

## CHAPTER 2

### PERINATAL MOOD DISORDERS AND POSTPARTUM DEPRESSION

#### 2.1 Chapter Preview

This chapter provides an overview of the types of perinatal mood disorders, focussing on postpartum depression (PPD) – which has been reported to affect 10 to 20% of postpartum women (Dalton & Holton, 2001; O’Hara & Swain, 1996; Wilkinson, 2001). Lee, Yip, Chiu and Chung (2000) maintain that PPD is the most common disorder following childbirth. The symptoms, prevalence and clinical course of PPD are presented and perspectives on the etiology of PPD as well as the risk factors and consequences of PPD are outlined.

#### 2.2 Introduction

The transition to motherhood can be a stressful time in the lives of women and often brings with it a number of major life changes. Apart from the physiological changes, the birth of a baby also has an emotional impact on the mother. Many women adapt well to these changes, but a significant percentage of mothers are affected by the development of a psychological disorder, particularly depression, during the postpartum period (Dalton, 1996).

### 2.3 Perinatal Mood Disorders

Perinatal mood disorders affect a large number of women both during and after pregnancy and are potentially devastating. Perinatal mood disorders are often broadly termed maternal depression. The term “postpartum depression” has also been used as a catchall phrase for many postpartum emotional symptoms (Beck, 1998a). This may lead to misdiagnosis of PPD when in actuality the mother is suffering from another perinatal mood disorder.

Researchers and clinicians have struggled to come to a consensus regarding the definition, onset and course of perinatal mood disorders (Boyd, Pearson, & Blehar, 2002). It has been debated whether they should fall within the category of mood disorders in the Diagnostic and Statistical Manual, Fourth Edition, Text Revision (DSM-IV-TR; APA, 2000) or whether they represent a constellation of symptoms unique to the antenatal and postpartum period (Brockington, Macdonald, & Wainscott, 2006; Beck & Indman, 2005; Halbreich, 2005). A recent study by Marrs, Durette, Ferraro and Cross (2009) to determine the underlying factor structure of a broad range of emotional experiences and psychiatric symptoms which occur within 30 days after childbirth, indicate that postpartum symptoms are more diverse than has currently been recognized, and may not fit within the current classification system.

A review of literature seems to indicate, however, that perinatal mood disorders may be classified into groups which are considered to be interrelated but potentially separate conditions. These disorders may be classified into 7 separate conditions (Beck, 1998a; Dalton, 1996; Kumar, 1994; Perinatal Mood Disorders, 2004; Roan, 1997;

Bennett & Indman, 2003; Spinelli & Endicott, 2003). Each of these 7 conditions has its own symptomatology and ability to disrupt the family unit affected by it. Although they may share some symptoms, they are considered different conditions, each requiring different treatment (Kirschenbaum, 1995).

The perinatal mood disorders that are classified separately in this section do not appear as separate diagnosable conditions in the DSM-IV-TR. The manner in which the DSM-IV-TR recognizes some of the postpartum mental illness is discussed in each section. Anger in the postpartum period is also included in this section, but postpartum anger is not a syndrome or pathological condition, and as such is not listed as a separate condition of perinatal disorders.

### **2.3.1 Antenatal mood and anxiety disorders.**

Antenatal mood and anxiety disorders can occur any time during pregnancy. Some symptoms of antenatal mood disorders may be overlooked by clinicians because they are also common symptoms which women may experience as a result of the pregnancy. A woman may report frequent changes in energy, appetite and sleep (neurovegetative symptoms), for example, and these may not be considered unusual symptoms during the first and third trimesters (Bennett & Indman, 2003; Sugawara, Sakamoto, Kitamura, Toda, & Shima, 1999). These neurovegetative symptoms are very common in pregnancy. This is frequently a reason why perinatal mood disorders may go undetected – some clinicians don't pay much attention to pregnant patients' complaints about neurovegetative symptoms (Hoffman & Hatch, 2000; Kendler, Walters, & Kessler, 1997)

and postpartum women easily dismiss these symptoms as just part of the pregnancy (Bennett & Indman, 2003).

Even though the symptoms of depression and normal pregnancy do overlap and pose a dilemma to clinicians, labelling antenatal women's alterations in appetite, sleep and energy as "normal" may be problematic. Antenatal women with depression are more likely to complain of fatigue and sleep deprivation than antenatal women without depression (Kelly, Zatzick, & Anders, 2001). Depressed patients may be more willing to mention behavioural changes to their health-care provider than to disclose their depressed mood. In addition, depressed patients often attribute their symptoms to being tired, overworked, or having a cold and fail to recognize that they're mentally ill (Smith, Brunetto, & Yonkers, 2004). Cognitive as well as behavioural and somatic symptoms should therefore be explored.

Depressive disorder during pregnancy varies in length and time of onset. Rates of depression are higher for pregnant women with inadequate social support, chronic stressors such as marital dysfunction, a personal history or family history of mood disorder, a history of child abuse, and financial and housing problems. Gonadal hormones have also been blamed for provoking uncertain mood effects (Wisner & Stowe, 1997). Demographic variables such as young age, minimal education, poverty and a large number of children have been found to put women at a greater risk for antenatal depression (Barnett, Joffe, Duggan, Wilson, & Repke, 1996; Evans, Heron, Francomb, Oke, & Golding, 2001).

According to Bennett and Indman (2003) approximately 15-20 percent of all antenatal women experience depression. Around 15 percent of these women are so severely depressed that they attempt suicide. It is therefore essential that health care providers adequately explore all symptoms that antenatal women report so that intervention may be given for the percentage of women whose symptoms are not merely pregnancy related. According to the American College of Obstetricians and Gynaecologists (ACOG, 2002) and Sichel and Driscoll (1999) antenatal depression necessitates careful monitoring to ensure a healthy outcome for both the mother and foetus. Timely and appropriate treatment is imperative to avoid depression-associated appetite and weight loss. Women suffering from antenatal depression are more vulnerable to nicotine, drug, and alcohol abuse and failure to obtain adequate antenatal care – factors that compromise foetal development (Zuckerman, Bauchner, Parker, & Cabral, 1990).

In studies by ACOG (2002) and Sichel and Driscoll (1999) it is reported that depression which is not monitored or which is left in pregnant women may lead to premature labour and delivery. Chung, Lau, Alexander, Chiu, & Lee (2001) also report that antenatal depression and stress is associated with lower gestational age, and also found it to be associated with lower birth weight, delivery by caesarean section, and admittance of infants to a neonatal care unit. Furthermore, Matthey, Barnett, Ungerer, & Waters (2000) have found that antenatal depression and PPD are linked by as much as 75%. This stresses the importance of identifying women with antenatal depression for intervention and treatment.

Some antidepressant medications have demonstrated relative safety during pregnancy, but warn that absolute safety cannot be ensured as the infant's developing

brain is vulnerable to adverse events (Wisner, Gelenberg, Leonard, Zarin, & Frank, 1999). A study by Oren et al. (2002) suggests that light therapy is beneficial for the treatment of antenatal depression. Spinelli and Endicott (2003) are but some researchers who found interpersonal psychotherapy to be an effective method of treatment during pregnancy and recommended it as a first-line treatment in the hierarchy of antenatal depression. They found that it showed significant improvement compared to a parenting education program. Wisner et al. (2000) compiled a set of guidelines for choosing appropriate interventions. Their risk-benefit analysis regarding decision making for the treatment of childbearing women has been regarded as the most appropriate method for intervention.

### **2.3.2 Postpartum blues.**

The first type of postpartum disturbance is termed postpartum blues, which commonly occurs around day 3 to 5 postpartum in 50% to 80% of mothers (Henshaw, 2003; Postpartum depression consensus statement, 2002). The DSM-IV-TR uses the term “baby blues” and states that it can affect up to 70% of women in the first 10 days postpartum, that the symptoms are transient and do not impair functioning (APA, 2000). Bennett and Indman (2003) point out that the “Baby Blues” is commonly experienced by a majority of mothers and should not be considered a disorder. They suggest that it may be more accurate to consider the blues as a normal experience following childbirth rather than a disorder or psychiatric illness.

It is assumed that postpartum blues are a result of fluctuating hormone levels that result from the expulsion of the placenta in the third stage of labour (Halbreich, 2005). Bennett and Indman (2003) add a number of factors that contribute to the etiology of postpartum blues which include the physical and emotional stress of birth, physical discomfort after birth, the emotional letdown experienced after pregnancy and the birth, an awareness and anxiety about the increase in responsibility that having a baby brings, fatigue and lack of sleep, as well as disappointments around the birth, spousal support, breastfeeding and the baby.

Women with postpartum blues commonly report mood swings, anxiety or irritability, feeling tearful, sadness, lack of concentration and feelings of dependency. Typically, these symptoms reach a peak on the fourth or fifth day after delivery and may last from a few hours to a few days. They usually disappear spontaneously within two weeks after the delivery. These symptoms do not interfere with a women's ability to function, but they may be unpredictable and often unsettling. No specific treatment is usually required. Women who experience this form of depression seldom pose any significant physical threat to themselves or to their babies (Postpartum depression consensus statement, 2002). However, in some women, particularly women with a history of depression, postpartum blues may herald the development of a more significant mood disorder. An evaluation to rule out a more serious mood disorder is warranted if the symptoms of postpartum blues last for a period longer than two weeks.

### **2.3.3 Postpartum depression.**

The second type of postpartum disturbance is termed postpartum depression (PPD) which may range from moderate to severe. This can occur as a gradual onset from postpartum blues, it may start when breastfeeding is discontinued, or it can manifest itself at any point in the first year after childbirth or up to the return of normal menstruation (Dalton & Holton, 2001). The majority of studies indicate that most cases of PPD occur within the first 3 months postpartum. Up to 20% of mothers develop PPD, although O'Hara and Swain (1996) reported that the average rate of this mood disorder based on findings of 59 studies was 13%. PPD will be discussed in further detail in the next section.

### **2.3.4 Obsessive-compulsive disorder occurring in the postpartum period.**

Obsessive-compulsive disorder (OCD) is an anxiety disorder characterized by “(a) recurrent, unwelcome thoughts, ideas, or doubts that seem senseless, yet give rise to anxiety or distress (obsessions), and (b) urges to perform excessive behavioural or mental acts (compulsive rituals) to suppress or neutralize the obsessional distress” (Abramowitz, Schwartz, Moore and Luenzmann, 2003, p. 462) . An adult would recognise that the obsessions or compulsions are excessive or unreasonable, yet would try in most cases to avoid situations related to obsessional fears. The obsessions or compulsions cause marked distress and interfere with the person’s normal functioning (APA, 2000).

Limited research exists on OCD during pregnancy and the puerperium. Abramowitz et al. (2003) reviewed literature on OCD in pregnancy and suggest that obsessional phenomena in postpartum women may occur at higher than expected rates.

Bennett and Indman (2003) indicate that symptoms usually begin at about two to six weeks after birth. They describe the postpartum obsessive thoughts as intrusive, repetitive, and persistent thoughts or mental pictures which usually centre on harming or killing the baby. The thoughts are conscious, usually intensify and frighten the mother to the extent that she may start to avoid being alone with her baby for fear that she may lose control and act out the obsessive ruminations. The mother is usually horrified and disgusted by the thoughts. The obsessions may be accompanied by behaviours to reduce the anxiety she experiences (for example, hiding dangerous items like knives). The mother may also experience compulsive behaviour like counting, checking or cleaning. Abramowitz et al. (2003) found a significantly consistent pattern regarding the content of obsessions and compulsions in perinatal women with OCD symptoms. Antenatal women report being obsessed by fear of contamination, followed by cleaning and washing rituals. Postpartum women tended to report experiencing intrusive unwanted obsessional thoughts of harming their babies, accompanied by phobic avoidance of fear cues. Symptoms of perfectionism, hoarding, and symmetry or ordering which often is present in OCD, were not prominent. Typically, the onset of OCD is gradual yet Abramowitz et al. (2003) found that in postpartum OCD, clinical reports emphasized a rapid onset of obsessive symptoms. They further state that there is evidence of a relationship between PPD and OCD symptoms, particularly unwanted intrusive thoughts of hurting the newborn. Furthermore, postpartum obsessive thoughts (regardless of how horrendous the

content) were not associated with an increased risk of harming the infant. They state that this is due to the obsessive thoughts being experienced as unwanted, senseless and ego-dystonic.

Abramowitz et al. (2003) provide a distinction between the symptoms of postpartum psychosis and postpartum OCD given that either of these disorders may give rise to thoughts or ideas of harming the infant. The postpartum OCD patient differs from the postpartum psychotic patient in that she fears participating in unacceptable behaviour, and also fears merely thinking about it (unlike the delusional thinking typically found in a postpartum psychotic patient). Furthermore, excessive avoidance behaviour and rituals can be seen in postpartum OCD patients as they attempt to control their thoughts and to ensure that they refrain from committing the frightful acts featured in their obsessive thoughts. Severe anxiety complaints are typical in mothers with postpartum OCD. The anxiety may, for example, have to do with concern over whether they will harm their infant or not. In postpartum psychosis, general psychotic symptoms are more prominent, such as losing touch with reality and unpredictable, aggressive behaviour.

According to Bennett and Indman (2003), three to five percent of new mothers develop obsessive symptoms. Women at risk of OCD in the postpartum period may have a personal or family history of OCD. This is a condition that seems to recur and women at-risk should therefore be monitored closely and be given prompt treatment after a subsequent pregnancy (ACOG, 2002; Sichel & Driscoll, 1999).

### **2.3.5 Postpartum onset of panic disorder.**

Metz, Sichel, and Goff (1988) reported the initial onset of panic disorder during the postpartum period. They recommended that clinicians differentiate between postpartum panic disorder and PPD. According to Roan (1997), panic disorder is common among women of childbearing age and is twice as common among women as among men. Prevalence rates vary, with figures ranging from 0.5% to 1.5% at 6 weeks postpartum (Matthey, Barnett, Howie, & Kavanagh, 2003). The emergence of the disorder for the first time in the postpartum period could be coincidental, but is likely to be triggered by the birth. Stressful life events can precipitate panic attacks, and childbirth, although considered a positive event by most people, is stressful.

The symptoms of panic disorder include fear, episodes of extreme anxiety, and a number of physical sensations like shortness of breath, a sense of being smothered or choking sensations, chest pain, palpitations, hot or cold flushes, dizziness, trembling, and tingling sensations or numbness. The mother may be restless, agitated or irritated. During an attack the mother may fear she is losing control, going crazy, or even dying. The panic attack can be so intense that it may wake her up. Typically the attack has no identifiable trigger. It is often accompanied by excessive worry or fears, including fear of having another panic attack (ACOG, 2002; APA, 1994; Bennett & Indman, 2003).

Beck (1998a) found that mothers experienced considerable impairment in their quality of life due to the panic attacks and accompanying fear and anxiety, to the extent that fulfilling maternal responsibilities became a struggle. Her phenomenological study of panic disorder in postpartum mothers indicated that recurring panic attacks led to

impairment in quality of life, feelings of disappointment and guilt, a decrease in self-esteem, feeling exhausted, and concern about the residual effects it would have on their children.

