ANTENATAL AND POSTPARTUM ANXIETY: INCREASING AWARENESS FOR NURSE PRACTITIONERS IN PRIMARY CARE

by

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Abstract

Anxiety during the antenatal and postpartum (PP) period is prevalent and can results in adverse ramifications for both mother and child. Research addressing antenatal and PP anxiety lacks in comparison to postpartum depression (PPD), subsequently leading to insufficient screening, misdiagnosis, and poor management of anxiety in maternal women. The literature and guidelines pertaining to how to best care for anxiety in this specialized population is inconsistent. However, the literature consistently identifies that if anxiety is detected early, associated complications and mortality can be reduced. The aim of this literature review is to enhance primary care practitioners (PCP) clinical understanding of perinatal anxiety by outlining the associated risk factors, prevalence, and subsequent consequences. Furthermore, recommendations for screening, diagnosis, treatment, and management are highlighted to improve clinical management of anxiety in perinatal women. This information will be translated into a clinical poster that will be presented at the University of British Columbia's graduate symposium. The principle objective of this poster will be to improve PCPs knowledge and awareness of prenatal and PP anxiety and help mitigate barriers hindering PCPs from initiating early screening and appropriate tailored treatments in the primary care setting.

Key words: perinatal, anxiety, postpartum, depression, primary care practitioner

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Antenatal and Postpartum Anxiety: Increasing Awareness for Nurse Practitioners in Primary Care

Mood disorders are the leading cause of mortality in the postpartum (PP) population (Dennis, Falah-Hassani, Brown, & Vigod, 2016). Postpartum depression (PPD) has received substantial attention in the research community and is regarded as a considerable health care concern (Dennis et al., 2016). In addition to depression, over 8.5 % of women experience stress and anxiety during the antenatal and postnatal period (Simpson, Glazer, Michalski, Steiner, & Benicio, 2014). Current literature reveals that anxiety is more common than depression and often precedes it (Skouteris, Wertheim, Rallis, Milgrom, & Paxton, 2009).

Despite the prevalence of prenatal and postnatal anxiety, there fails to be sufficient research dedicated to this disorder (Skouteris et al., 2009; Dennis et al., 2016). Academic research targeting anxiety in this population is warranted as the literature illuminates that perinatal anxiety can have adverse health consequences for both mother and child. Due to the complications associated with anxiety, it is imperative that clinicians initiate early screening and commence treatment during the antenatal and PP period (Grigoriadis et al., 2011). However, evidence reveals that many clinicians neglect to screen maternal patients for perinatal anxiety, and are uncomfortable with management, due to insufficient knowledge and lack of training (Grigoriadis et al., 2011).

Due to the prevalence of anxiety in antenatal and PP women and the associated healthcare risks, it is essential that guidelines address primary care practitioners (PCP) knowledge gaps (Grigoriadis et al., 2011). The purpose of this paper is to improve quality of care in maternal women by enhancing PCPs knowledge and awareness of perinatal anxiety. The following literature review provides a synthesis of the relevant research and clinical guidelines

investigating the prevalence, risk factors, screening measures, health care outcomes, and treatment recommendations for antenatal and PP anxiety.

Primary care serves as the foundation of the Canadian healthcare system and is comprised of a variety of professionals that work collaboratively to provide health care services to the community (Canadian Nurse Practitioner Initiative [CNPI], 2006). General practitioners (GP) and nurse practitioners (NP) are valuable members of the collaborative healthcare team, responsible for managing patient care across the lifespan. While both GPs and NPs are responsible for the management of prenatal and PP patients in the primary care setting, NPs may typically refer their prenatal patients to a midwife, GP maternity practice, or an obstetrician-gynecologist (OBGYN) at 28 weeks gestation. NPs are masters educated registered nurses who have the unique responsibility of independently diagnosing, prescribing medications, and managing patient care (College of Registered Nurses of British Columbia [CRNBC], 2011). For the purpose of this literature review the focus will be on educating NPs.

Description of the Problem

Current literature identifies both depression and anxiety as considerable contributors to poor health care outcomes for both mother and child in perinatal populations (Skouteris et al., 2009). Extensive clinical research has been allocated to PPD resulting in enhanced clinical understanding of the prevalence, etiology, screening, and treatment of this mood disorder (Skouteris et al., 2009). Research addressing antenatal and PP anxiety lacks in comparison to PPD, subsequently leading to insufficient screening, misdiagnosis, and poor management of anxiety in maternal women resulting in knowledge gaps for the detection and management of anxiety in perinatal women (Rowe, Fisher, & Loh, 2007). Grigoriadis et al. (2011) reveal that clinicians receive limited training regarding perinatal anxiety due to a lack of education, stating

that only 20% of clinicians screen their prenatal and PP patients for anxiety. As PCPs, NPs are responsible for the care of prenatal patients as well as mothers immediately PP in the primary care setting (CRNBC, 2011). Therefore, to reduce the adverse complications it is essential that NPs are educated on the complexities of antenatal and PP anxiety (Grigoriadis et al., 2011). PCPs need to understand the diagnostic criteria, associated risk factors, treatment options, and clinical guidelines for antenatal and PP anxiety.

The purpose of this culminating project is to increase NPs clinical understanding of the appropriate diagnosis and management of prenatal and PP anxiety. First, I will conduct a literature review to assess the prevalence, risk factors, and the clinical impact of anxiety in antenatal and PP women. Second, I will assess the state of the evidence to discern how antenatal and PP anxiety is currently being screened for, as well as the various treatment modalities being utilized. Lastly, I will disseminate the findings by creating a poster that will be presented at the University of British Columbia's (UBC) graduate symposium. The principle objective of this poster will be to improve NPs knowledge and awareness of perinatal anxiety and help mitigate barriers hindering NPs from initiating early screening and appropriate tailored treatments in the primary care setting (Austin et al., 2010).

Background

Anxiety affects 16 % of Canadian woman and is the most prevalent psychiatric condition in women of child bearing age (Bowen, Bowen, Manslany, & Muhajarine, 2008; Green, Haber, Frey, & McCabe, 2015). Considering that anxiety has a peak onset in females who are in their mid 20's, it is not surprising that anxiety is common during pregnancy and in the PP period (Ross & McLean, 2007). This challenging time is fraught with many physical, financial, social, and cognitive changes that predispose a woman to psychological distress (Yelland, Sutherland, &

Brown, 2010; Green et al., 2015; Rallis, Skouteris, McCabe, & Milgrom, 2014). While experiencing both negative and positive emotions during the perinatal period are common, some women may develop reactions that are debilitating and beyond what is considered normal (Green et al., 2015).

Conceptualizing Worry

Differentiating pathological anxiety from worry in the perinatal period can be challenging as it is common for women to feel overwhelmed and anxious about new maternal roles (Ross & McLean, 2007). A study analyzing worrying in 200 pregnant women reveals that 80% of prenatal women are anxious about delivering and having a healthy baby (Ross & McLean, 2007). Research also highlights that pregnant women frequently stress over finances, their physical appearance, and household duties and tasks (Ross & McLean, 2007). Worrying is an expected clinical finding in perinatal women and usually subsides over time (Ross & McLean, 2007). However, it is important that PCPs differentiate normal worrying from an anxiety disorder in the clinical setting (Ross & McLean, 2007). General anxiety disorder (GAD) is differentiated from normal worrying by three distinct characteristics: “Worry is excessive, and interferes with daily functioning; worry is widespread, usually to multiple domains of the person’s life; and worry can occur without any identifiable triggers” (Ross & Mclean, 2007, p. 1294). Furthermore, Ross and Mclean (2007) state that clinicians should have a high index of clinical suspicion for perinatal anxiety when a woman is worrying more than other maternal women, and when worrying is uncontrollable, excessive, and cannot be stopped with reassurance.

