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Relationship between Discontinuation of Anti-depressant Medication During Pregnancy and Development of Postpartum Depression

Maria Palombo Murphy
Philadelphia College of Osteopathic Medicine, mpmurphy225@aol.com

Philadelphia College of Osteopathic Medicine

Department of Psychology

RELATIONSHIP BETWEEN DISCONTINUATION OF ANTI-DEPRESSANT MEDICATION DURING PREGNANCY AND DEVELOPMENT OF SYMPTOMS OF POSTPARTUM DEPRESSION

By Maria Palombo Murphy

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DEPARTMENT OF PSYCHOLOGY

Dissertation Approval

This is to certify that the thesis presented to us by Maria Murphy

on the 30th day of March, 2006 in partial fulfillment of the requirements for the degree of Doctor of Psychology, has been examined and is acceptable in both scholarship and literary quality.

Committee Members' Signatures:

Barbara Golden, Psy.D., ABPP, Chairperson

Stephanie Felgoise, Ph.D., ABPP

John Mira, M.D.

Robert A. DiTomasso, Ph.D., ABPP, Chair, Department of Psychology

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Abstract

Postpartum depression (PPD) is a serious and potentially debilitating disorder that frequently goes undetected due to stigma and a lack of understanding about its course and etiology. The factor of particular interest to this study concerns the relationship between discontinuation of anti-depressant medication in pregnancy and the development of PPD. The study examined how the variables of pregnancy mood, child care stress, emotional support, instrumental support, marital satisfaction, history of depression, baby temperament, birth experience, and medication status affect symptoms of postpartum depression (PPD) in a sample of 202 patients at the six-week postpartum check-up. In addition to a demographic and mood questionnaire, the Postpartum Depression Screening Scale (PDSS) was used to measure symptoms of postpartum depression. Prenatal depression, child care stress, history of depression, baby temperament, and birth experience correlated significantly with PPD. Significant inverse correlations were found between PPD and emotional support, instrumental support, marital satisfaction, and medication status. Hierarchical multiple regression indicated that pregnancy mood, child care stress, emotional support, and marital satisfaction predicted a significant amount of the variance in postpartum depression scores.

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Chapter 1

Introduction

Postpartum Depression (PPD), also know as postnatal depression, is a serious and often under-reported disorder which affects a significant number of women in this country and around the world. The National Mental Health Association ([NMHA], 2003) estimates that PPD occurs in roughly 10 to 20 percent of new mothers. Beck (2002) conceptualized PPD as "a thief that robs mothers of the love and happiness they expected to feel toward their newborn babies" (p.453). PPD can also be conceptualized on a continuum ranging from the mild and often spontaneously remitting symptoms of the blues to the most severe symptom profile associated with a postpartum psychosis. The current study focuses primarily on the middle range symptom picture which is analogous to a major depressive disorder. One of the most salient risk factors associated with an onset of PPD is a history of a depression; approximately 12 million women in the United States experience a clinical depression each year, most frequently during the childbearing years (ages 25-44) (National Institute of Mental Health [NIMH], 1999). Women experience depression at a rate that is two times higher than men (NMHA, 2003).

Psychotherapy continues to be an effective treatment for depression, either as a substitute for or in conjunction with medication. With the proliferation of managed care plans, many individuals must first consult their primary care doctors with symptoms of depression. The past two decades have also seen a boom in newer anti-depressant medications like selective serotonin reuptake inhibitors (SSRIs), which have more favorable side effect profiles and lower toxicity associated with overdose (Richelson, 1994) in comparison to older anti-depressants. The combination of managed care and

medication proliferation seems to have resulted in a trend whereby anti-depressant medication is becoming standard treatment for depression. SSRIs relieve symptoms by blocking the reuptake of serotonin and increasing the amount available for transmission through the brain. SSRI medications include citalopram (Celexa), Escitalopram oxalate (Lexapro), Fluoxetine (Prozac, Prozac Weekly, Sarafem), Fluvoxamine (Luvox), Paroxetine (Paxil), and Sertraline (Zoloft). Mixed reuptake inhibitors, also known as serotonin and norepinephrine reuptake inhibitors (SNRIs), inhibit the reabsorption both of serotonin and norepinephrine. Medications in this category include Venlafaxine (Effexor) and Cymbalta (duloxetine). Other atypical anti-depressants include bupoprion (Wellbutrin), nefazodone (Serzone), and mirtazepine (Remeron); the latter of these is the only anti-depressant in the category known as receptor blockers (Mayo Clinic staff, 2002).

Treatment with anti-depressants has expanded to include other disorders, such as minor depression, dysthymia, premenstrual dysphoric disorder, and some eating disorders which frequently have a higher prevalence among women. The growth and expansion of the anti-depressant market has increased the availability of these medications to treat a variety of symptoms. SSRIs and SNRIs were ranked third and fourth in the leading product categories in 2000 and 1999, respectively, according to prescriptions dispensed (Latner, 2000 and Latner, 2001). In 2001, the drug Zoloft, an SSRI, ranked seventh for total number of prescriptions dispensed in 2001 (Pharmacy Times, 2002). In 2002, two SSRIs, Zoloft and Paxil, were included in the top 20 list for total scripts dispensed, and SSRIs and SNRIs showed a 16% increase in unit sales over the previous year (Vaczek, 2003). In a study of national patterns for treatment of depression, Stafford, MacDonald,

and Finkelstein (2001) estimate that between 1987 and 2001, the number of physician visits by patients with depression increased from 14.4 to 24.5 million and the rate of anti-depressant medication treatment increased from 70 to 89%.

Anti-depressants, therefore, represent a significant portion of the prescription drug market, becoming standard fare in the treatment of depression and contributing to a changing conceptualization and understanding of depression. Metzl and Angel (2003) found that the portrayal of depression in the popular press has expanded popular notions to include treatment for sub-threshold manifestations of the disorder. According to this study, the popular press often conceptualizes a woman's need for anti-depressant treatment based on problems with marriage, motherhood, or menstruation rather than on DSM symptom terminology, therefore expanding the range of problems considered treatable and pathologizing those that were previously construed as normal problems in womanhood (Metzl & Angel, 2003). This re-conceptualization of depression by the popular press, combined with the expanded marketing and advertising of newer pharmaceuticals has shifted the anti-depressant paradigm to include treatment for constellations of symptoms which may not meet the threshold for a psychiatric disorder. Indeed, prescribing trends for women seem to substantiate this altered notion of what constitutes depression. Burt and Bernstein (2003) found that anti-depressants represent the most frequently prescribed medications to women during visits to physician offices and hospital outpatient departments. The overall increase (13%) in medications prescribed to treat chronic illness, despite an absence of increased health care utilization has been attributed to patient demand, prescribing practices of physicians , and the availability of better medications (Burt & Bernstein, 2003).

To recap, changing trends about what constitutes symptomatic and treatable depression for women, combined with the availability and influential presence of new anti-depressant medications are associated with an increase in the prevalence of child-bearing-age women being treated with these medications. Women taking anti-depressant medications face a great dilemma concerning whether or not to continue pharmacologic treatment during pregnancy. Women faced with this decision may present to clinicians in one of three categories: those who are planning a pregnancy but require maintenance therapy for chronic and and/or recurrent depression; those who conceive while taking an anti-depressant; and those who develop depression during pregnancy (Young, Campbell, & Harper, 2002). Women seeking consultation for this dilemma present a difficult challenge for clinicians because the Food and Drug Administration (FDA) has not yet approved any psychotropic drugs for use during pregnancy (Nonacs & Cohen, 2002). Even though limited studies indicate that some medications may be used safely during pregnancy, many women choose to discontinue anti-depressants to avoid any risks that may be associated with fetal and/or child development. For liability reasons and/or based on limited knowledge about the risks associated with depression during pregnancy and the postpartum period, some clinicians recommend that women discontinue these medications for the duration of the pregnancy. However, untreated prenatal depression presents its own set of risks, which can include poorer pregnancy and infant outcomes (Oberlander & DePietro, 2003) as well as a difficult adjustment to the vulnerable period after labor and delivery.

An awareness of the biopsychosocial aspects of PPD has significant implications for clinical psychologists working in behavioral medicine and more traditional clinical

settings. Clinicians working with psychotherapy clients who are either pregnant or contemplating pregnancy and facing the medication cessation dilemma can assist these clients in performing a risk-benefit analysis to aid them in their decision-making. Clinicians in this type of setting can also assess, either formally or informally, a client's risk for developing PPD and offer an intervention which will help the client plan for any problems she may experience in the postpartum period. In other words, clients who decide to discontinue anti-depressant medication during pregnancy need to be assessed for symptoms throughout pregnancy and provided supportive psychotherapy as well as psychoeducation about the potential stressors associated with postpartum adjustment. The efficacy of combining psychotherapy and medication to treat certain types of depression has been increasingly supported in the research (Friedman, 2004; Otto et al., 2005). However, clinicians should consider the use of cognitive behavioral therapy (CBT) as an effective alternative for women who opt against taking medication. Literature has supported the efficacy of CBT in the treatment of depression. Wagner's (2005) meta-analysis revealed that both SSRIs and CBT proved effective treatments for depression and were superior to placebos. In a six year follow-up study of individuals for whom anti-depressants were tapered and discontinued, Fava et al. (2004) found that CBT treatment resulted in a significantly lower relapse rate than clinical management alone.

Clinical psychologists working in behavioral medicine settings will benefit from an awareness of risk factors for PPD and be better-equipped to assess obstetrical inpatients referred for depression consultations. Furthermore, they can provide training and education to medical staff about the risk factors and symptoms of post-partum depression. They can also be proactive in the prevention of PPD by increasing the

knowledge and awareness of pregnant women and their families about the realities of postpartum adjustment and the risks of developing PPD. Ideally this can be accomplished by augmenting childbirth classes typically offered to pregnant women and their partners. Behavioral medicine clinicians working in or affiliated with outpatient obstetrical-gynecological practices have a plethora of opportunities for prevention and intervention. For example, they can screen pregnant women to determine their level of risk for developing PPD and postpartum women for actual symptoms of PPD. Clinicians can interview women who screen positively for PPD to determine if a PPD diagnosis and further psychological treatment is warranted.

To summarize, there are several ways that clinicians working in traditional psychotherapy and behavioral medicine settings can intervene to assist clients with PPD or PPD risk factors. However, current practices related to prevention and intervention of PPD fall short of what is necessary to identify and treat at-risk pregnant women and women who have become symptomatic in the postpartum. As a result, opportunities abound for clinicians to screen and treat women and their families either to avert or to cope with the potentially debilitating effects of a disorder which can deprive women of experiencing the joys of parenthood and wreak emotional havoc on their families.

Symptoms of Postpartum Depression

Falling between the milder symptoms associated with the blues and the most severe manifestation of symptoms found in postpartum psychosis, non-psychotic PPD represents the middle range which affects between 10-20% of women (LLewlyyn, Stowe, & Nemeroff, 1997). Even though the DSM-IV defines a postpartum onset of an episode of depression as occurring within four weeks after delivery, onset varies and may even

develop late in pregnancy. Typically, symptoms appear between six and eight weeks postpartum (Nunacs & Cohen, 1998). Chaudron (2003) postulates that almost 50% of PPD cases represent continuations of depressive episodes that began either before or during pregnancy, estimating that only 15% of PPD episodes represent a woman's first episode of depression. Symptoms of PPD usually mimic those for major depression and can include depressed mood, anhedonia, significant weight change, low energy, fatigue, insomnia or hypersomnia, poor concentration, suicidal ideation, anxiety, and/or obsessionality. Although suicide seems to be less common in PPD, guilt and agitation seem to appear with greater frequency (Hendrick, Altshuler, & Suri, 1998).

Detecting PPD can be complicated by the overlap of depressive symptoms with the changes in sleep, appetite, weight, libido, fatigue, and worry that frequently characterize normal post-partum adjustment (Llewellyn et al., 1997). Although PPD is frequently indistinguishable from non-postpartum depression, the research on its presentation is mixed. For instance, Whiffen and Gotlib (1993) found that non-psychotic PPD tends to be milder in severity and that 70% of women with this type of PPD met only the diagnostic criteria for a minor depression. In contrast, Hendrick, Altshuler, Strouse, and Grosser (2000) found that women with PPD were significantly more likely to present with anxious features and a more severe symptom profile that took longer to respond to pharmacotherapy than those with major depression unrelated to childbirth . Expert opinions differ about whether or not PPD has a unique constellation of symptoms, and it is likely that the presentation depends on the particular factor profile unique to each woman.

Despite the incidence data on PPD, experts estimate that approximately 50% of women do not seek treatment for their symptoms even though they have the opportunity for at least one contact with their obstetricians at the postpartum follow-up visit and for frequent contacts with their children's pediatricians during well- and sick-baby visits (Chaudron, 2003; Lane et al., 1997). Medical professionals who do not screen women for depression may be inadequately trained to recognize the difference between normal adjustment and clinically significant symptoms of depression. Further, cognitive distortions suggesting that this should be a happy and fulfilling time can cause feelings of shame and guilt and make it difficult for women to acknowledge their distress.

Course and etiology of PPD

As stated above, identification of PPD proves difficult for afflicted patients as well as physicians. Women may erroneously attribute the insidious onset of symptoms to normal adjustment and therefore minimize self-reports of distress. The two most predominant perspectives which elucidate the etiology and course of PPD and have contributed to the most influential research on the topic include the feminist and medical models. The feminist model explains the manifestation of PPD on the basis of psychosocial factors, and the medical model offers a biological explanation of the disorder. Research from both models informs the current study in order to enrich awareness of the powerful and wide-ranging biopsychosocial factors that can influence a woman's experience.

The feminist model. Feminist theory postulates that women become disillusioned by the incongruity between the realities of motherhood and the myth that motherhood is a universally fulfilling experience for all women (Beck, 2002; Lewis & Nicolson, 1998). A

substantial amount of research underlying feminist theory comes from qualitative studies which use inductive analyses to identify constructs that are based on women's accounts of their own experiences with symptoms of PPD. One such study by Lewis and Nicolson (1998) found that women conceptualize the onset of motherhood as a series of losses which they frequently attribute to their own individual pathology, based on the pressures induced by the stigma that motherhood should be a joyous time in a woman's life. These theorists postulate that society needs to de-mystify the experience of motherhood and conceptualize it in more realistic terms which include both the negative as well as the positive elements (Lewis & Nicolson, 1998). Viewing PPD from a grief perspective, feminist research suggests that women must first adjust their expectations and acknowledge any losses associated with motherhood before they can change their perspectives and evolve to the healing and reconstruction phases (Beck, 2002). Maunther (1998) postulates that the manner in which women resolve the conflict between societal expectations and the realities of motherhood determines whether or not they will become depressed in the postpartum. In other words, women whose expectations of motherhood exceed their subjective experience will likely become distressed if they cannot adjust unattainable standards to be more congruent with their own realities.

Another aspect of this model focuses on the lack of social support available to women in modern-day Western societies, specifically the relationship between the absence of postpartum rituals and the prevalence of PPD. Rooted in the traditions of many non-Western societies, these rituals provide mutual support to women during times of emotional and physical vulnerability (Wile & Arechiga, 1999) and frequently include a period of rest and confinement for the mother, practical and emotional support from other

women, and social recognition for the mother's new status (Mauthner, 1998). For example, the Latino practice of "the quarantine" frequently includes 40 days of rest for the new mother, assistance with household chores from relatives, and abstention from certain foods (Wile & Arechiga, 1999). Based on the African proverb "it takes an entire village to raise a child" (p. 93), the postpartum practices of many African cultures include participation and support from biological relatives and non-relatives alike, (Wile & Arechiga, 1999).

Over the years, industrialization and ethnic blending in Western societies has diminished the prevalence of many of these cultural traditions and promoted social isolation and independent functioning. Research has demonstrated the relationship between perceived social support and lower levels of depression in the postpartum period. Collins, Dunkel-Schetter, Lobel, and Scrimshaw (1993) found that low-income pregnant women who reported greater levels of support experienced quicker labor, higher Apgar scores for their babies, and less post-partum depression. Another factor related to diminished support for American mothers concerns the marked difference between pregnancy and the postpartum in terms of the amount of attention women receive. Pregnancy frequently includes baby showers, regular health check-ups, child-birth and various pregnancy-related classes, and a plethora of written materials; yet, after the birth, the focus shifts almost exclusively to the baby (Wile & Arechiga, 1999) while simultaneously neglecting the needs of the new mother.

Medical model. Compared to the feminist model, the medical model views PPD as a pathological condition based on physiological and biological factors to the exclusion of social, political and economic factors (Beck, 2002). Indeed, the postpartum period is

characterized by many physiological changes. Progesterone and estrogen levels increase dramatically during pregnancy yet drop 200-fold, reaching pre-pregnancy levels between three and seven days postpartum (Hendrick & Altshuler, 1999). Other changes include a decrease in prolactin levels in non-breast-feeding women, thyroid dysfunction which contributes to an increased rate of postpartum thyroiditis, and a decrease in the body's production of naturally occurring pain analgesics known as B-Endorphins (Hendrick & Altshuler, 1999). Furthermore, some research has shown that estrogen and progesterone influence neurotransmitter function and that the precipitous drop in postpartum levels of these hormones may lower the levels of some neurotransmitters, such as serotonin and its precursor, trytophan, resulting in depression (Hendrick & Altshuler, 1999).