A woman who has a personal or family history of anxiety or panic disorder may trigger its onset in the stressful postpartum period. Thyroid dysfunction has also been described as a risk factor (Bennett & Indman, 2003), and Roan (1997) reports that the female hormone progesterone, which is approximately 170 times higher than before pregnancy, may trigger the onset of panic disorder. Panic attacks have also been found to be precipitated by certain times of day such as sunset, on awakening, feeding time, by being confined indoors, being alone, being away from the infant, the infant crying or by multiple demands on the mother's time (Beck, 1998a; Matthey et al., 2003). Beck's phenomenological study revealed six themes that describe the experiences of panic during the postpartum period (Beck, 1998a, p. 133-134):

Theme 1. The terrifying physical and emotional components of panic paralyzed the women, leaving them feeling totally out of control;

Theme 2. During panic attacks, women's cognitive functioning abruptly diminished while between these attacks women experienced a more insidious decrease in their cognitive functioning;

Theme 3. During the panic attacks, women feverishly struggled to maintain their composure, leading to exhaustion;

Theme 4. Because of the terrifying nature of panic, preventing further panic attacks was paramount in the lives of the women;

Theme 5. Due to recurring panic attacks, negative changes in women's lifestyles ensued, lowering their self-esteem and leaving them to bear the burden of disappointing not only themselves, but also their families;

Theme 6. Mothers were haunted by the prospect that their panic could have residual effects on themselves and their families.

There is a potential adverse effect on foetal well-being when stress hormones are released into the blood stream (Diego et al., 2004). Stress hormones can cause contraction of the blood vessels to the placenta which may induce abruptio placentae. The Postpartum depression consensus statement (2002) emphasises that early identification and treatment of anxiety may prevent pregnancy complications. Women with a history of anxiety or panic attacks prior to pregnancy warrant medical investigation to prevent maternal and foetal problems during the pregnancy.

Beck (1998a) discusses a number of specific interventions for nursing practice that can be formulated based on each theme to facilitate the correct treatment of mothers experiencing panic attacks in the postpartum period. For example, an intervention for Theme 2 is reassuring mothers that it is not unusual to fear insanity and feel a sense of impending doom during a panic attack. The fears are transient and disappear as soon as the panic attack is over. Beck (1998a) further advocates a multidisciplinary treatment

plan specifically for postpartum onset of panic disorder that promotes healthy development of the woman's maternal role and family integration.

### **2.3.6 Postpartum posttraumatic stress disorder.**

This disorder is characterised by symptoms of re-experiencing a trauma, avoidance of stimuli that are associated with and remind the person of the trauma, numbing of general responsiveness and increased arousal. The DSM-IV (APA, 1994) describes posttraumatic stress disorder (PTSD) as a response of “intense fear, helplessness or horror” (p. 424) to an extreme traumatic stressor that the person experienced, witnessed, or was confronted with. The extreme stressor may be an “event or events that involved actual or threatened death or serious injury, or a threat to the physical integrity of self or others” (p. 427).

Childbirth experiences with associated high levels of fear and increased risk of injury and mortality may well include some of the specified features described above. In a study by Arizmendi and Affonso (1987) it was found that the experience of labour continues to impact after the birth. Schreiber and Galai-Gat (1993) found that the experience of intense pain itself may act as a traumatic event.

A number of studies have identified women who experience posttraumatic stress symptoms following labour and childbirth. These studies found the posttraumatic stress symptoms to be associated with long or complicated labour and feelings of lack of control over the situation (Ballard, Stanley, & Brockington, 1995; Fones, 1996; Ichida, 1996; Moleman, Van der Hart, & Van der Kolk, 1992). Another potential aetiological

factor is a previous experience of an extreme traumatic event, in particular, sexual abuse (Watson, Juba, Manifold, Kucala, & Anderson, 1991). Watson et al. (1991) also identified contributing factors which include levels of control, attitude of the doctor, degree to which patients' views were listened to, the level of information given during the procedure and if consent was perceived to have been given.

Czarnocka and Slade (2000) and Soderquist, Wijma, and Wijma, (2006) researched the potential predictors and prevalence of posttraumatic stress type symptoms following labour. In both studies three percent ( $n = 264$  and  $n = 1224$ ) presented with symptoms that suggested clinically significant levels on all three posttraumatic stress dimensions of intrusions, avoidance and hyper arousal. A further 24% of mothers presented with symptoms on at least one of these dimensions (Czarnocka & Slade, 2000).

Soderquist et al. (2006) assessed posttraumatic stress in early and late pregnancy, and up to 11 months postpartum. They report that during the pregnancy, pre-traumatic stress, severe fear of childbirth, depression, previous counselling related to the pregnancy or childbirth, as well as self-reported prior psychological problems were associated with an increased risk of having posttraumatic stress within the first 11 months postpartum. A decrease in perceived social support was also reported in postpartum women who had posttraumatic stress.

According to Czarnocka and Slade (2000), the potential predictors of posttraumatic stress type symptoms following labour are a) the partner not being present at the birth; b) perceptions of low levels of support from the attending partner or relative or staff member; c) self-blame and particularly blaming staff for difficulties experienced during

the labour and delivery; d) fear and amount of distress experienced; and e) perceptions of low control during labour and delivery. Furthermore, they found that a history of mental health problems and trait anxiety were significant predictors for depression and anxiety and were also related to posttraumatic stress symptoms.

### **2.3.7 Puerperal psychosis.**

Puerperal psychosis is the final and most extreme form of perinatal mental illness and is regarded a medical emergency. The DSM-IV-TR terms this condition “postpartum-onset mood episode with psychotic features” and reports it to be more common in primiparous women (APA, 2000).

Puerperal psychosis is typically characterised by severe behavioural changes and psychotic episodes. In many cases puerperal psychosis signifies an episode or a variant of bipolar disorder triggered by childbirth (Brockington et al., 1981; Jones & Craddock, 2001; Kendell, Chalmers, & Platz, 1987; Perinatal Mood Disorders, 2004). Puerperal psychosis may present with mostly depressive symptoms, yet differs from PPD due to the presence of hallucinations, delusions, perplexity, confusion, and the psychotic symptoms that appear after the delivery tend to resemble those of a manic or mixed episode (Brockington, 2004). Hypomanic symptoms are particularly characteristic in mothers who develop puerperal psychosis in the initial days after childbirth with symptoms like irritability, restlessness, and insomnia (Heron, McGuinness, Blackmore, Craddock, & Jones, 2008). Mothers with this disorder show signs of disorientation or confusion, rapid mood variations from depressed to elated, and disorganized or erratic behaviour.

Delusions are common and often centre on the infant and may include religious themes (Heron et al., 2008). The mother may also experience auditory hallucinations that instruct her to harm herself or her infant. For these reasons, there is often a suicidal risk as well as a risk that the mother may harm her newborn (Bennett & Indman, 2003; Craig, 2004; Spinelli, 2004;). This disorder has a 5 percent suicide and a 4 percent infanticide rate (Bennett & Indman, 2003). King, Slaytor, and Sullivan (2004) suggest that figures could be much higher if risk events and near misses were taken into account.

The DSM-IV-TR states infanticide is most often associated with postpartum onset mood episode with psychotic features “that are characterized by command hallucinations to kill the infant, or delusions that the infant is possessed” (APA, 2000, p. 422). These psychotic features have, however, also been known to occur in severe postpartum mood episodes that do not have such specific hallucinations or delusions. Researchers agree that infanticide usually occurs when a woman is psychotic (Spinelli, 2004) or involved in the act of committing suicide, to avoid abandoning her children (Jennings, Ross, Popper, & Elmore, 1999; Spinelli, 2005).

This form of psychological disturbance probably has the highest detection rate owing to the severe nature of its manifestation, which typically occurs whilst the mother is still undergoing a period of hospitalisation. Puerperal psychosis (or postpartum mood episode with psychotic feature, as it is referred to in the DSM-IV-TR) is comparatively rare at around 1 to 2 in 1000 (0.1% – 0.2%) women afflicted with this condition (APA, 2000; Perinatal Mood Disorders, 2004; Munk-Olsen, Laursen, Pedersen, Mors, & Mortensen, 2006).

The onset is usually sudden and within a few days postpartum. It has been reported that the first 48 hours postpartum are symptom-free (Brockington and Hamilton as cited in Doucet, Dennis, Letourneau, & Blackmore, 2009, p.270), however, more recent research revealed that about one half of mothers present with mild hypomanic symptoms within the first three days after childbirth (Heron et al., 2008). After the initial mood symptoms, puerperal psychosis progresses rapidly (Heron et al., 2008). Onset typically occurs within the first three months postpartum and 80% of all incidences present within 3-14 days postpartum (Kumar, 1994; Kruckman & Smith, 2006).

Risk factors for puerperal psychosis include a personal or family history of psychosis, alcoholism, depression, premenstrual symptoms, stressful life events, bipolar disorder, or schizophrenia, and a previous postpartum psychotic or bipolar episode - especially bipolar I disorder according to the DSM-IV-TR (APA, 2000; Bennett & Indman, 2003; Heron et al., 2008). Women who have had a postpartum episode with psychotic features have a greater risk of recurrence with each subsequent delivery. The risk of recurrence is reportedly between 30% and 50% (APA, 2000). The DSM-IV-TR also reports that among women without a history of mood disorders, there is still evidence of an increased risk of postpartum psychotic mood episodes if they have a family history of bipolar disorder (APA, 2000).

Higher rates of postpartum mania, delirium, and psychosis were reportedly associated with postpartum thyroiditis (PPT; e.g. Bokhari, Bhatara<sup>1</sup>, Bandettini, & McMillin, 1998). PPT is the postpartum occurrence of transient hypothyroidism or transient hyperthyroidism. The majority of women return to the euthyroid state by 1 year postpartum. PPT occurs, on average, in 7.5% of women (Stagnaro-Green, 2004).

Spinelli (2009) recommends prompt treatment after delivery to prevent psychosis in women with mood swing disorders. The management of puerperal psychosis should include a physical examination, a clinical evaluation with complete blood chemistry, thyroid functioning tests, and calcium, vitamin B12 and folate levels (Sit, Rothschild, & Wisner, 2006). The treatment of puerperal psychosis is dependent on the outcome of the evaluations and the symptom profile but usually requires hospitalization (Sharma, 2003). Acute treatment may include mood stabilizing medication, antipsychotics, benzodiazepines, and aggressive treatment of insomnia. Electroconvulsive therapy may be a treatment to consider if the illness is unresponsive to conventional therapy (Sharma, 2003). Furthermore, pending the outcome of the clinical evaluation, the neuroendocrine role in the pathophysiology of puerperal psychosis may warrant hormone replacement therapy if indicated (Spinelli, 2009).

### **2.3.8 Anger in the postpartum period.**

Graham, Lobel and DeLuca (2002) explored state anger as a likely emotional response in the postpartum period and found that a considerable number of women reported angry feelings at approximately six weeks postpartum. Thirty-five percent of their sample reported moderate to high levels of anger. They also determined that anger and depressed mood were associated but relatively independent. Over 80% of women in their study who reported high levels of anger reported low levels of depressed mood. Their findings suggest that there is a group of women, separated from those who experience PPD, who experience anger after delivery. Their research does not suggest

that postpartum anger is a syndrome or pathological condition, and as such was not listed as a separate condition of perinatal disorders above. They also do not state that postpartum anger is qualitatively different from that which occurs at other times in a women's life. Rather, they advocate that the longstanding focus on PPD is too narrow and further investigations should look more closely at a more comprehensive range of postpartum emotional experiences.

## **2.4 Postpartum Depression**

The term “postpartum depression” (PPD) is widely used but varies considerably in its definition as the diagnosis of PPD is often erroneously used as a general term to incorporate many of the other postpartum mood disorders mentioned earlier. The phenomenon of what is now termed “postpartum depression” has been the subject of some debate in the past century.

### **2.4.1 Historical perspectives.**

Historically, the connection between psychiatric illness and childbirth has been well-documented. Hippocrates described the emotional problems and psychotic behaviour of postpartum women as a severe case of insomnia and restlessness that began on the sixth day in a woman who bore twins. This condition was referred to as “peurperal fever”, and it was theorised that suppressed lochial discharge was transported to the brain where it produced symptoms of “agitation, delirium and attacks of mania” (Thurtle,

1995). An 11th century gynecologist, Trotula of Salerno, speculated that when a woman's womb was too moist, then her brain was filled with water which would spill over her eyes and cause her to shed tears involuntarily (Steiner, 1990). The writings of Galen, Celsus and others also documented the problems and behaviour of postpartum women. Greater systematic efforts were made in the mid-19<sup>th</sup> century to describe and classify postpartum mental illness when Esquirol wrote about how nursing women and those recently confined suffered from mental alienation (Steiner, 1990).

The first thorough scrutiny of postpartum disorders took place in 1858 when a French physician, Louis Victor Marcé, published a definitive study, *Traits de la Folie des Femmes Enceintes* (Insanity in Pregnant and Lactating Women). This study linked negative emotional reactions with childbirth and the development of postpartum psychiatric illness. Marcé noted melancholy, anaemia, weight loss, constipation, and menstrual abnormalities. He also described the presence of confusion, faulty memory, and foginess which are now recognized as hallmark symptoms in postpartum illness (Roan, 1997; Steiner, 1990; Stern & Kruckman, 1983).

During the first half of the 20th century relatively few studies of maternal mental health were done and there was much disagreement about postpartum psychiatric illness. This changed, however, during the latter half of the 20th century when research among the interrelated, albeit diverse, disciplines of biology, psychology, sociology, and anthropology increased. Many of these have focused on the etiology and treatment of PPD.

The APA published the first edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM) in 1952. This was done in an effort to give all psychiatric ailments names and definitions that would be agreed upon worldwide. The leaders of this reform did not, however, include a category for PPD. Women who were afflicted with this condition, it seemed, were suffering from “dementia praecox”, “neurotic states” or “toxic confusion”, or they were “manic depressive”. Numerous early psychiatrists, including Kraepelin, therefore concluded that “postpartum psychosis” did not exist as a separate syndrome (Brockington, Schofield, Donnelly, & Hyde, 1978; Roan 1997). According to Jacobs, puerperal psychosis as a clinical entity did not exist because every reaction type may have occurred during the puerperium (as cited in Stern & Kruckman, 1983, p. 1030). Foundeur, Fixsen, Triebel, and White were even more insistent, stating that “the results would not appear to justify terming the postpartum illness as a separate illness any more than one might term those young patients who react unfavourably to college as sufferers from a ‘college psychosis’ ” (as cited in Stern & Kruckman, 1983, p. 1030).

The Diagnostic and Statistical Manual, Second Edition (DSM-II, APA, 1968) had described a separate entity: “294.4 Psychosis with Childbirth”. The DSM Third Edition (DSM-III, 1980) eliminated this category, however, arguing that there was no compelling evidence that postpartum psychosis could be classified as a distinct entity (APA, 1980). Furthermore, many physicians believed that if the name of an illness was removed, then it meant that the illness did not exist (Roan, 1997). With the connection between childbirth and psychiatric illness ignored in the DSM, research in the field of postpartum psychiatric illness diminished until the 1980’s.

