also the intention of constructors of the scale (Cox & Holden, 1994, 2003). Training in how to handle the screening situation, as well as access to supervision where mental health issues can be discussed, are crucial before implementing universal screening (Wickberg & Hwang, 2003).

The identification and management of distressed fathers are not included in any guidelines we examined. Although the EPDS has been validated for fathers in a few countries, we are not aware of any implementation studies evaluating screening in clinical practice or training to improve the detection of distressed fathers.

## **Intervention**

When depressive symptoms are identified in mothers, several different types of interventions have been shown to be effective. A Cochrane Database review found that, compared with usual care, any of the included psychological or psychosocial interventions reduced the likelihood of continuing symptoms in mothers with postnatal depression (Dennis & Hodnett, 2007). In primary health care supportive listening visits by the child health nurse, based on person-centred counselling, has been found to

be effective and feasible (Holden et al., 1989; Wickberg & Hwang, 1996a). Interpersonal psychotherapy (IPT) (O'Hara, Stuart, Gorman, & Wenzel, 2000), cognitive behavioural therapy (CBT), and psychodynamic therapy (PDT) have all been found to be effective in the treatment of postnatal depression (Cooper, Murray, Wilson, & Romaniuk, 2003; Milgrom, Ericksen, Negri, & Gemmill, 2005). In a large prospective randomized controlled cluster trial from the UK health visitors were trained to assess women, identify symptoms of postnatal depression, and deliver psychologically oriented sessions based on CBT or person-centred principles. The interventions were not only clinically effective at 6 and 12 months postnatally, compared with care as usual (Morrell, Slade, et al., 2009), but also cost-effective (Morrell, Warner, et al., 2009).

Attempts have been made to find methods of preventing postnatal depression in women. Two reviews of randomized controlled studies of preventive interventions showed that some studies had positive short-term effects, but none of the studies included showed any long-term effects, nor did they reduce the numbers of women who developed postpartum depression (Boath, Bradley, & Henshaw, 2005; Dennis & Creedy, 2004). However, an interesting secondary finding from the RCT cluster trial mentioned above (Morrell, Slade, et al., 2009) was that training the health visitors also had a preventive effect for depression (Brugha et al., 2011). The women in the intervention group scoring below the EPDS threshold at 6 weeks after childbirth were less likely to score above the EPDS threshold at 6 months after childbirth, compared to women in the control group. In another study from Australia, targeted information in the form of a booklet, together with an assessment using the EPDS during antenatal clinic visits improved help-seeking and mental health literacy among mothers (Buist et al., 2007).

In Sweden, the National Board of Health and Welfare recommend that person-centred counselling should be the first choice treatment for depressive symptoms or minor depression in postnatal women. For major but not severe depression CBT, IPT, or PDT are proposed as first choice treatments, while pharmacological treatment (SSRI) or person-centred counselling are suggested as second choice of treatment (Socialstyrelsen, 2010).

Other alternative types of support and treatment than conventional psychotherapies have also shown promising results, including telephone support interventions (Dennis & Kingston, 2008), and massage therapy (Field et al., 2008). In a study by Field et al. (2008), expectant mothers received massage from their partners twice a week from 20 weeks gestation. Besides more pain relief in the expectant mothers, both the men

and the women reported fewer anxiety and depression symptoms, less anger, and the couple's relationship improved more than in the control group.

However, treating the mother for symptoms of depression alone may not be sufficient to improve the mother-infant interaction (Forman et al., 2007; Gunlicks & Weissman, 2008; Murray, Cooper, Wilson, & Romaniuk, 2003), particularly in cases where the depression is prolonged. Interventions that focus on the parent-infant relationship are therefore also important (Weinberg & Tronick, 1998).

We found no published studies evaluating interventions aimed specifically at treating fathers with distress, depression or anxiety during the postnatal period. A few studies from other contexts have reported that interventions which may be helpful for mothers are not necessarily helpful for fathers. Matthey, Kavanagh, Howie, Barnett, and Charles (2004) found that a psychosocial intervention to prevent postnatal distress in first-time parents-to-be effective for mothers, but not for fathers. Matricardi, Agostino, Fedeli, and Montirosso (2013) found that an intervention to reduce stress levels in parents of very preterm ( $\leq 32$  weeks GA) infants was effective for mothers but not fathers. Habib (2012) suggests a multi-level approach to interventions for fathers, guided by four principles: the available empirical evidence regarding psychological treatments and modalities; the current understanding of the nature of depression in fathers during the postnatal period; factors affecting men's help-seeking behaviours; and providing interventions of varying intensity, from information and self-help to intensive clinical treatment.

In general, men are known to seek professional help, such as primary care, counselling, and mental health specialists, less than women (Addis & Mahalik, 2003; Smith, Braunack-Mayer, & Wittert, 2006), and to delay help-seeking (Bevan, 2010; Galdas, Cheater, & Marshall, 2005). Several reasons for these differences have been suggested. It appears that men are less likely than women to recognize and label feelings of distress as emotional problems (Addis & Mahalik, 2003; Bevan, 2010; Swami, 2012). Further, men worry more about being stigmatized for admitting to depressive symptoms, and they are less convinced of being helped by professional assistance (Bevan, 2010). Consequently, many men deny problems and do not seek help. We found no studies concerning help-seeking preferences and behaviours among distressed new fathers. Studies of fathers in the context of child health care, however, including one study concerning partners of women with postnatal depression (Letourneau et al., 2012), indicate that some fathers would like support from the child health nurse, while others prefer more informal sources of

support, such as friends and family (Fagerskiold, 2006; Letourneau et al., 2012).

# Aims

The overall aim of this thesis was to investigate different aspects of depression and distress in fathers during the postnatal period, such as prevalence, correlates, identification, and support. We also wanted to explore the practices and attitudes of child health nurses concerning both fathers and mothers during this period.

The aim of Study I was to investigate how screening for postnatal depression is implemented in the Swedish child health care system, specifically how child health nurses identified mothers with postnatal depressive symptoms, which factors were associated with using the EPDS universally and with offering support to mothers with depressive symptoms.

The aim of Study II was to explore how Swedish child health nurses worked with fathers, specifically how they perceived working with fathers in general, to what extent they offered support to and included fathers in clinical encounters, and their attitudes to fathers as carers of infants.

The aim of Study III was to investigate how accurately the EPDS identified depression and anxiety in fathers during the postnatal period. More specifically, we wanted to investigate the factor structure of the EPDS for fathers, in comparison with the factor structure for mothers, and to validate the Swedish version of the EPDS in relation to the DSM-IV criteria for major and minor depression. Moreover, we wanted to see if the EPDS could be useful in detecting anxiety in fathers and to compare it with the anxiety subscale of the HAD scale.

The aim of Study IV was to investigate the point prevalence of depressive symptoms in fathers and mothers 3 months postpartum, the association between fathers' depressive symptoms and a number of factors including depressive symptoms in the mother, psychosocial and socio-demographic background, and relational and support variables. We also wanted explore help-seeking preferences among distressed fathers.

# Subjects

## Studies I and II

In our first studies we examined how fathers and mothers with postnatal depression and distress were identified and supported by child health nurses.

**Table 1.** Characteristics of the study population (n= 348)

Variables	n	%	
<b>Training</b>			
District nurse training	263	76%	6 also midwives
Paediatric nurse training	44	13%	1 also midwife
District & paediatric nurse training	40	11%	1 also midwife
Other	1	< 1%	
<b>Employer</b>			
Public primary health care	311	90%	
Private primary health care	36	10%	
<b>Type of work</b>			
Exclusively CHC	149	43%	
CHC and other assignments	198	57%	
<b>Age</b>			
39 or younger	36	10%	
40-49	101	29%	
50-59	160	46%	
60+	51	15%	

CHC= child health care

A random sample of 512 nurses drawn from the total population of 2,580 nurses in CHS in Sweden were invited to take part in the study. Thirteen nurses were excluded from the sample for reasons of retirement, moving or otherwise no longer working, thus resulting in 499 valid questionnaires being sent. After two reminders, 348 questionnaires were returned between April and June 2004, a response rate of 70%.

The majority, 263 (76%) of the 348 registered nurses in the study, were district nurses (with primary health care training), 44 (13%) were paediatric nurses and 40 (11%) had both qualifications. A few nurses were also registered midwives. Almost 90% of the nurses worked in the public health care system. Forty-three per cent of the nurses worked exclusively in child health care, while the remaining 57% had other assignments as well. The nurses' years of experience in child health care varied between 0.5 and 35 years, with a mean of 13.3 years. Over 60% of the nurses were 50 years old or older and only 10% 39 or younger. All of the nurses in the study were women. Sixty-five per cent of them (220/348) had regular supervision, usually with a consultant perinatal and child psychologist, at which questions concerning mental health issues could be raised.

## **Studies III and IV**

A population-based sample of mothers and fathers were invited to take part in the studies. All 27 child health centres in the county, with a mixed urban and rural population, participated. All parents with newborns, living together as a couple (at least when recruited) and fluent enough in the Swedish language to understand the questionnaires and to take part in an interview in Swedish, were invited to participate in the overall study. The recruitment procedure began gradually in October 2008 and continued (consecutively) until December 2009, when a total of 1,268 eligible couples had been approached for recruitment and 1,014 couples (80%) agreed to participate. The couples were asked to complete the questionnaires independently of each other and to post them in their respective envelopes. Up to two reminders were sent to non-respondents. In all, 885 fathers (87%), 926 mothers (91%) and 858 couples (85%) returned the postal questionnaire at 3 months postpartum. Non-participants did not differ from participants concerning age, parity or occupation. There were, however, a significantly higher number of fathers whose native language was not Swedish among the non-participants (22% as compared with 8% among the participants;  $p < 0.0001$ ).

