The Use of Lactation Consultants in a Universal Postpartum Depression Prevention Intervention

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Shayna Vadnai

Mentor: Dr. Terry DiLorenzo, Psychology

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Abstract

Postpartum depression (PPD) is a major depressive episode experienced by up to 20% of women up until a year after childbirth, and is caused by a combination of biological, psychological and social factors. PPD can have a great impact on maternal well-being, causing women to have difficulty caring for their infants, obstetric complications or a general sense of guilt and hopelessness. Additionally, it can cause delayed neonatal development in infants and delayed speech and motor skills in the first year of life. Although various therapeutic programs have been developed to prevent the development of depressive symptoms, there are few preventative interventions that have been studied on a health system-level, and none based in the United States. Given the existing mental health benefits of breastfeeding and lactation consultations, as well as their current presence and insurance coverage in the US healthcare system, lactation consultants may be the best healthcare providers to implement a preventative intervention for PPD. Therefore, this review aims to explore the need for a preventative program for PPD and the possibility of utilizing lactation consultants to conduct mental health counseling, and to ultimately propose a study through which to determine if training lactation consultants to administer psychological counseling to patients could act as an effective universal preventive intervention for PPD.

I. Introduction

Postpartum Depression (PPD) is a term commonly used to describe the onset of a major depressive episode in a woman following childbirth. The American Psychiatric Association's *Diagnostic and Statistical Manual of Mental Disorders (*5th ed.; DSM-V; American Psychiatric Association, 2013) classifies antenatal and postpartum depression together under the umbrella term "perinatal depression." Perinatal depression is not classified as its own disorder, and is considered a specifier used when a patient meets the criteria for Major Depressive Disorder in addition to experiencing the symptoms during pregnancy or in the 4 weeks following delivery (Table 1; Stewart & Vigod, 2016). However, for clinical purposes, researchers and practitioners base their diagnoses on the onset of symptoms up to six months to a year postpartum. (Musters, McDonald, & Jones, 2008; Stowe et al., 2005)

Table 1: Diagnostic Criteria for Major Depressive Episode.*

At least five symptoms present for at least 2 weeks, for most of nearly every day

One symptom must include

- Depressed mood
- Markedly diminished interest or pleasure in all or most activities

Other symptoms

- Clinically significant weight loss when not dieting or clinically significant weight gain, or increase or decrease in appetite
- Insomnia or hypersomnia
- Psychomotor agitation or retardation
- Fatigue or loss of energy
- Feelings of worthlessness or excessive or inappropriate guilt
- Diminished ability to think or concentrate or indecisiveness
- Recurrent thoughts of death of suicidal ideation (with or without a specific plan)

Symptoms cause clinically significant distress or impairment in social, occupational, or other important areas of function

Symptoms not due to direct physiological effects of a substance or another medical condition, not better explained by schizoaffective disorder or other psychotic disorders, and there has never been a manic or hypomanic episode

Specifier: with peripartum onset

This specifier can be applied to the current or, if full criteria are not currently met for a major depressive episode, the most recent episode of major depression if onset of mood symptoms occurs during pregnancy or in the 4 weeks following delivery

*This list of criteria is adapted from the American Psychiatric Association's *Diagnostic and Statistical Manual of Mental Disorders,* fifth edition

II. Prevalence and Causes of Postpartum Depression

Approximately 7-20% of women experience PPD (Gavin et al., 2005; Shorey et al., 2018; Anokye et al., 2018; Patel et al. 2012), which is widely attributed to a combination of changes in hormonal levels during and following pregnancy, genetic factors, and social and psychological issues. Studies have shown differing results regarding the role of shifting hormonal levels in inducing a depressive episode. While studies searching for a relationship between the fluctuating ovarian hormonal levels and postpartum depression have shown no association (Buckwalter et al., 1999; Schiller et al., 2015), other studies, such as Gregoire et al. (1996), Moses-Kolko et al. (2009), Schiller et al. (2015), have shown that the use of estradiol, an ovarian hormone sometimes used to reduce symptoms of menopause, has been significantly effective in treating women for PPD, and animal studies have shown that the elimination of ovarian hormones can induce depressive symptoms (Stoffel & Craft, 2004; Suda et al., 2008; Schiller et al., 2015).

In addition to hormones, genetics may significantly increase the likelihood of developing PPD and may be partly responsible for onset of PPD. A study consisting of 838 pairs of twins in Australia found that genetic factors were responsible for 25% of the variance in the development of PPD (Treloar et al., 1999). Another study comparing incidences of PPD between siblings found that of the participants whose sisters had experienced PPD, 42% experienced PPD with their first delivery, whereas only 15% of women without a sibling who had experienced PPD experienced it after their first delivery ($p=0.01$; Forty et al., 2006). Further studies on genetic factors have shown that genes, such as 5HTT gene polymorphisms, MAO genes, TPH genes, COMT genes, and OXTR genes, are associated with the onset of PPD; however, the vast majority of these factors depended on covariates such as previous mental health issues, maternity

stressors, stressful life events, or the interactions of other genes (Couto et al., 2015; Payne et al., 2019).

A further, and very relevant contributor to PPD for the purposes of this study, is the role of social and psychological factors. Studies have shown that prenatal social support can have a significant positive effect on maternal and infant health (Seymour-Smith et al., 2021; Collins et al. 1993). More specifically, informational support has been found to be associated with increased infant APGAR scores. Social support, specifically in the forms of the provision of material aid, assistance with tasks, advice or information, and listening while one expresses beliefs or feelings, has been found to be important for the labor and postpartum periods (Collins et al., 1993). Additionally, a study by Jones et. al (2021) suggested that support from coworkers and supervisors may play a significant role in reducing the stress of pregnant and postpartum women.