Dr. James Hamilton was dedicated to bringing attention to the postpartum psychiatric illness. In 1962 he wrote the book entitled “Postpartum Psychiatric Problems” and thirty years later, in 1992, he co-edited “Postpartum Psychiatric Illness: A Picture Puzzle” (Hamilton & Harberger, 1992).

In 1980, Dr Ian Brockington of Great Britain held an international meeting on postpartum psychiatric illness. Dr James Hamilton and other physicians who attended this pioneering meeting founded the Marcé Society, named after Louis Marcé. This scientific organization comprised a group of professionals dedicated to advancing the understanding and treatment of postpartum psychiatric illness (Roan, 1997). The Marcé Society has held biennial international conferences on PPD and related disorders since 1984. The formation of the Marcé Society at this time did not however offset the confusion that resulted from the omission of the link between childbirth and psychiatric illness in the DSM-III.

This uncertainty regarding PPD as a clinical entity continued. According to Roan (1997), the revision of the DSM-III published in 1987, heralded for its improvements over past editions due to its more detailed definitions and information, only briefly mentioned postpartum illness and practically dismissed it for its complexity.

According to Walther (1997), the DSM-IV does not have a useful category for psychiatric disorders of the puerperium period. This edition published in 1994, was preceded by an intense discussion on the topic of postpartum psychiatric illness. Although the DSM-IV excludes PPD, psychosis, anxiety, or any of the other observed variations as separate and distinct illnesses, it does contain a few additions that are

helpful in the recognition and diagnosis of postpartum psychiatric disorders. The DSM-IV also cautions mental health practitioners about the risk of suicide and infanticide in severe cases of psychosis, of the risk of recurrence in subsequent pregnancies, and that healthy development of the mother-infant relationship is dependent upon prompt treatment (APA, 2000).

In 2001 a symposium was held in London to discuss contemporary issues of diagnosis and classification in psychiatry (Cox, 2002). At this symposium, the policy guidelines from Community Mental Health in the United Kingdom, specifically recommended, amongst others, that there be new funding for some mental disorders like PPD and puerperal psychosis. According to the International Classification of Diseases and Related Health Problems, tenth edition (ICD-10) and DSM-IV these disorders do not exist as distinct psychiatric illnesses, but only as an optional 4-week postpartum onset specifier in the DSM-IV or 6 weeks for ICD-10. Cox (2002) further reports that “these and other anomalies were encouraging a new look at international classification” (p. 195). Cox (2002) stressed that a common classification language is essential so that researchers and clinicians can communicate.

While more common than other pregnancy related conditions like gestational diabetes and preeclampsia, and preterm delivery, PPD has received less attention in medical literature, clinical practice, and training. In recent years, there has been an increase in academic and lay press that focus on PPD, yet this condition remains frequently overlooked despite its potentially devastating consequences. The cause, definition, diagnostic criteria, and even the existence of PPD as a distinct entity is still a topic of debate among some clinicians today.

### **2.4.2 Diagnosing postpartum depression.**

PPD is defined in different ways depending on the source. The diagnosis of PPD often depends on the severity of the depression as well as the duration of time between onset of depression and delivery. A number of related conditions should be differentiated from PPD when assessing the patient:

- Postpartum blues
- Postpartum psychosis
- Anxiety disorders
- Medical conditions

The latest edition of the Diagnostic and Statistical Manual of Mental Disorders, the DSM-IV-TR (APA, 2000), currently uses the term “with postpartum onset” as a specifier to describe the current or most recent major depressive, manic, or mixed episode in major depressive disorder, bipolar I or II disorder, or brief psychotic disorder that has its onset within 4 weeks postpartum. It further states that the symptoms in postpartum-onset major depressive, manic, or mixed episode do not differ from the symptoms in non-postpartum mood episodes. The DSM-IV-TR also mentions symptoms that are common in postpartum-onset episodes, though not specific to postpartum onset. These symptoms are mentioned in the next section.

### **2.4.3 Symptoms of postpartum depression.**

#### ***2.4.3.1 Symptom overlap between the postpartum period and postpartum depression.***

Many symptoms of mood disorders are similar to those that naturally follow childbirth, such as lack of sleep, appetite changes, fatigue, decreased libido, and mood lability (O'Hara, Neunaber, & Zekoski, 1984). Women also tend to lose weight postpartum in an attempt to regain their pre-pregnancy figures, and many lose weight naturally due to breastfeeding. Furthermore, depressed patients often fail to recognize that they are mentally ill. Their symptoms are often attributed to being tired, having a cold, or feeling overworked (Smith et al., 2004). Cognitive symptoms should therefore be monitored closely along with behavioural and somatic symptoms during the antenatal as well as the postpartum period.

#### ***2.4.3.2 Symptoms of postpartum depression versus depression.***

Symptoms of PPD may be similar to depression experienced at other times (Yonkers, 2003), however, a number of studies have indicated that perinatal mood disorders are quite different from other mood disorders. According to Fowles (1998) the difference between PPD and depression experienced at other times in a woman's life rests in the postpartum mother's feelings of guilt about being an inadequate and incompetent parent. Wilkinson (2001) further states that the significance of PPD relates to the time of onset and the impact it may have on the family as well as on the woman herself. Depression after childbirth may be considered unique due to the presence of an infant and

the stress the mother experiences as she adapts to motherhood (Weinberg et al., 2001). Bennett and Indman (2003) consider the influence of hormonal fluctuations. Roan (1997) points out that rapidly changing symptoms and poor interaction with the baby are particular symptoms that occur commonly among women experiencing postpartum illness that do not typically occur among other psychiatric patients.

#### ***2.4.3.3 Symptoms of postpartum depression.***

According to the DSM-IV-TR, symptoms frequently found in postpartum-onset episodes, although they are not limited to postpartum onset, include fluctuations in mood, mood lability, and a preoccupation with the infant's well-being. The intensity of these symptoms may range from over-concern with infant well-being to frank delusions. The DSM-IV-TR mentions that the presence of delusional thoughts or severe ruminations concerning the infant is associated with a notably increased risk of causing harm to the infant (APA, 2000).

Postpartum-onset mood episodes can, according to the DSM-IV-TR, present either with or without psychotic features. Although infanticide can occur in severe postpartum mood episodes without specific hallucinations or delusions, it is most often associated with postpartum psychotic episodes (APA, 2000).

Women with postpartum major depressive episodes often have, according to the DSM-IV-TR, severe anxiety, and some present with panic attacks. The DSM-IV-TR further recognizes that maternal attitudes toward the infant are highly variable and states

that the symptoms may include “disinterest, fearfulness of being alone with the infant, or over intrusiveness that inhibits adequate infant rest” (APA, 2000, p. 243).

Table 1 lists signs and symptoms of PPD that occur with varying degrees of severity, frequency, and extremity in women with PPD and are based on research findings in recent years (Dalton & Holton, 2001; Kruckman & Smith, 2006; Mehta & Sheth, 2006; Bennett & Indman, Roan, 1997; Smith et al., 2004). Symptoms needed to make a clinical diagnosis according to the DSM-IV-TR are listed with an asterix.

Researchers who study PPD agree that, in addition to the typical symptoms of depression, women with PPD may experience feelings of inadequacy, severe anxiety related to feeling incompetent in the care of their infant and worrying about the infant’s welfare, feelings of hostility towards others, including the baby, thoughts of harming their infants, obsessive symptoms, unprovoked tearfulness, unexplained mood swings, feelings of abandonment, feelings of hopelessness, and suicidal thoughts. These symptoms can occur with varying degrees in women with PPD (Dalton & Holton, 2001; Mehta & Sheth, 2006; Bennett & Indman, 2003; Wilkinson, 2001).

Mothers with PPD may also worry about the involvement of child protection services and possible separation from their baby. Women also may feel reluctant to confide their distress, as childbirth is usually expected to be a joyful event. These issues raise special concerns for women with suicidal thoughts or thoughts of harming their babies.

**Table 1 Signs and symptoms of PPD**

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<b>Symptoms</b>
<p><b>Emotional state</b></p> <ul style="list-style-type: none"><li>• Depressed or low mood most of the day, nearly every day* *</li><li>• Markedly diminished interest or pleasure in most, if not all, activities* *</li><li>• Severe anxiety related to feeling incompetent in the care of the infant and worrying about the infant's welfare</li><li>• Feelings of inadequacy</li><li>• Unexplained mood swings</li><li>• Unprovoked tearfulness</li><li>• Feelings of worthlessness or excessive or inappropriate guilt (which may be delusional) nearly every day *</li><li>• Low self-esteem</li><li>• Feelings of hopelessness</li><li>• Feeling of unreality and of not being one's usual self</li><li>• Feeling emotionally detached from loved ones, in particular from the infant</li><li>• Feelings of hostility towards others, including the infant</li><li>• Feelings of ambivalence about the infant</li></ul>
<p><b>Cognitive functioning</b></p> <ul style="list-style-type: none"><li>• Diminished ability to think or concentrate, or difficulty making decisions nearly every day *</li><li>• Poor short-term memory</li><li>• Recurrent thoughts of death, suicidal ideation, suicide attempt or a specific plan *</li><li>• Bizarre, strange or obsessive thoughts</li><li>• Over-concern for baby's health</li><li>• Thoughts of harming the baby</li><li>• Misinterpretation of baby's cues</li></ul>
<p><b>Behavioural symptoms</b></p> <ul style="list-style-type: none"><li>• Insomnia or hypersomnia nearly every day with sleep disturbance unrelated to</li></ul>

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## Symptoms

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the new baby, struggling to fall asleep, frequent waking and waking up unusually early \*

- Psychomotor agitation or retardation nearly every day \*
- Fatigue or loss of energy nearly every day \*
- Complaints of lack of social support
- Extreme Behaviour
- Panic Attacks
- Hostility
- Nightmares
- Unresponsiveness towards the baby
- Over-concern for the baby

### Physical Symptoms

- Significant weight loss when not dieting, weight gain, or an increase or decrease in appetite nearly every day \*
- Loss of libido
- Headaches
- Numbness, Tingling in Limbs
- Chest Pains, Heart Palpitations
- Hyperventilation

- 
- \* In order to diagnose a major depressive episode with postpartum onset, five or more of the items marked with a single asterix ( \* ) must have been present during the same 2-week period and represent a change from previous functioning, and at least one of the symptoms marked with a double asterix ( \*\* ). Onset of the episode must be within 4 weeks postpartum.

In the following section the prevalence and clinical course of PPD is presented along with a review of explanations concerning the cause of PPD in medical and psychological literature is presented. This is followed by an examination of the consequences and treatment of PPD.

#### **2.4.4 Prevalence of postpartum depression.**

Publications report that PPD affects up to 20% of women (Dalton & Holton, 2001; Josefsson, Berg, Nordin, & Sydsjö, 2001; Stuart, Couser, Schilder, O'Hara, & Gorman, 1998; Wilkinson, 2001). Halbreich (2005) discusses the diversified epidemiology of pregnant and postpartum symptoms and disorders. Halbreich reports that most publications estimate that PPD affects 10–15% of women. Prevalence estimates vary widely depending on the diagnostic criteria, the measures used in assessment, the sampling procedures, and the location of populations.

A meta-analysis by O'Hara and Swain (1996) reported that the rate of PPD in developed countries was approximately 13%. Research by Righetti-Veltema, Conner-Perreard, Bousquet, and Manzano, 1998, and Whitton, Warner and Appleby (1996), states that the incidence of PPD, without psychotic features, is roughly 10 - 15% for first time mothers. Women with a previous history of depression have a 2-fold rate of recurrence of a depressive disorder in the perinatal period (Banti et al., 2011; Sichel & Driscoll, 1999), while women with a previous history of PPD have an estimated 10-35% rate of recurrence (Kruckman & Smith, 2006).

Priest, Henderson, Evans, & Hagan (2003) compared the prevalence rate in the first few weeks postpartum to the rate in the first year postpartum. They found that in industrialised countries, rates for PPD varied between 13% in the first few weeks after delivery, to 20% in the first year postpartum.

A large study comprising 6,000 postpartum women estimated that the 2-month prevalence for postpartum-onset of major depressive disorder was 15% (Cooper, Murray, Hooper, & West, 1996). Transculturally, the rates were estimated at 10% to 15%, with a higher rate in adolescent mothers (Kumar, 1994). Higher rates of PPD were also reported in some developing countries (Patel, Rahman, Jacob, & Hughes, 2004). Halbreich's and Karkun's (2006) detailed review of the literature reveals that the reported prevalence of PPD varies among countries between 0.5% to over 60% of new mothers. Even in the USA, reports vary between 3.7% and 48.6% (Halbreich, 2005). This is despite the fact that most surveys applied the same instruments – the Edinburgh Postnatal Depression Scale (EPDS) or the Beck Depression Inventory (BDI).

Halbreich and Karkun (2006) found that in several countries like Denmark, Austria, Singapore, Malaysia and Malta, PPD or postpartum depressive symptoms are seldom reported, unlike other countries (e.g. South Africa, Brazil, Costa Rica, Guyana, Italy, Taiwan, Chile, and Korea) where postpartum depressive symptoms were very prevalent. They believe that, due to the varying reports, the broadly cited mean prevalence of PPD (10-15%) is not truly representative of the real global prevalence and magnitude of the problem.

Affonso, De, Horowitz, and Mayberry (2000) attribute the diversity across countries and cultures to cultural, socio-economic, genetic, and reporting style differences. Halbreich and Karkun (2006) agree that these factors may contribute to the variability in reported PPD. They further state that factors such as cross cultural differences in the perception and stigma of mental health, differences in socio-economic environments (for example levels of social support or its perception, poverty, stress and nutrition), and factors due to biological vulnerability may be significant too. Halbreich (2004) attributes the diversity in reported prevalence to factors such as sampling and assessment methods. Halbreich (2004) found that most reports, especially those on minority women or developing countries, were based on relatively small samples, did not include a control group, have been based on self reports of symptoms – mostly with a short dimensional screening instrument (e.g. EPDS), and were not necessarily based on structured clinical interviews to formulate a DSM-IV, ICD-10 diagnoses or both. Greater insight into the underlying processes impacting on the varied prevalence of PPD along with insight into the range of normal postpartum versus abnormal postpartum expressions of symptoms may lead to a better understanding of the diversified phenomena in perinatal mental illness (Halbreich & Karkun, 2006).

Some published reviews assert that the prevalence of mental disorders during pregnancy and postpartum is not higher than during other periods of a woman's reproductive life. Despite inconsistent findings there are other researchers who suggest that after childbirth women are at a 12% to 15% higher risk for serious depressive illness than are non-childbearing women (Whiffen, 1992).

A major challenge in dealing with PPD has been early recognition, partly because PPD is covertly experienced. Researchers found that not many women with PPD seek assistance of their own accord (Murray, Woolgar, Murray, & Cooper, 2003). Furthermore, missed diagnosis is frequent in settings where mental health status does not undergo a structured method of review (Reid et al., 1998; Evins et al., 2000). It has been reported that up to 50% of mothers affected by postpartum depression go undetected (Ramsay, 1993). According to Kruckman and Smith (2006) and Milgrom, Mendelsohn, and Gemmill (2011), the use of depression scales specifically aimed at screening for perinatal mental illness will benefit future research by providing a more accurate picture of the incidence of PPD.