Of the 336 fathers who were allocated to the interview group, based either on a score above threshold (EPDS total score  $\geq 10$ /EPDS-3A score  $\geq 4$ /HAD-A score  $\geq 9$ ) or on the randomization (one low-scoring father for every two fathers scoring high on any of the measures), 262 fathers (78%) were interviewed, while 65 (19%) could not be reached within the stipulated time period (no more than 3 weeks), and nine (3%) declined. The fathers who declined or were not reached for the interview did not differ

significantly from the interviewed fathers in age, parity, occupation, education, or in mean EPDS or HAD-A scores. A few fathers were excluded from the ROC analyses in study III owing to incomplete EPDS (three fathers) or HAD-A (four fathers) data.

The mean age of the fathers was 33 years (range 20-51), and almost all (99.8%) were living with the child's mother. The mean age of the mothers was 30 years (range 18-46). Forty-six percent were first-time fathers. Ninety-five percent of the fathers had completed upper secondary school and 37% of all fathers had also attended college or university.



# Methods

## Studies I and II

### Questionnaire

A postal questionnaire containing both open-end and closed-end questions was constructed for studies I and II. Up to two reminders were sent to non-respondents at two to three week intervals. Questions were asked about the following variables:

*Background factors (Studies I & II)* The nurses were asked about their age, professional background, years of experience in child health care, whether they worked exclusively with child health at the primary health care unit or if they had other assignments as well. In addition, they were asked whether or not they had regular supervision where they could discuss mental health issues and, if they did, what profession their supervisor had. They were also asked to specify the number of hours per week they were intended to work at the CHC as well as number of hours they actually worked there.

*Identifying mothers with postnatal depression and depressive mood (Study I)* The questionnaire included a brief description of postnatal depression as well as of the EPDS. The nurses were asked if they did anything in particular to detect mothers with symptoms of depression and, if so, to describe what they did. How did it usually come to the nurse's attention that a mother was feeling depressed and did they routinely screen mothers for depression? Nurses who used the EPDS were asked to describe the screening procedure. Specific questions about how the scale was administered were included.

*Reasons for using or not using the EPDS and for offering or not offering supportive listening visits (Study I)* The nurses were asked to describe, in their own words, the most important reasons for using or not using the EPDS. They were asked if they offered supportive counselling to mothers with depressive symptoms and if so in how many cases.

*Working with fathers and fathers' participation in CHC activities (Study II)* The nurses were asked to describe, in their own words, how they perceived working with fathers in general. The nurses were also asked how often fathers came to the child health centre, and how many of the fathers versus mothers attended the parental education groups.

*Nurses' support to fathers with distress (Study II)* The nurses were asked to estimate how often it came to their attention that a father was distressed and if they had offered supportive counselling to any fathers in the previous year. If they had, they were asked to specify to how many fathers, and to give a short description of the problems discussed and the types of the fathers' distress. The nurses were asked if they did anything in particular to identify fathers with distress, and if so to describe what they did.

*Nurses' attitudes towards fathers as carers of infants (Study II)* The nurses were asked to reflect upon four statements regarding attitudes to fathers as carers of infants and to choose the alternative that best matched their view.

## **Studies III and IV**

### **Questionnaire**

A questionnaire was sent to both mothers and fathers three months postpartum. The questionnaire included the EPDS (Cox et al., 1987) and the anxiety subscale of the HAD scale. The EPDS has been described previously in this thesis. The Hospital Anxiety and Depression scale (Zigmond & Snaith, 1983) is a self-rating scale developed to identify anxiety and depression in non-psychiatric settings. It consists of two subscales, a depression subscale (HAD-D) and an anxiety subscale (HAD-A), each consisting of seven items, scored on a four-point scale (0-3). The HAD has been used extensively and has been found to be well-accepted, and to perform well in assessing symptoms of depression and anxiety disorders in the general population (Bjelland, Dahl, Haug, & Neckelmann, 2002; Herrmann, 1997; Lisspers, Nygren, & Soderman, 1997). The HAD-A subscale was used in the present study with a cut-off score of 9 or more to allocate fathers for interview.

The questionnaire also included questions concerning history of depression (Eberhard-Gran et al., 2002; Kendler, Neale, Kessler, Heath, & et al., 1993), prior treatment for anxiety or depression, stressful life events

(Eberhard-Gran et al., 2002), the partner relationship and perceived support (Ostberg, Hagekull, & Wettergren, 1997), time at home and work time since the birth of the child, and socio-demographic questions.

## **Interview**

We used the Primary Care Evaluation of Mental Disorders (Prime-MD) (Spitzer, Williams, Kroenke, Linzer, & et al., 1994), a structured interview schedule aimed at diagnosing mental disorders in primary health care. It conforms to the DSM-IV criteria. In this study, the depression (major and minor depression as well as dysthymia) and anxiety modules (panic disorder, generalised anxiety disorder (GAD), anxiety disorder not otherwise specified (NOS), obsessive compulsive disorder (OCD), and social phobia) were used to assess the presence of any depression or anxiety disorder. An additional question concerning symptom duration was included when a Prime-MD diagnosis was confirmed.

The interviews were performed by telephone, in most cases within 2 weeks (71.5%) after return of the questionnaire, but 24% within 3 weeks and a few within 4-6 weeks (4.5%). Two experienced licensed clinical psychologists conducted the interviews, both blinded to the fathers' questionnaire results. When answers were ambiguous, probing was done with further questions to ensure as accurate answers as possible. The interviews lasted approximately 15 minutes (mean time).

The interviewed fathers were asked, in open questions, about their help-seeking/support preferences if they were experiencing emotional difficulties or distress, who they would turn to first, who their second choice would be, and if they would consider turning to the CHS. More than one source of support could be listed.

## **Analyses**

All quantitative results were recorded and analysed using IBM SPSS statistical software, version 20 or earlier (IBM Corporation, 2011). A significance level of  $p < 0.05$  was chosen.

In Studies I and II differences between groups were analysed with Fisher's Exact tests or Chi-square tests. Associations were explored using univariate and multiple variable logistic regression models. In Study II, content analysis (Berg, 2004) was used to categorize qualitative replies to an open-ended question.

In Study III the internal consistency of the EPDS was calculated using the Cronbach's alpha coefficient. Chi-square tests were performed to examine significant differences between groups. A factor analysis, using Maximum Likelihood extraction with oblique rotation, was performed to investigate the factor structure of the EPDS. Diagnoses derived from the Prime-MD interview were compared with EPDS scores, and receiver operating characteristics (ROC) were calculated to examine sensitivity, specificity, and positive and negative predictive values for the EPDS and the HAD-A subscale using a range of cut-off values. Confidence intervals (95%) were calculated for sensitivity and specificity using the Clopper-Pearson method as suggested by Eberhard-Gran et al. (2001). Given that high-scoring fathers were over-represented in the interview group, we weighted the sensitivity and specificity values and prevalence rates to obtain new estimates representative of the whole study population. This was done by expanding the data set with interviewed fathers by multiplying by a conversion factor, based on how many times more high-scoring fathers and low-scoring fathers there were in the whole study population than in the interview group.

Positive and negative likelihood ratios (LR+ and LR-) (Jaeschke, Guyatt, & Sackett, 1994) were also calculated to assess the accuracy of the screening scales. A likelihood ratio (LR) is a summary measure based on both sensitivity and specificity. LRs describe by how much a positive or negative result on a diagnostic or screening test will change the likelihood of a person having the disorder; how many times more likely a person with the disease is to have a positive test result (LR+) or how many times less likely a person with the disease is to have a negative test result (LR-) compared with a person without the disease.

In Study IV Fisher's Exact tests or Chi-square tests were performed for the preliminary analyses to assess differences between groups, and *p*-values below 0.05 were considered significant. Relative risk (RR) ratios were used to assess the risk of one parent having depression symptoms when the other parent had symptoms, and the correlation between their EPDS scores was calculated using the Pearson *r* coefficient. Univariate and multiple logistic regression models, with backward stepwise elimination, were used to analyse variables associated with depressive symptoms (EPDS 12 or more). The variables found to be significant in the univariate analyses were further analysed in three steps. In the first step only the socioeconomic background variables were included. In the second step the variables with *p*-values <0.1 were further analysed together with the variables "history of depression" and "stressful life events during the past 12 months". In the third step the variables with *p*-values <0.1 were kept in

the model and analysed together with the variable “partner EPDS score 12 or more” and three relational/support variables. The point prevalences of both major depression and major or minor depression in the whole study sample were estimated by expanding the interview data set using a conversion factor, as described for Study III. The fathers’ replies to the open-ended questions concerning help-seeking preferences and treatment were categorised.