III. Impact on Maternal and Infant Health

Although the degree to which prenatal and postpartum depression impacts infant and maternal health is still a subject of dispute, associations have been established between perinatal and several negative outcomes. Specifically, untreated depression during pregnancy has been found to be correlated with preeclampsia, low APGAR scores, slowed neonatal development, preterm labor and delivery, low birth weight, perinatal and birth complications, and intrapartum abnormal fetal heart rate (Lin & Chen, 2022; Alawamir et al., 2017; Soltsman et al., 2021). In a study conducted by Libvotzky-Gete et al. (2021) in which women were screened for PPD between 6-9 weeks postpartum, PPD was found to be associated with delays in language and motor development for the first two years of life and they observed that the odds of infants' personal-social delay increased by 1.5 (Lobotzky-Gete et al. 2021; Quevedo et al., 2012).

Additionally, PPD includes a risk of suicide. Maternal suicide rates, although much lower than in the non-childbearing population, remain a problem among mothers with mental illness (de Avila Quevedo et al., 2021). According to a 2022 MBRRACE-UK report on mortality rates, suicide has been one of the leading direct cause of maternal death since 2017, and maternal suicide rates have nearly doubled from a rate of 0.46 to 0.95 per 100,000 pregnancies between 2017 and 2020 (Knight et al., 2018).

IV. Treatment Methods

Various therapeutic interventions have been found to lessen the symptoms of PPD. For example, given the relationship between social factors such as marital status and support systems and PPD (Anderson, 2017), Interpersonal Psychotherapy (IPT) has been identified as a great method of treatment for PPD. In a sample of 120 postpartum women meeting the DSM-V criteria for PPD, the intervention group of women receiving IPT had a significantly greater decrease in depressive symptoms than the control group (O'Hara et al., 2000). Similar results were found in a study conducted by Zlontnick et al. (2001), in which 16 participants with PPD were divided into a control and intervention group. The intervention group received twelve group sessions of IPT, while the control group received care-as–usual. The results showed that the intervention had a significant effect on reducing depressive symptoms in the participants compared to the control group. IPT is founded upon the principle that interpersonal issues and stressful life events are directly related to people's mental health; therefore, IPT is an effective method through which to address the various interpersonal changes that occur throughout pregnancy.

Another therapeutic method, Cognitive Behavioral Therapy (CBT) has been found to be an effective treatment in reducing symptoms of PPD and giving mothers an improved quality of life. A meta-analysis by Lau et. al (2017) of eight randomized controlled trials exploring the

effectiveness of internet-based CBT showed that it significantly improved the risk factors of PPD, such as stress (d= 0.84, n=5) and anxiety (d= 0.36, n=6), as well as depressive symptoms (d= 0.63, n=8) of groups receiving the intervention. An additional meta-analysis by Huang et. al (2018) of 13 studies on the effectiveness of CBT reported that scores on the Edinburgh Postnatal Depression Scale significantly ($P<0.05$) decreased in the intervention group as compared after receiving CBT treatment.

Psychotropic medications are also a viable treatment option for PPD, although there is great difficulty in studying the effects of psychotropic medication since expectant women are generally excluded from drug development trials. Certain Selective Serotonin Reuptake Inhibitors (SSRI) and Serotonin and Norepinephrine Reuptake Inhibitors (SNRI) are considered an option for pregnant or breastfeeding mothers (Spencer et al., 2022; Mitchell & Austin, 1998). As indicated in the names, SSRIs act as serotonin reuptake inhibitors and SNRIs act as inhibitors for both serotonin and norepinephrine, increasing the levels of their respective neurotransmitters without disturbing the activity of other neurotransmitters. These medications are introduced on the basis of the theory that depression can be attributed to an imbalance of serotonin and norepinephrine in the brain (Chu & Wadhwa, 2023). Despite studies finding little evidence of negative effects of SSRI/SNRIs taken by pregnant women on their infants, there are various side effects clinically associated with SSRIs and SNRIs, such as increased spontaneous abortions, number of stillbirths, and longer hospitalizations (Dubovicky et al., 2017). Other medications, such as tricyclic antidepressants or bupropion, are clinically recommended less frequently due to lack of data (Ram & Gandotra, 2015).

Despite the various treatment methods and the known consequences of untreated PPD, there are many women who do not seek treatment. This can be attributed to familial and

communal factors, stigmatization, socio-economic factors, or the method of referral and intervention in the health care system (Bina, 2020)

V. Risk Factors for Postpartum Depression

There are three major categories of factors that contribute to the likelihood of women developing PPD: social risk factors, psychological risk factors and biological risk factors (Table 1; Howard et al., 2014). Social risk factors include a lack of social support, domestic abuse, low socioeconomic status [SES], and unintended pregnancies. Lack of social support as a risk factor has been supported in studies such as Ando et. al (2021)'s that found that in a group of 427 postpartum mothers, when investigating the association between social support and PPD, women without PPD receiving either formal (i.e through organizations such as hospitals, childcare centers or healthcare specialists) ($p = 0.001$) or informal (i.e. family members or friends) ($p = 0.013$) social support reported higher levels of satisfaction with their social support than those with PPD. Another cross-sectional study of 200 women in Tehran further corroborated these findings and found that the 43.5% of new mothers with PPD scored significantly lower on the Social Support Questionnaire than the 56.4% of women without PPD ($P < 0.001$; Vaezi et al.m 2019).