In addition to these hormonal changes, symptoms experienced by new mothers may include fatigue, hunger, chills and/or fever resulting from a hard labor, and pain from a variety of sources including the surgical site (from a Caesarean section), post-birth contractions, perineal bruises, tears, stitches, hemorrhoids, and tender breasts (Dunnewold, 1997). Recovery from childbirth, whether for vaginal or caesarean deliveries, is analogous to surgical recovery and can be a painful and physically uncomfortable experience for many women (Dunnewold, 1997).

Risk factors

The reality for most women most likely represents a hybrid of the feminist and medical models. Most women are exposed to multiple sets of internal and environmental factors which potentially increase their risk of, or protection from PPD, underscoring the importance of conceptualizing this disorder from a biopsychosocial perspective. In other words, a combination of biological/physiological, psychological/emotional, and

social/economic factors affects women's adjustment to the postpartum and represents a blend of risk and/or protective factors which influence outcomes. Exposure to multiple risk factors increases the probability that a woman will develop PPD even though these factors may be unrelated to the actual cause of the disorder (Beck, 2002) and may serve only to predispose women to the risk.

Through a meta-analysis of 84 studies published in the 1990's, Beck (2001) identified 13 significant risk factors for PPD. Ten of these factors had moderate effect sizes and include, in descending order, prenatal depression, self-esteem, childcare stress, prenatal anxiety, life stress, social support, marital relationship, history of depression, infant temperament, and maternity blues. The final three factors, marital status, socioeconomic status, and unplanned/unwanted pregnancy, had small effect sizes (Beck, 2001). Because ten of these factors can be identified in pregnancy and are not limited to the postpartum period, Beck has developed a revised version of the Postpartum Depression Predictors Inventory (PDPI-R) designed to be administered in an interview format to pregnant women to ascertain their risk of developing a postpartum depression (Beck, 2002).

Because an analysis of the large number of variables which have been correlated with PPD is difficult and unwieldy, the current study focused on the variables considered most salient, based on additional research. For example, research has consistently correlated depressed mood during pregnancy with PPD (Gotlib, Whiffen, Wallace & Mount, 1991; Honey, Bennett, & Morgan, 2003; O'Hara, Rehm, & Campbell, 1982; O'Hara, Schlechte, Lewis, & Varner, 1991); Righetti-Veltema, Conne-Perreard, Bousquet, & Manzano, 1998). Gross, Wells, Radigan-Garcia, and Dietz (2002) analyzed

data on recent mothers (N=14,609) from the Center for Disease Control and Prevention (CDC) Pregnancy Risk Assessment Monitoring System (PRAMS) and found that 5.9% of new mothers reported being depressed in the months after delivery. A more in-depth analysis revealed that women who reported that pregnancy was a "very hard time" or "one of the worst times of my life" were 4.6 times more likely to report symptoms of PPD (Gross et al., 2002). Unfortunately, this particular study did not glean more specific data from these women about the factors that contributed to their difficulties during pregnancy. One can only speculate that the problems were related to physical and/or emotional pain or distress, with the presumption that a portion of these women experienced either a continuation or a resurgence of depressive symptoms. Another study by Verkerk, Pop, Van Son and Van Heck (2002) found that a significant number of women identified as being at high risk for PPD, based on either a personal or family history of depression or depressive symptoms during pregnancy, were depressed at three months postpartum compared to their low-risk counterparts, substantiating the link between depressive history and PPD.

The variables social support and marital satisfaction have also been well-studied in the literature. Gotlib et al. (1991) assessed women (N=730) at one month postpartum and found that women identified as having PPD reported significantly lower levels of marital satisfaction. O'Hara, Rehm, and Campbell (1983) found that depressed subjects (N=11) reported having more frequent marital problems and receiving less instrumental (help with household chores and child care) and emotional support from their social network than did a group of non-depressed controls (N=19). Hock, Schirtzinger, Lutz, and Widaman (1995) found that maternal marital satisfaction declined between the pre-

and post-natal period and was significantly correlated with maternal depression at 9 months postpartum. Bernazzani, Saucier, David, and Borgeat (1997) found that satisfaction regarding social support and difficult interpersonal relationships had an indirect effect on PPD through higher levels of depression in the prenatal period.

Correlations between infant stress, which refers to infant temperament, infant health problems, and/or premature birth, and PPD have also been noted in the research. Davis, Edwards, Mohay, and Wollin (2003) found that 40% of mothers of very preterm infants reported significant symptoms of depression spawned by high maternal stress. O'Brien, Asay, and McCluskey-Fawcett (1999) found that almost half of the women (N=45) who had delivered prematurely experienced symptoms of depression up to six weeks after the baby was discharged from the hospital. In a comparison of depressed (N=25) and non-depressed women (N=24), Hopkins, Campbell, and Marcus (1987) found a significant correlation between infant-related stressors (neonatal complications and infant temperament) and symptoms of PPD. Other research has also found a positive correlation between PPD and mothers' perceptions of their infants being temperamentally difficult (Costa, Larouche, Dritsa, & Brender, 2000; Edhbor, Seimyr, Lundh, & Widstrom, 2000; Wood, Hargreaves, & Marks, 2004). Sutter-Dallay, Murray, Glatigny-Dallay, and Verdoux (2003) found that behavioral characteristics of three day old infants (N=468) predicted the occurrence of maternal depression at six weeks postpartum, independent of other risk factors. By using an objective measure of neonate behavior, Sutter-Dallay et al. (2003) were able to find a direct relationship between infants who demonstrated poorer orientation (defined as the ability to attend to visual and auditory stimuli and quality of overall alertness) and maternal development of PPD, suggesting

that mothers experience higher rates of depression when they have difficulty interacting with their less alert infants.

Another variable, a difficult birth experience includes reports of birth difficulty due to pain, medical complications, and/or personal/emotional complications that frequently occur after delivery by caesarean section. Boyce and Todd (1992) found that women who had a caesarean section (emergency or non-emergency) had significantly higher scores on a measure of depression than women who had either forceps or spontaneous vaginal deliveries. Edwards, Porter, and Stein (1994) also substantiated the findings of Boyce and Todd (1992) but also found a significantly higher rate of PPD among caesarean subjects who had general but not localized (epidural) anesthesia. Koo, Lynch, and Cooper (2003) found that women (N=55) who had an emergency caesarean had approximately twice the risk of developing PPD than women (N=191) who had a non-emergency delivery, suggesting that the salient factor has to do with the unanticipated nature of the emergency rather than the surgery itself.

The relationship between PPD and the variable, child care stress, defined as the stress a woman identifies in connection with her ability to care for her baby, has also been reported in the literature. As previously reported, Beck's (2001) meta-analysis found a moderate correlation between childcare stress and PPD. Honey et al. (2003) assessed depression and childcare stress in women (N=223) at six weeks postpartum and found that participants who reported a high frequency of childcare stress were 16 times more likely to have PPD compared to women who reported a low frequency of childcare stress. Examples of childcare stress include difficulties quieting a baby's cries and problems feeding the baby (Honey et al., 2003). Leung (2002) also found that childcare

stress was significantly predictive of PPD, suggesting that the problems women encounter while caring for their newborns are associated with significant emotional distress and subsequent symptoms of depression.

Assessment of PPD

Timing of assessment. Based on previous research revealing women's reluctance to report symptoms of PPD to their physicians, a formal assessment of all postpartum women seems to offer the greatest opportunity for identification and subsequent referral. Two localities which seem logical as places to administer screening include the offices of obstetricians (ob/gyns), gynecologists, and pediatricians. Even though symptoms can develop anytime during the first year after pregnancy, the postpartum checkup provides ob/gyns with a critical opportunity to conduct formal screening. Dietrich et al. (2003) conducted a study to address concerns about the capacity of ob/gyns to assess women for depression. In the study, physicians reported higher levels of confidence discussing psychiatric symptoms with patients, particularly in the postpartum, suggesting that there have been improvements in the didactic mental health training received by ob/gyns (Dietrich et al., 2003). The results of the random survey of 1,000 ob/gyns assert that the current training improvements hold promise for women, but these results also identify a need for additional training in the areas related to anti-depressant agents and assessment of multiple risk factors (Dietrich et al., 2003). Corroborating the need to augment physician training in behavioral health, a study of residents in North Carolina discovered that an insufficient number of pregnant and postpartum women are actually being screened for depression (Stevens & Diehl, 2003).

Barring any complications, women do not see their ob/gyns except for the one time postpartum visit. Therefore, women who are still asymptomatic or who have poor insight or awareness during this time period may risk avoiding detection. On the basis of this potentially lost window of identification, Chaudron (2003) asserts that pediatricians have a unique opportunity to assess PPD on the basis of their contacts with mothers during routine well-baby check-ups and any additional sick visits. In a subsequent study, Chaudron, Szilagyi, Kotzman, Wadkins, and Conwell (2004) found a significant increase in the detection of symptomatic women after implementing universal depression screening during first year well-baby visits. Mandl, Alpert, and Homer (1998) found that women whose infants have frequent outpatient sick visits to their primary care physicians are more likely to exhibit symptoms of depression, suggesting a link between PPD and excessive worry over the health of one's infant. A nationwide random sample revealed that most pediatricians had a general lack of knowledge regarding PPD and an unfamiliarity with screening tools, suggesting the need for education and training prior to implementing any type of assessment in the pediatric environment (Wiley, Burke, Gill, & Law, 2004).

Women's difficulties acknowledging symptoms of PPD, however, can potentially hamper screening efforts, as evidenced by Tam, Newton, Dern, and Parry (2002) in their efforts to screen women for PPD during well-baby visits in the first postpartum year. Of 160 study packets distributed to women at their first well baby visit, only seven women agreed to participate. The authors attributed this low participation rate to women's difficulties acknowledging symptoms of PPD due to fears of being stigmatized (Tam et

al., 2002) thus corroborating the need for increased awareness and acceptance of this disorder.

Assessment instruments. Formal assessment measures include the recently published Postpartum Depression Screening Scale (PDSS), as well as the Edinburgh Postnatal Depression Scale (EPDS), the Postpartum Depression Checklist, the Postpartum Adjustment Questionnaire, the Bromley Postnatal Depression Scale, and the Schedule for Affective Disorders and Schizophrenia Pregnancy and Postpartum Guidelines (Dunnewold, 1997). Until the development of the PDSS, the EPDS, a brief 10-item scale with excellent sensitivity and specificity, has been widely used in the assessment of PPD (Dunnewold, 1997). Research indicates that the EPDS is an effective adjunct to the clinical interview for the diagnosis of PPD (Evins, Theorfrastous & Galvin, 2000; Lee, Yip, Chiu, & Chung, 2000). Peindl, Wisner, and Hanusa (2003) found the EPDS to be an effective screening instrument for high risk women with a history of PPD. However, a systematic search of all published validation studies of the EPDS between 1987 and 2000 revealed that application of the EPDS to the general population tends to result in a substantial proportion of cases identified as false positives (Eberhard-Gran, Eskild, Tams, Opjordsmoen & Sven, 2001).

The newly designed PDSS has been strongly correlated both with the EPDS and the Beck Depression Inventory-II (BDI-II) (Beck & Gable, 2001). In a comparative study of the PDSS both with the EPDS and the BDI-II, Beck and Gable (2001) found that the PDSS showed a higher combination of sensitivity and specificity when detecting women either with major or minor postpartum depression. The PDSS identified 94% of 18 women identified with major PPD, compared to 78% and 56% identified by the EPDS

and the BDI-II, respectively. Unlike the EPDS, the PDSS includes items written in the context of new motherhood (Beck & Gable, 2001) and is based on 11 themes gleaned from Beck's qualitative research on PPD (Beck & Gable, 2003). By contrast, the EPDS falls short in its exclusion of most of these themes (Beck, 1992).

Treatment

Although experts in the field concur about the treatment modality for severe symptoms of PPD, there is less consensus regarding mild to moderate presentations of the disorder (Altshuler et al., 2001). The fact that Boath and Henshaw (2001) conducted a comprehensive literature review of treatments for PPD and identified only 30 articles suggests that there is a dearth of treatment research. Based on the fact that anti-depressants have not been proven to be completely risk-free during pregnancy and breastfeeding, Boath and Henshaw (2001) suggest that research should concentrate on effective psychological instead of pharmacological interventions (Boath & Henshaw, 2001). Findings from this study showed the majority of psychological interventions were superior to routine primary care in treating PPD but failed to uncover which treatments were superior to others in terms of efficacy (Boath & Henshaw, 2001).

Anti-depressant medication. Medication seems to be most effective for vegetative and more functionally impairing symptoms such as sleep and appetite changes, psychomotor agitation or retardation, and poor concentration (Jermain, 1992). Some research suggests that PPD is more refractory to treatment than non-postpartum depression. Based on a review of records of 26 women with PPD and 25 women with major depression, Hendrick et al. (2000) found that women who sought treatment for

PPD presented with more severe symptoms, took longer to respond to pharmacotherapy, and frequently required two or more anti-depressant agents to elicit a treatment response.

Research on the administration of anti-depressant agents prophylactically in the immediate postpartum period has provided mixed results. For example, Wisner et al. (2001) randomly assigned non-depressed women with a history of PPD to treatment with either nortriptyline or placebo immediately after giving birth and found no significant differences in PPD outcomes, concluding that preventive treatment with an anti-depressant did not protect women from becoming symptomatic. In contrast, an earlier study by Wisner and Wheeler (1994) found that non-depressed patients with a history of PPD who took anti-depressant medication within 24 hours after delivery had significantly lower rates of relapse than those who deferred medication. In contrast with the more recent study, the women in the earlier study were treated either with nortriptyline or the medication deemed effective for a previous episode of PPD which may explain, in part, the differential findings. On the basis of research in this area, Wisner, Parry, and Pintek (2002) continue to assert that post-delivery prophylactic treatment with SSRIs or agents to which there was a previously favorable response should still be considered; this is based on the statistic that women with a history of one PPD episode risk a 25% rate of recurrence. Wisner, Perel, Peindl, and Hanusa (2004) found that sertraline afforded a better protection than a placebo against a recurrence of PPD in postpartum women with a history of PPD who, however, were not treated for depression in the current pregnancy.

Therapy. Options for treating PPD include individual, group, and marital/family therapy. Of 120 postpartum women who met DSM-IV criteria for major depression, O'Hara (2000) found that women who were treated with interpersonal psychotherapy had

a significantly greater reduction in scores than did wait–list controls, both on the Beck Depression Inventory and the Hamilton Rating Scale for Depression. An earlier study by Holden, Sagovsky, and Cox (1989) found nondirective counseling, cognitive-behavioral therapy, and psychodynamic therapy were more effective than routine primary care in reducing symptoms of PPD. In her book designed to be a guide for practitioners, Dunnewold (1997) purports that treatment for the depressed mother should focus on physical and emotional self-care, social support, and structure to ensure that the mother understands the positive correlation between her own health and well-being and her ability to be an effective care-giver and form an emotional bond with her baby.

Several studies have demonstrated the effectiveness of multiple sessions of CBT, used alone or in combination with other treatments, in the treatment of PPD (Appleby, Warner, Whitton, & Farragher, 1997; Chabrol et al., 2002; Cooper, Murray, Wilson, & Romaniuk, 2003; Honey, Bennett, & Morgan, 2002; Prendergast & Austin, 2001). Based on a sample of 35 women diagnosed with PPD with comorbid anxiety, Misri, Reebye, Corral, and Millis (2004) found that CBT combined with antidepressants was equally as effective as antidepressant monotherapy for acute symptoms. Although studies like these suggest that CBT has not proven superior to other treatments for PPD (such as medication and interpersonal therapy), particularly in the acute phase of the disorder, it has some tenets which can be very helpful to depressed women in the postpartum. CBT strategies such as relaxation training and cognitive restructuring can be used to help reduce symptoms of anxiety, and sleep hygiene strategies can help women whose anxiety and coping self-efficacy is exacerbated by sleep-deprivation (Dunnewold, 1997). Furthermore, CBT can help depressed women modify distortions and erroneous beliefs

about motherhood and enable them to set more realistic expectations of themselves and others.

In terms of group therapy, treatment can include process groups led by trained therapists, support groups facilitated by peers, or didactic/educational groups which focus on specific topics (Dunnewold, 1997). Clark, Tluczek and Wenzel (2003) found that scant research exists on efficacious group treatments for postpartum depression; based on this finding, the authors sequentially assigned women identified with PPD either to a relationship-focused mother-infant therapy group or to a wait-list control group. The authors compared outcomes to a third group of women treated with individual interpersonal therapy (IPT) sessions which were unique, based on the frequent inclusion of infants and the strong focus on parenting and relational issues. Results revealed that the women in the mother-infant and IPT interventions reported significantly fewer symptoms on a post-treatment measure than did women in the wait-list condition. The findings of the study support a treatment approach which targets the quality of the mother-infant bond, family functioning, and the socio-emotional development of the child, in addition to the mother's symptoms of depression. As the study indicates, this can be accomplished either formally using the structure of the mother-infant group or informally with individual IPT sessions which include relational components (Clark et al., 2003).