Conceptualizing Anxiety

According to the diagnostic and statistical manual (DSM) of mental health disorders IV criteria, GAD cannot be diagnosed until three of the following symptoms of anxiety have been

experienced by the patient for six months: easily tired, restlessness, difficulty concentrating, muscle tension, difficulties falling asleep or staying asleep, and irritability (Jacob & Storch, 2013; Ross & McLean, 2007). While these criteria may be prudent for the mainstream population, it is unlikely that women will meet these required standards during the nine months of pregnancy or in the early PP months. Subsequently, this diagnostic limitation has resulted in insufficient diagnosis and treatment of anxiety in antenatal and PP women (Ross & McLean, 2007). Earlier screening and diagnosing of anxiety is warranted to combat the deficiency of the GAD criteria (Simpson et al., 2013; Dennis et al., 2016). To reduce mortality and prevent long term sequalae for both mother and child, it is essential that PCPs are educated on how to tailor their diagnosis and management of anxiety in this specialized population (Jacob & Storch, 2013; Dennis et al., 2016).

Current Gap in Knowledge

OBGYNs in the United States of America (USA) provide both primary and specialized care. OBGYNs have a unique role as PCPs as they are often the first point of contact for perinatal women in the clinical setting (Coleman, Carter, Morgan, & Schlikin, 2008). Through the lens of a primary healthcare model, Coleman, Carter, Morgan, and Schulikin's (2008) research evaluates the assessment of screening practices of 1193 American OBGYN fellows revealing that clinicians are under screening, diagnosing, and treating antenatal women with anxiety. Results of this study identify that only 79 of the 1193 OBGYN fellows screen their antenatal patients for anxiety on a regular basis. These low screening rates are linked to the fact that several OBGYNs feel that perinatal anxiety is not in their clinical scope of practice to diagnose and treat. Interestingly, only 32.5% of OBGYN feel that screening and managing anxiety is their responsibility, while 92.2% of OBGYNs feel that PPD is under the clinical scope

of practice of OBGYN care. OBGYNs also report that the education they receive to detect, diagnose, and treat anxiety is insufficient and they are only moderately comfortable with diagnosing anxiety. OBGYNs state that a lack of clinical knowledge, time constraints, and poor clinical training, are significant barriers to effectively screening and managing anxiety in perinatal and PP women. Subsequently, a deficiency of clinical knowledge, and insufficient clinical skills has resulted in clinicians feeling less confident to assess and manage anxiety in perinatal women (Coleman et al., 2008).

Grigoriadis et al. (2011) survey of 397 practitioners discovers that clinicians are 'somewhat' interested in screening, diagnosing, and treating anxiety in maternal women. This study reveals that clinicians are generally unaware of the physiological and psychological side effects of perinatal anxiety and insufficient knowledge is the principle source of poor clinical interest (Coleman et al., 2008; Grigoriadis et al., 2011). Coleman et al. (2008) states that if clinicians are educated about the symptomology and adverse effects of anxiety they will be more likely to be concerned with detecting and managing anxiety in pregnant and PP women. These two studies highlight the knowledge gap that exists amongst clinicians and brings attention to the need for further education for both OBGYNs and PCPs to improve the screening and management practices of perinatal anxiety. As PCPs are often the first point of contact for prenatal women in the clinical setting, it is essential that PCPs have the confidence and skills to detect and manage anxiety in this specialized population.

Literature Review

A literature search was conducted to examine research studies well suited to elucidating information on the impact of anxiety in perinatal populations. Consideration was given to literature written in English, from primary sources, and published beyond the year 2005. A

systematic search that encompassed research from the nursing, psychology, and medical fields utilizing three scholarly databases MEDLINE, Pub Med, and the Culminating Index to Nursing and Allied Health (CINAHL) in full text was conducted. Key words: pregnancy, perinatal, antenatal, anxiety, depression, postpartum, nurse practitioner was applied in various combinations and resulted in the identification of 72 articles suitable for further exploration. Abstracts of each article were reviewed, retained, or rejected based on the applicability of content to the topic of interest being explored. A google search was also conducted to identify clinical guidelines that pertained to anxiety in perinatal populations. This search resulted in the identification of the British Columbia Best Practice Guidelines for Mental Health Disorders in the Perinatal Period (BCBPG) (William, 2014). Additionally, a bibliography search from relevant articles previously reviewed, resulted in the identification of studies that were suitable for this literature review.

Risk Factors of Perinatal Anxiety

Risk factors for perinatal anxiety are multifactorial and are likely the consequence of complex overlapping physiological, psychological, and social influences **(**Pawluski, Lonstein, & Flemming, 2017). The BCBPG recommends that clinicians screen for risk factors for anxiety in the early antenatal period (William, 2014). To facilitate early recognition and treatment of perinatal anxiety, it is important that PCPs are aware of predisposing risk factors. Therefore, the following section highlights the myriad of factors influencing anxiety in antenatal and PP women.

Lee et al. (2007) studied anxiety and depression in prenatal women identifying young age, alcohol use, and poor self-esteem as risk factors for the development of anxiety during pregnancy. The strongest predictor of anxiety throughout all three trimesters of pregnancy is a

history of alcohol use. Lee et al. (2007) hypothesize that women who overuse alcohol may have undiagnosed and untreated pre-existing mental health disorders and when coupled with the stress of pregnancy, are predisposed to developing anxiety. Another predisposition to perinatal anxiety is lack of self esteem. Lee et al. (2007) propose that pregnant women who are lacking self confidence may have difficulties coping with the challenges of pregnancy; therefore, entering motherhood with fear, apprehension, and worry about future roles and responsibilities.

Yelland et al. (2010) population-based study utilized the 22 item Depression Anxiety Stress Scale (DASS) to survey 4,366 women for both anxiety and depression at six months PP. They discovered that social stressors and life events are strong predictors of PP anxiety and comorbid depression. This study revealed that 13% of the respondents had anxiety while 37.5% had both anxiety and depression. Furthermore, 37.8% of the PP woman who were anxious or both anxious and depressed, reported having at least one life stressor during the postnatal period. Common stressors impacting the psychological well being of mothers are insufficient finances, death of a loved one, conflict amongst family members, and moving to a new home. Findings of this study also show a strong correlation between social stressors, anxiety, and depression. Other risk factors that influence perinatal anxiety are a personal history of anxiety or depression, being a single mother, inadequate partner support, low socioeconomic status, and an increase in psychosocial stress (Pawluski et al., 2017). Furthermore, a history of neglect, trauma, or abuse are also influential factors that predispose women to the development of anxiety in the perinatal period (Pawluski et al., 2017).

Prevalence of Perinatal Anxiety

Researchers acknowledge that PPD is prevalent in perinatal populations and impacts seven to 15 % of postnatal women worldwide (Green et al., 2015). Interestingly, recent research

identifies that perinatal anxiety is more prevalent than depression and often occurs concomitantly with depressive disorders (Bowen et al., 2013; Green et al., 2015). Grant, McMahon, and Austin (2008) conducted an Australian study of 100 prenatal women identifying that 21% of their patient cohort met diagnostic criteria for anxiety during the antenatal period. Additionally, 63% of these women had a comorbid diagnosis of both depression and anxiety (Grant, McMahon, & Austin, 2008).