Clinicians tend to trivialise the seriousness of PPD and equate it simply with maternity blues (Huysman, 1998). Furthermore, many symptoms are similar to those that naturally follow childbirth, such as lack of sleep, appetite changes, fatigue, decreased libido, and mood lability (O'Hara et al., 1984). As a result only a small percentage of these women are identified by health practitioners as depressed. Mothers often suffer in silence, fear, and confusion before PPD is diagnosed. In a study by Hearn et al (1998), it was reported that up to 50% of cases go unreported. This may be due to the mother's concern about the stigma associated with mental health issues, or concern that the custody of her baby may be jeopardized if she were to report her mood swings and emotional state.

#### **2.4.5 Clinical course of postpartum depression.**

PPD can be mild, moderate, or so severe that it includes suicidal thoughts and requires hospitalisation (Roan, 1997). The onset may be gradual and insidious or sudden, but it commonly occurs within two to four weeks after delivery. Depression may occur at any time after childbirth, but more commonly sets in after the woman has returned home from hospital (Kruckman & Smith, 2006). According to Roan (1997), in some cases PPD may have started as postpartum blues that lingered and developed into a serious condition. According to Bennett and Indman (2003) and the Marcé Society, an international organization for the study of psychiatric illness related to childbearing, the onset is usually gradual, but it can be rapid and begin any time in the first year. The DSM-IV-TR stipulates that the initial episode of postpartum-onset depression begins within the first 4 weeks after delivery (APA, 2000). Many clinician's and researchers agree, however, that PPD symptoms are insidious and may occur at anytime up to a year after childbirth, but more commonly occurs within the first three months (Beck, 2006).

Early research by Gelder indicates that the symptoms of PPD may last anything from a few weeks to several months with approximately 4% of incidences persisting for as long as a year (as cited in Kruckman & Smith, 2006) and that the majority of women who have PPD recover within 6 months (Kumar & Robson, 1984). Subsequent research, however, suggests otherwise. England, Ballard, and George, (1994) claim that 20% of women will have chronic depression lasting longer than two years. Beck (2006) states that recent evidence reported by the Agency for Healthcare Research and Quality (Gaynes et al. as cited in Beck, 2006) indicates that up to 19.2% of new mothers may

have either major or minor depression in the first three months postpartum, of which as many as 7.1% have major depression.

Researchers agree that the duration of PPD may vary. For some women it may be mild and short-lived (a matter of weeks), vanishing on its own, but for most women it may languish for several months or a year (Beck, 2006; Roan, 1997). Some women who experienced PPD have depressive episodes that persist throughout life (Roan 1997). Women who have had a severe episode of PPD may continue to suffer from depression for up to two years (Smith et al., 2004). Philipps and O'Hara (1991) found substantial recurrence in the long-term follow up of women with PPD. Half of the mothers with PPD either felt the need to continue or again sought treatment over four years. Smith et al (2004) indicate, based on research findings, that a woman has a significant risk for developing chronic depression as well as lifetime recurrence of depression regardless whether the postpartum episode was the first depressive event or whether it was a recurrence.

#### **2.4.6 Perspectives on the etiology of postpartum depression.**

A number of possible hormonal, biological, cultural and psycho-social theories have attempted to explain the onset of perinatal disorders. The role that certain hormones may play in the development of PPD has attracted substantial scientific research. Yet, a clear link between hormones and PPD has not been found. This has led some researchers to conclude that causality may be found in psychological or social factors. Researchers do, however, seem to agree PPD develops from an interplay of multiple factors.

Kruckman and Smith's (2006) review of journal research from the past five years revealed that a majority of articles focussed on biological cause or pharmacotherapy linked to a biological etiological view. Researchers who strictly examined psychological factors as dominant causes, and related research on predictions, risk, and screening scales also comprised a large percentage of publications.

According to Kruckman and Smith (2006), the majority of researchers agree that studies of hormonal influence in PPD have not produced a direct link to PPD. Since psychological stimuli affect the neuroendocrine systems it has been recommended that research on hormonal impact should be performed in conjunction with psychosocial research. Gelder reviewed the hormonal link to PPD over 2 decades ago, and concluded that psychological and social factors were responsible (as cited in Kruckman and Smith, 2006). Two decades later, Hendrick, Altshuler and Suri (1998) came to a similar conclusion: "The literature to date does not consistently support any single biological etiology for postpartum depression." (p. 98). Hendrick et al. (1998) recommend that future research which investigates biological factors as triggers for postpartum mood disorders ought to control for psychosocial variables, as they believe that these variables are likely to confound the data.

The socio-cultural context of childbirth has also been considered. Childbirth may be a similar physiological experience universally, but it occurs in a socio-cultural context and is conceptualised and experienced according to people's specific values, attitudes, and beliefs. Anthropological perspectives view postpartum disorders from a bio-cultural approach and examine the influence of cultural patterns such as family values, structure, roles, and beliefs. Anthropologists believe that while objective measures of underlying

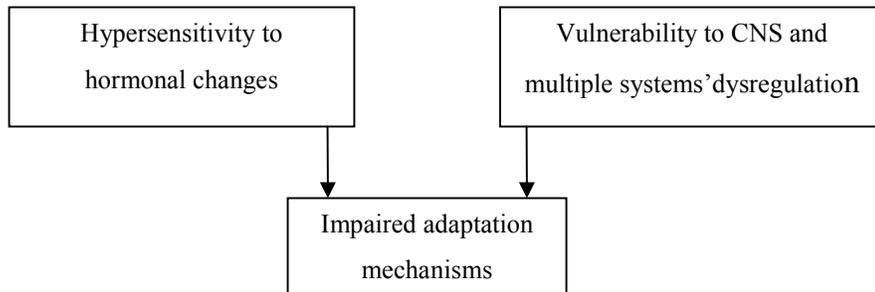
physiological processes may explain symptoms, it is important to take into account that the experience of those mechanisms are filtered, mediated and directed by culturally constituted frameworks (Kruckman & Smith, 2006; Stern & Kruckman, 1983).

Much research on PPD has focussed on biological and psycho-social etiologies such as hormonal changes, psychiatric history, maternal age, marital relationship, and so forth. Although these are important contributing factors, the influence that cultural patterning of the postpartum period has in the etiology of PPD needs consideration. This relates to factors like the social context, structure, and organization of the family. Furthermore, the role expectations of the new mother and father also need consideration.

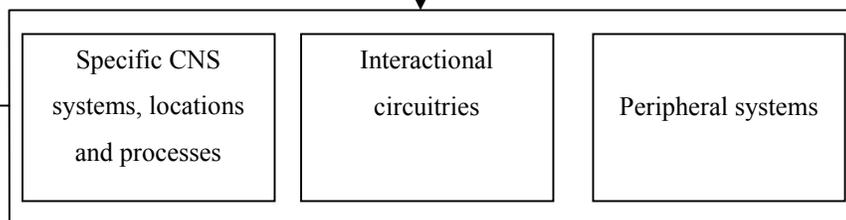
In the following section Halbreich's model that explains the evolving etiology and pathology of postpartum disorders is discussed. Halbreich's model is comprehensive and considers the influence of numerous factors in the onset of postpartum disorders. Furthermore, Halbreich (2005) takes into account that diversified postpartum disorders may have different predictors for the different underlying processes. The processes leading to postpartum disorders are, according to Halbreich (2003), multifaceted on several levels. The Bio-Psycho-Socio-Cultural Model by Halbreich (2005) of the processes leading to postpartum disorders is presented in Figure 1. According to this model, symptoms are a consequence of a process starting from a genetic predisposition to dysregulation and impaired ability to adapt. The model takes into account a person's dynamically evolving vulnerability that is shaped along the individual's life. Symptoms and disorders may surface in response to biological and social triggers. Halbreich (2005) explains that the individual's response depends on the perinatal and postpartum environment at the time.

I. Genetic Predisposition

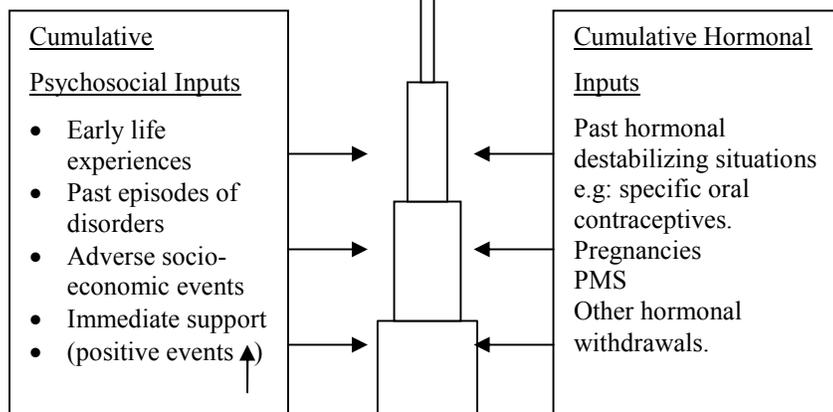
A. Predisposition to Reproductive-Related Disorders



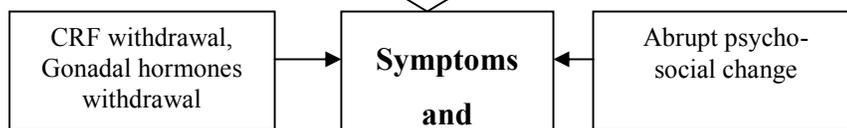
B. Phenotype Predisposition



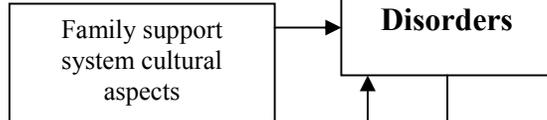
II. Dynamically Evolving Vulnerability



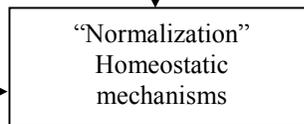
III. Perinatal Biological and Social Trigger(s)



IV. Perinatal and Postpartum Environment



V. Perception and Coping Mechanisms



*Figure 1 Bio-psycho-socio-cultural model of the processes leading to postpartum disorders. (Halbreich, 2005)*

According to Halbreich (2005), the main etiological factor may be a genetically determined predisposition to reproductive-related disorders. He states that this vulnerability is likely to be due to a combination of two factors: (a) an individual's hypersensitivity to changes in gonadal hormones and possibly also to other steroids. Such hypersensitivity would also bring about symptoms a woman may experience during other periods of hormonal change or instability; and (b) vulnerability to these factors is compounded by the tendency towards central nervous system dysregulation as well as adaptation mechanisms that are impaired.

Central nervous system and other peripheral systems' vulnerability may be due to changes in the activity of steroids as well as impaired adaptation to other external situations of change causing stress, such as abrupt drug and hormonal withdrawal and other psychological, biological, and social changes. This dysregulation leads to a disruption of homeostasis or circuitry that is hypersensitive to change (Halbreich, 2005).

The second stage of genetic vulnerability in Halbreich's (2005) model involves a phenotype predisposition. Vulnerability would depend on an individual's predisposition to phenomena resulting from abnormalities in their own central nervous system systems – although which central nervous system may be responsible for impaired adaptation is unclear as it depends on the individual's sensitivity to these systems. Some women may show symptoms due to two or more systems that are out of balance. The vulnerable system or systems will determine the nature of symptoms and their clusters. Halbreich (2005) points out that in some women, the vulnerable system may be peripheral, leading to diversity of postpartum mood, behaviour, and physical disorders.

Halbreich (2005) refers to the genetic vulnerability as “dynamically evolving vulnerability” as it is continually shaped by internal as well as external environmental inputs, and it constantly changes according to cumulative life experiences, both negative and positive. Cumulative hormonal inputs and their influence on many physiological processes may further increase the vulnerability an individual has to disorders. Furthermore, the kindling effect of psychosocial factors such as repeated dysphoric states, repeated episodes of disorders and adverse socio-economic circumstances may cause an increase in the dynamically evolving vulnerability.

The influence of hormonal disturbance in the perinatal period is shown in level III in Figure 1. Halbreich points out that the most powerful trigger of postpartum symptoms is the abrupt delivery of the placenta. Levels of progesterone and some other steroids reach highest levels during pregnancy. In addition, corticotrophin releasing factor (CRF) is in its highest peak just prior to delivery that results in hyperactivity of the hypothalamo–pituitary–adrenal (HPA) system of both the mother and her pre-born baby. When the placenta is delivered its hormonal secretions are abruptly withdrawn. This causes immediate changes in every system influenced by its regulating hormones. Halbreich (2005) points out vulnerable women may experience dysregulation within the affected systems and, as a result, may develop symptoms.

Halbreich (2005) explains that the culprit for postpartum disorders cannot be found by focusing on the functioning of a single neurotransmitter. He discusses the possibility that a large number of systems may be functioning abnormally or that the multiple interactions among these systems may be in a state of imbalance or may be impaired in women with postpartum disorders. He proposes that such a dysregulated state can be a

consequence of the individual's impaired homeostatic mechanism and may ultimately be the cause of the development of a disorder.

Halbreich's model takes into account the effect of psychosocial change from pregnancy to motherhood, along with its demands and stresses, which may contribute to the onset of postpartum disorders. Halbreich also discusses the influence of socio-cultural aspects and the environment at the time of delivery and thereafter, the amount of support the mother received, the mother's perceptions and coping ability – which are shaped by past experiences and influenced by the functioning of the central nervous system – as contributing factors to consider in the onset of postpartum disorders.

Halbreich (2005) regards the interactions between trait, state, environment and culture as especially noticeable in women with postpartum disorders as well as other reproductive-related disorders. He does, however, advocate a diverse and open-minded approach to explain how and why an external event is regarded as a challenge, as something pleasant or something negative and anxiety provoking. How our perception of the environment is translated to the biological mechanisms of the central nervous system is, no doubt, an intricate and complex process.

#### **2.4.7 Risk factors for postpartum depression.**

PPD develops from the interplay of multiple biopsychosocial and cultural factors. A number of researchers have examined specific factors and their contribution to the onset of postpartum disorders. Beck (1996a) conducted a meta-analysis of 44 studies to determine the magnitude of the relationships between various predictor variables and

PPD. The strongest predictor of this mood disorder was antenatal depression. Moderate effect sizes were revealed for the relationships between PPD and the following predictors: social support, life stress, childcare stress, marital satisfaction, antenatal anxiety, and maternity blues. Lastly, history of previous depression was shown to have a small effect size when determining its relationship with PPD. In a different meta-analysis (Beck, 1996b) infant temperament was also revealed to be a significant predictor of PPD.

In addition to Beck's (1996a, 1996b) meta-analyses, one other meta-analysis of predictors of PPD had been conducted. O'Hara and Swain (1996) determined the effect sizes of a number of risk factors for PPD that had been measured during pregnancy. They reported that the strongest predictors of PPD were antenatal depression, antenatal anxiety, social support, life events, and mother's history of psychopathology. The meta-analysis revealed the following three predictors that had small, significant relationships with PPD: neuroticism, negative cognitive attributional style, and obstetric variables.