## **Ethics**

The studies were performed in accordance with The Swedish Research Council’s research ethics principles in humanistic-social scientific research (21). All participants in Studies III and IV provided informed written consent, and ethical approval for these studies was granted by the regional ethics review board in Linköping (Dnr M120-08). The recruiting nurses were asked to include couples where both parents could fully understand the written and oral information. The study design included a procedure for referring any father who was assessed during the interview as having a serious depression or anxiety disorder, or suicidal ideation (and not already in treatment), for further professional evaluation or treatment. Referrals could be made to a primary health care general practitioner, perinatal psychologist, or in cases with suicidal ideation, directly to a psychiatric unit.



# Results

## Study I

### Identifying mothers with postnatal depression and depressive mood

The most common ways of identifying mothers with postnatal depression were: the nurse bringing the subject up with the mother after picking up signs; the mother telling the nurse how she was feeling; or through the EPDS (Table 2). The EPDS was used by half of the total group of nurses in the study, and at least another 7% were planning to begin using it. One hundred and fifty-five (91%) of the 171 EPDS users administered the scale universally to Swedish-speaking mothers. The remaining 16 (9%) used the EPDS selectively when time allowed and/or when they suspected depression. It appeared that the EPDS was rarely used for non-Swedish speaking mothers. When nurses who used the EPDS were singled out, more than one third (37%) considered using the scale universally to be the most common means of identifying postnatal depression.

**Table 2.** Most common way of identifying depression, EPDS users vs. non-users (n=310\*)

	Use the EPDS	Do not use the EPDS	All
Nurse brings the subject up	64 (40%)	92 (61%)	159 (50%)
Mother brings the subject up	30 (19%)	46 (31%)	79 (25%)
EPDS	60 (37%)	–	60 (19%)
Other ways	6 (4%)	12 (8%)	6 (6%)
Total	160 (100%)	150 (100%)	310 (100%)

\*Seven nurses did not provide information as to whether or not they used the EPDS or not. Five nurses did not state how they most commonly identified postnatal depression, and 26 nurses felt unable to choose one alternative.

## **The screening procedure**

The EPDS was most commonly administered at 6-9 weeks postpartum. One out of three nurses booked a special visit solely for the EPDS while two out of three nurses used a planned routine visit for screening. More than four out of five nurses (83%) allowed extra time for the EPDS screening procedure, between 10 minutes and one hour. More than half of the nurses allowed 30 minutes or more.

## **Reasons for using or not using the EPDS and for offering or not offering supportive counselling**

The odds of using the EPDS were six times greater when nurses had regular supervision concerning mental health issues (222/348 nurses (65%) had supervision), as opposed to not having supervision (OR 6.8, CI 4.0–11.5). The combination of using the EPDS and having access to supervision greatly increased the odds of offering supportive counselling (OR 12.1, CI 4.0–36.5). Working solely in child health care did not increase the likelihood of using the EPDS but those nurses did offer supportive counselling to depressed mothers in more cases than nurses who also had other assignments ( $p = 0.02$ ). The two most commonly mentioned reasons for using the EPDS were appreciation of the scale as helpful in detecting mothers who did not otherwise show symptoms of depression and making it easier to talk to mothers about how they were feeling. Reasons for not screening mothers with the EPDS were lack of time, appropriate training, and/or pathways to care.

## **Study II**

### **Working with fathers and fathers' participation in CHC activities**

Study II showed that fathers' participation in child health care was much lower than that of mothers. Nearly 80% of the nurses stated that almost all or all mothers attended a group, while only 8% of the nurses said that almost all or all fathers attended a group.

When asked to describe how they perceived working with fathers, 326/348 nurses replied with a total of 485 statements condensed into four



principal categories, with the percentages (number of statements/485) in parentheses. Almost all of the nurses found working with fathers positive.

1. Short but generally positive statements such as positive, nice, important or important for the child or the whole family. (41%)
2. Statements reflecting attitudes such as working with fathers being just as natural or important as working with mothers, and that fathers are capable. Others were impressed and/or found working with fathers different, enlightening or even touching. (22%).
3. Statements reflecting the importance of the nurses' own role in encouraging fathers' involvement in different ways, such as raising issues on the role of the father when both parents were present and offering individual appointments and group activities at times that made it possible for the father to attend as well. A few of the nurses were self-critical and some had ideas of their own about how to approach fathers. (8%)
4. Issues concerning the frequency of fathers' participation in the CHC programme were raised by over 40% of the nurses in 142 statements. Some mentioned their impression that fathers' involvement had increased over the years, particularly that of younger fathers, while others were disappointed that fathers' participation was still low. Several nurses described a wide range of paternal involvement; on the one hand fathers who were very actively involved in caring for the child and regularly attended the CHC, and on the other fathers they only met once or a few times during the early days after the birth of the child. Financial or work-related factors as well as the nurses' own responsibility for making fathers feel welcome and important were mentioned as factors that might affect fathers' attendance at the CHC. (29%)

### **Nurses' support to fathers with distress**

As many as 89% of the nurses (302/339) estimated that it only occasionally if ever came to their attention that a father was distressed. Only 27% of the nurses stated that they attempted by different means to identify fathers who were distressed. When asked to describe what they actually did, approximately one out of five of these nurses mentioned the first home visit as an important occasion to meet and talk to the father, as almost all fathers stay at home for the 10-day paternity leave in conjunction with the birth. No structured methods were used. Sixty nurses (17.5%) stated that they had offered supportive counselling to one or

more fathers during the previous year. They had given support to one, or 'a few' fathers. The odds of offering supportive counselling to fathers was three times as great (OR 3.1, CI 1.2–7.9) for nurses who had regular supervision concerning mental health issues and six times as great (OR 6.6, CI 2.0–22.4) for nurses with a paediatric specialization. Almost one third of these nurses mentioned problems in the couple's relationship, including separation and custody disputes, as the most common reason for the father needing support. The nurse's age and years of experience in child health care was not associated with giving support to fathers, nor was using the EPDS routinely with mothers or offering supportive counselling to mothers.

### **Nurses' attitudes towards fathers as carers of infants**

When asked to reflect on four statements regarding different aspects of fathers as carers for infants, between 33% and 52% of the nurses chose answers that reflect a view of fathers being just as sensitive and competent as mothers in caring for infants, the figure varying depending on the question. A small group of nurses, between 1% and 5%, seemed to be convinced that there is a difference between mothers' and fathers' caring abilities, mothers being more sensitive and having innate caring instincts that fathers lack. A large number of nurses, between 43% and 61%, chose the more ambivalent alternative "agree to some extent" to questions reflecting fathers' caring abilities. Further analyses with dichotomized variables for age ( $\leq 50$  vs.  $> 50$  years) and for type of training revealed a significant age difference for the response alternatives in three of the four statements and for training in one statement. We found no significant association between the nurses' attitudes and working solely in CHC. Nurses over the age of 50 were more likely to be convinced of gender differences in mothers' vs. fathers' caring capacities than younger nurses.

## **Study III**

### **Item analysis**

Both mothers and fathers completed the EPDS approximately 3 months postpartum. The endorsement rate (scoring the item with a value over zero) of each item on the EPDS is presented for men and women in Table 3. Chi-square ( $\chi^2$ ) tests show that men have a significantly lower endorsement rate than women on six of the ten items. For one item, "I

have been so unhappy that I have been crying”, there is a marked difference (Phi coefficient  $\Phi > 0.3$ ) in endorsement, with women rating this item as problematic approximately three times more often than men. Eight of the ten EPDS items showed statistically significant Chi-square values when comparing endorsement rates for depressed and non-depressed fathers.

**Table 3.** Percentage of fathers versus mothers (in the whole group) as well as percentage of depressed (DSM-IV major or minor) versus non-depressed fathers (in the interview group) endorsing each EPDS item as problematic (score >0).

EPDS item	Fathers (n=879)	Mothers (n=923)	Mothers vs. fathers		Depressed fathers (n=29)	Non- depressed fathers (n=233)	Depressed vs. non- depressed fathers <sup>1</sup>
	%	%	$\chi^2$	$\Phi$	%	%	$\chi^2$
1. I have been able to laugh and see the funny side of things.	30.1	37.8	11.5**	0.08	76.0	36.9	16.2***
2. I have looked forward with enjoyment to things.	22.1	21.5	ns	-	62.0	31.3	10.8**
3. I have blamed myself unnecessarily when things went wrong.	74.5	76.5	ns	-	96.6	85.0	ns
4. I have been anxious or worried for no good reason.	46.4	55.0	7.1**	0.06	89.7	69.1	5.3*
5. I have felt scared or panicky for no good reason.	21.2	24.7	6.1*	0.06	72.4	41.2	10.2**
6. Things have been getting on top of me.	72.7	79.2	11.4**	0.08	96.6	82.4	ns
7. I have been so unhappy that I have had difficulty sleeping.	28.4	27.6	ns	-	72.4	41.4	10.0**
8. I have felt sad or miserable.	54.8	69.1	40.4***	.015	72.4	41.2	10.9***
9. I have been so unhappy that I have been crying.	15.1	45.4	186.6***	0.32	44.8	22.0	7.3*
10. The thought of harming myself had occurred to me.	2.3	2.6	ns	-	20.7	3.5	15.0**

\*p<0,05; \*\*p<0,01; \*\*\*p<0,001

<sup>1</sup>The whole group was population-based, whereas the interview group (including the non-depressed) consisted of more high-scoring (EPDS or HAD-A) than low-scoring. Comparisons between depressed and non-depressed fathers therefore cannot be generalized to the whole study population.