Lee et al. (2007) study further highlights the prevalence of perinatal anxiety. This prospective longitudinal study examined anxiety and depression in 357 perinatal women utilizing the Hospital Anxiety and Depression scale (HAD) during each trimester of pregnancy and at six weeks postpartum. Lee et al. (2007) reveal that anxiety is more prevalent than depression during the perinatal period with 54% of the sample reporting anxiety during various points of pregnancy. Statistically significant results ($p < 0.05$) show that anxiety in the first and third trimesters of pregnancy is more common and more severe than anxiety levels in the second trimester. Their results reveal that 12.6% to 16.9% of pregnant women experience comorbid anxiety and depression and that anxiety is present at various phases of pregnancy. Lee et al. research strengths lies in its longitudinal analysis of anxiety in each trimester of pregnancy and concludes that anxiety should not only be assessed at the initial clinical visit but throughout each trimester of pregnancy.

Furthermore, Rallis et al. (2014) research supports previous findings by Lee et al. (2007). Rallis et al. explored anxiety, stress, and depression over the length of pregnancy in 214 women who were less than 16 weeks gestation. Perinatal stress and anxiety were assessed using the anxiety component of the Depression Anxiety-Stress Scale (DASS). Depression was evaluated using the Edingburgh Postnatal Depression Scale (EPDS). Rallis et al. discovered that

psychological distress is present at 16 weeks, 32 weeks, and 36 weeks gestation. The researchers found an increase in anxiety during the first and third trimesters of pregnancy and a decrease in symptoms of anxiety at 24 to 28 weeks gestation. In comparison to Lee et al. (2007) study, Rallis et al. also reveal that there is a high prevalence of stress and anxiety in both the first and final trimesters of pregnancy. This study also declares that vigilant screening throughout pregnancy is essential to identify women who are at highest risk for developing prenatal anxiety.

PCPs must understand that anxiety is prevalent in antenatal and PP women and that screening only once during the prenatal period will not sufficiently identify this disorder (Biaggi, Conroy, Pawlby, & Pariante, 2016). Clinical attention should also be given to comorbidity. Women who have a dual diagnosis of both anxiety and depression during pregnancy are less likely to achieve remission with treatment (Simpson, Glazer, Michalski, Steiner, & Frey, 2014). Additionally, women who suffer from both these disorders often have symptoms that are more severe than women who have a singular psychiatric diagnosis (Farr et al., 2014; Simpson et al., 2014). Therefore, it is essential that PCPs assess for comorbidity because treatment options that do not collectively target both depression and anxiety may have negative health implications for both mother and child (Farr et al., 2014).

Perinatal Anxiety as a Predictor of Postpartum Depression

Extensive research has been dedicated to the study of PPD and identifies antenatal depression as a risk factor for depression following birth (Miller, Pallant, & Negri, 2006). However, evidence reveals that prenatal anxiety is a more substantial predictor of depression in PP women (Biaggi et al., 2016). Alipour, Lamyian, and Hajizadeh's (2012) prospective longitudinal study investigates the impact of antenatal anxiety and fear of childbirth on PPD in 140 pregnant women between 28 to 30 weeks gestation. Through individualized interviews,

anxiety was assessed using the State-Trait Anxiety Inventory (STAI) and the Childbirth Attitudes Questionnaire (CAQ). PPD was evaluated at 45 days and 12 weeks PP using the EPDS. Alipour et al. (2012) research findings reveal that anxiety in the prenatal period is an independent predictor for developing depression at 45 days and 12 weeks PP. Statistics show 35% of respondents with antenatal anxiety had PPD at 45 days, while 25% of women had PPD at three months postpartum (Alipour et al., 2012). Therefore, it is important for PCPs to identify anxiety to decrease depression.

Skouteris et al. (2009) study supports previous research regarding perinatal anxiety as a risk factor for depression. This prospective study explores symptoms of depression and anxiety throughout both pregnancy and the PP period in 207 women. The researchers analyze the relationship between these two mood disorders and sought to discern whether anxiety causes depression, or conversely, depression causes anxiety in perinatal women. Skouteris et al. (2009) discover that there is a strong correlation between prenatal anxiety and PPD. However, unlike former studies that assessed anxiety and depression, their research specifically identifies that low levels of clinical anxiety predict elevated levels of postnatal depression. These findings have clinical implications for PCPs who may have disregarded subclinical levels of anxiety in pregnant women in the past (Skouteris et al., 2009). Failing to recognize subsyndromal anxiety in pregnant women may result in undertreatment of anxiety and place women at risk for developing PPD (Rallis et al., 2014).

Research consistently identifies antenatal anxiety as a significant risk factor for PPD. PCPs need to turn their clinical focus from PPD towards anxiety to better assess and manage anxiety in antenatal women (Alipour et al., 2010). A traditional clinical focus on PPD has resulted in the misdiagnosis and inappropriate management of anxiety and other psychiatric

mood disorders (Alipour et al., 2010). To improve the emotional health of women in the PP period, it is imperative that PCPs recognize the associated risk factors of perinatal anxiety and begin to screen in the initial stages of pregnancy (Alipour et al., 2010).

Consequences of Antenatal and Postpartum Anxiety

There is unanimity amongst researchers that perinatal anxiety has negative implications for the physiological, psychological, and social well-being for both mother and child (Bergh, Calster, Smits, Huffel, & Lagae, 2008; Bowen et al., 2013; Pawluski et al., 2017). Clinical research on fetal development reveals that prenatal anxiety causes over stimulation of the hypothalamic-pituitary-adrenal (HPA) axis (Biaggi et al., 2016; Ross & McLean, 2007). A hyper active HPA axis results in vasoconstriction of the maternal blood supply, reduction of essential nutrients and oxygen to the fetus, and improper fetal development of both glucocorticoid brain receptors and the nervous system (Biaggi et al., 2016; Ross & McLean, 2007). Research also magnifies the association between prenatal anxiety and lower Apgar scores, irregularities in fetal heart rates, lower birth weights, and elevated rates of still births (Biaggi et al., 2016; Brand & Brennan, 2009; Orr, Reiter, Blazer, & Sherman, 2007; Meades & Ayers, 2011). Additionally, Orr et al. (2007) identifies that women with high levels of prenatal anxiety are three times more likely than women with mild levels of anxiety to experience preterm labour and delivery.

The psychological and social side effects of perinatal anxiety are widely documented (Orr et al., 2007). Biaggi et al. (2016) systematic review identifies that women with prenatal anxiety are more likely to make cavalier lifestyle choices and have unhealthier pregnancies. These women also have higher rates of alcohol and substance abuse, make poor nutritional choices, have excessive weight gain, and inadequate prenatal care (Biaggi et al., 2016). Considering that

disadvantaged individuals who have unfavorable socioeconomic and environmental circumstances are at greatest risk for developing mental health disorders during pregnancy and PP, it is essential that health promotion programs and PCPs consider and screen individuals with the greatest inequities (World Health Organization [WHO], 2014). Studies also reveal that women who suffer from PP anxiety breast feed their children for shorter durations of time and have difficulties with infant bonding and attachment (Paul, Downs, Schaefer, Beiler, & Weisman, 2017; Pawluski et al., 2016).