Two recent studies regarding patient views about treatment for PPD yielded information which has important implications for clinical psychologists. Chabrol, Teissedre, Armitage, Danel, & Walburg (2004) provided information about PPD to women who were three days postpartum, assessing the women's intentions to breastfeed

as well as their level of support either for psychotherapy or anti-depressants as the preferred treatment for PPD. The participants were subsequently instructed to read a brief passage which contained information about the potential risks of taking anti-depressants while breastfeeding. Results indicated that the women's acceptability of anti-depressants was significantly lower than that of psychotherapy both before and after the information was presented. On the post-information measure, 95% of the 405 participants indicated they would choose psychotherapy over PPD; 2% and 3% chose anti-depressants or neither treatment, respectively (Chabrol et al., 2004), suggesting that women find psychotherapy to be a more acceptable treatment for PPD than medication.

The second study found that British women treated for PPD were significantly more satisfied with treatment by a multidisciplinary team of medical and mental health workers than by treatment in routine primary care (Boath, Bradley, & Anthony, 2004). The women in the multi-disciplinary treatment group were provided a unique intervention, known as Parent and Baby Day Unit, offered in the setting of a specialized psychiatric day hospital in England. Although the treatment was considered comprehensive and included pharmacotherapy, individual and group therapies were salient components. Both of these studies (Boath et al., 2004; Chabrol et al., 2004) suggest that women regard treatment which includes psychotherapeutic components as more acceptable and experience greater levels of satisfaction after this type of treatment is delivered. When becoming symptomatic, it makes sense that women initially consult with their physicians, simply because they have experienced more frequent contact with them prenatally, during birth, and at the 6 week postnatal check-up. Although many physicians prescribe medication as the first line of treatment for symptom relief, it seems

that many women would prefer treatment alternatives if they were made available to them. For clinical psychologists, this means establishing working relationships with medical professionals to offer psychotherapeutic treatment alternatives to patients with PPD.

PPD and child development

Research has shown that PPD can disrupt the maternal-infant bond, resulting in acute infant distress and a potentially less favorable developmental pathway for the child (Jacobsen, 1999). Much of the work in this area is based on the Mutual Regulation Model (MRM) which asserts that the establishment of social relationships and the mutual construction of meaning provide the foundation for a child's understanding of the world of objects (Tronick & Weinberg, 1997). The caretaker's capacity to interpret and respond appropriately to the infant's communication is a critical component of this model. The presence of PPD can interfere with a mother's ability to meet the needs of her baby adequately and, barring the buffering effects of any protective factors (such as easy infant temperament and frequent interactions with healthy caretakers), may have deleterious effects on the child's capacity to develop normally.

In a meta-analysis of 19 studies, Beck (1996) found that PPD has a moderate to large effect size in relation to the quality of interactions between mothers and infants during the first year of life. Compared to non-depressed mothers, mothers with PPD were less affectionate with their babies, less responsive to infant cues, and either more withdrawn and affectively flat or more hostile and intrusive with their babies (Beck, 1996). Tronick and Weinberg (1997) distinguished between intrusive mothers who had exhibited physically rough and verbally angry behavior toward their babies and

withdrawn mothers who were more disengaged and unresponsive. The fact that infants of the withdrawn mothers showed more distress (fussing and crying) than those of the intrusive mothers suggests that infants prefer some type of interaction over no interaction (Tronick & Weinberg, 1997).

Depressed mothers have negative cognitions which predispose them to distort their perceptions regarding their children's temperaments and their own ability to parent competently and effectively (Teti & Gelfand, 1997). Because depressed mothers have lower levels of self-efficacy regarding parenting abilities, they are more vulnerable to making negative attributions about children with more difficult temperaments. (Teti & Gelfand, 1997). Furthermore, the distress exhibited by infants of depressed mothers is likely induced by a combination of the mothers' cognitive distortions and an exacerbation of the children's temperaments as a result of depression-related maternal behavior (Beck, 1996). Beck (1996) found that infants of depressed mothers made fewer positive facial expressions and vocalizations in addition to being fussier, less content, and more avoidant. Righetti-Veltema, Conne-Perreard, Bousquet, and Manzano (2002) corroborated these findings in their research, which revealed that depressed mother-infant dyads presented fewer vocal/visual communications, fewer corporal interactions, and less smiling.

Even though infant sleep disorders are prevalent in non-clinical as well as in clinical populations, Hiscock and Wale (2001) found a significant relationship between PPD and infant sleep problems. Cramer (1997) found that infant sleep disorders diminished after depressed mothers were treated with psychotherapy. It is difficult to ascertain if the infant actually sleeps less or if the depressed mother's sleeplessness,

agitation, and heightened state of arousal causes her to react to even minor infant sleep disturbances; the reaction of most non-depressed women would be either to remain asleep or to choose to ignore the disturbance (Cramer, 1997).

Finding a relationship between PPD and maladaptive child development that occurs beyond the first year becomes more difficult. A meta-analysis by Beck (1998) showed that PPD had a small but significant effect on children's cognitive and emotional development, specifically anti-social behavior and cognitive deficits. Murray, Sinclair, Cooper, Ducournan, and Turner (1999) did a follow-up study which compared the socioemotional behavior of 5-year-olds whose mothers had experienced depression in the early postpartum months to a control group, whose mothers had not experienced depression in the postpartum. These authors attributed certain problematic aspects of the socioemotional behaviors displayed by the 5-year-olds in the experimental group to the occurrence of PPD which was identified in their mothers at 2 months postpartum (Murray et al., 1999). Even though the mothers in the study had recovered from the episode of PPD by the time their children were 5 years old, the authors speculate that the difficulties that PPD brings to the early mother-infant relationship may begin a cycle of problematic interactions which continue to influence a child's behavior, at least through the age of five. Beck (1998) concluded, however, that the effects on maladaptive development seem to weaken as children grow older. Because so many other factors can affect a child's development, it becomes increasingly difficult to correlate PPD with developmental delays in later years. However, an episode of PPD predisposes women to future episodes of maternal depression which could subsequently impede the children's developmental trajectory (Jacobsen, 1999).

Pharmacologic treatment of depression during pregnancy

Current profile. No uniform standards exist for the pharmacologic treatment of depression during pregnancy. The primary concern for patients and clinicians alike is the short- and long-term effects that medication exposure in utero will have on the developmental trajectory of the child. Because infants experience greater exposure to psychotropic medications in utero (through placental passage) than postnatally via breast milk, the American Academy of Pediatrics recommends prescribing women the lowest dosage possible to control symptoms and minimize fetal risks (Misri & Kostaras, 2002). Hendrick, Stowe, Altshuler, and Hwang (2003) found that concentrations of SSRIs were lower in the umbilical cord than in the maternal serum for a sample of 38 women, suggesting that a subthreshold dosage of the medication in a woman's system passes through to the placenta. Although metabolic changes in pregnancy (such as an increase in blood volume and changes in gastrointestinal functioning) frequently require a dosage increase in some drugs to maintain the therapeutic effect established before pregnancy, research has shown that standard doses of antidepressant medication, specifically SSRIs, seem to be adequate in pregnancy (Stewart, 1998). On the other hand, lowering a previously effective dosage of anti-depressant in order to minimize fetal risk may in fact increase a woman's risk for a depressive relapse during pregnancy (Nonacs & Cohen, 2002).

The risks inherent in the placental passage of even milder forms of anti-depressants are still not completely known and warrant multi-factorial consideration. Guidelines developed on the basis of a review of literature published from 1971 to 1999 state that "anti-depressant medication treatment should be considered for pregnant

women who have major depressive disorder, as well as for those women in remission from major depressive disorder, receiving maintenance medications, and deemed to be at high risk for a recurrence if the medication is discontinued," (American Psychiatric Association [APA], 2000, p.21).

Clinicians' utilization of a decision-making model designed to present information in the context of a risk-benefit discussion can assist patients struggling with the question of whether or not to continue medication during pregnancy (Wisner, Zarin, Holmboe & Appelbaum, 2000). This type of method enables the clinician to take a case by case approach and to collaborate with patients to formulate a biopsychosocial conceptualization of the problem. The net result is that patients are better-equipped to make informed choices and clinicians are better protected from liability risks provided they have appropriate documentation (Wisner et al., 2000). In addition to including individualized information from each women's biological, psychological (personality characteristics, coping skills), and social (i.e. culture, marital, family, spirituality, financial) domains, the decision-making process should provide not only guidelines from the Food and Drug Administration (FDA), but also outcome data concerning treatment of depression in pregnancy.

FDA guidelines. Based on data from human and animal studies, the FDA has developed a five-category system (A, B, C, D, and X) to classify the reproductive safety of various prescription medication (Nonacs & Cohen, 2002). The FDA considers category A medications safe for use during pregnancy. Categories B through D represent increasing degrees of risk, and Category X medications are contraindicated based on fetal risks which significantly outweigh patient benefits. Fetal risk from drugs in Category C,

which includes the majority of anti-depressant medications, cannot be ruled out because of incomplete controlled human studies or because of animal studies which have shown some risk (Cohen, 2001). By contrast, Category B medications demonstrate no evidence of fetal risk on the basis of the following: animal studies show risk but human findings do not OR animal studies show no risk but human studies do not exist (Ward et al., 2000).

Many professionals argue, however, that the FDA's system is flawed because some drugs for which there are no documented adverse effects are "considered" safer than others despite an extremely limited amount of data (Cohen, 2001). In other words, medication in Category B is not necessarily safer to use in pregnancy than a category C, especially if the medication in question received the higher rating in the absence of human data. In fact, Hendrick and Altshuler (2002) argue that a Category C medication which received its rating on the basis of human studies showing low risk may be preferable to a Category B drug for which no human data exists at all. A good example of this confusion concerns the anti-depressant, buproprion (Wellbutrin), which has an FDA category rating of B despite a dearth of available research. By contrast, the FDA assigned a category C to fluoxetine (Prozac) based on low risk associated with administration of extremely high doses to animals, despite the presence of a substantial number of human studies (Cohen, 2001). This system not only confuses but can potentially mislead clinicians who depend on these rating to advise patients. A committee on drugs composed of Ward and colleagues (2000) have challenged the current FDA rating system and recommend replacing it with a format which uses narrative statements to summarize/ interpret available research data and provide estimates of developmental risk.

The FDA has, in response to these challenges, organized several advisory panels to re-evaluate the current rating system (Cohen, 2001; Ward et al., 2000).

Outcome data on use of anti-depressants in pregnancy. The four primary ways medication exposure can affect the fetus include spontaneous abortions (miscarriage), structural teratogenesis (birth defects), behavioral teratogenesis (behavioral or neuropsychiatric symptoms in offspring), and perinatal syndromes (intoxication or withdrawal symptoms in exposed offspring) (Ward & Zamorski, 2002; Wisner, Gelenberg, Leonard, Zarin, & Frank, 1999). An interpretation of any studies on fetal exposure to teratogens should take into consideration that the baseline incidence of birth defects in the United States population is estimated to be between 2 and 4%, and the cause is unknown for approximately 65% to 70% of these birth defects (Wisner, et al., 1999).

Several changes have recently occurred regarding fetal exposure to SSRIs. First, inconclusive data describing a neonatal withdrawal syndrome has resulted in an agreement between the FDA and manufacturers of SSRIs and SNRIs to change labels and to package inserts cautioning physicians and patients about potential adverse events that have been associated with late trimester exposure to some SSRIs and SNRIs (Food and Drug Administration, 2004; Moses-Kolko et al., 2005; Rosack, 2005). The labeling also advises tapering and eventually eliminating the dosage of medication toward the end of the third trimester to reduce and/or prevent any potential neonatal complications, a practice not unanimously supported (Moses-Kolko et al.; Rosack, 2005; "SSRI Pregnancy," 2004). Second, a determination that fetal exposure to paroxetine (Paxil) in the first trimester of pregnancy may increase the risk for cardiac malformations led the

FDA to request that the manufacturer change the drug's pregnancy category from C to D, indicating a higher level of risk ("FDA Public Health Advisory," 2005). Although advising against the use of paroxetine in pregnancy, the FDA has stated that women should not discontinue taking the drug without first consulting their physicians and that any discontinuation should follow the directives outlined by the manufacturer ("FDA Advising," 2005).

With the exception of fluoxetine (Prozac) and citrapolam (Celexa), the reproductive safety of many SSRIs is currently limited. Although there has been a gradual increase in the number of clinical trials concerning the short-term effects to infants exposed to anti-depressants in utero, longitudinal research designed to evaluate the long-term developmental effects of exposure remains insufficient (Nunacs & Cohen, 2003). Some of the research is encouraging, albeit a bit confusing based on the fact that studies vary in terms of the specific outcomes and medications being examined as well as the period of exposure (i.e. first, second, and/or third trimester). Of the SSRIs, fluoxetine (one of the original SSRIs) accounts for the largest percentage of studies, with approximately 2400 in utero exposures documented in the literature as of 2001 (Cohen, 2001). Clinical trials of infants exposed to some of the newer SSRIs that came on the market after fluoxetine are on the increase.

After the addition of FDA warning labels regarding potential neonatal toxicity associated with late trimester exposure to SSRIs and SNRIs, Moses-Kolko et al. (2005) reviewed the literature, finding most case reports about late trimester exposure to fluoxetine and paroxetine. Their findings revealed that most neonates display mild symptoms affecting central nervous system, respiratory, motor, and/or gastrointestinal

functioning which usually remit within two weeks after supportive medical care (Moses-Kolko et al., 2005). Specific findings by Nordeng, Lindemann, Perminov, and Reikvam (2001) found that infants exposed either to paroxetine, citalopram, or fluoxetine in the third trimester of pregnancy experienced symptoms of withdrawal which lasted up to one month postpartum. Findings by Costei, Kozer, Ho, Ito, and Koren (2002) also showed an association between paroxetine and neonatal complications.

In a similar study, Laine, Heikkinen, Ekblad, and Kero (2003) found that infants exposed in utero either to citalopram or fluoxetine exhibited significantly more serotonergic symptoms (irritability, constant crying, shivering, and eating/sleeping problems) during the first 4 days of life than did a group of unexposed infants . These between-group differences, however, disappeared by 2 weeks postpartum, and results from brain imaging revealed no pathological or structural differences between the experimental and control group (Laine et al., 2003). The authors associate the serotonergic symptoms of the exposed infants to the long half-life of SSRIs. In other words, a steady level of an SSRI drug remains in the bloodstream for a prolonged period of time even after medication is discontinued, explaining, in part, the infants' symptoms (Laine et al., 2003). An analogous study by Oberlander et al. (2002) found an association between prolonged prenatal exposure to SSRIs and reduced behavioral pain responses following a routine screening which necessitated blood collection from the baby's heel, an event considered to be noxious for the infant. These authors postulate that the association between in utero exposure to SSRIs and blunted pain reactivity in infants may reflect, at least in the short-term, an alteration in the function of neurotransmitters in the brains of exposed infants (Oberlander et al,. 2002).

On the basis of calls made to the California Teratogen Information Service and Clinical Research Program, Chambers, Johnson, Dick, Felix, and Jones (1996) compared pregnancy outcomes between 228 women taking fluoxetine and 254 not taking fluoxetine during pregnancy. Findings revealed that the fluoxetine group did not experience an increase risk for miscarriage or major fetal abnormalities; however, those women who took fluoxetine during the third trimester experienced a higher risk of birth and postnatal complications such as premature delivery, special care nursery admissions, and poorer neonatal adaptation (Chambers et al., 1996), corroborating other findings of problematic neonatal symptoms. Kulin et al. (1998) conducted a similar study which compared 267 women exposed to the SSRI's fluvoxamine, paroxetine, or sertraline during the first trimester to 267 unexposed controls. It is noteworthy that this study excludes fluoxetine and that only 49 women in the SSRI group took the medication throughout their pregnancies. Results showed no significant differences between groups on the following pregnancy outcomes: major malformations, miscarriage, stillbirth, prematurity or infant birth weight. Unlike the research by Chambers et al.(1996), this study was limited to measures of structural teratology alone.

Utilizing their worldwide fluoxetine pregnancy registry, employees of Eli Lilly and Company, the manufacturer of Prozac, studied the outcomes of 196 women exposed to fluoxetine during the first trimester and found no statistically significant relationship between maternal fluoxetine use during this time period and increased risk of fetal malformation (Goldstein, Corbin, & Sundell, 1997). Their results could not, however, completely rule out the presence of a marginally increased risk for fetal malformation relative to fluoxetine exposure in the first trimester (Goldstein et al., 1997) In a related

study, Cohen et al. (2000) found no differences in birth weight and acute neonatal outcomes between infants exposed to fluoxetine in either early or late trimesters of pregnancy. The study did, however, find a relationship between late trimester exposure and frequency of special care nursery admissions which were brief in duration and primarily observational in nature (Cohen et al., 2000).