## Factor structure of the EPDS for mothers and fathers

The internal consistency of the whole EPDS was good for both mothers and fathers (Cronbach's alpha 0.85 and 0.81, respectively). However, in the factor analysis, item 10 (thoughts of self-harm) showed very low loadings on the two factors (communalities 0.18 for mothers and 0.23 for fathers) and was only endorsed by approximately 3% of the fathers and mothers in the sample. This item was therefore excluded in the further analyses. Item 6 "Things have been getting on top of me" also showed low loadings on the factors, but we chose to retain this item as it was endorsed by more than 70% of the fathers.

**Table 4.**

Factor analysis of the EPDS for mothers (n=913)

	Factor 1	Factor 2
Item 1	0.78	
Item 2	0.72	
Item 3	0.42	
Item 4		0.91
Item 5		0.55
Item 6	0.52	
Item 7	0.66	
Item 8	0.77	
Item 9	0.74	
variance explained (%)	42.9	7.5

Extraction method: Maximum Likelihood.

Rotation: Direct Oblimin. Eigenvalues >1.

For reasons of clarity, factor loadings under 0.4 are not presented.

**Table 5.**

Factor analysis of the EPDS for fathers (n=882)

	Factor 1	Factor 2
Item 1		0.63
Item 2		0.84
Item 3	0.58	
Item 4	0.76	
Item 5	0.71	
Item 6		
Item 7	0.56	
Item 8	0.56	
Item 9	0.47	
variance explained (%)	35.8	7.4

Extraction method: Maximum Likelihood.

Rotation: Direct Oblimin. Eigenvalues >1.

For the mothers, two factors were extracted with eigenvalues of more than one. The first factor, explaining 42.9% of the variance, seemed to reflect depression, in that all items except the two anxiety items 4 and 5 loaded high on it. Anxiety items 4 and 5 loaded on a second factor that explained 7.5% of the variance. The correlation between the two factors was 0.58.

For the fathers, the factor analysis produced a different structure. The first factor, explaining 35.8% of the variance, included item 3 (self-blame), anxiety items 4 and 5, and items 7, 8 and 9, reflecting unhappiness. We chose to label this factor "distress". The core depression items 1 and 2 loaded high on a second factor that explained only 7.4% of the variance. The correlation between the two factors was 0.54. It is worth noting that both item 6, which did not load high on any of the factors for fathers, and item 3, which had relatively low loading on the first factor for mothers, were endorsed by over 70% of both mothers and fathers. These items did

not discriminate between depressed and non-depressed fathers ( $p=0.06$  and  $p=0.15$  for items 6 and 3 respectively).

## Using the EPDS to screen for depression in fathers

**Table 6.** Sensitivity, specificity, PPV and NPV, (values in percentages) as well as positive and negative LR's of the EPDS for different cut-off scores for **major depression**, (values calculated for the interviewed fathers ( $n=262$ ) and weighted to estimate values for the whole study population ( $n=882$ ) (highlighted figures)).

EPDS cut-off		Sensitivity (95%CI)		Specificity (95%CI)		PPV	NPV	LR+	LR-
≥10		100	(63-100)	72.7	(67-78)	10.3	100	9.4	0.0
	weighted	100	(63-100)	89.4	(82-96)				
≥11		100	(63-100)	83.9	(79-88)	16.3	100	14.3	0.0
	weighted	100	(63-100)	93.0	(87-98)				
≥12		100	(63-100)	87.4	(83-91)	20.0	100	19.6	0.0
	weighted	100	(63-100)	94.9	(90-99)				
≥13		75.0	(35-97)	91.3	(87-94)	21.4	99.1	15.3	0.5
	weighted	53.7	(25-69)	96.5	(92-100)				

CI=confidence interval; PPV=positive predictive value; NPV=negative predictive value; LR=likelihood ratio

The validity of the EPDS was assessed for different EPDS scores, its sensitivity (the percentage of correctly identified cases), specificity (the percentage of correctly identified non-cases), positive predictive value (the percentage of all those scoring above the threshold who were correctly identified as cases) and negative predictive value (the percentage of all those scoring under the threshold who were correctly identified as non-cases). The weighted analyses showed that the optimal cut-off score when screening for major depression is 12 or more, yielding a sensitivity of 100% (CI 63%-100%), a specificity of 94.9% (CI 90%-99%) and a positive predictive value of 20.0% (table 6). Likelihood ratios (LR+ 19.6; LR- 0.0)<sup>1</sup> confirm 12 or more as the most suitable cut-off score. Closer examination revealed that of the 32 false positive cases out of 40 scoring

<sup>1</sup> According to a frequently cited guide "LRs greater than 10 or less than 0.1 generate large and often conclusive changes from pre-test to post-test probability" (Jaeschke et al., 1994).

12 or more, nine satisfied the criteria for minor depression or an anxiety disorder, leaving 23 cases with no anxiety or depression diagnosis.

For major or minor depression, a cut-off score of 9 or more yielded a sensitivity of 66.0% (CI 52%-74%), a specificity of 86.3% (CI 78%-94%) and a positive predictive value of 23.8%. A higher threshold would lower the sensitivity considerably. When screening for both major and minor depression the likelihood ratios (LR+ 4.8; LR- 0.4 at a cut-off score of 9 or more) are not as strong as when screening for major depression alone.

The prevalence of major depression in the interview sample was 3.4%, and for major or minor depression 11%. A weighted prevalence estimate for the whole study sample is 1.3% (CI 0.5%-2.1%) for major depression, and 6.1% (CI 3.6%-8.5%) for major or minor depression. Of all 882 fathers, 56 (6.3%) scored 12 or more and 149 (16.9%) scored 9 or more on the EPDS.

### **Using the EPDS and the HAD–A subscale to screen for anxiety in fathers**

We investigated the validity of the EPDS and the HAD–A subscale for various cut-off scores in relation to a Prime–MD anxiety diagnosis, for the interview group as well as weighted estimates for the whole study group. First we calculated values for the EPDS total score. Using a cut-off value of 8 or more produced the best accuracy. Positive and negative likelihood ratios were 3.1 versus 0.5<sup>2</sup> at this threshold, suggesting that the performance of the EPDS is modest when screening for anxiety. Seeing that our factor analysis did not support the idea of a distinct anxiety factor in the EPDS for men, we do not present complete ROC data for the EPDS–3A score (consisting of items 3, 4 and 5). Our preliminary analyses did, however, confirm that it would not be feasible to detect anxiety in men with this score. Fifty percent of the fathers scored 4 or more on the EPDS–3A, and at this cut-off point we would only reach a weighted sensitivity of 51%.

We proceeded to examine the psychometric properties of the HAD–A subscale against any anxiety disorder according to the Prime–MD

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<sup>2</sup> “LRs of 2 to 5 and 0.5 to 0.2 generate small ... changes in probability” (Jaeschke et al., 1994).

interview. Our results show that when using the commonly suggested cut-off score of 8 or more, the sensitivity would be 23.3% (weighted estimate) and even by using a threshold as low as 6 or more the sensitivity would still be low at 45%. Likelihood ratios for the range of cut-off values of 6-8 or more are close to 1, indicating that the subscale would have little practical significance in identifying men with probable anxiety disorders during the postnatal period. In other words, when screening for anxiety disorders in men during this period, it seems that using the HAD-A subscale does not result in higher sensitivity or better accuracy than using the EPDS.

For the anxiety subscale of the HAD, both the Spearman-Brown coefficient and the Cronbach's alpha were 0.77. The prevalence of anxiety disorders (GAD, panic disorder, OCD, anxiety NOS or social phobia) in the interview group was 11%. Owing to the poor accuracy of the anxiety measures, we did not estimate the prevalence of anxiety in the whole study population.

## **Study IV**

### **The point prevalence of depressive symptoms/depression in fathers and mothers three months postpartum**

Fifty-six fathers (6.3%) scored 12 or more on the EPDS. The median EPDS score for fathers was 4 (range 0-26; IQR 2-7), and 9.1% scored zero. Forty of the 56 high-scoring fathers were interviewed and 16 of them satisfied the criteria for a depression diagnosis: 7 with depression only (two major and 5 minor), 9 with comorbid depression (six major, two minor and one dysthymia) and anxiety. Only one high-scoring father satisfied criteria for anxiety without depression. As calculated in Study III, the estimated point prevalence of major depression in the whole study sample was 1.3% (CI 0.5%-2.1%), and for major or minor depression 6.1% (CI 3.6%-8.5%). Among the mothers, 110 (12.0%) scored 12 or more on the EPDS, with a median score of 5 (range 0-25; IQR 3-8), and 4.8% scored zero.

## **Correlation between mothers' and fathers' depressive symptoms**

The correlation between the couples' EPDS scores was significant ( $r=0.24$ ,  $p<0.001$ ). Using mothers as the index group, there was a significantly greater risk of fathers scoring 12 or more on the EPDS if their partners also scored 12 or more, RR 2.52 (95%CI 1.4–4.6). Using fathers as the index group produces a similar risk for mothers, RR 2.31 (95%CI 1.4–3.9).