The evidence further identifies that children of mothers who experience anxiety during pregnancy have an increased risk of developing cognitive delays, hyperactivity, conduct disorders, and psychiatric conditions later in life (Biaggi et al., 2016; Meades & Ayers, 2011). Meades and Ayers (2011) research presents a correlation between perinatal anxiety, anxiety in eight-year-old children, and a reduction in academic scores. Anxiety during pregnancy is associated with impulsive behavior in 15-year-old teenagers (Meades & Ayers, 2011). Cognitive development was the focus of a study assessing antenatal anxiety and academic performance in six-year old children (Brand & Brennan, 2009). To identify anxiety in perinatal women, a validated questionnaire was administered to the pregnant cohort. This prospective study analyzed the cognitive development of the children of mothers who had prenatal anxiety by comparing grades in mathematics, writing, reading, and music to the children of mothers who did not have perinatal anxiety. Results of this study show a negative correlation between stress during pregnancy and academic grades in primary school children.

Surveillance of Perinatal Anxiety

While the importance of screening is evident, clinical recommendations are ambiguous regarding which screening instrument to use (Simpson et al., 2014). Currently, there are no

validated screening instruments designed to specifically detect anxiety in antenatal and PP women. This results in suboptimal identification of anxiety in this specialized population **(**Meades & Ayers, 2011; Rowe et al., 2008). Throughout the literature, the following screening tools have been utilized to measure perinatal anxiety with differing results: General Health Questionnaire (GHQ), GHQ 30, State-Trace Anxiety Inventory (STAI), Hospital Anxiety and Depression Scale (HADS), and EPDS (Meades & Ayers, 2011). In Canada, the EPDS is utilized for clinical screening of anxiety in antenatal and PP women (Bowen et al., 2008). Therefore, the following section will focus on research pertaining to the use of the EPDS tool.

The literature does not exclusively validate the use of the EPDS as an effective measure for detecting anxiety in perinatal women (Matthey & Agostini, 2017; Simpson, Glazer, Michalski, Steiner, & Benico, 2014; Rowe et al., 2008; Swalm, Brooks, Doherty, Nathan, & Jaques, 2010). The EPDS is a ten-item screening instrument that was originally designed to detect PPD in maternal women (Bowen et al., 2008). The EPDS is used as a screening measure in perinatal anxiety because it contains a three questions sub scale that addresses anxiety (Matthey & Agostini, 2017). While the EPDS can identify anxiety in antenatal and PP women, some researchers propose that as a construct, this three-item subscale is too subjective to effectively capture the complexities of perinatal anxiety (Meades & Ayers, 2011; Swalm et al., 2010). Mathey and Agostini (2017) identify the following subjective questions from the EPDS: question three addresses whether the individual unnecessarily blames herself; question four asks the individual whether she has been worried or been anxious for no apparent reason; and, question five inquires whether the individual panics for no apparent reason. Misinterpretation of items three through five has led to low EPDS scores and substandard identification of perinatal anxiety disorders (Allison, Wenzel, Kleiman, & Sarwer, 2011). For example, a mother who is

worrying about sudden infant death syndrome and continues to check on her baby throughout the night may feel that her anxiety is necessary and justified (Mathey & Agotini, 2017). This example highlights the ambiguity of the EPDS scale.

Furthermore, Austin et al. (2010) study sought to discern if combining the EPDS with an interval system questionnaire improves diagnostic screening of anxiety in postpartum women. The EPDS and interval system questionnaire were administered to 1549 women at two, four, and six months PP. Women who answered yes to any of the interval questions or scored greater than 12 on the EPDS received a psychiatric interview called the auto-CIDI. Findings revealed that 20.4% of women met diagnostic criteria for anxiety and 37.7% of women had comorbid anxiety and major depression (Austin et al., 2010). Austin et al. (2010) reveal that the interval system questionnaire identifies twice as many CIDI candidates than the EPDS alone. This study highlights that the EPDS does not definitively identify anxiety in PP women and that a more thorough screening instrument is necessary to augment or replace the EPDS.

Rowe et al.'s (2008) research examines whether the EPDS distinguishes perinatal anxiety from depression in 145 Australian perinatal women. Anxiety and depression were compared in individuals who scored 12 or greater on the EPDS. While their study discovers that the EPDS correctly identifies major depression in 43.8% of the women, 40.7% of the respondents with scores greater than 12 did not actually have depression or anxiety (Rowe et al., 2008). These findings suggest that that EPDS does not differentiate anxiety from depression in perinatal women and that mislabelling of mental health disorders is a potential consequence of using the EPDS for disorders other than depression. Matthey & Agostinis's (2017) study supports Rowe et al. (2008) research findings. They determine that high scores on the EPDS results in false-positive identification of mood disorders in perinatal women. These results have

financial implications for the healthcare system as over diagnosing leads to unnecessary clinical referrals and a reduction in access to care for individuals in need (Matthey & Agostini, 2017). Falsely diagnosing a mother with anxiety may also be stigmatizing (Batterham, Griffiths, Barney, & Parson, 2013). Stigmatization is associated with poor healthcare outcomes, a reduction in self- esteem, and poor social interactions (Batterham et al., 2013; Matthey & Agostin, 2017). Furthermore, women who feel stigmatized are less likely to report symptoms, seek care, and adhere to recommended treatment plans (Batterham et al., 2013). Simpson et al. (2014) conducted a retrospective chart review of 140 women comparing the EPDS and General Anxiety Disorder 7-item scale (GAD-7) as measures for GAD during the perinatal period. Each woman in the study completed both the GAD-7 and the EPDS at the initial clinical visit. A skilled psychiatrist diagnosed each woman according to DSM-IV criteria. The total scores of the EPDS and GAD-7, coupled with each women's demographic information were analyzed. Results found that the GAD-7 was superior to the EPDS in detecting perinatal anxiety and comorbid anxiety and depression. Statistics reveal that the GAD-7 has a specificity of 72.2% and a sensitivity of 61.3% (Simpson et al., 2014). Whereas the EPDS-3A yields a specificity of 63.5% and a sensitivity of 68%. The EPDS produces a sensitivity of 77.3% to 89.3% and a specificity of 26.7% to 40.3%. Simpson et al. (2014) results indicate that a high score above 13 on the GAD-7 is more specific at identifying perinatal anxiety than a higher score on the EPDS-3A and EPDS. This study is the first to analyze the utility of the GAD-7 screening measure in antenatal and PP women. While these results are promising, this screening measure requires further research and validation to support its utility as a primary screening tool in perinatal women.

The research previously outlined clearly illuminates that the EPDS does not sufficiently detect anxiety in perinatal women and that screening is an area for future research development (Matthey et al., 2012; Simpson et al., 2014). PCPs should take caution when using the EPDS as a screening instrument. A screening tool that is designed for one population may produce erroneous results in another population (Meades & Ayers, 2011). Consideration should be given to the GAD-7 or a symptom interval questionnaire to augment the EPDS while awaiting newer tools that specifically target perinatal anxiety to be developed. At this time, recommendations for screening are inconclusive and left to the discretion of the PCP (William, 2014). Although specific screening time frames have not been mandated by the BCBPG, the literature supports that screening should commence at the initial clinical visit and at each subsequent visit thereafter (Lee et al., 2007; Rallis et al., 2014).