Since 1996 the amount of research on risk factors for PPD has dramatically increased. Beck (2001) conducted another meta-analysis to update the findings of these earlier meta-analyses of PPD predictors. Results confirmed findings of the earlier meta-analyses and also revealed four additional predictors of PPD: marital status, self-esteem, unwanted or unplanned pregnancy, and socio-economic status.

In these studies, a total of thirteen significant predictors of PPD were revealed. The risk factors were as follows: antenatal anxiety, antenatal depression, a history of depression, unplanned or unwanted pregnancy, postpartum blues, infant temperament,

childcare stress, social support, life stress, marital status, marital relationship, self-esteem, and socio-economic status.

Kruckman and Smith (2006) state that the etiology of perinatal mental illness is complex and also likely diverse, with some distinct and shared risk factors. These risk factors may be biological variables, personality variables, psychological variables, demographic variables, interpersonal variables, or obstetric variables. The significant predictors of PPD identified by Beck (1996a, 1996b, 2001) as well as significant biological, obstetric risk, and other psychosocial and personality factors identified by other researchers are discussed in more detail below.

#### ***2.4.7.1 Antenatal depression and anxiety.***

A number of studies have since demonstrated an association between anxiety or depression during pregnancy with PPD (e.g. Josefsson, 2003; O'Hara, Zekoski, Philipps, & Wright, 1990; Laizner & Jeans, 1990; Orr, James, & Blackmore Prince, 2002; Robertson, Grace, Wallington, & Stewart, 2004; Sutter-Dallay, Giaccone-Marcésche, Glatigny-Dallay, & Verdoux, 2004; Verkerk, Pop, Van Son, & Van Heck, 2003). O'Hara and Swain's (1996) results from their meta-analysis of the rates and risk of PPD, demonstrated a strong association between antenatal depression and PPD. This was particularly the case when a self-report measure was used to determine the presence of symptoms. Consistent with the literature, Da Costa, Larouche, Dritsa, and Brender (2000) reported that the best predictor of postpartum depressed mood was antenatal depression. Beck (2001), in a replicated meta-analysis, validated some findings from O'Hara and

Swain's (1996) meta-analysis, and also confirmed findings from her own earlier meta-analysis (Beck's 1996a), including that amongst the strongest predictors of PPD were antenatal depression and anxiety.

Orr, et al. (2002) established that the risk for PPD in women who had the most depressive symptoms during pregnancy was doubled. Matthey et al., (2000) noted a link ranging from between 18% and 75% and stated that the rate is dependent upon the population group. Leung, Martinson and Arthur's (2005) study aimed to identify correlations between demographic variables and PPD, and psychosocial variables and antenatal depression in Honk Kong Chinese women. One of the major three predictors in this group was depression during pregnancy. Rich-Edwards et al. (2006) also found that the strongest risk for postpartum depressive symptoms was antenatal depressive symptoms. The DSM-IV-TR also specifies that having the "baby blues" in addition to mood and anxiety symptoms during pregnancy, increases the risk for a postpartum major depressive episode (APA, 2000).

Verkerk et al. (2003) investigated, amongst other things, whether the occurrence of depression during the first year after childbirth can be predicted in around the mid trimester of pregnancy. Their findings led them to conclude that it was possible to detect during pregnancy those women who were at high risk as well as women who were at low risk for PPD during the initial months after childbirth. Women who were high-risk were only at particular risk during the first 3 months after delivery. A personal history of depression and high depressive symptomatology during mid-pregnancy were found to be independently predictive risk factors of PPD. Bloch, Rotenberg, Koren and Klein (2005)

noted a strong trend for a significant effect of mood symptoms during the 3rd trimester and the development of PPD.

The severity as well as the duration of depressive symptoms impact on a woman during pregnancy. The physiological impact, for example, can be seen in poor maternal weight gain, or even weight loss due to poor appetite. Depression during pregnancy has been associated with low birth weight (less than 2,500 grams) and preterm delivery (less than 37 weeks; Bennett & Indman, 2003). Severe anxiety during pregnancy may cause harm to a growing foetus due to constriction of the placental blood vessels and higher cortisol levels". ACOG (2002) agree and report that unmonitored and untreated depression in antenatal women may initiate premature labour and delivery. They further stipulate that careful monitoring is required of the depressed mother during pregnancy to ensure a healthy outcome for both the mother and her foetus.

#### ***2.4.7.2 Past history of depression.***

Bender (2003) reports that women with a history of major depression were 5 times more likely to present with depressive symptoms in the peripartum period. Ryan, Milis, & Misri (2005) found that a history of depression or any other psychiatric disorder may increase the risk of developing PPD. According to the DSM-IV-TR a family history of Mood Disorders on top of a personal history of non-postpartum Mood Disorder increases the risk for developing a postpartum Mood Disorder (APA, 2000). A family history of mental health problems increases the risk of PPD significantly. Genetic predisposition

and psychosocial variables related to having a family member with psychiatric illness may be responsible for the increased risk (Freeman et al., 2005).

O'Hara and Swain's (1996) meta-analysis of the risk factors for PPD found that past history of psychopathology is a significant risk factor for PPD, although the kind of PPD assessment that was used influences the magnitude of the relation between PPD and previous psychiatric history. Forman, Videbech, Hedegaard, Salvig and Secher (2000) conducted a large study to identify and test the predictive power of risk factors of PPD. A history of pre-pregnant psychiatric disease was among the strongest identified risk factors. Beck's (1996a; 2001) meta-analyses confirmed that a mother's history of depression is a strong and significant predictor of PPD.

A mother's prior psychiatric history, especially the occurrence of previous depressive episodes, has emerged as one of the most salient predictors of PPD (e.g. Baker & Oswalt, 2008; Bloch et al., 2005; Dennis, Janssen, & Singer, 2004; Freeman et al., 2005; Rich-Edwards et al., 2006; Robertson et al., 2004). As mentioned in the previous section, the occurrence of depressive symptoms during pregnancy was found to be a risk factor in the development of PPD. Swendsen and Mazure (2000) point out that, taken together, these findings signal that PPD may, in some cases, constitute an exacerbation or recurrence of illness, rather than the onset of a depressive disorder that is only due to the state-related changes of motherhood. ACOG (2002) encourages counselling women prior to conception about their risk for recurrent depression during their pregnancy and also during the postpartum period.

### 2.4.7.3 *Postpartum blues.*

The prevailing perception that postpartum blues is inevitable and self-limiting has led to the condition receiving comparatively little attention from perinatal researchers (Kruckman & Smith, 2006). The exact mechanisms responsible for the development of postpartum blues or psychotic depression have been debated, but have not been clearly identified. Kruckman and Smith (2006) suggest that it may be that postpartum blues is “simply the milder end of a biologically based continuum in which the severe end is psychosis”.

Henshaw (2003) did a comprehensive review of postpartum blues and described an earlier investigation, which took place over a period of 6 months, of 103 women with severe postpartum blues and their controls with no postpartum blues. It was found that severe postpartum blues was an independent predictor of depression. Depressive episodes in the severe postpartum blues group had onset earlier in the puerperium, lasted longer and were more likely to be major than minor depression. Henshaw (2003) concludes that the most convincing relationships with early mood disturbance are dysphoria during pregnancy, a personal history of depression, premenstrual depression, neuroticism, and depression later in the postpartum period suggesting that postpartum blues is a predictor of subsequent PPD and appears to be an index of affective vulnerability.

Lane et al. (1997) investigated the predictors of PPD and found that amongst the factors associated with PPD, mothers' mood state at 3 days postpartum (symptomatology related to the “blues”) was the best predictor of psychopathology at 6 weeks. In this study, EPDS scores at day 3 postpartum were similar to EPDS scores at week 6

postpartum. O'Hara and Swain's (1996) and Beck's (1996a; 2001) meta-analyses of predictors of PPD have shown that of the 13 significant risk factors for PPD that they identified, postpartum blues was one of 10 of these predictors that had moderate  $r$  effect sizes. More recent studies by Bloch and Klein (2005) and Bloch et al. (2005) also found that mood symptoms during the first 2-4 days postpartum were amongst the significant risk factors for postpartum mood disorders.

Postpartum blues is, however, more prevalent than PPD, affecting up to 70% percent of postpartum women (APA, 2000). All women who experience postpartum blues will not necessarily develop PPD. The results of this study do, however, highlight the importance of screening prior to discharge from hospital and the need for early intervention for women at risk.

#### ***2.4.7.4 Hormonal changes.***

##### *2.4.7.4.1 Neuroendocrine alterations.*

Hormonal changes are dramatic during pregnancy and shortly after delivery. Numerous studies have explored how reproductive events may contribute to the development of postpartum mood disorders. The DSM-IV-TR recognizes that neuroendocrine alterations render the postpartum period unique (APA, 2000). The levels of progesterone, estrogens, human chorionic gonadotropin, beta-endorphin, cortisol and prolactin increase during pregnancy and reach a maximum level near term and then

decline rapidly after delivery. A topic of intense debate amongst researchers is whether postpartum mood disorders have a distinct pathophysiology.

In some studies that explored biological factors, a specific etiologic link between postpartum mood disorders and reproductive changes has not been identified (Hendrick et al., 1998; Ross, Sellers, & Romach, 2003). Ross, Sellers, and Romach (2003) investigated the interactions between psychosocial and biological risk factors in PPD and anxiety. They reached the conclusion that hormonal variables may not have a direct impact on women's moods during pregnancy and the postpartum period. Their results did, however, indicate that hormonal variables do play an important role in perinatal anxiety as they may mediate sensitivity to psychosocial stressors. Their results also emphasize the importance of examining the effect of biological variables in PPD in addition to examining demographic and psychosocial risk factors.

The theory of hormonal influence as a risk factor for PPD is supported by researchers like Bloch et al. (2000) who attribute PPD to hormonal changes. They report that women had a greater risk of recurrence of depressive symptoms during a pseudopregnancy and parturition if they have a history of PPD.

Epperson et al. (2003; 2006) are of the opinion that neuroactive steroids play a definite role in postpartum mood disorders considering the temporal relationship between hormonal changes associated with parturition and the onset of symptoms. Their examination of the GABA levels of postpartum women led them to conclude that some postpartum women are more vulnerable to the fluctuations in sex steroids and the onset of postpartum affective disorders.

Altemus et al. (2004) examined the changes that occur in the neurochemistry of cerebrospinal fluid during pregnancy. They report that levels of prolactin, but not oxytocin, in CSF and plasma were correlated in pregnant women. These results suggest that pregnancy alters regulation of brain GABA, norepinephrine, and prolactin, which may play a role in changes in vulnerability to anxiety and depression during pregnancy and postpartum.

Studies have indicated that postpartum hormone withdrawal may contribute to depressive symptoms experienced after giving birth (e.g. Ahokas, Kuakoranta, & Aito, 1999; Bloch, Daly, & Rubinow, 2003). According to Suri (2004) women who develop PPD may be particularly sensitive to these dramatic hormonal fluctuations that take place in the immediate postpartum period. Halbreich (2005) states that hormonal changes in conjunction with genetic predisposition, causing hypersensitivity to these changes, places women at an increased risk of developing PPD.

#### *2.4.7.4.2 Premenstrual dysphoric disorder.*

Halbreich and Halbreich and Endicott (as cited in Halbreich, 2005) demonstrated and suggested a statistical association between PPD and depressions during other reproductive-related situations, like premenstrual dysphoric disorder (PMDD) and puberty. The statistical association reflects common underlying mechanisms, most likely hormonal withdrawal, changes, or instability. A kindling effect was also suggested. This implies that repeated hormonally-related episodes have a cumulative effect resulting in

increased sensitivity or vulnerability to develop symptoms in response to future situations of change.

Sugawara et al. (1999) reported that high postpartum depressive scores were associated with a history of PMS. Bloch and Klein (2005) found a clear association between having a history of PMDD and the development of either PPD or the blues. While their study was limited by the retrospective report of PMDD symptoms, the subsequent diagnosis of postpartum mood disorders and comparison to a control group strongly supported considering a history of PMDD as a risk factor for postpartum mood disorders.

Bloch et al. (2005) later also report that significant risk factors for postpartum mood disorders were a history of PMDD and a history of mood symptoms in prior oral contraceptive use. These studies provide evidence that putatively hormone-related phenomena are related to the occurrence of postpartum mood disorders. The results go some way to support the hypothesis that the etiology for postpartum mood disorders may be related to differential hormonal sensitivity. Such risk factors should be included in any assessment of the risk for these disorders.

#### *2.4.7.4.3 Thyroid dysfunction.*

It has been suggested that abnormalities in thyroid functioning in the postpartum period contribute to postpartum mood disorders (Bokhari et al., 1998; Pop et al., 1991; Pop et al., 1993). The percentage of women with postpartum hypothyroidism is fairly

high in the first six months after delivery. The rate of thyroiditis in postpartum women has been found to reach 9%, compared to 3% to 4% in the general population (Goldman, 1986). The relationship between PPD and postpartum thyroid dysfunction may substantiate a hormonal theory for the development of PPD in a small number of women (Pop et al., 1991; Harris et al., 1996), but it does not account for most cases of PPD. Nevertheless, Pop et al. (1991) study shows that a significant fraction (7%) of euthyroid women developed postpartum thyroid dysfunction after childbirth. Thirty-eight percent of these women had PPD that resolved when the thyroid abnormality was treated. Thyroid dysfunction should therefore be given consideration in the assessment of women who present with PPD. Stronger associations have, however, been found with factors like social support and infant variables, and PPD also occurs in fathers. Therefore, it would be faulty to assume a strictly hormonal etiology for most cases of PPD.

#### *2.4.7.4.4 Serum n-3 polyunsaturated fatty acid levels.*

Alterations in serum fatty acid composition accompany major depression (De-Vriese, Christophe, & Maes, 2003). Maternal serum 22:6n-3 is depleted due to pregnancy. This serum level gradually declines further after childbirth. De-Vriese et al. (2003) investigated whether cholesterol esters and the postpartum fatty acid profile of maternal serum phospholipids differs in women who develop PPD. They found that abnormalities in fatty acid status were also observed in PPD just as it had previously been observed in major depression. Their results further show that antenatal women may

benefit from prophylactic treatment with serum n-3 polyunsaturated fatty acids if they are at risk of developing PPD.

#### **2.4.7.5 *Obstetric risk factors.***

##### *2.4.7.5.1 Preterm infants.*

Depression in mothers of pre-term infants is not uncommon. This mood disorder may impact on the health of the infant (Kruckman & Smith, 2006). Elevated depression scores after childbirth were significantly more frequent among mothers whose infants were born preterm. These findings were evident even when antenatal depression scores were controlled (Drewett, Blair, Emmett, & Emond, 2004). Locke et al. (1997) found that the severity of the initial neonatal illness was associated with maternal depression in mothers of preterm infants.

Halbreich (2005) proposes that the risk factors for PPD may be similar to the risk factors for low birth weight or preterm delivery. This may suggest that the 3 situations - low birth weight, preterm delivery and PPD - may be an outcome of similar or partially overlapping pregnancy processes. Halbreich (2005) states that it may be that low birth weight and preterm delivery are predictive factors for PPD, particularly when the infant's special needs severely affect the mother.