## **Factors associated with depressive symptoms in fathers**

In the univariate analysis factors found to be significantly associated with depressive symptoms in fathers were: lower education (compulsory school only), stressful life events during the past 12 months, a history of depression (self-reported symptoms), partner relationship problems, less partner support than expected (at least sometimes), not working owing to unemployment or illness, insufficient support from relatives and friends (at least sometimes), depressive symptoms in partner, working more than before the birth of the child, and having more than one child (see Table 1, Paper IV). No significant association was found with the following factors: not having Swedish as a native language, age <25 years or >40 years, premature birth <37 gestational weeks, negative birth experience, poor infant health (after birth or at 3 months), and time at home since the birth of the child.

The variables found to be significant in the univariate analysis were further analysed in three steps (described under Methods). Factors found significant in the third and final step, and thus independently associated with depressive symptoms, were the following five factors with the higher ORs in the univariate analyses: partner relationship problems, less support from partner than expected, low educational level, history of depression, and having experienced two or more stressful life events during the past 12 months. This final model explained 30.0% of the total variance.

Among the 56 high-scoring fathers, the stressful life events rated most frequently as being emotionally difficult/very difficult were problems at work (rated most frequently as being emotionally very difficult) and problems or conflicts with family, friends or neighbours. These events were experienced by 19 (34%) fathers and rated as difficult/very difficult by 13 fathers (23%), with work problems being rated as very difficult more frequently than any other event. Financial problems were rated as difficult/very difficult by 10 fathers, and serious problems in marriage or partner relationship by 9 fathers.



## **Help-seeking preferences among the interviewed fathers**

Thirty-eight high-scoring fathers (EPDS 12 or more) replied to an open question about their help-seeking preferences. When asked to whom they would turn or confide in if they were distressed, half of the fathers (18) mentioned their wife/partner, as their first (14 fathers) or second (4 fathers) alternative. Almost as many fathers (17) mentioned seeking professional help, such as a GP or psychologist, or seeking help through their employer. Ten fathers mentioned their own parents, siblings, or other family members, and four fathers said they would confide in friends or colleagues. Four fathers could only name one person and nine fathers didn't know to whom they would turn or said that they would not confide in anyone. Only two fathers mentioned the CHC as an alternative. When asked specifically if they would turn to the CHC when distressed, approximately one out of four fathers (10) replied either that they would consider doing so.

Of the 47 fathers (of 262 interviewed) who satisfied the criteria for a Prime-MD diagnosis, eight (3%) had major depression (all scoring 12 or more on the EPDS). Six of them already had treatment, and the remaining two were interested in a referral to their primary health care GP to discuss treatment options. Of the 20 fathers with minor depression, only two were receiving treatment and none of the remaining 18 fathers were interested in support or treatment. Of the 18 fathers with an anxiety disorder without depression, three were receiving treatment and one intended to seek treatment. None of the remaining 14 fathers was interested in treatment.



# Discussion

In Study I we investigated, in a national sample, how nurses in Swedish CHS identified mothers with postnatal depression. The EPDS was used by half of the nurses in the study and more were planning to start using it. The majority of the nurses seemed to handle screening with the EPDS in accordance with the intentions of the authors of the scale (Cox & Holden, 1994, 2003) and the recommendations published by The Swedish National Institute of Public Health (Wickberg & Hwang, 2003), such as allowing extra time for the task, ensuring the mothers' privacy while filling out the scale and including a follow-up interview on the same occasion. Having access to regular supervision greatly increased the likelihood of child health nurses using the EPDS to identify mothers with symptoms of postnatal depression. Many nurses expressed appreciation for having a routine that included the EPDS as a way of bringing up the subject with the mother. Unless a systematic approach is used to enquire about mothers' emotions, child health nurses have to rely on mothers either showing signs of depression or expressing directly that they are not feeling well emotionally. In a Norwegian study, nurses reported that they had experienced situations in which they would never have guessed that a mother was going to score high on the EPDS (Vik et al., 2009). It is likely that these mothers would have been missed, and not been offered support or treatment, had the screening not been universal.

The ethical and practical issues surrounding routine screening for depression are of great importance. In a UK study conducted in a district where the EPDS was administered without a structured training program for personnel in the use and interpretation of the scale, the authors concluded that merely administering the EPDS would not necessarily increase detection rates for depression. In our study, more than four out of five nurses allowed extra time for the EPDS routine and the common procedure included a follow-up interview on the same occasion. In Vik's study (2009) the authors reported that the nurses focused on acknowledging the mother's situation and not on diagnoses, and they used terminology stressing postnatal reactions as being common, recognisable and treatable. It is, however, important to bear in mind the risks of

overpathologizing mothers and to be vigilant about the development of routines in clinical practice so that the screening procedure is done sensitively and ethically, and to ensure that nurses involved in the screening of new mothers have the appropriate training, access to regular supervision and sufficient time.

In Study II we found, in accordance with other Swedish studies, that fathers' participation in the activities at the CHC was much less than that of mothers (Hallberg, 2006; Petersson, Petersson, & Hakansson, 2003). One consequence of fathers' low attendance at the CHC seemed to be that they did not receive support to the same extent as mothers did. No systematic methods were used to detect distressed fathers, which was to be expected, in view of the fact that this is not a recommendation in the programme for the Child Health Services. The nurses themselves seemed to be aware of their methods being insufficient, as the vast majority estimated that it would rarely come to their attention if a father was distressed, and they rarely offered support to distressed fathers. Less than one out of five nurses had offered supportive counselling to any father during the previous year, whereas nine out of ten of these same nurses stated in Study I that they offered distressed mothers supportive counselling. Nurses with regular supervision as well as nurses with a paediatric specialization were more likely to give extra support to fathers. Possible explanations may be related to differences in the nurses' professional training and experience.

Despite positive intentions concerning working with fathers, many nurses in our study seem to have traditional views on mothers' vs. fathers' instinctive competences concerning caring capacities. This was particularly evident for nurses over the age of 50. A qualitative study of district nurses' professional practices revealed that child health care was still assumed to be a mother-orientated working area, and that mothers were regarded as primary givers of care and welfare and fathers' absence was taken for granted (Lindström, 2007). In a report by Sarkadi (Sarkadi, 2008), an analysis of CHC waiting rooms found 50% of CHC environments to be aimed at mothers. In another interview study by Fagerskiöld (2006), fathers stressed the importance of feeling welcome and having a trusting relationship with the child health nurse. While some fathers expressed a desire for more communication with and support from the nurse, others said that they preferred support from friends and colleagues. In other words, fathers' needs and help-seeking behaviours vary, and a trusting relationship with the child health nurse could help fathers express their specific needs.

Although the nurses were generally positive to fathers' involvement, many were ambivalent about fathers' caring abilities. There may be several explanations for this discrepancy between the child health nurses' contact with and attitudes towards mothers versus fathers. Appointments and check-ups at the CHC are more frequent during the first six months after the birth, when mothers are most commonly on parental leave and fathers at work (except for the first two weeks when most fathers are on paternity leave). This gives the nurse a better opportunity to get to know the mother than the father. During the first months, most mothers also get a head start in getting to know their infant. Furthermore, fatherhood today encompasses much more caretaking and nurturing than it did 20-30 years ago, when the older nurses in our study received their training. All the nurses in the study were women and this may have been reflected in their answers. In addition, historically, the focus on the CHS has mainly been on the child, not so much on the family as a whole.

None of the nurses seem to have had any systematic routines or methods in approaching fathers about how they were feeling, and the vast majority assumed that they would not know if a father was distressed. Approximately 50% of these nurses used the EPDS with mothers. One explanation for not approaching the father when the mother screened high might be that the nurse did not feel confident enough about talking to a father about his emotional well-being. Another explanation could be that many nurses were not aware of the higher risk of distress in partners of distressed mothers. When a nurse becomes aware that a mother is distressed, it should be recommended that she always take an interest in the emotional well-being of the father as well.

In Study III we found that the EPDS factor structure is different for fathers and mothers. The factor structure we found for fathers was similar to an analysis by Matthey (2008), indicating that depression is not what is primarily captured when the EPDS is used for fathers. Instead, the scale seems to pick up what we call "distress", symptoms of worry, anxiety and unhappiness. These findings may reflect that this type of distress is more common than depression in fathers during the postnatal period. Studies of fathers have shown that many find it challenging to balance personal and work needs with the new demands in their family life. Feeling helpless, anxious or irritable is not uncommon (Fagerskiold, 2008; Genesoni & Tallandini, 2009).

We examined how men and women endorse the different EPDS items, and found that for one item in particular, "I have been so unhappy that I have been crying", there was a marked difference between the frequency of endorsement. It was endorsed three times more often in women.

Interestingly, the endorsement rate for the mothers in our study was practically the same as for mothers in an Australian study (Matthey et al., 2001), whereas the fathers in our study endorsed this item more than six times more frequently than fathers in the Australian study. This highlights the importance of culturally validated measures. When comparing endorsement rates between depressed and non-depressed fathers, eight of the ten items showed statistical significance. However, the differences between depressed and non-depressed fathers are likely to be underestimated, as the high scorers were over-represented in the non-depressed subgroup (Table 3.). Furthermore, the intensity of depressive symptoms is relevant when distinguishing depressed from non-depressed fathers.