Domestic violence has additionally been evaluated as a risk factor in several studies, such as a meta-analysis of six studies by Wu et. al (2012) in which a positive association between PPD and domestic violence was observed (OR = 3.47; 95% CI: 2.13–5.64) (Wu et al., 2012), and a systematic review of 37 studies by Beydoun et. al (2012) found that the risk of PPD is raised by 1.5-2.0 ($p < 0.05$) times when a person is experiencing interpersonal violence (Beydoun et al., 2012).

Studies have also found associations between SES and PPD (Dolbier et al., 2013; Goyal et al., 2010; Beck, 2001). For example, in a 2010 study by Goyal et. al, researchers found that in

Table 2

	Antenatal Depression	Postpartum Depression
Social risk factors • Socioeconomic status • Exposure to trauma, negative life events and stress • Domestic violence • Migration Status • Relationship and social support • Reproductive intention	• Domestic violence • Life stress and major/negative life events • Low socioeconomic status • Absence of social or relationship support • Intention to get pregnant	• Domestic violence, previous abuse • Negative life events, low social support • Low partner support, marital difficulties • Migration status • Low socioeconomic status
Psychological risk factors • Personality traits • High neuroticism • Prior psychopathology: depression anxiety, PTSD, substance abuse	• Prior history of psychopathology • Anxiety during pregnancy	• Depression or unhappiness in pregnancy • Anxiety in pregnancy • History of depression • Neuroticism • Substance misuse • Family history of any psychiatric illness
Biological risk factors • Age • Genetic and hormonal susceptibility • Chronic disease • Physical Illness • Pregnancy complications	• Young age	• Multiple births • Chronic illness or medical illness • Preterm birth, low birth weight • No association with use of assisted reproductive technologies

Note. Risk factors for antenatal and postnatal depression: systematic review evidence categorized by strength of risk in HICs and LMICs.

a sample of 198 women, women with low SES had a 25% risk of PPD at three months postpartum, whereas those with high SES only had a 9% risk ($p<0.01$) (Goyal et al., 2010).

Although there are some studies that did not discover an association (Faisal-Cury, 2017; Abbasi et al., 2017), studies such as Brito et. al (2015) have found that women are 1.74 times

more likely ($p = 0.0002$) to develop PPD when they report their pregnancy as unintended (Brito, et al., 2015; Qandil et al., 2016).

Psychological risk factors include the influence of a woman's affect and prior psychopathology. Studies have found a positive association between neuroticism and the likelihood of developing PPD , and Verkerk et. al (2005) observed an increased likelihood of PPD by four to six times with neuroticism (Martin-santos et al., 2012; Iliadis et al., 2015). Similarly, several studies identified a history of mental illness as a predictor for PPD (Beck, 2001; O'Hara & Swain, 1996; Robertson et al., 2004).

The third category, biological factors, includes risk factors such as age, genetic predisposition, hormonal changes, chronic disease, or obstetric complications. Bottino et. al (2012) observed that as maternal age increases, the likelihood of PPD decreases, and other studies have discovered that there are higher rates of PPD found in studies with younger populations (Dinwiddie et al., 2018; Reid & Meadows-Oliver, 2007). Genetic factors and hormonal changes, previously mentioned as potential causes for PPD, are also viewed as risk factors. There are four major studies that have explored the risk of PPD when experiencing a chronic disease, three of which failed to find an association. In a systematic review, Ross and Dennis (2009) suggested that the failure to find an association was because the three studies were conducted in developed countries with better treatment and management of chronic diseases, whereas Chaaya et al. (2006), the only study to find an association, conducted their study in Lebanon. They further pointed out that Chaaya et. al (2006) included women with various chronic diseases, while the three other studies focused on only one chronic illness (rheumatic disease or HIV).