Hendrick et al. (2003) prospectively followed 147 women taking SSRI anti-depressants during any stage of pregnancy between June 1997 and May 2002 and found the incidence of congenital anomalies to be comparable to general population rates. The authors did, however, find reduced incidences of low birth weight infants and of preterm births in this population, but they found that the low birthweight infants were born to women who had taken relatively high doses of fluoxetine throughout their pregnancies. The high dosage of medication taken by these women may, however, be associated with a refractory depression of which poor appetite and insufficient weight gain may have been a confounding factor which adversely impacted upon infant birthweight (Hendrick et al., 2003). Other potential confounds include subject variability in anti-depressant and trimester during which medication was taken, as well as the inclusion by some subjects of other psychotropic medications taken in addition to anti-depressants (Hendrick et al., 2003).

Simon, Cunningham, and Davis (2002) conducted an extensive review of hospital and pediatric records of members of a prepaid health plan in the state of Washington to determine the effects of tricyclic or SSRI anti-depressant exposure on birth and fetal outcomes. Although the authors found no association between tricyclic or SSRI exposure and either congenital malformation or developmental delay, they did report that SSRI

exposure anytime during the pregnancy was associated with pre-term delivery and low birth weight and that third trimester SSRI exposure was additionally associated with lower Apgar scores (Simon et al., 2002). A similar study of women identified via the Pregnancy Safety Hotline found no association between SSRI use in pregnancy and major birth defects but did observe a trend for a slight decrease in infant birthweight with prolonged exposure to an SSRI during pregnancy (McConnell, Linn & Filkins, 1998).

Two studies measured development in older children who had been exposed to anti-depressants during pregnancy. Nulman et al. (1997) found no significant differences on measures of global intelligence (IQ), language development, or behavioral development between preschool age children of mothers who had received either tricyclics or fluoxetine during pregnancy and a control group of non-exposed children. Casper et al. (2003) conducted a similar study comparing the neurodevelopment of children aged 6 to 40 months whose depressed mothers either took SSRIs during pregnancy or elected not to take medication. Although the authors found no significant differences between the groups on most birth outcomes (including measures of mental developmental), they did find that SSRI-exposed children had lower APGAR scores and lower scores on a measure of psychomotor development (Casper et al., 2003).

Untreated depression in pregnancy. Women experiencing depression during pregnancy are also at risk for poorer pregnancy outcomes resulting from depressive symptoms such as malnutrition, poor sleeping patterns, refusal of prenatal care, use of illicit substances, psychotic symptoms, anxiety, and irritability (Young, Campbell, & Harper, 2002). In a study of African-American women living in Baltimore, Maryland, Orr, James, and Prince (2002) found a positive association between symptoms of

maternal depression and preterm births. These results were corroborated by Dayan et al. (2002) in a study of anxiety and depression in a sample of women living in France. Kurki, Hiilesmaa, Raitasalo, Matilla, and Ylikorkala (2000) prospectively studied 623 pregnant women in Helsinki, Finland, finding a significant association between depression and anxiety during pregnancy and the development of preelampsia (high blood pressure) during pregnancy. Additionally, Hoffman and Hatch (2000) measured the relationship between depression in pregnancy, fetal growth, and gestational duration in 666 pregnant women and found an association between depression at 28 weeks and low birthweight for the subgroup of women in a lower socio-economic class.

Three studies provide the most evidence-based foundation for the current study. In one study, Einarson, Selby, and Koren (2001) address the relationship between depression in pregnancy and discontinuation of psychotropic medication during pregnancy. Of the 36 women who participated in the study, 34 abruptly discontinued their anti-depressant or anti-anxiety medications, primarily for fear of harming the developing fetus. Seventy percent of these women experienced adverse psychological and physical effects, and a smaller number experienced psychological effects only. Further analyses revealed that almost one-third of the women reported suicidal ideation; four required hospitalization; one decided to have a therapeutic abortion, and one self-medicated with alcohol. After counseling, 61% of the women in the study resumed taking their medications with no adverse birth outcomes reported (Einarson et al., 2001).

The second more recent study by Marcus, Flynn, Blow, and Barry (2005) identified 316 pregnant women who had taken antidepressant medication within two years prior to conception. 248 women discontinued medication throughout pregnancy

and 68 women continued medication throughout pregnancy; both groups demonstrated symptoms with no significant differences between depression scores (Marcus et al., 2005). The study was unable to ascertain whether or not obstetricians "were aware of their patients" use or non-use of medication and also found that "most of the women who discontinued medication were not in mental health treatment and unlikely to have been engaging in prevention strategies or receiving regular medication visits or adjunctive psychotherapy" (Marcus et al., 2005, p. 27). This suggests that the risk of relapse for women who stopped medication was heightened by the absence of other modes of treatment which could have assuaged symptoms. Of interest to the current study is the fact that the study sample (women on medication prior to conception) represented only 11% of approximately 3500 women screened (Marcus et al., 2005), providing evidence for the difficulty of finding an adequate sample size when the pool of potential participants is smaller (as was the case in the current study).

In the most recent study measuring maternal mood in pregnancy, Cohen et al. (2006) found that women who discontinued anti-depressant medication relapsed at a significantly higher rate during their pregnancies than did their counterparts who maintained their medication. Criteria for the study included current or recent anti-depressant treatment proximate to conception and compared both discontinuers and continuers using the Structured Clinical Interview for DSM-IV and the Hamilton Rating Scale for Depression. Of the entire sample of 201 women, 43% experienced a relapse of depression. More specifically, 21% of the 82 women who stayed on medication during pregnancy relapsed into depression compared to 68% of the 44 women who discontinued medication (Cohen et al., 2006). The findings in this study clearly support the

relationship between discontinuing medication proximate to pregnancy and symptoms of depression in pregnancy, and they provide a logical preface to the question posed by the current study regarding what happens to this already vulnerable subgroup of depressed discontinuers in the postpartum.

According to Dr. Lee Cohen, the Director of Perinatal and Reproductive Psychiatry Clinical Research Program and Associate Professor of Psychiatry at Harvard Medical School, the practice of "tapering or discontinuing psychiatric medication before labor and delivery should be reexamined because it puts mothers and their babies at risk," (Cohen, 2001, p.10). All women, especially those with a depressive history, are at risk for developing symptoms of depression during the emotionally vulnerable postpartum period. Therefore, withdrawing treatment from women when they are about to enter a period of increased risk is precarious and may lead to more severe symptoms of postpartum depression (Nonacs & Cohen, 2002). The question remains: Are women who suffer through depression during pregnancy because they believe they are protecting their developing child from medication exposure setting themselves up for an episode of postpartum depression which presents its own risks to the mother-baby bond and to the child's developmental trajectory?

Issues Related to Chronic and Recurring Depression

For the purposes of the current study, women in the postpartum who either discontinued or who continued taking anti-depressant medication throughout pregnancy can be conceptualized as having a history of depression, regardless of whether this episode represents a first episode, a recurrent episode, or a chronic unremitting course of treatment. Understanding the literature regarding relapse and recurrence of depression

has significant implications for postpartum women with a history of depression. The current study postulates that a return of depressive symptoms after a woman discontinues anti-depressant medication during pregnancy constitutes a relapse of the current episode. If this gap in treatment continues, symptoms are likely to worsen or, at best, remain steady. However, once these symptomatic women experience the elevated stress associated with the postpartum, the risks for experiencing a more severe episode of depression increase.

Relapse prevention. A panel of representatives from the disciplines of psychiatry, psychology, pharmacology, epidemiology, internal medicine, and the general public concluded that recurrent mood disorders are under-diagnosed and under-treated (Consensus Development Panel, 1985). The panel distinguished between "relapse" and "recurrence", defining the former as an "exacerbation of an ongoing episode after an initial suppression of symptoms" and the latter as a "new episode following a complete recovery that has lasted for at least several months" (Consensus Development Panel, 1985, p.470). According to information gleaned from the panel, approximately 50-85% of patients with a major depressive episode will have at least one subsequent episode in their lifetimes (Consensus Development Panel, 1985). This has tremendous implications for postpartum women with a history of depression. Furthermore, 15-20% of patients with a recurrent episode of depression do not sustain full recovery and may experience symptoms for two years, and 50% of this group who do experience recovery are likely to have a recurrence within the first two years (Consensus Development Panel, 1985). For postpartum women who were treated in pregnancy for a recurrent episode of depression,

discontinuing medication seems risky, given the statistics which show that full recovery may take up to 2 years.

The panel acknowledged the risks inherent in offering preventive anti-depressant drug treatment to pregnant women and to the population in general, considering the unknown risks that may be posed by long-term use of these drugs. However, they concluded that appropriate and collaborative long-term treatment which involves the patient, doctor, and family can help patients protect themselves from the potentially deleterious effects of relapse and recurrence (Consensus Development Panel, 1985). Clinical psychologists can also play an important role on this team of collaborators, whether they are working with existing psychotherapy clients or consulting in a behavioral medicine setting.

Research has supported the assertions of this panel. Judd et al. (2000) found that patients who experienced residual, albeit subthreshold, symptoms after their first lifetime major depressive episodes had significantly more severe and chronic future episodes of depression than those who experienced a full recovery. This has implications for pregnant women who discontinue anti-depressant treatment, especially if they are still symptomatic, because they are approaching the postpartum period, "a time of heightened risk for affective illness," (Nonacs & Cohen, 2003, p.560). In other words, the possibility exists that disrupting treatment could worsen the prognosis and cause an exacerbation of depressive symptoms in the postpartum period.

Another study by Lin et al. (1998) found that 37.1% of 251 primary care patients diagnosed either with major or minor depression reported a relapse in the year after acute and continuous phase treatment. According to the authors, the two major risk factors

associated with relapse were a history of two or more episodes of major depression, two years of chronic mood symptoms, and/or presence of subthreshold symptoms of depression for seven months after beginning treatment with anti-depressant medication (Lin et al., 1998). Interestingly, 76.8% of the study sample were female, further underscoring a woman's risk for recurrent episodes of depression. And, the postpartum period has certainly been identified as a risky time, especially if treatment was interrupted during pregnancy .

Melfi et al. (1998) found that 25% (N=4052) of Medicaid patients taking anti-depressant medication experienced a relapse or recurrent episode of depression during a 2-year follow-up period. Although those patients who maintained their drug therapy were the least likely to experience a relapse or recurrence of their depression, those who prematurely discontinued medication risked a 77% percent chance of experiencing a relapse/recurrence (Melfi et al., 1998). This research has significant implications for the current study, because pregnant women who prematurely discontinue medication fall into this category and face a substantial risk of relapse or recurrence.

Effects of long-term use of anti-depressants. The acute phase of antidepressant treatment lasts until symptoms remit and it is followed by a continuation phase in which treatment continues for four to nine months to prevent symptom relapse (APA, 2000; Byrne & Rothschild, 1998; Keller, Kocsis, Thase, & Gelenbert, 1998; Winkler et al., 2002). Following the continuation phase, patients at increased risk for recurrent episodes are frequently advised to receive maintenance treatment that varies in length, depending on the frequency and severity of recurrences, treatment tolerability, and individual preferences (APA, 2000; Winkler et al., 2002). Some high risk patients with chronic

depression may require a lifetime course of treatment (APA, 2000) to prevent recurrent episodes. Keller et al. (1998) studied patients with chronic depression and discovered that sertraline afforded significantly greater protection from recurrence than a placebo, supporting the need for indefinite maintenance treatment in some cases. The Keller et al. (1998) study has implications for the current study, especially for the population of postpartum women who receive long-term treatment with anti-depressants prior to pregnancy. The long-term effects of prolonged use of SSRIs on brain function are, however, not clearly understood. Researchers have differentiated between the short-term symptoms frequently associated with medication discontinuation and the longer-term effects associated with symptoms akin to tolerance.

Regarding short-term discontinuation effects, the literature discusses withdrawal-like symptoms which can include dizziness, nausea, headache, nervousness, and insomnia (Haddad, 2001; Rosenbaum, Fava, Hoog, Ascroft & Krebs, 1998). Usually temporary in duration, these symptoms vary according to the particular SSRI taken . Based on an analysis of pertinent anti-depressant withdrawal studies between 1985 and 1996, Therrien and Markowitz (1997) concluded that all SSRIs, regardless of dosage or treatment duration, had the potential to cause withdrawal-like symptoms when abruptly discontinued; however, most symptoms did not persist beyond 25 days of medication discontinuation. Recommendations for symptom minimization include a gradual tapering instead of an abrupt discontinuation of the medication. However, clinicians vary considerably in their suggestions for duration of tapering, with some suggesting 1-2 weeks (Therrien & Markowitz, 1997) and others, despite a lack of empirical evidence, promoting a year-long tapering process predicated on the notion that the “brain needs

months, rather than days to adjust to the changes associated with stopping a medication" (Winkler, Tauscher, & Kasper, 2002, p.66). This variability in tapering recommendations certainly poses a dilemma for pregnant women contemplating medication discontinuation. If they abruptly discontinue medication as soon as they discover they are pregnant, they risk suffering a short-term bout of withdrawal-like symptoms and a relapse of depressive symptoms. If they taper the medication gradually, their unborn babies risk the potential consequences of medication exposure and the mothers themselves still risk a relapse of depressive symptoms after the tapering ends.

The research regarding long-term effects of prolonged use of SSRIs on brain function is less clear. A description of how SSRIs decrease symptoms of depression may illuminate an understanding of the potential long-term effects cited in the literature. Designed to prevent the reuptake of serotonin by the presynaptic receptors, SSRIs prolong the amount of time that serotonin remains in the synaptic cleft and, therefore, increase the concentration without altering the total levels of serotonin in the brain (Popik, 1999). Transmission is facilitated because more serotonin is available to bind with the postsynaptic receptors.

The impact that SSRIs have on the postsynaptic receptors is less clearly understood and seems to be implicated as a factor affecting long-term outcomes of prolonged use. Yatham et al. (2000) hypothesized that, during depression, the (untreated) brain compensates by reducing the number of postsynaptic receptor sites, which may offer an explanation about why some depression remits spontaneously. In other words, fewer postsynaptic receptor sites decrease the amount of serotonin required for transmission, thus diluting the effects that the reuptake of serotonin by the presynaptic

receptors has on depression. The effect of SSRIs on the density and function of postsynaptic receptors has shown mixed results. Of primary concern is the possibility that prolonged use will increase the number of postsynaptic receptor sites and, therefore, require greater amounts of serotonin in the synapse to facilitate transmission throughout the brain. One study found an association between treatment with paroxetine and an increase in these receptors, yet other studies showed that SSRIs either reduced or had no effect on the number of postsynaptic receptors (Zanardi et al., 2001). Massou et al., (1997studied a small sample of six patients, finding an association between chronic treatment with SSRIs and an "up-regulation" (increase) of postsynaptic receptors in the frontal lobes.

Byrne and Rothschild (1998) conceptualize these cellular adaptations to prolonged SSRI use as one type of pharmacologic tolerance defined as "pharmacodynamic tolerance." The other type, described as "pharmacokinetic tolerance", is defined as a reduction in a drug's concentration. A meta-analysis of studies since 1966 revealed that 9% to 57% of patients experienced a loss of anti-depressant efficacy during maintenance treatment, citing pharmacologic tolerance as one possible explanation (Byrne & Rothschild, 1998). In a review of the clinical literature suggesting that long-term treatment with anti-depressant drugs may worsen the course of depression, Fava (2003) suggests that the cellular changes associated with pharmacodynamic tolerance increase an individual's biochemical vulnerability and represent one of the potential deleterious effects of prolonged use.

Effective treatment for symptoms of tolerance includes increasing the medication dosage, but again, the research shows mixed results. Fava et al. (1995) found that

patients who relapsed during long-term treatment with fluoxetine recovered when the dosage was doubled. However, in a similar study Baldessarini, Ghaemi, and Viguera (2002) found that doubling the dose of fluoxetine for 35% of patients who relapsed during long-term fluoxetine treatment had no effect on depressive symptoms.

Fava (2003) also speculates that anti-depressants may induce sensitization effects, similar to those induced by amphetamines and cocaine, referring to a "long-lasting increment in response occurring on repeated presentation of a stimulus that reliably elicits a response at its initial presentation," (p. 128). Acknowledging the difficulty involved in testing this hypothesis, Fava (1999) cites only one study by Young, Cooke, and Levitt (1995) which has attempted to verify the sensitization effects of anti-depressants. Although this particular study found that patients with past anti-depressant treatment had more subsequent depressive episodes of longer duration, it did not address the possibility that the subjects experienced a more severe and refractory course of illness (Fava, 1999; Young et al., 1995).

To summarize, there is a dearth of data to support the speculation that long-term anti-depressant treatment can have deleterious effects on the course of depression. Fava (2003) acknowledges the methodological and ideological obstacles involved in studying this phenomenon in a scientific way and recognizes how the commonly held assertions about maintenance treatment will continue to be reflected in clinician attitudes, beliefs and, therefore, prescribing practices. In other words, it is likely that clinicians will continue to advise individuals with chronic depression to maintain treatment with anti-depressants to prevent recurrence. Furthermore, the paradigm shift in prescribing anti-depressant medication for patients whose symptoms do not meet the threshold for clinical

depression suggests that anti-depressants have become a mainstream solution for many individuals seeking relief from symptoms that range from the very mild to the very severe. At this juncture, research suggests that premature discontinuation and long-term use are associated with an exacerbation of symptoms regardless of whether or not they represent an incomplete recovery/relapse, a recurrence, or tolerance.