Diagnosis

Before diagnosing anxiety in perinatal woman, it is essential that PCPs have excluded all medical disorders that can potentially mimic anxiety (William, 2014). A high index of suspicion should be given to the following conditions; arrhythmias, neoplasms, metabolic disorders such as: hyperthyroidism, adrenal insufficiency, electrolyte imbalances, Cushing's syndrome, folate and thiamine deficiencies, substance overuse, and substance withdrawal (Craske & Bystritsky, 2015). Of note, screening instruments identify women at risk for mood disorders, and are not diagnostic tools (Matthey & Agostoni, 2017). Diagnosis can only be confirmed once a clinical diagnostic assessment interview has been conducted by the PCP and when DSM-V criteria is met (Matthey & Agostini, 2017; William, 2014).

Practice Recommendations for PCPs

The consequence of inadequate research in perinatal anxiety has resulted in limited evidence based recommendations for the treatment and management of anxiety in antenatal and PP women (Lemmon, Vanderkruik, & Dimidjian, 2015). Despite limited research, clinical guidelines have been developed in BC with the purpose of guiding clinicians on how to best manage anxiety in antenatal and PP women. The BCBPG propose that perinatal anxiety care should encompass screening of anxiety, strategies for early prevention, interventions and management, and surveillance for adverse health outcomes (William, 2014).

Treatment of antenatal and PP anxiety can be subdivided into two categories based on symptomology: mild to moderate anxiety and moderate to severe anxiety (William, 2014). Treatment recommendations from the BCBPG are further subdivided into two components based on the severity of anxiety. For mild to moderate anxiety treatment is centered on psychoeducation, psychotherapies, and self-care strategies using the NEST-S program (William, 2014). For moderate to severe and recurrent anxiety, the focus continues to be on non-pharmacological modalities with the addition of psychotropic medications (Misri & Kendrick, 2007). The following treatment recommendations of the BCBPG are displayed in Appendix A.

Strategies for Prevention of Anxiety

In the primary care setting prevention strategies for perinatal anxiety are targeted at reducing risk factors and endorsing protective influences (Garcia-Campayo et al., 2015). The literature identifies that strong social supports and marital satisfaction help guard against anxiety in perinatal women (Lee et al., 2007; Biaggi et al., 2016). PCPs can help strengthen relationships by educating patients partners about the symptomology of anxiety and what to anticipate in the care of an individual with this disorder (Thomas, Komyitri, & Judd, 2014). Being knowledgeable and providing support throughout the pre-and postnatal period can have a

major impact on the outcome and duration of anxiety in perinatal women (Thomas et al., 2014). The literature also identifies that when individuals with pre-existing anxiety and predisposing risk factors engage in group therapy sessions, anxiety during the perinatal period is prevented (Thomas et al., 2014). The environment provided by group therapy fosters conflict resolution skills that can be utilized when individuals have interpersonal and relationship difficulties during the perinatal period (Thomas et al., 2014). Furthermore, Orr et al. (2007) suggest that by simply educating women on what to anticipate during pregnancy, clinicians can reduce anxiety in expectant mothers. Therefore, to mitigate anxiety in perinatal women it is essential that before conception, PCPs identify early predisposing risk factors, assess for quality of relationships and social support systems, and begin an open dialogue about what to expect in the antenatal and postpartum stages of motherhood (Orr et al., 2007)

Treatment Strategies for Anxiety

Treatment strategies for anxiety in perinatal women encompass both non-pharmacological and pharmacological measures. The NEST-S program was developed by the BC mental health and reproductive program as an non-pharmacological initiative to improve self-management of perinatal anxiety using a cognitive behavioural therapy approach (Haring et al., 2013). The NEST program has five components that are essential to self care: nutrition, exercise, sleep and rest, time for yourself, and support (Haring et al., 2013). This program is recommended by the BCBPG and is outlined in a clinical resource manual for both clinicians and perinatal patients with anxiety (William, 2014). Components of the NEST-S program are outlined below and can be accessed in Appendix B. Selective serotonin reuptake inhibitors (SSRI) and selective norepinephrine reuptake inhibitors (SNRI) are first line pharmacological

agents utilized for perinatal women with moderate to severe anxiety and are discussed in the pharmacological section of this literature review (William, 2014).

Nutrition. The Canadian prenatal nutrition guidelines for health professionals (2009) outlines the nutritional recommendations required to have a healthy pregnancy. However, the literature identifies that antenatal women with anxiety tend to have poor nutritional habits leading to unhealthy pregnancies and associated fetal complications (Biaggi et al., 2016; Soares et al., 2009). Excessive weight gain during pregnancy may contribute to hypertension, fetal macrosomia, gestational diabetes, and miscarriages (Harrison, Brown, Hayman, Oran, & Redman, 2016). Alternatively, insufficient weight gain during pregnancy may contribute to intrauterine growth restriction, premature delivery, and a reduction in neonatal birth weights (Soares et al., 2009). Hobel and Culhane's (2003) study analyzing maternal nutrition and the impact of food intake on preterm delivery found that pregnant women who consume less than three meals per day are 30% more likely to go into preterm labour in comparison to individuals who meet the daily recommendations of food intake. Nutrition during pregnancy was further researched by Soares et al. (2009). Their cross-sectional study investigates the prevalence of poor eating behaviours in pregnant women and the associated factors contributing to inadequate nutrition. Behaviours of eating were investigated in 712 antenatal women who were between 16 and 36 weeks gestation. Vomiting and increased food cravings are features of the first trimester of pregnancy (Soares et al., 2009). To control for these confounding variables, pregnant women who were less than 16 weeks gestation were excluded from this study.

Eating behaviours and psychiatric symptoms were assessed at baseline using the Eating Disorder Examination Questionnaire (EDEQ) and the Prime Care Evaluation of Mental Disorders (PRIME-MD). Eating behaviours in this study were identified as vomiting, binge

eating, excessive exercise, and laxative misuse. This study identifies that 31.5% of the participants were anxious. Results reveal a significant association between anxiety and improper eating behaviours such as binge eating during pregnancy. This study also reveals that women with antenatal anxiety often fail to meet the nutritional requirements outlined by the Canadian prenatal nutrition guidelines. Additionally, women with anxiety are at an increased risk for developing eating disorders during pregnancy. Most maternal women desire a healthy pregnancy and are receptive to making lifestyle changes to prevent poor pregnancy and fetal outcomes (Soares et al., 2009). Therefore, the prenatal period is the optimal time for PCPs to council patients on the importance of eating a well-balanced diet and changing behaviours that promote either obesity or low gestational weight gain during pregnancy (Soares et al., 2009; Stadtlander, 2017).

Exercise. Regular physical activity can help reduce the risk of developing anxiety in perinatal women by 25% (Stadtlander, 2017). A study of 20,000 men and women comparing physical activity and sedentary lifestyles reveals that 60 minutes of weekly, moderate to intense, physical activity decreases both anxiety and depression (Harrison et al., 2016). Cramp and Bray (2010) investigates the impact of exercise on psychological health and whether having a mother's baby present during exercise sessions improved mood in 23 postpartum women. Twenty-three pregnant women who were eight to 43 weeks PP were placed into two groups. One group exercised with their baby present, whereas the comparative group exercised alone. Anxiety and feelings were measured using the STAI and the Exercise-induced Feeling Inventory (EFI) pre-and post program. Exercise sessions were group led and encompassed 45 minutes of flexibility, strength, weight, and cardiovascular training. This study reveals no statistically significant differences in feelings between the group that exercised with their child present

versus the group that did not. However, this study discovered a statistically significant reduction in anxiety amongst the entire cohort. In addition to a reduction in anxiety, women reported that they felt calmer, refreshed, and had an overall improvement in fatigue after each training session (Cramp & Bray, 2010).