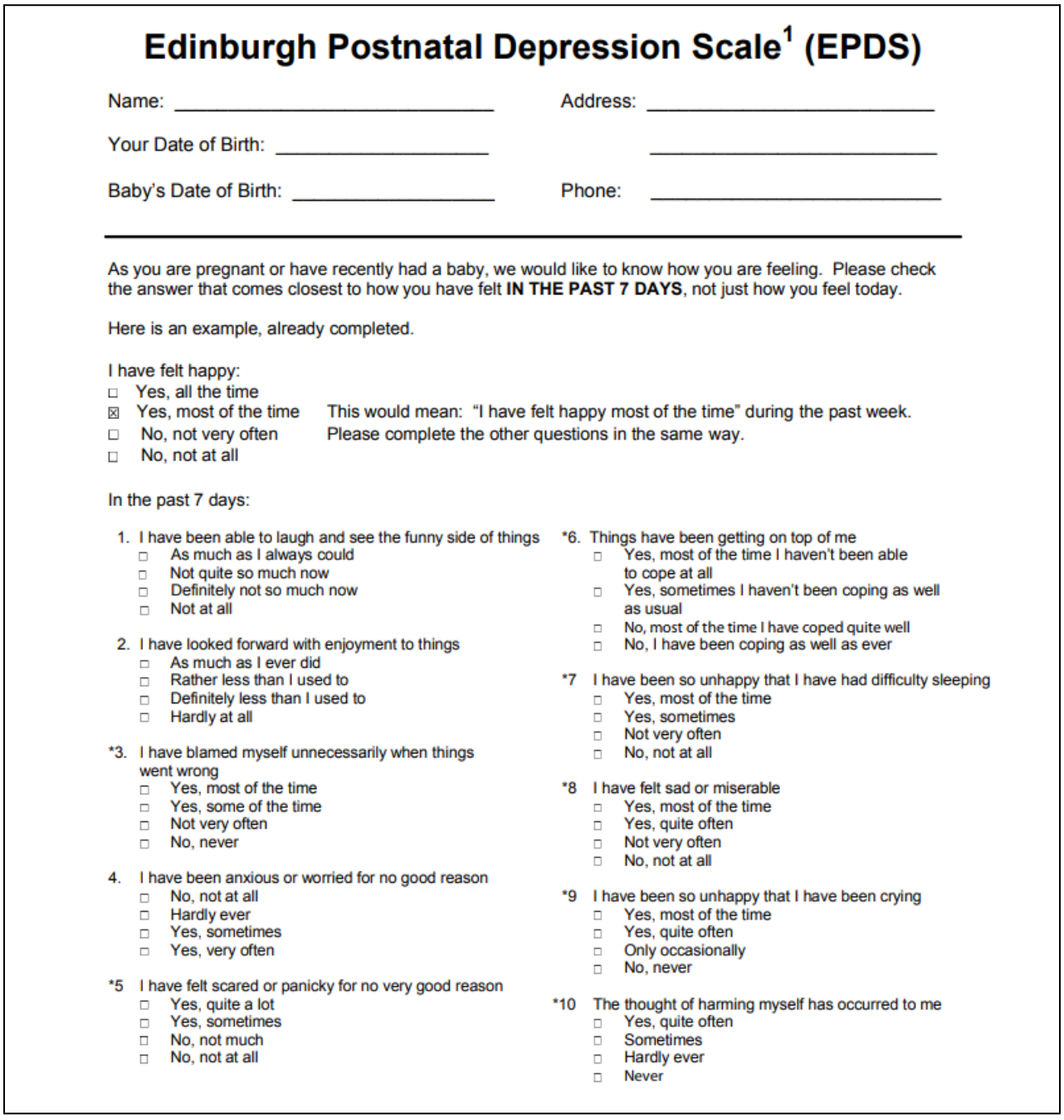
A final biological factor, obstetric complications, has been found to increase likelihood of developing PPD (Blom et al., 2010; Verdoux et al., 2002). Blom et. al (2010) identified complications such as pre-eclampsia, hospitalization during pregnancy, emergency cesarean section, or fetal distress as specific issues that are significantly associated with PPD. However, as demonstrated in Lin & Chen (2022)'s observation that PPD may be a cause of poor obstetric outcomes, the relationship between PPD and obstetric risks has been found to be reciprocal.

VI. Postpartum Depression Screening Methods

Although there are various tools available to screen women for PPD, such as the Whooley questions (Whooley, 1997), Postpartum Depression Screening Scale (PDSS; Beck, 2000) and the Beck Depression Inventory (Beck et al., 1996), the most common screening tools for PPD, and the tools recommended by the Postpartum Support International (PSI), are the Patient Health Questionnaire (PHQ-9; Spitzer et al., 1994) or the Edinburgh Postnatal Depression Screen Scale (EPDS; Cox et al., 1987). The PHQ-9 is a ten question diagnostic tool that assesses the presence and severity of the nine criteria for major depressive disorder in the DSM-V (Spitzer et al., 1994; Kroenke et al., 2001). Although not created specifically to assess pregnant or postpartum women, the test has been found to be valid in screening for depression in pregnant women (Woldetensay et al., 2018; Sidebottom et al., 2012). The EPDS is a ten question, evidence-based screening tool developed specifically for pregnant or postpartum mothers (Figure 2; Cox et al., 1987). Randomized controlled trials have been conducted to determine the efficacy of the EPDS and have observed a significant improvement in the mental health outcome in women identified as at-risk for depression by the EPDS (Evins et al., 2000; Fergerson et al., 2002). For example, a study conducted in Hong Kong performed screenings on a group of 231 women who were two months postpartum using the EPDS and an equivalently sized control

group using the usual practice of clinical assessments. Their assessments detected possible PPD in 29% of the intervention group and only 6% in the control; however, their six month follow-up

Figure 2



Edinburgh Postnatal Depression Scale[1] (EPDS)

Name: _____ Address: _____

Your Date of Birth: _____ _____

Baby's Date of Birth: _____ Phone: _____

As you are pregnant or have recently had a baby, we would like to know how you are feeling. Please check the answer that comes closest to how you have felt **IN THE PAST 7 DAYS**, not just how you feel today.

Here is an example, already completed.

I have felt happy:
- ☐ Yes, all the time
- ☒ Yes, most of the time — This would mean: "I have felt happy most of the time" during the past week.
- ☐ No, not very often — Please complete the other questions in the same way.
- ☐ No, not at all

In the past 7 days:

1. I have been able to laugh and see the funny side of things
   - ☐ As much as I always could
   - ☐ Not quite so much now
   - ☐ Definitely not so much now
   - ☐ Not at all

2. I have looked forward with enjoyment to things
   - ☐ As much as I ever did
   - ☐ Rather less than I used to
   - ☐ Definitely less than I used to
   - ☐ Hardly at all

*3. I have blamed myself unnecessarily when things went wrong
   - ☐ Yes, most of the time
   - ☐ Yes, some of the time
   - ☐ Not very often
   - ☐ No, never

4. I have been anxious or worried for no good reason
   - ☐ No, not at all
   - ☐ Hardly ever
   - ☐ Yes, sometimes
   - ☐ Yes, very often