Summary

A serious and frequently underreported psychiatric disorder, PPD can have deleterious and, in extreme cases, life-threatening effects on women, children, and families. Stigma and lack of uniform screening procedures contribute to the inadequate detection of symptomatic women, despite the availability of reliable and valid assessment tools like the PDSS and the EPDS. Routine assessments at the 6-week postpartum appointment and well-baby visits offer an opportunity to detect symptomatic women during critical times.

A plethora of risk and protective factors are associated with PPD, underscoring the importance of conceptualizing the disorder from a biopsychosocial perspective to inform more comprehensive assessment and treatment strategies. Some noted risk factors include a history of depression, depressed mood during pregnancy, infant-related stress, and inadequate social support, to name a few. Treatment for PPD can include anti-depressant medication and/or various types of therapy. Untreated PPD can have deleterious effects on the mother-infant bond, potentially establishing a template for problematic parent-child interactions in the future. Although PPD has also been associated with poorer, short-term developmental outcomes, the relationship between PPD and maladaptive development beyond the first year has been more tenuous.

The factor of interest to the current study concerns the relationship between the discontinuation of anti-depressant medication and the development of PPD. Because women of childbearing age are being increasingly prescribed anti-depressant medication to treat even minor symptoms of depression, they frequently face a dilemma about whether or not to continue treatment when they become pregnant. Based on a lack of comprehensive research on outcomes of infants exposed to medication in utero, many women choose to stop medication for fear of harming their developing baby at the expense of risking a return of their own symptoms of depression. They may be able to withstand the return of some symptoms during pregnancy; however, their risk of experiencing a clinical level of depression increases during the postpartum period, a time of heightened emotional vulnerability and stress for most women, even those with no known history of depression. Women who were on maintenance anti-depressant therapy for chronic and recurrent depression may face an even greater risk of medication discontinuation based on speculative changes associated not only with prolonged medication use, but also with the chronic nature of their illnesses.

Women at increased risk for a return of symptoms during pregnancy and/or a clinical level of PPD as a result of medication discontinuation need assistance in making informed risk-benefit analyses and in obtaining alternative forms of treatment to cope with symptoms in depression and in the postpartum. Clinical psychologists working either in traditional outpatient therapy or behavioral medicine settings can play a critical role in the prevention, assessment, and treatment of PPD. In summary, the review of relevant research on PPD consistently points to the need for increased awareness and education. The ability to conceptualize the risk factors for PPD from a biopsychosocial

perspective will inform assessment and treatment, specifically with regard to the factors addressed by the current study.

Purpose

Because the postpartum period represents a time of physiological and emotional adjustment for all women, those at higher risk for post-partum depression seem to be particularly vulnerable. The current study concerns whether or not discontinuation of treatment with anti-depressant medication exacerbates a woman's risk. Women with chronic depression who take medication prophylactically may be especially vulnerable to a more severe relapse, based on research (Fava, 2003; Massou et al., 1997; Zanardi et al., 2001) showing that long-term use may be associated with permanent neurochemical changes. Further, women being treated for more acute episodes of depression may prematurely discontinue treatment prior to a full recovery and experience a continuation of symptoms throughout pregnancy; these may then be exacerbated in the postpartum period.

The primary purpose of the current study is to determine the relationship between the discontinuation of anti-depressant medication and the development of post-partum depression, determining if persons who decide to discontinue treatment during pregnancy are at risk for an episode of postpartum depression. The current study will also attempt to uncover additional factors which may be associated with PPD. Having this knowledge will help to enlighten both the medical and mental health communities by helping patients conduct more informed risk-benefit analyses regarding medication use during pregnancy; it will also aid in the identification of patients at risk for developing PPD. Clinical psychologists will benefit by understanding and educating clients about the risks

and realities of this disorder and by offering preventive screening as well as postpartum assessment either in traditional outpatient therapy or behavioral medicine settings. Furthermore, the increase in education and awareness may have the effect of increasing the number of symptomatic women who seek psychological treatment either on their own or via a referral from their physicians. If the results of the study show that women increase their risk for PPD when they discontinue anti-depressants during pregnancy, clinical psychologists may increase their abilities to offer alternative therapies to women suffering from depression throughout their pregnancies and into the postpartum period.

Hypotheses

The primary research hypothesis concerns the relationship between discontinuation of anti-depressant medication during pregnancy and postpartum depression. Specifically, the study hypothesizes that women who discontinue anti-depressant medication during pregnancy will experience PPD at a higher rate than those who either continued or restarted pharmacological treatment during pregnancy; the study also includes a control group of women who were not taking anti-depressant medication when they became pregnant. This hypothesis will be tested by comparing scores on a postpartum depression screening instrument (the dependent variable) between all three groups of women (the independent variable). Using the subgroup of women who discontinue anti-depressant medication during pregnancy, the secondary hypothesis asserts that those on maintenance therapy who had taken anti-depressants for the previous nine months or more (APA, 2000; Byrne & Rothschild, 1998; Keller, Kocsis, Thase, & Gelenbert, 1998; Winkler et al, 2002) will experience more severe symptoms of PPD.

Based on the relationship between PPD and several risk factors already identified in the literature, the third hypothesis contends that there will be a negative or positive correlation between PPD and the following variables:

1) Pregnancy Mood (item # 26 on the postpartum survey); positive correlation.
2) Childcare stress [the stress of providing daily infant care (item #28 on the postpartum survey)]; positive correlation.
3) Emotional Support (item #23 on the postpartum survey); negative correlation.
4) Instrumental Support [refers to help with household chores and hands-on help with child care (item #25 on the postpartum survey)]; negative correlation.
5) Marital satisfaction (item #5 on the postpartum survey); negative correlation.
6) History of symptoms and/or treatment of depression (item #41 on the postpartum survey); positive correlation.
7) Baby temperament (item #20 on the postpartum survey); positive correlation.
8) Birth experience (item #15 on the postpartum survey); positive correlation.

Chapter 2

Method

Inclusion and Exclusion Criteria

Participation was voluntary and anonymous and included volunteers who were female patients being seen for their routine postpartum appointment which normally occurs between three and eight weeks after delivery. Participation was limited to those older than 18 who had single births and were able to understand written and spoken English; if unable to speak, write and understand English, a family member or friend had to be available to assist them with any language barriers. Toward the end of the study, in an attempt to equalize groups for analysis, participation was limited to women who took either anti-depressant medication proximate to conception or began/restarted medication sometime during their pregnancy.

Exclusion criteria included those under age 18, those who had a multiple birth, and those taking either tri-cyclic anti-depressants, MAO Inhibitors, mood stabilizers, or anti-psychotics medications. Participants who returned incomplete survey materials were also excluded, as well as those not willing to volunteer to participate in the study. Toward the end of the study, in an attempt to equalize groups for analysis, women who were not taking anti-depressant medication proximate to conception or who did not begin/restart taking medication at any time during their pregnancy were excluded.

Participants

The majority (99%) of the participant group included patients of an obstetrical/gynecological practice which has offices in Lemoyne, Carlisle, and Hershey, Pennsylvania, as well as an affiliate office in Harrisburg, Pennsylvania. One percent of

the participants were patients of the PinnacleHealth Women's Outpatient Health Center in Harrisburg, PA, a site added six months after the study's inception. Participation occurred during the postpartum check-up which is typically scheduled approximately 6 weeks after delivery.

A sample of 202 women participated in this study. Twenty-six responses were unusable for the following reasons: twenty-two were returned incomplete and four did not meet study criteria because they indicated a multiple birth (i.e. twins). Participants reported a mean age of 30.22 years (SD=4.93) with age ranging from 18 to 42 years.

Of the 99% of participants who were high school graduates or equivalent, 27.7% reported having had some college credits and 36.6% had 4-year college degrees (See Table 1). Regarding race, marital status, and income, the majority of the sample were white (88.6%), married (89.6%), and had annual household incomes above $40,000(83.2%). (See Tables 2, 3, and 4).

Almost half of the sample (49%) had only one child; the rest reported having two or more children. Seventy percent of participants had a vaginal delivery but the other 30% had delivery by caesarean section (See Table 5). Almost thirty-two percent of the sample reported having a history of depression (see Table 6), with 12.4% of multiparous women reporting a history of symptoms of postpartum depression with prior births.

Table 1

Years of Education (N = 202)

Education	Frequency	Percent	Cumulative Percent
Did Not Complete High School	2	1.0	1.0
High School Graduate	37	18.3	19.3
Some college	56	27.7	47.0
College Degree	74	36.6	83.7
Graduate Degree	33	16.3	100.0
Total	202	100.0	100.0

Table 2

Race (N = 202)

Race	Frequency	Percent	Cumulative Percent
Black or African American	12	5.9	5.9
Hispanic or Latino	6	3.0	8.0
Asian	5	2.5	11.4
White	179	88.6	100.0
Total	202	100.0	100.0

Table 3

Marital Status (N = 202)

Marital Status	Frequency	Percent	Cumulative Percent
Married	181	89.6	89.6
Partnered	13	6.4	96.0
Divorced	1	.5	96.5
Separated	2	1.0	97.5
Single	5	2.5	100.0
Total	202	100.0	100.0

Table 4

Gross Annual Household Income (N = 202)

Income	Frequency	Percent	Cumulative Percent
<$20,000	7	3.5	3.5
$20,000-$40,000	27	13.4	16.8
$40,001-$75,000	95	47.0	63.9
$75,001-$100,000	52	25.7	89.6
> $100,000	21	10.4	100.0
Total	202	100.0	

Table 5

Type of Delivery (N = 202)

Type of Delivery	Frequency	Percent	Cumulative Percent
Planned C-section	34	16.8	16.8
Induced Vaginal	53	26.2	43.1
Vaginal	89	44.1	87.1
Emergency C-section	26	12.9	100.0
Total	202	100.0	100.0

Table 6

Depression Treatment History (N =202)

Depression Treatment History	Frequency	Percent	Cumulative Percent
No history depression	138	68.3	68.3
Symptoms (no treatment)	12	5.9	74.3
Medication	24	11.9	86.1
Therapy/Counseling	10	5.0	91.1
Other	2	1.0	92.1
Medication and Therapy	16	7.9	100.0
Total	202	100.0	100.0

Measures

Measurements of postpartum depression were obtained using the PDSS, a measure which requires at least a third-grade reading ability (Beck & Gable, 2002). The PDSS yields a total score which breaks into one of three levels: 80 or above indicates a positive screen for major postpartum depression; 60-79 indicates significant symptoms of postpartum depression (positive screen for depressive disorder NOS); 59 or below indicates normal adjustment. The PDSS also includes the following seven symptom content scores, each containing an identified cutoff score which indicates the presence or absence of a significant cluster of symptoms: sleeping/eating disturbances; anxiety/insecurity; emotional lability; mental confusion; loss of self; guilt/shame; suicidal thoughts. Items that have no response (or more than one response) will be given the median response value printed in bold type on the scoring sheet. A score of four or more on the inconsistent responding index suggests that the respondent may have attention or comprehension problems, which may reflect cognitive impairment but warrants collateral data to confirm (i.e. interview with patient). All scores on the PDSS are discrete variables with whole number values.

In terms of reliability, the PDSS demonstrates excellent internal consistency with an alpha coefficient of .97 for the total score and coefficients ranging from .83 to .94 for the symptom content scales (Beck & Gable, 2002). Content validity measures of the PDSS show that each of the seven content scales correlate more strongly with the total score than with each other, indicating that they represent a better index of general PPD symptoms than symptom clusters measured by the other content scales (Beck & Gable, 2002). The PDSS also has good convergent validity as indicated by its strong correlations

with the BDI-II (r=.81, p<.0001), the EPDS (r=.79,p<.0001), and the Structured Clinical Interview(r=.70, p<.0001) (Beck & Gable, 2002). Probability analyses also revealed that PDSS cutoff scores were derived to assure high levels of sensitivity and reasonable levels of specificity to minimize the risks of failing to detect depressed mothers (Beck & Gable, 2002). The cutoff score for the suicidal thoughts content score was designed so that any score above the minimum possible score of five would be considered elevated, primarily to ensure the detection of women showing any evidence whatsoever of suicidal thoughts (Beck & Gable, 2002).

Procedures

During check-in with office staff, each woman received a packet of materials which included an informational letter explaining the nature of the study (Appendix A), a hand-out providing a comprehensive list of mental health referrals and resources (Appendix B), and three questionnaires: a mood disorders questionnaires (Appendix C); a demographics survey (Appendix D) and a postpartum depression screen (see Appendix E). All measures were taken at a single point in time (the postpartum visit), and participants completed the study materials during the standard wait time in the waiting room, the doctor's office, and the examination room. All survey materials were numbered and there were no blank spaces requesting any information which could potentially identify participants. Completed surveys were placed in a file at the physician's office until picked up by the researcher. Neither the physician's office nor the researcher was aware of the individual identities corresponding to the completed packets. Volunteers were not reimbursed in any way for their participation.

Chapter 3

Results

Statistical Analysis

The Statistical Program for the Social Sciences 13.0 (SPSS) was used to create a database in which to enter participant information. The database was independently checked for accuracy. Descriptive statistics, including means, standard deviations, and frequency distributions were computed. The analysis also included Pearson product-moment coefficient of correlations computed between relevant variables, as well as the computations of a hierarchical regression analysis. A significant level, alpha, was selected at <.05 for all statistical tests. The following section includes results of these statistical analyses.

Description of the Participants

The Postpartum Depression Screening Scale (PDSS) was used to yield a total score reflecting the presence and severity of symptoms of postpartum depression as well as seven subscales reflecting symptom content. The mean total score for the sample (N=202) was 59.38 (S.D = 21.08), with scores ranging from 35 to 128. Although the majority of the sample (60%) had total scores which reflected a normal level of adjustment (score of 59 or below), 24% had scores reflecting significant symptoms of postpartum depression (score of 60-79) and 17% screened positively for major postpartum depression (score of 80 or above).

An analysis of the symptom content scores revealed significant elevations for those participants with a positive screen for postpartum depression in the areas of sleeping/eating disturbances, anxiety/insecurity, emotional lability, mental confusion, and

suicidal thoughts. The participants with significant symptoms of PPD but not a positive screen did not, on average, show significant elevations in any of the symptom content areas. See Table 7 for a comparison of symptom content scores between participants in each of the three levels for total score (normal, significant symptoms, and positive screen).

Table 7

Symptom Content Profile (N=202)

	Range of Total Scores					
	Normal (n=121)		*Significant Symptoms* (n=46)		+ Screen (n=35)	
	Mean	S.D.	Mean	S.D	Mean	S.D.
SYMPTOM CONTENT						
Sleeping/Eating Disturbance	7.05	2.42	10.8	3.58	14.26*	3.81
Anxiety/Insecurity	7.66	2.15	11.57	1.89	15.46*	2.48
Emotional Lability	7.33	2.29	11.61	2.53	17.26*	2.70
Mental Confusion	6.13	1.67	10.80	2.00	15.43*	2.90
Loss of Self	5.75	1.16	9.76	1.62	12.77	3.28
Guilt/Shame	5.93	1.53	9.57	1.87	12.43	4.48
Suicidal Thoughts	5.07	.56	6.00	1.79	7.69*	3.56
TOTAL SCORE	44.90	7.38	70.11	5.28	95.34	12.79

*indicates an elevated score.

Correlational Analyses

The primary hypothesis of the study proposed using a one-way analysis of variance (ANOVA) to compare the mean PPD scores of three groups of women (N=150; n=50 for all groups): those who discontinued medication during pregnancy; those who either continued or restarted medication during pregnancy; and a control group of women not taking medication at or prior to conception. However, 9 months of data collection did not yield enough women in the two medication groups (n=11 and n=17) to achieve statistical power and was, therefore, not a testable analysis. In lieu of this analysis, a new variable, medication status, was correlated with PPD, hypothesizing a negative relationship (variable 9).

The second hypothesis contended that there would be a positive correlation between PPD and longevity of medication among the subgroup of women who discontinued medication during pregnancy (n=11). The results showed a negative but not significant correlation between these two variables (r=-.340, p=.306). This suggests that, contrary to the research hypothesis, postpartum depression decreases as length of time on medication increases among this subgroup of medication discontinuers.

As the third hypothesis postulated, there were significant correlations between total scores on the PDSS and selected variables, with N=202 for all correlations. There was a significant positive correlation between the first variable, pregnancy mood, and PPD (r=.391, p=.000). This finding shows that postpartum depression tends to increase as depression in pregnancy increases, suggesting a relationship between prenatal depression and postpartum depression. This constitutes a significant but weak/moderate relationship.