For major depression, our suggested cut-off score of 12 or more would result in all fathers with major depression being identified (sensitivity 100%) and most fathers without major depression being correctly classified as non-depressed (specificity 94.9%). However, four out of five fathers scoring above the threshold did not have major depression (PPV 20%). The PPV was lower than what is generally found in different studies of mothers; a mean PPV of 48% was reported in a review by Gibson et al. (2009). One handy explanation for this difference would be that depression is more prevalent in postnatal mothers than in postnatal fathers. When screening for both major and minor depression, our suggested cut-off score of 9 or more would result in less than one out of four fathers scoring over 9 being correctly classified as depressed, while at the same time one out of three depressed fathers would have been missed.

We have summarized the results from our validation of the EPDS together with the four other published validation studies of the scale for fathers (Table 7). As illustrated in the table, it is difficult to make comparisons between these studies as they are based on different outcome measures and different types of populations, and the majority of them were not population-based or had low participation rates. Nonetheless, in our population-based study, the weighted sensitivity and specificity rates were high for major depression. With the exception of the Hong Kong study (Lai et al., 2010), the PPV values in the studies are all within the same range (20-32%).

When screening for anxiety, the accuracy of the EPDS (total score) was modest, using the optimal cut-off score of 8 or more. Using the EPDS-3A score, as has been suggested for mothers (Matthey, 2008), was neither supported by the factor structure we found nor feasible according to our preliminary ROC analysis. One explanation for our results could be that the HAD-A items do not target all the anxiety disorders included in the Prime-

MD. We did look further at this by singling out cases with generalized anxiety or panic disorder, but two out of the five cases were still missed with the HAD-A. Moreover, the total HAD scale has been found to identify both anxiety and depression more accurately than the separate anxiety and depression subscales (Lisspers et al., 1997).

Our results imply that the EPDS can be used to identify probable major depression when the scale is used as part of a clinical assessment where true cases of depression can be confirmed. For minor depression or anxiety disorders, neither the EPDS nor the HAD-A subscale seems to be accurate enough to be recommended. The low prevalence of major depression we found, around 1.3% in the whole study population, and the psychometric properties of the EPDS, suggest that universal screening for depression cannot be recommended for all new fathers. Screening for probable major depression is, however, useful in cases where the partner is depressed or when signs of paternal distress or difficulties are noted. One problem with this type of selective screening is that signs of distress in fathers rarely seem to come to the attention of child health nurses (Study II). In order to identify fathers in need of support, perinatal healthcare providers probably need to have a more structured approach and be more intentional in their efforts to actively involve fathers in their services.

In Study IV, the point prevalence rate of depressive symptoms (6.3%), and the estimated point prevalence of major depression (1.3%) we found for men during the postnatal period, were within the same range as the rates found for fathers (Figueiredo & Conde, 2011a; Madsen, 2009; Ramchandani et al., 2005) and married/co-habiting men in general (Alonso et al., 2004a; Andrade et al., 2003) in several other European studies, and for fathers according to a study from Australia (Giallo, D'Esposito, Christensen, et al., 2012). Depression rates, however, were higher in a low-income community in Vietnam, characterized by a high level of social adversity (Tran et al., 2012). The point prevalence of depressive symptoms for the women in our sample, 12.0%, is very similar to findings in earlier population-based studies in Sweden: 12.3% (Rubertsson, Waldenstrom, et al., 2005) and 12.5% (Wickberg & Hwang, 1997). The prevalence of depressive symptoms as measured by the EPDS thus seems to be approximately doubled for mothers as compared with fathers, in line with the female-to-male ratios usually reported from population-based studies of psychiatric disorders in men and women in general (Alonso et al., 2004a; Andrade et al., 2003; Kessler, McGonagle, Zhao, & et al., 1994).

Several explanations for this difference between men and women have been proposed, with the most consistent findings being related to gender role factors (Addis, 2008; Cochran & Rabinowitz, 2003; Kuehner, 2003). Some researchers assert that some men experience depression with more masculine-specific features that do not conform to the DSM criteria, with more externalizing and distracting features, such as aggression, substance use, and risk-taking, as well as other more benign coping methods, such as exercising or working on a hobby (Cochran & Rabinowitz, 2003). Other researchers, however, stress that instead of trying to understand the gender differences between men and women in the concept labelled as depression, the focus should be on affect, mood and negative experiences, in other words, more general distress, and the different ways in which both men and women, can respond to these emotions (Addis, 2008; Nolen-Hoeksema, 2008; Safford, 2008). Depression is one response that happens to be more common in women. This is in line with the results from Study III, showing that for the vast majority of fathers, a high EPDS score reflects a higher level of general distress, with more of worry, anxiety and unhappiness than depression.

We examined how a number of variables were associated with depressive symptoms in fathers. The strongest associations were with partner relationship problems, education level, a history of depression, two or more stressful life events during the past 12 months and less support from partner than expected. These variables were found to independently predict depressive symptoms in fathers, with ORs varying between 2.8 and 5.2 in our final model. These results are very similar to findings from other studies concerning depressive symptoms in postnatal mothers (Rubertsson et al., 2005), and emotional distress in new fathers (Rosand et al., 2012). Among the distressed fathers, the stressful life event most frequently rated as difficult/very difficult, was problems at work. We assume that mothers are somewhat less affected by problems at work during this period, when they are usually at home on parental leave. A recent study examined the pathways of risk between parental postnatal depression, marital conflict, and child outcomes. The authors found that marital conflict partly mediated the relationship between depression in both mothers and fathers and child outcomes, and was an independent risk factor for adverse child outcomes (Hanington et al., 2012). In another study, Rosand et al. (2012) found that relationship satisfaction appeared to strongly buffer the effects of a number of stressors for both men and women.

Almost all fathers satisfying criteria for major depression were already receiving treatment, and the few who were not were interested in



treatment. Among those with minor depression or anxiety disorders, however, only a minority were receiving or were interested in treatment. This is in line with findings from a large epidemiological study conducted in six European countries. Consulting a formal health service was around twice as common for distressed women as for distressed men and more common for men and women with depressive disorders than with anxiety disorders (Alonso et al., 2004b). In our study, fathers with more serious depressive symptoms seemed to be identified by the Swedish health care system to a high extent. However, it is possible that fathers who did not acknowledge their symptoms also declined to take part in the study or in the diagnostic interview. There are probably several explanations for the finding that the vast majority of distressed fathers were not interested in treatment. Studies have shown that many fathers (Fagerskiold, 2006; Letourneau et al., 2012), as well as men in general (Oliver, Pearson, Coe, & Gunnell, 2005) seem to prefer support from their partners, family and friends. In addition, some fathers state that their mental health is not taken seriously by healthcare professionals (Letourneau et al., 2012). When men do seek primary health care, they are more likely than women to focus on physical problems, and seem to have shorter appointments, ask fewer questions and receive less advice (Smith et al., 2006).

Only one out of four fathers said that they would consider turning to the CHC for support. This is in line with findings from Study II, showing that almost 90 percent of the child health nurses estimated that it rarely came to their attention that a father was distressed. Letourneau (2012) found that fathers expressed a need for time to get acquainted before revealing feelings and personal information.

The fathers in our study did not seek professional help to a high extent, in line with studies of men in general. Various possible explanations for this have been discussed. However, it is important to consider that seeking professional help may not be the best option for all men. Many men handle their distress in others ways, such as confiding in their partners, family or friends, or by others more active and distracting means. Addis (2003) suggests that adaptive help-seeking is likely to be of benefit to men, and in our context, adaptive help-seeking could be interpreted as recognizing when the distress experienced may have negative consequences for the partner, the couple's relationship and for the child, and that these consequences could be prevented if they decided to seek help.

**Table 7. Summary of studies validating the EPDS for fathers.**

<b>Author, country year</b>	<b>Language, timing of EPDS</b>	<b>Type of population</b>	<b>Participation rates</b>	<b>Diagnostic criteria</b>
Edmondson UK 2010	English, 7-8 weeks	Postnatal wards	Total eligible not specified, 1562 (38%) completed the EPDS, 189 <sup>1</sup> (56%) were interviewed	Major depression
Lai, Hong Kong 2010	Chinese, 10 weeks	Postnatal ward	1034 (44% of eligible) consented, number completing the EPDS not reported, 551 <sup>1</sup> (91%) were interviewed	Major or minor depression
Matthey, Australia 2001	English, 6 weeks	Parenthood classes, low-risk sample	Total eligible not specified, 218 (87%) completed the EPDS, 200 (80%) were interviewed	Major or minor depression
Tran, Vietnam 2012	Vietnamese, 28 gest.weeks or 4-6 weeks postpartum	Community-based, low-income sample	231 (64% of eligible) were interviewed with the EPDS and the SCID	Major depression or dysthymia, GAD or Panic Disorder
Massoudi, Sweden 2013	Swedish, 3 months	Population-based	80% of eligible consented, 882 (87%) completed the EPDS, 262 <sup>1</sup> (78%) were interviewed	Major depression Major or minor depression

<sup>1</sup> Studies where a stratified subgroup of participants, including more high-scorers than low-scorers were selected for interview. In these studies sensitivity and specificity values, as well as prevalence rates need to be weighted to be representative for the whole study population.