*5 I have felt scared or panicky for no very good reason
   - ☐ Yes, quite a lot
   - ☐ Yes, sometimes
   - ☐ No, not much
   - ☐ No, not at all

*6. Things have been getting on top of me
   - ☐ Yes, most of the time I haven't been able to cope at all
   - ☐ Yes, sometimes I haven't been coping as well as usual
   - ☐ No, most of the time I have coped quite well
   - ☐ No, I have been coping as well as ever

*7 I have been so unhappy that I have had difficulty sleeping
   - ☐ Yes, most of the time
   - ☐ Yes, sometimes
   - ☐ Not very often
   - ☐ No, not at all

*8 I have felt sad or miserable
   - ☐ Yes, most of the time
   - ☐ Yes, quite often
   - ☐ Not very often
   - ☐ No, not at all

*9 I have been so unhappy that I have been crying
   - ☐ Yes, most of the time
   - ☐ Yes, quite often
   - ☐ Only occasionally
   - ☐ No, never

*10 The thought of harming myself has occurred to me
   - ☐ Yes, quite often
   - ☐ Sometimes
   - ☐ Hardly ever
   - ☐ Never

assessments using the EPDS for both groups revealed that the intervention group's rates had decreased to 13%, whereas the control group's rate was detected to be 22%. The mothers were also assessed using tools such as the General Health Questionnaire-12 (GHQ-12), Parenting

Stress Index (PSI) scores and Chinese Kansas Marital Satisfaction Scale (CKMSS), which revealed that the mental health outcomes of the intervention group were significantly better.

In addition to screening for symptoms of PPD, there are two main screening tools that were created to test for a woman's risk level of developing PPD before she presents with depressive symptoms: The Postpartum Depression Screening Scale (PDSS) and the Antenatal Risk Questionnaire (ANRQ) (Austin, 2017). The PDSS is a 35 question self-report test that can be used to detect symptoms of PPD in new mothers; however, it has been mostly used in research to identify women who may be at risk for PPD in order to facilitate early intervention. The questionnaire was developed using the 13 risk factors identified by Beck (2006)'s earlier research, and assesses for factors such as depression, mood or sleep disturbances, anxiety, cognitive impairment, loss of self-esteem, and guilt or shame (Beck, 2002). Although the PDSS has been found to be highly valid and effective in identifying symptoms and risk levels in women, its lengthy and expensive nature makes it impractical for use as a screening tool.

The ANRQ, a shorter and more cost-effective tool was designed in 2004 by Marie-Paule Austin, has been found to be a valid tool in effectively predicting PPD in various studies (Reilly et al., 2021). The tool, which has since been revised (Austin, 2017), is self-completed and contains 12 scored items asking about mental health history, level of practical and emotional support accessible to the patient, life stress, history of abuse, and anxiety levels. Although there is no absolute cut-off score, the clinician information guidelines suggest a cut-off score of 23 or greater, or if the questionnaire indicates that the woman has a significant history of abuse or mental illness. Additionally, it is recommended that the findings be discussed with the patient, and an action plan for psychological and social support be implemented (Austin et al., 2013; COPE, 2017).

The most recent study of the revised edition of the ANRQ (ANRQ-R), in addition to previous studies in which pregnant women in Australia completed an assessment alongside other psychosocial assessments during antenatal care, showed that the screening tool had good concurrent and predictive validity. The study provides strong evidence for the usefulness of ANRQ-R in identifying women at risk for PPD. However, it is important to note that the study included a sample of mostly older, high-income women born outside of Australia, and previous studies on the ANRQ-R were predominantly conducted in Australia (Austin et al., 2013; Reilly et al., 2021; Reilly et al., 2022). The sole study that specifically assessed the effectiveness of ANRQ-R outside of Australia was conducted in the southwest region of the United States in 2016, with a sample size of 44 women who were evaluated during the third trimester of pregnancy and six weeks postpartum. Researchers found a significant correlation between the ANRQ-R and EPDS scores, indicating that the ANRQ-R is an effective tool in identifying women at risk for PPD. However, the study had limitations such as convenience sampling and limited follow-up, considering that PPD can present up to a year postpartum, warranting further exploration of ANRQ-R in clinical practice. (Ruyak et al., 2018).

VII. Benefits of Early Screening and Identification of Risk for Postpartum Depression

Although there is no “gold standard” test to screen for PPD, there are nevertheless various benefits to performing screenings with the current tools that have been developed and validated to identify PPD. In a meta-analytic review performed by Sockol et al. (2013), researchers identified that early screening can help identify women experiencing PPD in order to promptly provide them with the proper support, reduce the risk of long-term negative outcomes for the mother and child, improve maternal mental health and well-being, and improve parent-infant interactions. Shaw et al. (2006) identified the same benefits, as well as that early

screening reduces the burden on healthcare services through early detection and treatment, and creates an opportunity for providers to educate women about PPD and reduce stigma associated with it. Additionally, screening can increase awareness of PPD to both healthcare providers and patients, allowing for improved recognition and management of PPD (Shaw et al., 2006).

VIII. Management of Women at High Risk for Postpartum Depression

Apart from referring individuals to professional psychiatric healthcare providers and treatments, there are various types of intervention programs that can offer support in a less formal and more cost-effective way. From a public health perspective, there are three categories of interventions: universal interventions, selected interventions and indicative interventions. Universal interventions are designed to be administered to every member of a population, regardless of their risk level or presence of symptoms, whereas indicated interventions are intended for people who exhibit early signs without meeting diagnostic criteria and selected interventions are for individuals without symptoms who are at high risk for developing them (Sockol et al., 2013). Studies on the effectiveness of these interventions for the prevention of PPD are limited, but the success of intervention programs in treating depression suggest that these programs could be beneficial for preventing PPD, as well.