Next, there was a significantly positive correlation between the second variable, child care stress, and PPD (r=.394, p=.000), suggesting that as stress related to caring for one's baby increases, postpartum depression also increases. The relationship between these two variables is significant but weak/moderate. A significant negative correlation was found between the third variable, emotional support, and PPD (r=-.385, p=.000); this finding suggests that as emotional support increases, postpartum depression decreases. The relationship between these two variables is significant, although weak/moderate.

Next, a significantly negative correlation was found between the fourth variable, instrumental support, and PPD (r=-.385, p=.000), suggesting that as instrumental support increases, postpartum depression decreases. The relationship between these two variables is weak to moderate but significant. There was also a significantly negative correlation found between the fifth variable, marital satisfaction and PPD (r=-.343, p=.000). This finding suggests that as marital satisfaction increases, postpartum depression decreases and also represents a significant, yet weak/moderate, relationship.

Variable 6, history of depression (treatment and/or symptoms), had a significantly positive correlation with PPD (r=.222, p=.002), and this finding suggests that individuals with a history of depression tend to have higher postpartum depression scores. The relationship between these two variables is significant but weak. Similarly, a significantly positive correlation was found between variable 7, baby temperament, and PPD (r=.292, p=.000), suggesting that postpartum depression increases as a baby's temperament becomes increasingly more difficult. Although significant, the relationship between these variables is weak.

Variable 8 (birth experience) had a significantly positive relationship with PPD (r=.216, p=.002), suggesting that postpartum depression increases when difficult birth experience increases. The relationship between these variables is significant but weak. Finally, a significantly negative correlation was found between the ninth variable, medication status (stopped medication, stayed on medication, not on medication at conception), and PPD (r=-.220, p=.002). Theses findings suggest that PPD increases as discontinuation of anti-depressant medication during pregnancy increases. The relationship between these variables is significant but weak.

Regression Analysis

A hierarchical linear regression was performed to determine to what degree, if any, each variable could explain the unique variance in postpartum depression scores at six weeks postpartum. All variables were postulated to predict postpartum depression, and the order of entry for the regression was pregnancy mood, care stress, emotional support, and instrumental support, and marital satisfaction, history of depression, baby temperament, birth experience, and medication status.

Child care stress (16%), pregnancy mood (9%), emotional support (5%), and marital satisfaction (1%) accounted for 31.3% of the combined variability in postpartum depression scores. In the first step, child care stress alone accounted for 16% of the variance in postpartum depression scores (r=.394, R-square=.156, F (1,200) = 36.82, p=.000). Next, pregnancy mood was entered into the equation to test its predictive role above and beyond the effect of care stress. Pregnancy mood accounted for an additional 9% of the variance in postpartum depression scores (r=.499, R-square=.249, F (2, 199) =33.06, p=.000). In the third step, emotional support was entered into the equation,

accounting for an additional 5% of the variance in postpartum depression scores (r=.545, R-square=.297, F (3, 198) = 27.92, p=.000). In the final step, marital satisfaction was added to the equation, accounting only for an additional one percent of the variance in postpartum depression scores (r=.559, R-square=.313, F (4, 197) =22.42, p=.000). Instrumental support, history of depression, baby temperament, birth experience, and medication status did not contribute significantly to the prediction of postpartum depression. Please see Table 8 for a summary of the above information.

Table 8

Summary of Regression (N=202)

Dependent Variable: Postpartum Depression

Step	R	R^2	AdjR^2	F	SigF	R^2Ch	FCh	SigCh	B	Sig
1	.394	.156	.151	36.83	.000	.156	36.83	.000	.394	.000
2	.499	.249	.242	33.06	.000	.094	24.90	.000	.315	.000
3	.545	.297	.287	27.92	.000	.048	13.50	.000	-.235	.000
4	.559	.313	.299	22.42	.000	.015	4.44	.036	-.145	.036

Predictors: (Constant), Care Stress
Predictors: (Constant), Care Stress, Pregnancy Mood
Predictors: (Constant), Care Stress, Pregnancy Mood, Emotional Support
Predictors: (Constant), Care Stress, Pregnancy Mood, Emotional Support, Marital Satisfaction

Chapter 4

Discussion

This study examined the relationship between postpartum depression and several variables in a sample of 202 women screened at the routine postpartum visit. The primary purpose of the study was to determine the relationship between the discontinuation of anti-depressant medication during pregnancy and the development of postpartum depression. A history of depression is one of the most salient risk factors associated with an onset of PPD, and approximately 12 million women in the United States experience a clinical depression each year, most frequently during the child-bearing years (NIMH, 1999). Furthermore, anti-depressants have become increasingly standard in the treatment of depression, with one study finding that anti-depressants represented the most frequently prescribed medications to women during visits to physician offices and hospital outpatient departments (Burt and Bernstein, 2003). The study intended to expand the literature on postpartum depression to include medication discontinuation as a potentially additional risk factor. The relationship between medication discontinuation and mood has been fairly well studied in pregnancy (Einarson et al., 2001; Marcus et al., 2005) but not in the postpartum.

The study originally intended to test its primary hypothesis using a one-way analysis of variance in order to compare the means of three groups of women: those who discontinued medication during pregnancy, those who stayed on medication during pregnancy, and a control group who did not take medication prior to or during pregnancy. However, nine months of data collection did not yield enough women in the two medication groups [discontinuers (n=11) and continuers (n=17)] to achieve statistical

power and was, therefore, not a testable analysis. In lieu of this analysis, the study used a correlational analysis of the variable "medication status" (stopped medication, stayed on medication, not on medication at or prior to conception) to determine its relationship with postpartum depression.

Based on research linking long-term use of anti-depressants with tolerance and relapse (Fava, 1999; Fava, 2003; Massou et al., 1997; Young et al., 1995; Zanardi et al., 2001), the study also hypothesized a positive relationship between PPD and length of time on medication among the subgroup of women who discontinued anti-depressants during pregnancy. This finding was not substantiated, and the results showed a negative and not significant relationship between PPD and length of time on medication among those who discontinued medication. It is noteworthy that this sub-sample of subjects was extremely small (n=11). One possible explanation for these findings is that those women taking medication for a shorter duration may have been at increased risk for PPD if medication discontinuation occurred prematurely and thus before a complete recovery from symptoms. Similarly, those women taking medication for a longer duration may have been in remission and may not have experienced a recurrence of symptoms by the six week postpartum check-up.

The findings indicate a significantly positive correlation between PPD and pregnancy mood. Although the relationship was weak/moderate, it still suggests that symptoms of PPD increase as prenatal depression increases. Stated another way, women who experience depression during pregnancy seem to be at an increased risk for postpartum depression. Several biological, psychological, or social factors may contribute to depression in pregnancy and the link between prenatal depression and PPD

has been clearly established in the literature (Gotlib et al., 1991; Honey et al., 2003; O'Hara et al., 1982; O'Hara et al., 1991; Righetti-Veltema et al., 1998). This study corroborates the relationship between PPD and prenatal depression.

Results also showed a significantly positive correlation between PPD and child care stress. Although weak to moderate, the relationship still suggests that symptoms of PPD tend to worsen when women experience caring for their babies as being stressful. Child care stress can result from a plethora of factors and may be precipitated by infant-related stressors (i.e. neonatal complications, health problems, difficult temperament, and poor orientation) and/or factors related to the mother's physical, psychological, and/or social state. This study provides additional support for a relationship between PPD and child care stress which has been well-founded in the literature (Costa et al., 2000; Davis et al., 2003; Edbor et al., 2000; Hopkins et al., 1987; O'Brien et al., 1999; Sutter-Dally et al., 2003; Wood et al., 2004).

Significant but weak/moderate negative correlations were found between PPD and emotional support, instrumental support, and marital satisfaction, suggesting that symptoms of PPD tend to increase as support and marital satisfaction decrease. Although fairly self-explanatory, emotional support may refer to feeling loved, nurtured, and cared for by a spouse/partner and/or by extended family, friends, and/or community. Instrumental support refers to more concrete forms of help with household chores and baby care which can be received from a variety of sources (spouse, family/community, hired help, etc...). Marital satisfaction refers to the degree of satisfaction with one's marriage; this may refer to situational stress related to inadequate spousal support (emotional and/or instrumental) during the newborn adjustment period or to the existence

of a more pervasive sense of dissatisfaction either prior to or during pregnancy. This study provides additional support for the relationship between PPD and these variables.

The significantly positive relationship between PPD and a history of depression, which included women with a history of symptoms who may or may not have received treatment, was less robust than expected. The fact that the vast majority of the sample (68%; N=202)) reported no history of depression offers one possible explanation for the weak relationship between these variables. Risk factors other than a history of depression may have been more salient with regard to the 40% of women in the sample (N=202) who endorsed symptoms of PPD. The fact that 40% (N=202) of the women in this sample had symptoms of PPD suggests that there were other more salient risk factors related to the PPD.

The significant but weak positive correlation found between PPD and baby temperament suggests that PPD tends to increase as the baby's temperament becomes more difficult. Difficult baby temperament refers to infants who cry frequently, react negatively to new situations, and have irregular and unpredictable daily routines (Santrock, 1983; Thomas & Chess, 1987). Although Whiffen & Gotlib (1989) found evidence that two month old babies of depressed mothers were emotionally and cognitively different from babies of non-depressed mothers, the authors could not ascertain whether or not these differences were the result of actual infant disposition or of infant response to being exposed to a depressed mother. In other words, this particular study illuminated the challenge inherent in determining whether or not difficult infant temperament is a cause or an effect of maternal depression. Cognitive distortions of depressed mothers may also contribute to a less than accurate perception of infant

temperament (Whiffen & Gotlib, 1989), further confounding the issue. It is beyond the scope of this study to make these distinctions about self-reports of temperament; however, the relationship between difficult baby temperament and PPD has corroborated existing research.

The results also found a significantly positive, albeit weak, relationship between birth experience and PPD, suggesting that symptoms of PPD increase when the birth experience is reported as difficult. Difficult birth experience may be associated with pain, medical complications, and/or personal/emotional complications and this may have some connection with the type of delivery that occurs. Research has substantiated a relationship between PPD and delivery by caesarean (Boyce & Todd, 1992; Edwards, Porter, & Stein (1994). A study comparing planned versus emergency caesarean (Koo et al., 2003) suggests that the salient factor has to do with the unanticipated nature of the emergency rather than the surgical procedure alone. It is possible that a woman may report a difficult birth experience when her actual experience does not meet her expectations, regardless of type of delivery.

A significant but weak relationship was found between medication status and PPD, suggesting a link between discontinuation of anti-depressant medication in pregnancy and symptoms of PPD. Previous research has found a relationship between medication discontinuation and depressed mood in pregnancy and, as already reported in this study, a link between prenatal depression and PPD has been well-established. Giving birth and adjusting to the new mother role represents a significant stressor for all women, especially those already predisposed to depression (Riecher-Rossler & Fallahpour, 2003). The findings of this study suggest that women who stop taking anti-depressants during

pregnancy may be placing themselves at increased risk as they approach the postpartum, a time of heightened vulnerability. The limited number of women in the sample who discontinued medication (n=11) may, in part, explain the weak relationship between these variables.

The four predictor variables (child care stress, pregnancy mood, emotional support, and marital satisfaction), accounting for 31.3% of the variance in PPD scores, provide additional support to the existing literature on predictor variables. A substantial body of research has identified these variables as predictive of PPD (Beck, 2001; Leung, 2002, Logsdon, 2001; Whiffen, 1988). Predictors can be used to ascertain a woman's risk for developing PPD. Unless a woman has experienced child care stress with previous births, assessment of this variable prior to delivery will be difficult and may instead be assessed by evaluating a woman's history of adjusting to new and potentially demanding situations. Assessment of mood in pregnancy can be fairly easy to assess if obstetrical staff are willing to implement formal depression screening throughout the prenatal period. Emotional support and marital satisfaction can also be assessed prenatally with the caveat that these variables are subject to change during the postpartum period, especially if, for example, a husband or partner's behavior falls short of the new mother's expectations.

Summary of Results

In summary, significantly positive correlations were found between PPD and pregnancy mood, child care stress, history of depression, baby temperament and, birth experience. Significantly negative correlations were found between PPD and emotional support, instrumental support, marital satisfaction, and medication status. Hierarchical

multiple regression indicated that child care stress and pregnancy mood predicted a significant amount of the variance in postpartum depression, and emotional support and marital satisfaction accounted for a significant yet smaller portion of the variance in PPD scores. A negative but not significant correlation was found between PPD and length of time on medication for the subgroup of women who discontinued medication during pregnancy.

The results of this study supported all hypotheses except the prediction of a positive correlation between PPD and length of time on medication for the subgroup of medication discontinuers. Most results were less robust than anticipated, most likely because the majority of the sample (60%) did not have any symptoms of PPD, and only 17% endorsed symptoms indicative of a positive screen for postpartum depression.

Interpretation of Results

Seventeen percent of the participants in this sample had symptoms indicative of major postpartum depression, and this falls within the 10 to 20% range of new mothers estimated to become afflicted with PPD (NMHA, 2003). Women in this range tended to endorse symptoms related to disturbances in eating and/or sleeping, feelings of anxiety and/or insecurity, feeling of emotional instability, feelings of mental confusion, and suicidal thoughts. It is noteworthy that an additional 24% of the sample endorsed significant symptoms of PPD, indicating the potential presence of a minor depression. The fact that a substantial proportion of women (41% ;N=202) in the current study were experiencing symptoms beyond the baby blues indicates that many of these women are indeed suffering, identifying a need for additional evaluation and possible treatment.

As is the case with many obstetrical practices, this particular office did not

conduct any formal screening for postpartum depression at the time of the study. Therefore a physician would become aware of a woman's symptoms only if she discussed them during the exam, and this is less likely, considering the embarrassment and guilt frequently associated with this disorder. The current study provides further evidence that screening does increase detection, most likely because women are more comfortable recording their symptoms as an initial step, before discussing these symptoms with their physicians. Further, recognizing some of their own symptoms in writing may provide some relief by normalizing the disorder to some degree.

The study sample represented a fairly homogenous group in demographic terms. Most of the subjects in the sample were white, married, middle class women who were well-educated. The results may have been confounded by the preponderance of married subjects, especially considering the potentially protective value that social support and marital satisfaction has on postpartum mood. A larger proportion of single parents in the study may have been associated with an increase in postpartum depression scores, especially in the absence of other protective factors (such as social support from sources other than a spouse). The high proportion of middle class women in the study sample may also have confounded the results of the study, especially considering the relationship found between PPD and low socioeconomic status (Beck, 2001; Kuo et al., 2004; Seguin, Potvin, St.-Denis & Loiselle, 1999). There may have been an increase in postpartum depression scores if the sample had been represented by a higher proportion of low socioeconomic status mothers.

Half of the sample were first-time mothers, and it is noteworthy that the average age of the sample was 30 years old, suggesting the postponement of motherhood

presumably to fulfill other roles. The relationship between age and PPD has not been well-studied and was not hypothesized by the current study. A sample with a higher average age may have been at greater risk for PPD, especially for career-oriented primiparous mothers for whom motherhood represents a drastic lifestyle change. However, experience with motherhood may serve as a protective factor for multiparous mothers in this higher age group. By comparison, the lifestyle change may not be as salient a factor in a sample of mothers with a lower average age; yet, lack of emotional maturity and inadequate planning for parenthood may be a factor which increases risk for younger mothers. Regardless of age, it is possible that the stigma resulting from unrealistic expectations about motherhood is a more salient risk factor for primiparous women experiencing motherhood for the first time. A larger proportion of primiparous mothers in the current study may have been associated with higher PPD scores. In terms of the proportion of women taking anti-depressants proximate to pregnancy (13%; N=202), the current study is, however, representative based on a similar proportion found in the Marcus et al. (2005) study (11%; N=3500).

Despite the demographic homogeneity of the sample, the results provide additional support for correlates of PPD that had already been studied in the literature, suggesting that PPD is a disorder that afflicts women in general, without respect to their demographic characteristics. According to Beck's (2001) meta-analysis, prenatal depression, child care stress, social support, marital relationship, history of depression, and infant temperament represented six of 13 predictors for PPD and had moderate effect sizes. This study certainly upheld the positive relationship between PPD and mood in pregnancy, even though the study did not glean the reasons for prenatal depression in the

sample. The study also upheld the positive relationship between PPD and child care stress, suggesting that the women in this sample experienced more depression when they experienced child care as a stressor, regardless of whether or not the stress was a reflection of something externally or internally produced.

The negative relationships between PPD and both emotional and instrumental support that the study upheld, suggest that an absence of support, whether perceived or real, can put women at risk in the postpartum. Although separate constructs, the influence that emotional and instrumental support potentially have on one another may have impacted the results of the correlational analyses. For example, a woman who asks her husband to perform more hands-on duties (housework, child care) may subsequently feel more emotionally supported by him as well. Likewise, if a woman perceives the emotional support of friends and family, she may be more inclined to ask for assistance with more concrete duties. The negative relationship found between marital relationship and PPD may also be related to the support constructs, because a poor marital relationship could either precede or follow inadequate support. Bernazzani et al. (1997) found that the correlation between difficult relationship and prenatal depression had an indirect effect on PPD, and Hock et al. (1996) found a significant correlation between symptoms of PPD at 9 months and a decline in marital satisfaction between the prenatal and postnatal period.