The Society of Obstetricians and Gynaecologist of Canada (SOGC) recommends that exercising during pregnancy is safe in individuals at low risk for obstetrical complications (DeMaio & Magann, 2009). Exercising is contraindicated in high risk individuals who have the following conditions: an incompetent cervix, high risk of precipitous labour, multiple gestations, bleeding in the second or third trimester, preeclampsia, and placenta previa past 26 weeks of pregnancy (Harrison et al., 2016). There is limited evidence pertaining to the impact that exercise has on fetal health. DeMaio and Magann (2009) prospective observational study investigated 7,101 antenatal women and found that there is no correlation between physical activity, preterm birth, and reduced fetal intrauterine growth in mothers who exercise during pregnancy. The literature also identifies that pregnant women who are sedentary prior to pregnancy are safe to engage in supervised exercise classes beginning in the second trimester (Demaoi & Magann, 2009; Schmidt, Chari, & Davenport, 2016). Research identifies that physical activity does not impact the composition or amount of breast milk in lactating women (Harrison et al., 2016). To protect milk supply, lactating women should feed their child before physical activity or at least one hour following exercise (Harrison et al., 2016). Furthermore, to reduce anxiety, maintain physical fitness, and control weight gain during pregnancy, PCPs should recommend that their antenatal patients engage in 30 minutes of moderate physical activity on a regular basis (DeMaio & Magann, 2009; Schmidt et al., 2016)

Sleep. Sleep deprivation during the perinatal period is associated with obstetric complications and elevated levels of anxiety (Hall et al., 2009; Stadtlander, 2017). Hall et al. (2009) identifies that antenatal women who sleep less than six hours per night have a threefold increase in C- section deliveries compared to women who get adequate sleep each night. Their study of 650 Canadian women in their third trimester of pregnancy examined the relationship between sleep, fatigue, anxiety, and fear of childbirth. The STAI-S measured anxiety, the Mindel's sleep questionnaire measured sleep deprivation, and the MAF scale analyzed fatigue. This study identifies a positive correlation between anxiety, fatigue, lack of sleep, and fear of childbirth. Furthermore, high levels of anxiety result in a greater fear of childbirth. A study analyzing prenatal anxiety and obstetrical labour complications reveals that women who fear child birth have elevated levels of anxiety (Hall et al., 2009). Insufficient sleep during pregnancy also contributes to higher anxiety levels and fear of child birth. To mitigate the complications associated with poor sleep, PCPs should encourage their pregnant patients to strive for seven to eight hours of sleep per night (Stadtlander, 2017). However, the demands of the perinatal period may make it difficult to achieve this goal.

Relaxation. The research identifies that relaxing activities and techniques such as yoga, massage therapy, deep breathing, guided imagery (GI), and passive muscle relaxation (PMR) are instrumental in reducing anxiety during pregnancy (Urech et al., 2010). Urech et al. (2010) conducted a randomized control trial (RCT) to assess the impact of relaxation exercise techniques on the psychological and physiological health in pregnant women. Thirty-nine women were randomized to three different groups; GI, PMR, and the control group, passive relaxation. Anxiety, blood pressure (BP), heart rate (HR), cortisol levels, adrenocorticotropic

hormone (ACTH), norepinephrine, and epinephrine were all measured at four different time points throughout the group sessions (Urech et al., 2010).

Utilizing an analysis of covariance (ANACOVA), results show no statistically significant differences between all three intervention groups, anxiety, and endocrine measurements. While results indicate that GI and PMR are not superior to passive relaxation exercises, statistical analysis found that all three interventions do decrease anxiety, ACTH, and cortisol levels in pregnant women. This study also discovered a greater reduction in BP and HR with the use of GI and PMR in comparison to the control group. It is apparent that both active and passive relaxation exercises during pregnancy can reduce anxiety and the biochemical responses associated with stress. Therefore, PCPs should encourage their perinatal patients to incorporate relaxation exercises such as GI, yoga, and deep breathing into their daily routine (Urech et al., 2010)

Cognitive behavioural therapy. Cognitive behavioural therapy (CBT) is the gold standard treatment for anxiety in the mainstream population and is recommended as an initial treatment modality for perinatal anxiety (Green et al., 2015; Lemon et al., 2015; William, 2014). CBT is time specific psychoeducation that is grounded in problem solving, restructuring of unhealthy thought patterns, and relaxation techniques (Green et al., 2015). To date, there are few studies that assess CBT therapy in perinatal populations. Green et al. (2015) conducted a small study of two prenatal women and eight PP women to distinguish if CBT is an effective treatment option for perinatal anxiety. All ten women were diagnosed with anxiety according to DSM-V criteria before commencing CBT. Weekly, two-hour sessions were attended by each woman for six weeks. Results identify a statistically significant reduction in anxiety symptoms amongst all perinatal women. Additionally, all ten women were satisfied with the CBT sessions and felt that

this treatment met their psychological needs. Although, a small sample size, lack of power, and homogeneity of the study threatened generalizability of Green et al. research, this study's finding are congruent with the larger scale research addressing CBT in general populations (Rezvan, Baghban, Bahrami, & Abedi, 2008). CBT is an excellent non-invasive, non-pharma logical therapy option for women with perinatal anxiety. However, it is apparent the future research that addresses the methodological shortcomings of this study is warranted (Green et al., 2015)

Interpersonal therapy. Interpersonal therapy (IPT) is based on the premise that psychological problems stem from interpersonal and relationship difficulties (Wright & Abrahams, 2015). Promising research reveals that IPT can be an effective therapy modality for maternal women having difficulties with role transition. (Misri & Kendrick, 2007; William, 2014). Currently there are not any studies evaluating IPT in perinatal women with anxiety. Therefore, the literature addressing anxiety and IPT in non-pregnant populations was reviewed. Wright and Abrahams (2015) study sought to investigate the effectiveness of IPT in individuals who were depressed or anxious. Outcomes were measured in 24 individuals at both the initial and final clinical visit using the patient health questionnaire-9 (PHQ-9) for symptoms of depression and the GAD-7 for symptoms of anxiety. Individuals completed weekly 50-minute IPT sessions for 16 weeks. This study reveals a statistically significant reduction ($p<0.011$) in both depression and anxiety with the use of IPT (Wright & Abrahams, 2015). Although this study delivers convincing results, a small sample size and a lack of a control group have impacted the rigour of this study (Polit & Beck, 2014). A study conducted with a larger perinatal sample using a two-group comparison would help validate IPT use in antenatal and PP women.

Group therapy. The literature identifies that interventional group therapy can be beneficial to individuals having difficulties with role transition, interpersonal challenges, and

relationship strain (Thomas et al., 2014). Thomas et al. (2014) conducted a study exploring group interventional therapy and levels of anxiety and depression. This study assessed symptoms of anxiety using the STAI tool and the EPDS for symptoms of depression in 37 pregnant women. A client satisfaction questionnaire was administered at the final clinical visit. Pregnant women and their partners participated in six weeks of two-hour group therapy sessions. Group sessions were composed of four components: developing strategies to improve self care, identifying symptoms of depression and anxiety, IPT addressing role transition and partner support, and maternal-infant attachment strategies. The results of this study reveal a statistically significant reduction ($p < 0.001$) in both anxiety and depression following six completed group sessions (Thomas et al., 2014). Women in this study reported that interventional group therapy is beneficial, meets their psychological needs, and fulfills their expectations. Additionally, fathers who attended group sessions state that they have gained a better understanding of their partners mental health issues and feel more capable of identifying and accessing resources when necessary. While the resources required to facilitate group therapy sessions are more substantial than individualized psychotherapy sessions, this form of treatment can be beneficial in individuals that do not respond well to other forms of therapy (Thomas, 2014).