#### 2.4.7.5.2 *Perinatal loss.*

Depression and anxiety are not uncommon after a pregnancy is terminated, either through own choice or in miscarriage. Furthermore, a bereaved mother typically experiences depressive symptomatology when a stillbirth or neonatal death occurs (Bennett & Indman, 2003).

Turton, Hughes, Evans, and Fainman (2001) demonstrated that women, who in stillbirth have suffered the double psychological burdens of trauma and bereavement, are at a significant risk of developing PTSD and comorbid symptoms of depression and state-anxiety during and after the pregnancy following stillbirth. Stowe, Levy, and Nemeroff (1997) caution that patients may be deprived of adequate support and treatment if either the patients or the professionals consider severe depression to be normal after a significant loss. These studies highlight the need for education about PPD and PTSD and the importance of careful ongoing diagnostic, pharmacological, and psychotherapeutic treatment of patients who suffer from perinatal loss. Furthermore, bereaved mothers ought to be carefully monitored for symptoms of depression and anxiety in subsequent pregnancies and in the postpartum period.

#### 2.4.7.5.3 *Care during labour and delivery.*

The quality of care the mother receives during labour and delivery has been reported to be a risk factor for PPD. Studies have shown that the emotional and psychological care a woman receives during labour and delivery, as well as the physical

care provided determine her satisfaction with childbirth. How all these needs are met is considered an important factor in postpartum outcomes like PPD (Baker, Henshaw, & Choi, 2003).

#### *2.4.7.5.4 Delivery complications.*

Birth complications have been investigated as possible risk factors in the development of PPD, and results have varied. In a study by Warner, Appleby, Whitton, and Faragher (1996) where obstetric risk factors for postpartum psychiatric morbidity were examined, there was no association reported by subjects. O'Hara and Swain (1996), however, found a moderate correlation between women with higher levels of obstetrical complications and those with higher levels of self-reported symptoms of depression during the postpartum period.

#### *2.4.7.5.5 Unplanned caesarean delivery.*

Concern has been expressed since the 1970s that caesarean delivery and PPD may be linked. A broad range of findings have been reported. Carter, Frampton, and Mulder (2006) point out that this may be partly due to methodological factors employed. Most commonly, however, studies have found no association between PPD and caesarean delivery. Carter et al. (2006) performed a meta-analysis of suitable studies and report that methodologically superior studies were more likely to find no significant association.

A recent study by Patel, Murphy, and Peters (2005) examined the association between PPD and elective caesarean delivery compared with planned vaginal delivery. Patel et al. (2005) further explored whether assisted vaginal delivery or an emergency caesarean section is associated with PPD compared with vaginal delivery that proceeds spontaneously. Their results show that women who plan vaginal delivery and due to complications require an emergency caesarean section or assisted vaginal delivery are not at increased risk of PPD. Variables such as whether the caesarean delivery is planned or unplanned do not appear to significantly increase the risk of PPD (Patel, Murphy, & Peters, 2005).

The studies reviewed in the meta-analysis by Carter et al. (2006) suggest an association between a variety of other risk factors and PPD. They suggest that caesarean delivery operates as a risk factor for PPD only if women are vulnerable to PPD for some other reason. Gottlieb and Barrett (1986) found that lack of experience with children was a moderating variable between caesarean delivery and PPD. Two studies are of indirect relevance to this issue. Green (1990) found that low antenatal mood and negative experiences of labour had independent and cumulative effects on PPD. Murray and Cartwright (1993) found that the mode of delivery was only associated with PPD if women had a history of depressive disorder.

#### *2.4.7.5.6 Tokophobia.*

Hofberg (2003) studied the profound dread and avoidance some women have of childbirth. Fear of childbirth is not uncommon in pregnant women. It may, however, be

disabling in up to 10% of parous women (Saisto & Halmesmäki, 2003; Waldenström, Hildingsson, & Ryding, 2006). Fear of childbirth is equally common in nulliparous as in parous women. In up to 13% of women who are not pregnant, the fear is so intense that they prefer to postpone or avoid pregnancy altogether.

Profound fear of childbirth is not a modern day phenomenon. In 1858, Marcé described fear of parturition (as cited in Hofberg, 2003). Despite advances in medicine and the types of assistance offered to women in childbirth, many women still fear pain and death during childbirth. When this fear precedes pregnancy and is so intense that the woman avoids pregnancy, and hence childbirth, it is a phobic state termed tokophobia. Wijma (2003) refers to this phenomenon as “clinical fear of childbirth” or “clinical FOC”. He agrees that the fear may be so intense that it meets the criteria for a specific phobia. The fear is specific in some instances, only concerning the process of labour and childbirth, but in others it is coupled with various other anxiety problems. Furthermore, Wijma (2003) reports that it may be so disabling that it interferes with the woman’s academic or occupational functioning, with her social and domestic activities or with her relationships. Fear of childbirth may manifest as physical complaints, nightmares and difficulty in concentrating.

According to Wijma (2003), fear of childbirth can be experienced by women during their pregnancy, during the delivery and in the postpartum period. Their fear usually reaches a phobic level after they have become pregnant. Furthermore, the woman’s fear of childbirth often leads to a request for an elective cesarean section without any obvious medical reason (Saisto & Halmesmäki, 2003; Wijma, 2003). They may also request to be sterilised so that they can avoid a subsequent pregnancy – with the fear being parturition

and not parenting. Various studies (e.g. Waldenström et al., 2006) have indicated that women with greater fear of childbirth antenatally are prone to more intense fear during the delivery and are more likely to report a negative birth experience. They may also suffer the most from it in the postpartum period, regardless of the type of delivery they had. Soderquist, Wijma, Thorbert, & Wijma (2009) found that antenatal women with pre-traumatic stress or women with severe fear of childbirth in late pregnancy were more likely to have depression and post-traumatic stress one month after childbirth.

Women with PTSD after childbirth often have had symptoms of PTSD prior to delivery. According to Hofberg (2003), women who suffer from tokophobia may be more vulnerable to PTSD and PPD. A large percentage of women who have had emergency caesarean sections or instrumental deliveries have PTSD after childbirth. Not all women will, however, develop PTSD after a problematic delivery.

#### *2.4.7.5.7 Primiparity.*

Birth order has frequently been suggested as a factor related to the development of PPD. In earlier studies Davidson, Yalom et al., and Jackson and Laymeyer, as cited in Kruckman and Smith (2006, section 4, paragraph 5), suggest that the birth of the first child brings about a unique stress as the woman adopts the role and identity of a mother. This was found to correlate more strongly with depression than the birth of the second or third child. Tamaki, Murata, and Okano (1997) also suggest a possible association between first childbirth and PPD.

Studies looking at the possible effect of pregnancy number on PPD are, however, controversial. Posner, Unterman, Williams, and Williams (1997) did not find an association between number of deliveries and PPD. Righetti-Veltima et al., (1998) also found no association indicating that high parity is associated with PPD. Munk-Olsen et al., (2006) found that a higher risk of postpartum mental disorders was evident among primiparous women for several months after childbirth. Bloch and Klein (2005) found that in the order of pregnancies, earlier ones entail a higher risk of PPD. They report that this result may reflect the possibility that women who develop PPD are less inclined to become pregnant again. Women with multiple pregnancies may therefore represent a group of women with a relatively lower vulnerability for PPD. Alternatively, Bloch and Klein (2005) suggest it is possible that the vulnerability to PPD diminishes with multiple deliveries due to a non-specific decrease in stress associated with the pregnancy and delivery, or for other yet unexplained reasons.

#### ***2.4.7.6 Psychosocial adjustments.***

Halbreich (2005) cites that the abrupt psychosocial change from pregnancy to motherhood and its demands and stresses may be a risk factor in PPD. This factor is related to the environment at time of delivery and the immediate postpartum period. It is well documented that in cultures where the new mother is provided with a higher level of care and family support during the first month after childbirth, reported rates of PPD are low and may be delayed until this period of pampering ends and the new mother is faced with the reality of day-to-day life (e.g. Harkness as cited in Bina, 2008).

The occurrence of symptoms and their perceived severity is also dependent on the individual's ability to cope with them. According to Halbreich (2005), these perception and coping mechanisms are shaped by past experiences as well as by the individual's central nervous system functioning. Kruckman and Smith (2006) point out that psychological functioning plays a major role in PPD.

It has been suggested that PPD is partly associated with the explicitness of role expectations for females and mothers (Tentoni & High, 1980). Kruckman and Smith (2006) report on some findings that identify role conflict as a psychosocial risk factor for emotional problems. They indicate that attitude towards pregnancy, especially ambivalence and sexual identity, are concepts related to role conflict, which may be associated with the development of psychological symptoms following childbirth.

#### ***2.4.7.7 Self-esteem.***

There appears to be a strong relationship between depression and self-esteem. Mothers with low self-esteem are 39 times more likely to have depressive symptoms than mothers with high self-esteem (Hall, Kotch, Browne, & Rayens, 1996). A number of studies have found that self-esteem is related to depression after childbirth. Fontaine and Jones (1997) found a significant relationship with moderate depressive symptomatology at two weeks postpartum. Beck's (2001) meta-synthesis shows that, based on research in the 1990s, self-esteem has emerged not only as a new, significant predictor of PPD but also as one of the strongest predictors.

Srisaeng's (2004) study focused on the relationships between self-esteem and stressful life events with PPD in adolescent mothers in Thailand. When controlling for maternal characteristics, only self-esteem and negative stressful life events were significant predictors of PPD. Adolescent mothers who have been subjected to a high level of negative stressful life events and who have low self-esteem should be identified as they are at increased risk for PPD.

According to Hall et al. (1996) self-esteem, with its emphasis on feelings of self-worth, buffers the negative effects of stressful life events. Mothers with high self-esteem are better able to withstand stressors that may impact on their sense of self-worth and be a factor in the development of PPD. Clinicians should still be wary though, even if a mother does possess a high level of self-esteem. Sichel and Driscoll (1999, p. 198) warn in their model of women's mental health, that the postpartum period "is a fragile time for the self-esteem of the ablest of women and is made much worse by the occurrence of a depression." Logsdon and Usui (2003) recommend that social support interventions for postpartum women should include assistance with building self-esteem, maintaining or improving relations with her partner, and providing support in areas that are important to her.

Researchers have explored how the weight retained after childbirth influences a mother's self-esteem, her weight satisfaction, and mood. Jenkin and Tiggemann (1997) conclude that a mother's postpartum weight determined her psychological well-being. Their findings show that the negative response to weight gain is not uncommon after childbirth. Women who gained more weight report depressive symptoms more often than women who gained less weight (Walker, 1997). Furthermore, mothers who reported

having low self-esteem were found to have higher body mass indexes, greater weight gains, and more symptoms of depression. A study conducted by Carter, Baker, and Brownell (2000) found a strong association among BMI, eating attitudes, and depressive and anxiety symptoms during the postpartum period that are not present during pregnancy. Morgan, Lacey, and Chung (2006) investigated whether active bulimia nervosa affects obstetric outcome. They found that active bulimia nervosa during pregnancy was associated with postnatal depression, miscarriage, and preterm delivery.

#### ***2.4.7.8 Personality organization.***

Personality has been associated with clinical depression. A number of researchers have explored personality in relation to PPD. Traits such as neuroticism have often been found to be associated with postnatal depression (Dennis et al., 2004; Matthey et al., 2000; O'Hara & Zekoski, 1988; Thio, 2004). O'Hara and Swain (1996) found that a negative cognitive attributional style was found to be related to PPD when assessed through self-report. Matthey et al. (2000) who examined the course of postnatal depression in first-time mothers and fathers with an emphasis on the role of personality as one possible major risk factor, further indicate the mother's level of interpersonal sensitivity is associated with depressed mood postpartum. Sved-Williams (2003) found associations between antenatal perfectionism and mood changes both during the antenatal and postnatal period. Highly self-critical women's risk for depression was lowered if they became strongly attached to the foetus during pregnancy (Priel & Besser, 1999). Boyce

and Hickey (2005) confirm that psychosocial risk factors, predominantly in the areas of social support and personality style, are closely associated with postnatal depression.

Verkerk, Denollet, Van-Heck, Van-Son, and Pop, (2005) investigated introversion and neuroticism as predictors of PPD. They conclude that a person's personality traits may be constant and important determinants of PPD. Furthermore, their findings show that the risk estimates for clinical depression in the first year postpartum are considerably higher when both neuroticism and introversion scores are high.

Mazzeo et al. (2006) explored how perfectionism in women is related to antenatal and postpartum symptoms of depression and eating disorders. Their results propose that the particular aspect of perfectionism, namely "concern over mistakes", may contribute to the severity of PPD symptomatology.

The properties of antenatal screening instruments, developed specifically to determine a mother's risk of PPD, are described by Austin and Lumley (2003). They report that certain factors may have influenced poor sensitivity and positive predictive values of antenatal screening measures. The exclusion of key domains in predicting risk, particularly personality, is one such factor. They believe that the influence personality traits have may be under-estimated in studies where measures of risk prediction are evaluated.

The Vulnerability Personality Style Questionnaire (VPSQ) was developed to identify women at-risk for PPD due to personality vulnerability. Preliminary research with this 9-item self-report scale suggests it has satisfactory psychometric properties. Dennis and Boyce (2004) report that this measure will aid in the identification of women

who are at-risk of developing PPD thereby allowing for appropriate secondary preventive or treatment interventions.

#### **2.4.7.9 *Infant temperament.***

According to Beck (1995), a source of stress that contributes to the development of PPD can be difficult infant temperament. Beck's (1996b) meta-analysis investigated the relationship between infant temperament and PPD. In this study the confidence interval, which was calculated at 95%, ranged from 0.261 to 0.369, indicating a significant relationship between infant temperament and PPD. A subsequent updated meta-analysis conducted by Beck (2001) revealed that infant temperament was a significant predictor of PPD.

A relationship between PPD and infant temperament has been indicated in a number of studies (Austin, Hadzi-Pavlovic, Leader, Saint, & Parker, 2005; Aydin, Inandi, & Karabulut, 2005; Coplan, O'Neil, Arbeau, 2005; Edhborg, Seimyr, Lundh, Widstroem, 2000; Pesonen, Raikkonen, Strandberg, Kelitikangas, & Jarvenpaa, 2004; Whiffen & Gotlib, 1989). Murray, Stanley, Hooper, King, & Fiori-Cowley, (1996) found that high levels of irritability in infants were strongly predictive of the onset of maternal depression by 8 wks postpartum.

Whiffen and Gotlib (1989) state that a depressed postpartum woman's ability to mother effectively may be impaired by non-affective symptoms of depression, such as self-preoccupation, withdrawal and passivity, which may further contribute to an infant's difficult temperament. Irritable infants can make caretaking efforts largely ineffective and

raise doubts in mothers' minds about their competence, resulting in feelings of inadequacy and depression. Rowe, Fisher and Feekery (2003) agree that difficult infant temperament has an effect on the quality of the relationship the mother has with her baby and also contributes to her diminished maternal confidence. Furthermore, high rates of co-incidental maternal psychological distress, particularly clinically significant anxiety and exhaustion, were found to be related to very high rates of difficult infant temperament. Sheinkopf et al (2006) furthermore report that a mother's psychological distress has an effect on the extent to which her baby's behavioural characteristics were experienced as difficult or stressful.