Other correlates upheld by this study include difficult infant temperament and difficult birth experience. Women with more difficult babies, regardless of whether or not the babies were actually more difficult or were reacting to the stress of being cared for by a depressed mother, had higher levels of depression. Likewise, women who reported

having a more difficult birth experience, regardless of the reasons, tended to experience higher levels of depression. The construct of difficult birth experience in this study represents difficulty as a result of pain, medical complications, and/or personal complications, without respect to type of delivery. Therefore a woman's mental and physical state, as well as her pain threshold, most likely contributed to her assessment of her own birth experience. Based on research correlating PPD and an emergency c-section (Koo et al., 2003), it is possible that the relationship between PPD and a difficult birth experience may have been more robust if the number of women reporting an emergency c-section in the current study (n=26) had been larger.

The findings related to the variable, medication status, were significant but not as robust as anticipated, suggesting that medication discontinuation poses an additional risk factor for symptoms of PPD. As previously discussed, analysis of the primary hypothesis was modified due to lack of participants in each of the two medication groups of the study, despite procedure modifications. Data collection at the additional sites yielded only 2 additional surveys, and it is possible that women were less forthcoming with information when they self-selected, based on anti-depressant use. It is also possible that, even among the 200 women who were included in the study regardless of medication status, there was some hesitation to share information about anti-depressant use, especially if this information was not shared with their obstetricians. Fears of being stigmatized have impeded women from speaking up about their depression, especially in the postpartum (Tam et al., 2000).

It is also possible that the demographic homogeneity of the sample also reflected a homogeneity regarding beliefs about depression and its treatment. Despite substantial

increases in the rate of anti-depressant treatment (Stafford et al., 2001), it is possible that the vast majority of this particular sample of women did not experience or seek medical treatment for depression shortly before or during pregnancy. The most salient possibility suggests that obtaining enough subjects to study the relationship between medication status and PPD requires screening a larger number of participants. The current study's proportion of women taking medication proximate to pregnancy (13%; N=202) parallels the Marcus et al. (2005) study in which only 11% of 3500 participants had taken medication close to conception.

The fact that most of the findings in the current study were less robust than expected suggests that certain moderator variables may have served a protective role for some potentially at-risk women. Dimensions of psychological hardiness, described as a personality style characterized by the components of commitment, control, and challenge, have been shown to moderate the relationship between stress and depression (Oman & Oman, 2003; Pengilly & Dowd, 2000; Rhodewalt & Zone, 1989; Santrock, 1983). It is possible that, in the current study, women with psychological hardiness were more adept at managing any stress associated with the postpartum and therefore more resilient to symptoms of depression. Similarly, women having better developed coping skills, whether or not they are learned or inherent dimensions of personality, tend to manage stress more productively. Effective coping may include the use of proactive problem-solving strategies aimed at altering the source of stress or the use of emotion-focused strategies, such as cognitive restructuring, recreational activities, humor, religion, and spirituality aimed at reducing emotional distress (Carver, Scheier & Weintraub, 1989; Matheson & Anisman, 2003). In the current study, it is possible that better developed

coping skills may have moderated the impact of stress and served to protect some women from experiencing symptoms of PPD. This may be especially salient considering that the majority of the sample is well-educated, a factor which can impact learned coping skills.

A positive attributional style frequently associated with optimism represents another potential moderator variable in the current study. Individuals having a positive attributional style tend to credit themselves for positive experiences in their lives and have hope that the future will bring more positive experiences in all facets of their lives (Scott, 2006). Likewise, they attribute negative experiences to external factors and perceive these experiences as isolated incidents which are not representative of themselves or the future. Positive thinking has been associated with higher self-esteem and is potentially a depression-buffer (Hull & Mendolia, 1991; Lightsey, 1994) and a moderating factor which may have enabled some participants in the current study to manage PPD-related stressors effectively and to experience healthier outcomes.

Other factors potentially impacting the outcome of the current study concerns multiparous women who may have experienced PPD following a previous birth. This subgroup of women may have approached the current birth more realistically and implemented a plan of action in an attempt to effect a more positive outcome. Whether or not a women's role either as a stay-at-home or as a working mother met her pre-birth expectations may also be a factor related to PPD. A woman having to return to work due to financial constraints may become depressed if she expected (and hoped) to stay home and care for her baby. Likewise, a woman needing to stay home to care for a baby with health problems may become depressed, especially if she had expected to return to work. Exposure to other life stressors (such as an ill family member, death of a loved one, or

unemployment of a spouse) during the postpartum period may also increase a women's vulnerability to depression and may have been a factor affecting the outcome of the current study. An unplanned pregnancy represents another potential factor which may have mediated the relationship between PPD and other variables identified by the current study.

Clinical Implications

Estimates indicate that approximately 50% of symptomatic women do not seek treatment for PPD (Chaudron, 2003; Lane et al., 1997), usually out of embarrassment and fears of being stigmatized. Yet, 40% of the women in the current study endorsed some degree of symptoms of PPD, with 17% screening positive for a major disorder. It is difficult to know if women are more inclined to be forthcoming on a pen and paper measure than they would be if they are forced to discuss symptoms of PPD with their physicians, who may lack the knowledge and/or self-efficacy needed to put patients at ease. If, as some research suggests, screening increases the detection of PPD (Chaudron et al., 2004; Freeman et al., 2005), then this creates opportunities for clinical psychologists to develop relationships with obstetrical and pediatric practices to conduct or oversee screening in exchange for referrals to further evaluate and treat symptomatic women. This arrangement benefits providers of medical/mental health care and patients alike. An understanding of the risk factors supported in this study will help clinicians utilize a biopsychosocial approach to assess, diagnosis, and treat women both prenatally and in the postpartum. This is critical because the risk factors identified in this study are multi-faceted in nature, reflecting biological, psychological, and social aspects of individuals' lives.

Results of this study indicate that clinical psychologists would benefit from having knowledge of the risks and benefits of anti-depressant discontinuation during pregnancy. During the time period in which the study took place, the FDA required manufacturers to add warning labels regarding risks associated with third trimester exposure (Moses-Kolko et al., 2005) and gave Paxil a higher risk pregnancy rating. Clearly, the trend over the past few years has been to increase the level of caution regarding anti-depressant use during pregnancy, and this will likely exacerbate the medication cessation dilemma for women who have benefited from treatment with anti-depressants.

With this knowledge, clinical psychologists can play a significant role by assisting clients who face the medication-during-pregnancy dilemma with problem-solving and risk-benefit strategies applied during therapy sessions. Clinicians can begin this process by having discussions with all child-bearing age therapy clients who have been prescribed anti-depressant medication, regardless of whether or not they are pregnant or even contemplating pregnancy. Preliminarily increasing women's awareness and understanding of the realities associated with medication continuation/discontinuation in pregnancy may help them plan more effectively for the future by enabling them to make more informed choices.

Psychologists treating clients who decide to discontinue medication during pregnancy can treat any symptoms of depression that may arise throughout the pregnancy and use psychoeducation to help clients anticipate problems in the postpartum. Multiple sessions of cognitive behavioral therapy would likely be a good substitute for medication, based on studies demonstrating its effectiveness when used alone or in combination with

other treatments (Appleby et al., 1997; Chabrol et al., 2002; Cooper et al., 2003; Honey et al., 2002; Prendergast & Austin, 2001). These sessions can focus on increasing clients' coping skills to enable them to manage potential postpartum stressors more effectively. Current coping skills can be assessed in order to identify strengths and deficits. Dependent upon the areas of deficit, new coping skills can include problem-solving strategies aimed at changing some aspect of the stressor or self-care strategies aimed at reducing emotional distress.

Clinical psychologists, especially those working in behavioral medicine settings, can be proactive in the prevention of PPD by educating medical staff, as well as patients and their families about the risk factors associated with PPD, including the psychosocial and neuroendocrine changes which are unique to the postpartum period (DSM-IV-TR, 2000). In addition to obstetrical and pediatric providers of patients having private insurance, it is critical to disseminate information to providers of underserved populations who frequently receive federal or state-funded health care benefits. These include agencies such as Planned Parenthood as well as federally funded clinics serving both women and children. Informed physicians and other medical staff that come into contact with postpartum women can not only better educate patients but can also increase their ability to understand and potentially detect symptoms. Incorporating presentations about PPD at venues where medical staff receive continuing education credits represents an effective way to disseminate information to large audiences; these are venues such as conferences, seminars, and hospital grand rounds. Developing separate prenatal classes on PPD or incorporating a greater depth of information into already existing childbirth classes represent a few ways to increase patient awareness. Providing pamphlets and

other written materials in the offices of obstetricians and pediatricians represent another. A government-sponsored program similar to the one launched by the state of New Jersey under Acting Governor Richard J. Codey is an extremely effective way to reach a large audience. However, these programs are costly and stand a better chance of being implemented when someone in public office expresses a personal interest, as was the case in New Jersey.

Increasing awareness and knowledge of PPD not only increases the detection of PPD but also helps to create an environment that normalizes the disorder and encourages women to discuss their symptoms without fear of stigmatization. It is unfortunate that the cases of PPD to which many women are exposed are the very rare and extreme cases of psychosis reported by the media. These cases frequently have tragic endings involving infanticide and/or suicide; women who equate PPD with these extreme cases may continue to suffer silently based on erroneous beliefs that less severe, non-life-threatening symptoms do not constitute PPD. Opportunities abound for clinical psychologists to intervene by assisting women and their families either to avert or to cope with a potentially debilitating disorder which can have deleterious effects on women, children, families, and society as a whole.

Limitations of the Study

The cross-sectional design of the study limits the ability to determine the cause and effect relationships among the variables. The fact that 99% of the study participants were patients of a primarily suburban, central Pennsylvania obstetrical practice limits the ability to generalize the results to other practices on the basis of geographical and philosophical differences which may impact decision-making in the practices. The

demographic homogeneity of the sample also makes it difficult to generalize the results to populations that are more diverse in terms of race, education, marital status, and socioeconomic class. Because screening took place at a single point in time, limitations exist in the ability to generalize results to measurements taken at time periods other than the 6 week postpartum check-up. The study cannot be generalized to the subgroup of women who schedule, but never receive postpartum follow-up care.

Limitations also exist regarding the method by which participants were screened. Because all the questionnaires relied on self-reports, individuals may have had a tendency to respond in a socially desirable manner. This is especially salient with regards to the postpartum period during which women have demonstrated a reluctance to discuss symptoms based on beliefs that motherhood should be a joyful and fulfilling time. Individual responses on the PDSS may have reflected attempts to appear less depressed and therefore happier in their mother role than they actually were. Furthermore, individual responses on the demographic survey may have also reflected social desirability, especially regarding sensitive topics such as marital satisfaction and depression-related issues. Despite the anonymity of the surveys, it is possible that some women were reluctant to share information about their mental health.

Another threat to the study's validity includes the reliance on voluntary participation in the study. In other words, the fact that certain individuals may have opted not to participate may have confounded the results of the study, and this may have been even more salient after the procedures were changed to include only those women who had a recent history of anti-depressant use. Again, despite the anonymity of the surveys, women may have been reluctant to respond when the inclusion criteria was more limited,

especially if social desirability was a factor. It is noteworthy that the addition of a third data collection site utilizing the new procedures did not yield any new participants, despite a month-long attempt to recruit approximately 30 women when they checked in for their postpartum appointment.

Another limitation of the study concerns the fact that the only measure used to assess postpartum depression (the PDSS) is merely a screening instrument and not a diagnostic tool. The measure is intended to serve as a "gatekeeper" to identify women at risk for PPD, with the presumption that these women will be subsequently referred for an additional evaluation (Beck & Gable, 2002). In other words, collateral data in the form of a clinical interview both with patient and family must augment the screen to complete the assessment and make appropriate referrals to mental health professionals if necessary.

Finally, testing the primary hypothesis of the study was limited by the inability to perform the intended statistical analysis due to a lack of participants who had taken medication immediately prior to pregnancy. This may have been prevented had the study continued for longer than 9 months. However, considering the aforementioned issues related to social desirability and self-selection, it is possible that it would have taken months to obtain the necessary number of surveys to perform the intended analysis. Another possibility would have been to add more data collection sites and to include sites with a larger number of postpartum patients. Further, even among the small group of subjects taking SSRI anti-depressants at pregnancy, there may have been differences in the results based on they type of medication taken. Although it is beyond the scope of this study to examine individual medications, a women's unique physiology combined with the different chemical composition of each of the SSRI medications may have affected

mood symptoms related to discontinuation or continuation during pregnancy and subsequently in the postpartum.

Future Research

Future research of anti-depressant discontinuation in pregnancy should screen a larger group of more demographically diverse postpartum women in order to obtain enough subjects to conduct a more powerful statistical analysis. The medication cessation dilemma for pregnant women or those contemplating pregnancy is likely to continue, given the availability and effectiveness of SSRI anti-depressants, combined with the recent FDA warnings regarding fetal exposure to these medications. Both continuation and discontinuation of medication in pregnancy poses risks to the fetus, the former in terms of fetal exposure to medication in utero and the latter in terms of potential fetal exposure to maternal depression. Even if women endure symptoms of depression during pregnancy, the postpartum represents a period of additional risk as a result of the psychosocial and physiological changes that occur. Continued research of this issue is critical to ascertain the degree to which medication cessation in pregnancy serves as an additional risk factor for postpartum depression. Research should also focus on the nature of the risk-benefit analysis undertaken by these women and the extent to which they sought consultation both from family members and professionals alike. It is important to understand how much information women have at their disposal when they must make this difficult choice.

Because of the validity constraints imposed by screening at a single point in time and because symptoms of PPD can develop anytime within the first postpartum year, future researchers should consider screening women at various postpartum intervals (i.e.

6 weeks, 3 months, 6 months, 12 months). Although requiring a greater investment in time, identifying medication status and screening women for depression in pregnancy with a follow-up in the postpartum may provide researchers with a more comprehensive understanding of this issue. Previous research (Marcus et al., 2005) studying the relationship between medication status and mood in pregnancy can be expanded to the postpartum.

Future research of mood in the postpartum should continue to use the PDSS because it was created specifically to measure postpartum depression but this research may also use other more general measures of depression, especially if convergent validity is a concern. Adding a brief clinical interview may also help to glean more information about a particular woman's symptom profile and may also encourage women to discuss their symptoms honestly and to seek help if necessary.

In an effort to increase prevention and assessment of PPD, future researchers should continue to assess the knowledge and awareness of medical professionals who come into contact with postpartum women, namely obstetricians and pediatricians; they should also determine the degree to which screening programs are already in place. Previous research has identified a lack of knowledge by these professionals (Dietrich et al., 2003; Stevens & Diehl, 2003; Wiley et al., 2004), opening the door for future research to focus on the implementation of training programs to ascertain their impact on the detection and treatment of PPD. Generally speaking, the underlying goal of any research concerning postpartum depression should be to augment the literature on the prevention, assessment, and/or treatment of this potentially debilitating disorder in order

to increase societal knowledge and enable women to enjoy this special time with their babies.

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Appendix A

Dear Study Participant:

My name is Maria Murphy, and I am doctoral candidate at the Philadelphia College of Osteopathic Medicine (PCOM). I am conducting a study and requesting your help to understand the relationship between postpartum depression (PPD) and certain risk factors. You are being asked to participate in this study because you have recently had a baby and have an appointment with your doctor today for your postpartum check-up. By agreeing to participate, you will be asked to complete and return 3 questionnaires. This will take approximately 20 to 30 minutes of your time. You will also be provided a list of mental health referrals to assist you in seeking help should you be experiencing any symptoms of postpartum depression now or in the future.

While you may not benefit directly from this study, other people in the future may benefit from what the researchers learn from this study. Also, if you are experiencing any emotional distress, you will benefit by being provided with a list of referrals and information about some symptoms of PPD. Although there are no known risks associated with your participation in this study, exploring emotional issues and questions about depression may cause you to experience discomfort and/or distress. It is expected that this will be minimal to none. You will not receive any payment for being in this study but your participation is gratefully appreciated.

Your participation in this study is completely voluntary and you may refuse to be in the study with no risk of penalty to you. You may choose to discontinue participation in the study at any time. There will be no penalty or consequence for failing to complete the survey materials.

Your responses to the questionnaire and survey will remain completely <u>confidential</u> and will not identify you by name. Therefore, we ask that you refrain from putting your name on any of the questionnaires you will be returning to us. After your participation, the researcher <u>will not</u> have access to any information which could potentially identify you.

If you have any further questions about the research, you can contact the Principal Investigator (Dr. Barbara Golden) at the following address: PCOM, Psychology Department, 4170 City Avenue, Philadelphia, PA 19131-1694; (215) 871-6495. If you want to know more about Dr. Golden's background or the rights of research subjects, you can call Dr. Frederick Goldstein, Chairperson, PCOM Institutional Review Board at (215) 871-6859.

Thank you in advance for your participation in this study.