Pharmacotherapy. Recommendations of the BCBPG suggest that SSRIs and SSNRIs are the first line pharmacological agents for the treatment of anxiety in antenatal and PP women (William, 2014). Due to the ethical implications of conducting RCTs on women during pregnancy, limited data comparing different classes of psychotropic medications and fetal outcomes is available (Kennedy, 2013). All drugs are assigned a pregnancy risk category (A-X) that help determine the risk of drug exposure on the fetus (William, 2014). Most SSRIs and SSNRIs are deemed a category C, which states that the risk of fetal harm cannot be excluded

(William, 2014). While harm cannot be ruled out, the potential benefit of a class C drugs may outweigh the potential risks. The safety of antidepressants during pregnancy and breastfeeding has been extensively studied. Subsequently, the research reveals that SSRIs may increase the risk for fetal harm, as these medications diffuse across the placental barrier (Bjork, Engelelson, & Gilhus, 2015). Although SSRI's are less harmful than other psychotropic medications, the adverse effects of SSRI use during pregnancy cannot go unmentioned (Bjork et al., 2015).

Selective serotonin reuptake inhibitors. A meta-analysis conducted by Eke, Saccone, and Berghella (2016) analyzed two retrospectives, three prospective, and three population-based studies to assess SSRI use during pregnancy and the risk of preterm delivery. The results of this study reveal that there is a strong correlation (95% CI [1.14-1.56]) between SSRI use during pregnancy and preterm birth, lower birth weight, and respiratory distress in neonates. Preterm birth is also higher in women who have used SSRIs during the third trimester of pregnancy (Eke et al., 2016). Additionally, Bjork et al. (2015) identify that SSRI use during pregnancy is associated with pulmonary hypertension, respiratory distress, an increase in irritability, and cognitive delays in infants (Bjork et al., 2015; Eke et al., 2016). Due to the risk of cardiac malformations; specifically, atrial and ventricular septal defects, the use of paroxetine is contraindicated in pregnant women (Kennedy, 2013; Tran & Robb, 2015).

Although the first line treatment recommendations for perinatal anxiety are non-pharmacological, PCPs may need to prescribe antidepressants for women experiencing recurrent anxiety or anxiety that is moderate to severe (William, 2014). Prior to initiating pharmacotherapy in pregnant and lactating women, PCPs can consult the data base *Motherisk* (2017). Motherisk is a Canadian data base that offers evidenced based information on the safety and risk of medications used during the prenatal period and while breastfeeding (Bjork et al.,

2015; Motherisk, 2017). Efficacy of SSRI use for the treatment of anxiety is made evident in a trial conducted by Ball and Kuhn (2005). Their double blind RCT of 55 (non-pregnant) patients with GAD were randomly assigned an eight-week treatment of either sertraline or paroxetine. Anxiety was measured using the Hamilton rating scale for anxiety (HAM-A) at the initial and final clinical visit. The results of this study show a significant reduction in GAD with the use of sertraline (56%) and paroxetine (57%) (Ball & Kuhn, 2005). Efficacy is comparable amongst sertraline and paroxetine, with no statistically significant differences between the two groups. Considering paroxetine is contraindicated in pregnancy, the literature reveals that sertraline is the recommended antidepressant for treating anxiety during the perinatal period due to its relatively safe drug profile in both pregnant and breastfeeding women (Kennedy, 2013; Misri & Kendrick, 2007; Ravindran & Stein, 2010).

An observational study was conducted by Micheal (2017) analyzing the distribution levels of sertraline in maternal serum, amniotic fluid, and umbilical cord blood in six pregnant women and their babies at birth. In this study, prenatal women with anxiety were treated with 20-100mg of sertraline throughout pregnancy. The results of this study reveal a non-statistically significant correlation between daily dosing of sertraline and drug concentration levels in maternal serum and umbilical cord blood. However, there is a positive correlation between the dose of sertraline and the drug concentration in the amniotic fluid. Although, sertraline was detected in amniotic fluid, the umbilical cord blood had almost undetectable traces, implying safe use of sertraline during pregnancy and breastfeeding (Jacob & Storch, 2013). Other SSRIs that can be safely administered during the perinatal period are citalopram, escitalopram, and fluoxetine (William, 2014). While fluoxetine is safe to use during pregnancy, fluoxetine's long half-life makes it a less desirable choice for women who are breastfeeding (Misri & Kendrick,

2007). PCPs should avoid using fluoxetine in breastfeeding mothers as superior options are available (Misri & Kendrick, 2007).

Serotonin-norepinephrine reuptake inhibitors. Due to limited evidence pertaining to the effectiveness off SSNRI use in perinatal women, the literature examining the mainstream population was reviewed. Bose, Korotzer, Gommoll, and Dayong (2008) conducted an eight-week double blind, placebo controlled RCT using venlafaxine XR and escitalopram versus placebo in 404 non-pregnant subjects. GAD was evaluated at the first and final clinical visit using the HAM-A measurement tool. The researchers of this study identify that venlafaxine XR and escitalopram are superior to placebo for the treatment of GAD (Bose et al., 2008). Another trial comparing duloxetine and venlafaxine to placebo, found that both treatments are superior to placebo in treating anxiety (Ravindran & Stein, 2010). Trials also identify that venlafaxine and duloxetine are efficacious for the treatment for relapse prevention (Ravindran & Stein, 2010). Safety of venlafaxine was studied in 150 women during the first trimester of pregnancy (Misri & Kendrick, 2007). Misri and Kendrick (2017) reveal that there is no correlation between venlafaxine and an increase in birth defects. However, the perinatal guidelines designate SSNRIs as a category L3 in lactating women. The L3 classification deems that SSNRIs are probably safe and that these agents should only be used when the benefit of these agents outweighs the risk of harm to the infant (William, 2014).

The literature recommends that women with pre-existing treated anxiety should not have their antidepressant agents switched if current treatments are working (Fishell, 2010). It is also essential that PCPs monitor infants who may have been exposed to antidepressants during maternal pregnancy and breastfeeding for any adverse complications (Bjork et al., 2015). The literature suggests that mothers should breastfeed her child before taking a dose of antidepressant

medication (Bjork et al., 2015). PCPs should also consider referring their perinatal patients with anxiety to the perinatal mental health care team when they unsure how to continue treatment, are uncomfortable managing perinatal anxiety, or their patient's mood becomes unstable (Bowman, Hellier, & Cline, 2015).

Description of the Project

The writer conducted an extensive review of the literature and the BCBPG in an effort to disseminate the findings to PCPs through a clinical poster presentation. Gaps are identified within the research, and the evidence is synthesized with the intent of developing a poster that will be presented at the UBC's graduate symposium. This poster will be tailored to NPs, aiming to increase awareness in prevalence, risk factors, adverse effects, diagnostic screening, and various treatment options of prenatal and PP anxiety. This poster will also address the limitations of the project, areas for future clinical research, as well as identify areas for clinical practice improvements. The lead chair will evaluate the literature review in addition to attending the poster presentation to ensure the goals of the culminating project are competently addressed, and that outcomes outlined are achieved. Additionally, I will seek feedback from fellow colleagues, experts in the field of perinatal mood disorders, and NPs who attend my poster presentation.