Universal intervention programs are beneficial because they do not require facilitators to screen for risk and they reduce stigmas by avoiding singling out individuals at high risk or exhibiting symptoms. In a meta-analysis of the effectiveness of universal interventions, Tan et al. (2014) analyzed nine randomized control trials of interventions in the workplace and found evidence that universal interventions for depression can significantly reduce depressive symptoms in their participants. A further meta-analysis reviewing studies focusing on interventions for adolescents found that there was a significant reduction in depressive symptoms

at the post-intervention assessment, however, the effects tended to lessen at the six to nine month mark (Stockings et al. 2015). Alongside the studies identifying universal interventions as effective, various meta-analyses have found universal interventions to show lower success rates than indicated or selected interventions (Clarke et al., 2001; Pattison and Lynd-Stevenson, 2001; Quayle, Dziurawiec, Roberts, Kane, and Ebsworthy, 2001; Spence & Short 2007). For example, in an analysis of 29 intervention programs aimed at preventing depressive symptoms in children and adolescents, Horowitz and Garber (2006) found that at follow-up after the intervention was administered, both indicated and selective prevention programs were significantly more effective than universal programs. Although these results can be partially explained by the fact that universal interventions typically have a lower baseline of depressive symptoms in their populations compared to indicated/selected, it is still difficult to yield significant effects of universal interventions and it is oftentimes impractical to administer interventions to large populations. The analysis also noted that the vast majority of the universal interventions that they studied resulted in the decrease in depressive symptoms of the intervention group instead of lowered development of depression, causing them to fall into the category of treatments instead of preventative programs (Horowitz & Garber, 2006).

Another meta-analysis of intervention programs performed by Stice et al. (2009) also observed significantly larger effects in indicative/selective trials than universal trials. Interestingly, Stice et al. (2009)'s study noted that like Horowitz and Garber (2006), they had observed that preventative programs were more effective when more female participants were involved. Stice et al. (2009) suggested that this could explain the large effect sizes found in studies focusing on only female populations, such as Burton, Stice, Bearman, and Rohde (2007);

Forsyth (2000). The observed success of the interventions in female populations may be highly beneficial for the success of preventing PPD.

Indicative and selective interventions that have been studied for the prevention of major depressive disorder and PPD include: psychoeducation, social support, and cognitive restructuring (Sockol et al., 2013). For example, a study conducted by Clarke et al. (2001) recruited adolescent children with depressed parents to participate in an intervention aimed at preventing depression. The intervention group received 15 1-hour group therapy sessions in which they were taught cognitive restructuring techniques to manage irrational or negative thoughts and thoughts specifically related to having a depressed parent. Clark et al. (2001) found significant preventative effects in the at-risk group, and risk for development of depression in the control group was more than five times the intervention group. At the two year follow-up, the preventative effects seemed to have faded over time, a problem that was later addressed in a meta-analysis conducted by Stice et al. (2009), in which booster sessions were found to increase the effectiveness of interventions.

Social support interventions, such as telephone-based counseling, social support programs or home visit programs, are still being researched, but have shown success in multiple studies (Sockol et al., 2013). For example, Dennis et al. (2009) conducted a randomized control trial in which 846 women who were identified as being at high risk for PPD by the EPDS were randomly assigned into either a peer support group or control group. The women in the peer support group received weekly telephone calls from trained peer volunteers who had previously experienced PPD, and at six months postpartum, the researchers observed that 11.3% of the women in the peer support group developed PPD and 19.2% in the control group developed PPD. They found that women receiving peer support were less likely to develop PPD than the

control group and had better mental health outcomes, suggesting that peer support for women at high risk for PPD can be an effective method of intervention (Dennis et al., 2009). Armstrong et al. (1999) and (2000), an example of a study examining the benefits of home visits, recruited women identified as at-risk by the EPDS, and observed their mental health outcomes when receiving home visits by a nurse, compared to a control group. Despite the baseline EPDS scores indicating no difference between the two groups, the researchers found that there was a significant difference between the scores of the two groups after six weeks, as well as when assessed by the Parenting Stress Index (PSI), a tool used to measure the stress associated with parenting, and a home observation for the assessment of the quality of the home environment. (Armstrong et al., 1999; Armstrong et al., 2000).

Apart from implementing intervention programs, addressing certain barriers can help ensure that women at a high risk of postpartum depression or those diagnosed with postpartum depression receive proper care. Psychiatric treatment referrals are generally given to patients scoring high on PPD screening tools, and the employment of a social worker or care manager has been found to be effective in managing at-risk women and increasing the number of women receiving interventions and following up on referrals. For example, researchers conducted a study in which they investigated the effectiveness of a social worker providing education, referrals and a one-month follow-up call to a population of over 200 university clinic patients. Of the patients who received mental health referrals through the social worker, 78% kept their appointments, while not even half of those who received referrals from the general clinic staff followed through with the referrals (Sit & Wisner, 2009).