**Table 7. (continued)**

<b>Diagnostic instrument</b>	<b>Cut off</b>	<b>Sensitivity (95% CI)</b>	<b>Specificity (95% CI)</b>	<b>PPV</b>	<b>Prevalence</b>
SCID	11 or more	0.77 (weighted)	0.93 (weighted)	0.32	10% major or minor depression (unweighted) <sup>1</sup>
SCID	11 or more	0.91 (unweighted)	0.97 (unweighted)	0.57	1.6% minor, 1.5% major depression (unweighted) <sup>1</sup>
DIS	10 or more	0.71	0.94	0.29	2.9% major or minor depression
SCID	5 or more	0.68	0.77	not reported	12.6% major depression or dysthymia
Prime- MD	12 or more	1.0 (0.63-1.0) (weighted)	0.95 (0.90-0.95) (weighted)	0.20	1.3% major depression
	9 or more	0.66 (0.55-0.74) (weighted)	0.86 (0.78-0.94) (weighted)	0.24	6.1% major or minor depression

# Summary and conclusions

Important factors for the implementation of routine screening of mothers for postnatal depression in Swedish child health care were training in the screening procedure, supervision in mental health issues, sufficient time and clear pathways to care. Nurses who used the EPDS and also had access to regular supervision were much more likely to offer supportive counselling to mothers.

Although the nurses were generally positive to fathers' involvement, many were ambivalent about fathers' caring abilities. The vast majority of child health nurses estimated that it rarely came to their attention if a father was distressed, and only one out of four fathers with depressive symptoms said he would consider turning to the CHC for support.

In our population-based study of depression and distress in fathers during the postnatal period, the first in Sweden, we found an estimated point prevalence of major depression of 1.3%, and of 6.1% for major or minor depression, among the 885 fathers. These rates are comparable to the prevalence rates of depression for new fathers in other studies and for men in the general population. The high response rate (87%) and weighted estimates suggest that the prevalence rates for the whole population are reliable.

The EPDS is a valid instrument for identifying probable major depression in Swedish fathers during the postnatal period, yielding high sensitivity (100%) and specificity (94.9%) at the optimal cut-off score of 12 or more. However, the positive predictive value was low, and only one out of five fathers scoring over this threshold had major depression.

The EPDS seems to have a different factor structure when used with fathers as compared with mothers, picking up more distress than depression. Among the high-scoring fathers who did not have major depression, there was a mixed picture, with some having minor depression, anxiety disorders, or more general distress.

The most important factors associated with depressive symptoms in fathers were the same as those found concerning postnatal mothers in others studies: Partner relationship difficulties, poor partner support, a

history of depression, experiencing two or more stressful life events during the past year, and a low educational level.

All of the fathers with major depression either had or were interested in treatment, while very few fathers with anxiety disorders, minor depression or more general distress were interested in professional help. Most of the high-scoring fathers said that they would prefer support from their partners, friends, or family, when or if they were distressed. Almost as many said that they would consider professional help, whereas some would not confide in anyone, or had no one to confide in.

# Clinical implications

It seems that the organization of the CHS in Sweden, with consultant psychologists working within the services to provide training and supervision, and the nurses' appreciation of the EPDS method both facilitated the implementation of routine screening for depression in new mothers and made it possible to reach a relatively high level of method compliance among nurses.

The point prevalence of major depression in fathers (1.3%) is lower than in mothers. For fathers, the EPDS seems to pick up more of general distress, such as worry, anxiety and unhappiness, than depression. Considering the impact of paternal distress on the child as well as on the partner, and fathers' high degree of involvement in their infants in Sweden today, it is important that the child health services make efforts to identify and support distressed fathers as well as mothers. To do this, they need to become more aware of gender bias, actively involve fathers from the beginning, and direct their communication and questions to fathers as well as mothers. The first appointments, when most fathers are on parental leave, can be essential to becoming acquainted with the father. These appointments could include discussion of normal adjustment difficulties, balancing work needs with personal and family needs, and distress.

The lower prevalence of major depression among fathers than among mothers and the psychometric properties of the EPDS scale suggest that universal screening cannot be recommended for all fathers. The scale can be used, however, to identify probable depression in fathers when signs of distress are picked up or when the partner is depressed. The EPDS must be used as part of a clinical assessment where true cases of depression can be confirmed.

Fathers' needs and help-seeking behaviours vary, and a trusting relationship with the child health nurse may help fathers express their specific needs concerning how they experience their fatherhood, how they are feeling and what type of support they expect from the child health nurse. When signs of distress or partner relationship difficulties are picked up, the EPDS can be used together with an interview to determine the

nature of the father's distress. Support interventions should be offered, taking into consideration fathers' individual preferences and needs.

# Further studies

Qualitative studies are needed to understand the nature, and underlying features of distress in new fathers so that measures and interventions more sensitive to these features can be developed.

Research in how fathers perceive consultations and screening procedures at the child health centres is important to achieve more father-friendly and family-oriented services.

We need to learn more about the mechanisms of transmission of risk from fathers to their children; which symptoms in the fathers and which interactions between fathers and infants are associated with adverse child outcome and how these can be identified and treated.

More research is need into methods to identify and support both mothers and fathers who do not speak Swedish.



# Limitations

Studies I and II were based on a questionnaire sent to nurses in Swedish child health care and we therefore do not have the perspectives of mothers and fathers concerning how they perceived the encounters at the CHC, screening, support, and attitudes. A questionnaire study has its limitations as to how much detailed data can be collected. It would be interesting to understand more about the mechanisms behind nurses' attitudes toward mothers versus fathers, but this was not feasible in this study. Another limitation is that the publication of the second study was 6 years after data collection and it is possible that some changes in nurses' attitudes and support to fathers occurred during this period.

Major strengths of Studies III and IV are that the studies were population-based and that high consent and participation rates were achieved, as compared with other studies of fathers. There are, however, some limitations that must be considered.

The confidence intervals around the ROC estimates are wide, owing to the relatively small number of cases with a DSM-based diagnosis. In addition, the fathers selected for the diagnostic interviews were stratified to ensure enough cases with depression or anxiety (all high-scoring fathers and a random sample of low-scoring fathers were invited for a telephone interview). The results were then weighted to estimate values representative of the whole study population.

The reliability of the Prime-MD, although modest or good for more severe disorders, has been questioned for the sub-threshold disorders of minor depression and anxiety NOS (Spitzer et al., 1994, Bakker et al., 2009). Thus, using a more comprehensive interview form face-to-face, might have yielded a higher degree of accuracy. This was not, however, considered feasible in our study, with so many fathers consecutively included from the whole county. On the other hand, interviewing fathers by telephone may have been to our advantage in that we achieved a high participation rate for the study and reached a large number of respondents for interviews.

Our findings cannot be generalized to single fathers who are primary caregivers, to fathers not living with their infants, or to fathers not fluent in the Swedish language. Fathers not living with their infants have been found to have a higher risk of distress during the early childhood period (Giallo et al., 2012). Being single has also been associated with a higher risk of major depression in men in general (Alonso et al., 2004a). Current depressive symptoms and relationship difficulties were assessed on the same occasion. Therefore we cannot know the causal pathways between distress in fathers and the associated factors. Having a low educational level may reflect other aspects of being disadvantaged not studied here.

Another weakness in the study is that there was a delay of up to 2-3 weeks between completing the scales and taking part in a telephone interview. This could have affected the results, mainly by underestimating the accuracy of the scales. In our study, however, all cases of major depression and the majority of the cases with minor depression or an anxiety disorder had lasted for at least 2 months, in several cases for years.

# Populärvetenskaplig sammanfattning på svenska

Syftet med denna avhandling har varit att studera psykisk ohälsa hos nyblivna föräldrar, främst pappor. Hur har barnhälsovården hittills uppmärksammat nyblivna pappor och hur de mår? Hur väl fungerar Edinburgh Postnatal Depression Scale (EPDS) när den används för pappor? Hur vanligt är det att nyblivna pappor har depressionssymptom och vilka är de vanligaste samvarierande faktorerna? Vi ville också ta reda på vem papporna helst vänder sig till när de inte mår bra och hur de förhåller sig till professionell hjälp.

Ungefär 10-15 procent av alla kvinnor visar tecken på nedstämdhet eller depression några månader efter att ha fött barn. I svenska studier har man funnit att ungefär 12 procent av kvinnorna visar depressionstecken 8 veckor efter förlossningen och knappt hälften av dessa har kvar symptomen en månad senare. Tidiga depressionstecken kan ibland återspegla övergående omställningssvårigheter som ger sig uttryck i nedstämdhet och oro, medan det andra gånger kan röra sig om egentlig depression, ibland med inslag av ångest, tvångsproblematik eller PTSD. Vissa kvinnor är deprimerade för första gången och depressionen tycks ha en koppling till föräldrablivandet. Andra har haft depressioner förut och drabbas av ett återfall i samband med att de får barn.

Depressionsförekomsten hos män i allmänhet brukar anges som ungefär hälften så vanligt som hos kvinnor. Även för nyblivna pappor har en lägre depressionsförekomst än hos nyblivna mödrar rapporterats, men detta är inte lika väl studerat.