Appendix B

Referral List

Shortly after the birth of a baby, most women experience feelings of sadness which usually pass after 2 or 3 days. For many women, these symptoms persist and result in postpartum depression (PPD). Symptoms of PPD are similar to those for major depression and may include

- persistent feelings of sadness or emptiness
- frequent crying
- loss of pleasure for previously enjoyed activities
- feeling irritable or angry
- having either a poor or an excessive appetite
- having trouble falling asleep, waking up too early, or sleeping too much
- feeling restless and agitated or having little energy
- extreme fatigue
- feeling anxious
- feeling guilty or worthless
- having trouble concentrating
- feeling unable or unwilling to care for your baby
- feeling hopeless or thinking your children would be better off without you
- worrying excessively about your baby's health
- intrusive thoughts about harming yourself or your baby.

If you are experiencing any of the above symptoms, please know that you are **NOT ALONE** and that **HELP IS AVAILABLE**. The following includes a list of mental health treatment providers who can offer assistance. (You may also contact your insurance carrier for a list of covered providers). Thank you for your participation.

IF YOU ARE HAVING THOUGHTS OF HARMING YOURSELF OR YOUR BABY, PLEASE SEEK HELP IMMEDIATELY

Crisis Intervention:

Cumberland County:

Carlisle Area: 717-243-6005
Shippensburg Area: 717-532-8049
Camp Hill Area: 717-763-2222
Duncannon Area: 717-834-3326

Dauphin County:

717-232-7511 or 888-596-4447

Support Groups/Resources:

PinnacleHealth WomanCare Resource Center @ 717-782-2727 or www.pinnaclehealth.org.

Psychotherapists:

Holy Spirit, Behavioral Health Services, Camp Hill, 717-763-2219
Pauline Wallin, Ph.D., Camp Hill, 717-761-1814
Jeff Verrechio, M.S., Camp Hill, 717-761-5301
PinnacleHealth Psychological Associates, Harrisburg, 717-231-8360
Susan Gillius, M.S., Lemoyne, 717-730-8555
Cheryl Shope, M.S., Lemoyne 717-730-8555

Psychiatrists:

John Mira, M.D., Camp Hill, 717-763-1191
J.K. Moola, M.D., Camp Hill, 717-761-1325

Other:

Depression After Delivery, Inc.
91 East Somerset Street
Raritan, NJ 08869
1-800-944-4773
http://www.depressionafterdelivery.com

Postpartum Support International
927 N. Kellogg Avenue
Santa Barbara, CA 93111
voice (805) 967-7636
fax (805) 967-0608
www.postpartum.net

Books (many of these books are available in paperback and can be purchased used from Amazon.com):

**Shouldn't I be Happy? Emotional Problems of Pregnant and Postpartum Women* by Shaila Misri, M.D.
**Mothering the New Mother: Woman's Feelings and Needs After Childbirth- A Support and Resource Guide* by Sally Placksin
**Conquering Postpartum Depression* by Ronald Rosenberg, M.D.
**Behind the Smile: My Journey Out of Postpartum Depression* by Marie Osmond.
**A Mouthful of Air* by Amy Koppelman
**The Cradle Will Fall* by Michele Remington
**Beyond the Blues: A Guide to Understanding and Treating Prenatal and Postpartum Depression* by Shoshana S. Bennett
**This Isn't What I Expected: Overcoming Postpartum Depression* by Karen Kleinman and Valerie Raskin
**Postpartum Depression: Every Women's Guide to Diagnosis, Treatment, and Prevention* by Sharon Roan
**Overcoming Postpartum Depression & Anxiety* by Linda Sebastian
**Postpartum Survival Guide* by Anne Dunnewold and Diane G. Sanford
**A Mother's Tears: Understanding the Mood Swings that Follow Childbirth* by Arlene Huysman

Appendix C

MOOD DISORDERS QUESTIONNAIRE

1. Has there ever been a period of time (at least TWO weeks) when you have been bothered by any of the following problems?

	Not at all	Several days	More than half the days	Nearly every day
a .Little interest or pleasure in doing things	☐	☐	☐	☐
b. Feeling down, depressed, or hopeless	☐	☐	☐	☐
c. Trouble falling or staying asleep, or sleeping too much.	☐	☐	☐	☐
d. Feeling tired or having little energy.	☐	☐	☐	☐
e. Poor appetite or overeating.	☐	☐	☐	☐
f. Feeling bad about yourself, or that you are a failure, or have let yourself or your family down.	☐	☐	☐	☐
g. Trouble concentrating on things, such as reading the newspaper or watching T.V.	☐	☐	☐	☐
h. Moving or speaking so slowly that other people could have noticed? Or the opposite – being so fidgety or restless that you have been moving around a lot more than usual.	☐	☐	☐	☐
i. Thought that you would be better off dead or of hurting yourself in some way.	☐	☐	☐	☐

2. Has there ever been a period of time (at least ONE week) when any of the following occurred at the same time?

	Yes	No
a. You felt much more self-confident than usual.	☐	☐
b. You got much less sleep than usual and found you didn't really miss it.	☐	☐
c. You were much more talkative or spoke faster than usual.	☐	☐
d. Thoughts raced through your head or you couldn't slow your mind down.	☐	☐
e. You were so easily distracted by things around you that you had trouble concentrating or staying on track.	☐	☐
f. You had much more energy than usual and tried to accomplish many more things than usual.	☐	☐
g. You did things that were usual for you or that others might have thought were excessive, foolish, or risky (such as buying sprees, risky sexual activity, or foolish business investments).	☐	☐

3. If you checked off any problems in #1 or #2, how much of a problem did any of these cause you (like being unable to work; having family, money, or legal troubles, getting into arguments/fights?)

☐ No problem ☐ Minor problem ☐ Moderate Problem ☐ Serious problem

Appendix D

Postpartum Survey

***The following section contains some general questions*.**

1. **Your Age**: _____

2. **What is the highest education you have earned?**
   [] less than high school
   [] high school graduate
   [] some college
   [] 4-year college degree.
   [] graduate degree or more

3. **What is your race or ethnic group?**
   [] White []Asian
   []Black or African American []American Indian or Alaskan Native
   []Hispanic or Latino []Native Hawaiian or other Pacific Islander
   []Other (Please specify)_____

4. **What is your marital status?**
   []Single []Divorced
   []Married []Separated
   []Partnered []Widowed
   []Other (please specify)_____

5. **If married or partnered, please describe your level of satisfaction with your current relationship?**
   [] Very Satisfied
   [] Satisfied
   [] Neutral
   [] Unsatisfied
   [] Very Unsatisfied

6. **What is you household's current gross annual income?**
   []<$20,000 []$75,001-$100,000
   []$20,000-40,000 [] over $100,000
   []$40,001-75,000

7. **Please list any significant health problems or conditions you have experienced, either before or during your pregnancy (such as thyroid problems, heart problems, cancer, diabetes, gestational diabetes, etc…)**
   _____
   _____
   .

8. **Please list any medications you have been taking to treat any significant medical conditions**_____
_____.

9. **How many times have you been pregnant?**_____

10. **How many biological children have you had?**_____

The following questions pertain to your current pregnancy and birth experience.

11. . **What type of delivery did you have?**
    [] Vaginal (not-induced)
    [] Induced vaginal after natural labor faltered
    [] Planned caesarean section
    [] Emergency caesarean section

12. **Did you have** _____a single birth OR _____multiple births?

13. **What was the date of your baby's birth**?_____.

14. **How would you describe your pregnancy**?
    [] problem-free
    [] difficult due to medical complications.
    [] difficult due to personal/emotional complications
    [] on bed-rest.
    [] other (please specify_____).

15. **How would you describe your birth experience**?
    [] problem-free
    [] difficult due to pain
    [] difficult due to medical complications
    [] difficult due to personal/emotional complications
    [] difficult due to medical **and** personal/emotional complications
    [] other (please specify_____).

16. **What, if any, types of pain-relieving medication did you receive during your labor and delivery?**_____.

17. **Was your baby born prematurely (less than 36 weeks gestation)?**
    [] Yes []No

18. **What was your baby's birthweight?** _____

19. Does your baby have any health or developmental problems which have been identified since birth?
[] Yes (please explain)_____
[] No

20. How would you describe your baby's temperament on a scale from 1 to 5, with "1" being <u>extremely easy-going</u> and "5" <u>being extremely difficult</u>?
[] 1
[] 2
[] 3
[] 4
[] 5

21. Was this a planned pregnancy? []Yes []No

22. Were you treated for infertility prior to the pregnancy? [] Yes []No

23. How would you rate the level of <u>emotional</u> support you currently receive to help you care for your baby?
[] an abundance of support
[] adequate support
[] some support but not adequate
[] no support

24 .How would you rate the level of <u>financial</u> support/assistance you currently receive to help you provide for your baby?
[] an abundance of support
[] adequate support
[] some support but not adequate
[] no support

25. How would you rate the level of <u>instrumental</u> support (i.e. help with daily feeding and changing, provide babysitting) you currently receive?
[] an abundance of support
[] adequate support
[] some support but not adequate
[] no support

26. How would you describe your mood during this pregnancy on a scale of 1 to 5, ("1" being <u>not depressed at all</u> and "5" being <u>extremely depressed</u>)?
[] 1
[] 2
[] 3
[] 4
[] 5

27 . How are you feeding your baby?

[] breast.
[] bottle (formula).
[] combination (breast milk and formula).

28. How stressful has it been for you to provide daily care for your baby?

[] Extremely stressful.
[] Moderately stressful.
[] Mildly stressful.
[] Not stressful at all.

29. If you were being <u>treated for depression</u> when you became pregnant OR immediately prior to pregnancy (either shortly before or during the time you were trying to conceive), what <u>type</u> of treatment did you receive?

[] Anti-depressant medication
[] Therapy or counseling
[] Medication and counseling
[] Other (please specify_____)
[] N/A

30. If you were being <u>treated for depression</u> with ANTI-DEPRESSANT medication when you became pregnant OR immediately prior to pregnancy (either shortly before or during the time you were trying to conceive), which medication(s) were you taking?

[] N/A
[] Prozac or Prozac Weekly or Sarafem (fluoxetine)
[] Zoloft (sertraline)
[] Celexa (citalopram)
[] Lexapro (escitalopram)
[] Luvox (fluvoxamine)
[] Paxil (paroxetine)
[] Effexor (venlafaxine)
[] Wellbutrin (buproprion
[] Remeron (mirtazapine)
[] Serzone (nefazodone)
[] Desyrel (trazodone)
[] Elavil (amitriptyline)
[] Anafranil (clomipramine)
[] Norpramin (desipramine)
[] Adapin or Sinequan (doxepin)
[] Tofranil (imipramine)
[] Aventyl or Pamelor(nortriptyline)
[] Vivactil (protriptyline)
[] Surmontil (trimipramine)
[] Nardil (phenelzine)
[] Parnate (tranylcypromine)
[] Other (please list_____ _____).

31. For how long did you take the medication(s) listed in #30?

[] N/A
[] 0 to 9 months.
[] more than 9 months (please indicate actual time_____).
[] other (please indicate_____).

32. In addition to the medications listed in #27, please indicate any other medications that you also took for your mood.

[] N/A
[] Eskalith or Lithonate (lithium)
[] Symbyax (olanzapine/fluoxetine)
[] Tegretol (carbamzepine)
[] Trileptal (oxcarbazepine)
[] Depakote (divalproex)
[] Neurontin (gabapentin)
[] Lamictal (lamotrigine)
[] Topamax (topiramate)
[] Moban (molindone)
[] Loxitane (loxapine)
[] Other (please list_____ _____).
[] Zyprexa (olanzapine)
[] Risperdal (risperidone)
[] Abilify (aripiprazole)
[] Geodon (ziprasidone)
[] Stelazine (trifluoperazine)
[] Haldol (haloperidol)
[] Navane (thiothizene)
[] Seroquel (mesoridazine)
[] Clozaril (clozapine)
[] Thorazine (chlorpromazine)
[] Prolixin (fluphenazine)

33. Did you continue to take anti-depressants for the duration of your pregnancy?

[] N/A
[] Yes
[] No

34. Did you switch to a different anti-depressant during your pregnancy?

[] N/A
[] Yes (please specify)_____
[] No

35. If you decided to stop taking anti-depressants while you were trying to conceive <u>or</u> when you discovered you were pregnant, please indicate your reasons (check all that apply):

[] N/A
[] Didn't want to risk harm to unborn baby.
[] Didn't think I needed them anymore.
[] Followed doctor's recommendations.
[] Experienced unwanted side effects.
[] Other (please specify)_____..

36. Did you either <u>*begin taking*</u> or <u>*restart*</u> anti-depressant medication at any time during your pregnancy due to an increase in symptoms of depression?

[] Yes
[] No
[] N/A

37. What were your doctor's recommendations about taking anti-depressants during pregnancy?

[] advised me to stop taking medication
[] advised me to continue taking medication
[] presented information but left decision up to me
[] had no recommendations
[] other (please specify_____).
[] N/A

38.What treatments are you *currently* receiving for depression?

[] Anti-depressant medication (name of medication_____)
[] Therapy/counseling.
[] Medication and therapy/counseling.
[] N/A

39. What were your doctor's recommendations about taking anti-depressants while breast-feeding?

[] advised me to stop taking medication.
[] advised me to continue taking medication
[] presented information but left decision up to me
[] made no recommendations
[] other (please specify)_____.

40. Did you switch from breast or combination feeding to all bottle-feeding because you began taking anti-depressants?

[] Yes
[] No
[] N/A

The following questions concern any HISTORY of depressive symptoms you may have had prior to this pregnancy.

41. Please indicate any treatment you've ever received for depression at any time prior to your most recent pregnancy and birth (check all that apply).

[] N/A because I have no history of depressive symptoms
[] I've never received treatment despite having symptoms
[] medication (please state name of medication_____)
[] counseling/therapy
[] other (please specify)_____.

42. If you have had prior births, did you ever experience symptoms of depression (such as a loss of pleasure for things you previously enjoyed, depressed mood, anxiety, sleeping or eating disturbances, poor concentration, etc..) within a few weeks or months after giving birth?

[]Yes []No [] N/A

Appendix E

Below is a list of statements describing how a mother may be feeling after the birth of her baby. Please indicate how much you agree or disagree with each statement. In completing the questionnaire, please circle the answer that best describes how you have felt over the past 2 weeks. Read each item carefully. Then circle the number that best fits your answer. Please give only one response for each statement, using the following scale:

1	2	3	4	5
Strongly Disagree	**Disagree**	**Neither Agree nor Disagree**	**Agree**	**Strongly Agree**

If you wish to change your response, completely mark through your first response with an "X." Then circle the response that best fits your new choice.

Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree	**During the past 2 weeks,**
1	2	3	4	5	1. I had trouble sleeping even when my baby was asleep.
1	2	3	4	5	2. I got anxious over even the littlest things that concerned my baby.
1	2	3	4	5	3. I felt like my emotions were on a roller coaster.
1	2	3	4	5	4. I felt like I was losing my mind.
1	2	3	4	5	5. I was afraid that I would never be my normal self again.
1	2	3	4	5	6. I felt like I was not the mother I wanted to be.
1	2	3	4	5	7. I have thought that death seemed like the only way out of this living nightmare.
					Stop here if you were asked to complete only the Short Form.
1	2	3	4	5	8. I lost my appetite.
1	2	3	4	5	9. I felt really overwhelmed.
1	2	3	4	5	10. I was scared that I would never be happy again.
1	2	3	4	5	11. I could not concentrate on anything.
1	2	3	4	5	12. I felt as though I had become a stranger to myself.
1	2	3	4	5	13. I felt like so many mothers were better than me.
1	2	3	4	5	14. I started thinking that I would be better off dead.
1	2	3	4	5	15. I woke up on my own in the middle of the night and had trouble getting back to sleep.
1	2	3	4	5	16. I felt like I was jumping out of my skin.
1	2	3	4	5	17. I cried a lot for no real reason.
1	2	3	4	5	18. I thought I was going crazy.
1	2	3	4	5	19. I did not know who I was anymore.
1	2	3	4	5	20. I felt guilty because I could not feel as much love for my baby as I should.
1	2	3	4	5	21. I wanted to hurt myself.
1	2	3	4	5	22. I tossed and turned for a long time at night trying to fall asleep.
1	2	3	4	5	23. I felt all alone.
1	2	3	4	5	24. I have been very irritable.
1	2	3	4	5	25. I had a difficult time making even a simple decision.
1	2	3	4	5	26. I felt like I was not normal.
1	2	3	4	5	27. I felt like I had to hide what I was thinking or feeling toward the baby.
1	2	3	4	5	28. I felt that my baby would be better off without me.
1	2	3	4	5	29. I knew I should eat but I could not.
1	2	3	4	5	30. I felt like I had to keep moving or pacing.
1	2	3	4	5	31. I felt full of anger ready to explode.
1	2	3	4	5	32. I had difficulty focusing on a task.
1	2	3	4	5	33. I did not feel real.
1	2	3	4	5	34. I felt like a failure as a mother.
1	2	3	4	5	35. I just wanted to leave this world.