Maxted et al. (2005) performed a study on infant colic and maternal depression. Their sample included 93 consecutive patients seen at an outpatient clinic for colic, and results show that 45.2% of these mothers reported moderate to severe depressive symptoms. They report that factors like fussy or difficult infant temperament, lower parental self-esteem, more parenting stress, and more family-functioning problems were associated with more severe symptoms of depression in mothers whose infants suffered from colic. Howell, Mora, & Leventhal (2006) report that patients reporting depressive symptoms were more likely to have infants that suffered from colic. Akman et al (2006) also report that the mean EPDS score of mothers whose infants suffered from colic were significantly higher in comparison to mothers whose infants did not have colic.

Murray (2001) identified women at risk for PPD prior to the birth of their babies. She found that women were three times more likely to be depressed postpartum when their infant was difficult and had poorly organised motor behaviour – characteristically either jerky and strung up or else flat and sluggish. The influence that an infant's early

behaviour has on the mother's mood was seen regardless of whether her perception of her baby's behaviour was difficult and whether or not she had postpartum blues. These factors did contribute to her risk of PPD, but her baby's behaviour added significantly to that risk.

An infant's early behaviour is important because it contributes to the risk of depression in the mother, which can cause relationship problems between mother and baby. Interventions during the postpartum period that focus on assisting mothers who have infants with difficult temperaments or colic, may prevent PPD. Conversely, postpartum psychological interventions aimed at minimising maternal depression and anxiety may optimise infant temperament outcomes and are likely to impact positively upon maternal perceptions of their infants, with implications for improving child behavioural development and health.

#### ***2.4.7.10 Sleep deprivation.***

Infant sleep problems and PPD are highly prevalent in the postpartum period and both have adverse sequelae. It has been suggested that changes in sleep physiology and sleep deprivation plays a role in perinatal psychiatric disorders. Hiscock and Wake (2001; 2002) investigated the relationships between infant sleep problems and maternal well-being and found that there is a significant relationship between the two, even when known depression risk factors are taken into account. They report that both PPD and infant sleep problems can negatively impact, in apparently similar ways, on the infant, the mother, and the mother-infant relationship. Disrupted sleep in the infant can result in

maternal sleep disruption, which in turn has an adverse effect on motor function, cognition, and mood. Lavigne et al., 1999) found that infants with sleep disruption are more likely to be irritable, inattentive, and tired, and find it more difficult to modulate their emotions and impulses. Similar problems along with poorer behavioural and cognitive outcomes and difficulty in forming attachments are seen in children of depressed mothers (Beck, 1998b; Murray, Hipwell, & Hooper, 1996).

Hiscock and Wake's (2002) results confirm that there is a strong association between maternal report of depression symptoms and infant sleep problems, even when already determined risk factors for PPD, like a past history of depression, are taken into account. According to Hiscock and Wake (2002), an important mediator in the relationship between infant sleep problems and depression may be maternal sleep quality, the reason being that mothers who reported good or very good sleep quality were less likely to report symptoms of depression, even when they regarded their infant's sleep to be problematic. Their findings suggest that there are other factors which contribute to good maternal sleep quality and protect mothers from depression if they have an infant with a sleep disturbance.

Mothers who reported sleep disturbance in their infants noted that they were significantly more likely to sleep in their parent's bed, would wake frequently and for typically for longer periods, and would need an adult to settle them back to sleep (Hiscock & Wake, 2002). According to Ferber (1995), these behaviours are typically learned behaviours and are therefore amenable to change through behaviour modification techniques. Hiscock and Wake (2002) found that night waking was related to a high EPDS score. They suggest that in order to decrease maternal report of depression

symptoms, assistance should be offered to parents in teaching their infants to settle independently.

Parry et al. (2003) hypothesized that underlying chronobiological abnormalities may be associated with depression. They examined the relationship between endocrine measures and sleep in women with onset of a major depressive episode during their pregnancy or within the first year after childbirth. Their findings revealed that disruptions in the timing relationships of endocrine and sleep rhythms may play a role in antenatal and PPD.

Ross, Murray and Steiner (2006) provide a review about changes in antenatal and postpartum behaviour and sleep physiology. Their review particularly focuses on the association between sleep and postpartum "blues," depression and psychosis as well as on sleep-based interventions for the prevention and treatment of perinatal mood disorders. Their review suggests that there is a significant relationship between perinatal mood disorders and sleep. They recommend that studies employ objective measurement tools to measure both mood and sleep during the perinatal period in order to gain important information about the etiology, treatment, and prevention of perinatal mood disorders.

Mothers who report sleep problems in their infants are likely to be experiencing symptoms of depression and should be carefully monitored by their practitioners. Appropriate anticipatory guidance, which addresses problems with infant sleep patterns, has the potential to greatly reduce the number of maternal reports of depressive symptoms. It may also improve the infant's sleep and consequently have a positive impact on the well-being of the infant, the mother, and her family.

#### ***2.4.7.11 Lack of support.***

According to Kruckman and Smith (2006) the relationships between social variables such as role conflict, stress and support have frequently been correlated. This indicates the likelihood that a more complex causal pattern is involved in the etiology of PPD than merely biologically-based theories can encompass.

O'Hara and Swain (1996) report that social support, as it is manifest during pregnancy, is a significant risk factor for the development of PPD – even more so when the mother has high levels of antenatal depressive symptomatology and lacks support from the baby's father. Morton (2000) observed a link between a mother's prenatal perceived lack of personal support and PPD. The meta-analyses of 44 studies by Beck (1996a), the meta-analyses of 84 studies by Beck (2001) and a meta-analysis (Robertson et al., 2004) that included subsequent studies of nearly 10 000 additional subjects reveal that a low level of social support is one of the strongest predictors of PPD.

Dennis and Ross (2006) found that women with postpartum depressive symptoms had significantly lower perceptions of postpartum-specific partner support. The significant relationship between social support and postpartum depressive symptomatology has been documented in numerous studies. Some researchers assert that measures of social support are the strongest predictors of postpartum outcome (e.g. Bennett & Indman, 2003; Boyce & Hickey, 2005; Dennis et al., 2004; Kruckman & Smith, 2006; Martinez-Schallmoser, Telleen, & MacMullen, 2003; Misri, Kostaras, Fox, & Kostaras, 2000; Nath, 2005; Pierce, Strauman, & Lowe-Vandell, 1999; Seguin, Potvin,

St-Denis, & Loiselle, 1999). Forman et al (2000) determined that one in three women with perceived social isolation who suffer from psychological distress in late pregnancy will develop PPD. Logsdon and Usui (2003) state that social support as a predictor of PPD is the same across diverse samples of women.

In relation to support, studies have shown that early discharge from the hospital increases a mother's risk for developing PPD. This was found to be the case even when psychosocial, obstetric, and socio-demographic risk factors are controlled for (Dennis et al., 2004; Hickey, Boyce, Ellwood, & Morris-Yates, 1997). Hospitals that have an early postpartum discharge policy are likely, unless planned effectively, to leave the new mother at risk for emotional stress due to lack of social support.

Cooper et al. (1999) found that the pattern of socio-demographic variables associated with PPD in Khayelitsha, South Africa, was somewhat different from that found in Western samples. They report that in Western studies social adversity was a major risk factor for postnatal depression (Cooper & Murray, 1998). High levels of social adversity were endemic in Khayelitsha however, and it was, therefore, not possible to examine usefully the role of adversity. The only socio-demographic factor examined which they found related to maternal depression in Khayelitsha was the absence of support from the woman's partner.

It is essential that health care providers enquire about the presence of depressive symptoms and assess the mother's available social support during the antenatal period. Vulnerable mothers need to be identified and targeted for assistance so that they may receive additional support and assistance in dealing with everyday stressors.

#### ***2.4.7.12 Marital difficulties.***

O'Hara and Swain (1996) examined the relationship between the mother's antenatal relationship with her spouse and PPD. Their findings show that a comparatively clear risk factor for PPD is the state of a woman's marital relationship during pregnancy. The meta-analyses conducted by Beck (1996a; 2001) also point out that marital satisfaction is a significant predictor of PPD.

Parents in a stable marital relationship are better able to adapt to the demands of marriage, family and parenthood. In contrast, a number of studies indicate that a poor marital relationship is a consistent psychosocial risk factor for the development of PPD (Alkar & Gencoz, 2005; Crockenberg & Leerkes, 2003; Ghubash & Abou-Saleh, 1997; Martinez-Schallmoser et al., 2003; Matthey et al, 2000; Merchant, Alfonso, & Mayberry 1995). Women with postpartum depressive symptoms are more likely to report conflict in their relationship with their partner (Dennis & Ross, 2006). Partner violence has been found to be significantly associated with PPD. Beydoun, Al-Sahab, Beydoun, & Tamim (2010) found that the odds of PPD were 60% greater among mothers who experienced physical or sexual abuse by their partners in comparison to mothers who had not. Fisher, Feekery, and Rowe-Murray (2002) found that the severity of PPD was associated most consistently with the quality of a woman's relationship with her partner and with her infant if classified as "difficult to settle".

Significant complications in both family and marital relationships may result from the presence of maternal depression (Larsen & O'Hara, 2002). Furthermore, existing

depression may worsen after childbirth in a troubled environment (Robertson et al., 2004). Women with a history of mood disorders are more prone to experience a relapse after childbirth if they are dissatisfied with their partners. A lack of communication is the most common complaint among these women. Conversely, there is evidence that if a psychologically vulnerable woman is in relationship, within which she is appreciated by her partner, this appreciation may actually protect her from PPD (Marks, Wieck, Checkley, & Kumar, 1996).

Numerous women find handling both marital and maternal roles stressful. Researchers found that significant psychosocial stresses arose in postpartum marital adjustment when partners were not involved in child-rearing and were not supportive (Boyd-Bragadeste, 1998; Misri et al., 2000). In addition, in a normal postpartum marital adjustment the lack of support after the birth of a child acts as a source of psychosocial stress. Furthermore, how a woman perceives her partner's support influences her sense of well-being as a wife, a mother, and a woman (Misri et al., 2000).

The amount and type of support a partner gives is an important factor in the treatment of PPD as it has a significant positive effect on women experiencing PPD. Husbands or partners should be routinely included in women's visits with both primary care physicians and psychiatrists.

#### ***2.4.7.13 Single parenthood.***

Warner et al. (1996) and Wickberg and Hwang (1997) found a significantly increased risk of PPD among single women. According to Kruckman and Smith, (2006)

the lack of a natural support system and marital intimacy that a marital relationship may provide has been correlated with mental health problems.

Carter, Garrity-Rokous, Chazan-Cohen, Little, and Briggs-Gowan (2001) report that when maternal depression is combined with single parenting, the risk to the parent–infant system may be amplified and developmental progress disrupted. Lane et al. (1997) found that amongst the factors associated with high EPDS scores were single status.

#### ***2.4.7.14 Adolescent age.***

Research reveals that adolescent pregnancy is associated with PPD. Warner et al. (1996) found a significant association between PPD and a younger age.

Lesser, Koniak-Griffin, and Anderson (1999) examined depressed adolescent mothers' perceptions of their own maternal role. Many adolescent mothers in their study had engaged in impulsive high risk activities prior to their pregnancies. Their findings propose that the experience of motherhood may help some adolescent mothers improve their previously self-destructive lives. Furthermore, establishing maternal identity and simultaneously developing a sense of maternal protectiveness led to realistic, future-oriented decision making. Some adolescent mothers, however, who experienced chronic depressive mood along with social isolation after childbirth were found to be at increased risk for developing problematic maternal behaviours.

According to Srisaeng (2004), in Thailand, premarital relations and pregnancy out of marriage are considered dishonourable and bring great shame upon the family. This

research indicated that PPD was common among Thai adolescent mothers. This risk was increased if they had low self-esteem and had experienced high negative stressful life events.

Adolescent mothers experience distinct social and personal challenges that may determine their postpartum functioning. Research indicates that maternal competence, social isolation, and shape or weight concerns contribute to the unique variance that may predict their depression level (Birkeland, Thompson, & Phares, 2005).

In a study of 1662 participants, Rich-Edwards et al. (2006) investigated whether age was a factor that may be related to antenatal and postpartum depressive symptoms. They concluded that young maternal age was related to an increased risk of antenatal and postpartum depressive symptoms. Unwanted pregnancy, lack of partner support, and financial hardship largely contributed to the risk in this age group.

#### ***2.4.7.15 Unplanned pregnancy, ambivalence about having a child.***

An unplanned pregnancy has been shown to be associated with PPD, which in turn, may lead to difficulty in adjusting to parenthood and feelings of entrapment. Furthermore, an unplanned pregnancy may result in ambivalence towards the child antenatally or lack of commitment to the infant (Chee et al., 2005; Warner et al., 1996). Warner et al. (1996) suggest that reducing unwanted pregnancies and, perhaps, better opportunities to return to employment postnatally would have a substantial effect on the rate of postnatal depression.

Lane et al. (1997) report that amongst the factors associated with high EPDS scores were unplanned pregnancy. Ghubash and Abou-Saleh (1997) studied postpartum psychiatric illness in an Arab culture. Their study identified four major risk factors for PPD, of which unplanned pregnancy was one. Rich-Edwards et al. (2006) investigated socio-demographic risk factors for antenatal and postpartum depressive symptoms among women. They conclude that unwanted pregnancy and financial hardship are significant factors associated with antenatal and postpartum depressive symptoms.

Beck's meta-analysis (2001) revealed that an unplanned or unwanted pregnancy was found to be another new predictor of PPD. She indicates that even if unplanned pregnancies were a welcome surprise, the mothers still had to cope with the ramifications of this unplanned event that would impact on the rest of their lives.

Cooper et al. (1999) researched PPD and the mother-infant relationship in a South African peri-urban settlement. They found that depression, whether with antenatal or postpartum onset, was strongly related to whether or not the pregnancy was planned. An unplanned pregnancy was reported by 69% of mothers with PPD. In this study, an unplanned pregnancy was strongly related to the woman reporting that the pregnancy was also unwanted.

#### ***2.4.7.16 Maternal or paternal unemployment or poverty.***

Epidemiological evidence indicates a high rate of depression in women in conditions of socio-economic hardship (Harpham, 1994). It is likely that a similarly high rate would be found in puerperal samples.

Unemployment in both the mother and in the head of the household is a significant risk factor for PPD. The association between maternal unemployment and PPD is thought to reflect the isolation and low self-esteem of unemployed mothers, or the substantial role change for women who were previously employed but who, following childbirth, have no future employment planned. Alternatively, women who are vulnerable to depression may not seek work during the postpartum period (Warner et al., 1996).