En allvarlig konsekvens av depression under postpartum perioden är att samspillet mellan förälder och barn, och i förlängningen barnets känslomässiga och kognitiva utveckling, kan påverkas negativt. Om mammans depression är långvarig eller återkommande, och om hon också har andra problem, är risken för negativa konsekvenser större. Flera relativt nya studier visar att även depressionssymptom hos pappan är förknippat med

ökad risk för beteendeproblem, problem med kamratrelationer och sämre språkutveckling.

För kvinnor är den kliniska bilden av en depression under postpartum perioden inte annorlunda än vid andra perioder i livet men konsekvenserna för barnet, relationen till partnern och för kvinnan själv har bidragit till att man har utvecklat metoder för tidig upptäckt och behandling. Under de senaste 10 åren har screening av mammor för postpartum depression gradvist införts som rutin i Barnhälsovården. Screening sker med självskattningsskalan EPDS och ett uppföljande samtal med mamman vid samma tillfälle. Sedan 2010 rekommenderar Socialstyrelsen screening av mammor för depression efter barnets födelse.

Olika aspekter av engagemang och delaktighet från pappans sida har visat sig ha ett positivt samband med barnets sociala och kognitiva utveckling. Idag tar pappor ett allt större ansvar för sina små barn och detta är särskilt påtagligt i Sverige där de flesta kvinnor arbetar och förutsättningar för pappor att vara hemma med sina barn är relativt gynnsamma. År 2010 tog 90 procent av papporna i Sverige någon föräldradighet och utnyttjade 23 procent av alla föräldradagar. Sverige har dessutom en lång tradition av preventiv barnhälsovård och den verksamhet som erbjuds av barnavårdscentralerna (BVC) utnyttjas av de allra flesta föräldrar. Medicinska forskningsrådet föreslog år 1999 en fokusering av BVC:s verksamhet mot barnets två första levnadsår och man tryckte på betydelsen av samspelet mellan föräldrar och barn.

Det övergripande målet med Studierna I och II var att undersöka hur BVC-sjuksköterskor upptäckte och gav stöd till mammor och pappor med psykisk ohälsa. I Studie I redovisas vad BVC-sköterskor gjorde för att upptäcka tecken på postpartum depression hos nyblivna mammor. Vidare undersöktes faktorer som hade samband med införandet av rutinmässig screening för postpartum depression och med att erbjuda stödjande samtal till mammor. I Studie II undersöktes i vilken utsträckning pappor besökte BVC, hur BVC-sjuksköterskor upplevde sina kontakter med dem och i vilken utsträckning sjuksköterskorna gav samtalsstöd till pappor.

Undersökningsgruppen utgjordes av ett slumpmässigt urval av alla BVC-sjuksköterskor i Sverige, 499 sjuksköterskor och 70 procent av de tillfrågade besvarade ett frågeformulär.

I Studie I fann vi att hälften av sjuksköterskorna använde självskattningsskalan EPDS för att upptäcka depressionstecken hos nyblivna mammor och flera var på gång att börja med detta. Utbildning i screeningmetoden, tillgång till regelbunden handledning (oftast av psykolog) och möjligheter till att kunna remittera vidare mammor var viktiga faktorer som ökade

sannolikheten för att använda sig av EPDS. De flesta sjuksköterskor som använde EPDS lät mamman fylla i skalan i samband med ett samtal på BVC. Fyra av fem sjuksköterskor avsatte extra tid för EPDS; fler än hälften avsatte en halvtimme eller mer för dessa besök. De sjuksköterskor som använde sig av EPDS och dessutom hade tillgång till handledning gav också i större utsträckning stödjande samtal till mammor. Att arbeta enbart med BVC ökade inte sannolikheten att använda sig av EPDS men dessa sjuksköterskor gav oftare stödsamtal än sjuksköterskor som också hade andra arbetsuppgifter.

Studie II visade att pappors deltagande vid besöken på BVC var markant lägre än mammors deltagande. Många sjuksköterskor lyfte fram det första hembesöket som ett viktigt tillfälle att bekanta sig med pappan. I stort sett alla sjuksköterskor upplevde kontakterna med pappor på BVC som positiva. Emellertid, när de ombads ta ställning till några påståenden om pappors omvårdnadsförmågor hade ungefär hälften en ambivalent attityd till pappors instinktiva omvårdnadsförmågor och känslighet för spädbarns behov, jämfört med mammors känslighet och förmågor. Nästan 90 procent av sjuksköterskorna uppskattade att de aldrig eller nästan aldrig skulle få veta om en pappa inte mår bra psykiskt och färre än en av fem hade erbjudit stödjande samtal till någon pappa under föregående år. Sjuksköterskor med regelbunden handledning och barnsjuksköterskor gav i något högre utsträckning stödjande samtal till pappor.

Resultaten tyder på att barnhälsovårdens organisation, med psykologer inom organisationen som kunnat ansvara för både utbildning och regelbunden handledning till BVC-sjuksköterskorna, liksom det faktum att metoden varit uppskattad av sjuksköterskorna, har bidragit till att allmän screening för depression hos nyblivna mödrar fått en spridning i Sverige. De allra flesta sjuksköterskor har kunnat avsätta tid för screeningsamtalet och de har använt metoden i enlighet med de rekommendationer som finns, undantaget mammor som inte var svensktalande. När det gäller arbetet med pappor finns det däremot en del kvar att göra.

Det övergripande målet för Studierna III och IV var att utvärdera EPDS egenskaper för nyblivna pappor och undersöka förekomsten av depression och ångest hos pappor tre månader efter barnets födelse. Vi ville också veta i vilken utsträckning det finns ett samband mellan mammans och pappans symptom och andra faktorer som samvarierade med depressionssymptom, vem papporna vände sig till när de inte mår bra och hur de förhöll sig till professionell hjälp. Vi vände oss till alla nyblivna föräldrapar i länet som var sammanboende och där båda hade tillräckliga kunskaper i det svenska språket. Alla dåvarande barnavårdscentraler i länet deltog i studien och rekryteringen pågick tills 1 014 föräldrapar hade

samtyckt till att delta. Då barnen var tre månader ombads föräldrarna att var och en för sig besvara ett frågeformulär, med bland annat EPDS och ångestdelen i Hospital Anxiety and Depression Scale (HAD-A). Frågeformuläret besvarades av 885 (87 %) pappor, 926 (91 %) mammor, och 858 par (85 %). Alla pappor med höga poäng på någon av skalorna, samt ett slumpmässigt urval av de som fick låga poäng intervjuades per telefon för att fastställa förekomsten av något depressions- eller ångesttillstånd. Totalt intervjuades 262 pappor.

I Studie III validerades EPDS för nyblivna fäder och skalans faktorstruktur utforskades för pappor jämfört med mammor. Medan skalan hos mammor i huvudsak fångar upp depressiva symptom och till viss del ångestsymptom, fann vi att den för pappor fångar upp mera av oro, ångest och olycklighetskänslor (som vi på engelska valt att sammanfatta under begreppet "distress"). Vi fann att EPDS hade hög sensitivitet, 100 procent (andelen sjuka som klassas rätt som deprimerade) och specificitet, 95 procent (andelen friska som klassas rätt som friska) vid screening för egentlig depression hos pappor, med tröskelvärde 12 poäng eller mer. Andelen falskt positiva, felaktigt klassificerade som deprimerade, var däremot hög. Skalans sensitivitet vid screening för lätt depression eller ångesttillstånd var låg och den kan därför inte rekommenderas för detta. När skalan används kliniskt kan man anta att alla eller de allra flesta pappor med egentlig depression kommer att upptäckas. Bland de resterande som får poäng över tröskelvärde kommer några att uppfylla kriterier för lätt depression eller ett ångesttillstånd, medan många är falskt positiva fall som inte uppfyller kriterier för någon depressions- eller ångestdiagnos. Den kliniska bedömningen är därför avgörande för att fastställa om en pappa verkligen lider av egentlig depression eller inte.

I Studie IV fann vi att punktprevalensen av depressiva symptom (12 poäng eller mer på EPDS) vid 3 månader efter barnets födelse var för pappor 6,3 procent, och för mammor 12,0 procent. För pappor var den beräknade punktprevalensen för egentlig depression 1,3 procent, och för både lätt och egentlig depression 6,1 procent. De faktorer med starkast samband med depressionssymptom hos pappor var: problem i parrelationen, mindre stöd från partnern än förväntat, tidigare depression hos pappan själv (medan man väntade barnet eller tidigare), 2 eller fler stressfyllda livshändelser under de senaste 12 månaderna och låg utbildning (enbart grundskola). Alla pappor med diagnosen egentlig depression antingen hade eller var intresserade av behandling. Bland papporna med lätt depression, något ångesttillstånd eller mer generella symptom som vi benämnt som "distress" var det väldigt få som var intresserade av professionell hjälp.

En viktig uppgift för barnhälsovården framöver är att utveckla metoder för att uppmärksamma även nyblivna fäder; hur de upplever sitt föräldraskap, hur de balanserar yrkeslivets krav med de egna och familjens behov, och vilket stöd de förväntar sig av barnhälsovården. En allmän rekommendation är att när en mamma uppvisar depressionstecken bör BVC-sjuksköterskan också uppmärksamma hur pappan mår psykiskt. Vid tecken på psykisk ohälsa eller problem i parrelationen kan EPDS användas vid ett samtal, även med pappan, för att få en fördjupad bild. Stöd- eller behandlingsalternativ bör anpassas utifrån pappans individuella behov.





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