Additionally, Scholle & Kelleher (2003) found other variables that prevented women from seeking proper care, such as difficulty in accessing psychiatric treatment or stigmas related

to PPD. 17%-25% of participants reported having to independently contact their insurance company to identify available providers and arrange a visit, creating further barriers to receiving psychiatric services (Sit & Wisner, 2009). Similarly, stigmas, which can refer to either personal stigmas or treatment stigmas, and the shame and isolation associated with them, were found to hinder a patient's likelihood of seeking help (Corrigan et al., 2014).

IX. Healthcare System-Level Interventions for Postpartum Depression

Given the prevalence of PPD and its potential detriments to the well-being of both mothers and infants, providers worldwide have created and implemented prevention and intervention programs. The United States Preventive Services Task Force recommends "that clinicians provide or refer pregnant and postpartum persons who are at increased risk of perinatal depression to counseling interventions," and suggests encouraging the utilization of counseling interventions such as the ROSE program and Mothers and Babies (*Recommendation: Perinatal Depression: Preventive Interventions | United States Preventive Services Taskforce*, 2019). However, beyond counseling-based interventions, there is a lack of adequate research into PPD interventions in the health system-level (O'Connor et al. 2019).

There are presently three major studies, as identified by O'Connor et al. (2019), that studied the effectiveness of health system-level interventions. The first study conducted by Brugha et al. (2010) studied the benefits of training "health visitors" in the identification and psychological intervention methods for PPD. In the United Kingdom, postnatal care generally consists of ten visits with a midwife either at home or in-practice, and then 10-14 weeks of visits from a health visitor. Health visitors are nurses or midwives that are trained in public health nursing, and conduct postpartum visits with mothers to assist in the transition into motherhood. In the study, over 1,000 mothers were included in an intervention group that received visits from

health visitors who had received additional training in psychological intervention methods for PPD. They found that women who received visits from health visitors with additional training were significantly less likely to screen positive for PPD after childbirth than those who had visits with an usual health visitor (Brugha et al. 2010).

The second study, conducted in the UK as well, also focused on the psychological counseling training of healthcare providers within the healthcare system. MacArthur et al. (2002) gave additional training to midwives in the intervention group that consisted of teaching them how to better tailor care to mothers' psychological and physical needs. Well over 1,000 women also participated in this study, and the researchers were able to observe that at the post-intervention screening at four months, the intervention group scored significantly lower on the mental health measures than the control group (MacArthur et al. 2002).

The final study was conducted by Fontein-Kuipers (2016) in the Netherlands on a PPD prevention program called *WazzupMama?*. The intervention consisted of two parts: The first was to screen patients for PPD and provide them with psychoeducational videos and resources, and the second was to provide training to help midwives better support women with PPD and more effectively coordinate their care. They also found their intervention to be effective and observed a 10% decrease in maternal stress levels in the intervention group than in the control group.

Additional research is necessary to determine if preventative health system-level interventions can be effective universally, given the success of these three studies. These interventions, which are incorporated into routine postpartum visits, could be especially beneficial in addressing current barriers that prevent mothers from receiving help with PPD, such as insurance coverage and efficient transfer of patients to psychiatric treatment. However, since the UK and the Netherlands have different healthcare protocols and insurance systems, it would

be challenging to implement the models in the above studies in the United States. To address this issue and to collect conduct more research on the effectiveness of universal health system-level, I propose adapting the models of additional mental health training for healthcare providers developed by Brugha et al. (2010) and MacArthur et al. (2002), and substituting the midwives and health visitors with lactation consultants.

X. Lactation Consultants, Breastfeeding and Postpartum Depression

Lactation consultants are health professionals certified by the International Board of Lactation Consultant Examiners (IBLCE) who specialize in lactation and breastfeeding. Their training consists of a course on breastfeeding, anatomy, nutrition and communication, lactation-specific clinical experience, and an exam, as well as continued education. Although the number of consultations varies based on the insurance provider, under the American Care Act (ACA) all insured women are eligible for lactation consultants who can assist mothers with various breastfeeding issues, such as milk supply, sore or cracked nipples or breastfeeding positions (*Lactation Consultant: When To See One & What To Expect*, 2021; Hawkins et al., 2015). In the Infant Feeding Practices Study II, 61% of women reported meeting with a lactation consultant during their hospital stay (Infant Feeding Practices Study II, 2008).

Although lactation consultants are primarily intended to educate mothers, they also benefit the emotional needs of the mother. Lactation consultants work with mothers during the vulnerable and stressful transition into motherhood, and are in a position in which they oftentimes provide emotional support. Additionally, breastfeeding itself has been found to have a relationship with maternal mental health. For example, in a study conducted by Figueiredo et al., (2013), researchers found a bidirectional relationship in which women who do not breastfeed are at an increased risk of PPD and those who breastfed may be protected form PPD. Furthermore,

although supplemental research is necessary to support their conclusions, in a study on the association between self-efficacy and PPD, Chrzan-Dętkoś (2021) found that the improvement of self-efficacy in breastfeeding through the intervention of a lactation consultant was negatively correlated with mental health issues.

Considering the role lactation consultants play in maternal healthcare, they may be the best positioned providers within the US healthcare system to serve as facilitators of a PPD intervention program. Given that the US healthcare system does not incorporate the use of health visitors like the UK, and such services are not covered by insurance, lactation consultants are a more accessible and affordable option. They also have knowledge of the postpartum period despite requiring less schooling than nurses, midwives or obstetricians, making them easier to train and employ. Most importantly, there is already research suggesting that there are mental health benefits to breastfeeding and lactation consultation. Therefore, I intend to present a research proposal that aims to investigate whether providing psychological counseling training to lactation consultants can prevent the development of depressive symptoms in pregnant and postpartum women.