Several other researchers have also reported that financial stress and socio-economic status (SES) is a significant risk factor for the development of PPD (Beck, 2001; Dearing, Taylor, & McCartney, 2004; Jardri et al., 2006; O'Hara and Swain, 1996; Patel, Rodriguez, & DeSouza, 2002; Rich-Edwards et al., 2006; Rubertsson, Waldenstrom, Wickberg, Radestad, & Hildingsson, 2005; Rubertsson, Wickberg, Gustavsson, & Radestad, 2005; Segre, O'Hara, Arndt, & Stuart, 2007; Sherman-Slate, 2005). Beck (2001) states that women at risk for PPD may experience a number of stressors that often include financial difficulty related to their demographic status – a stressor exacerbated after childbirth due to the costs of childcare. Single mothers, in particular, with a low income may have fewer resources at their disposal to prepare for motherhood.

Logsdon, Birkimer, and Usui, (2000) found a high incidence of depression in their sample of low socio-economic status African American postpartum women. Cooper et al. (1999) found a PPD prevalence rate of 34.7% in Khayelitsha, a very poor peri-urban settlement near Cape Town. This is roughly three times the expected rate internationally. Halbreich and Karkun (2006) revealed a wide range of reported prevalence of PPD that ranges from almost 0% to almost 60%. They state that one of the factors resulting in

variability in PPD that is reported may be as a result of differences in socio-economic environments, such as levels of social support, or perceived social support, poverty, stress, and nutrition. Some researchers have found higher rates of depressive disorders in selected ethnic minorities (e.g. Onozawa, Kumar, Adams, Dore, & Glover, 2003) and some have indicated that the interaction between ethnic status and income increases the risk for depression (Belle, 1990; Golding & Lipton, 1990). Assessing a woman's psychosocial history and presence of stressful life events in early pregnancy, her employment status, as well as her psychiatric history may help the practitioner determine her risk for recurrent or sustained antenatal and PPD.

#### ***2.4.7.17 Childcare stress.***

Beck's (2001) meta-analysis of PPD to determine the magnitude of the association between PPD and various risk factors revealed that one of the 13 strongest predictors of PPD was childcare stress. Leung (2002) studied stress, social support, and PPD in the context of Chinese culture. Results show that antenatal depression, social support factors and stress factors – including global stress level and specific childcare stress level – were all significant association factors and predictors of PPD. Major themes that emerged in reported stress and support related to postpartum adjustment. They included, amongst others, childcare competence, adjustment to the new roles, baby related problems, childcare arrangement, and support and stress from helpers and from health care professionals.

In a subsequent study, Leung et al. (2005) identified correlations between demographic variables and PPD, and psychosocial variables and antenatal depression in Hong Kong Chinese women. One of the major three predictors in this group was childcare stress. Honey, Bennett and Morgan (2003) found that screening tools for PPD that included maternal reports of childcare stress, assisted in considerably increasing the predictive performance of the screening measures.

#### ***2.4.7.18 High stress levels and adverse life events.***

Stress associated with life events such as marriage, family structure, housing, occupation, and geographic mobility, have long since been correlated with PPD (Heitler, O'Hara et al., Paykel, Sosa et al., Telles, as cited in Kruckman and Smith, 2006, section 3, paragraph 3). O'Hara and Swain (1996) examined the relationship between adverse life events and PPD. The findings from their meta-analysis indicate that stressful life events during pregnancy is a significant risk factor for later PPD. Subsequent studies have also identified stressful life events as a significant risk factor in PPD (e.g. Grazioli & Terry, 2000; Robertson et al., 2004; Seguin et al., 1999; Srisaeng, 2004).

Stressful life events were identified as a significant risk factor for PPD in various cultural groups. In a study by Leung et al. (2005) on a sample of Hong Kong Chinese postpartum women, one of the major three predictors of PPD was postnatal perceived stress. Ghubash and Abou-Saleh (1997) studied postpartum psychiatric illness in an Arab culture. They found that women with past psychological problems, previous and ongoing

marital difficulties and other stresses, and who show early postpartum psychological symptoms, are highly vulnerable to PPD.

Kim and Buist (2005) report on lack of social support as a key risk factor in the development of PPD. Their findings reveal that the isolation experienced by Korean immigrants in Australia is likely to be a significant stress for new mothers from a Korean cultural background. Results by Dennis et al. (2004) indicate that immigration within the last 5 years was amongst the factors that predicted depressive symptomatology at one week after delivery. They recommend that recent immigrant status as a risk factor needs further examining.

According to Mason, Rice, and Records (2005), various life experiences, such as physical or sexual abuse, may impact on how a woman subjectively perceives the normal developmental processes of labour, delivery, and postpartum recovery. According to Records and Rice (2002), a woman's experience of labour is significantly affected by a history of abuse and has been shown to contribute to the development of PPD. The participants in these studies related how their prior abuse influenced their thoughts and views of their labour, delivery, and postpartum experiences and felt that their PPD originated from the combined recall of trauma events and the labour and delivery experience. As labour progressed, they developed a cognitive frame of reference in response to their former abuse experiences. In situations like these, the woman's perception of her labour and delivery experience serves as a trigger that kindles a posttraumatic stress response (Seng & Hassinger, 1998). Records and Rice (2002) state that this response placed them at risk for PPD. Mason et al. (2005) state that the perceived context of abuse combined with feeling overwhelmed and a sense of

inadequacy and helplessness, may contribute to the emergence as well as the severity of PPD.

Faisal-Cury, Tedesco, Kahhale, Menezes, and Zugaib (2004) examined PPD and its relationship with life events and patterns for coping. They found no association between PPD and life events. They did, however, find that depressed puerperal women resort to inadequate coping strategies, such as distancing. They indicate that this pattern of coping may be an etiological factor of the PPD as well as a reaction to their difficult life environment.

Knowledge of the risk factors for PPD suggested in this study and in other investigations is important for appropriate assessment by health providers. Ideally, brief questionnaires ought to be used routinely in a variety of settings (e.g., clinic or home) to assess stressors, intimate relationship quality, levels of support, self-esteem, and depressive symptoms as indicators of risk for adverse mental health outcomes. Early identification of mothers with compromised mental health and prompt intervention are essential for the well-being of both mothers and infants.

It is critical that health practitioners recognize the significance of postpartum depressive symptoms and the potential negative ramifications for the mother, her children, and family as a whole. Certain activities that promote mental health in both the antenatal and postpartum periods should be encouraged for positive mental health outcomes. These activities should aim to help reduce chronic stress, boost self-esteem, and strengthen the relationship women have with their partners. Furthermore, continued

investigation into the prevalence and degree of postpartum depressive symptomatology is essential (Affonso et al., 2000).

#### **2.4.8 Consequences of postpartum depression.**

A depressed antenatal or postpartum woman is often plagued with guilt and anxiety. Her appetite and sleep are affected and she may feel that she is not able to care for her baby adequately. PPD robs a mother of the joy of new motherhood. The insidious aspect of postpartum psychiatric illness is that it will – eventually if not immediately – encompass the entire family.

PPD has been associated with poor maternal functional outcomes, such as substance abuse, loss of employment, suicidal behaviour and death by suicide. Adverse effect has also been reported in terms of low self-esteem, marital relationship and partner's mood state. Apart from the usual symptoms of depression, the mother may have obsessive thoughts about harm that could come to her child. She may also have intrusive thoughts concerning hurting herself or her child.

Postpartum depression has been associated with varied aspects of child outcome, even when current adverse circumstances were taken into account. These included the child's physical health, cognitive development, the mother-infant relationship, emotional development and social competence.

The postpartum period is, normally, a time of readjustment in a marriage with renegotiation of roles. A strong supportive marital relationship tends to “survive” the

baby and come out stronger. A couple who experienced problems in their marriage prior to the birth of their baby are, however, at a greater risk of marital breakdown (Roan, 1997). Increased financial pressure, a marital partner feeling left out by the spouse's infatuation with the baby, and especially failure to renegotiate household and parenting responsibility with resulting unequal sharing of tasks are amongst the most likely causes of marital conflict (Roan, 1997; Larsen & O'Hara, 2002).

Studies show that marital stress is a major consequence of PPD (Burke, 2003; Larsen & O'Hara, 2002). Pregnancy and the postpartum period often coincides with the onset or increase in marital discord or domestic violence, all of which can have a deleterious effect on children (Burke, 2003).

Higher rates of depressive disorder have been found in men whose wives or partners have PPD (Bielawska-Batorowicz & Kossakowska-Petrycka, 2006; Burke, 2003; Cox, 2005; Davey, Dziurawiec, & O'Brien-Malone, 2006; Goodman, 2005; Pinheiro et al., 2006; Roberts, Bushnell, Collings, & Purdie, 2006; Schumacher, Zubaran, & White, 2008). Depressed mood in men during the postpartum period was correlated with poor family economic situation, low social support, poor marital relationship and antenatal expectations about what life with an infant would be like (Bielawska-Batorowicz & Kossakowska-Petrycka, 2006).

Some researchers postulate that mental illness in a mother may lead to a more active parenting role of the father in order to buffer the deficit in the mother-infant relationship (e.g. Albertsson-Karlgren, Graff, & Nettelbladt, 2001). Goodman (2005), however, offers evidence that fathers do not provide a buffering effect when a mother is

depressed. Instead, it is suggested that depression in the mother has a negative outcome on father-infant interaction, which may increase possible risk to child development. When a new mother is severely depressed there is a much greater likelihood that her partner will develop depression too, which may have emotional and behavioural implications for the child (Schumacher et al., 2008). In light of the above, a family-focused approach to the assessment and treatment of PPD is needed, which includes the assessment of fathers for mood disorders in the postpartum, especially when their partner is depressed.

Responsive maternal contact as well as a healthy environment is important for the infant's normal and healthy development (Pound, 2006). The postpartum period is, however, a sensitive time due to the presence and demands of the developing infant. The care provided by a mother to her infant during this period may be compromised if she is suffering from postnatal depression or postpartum psychosis. Recent literature has found a link between maternal PPD and decreased parental participation in activities that promote the infant's development (McLearn, Minkovitz, Strobino, Marks, & Hou, 2006). Furthermore, findings from research done in developing countries suggest that poor physical health and malnutrition in infants is related to poor maternal mental health (Rahman, Iqbal, & Harrington, 2003).

Some mothers with PPD have obsessive or intrusive thoughts about harming their babies or themselves (Barr, 2003; Jennings et al., 1999; Kruckman & Smith, 2006). Chandra, Vankatasubramanian and Thomas (2002) report that the presence of depression with psychotic symptoms predicted infanticidal ideas and behaviour, especially where the psychotic ideas were directed towards the infant.

To a large extent mothers establish their infants' social environment and mediate their experiences of the external world. A mother's role is largely to provide a secure base from which a young infant or child can begin to explore the outside world. Compared to nondepressed women, depressed mothers' interactions were found to be impaired, and they expressed behaviour that had a negative impact on their children (Hart, Field, & Nearing, 1998; Weinberg & Tronick, 1998; Wolf, De Andraca, & Lozoff, 2002). Interaction was both less contingent and less affectively attuned to the infant's behaviour (Milgrom & Westley, 2003; Stanley, Murray, & Stein, 2004).

The unresponsive or rejecting care associated with PPD may have an acutely negative impact on young infants who are especially vulnerable during this critical imprinting period, and who are particularly dependent on their caregivers (Campbell & Cohn, 1991). An infant or young child whose needs have been rebuffed or neglected by a depressed and withdrawn mother will be generally less willing and able to interact with the environment (Jacobsen, 1999; Leiferman, 2002).

Depression in mothers was first in the list entitled, "Most significant mental health issues impeding children's readiness for school" set out by the Mental Health Policy Panel for the Department of Health Services in 2002 (as cited in Bennett and Indman, 2003, Consequences of untreated mood disorders, para. 1). Disruption in the early mother-infant interaction has a significant impact in later cognitive and behavioural problems in children of depressed mothers (Beck, 1995; Cornish et al., 2005; Grace, Evindar, & Stewart, 2003; Kurstjens & Wolke, 2001; Milgrom & Westley, 2003; Pound, 2006). Galler et al. (2004) confirmed these findings even when background variables such as less maternal education, young maternal age at the time of her first pregnancy,

fewer home conveniences and more children in the home were controlled for. Murray (2001) found that depression had no long-lasting damaging effects on the child's cognitive development where the child was in a non-deprived family environment. Murray (2001) reports good environmental circumstances may help buffer any negative impact.

The first few months postpartum are a highly sensitive period for the development of a relationship between the mother and her infant. There is a significant risk of insecure attachment by the infant if the mother has experienced depression during this time (Moehler, Brunner, Wiebel, Reck, & Resch, 2006; Murray, 2001). Bonding disorders in the mother-infant interaction include irritability, aggressive and hostile impulses, lack of maternal emotion, pathological thoughts, and outright rejection. Impaired bonding is not uncommon in mothers who are referred for psychiatric help, and is present in 29% of mothers diagnosed with PPD (Brockington et al., 2001). Sagami, Kayama and Senoo (2004) found that aggressive parenting behaviour was strongly related to PPD. In severe instances, it can lead to child abuse or neglect.

Maternal depressive symptoms were also found to be related to low social competence and low adaptive functioning in children (Luoma et al., 2001; Murray, Sinclair, Cooper, Ducournau, & Turner, 1999; Zapata, 2005). Milgrom and Westley (2003) and Josefsson (2003) report increased temperamental and behavioural difficulties in children of depressed mothers. Kestler (2006) confirmed these findings and found evidence that maternal depression is related to infant stress regulation with greater increases in cortisol level. Murray (2001) found a correlation between behavioural problems and PPD even when parental conflict and a recent depressive episode in the

mother were considered. Beck (1998b) reported a small yet significant effect on children's emotional and cognitive development, which appeared to weaken as the infants grew older.

The particular circumstance in which adverse effects are related to depression has been explored. Factors such as the nature, duration and severity of depression as well as the context in which it occurs with respect to other risk and protective factors (e.g., socio-economic status) have been suggested as moderators of the effects of PPD on infant outcomes (Brennan et al., 2000; Essex, Klein, Miech, & Smider, 2001; Murray, Fiori-Cowley, Hooper, & Cooper, 1996). Murray (2001) points out that depression occurring during the early months resulted in a higher rate of significant delays in mental development. Grace et al. (2003) assert that chronic or recurrent maternal depression, rather than solely PPD, are probably related to child outcomes. Kurstjens and Wolke (2001) also found significant interactions where maternal depression was major and had early-onset with repeated episodes. Zapata (2005), who examined the association between maternal depression during the first three years postpartum and child social competence and problem behaviours at first grade level, found that exposure to non-maternal care by 24 months buffered the negative impact of chronic depression.

Puckering (2005) points out that children of depressed mothers have needs which are often overlooked by mental health services and recommends that steps be taken to protect the development of these children. Children of mothers with long-term or chronic depression should be observed for learning and behaviour problems, as well as affective disorders, especially children who come from a deprived family environment who have only had maternal care.

## **2.5 Conclusion**

This chapter provided an overview of perinatal mood disorders with a more detailed description of PPD in particular. The symptoms, prevalence and clinical course of PPD were discussed and perspectives on the etiology of PPD were addressed. Risk factors for PPD were discussed at length as this study examined the presence of these factors in this South African sample. Early detection and treatment of PPD is crucial considering that numerous women are affected by perinatal mood disorders and suffer from its negative impact on themselves as mothers, their infants and their families. The following chapter provides an overview of screening measures used to screen for PPD with particular focus on the Postpartum Depression Screening Scale.