XI. Study Proposal

Aims:

The aim of this study is to determine if training lactation consultants to administer psychological counseling to patients could act as an effective universal preventive intervention for PPD. Secondarily, the study will test whether lactation consulting alone can prevent the development of depressive symptoms. The study will be conducted as a randomized control trial with two intervention groups and will have two outcome measures. Based on prior research, I hypothesize that the women undergoing mental health counseling by lactation consultants will

have a lower prevalence of PPD post-intervention than those receiving usual consulting, suggesting that lactation consulting helps prevent PPD. Additionally, I hypothesize that women who do not have any visits with a lactation consultant will have a higher prevalence of PPD than the women receiving consultations with or without mental health counseling.

Methods:

Participants:

Women above 18 years of age will be recruited from local hospital systems during their third trimester of pregnancy. Exclusion criteria will include a severe or enduring mental illness and a score ≥12 on the Edinburgh Postnatal Depression Scale (EPDS) when administered during the third trimester.

Lactation consultants will be certified by the International Board of Lactation Consultant Examiners (IBLCE) and must have practiced as a lactation consultant for ≥ 3 years. Those who have previously been formally trained or worked as a mental health professional, as well as those who are nurses, midwives or physicians, will be excluded from the study.

Procedure:

Pre-intervention screening for PPD would occur at a regularly scheduled prenatal visit by the participant's usual provider, and those who meet inclusion criteria will be invited to participate. Informed consent will be obtained from all lactation consultants and participants, and then the participants will be randomly divided into two intervention groups and a control group.

Lactation consultants who meet the criteria will be divided into two groups. Over a few days, a trained psychotherapist practitioner will train the first group in utilizing cognitive behavioral intervention techniques. The course will be given in a group setting, and will include

reflective practice sessions to ensure maximum retention. The second group will not receive the training in counseling, and will practice lactation consulting as usual.

Within 24 hours of delivery, the participants in the first intervention group will receive a consultation with a "trained" lactation consultant, and will continue to receive weekly consultations until they reach a total of eight sessions conducted at the location of their usual provider. The second intervention group will receive sessions at the same intervals, but their lactation consultant will not be trained in mental health counseling. The control group will receive no lactation consultation beyond basic, pre-outlined instruction by a nurse, and upon requesting consultation, they will be excluded from the study.

Measures:

At 24 hours, four weeks, and eight weeks postpartum, participants in each group will be assessed using a variety of psychological assessments at the conclusion of the lactation consultations. The control group, who will not receive any consultation, will come to receive the same assessments at the same intervals at the location of their usual provider.

Edinburgh Postnatal Depression Scale (EPDS; Cox et al., 1987)— The EPDS is a screening tool that assesses pregnant and postpartum women for depressive symptoms. It is a self-report questionnaire consisting of 10 questions assessing the woman for symptoms of anxiety, depression or stress. A score ≥ 12 indicates that a woman is at risk for PPD, and indicates a need for a clinical evaluation to confirm that the woman has PPD.

State–Trait Anxiety Inventory (STAI; Spielberger et al., 1970)—The STAI is a 20 item test screening for anxiety. The scale consists of two different categories of anxiety: state anxiety,

whether the participant is currently in a state of anxiety, and trait anxiety, whether the participant tends to experience anxiety in other situations.

Parenting Stress Index Short Form (PSI-SF; Abidin, 1995)—The PSI-SF is a tool that assesses caretaking related stress that is experienced by parents. There are 36 questions that test for the parents' psychological well-being, difficulties within the parent-child relationship, and difficult behaviors and characteristics presented by the child.

Scale to Assess the Therapeutic Relationship (Patient and Clinician Versions) (STAR-P, STAR-C; . McGuire-Snieckus et al., 2007)— The STAR is a 12 question psychological assessment that will be administered at the completion of the 8 weeks of lactation consulting. Lactation consultants will complete the STAR-C and the intervention groups will complete the STAR-P to measure the quality of the therapeutic relationship between the lactation consultant and participant.

There will also be a follow-up EPDS assessment for both intervention groups and the control group at six months and 12 months postpartum to test for long-term effects.

Data Analysis:

The analysis will be completed using a generalized linear model, and the outcome variables will be adjusted based on different covariates, such as life stress, mental health history and relationship status, to control for confounding factors. There will be a between-group comparison to examine the effectiveness of the intervention. The primary outcome measure will be the proportion of women scoring ≥12 on the Edinburgh Postnatal Depression Scale (EPDS) at each postnatal screening interval, and the secondary outcome measure will be the mean scores of the EPDS, STAI, CORE-OM and PSI-SF at 24 hours, four weeks and eight weeks postpartum.

Expected Limitations for the Generalizability of this Program:

Assuming the success of this prevention program, there are various limitations that would make it difficult to implement it in the broader US healthcare system. The largest issue is that there is inadequate insurance coverage for lactation consultants. Although there are resources to help gain coverage for lactation consulting, such as educational pamphlets to teach providers proper billing practices, coverage continues to vary depending on the insurance provider (American Academy of Pediatrics, 2011). Insurers will cover anywhere from just an initial visit while still in the hospital after childbirth to eight visits. Additionally, there are not enough lactation consultants to staff hospitals and birthing clinics around the world. However, the results of this study may have important implications, such as the decrease in the prevalence of PPD in populations receiving the intervention and an increased recognition on the part of insurers of the importance of PPD preventative measures. Thus, insurance cover would increase and the lactation consulting profession would grow.

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