Poster Presentations

Strengths. Poster presentations are suitable learning tools utilized to disseminate health information to adult learners (Ilic & Rowe, 2015). Posters are generally inexpensive and appeal to adult learners as they are interactive and dynamic modalities that can relay information to larger audiences at their own leisure (Ilic & Rowe, 2015). Adult learning is centered on the principles of motivation, self-direction, expertise, application, and learning styles (McNeil, Hughes, Toohey, & Dowton, 2006). According to Palis and Quiros (2014) adults must be

motivated and have self-direction to acquire knowledge and see the personal benefit of learning. Individuals need to be able to apply new information to help foster personal and professional growth. By presenting a poster at a conference, individuals have the opportunity and choice to engage in discussion as well as review the information presented on the poster (Ilic & Rowe, 2015). Poster presentations provide an opportunity for individuals seeking information the chance to build upon their current knowledge of perinatal anxiety as well as the opportunity to share their own clinical expertise. Posters also provide a non-threatening environment where individuals can electively participate in discussions and review the material that is relevant to them (Ilic & Rowe, 2015). This process promotes engagement and active learning (Palis & Quiros, 2014; Ilic & Rowe, 2015). Poster presentations also appeal to individuals who learn through all senses (Palis & Quiros, 2014). Poster presentations appeal to the visual learner, provide an auditory component due to verbal interactions between poster facilitator and learner, and are an interactive method that helps bolster audience engagement (Ilic & Rowe, 2015).

Weaknesses. Weaknesses of a poster presentation are they have restricted space for information. Thus, only pertinent information can be included on the poster. Another weakness of a poster presentation is that individuals must be interested in the topic being presented. Engagement from the audience is instrumental in helping to disseminate the information outlined on the poster. Lastly, there is limited data and research assessing the effectiveness of poster presentations and knowledge transfer (Ilic & Rowe, 2015). Further research is warranted to substantiate poster presentations as an effective modality for promoting transfer of knowledge (Ilic & Rowe, 2015).

Limitations

There are several limitations hindering the integration of effective screening and management of anxiety in perinatal populations. First, there has been limited research dedicated to the study of anxiety in this distinct population. Subsequently, lack of clinical research has resulted in limited clinical guidelines addressing perinatal anxiety. Although the BCBPG clinical guidelines provides recommendations for clinicians, there are gaps within this resource. These gaps stem from the lack of substantial research supporting this mood disorder and are as follows. According to the BCBPG a diagnosis is confirmed by meeting DSM IV criteria (William, 2014). As previously discussed, waiting six months to diagnose anxiety in perinatal women may result in perinatal women being misdiagnosed with other mood disorders. This diagnostic criterion needs revision as this criterion is not applicable to pregnant and PP women. Additionally, the BCBPG has a two-prong approach for treating mild and major anxiety. However, how clinicians decipher which patient has mild anxiety and major anxiety is inconclusive as there is no consistent grading system for perinatal women. Differentiating between mild and moderate antenatal anxiety is left to the discretion of the clinician and may result in suboptimal treatment of this disorder.

Second, lack of a dedicated screening tool specifically designed for perinatal anxiety has resulted in substandard identification and management of anxiety in perinatal women. In depression, the EPDs distinctly indicates major depression when a score of 13 or more is calculated and minor depression when a score of 10-13 is obtained (Matthey, 2008). This specific algorithm has provided a guideline for clinicians on how to diagnose, treat, and refer PPD patients. A tool that provides the same consistent results for anxiety is necessary. Lack of consistent tools has created ambiguity on how to even identify anxiety in perinatal women. This

has served as a barrier for this culminating project as I was unable to make a clear recommendation on how to screen for perinatal anxiety.

Lastly, to my knowledge, there are no long term prospective studies analyzing the effect of antidepressant use in children of women who used antidepressants during pregnancy (Bowman et al., 2015). This information would help substantiate recommendations for antidepressant use during pregnancy and breastfeeding and help PCPs become more comfortable prescribing these agents. Bowman et al. (2015) suggests that PCPs should encourage their prenatal patients who are taking antidepressants to register with the pregnancy exposure registry as this data will help provide evidence on the safety of antidepressant use during pregnancy.

These aforementioned factors have served as barriers for this culminating project due to the inability to make strong recommendations about screening, diagnosing, and antidepressant use during pregnancy and the PP period. While the literature identifies that further research assessing screening tools is necessary, long term prospective studies that follow the children of mothers who used antidepressants during pregnancy is warranted (Bowman et al., 2015).

Conclusion

Anxiety during the perinatal period is a considerable health care concern (Dennis et al., 2016). Anxiety in prenatal and PP women has been associated with poor healthcare outcomes for both mother and child and is an independent risk factor for depression in PP women (Miller et al., 2006). Clinical research in perinatal anxiety has paled in comparison to PPD, subsequently leading to practice and research gaps, in addition to suboptimal clinical management of this disorder (Skouteris et al., 2009). To address the current knowledge barriers of PCPs, research articles and clinical guidelines were examined with the intent of educating PCPs about the risk factors, prevalence, adverse complication, surveillance measures, and

treatment options for anxiety in perinatal women. The information extrapolated from this literature review was translated into a poster presentation that will be presented at the graduate symposium. The goal of this project is to educate PCPs about perinatal anxiety so that they will be better equipped to recognize women who are at risk, initiate early screening, and employ effective management strategies to prevent complications and long-term sequelae associated with this disorder.

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Appendix A

Treatment Recommendations of the BCBPG

Severity of Symptoms	Treatment and Self-Management
Mild to Moderate	A. Psychoeducation B. Self-Care: The NEST-Program C. Psychotherapies I Cognitive Behavioural Therapy (CBT) II Interpersonal Therapy (IPT) III Psychodynamic Therapy (PDT) IV Group Therapy (therapist or peer led)
Moderate to Severe or a high risk of relapse	Treatments for mild to moderate symptoms plus: D. Pharmacotherapy

William, J. (2014). Best practice guidelines for mental health disorders in the perinatal period. *British Columbia Reproductive Mental Health Program*. Retrieved from http://www.perinatalservicesbc.ca/Documents/Guidelines-Standards/Maternal/MentalHealthDisordersGuideline.pdf

Appendix B

The NEST-S Program

Components of the NEST-S program are recommended by the BCPG and can be accessed at the following link: https://reproductivementalhealth.ca/sites/default/files/uploads/resources/files/bcrmh_anxietyguide_mod1.pdf

Harring, M., Smith, J., Bodnar, D., Misri, S., Little, R., Ryan, D. (2013). Coping with anxiety during pregnancy and following birth. Retrieved from https://reproductivementalhealth.ca/sites/default/files/uploads/resources/files/bcrmh_anxietyguide_final_whole_document.pdf

Appendix C

ANTENATAL AND POSTPARTUM ANXIETY

INCREASING AWARENESS FOR NURSE PRACTITIONERS IN PRIMARY CARE

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BACKGROUND

Anxiety during the antenatal and postpartum (PP) period is prevalent and can results in adverse ramifications for both mother and child. Research addressing antenatal and PP anxiety lacks in comparison to postpartum depression (PPD), subsequently leading to insufficient screening, misdiagnosis, and poor management of anxiety in maternal women (Skouteris et al., 2009). The literature and guidelines pertaining to how to best care for anxiety in this specialized population is inconsistent. However, the literature consistently identifies that if anxiety is detected early, associated complications and mortality can be reduced. The aim of this poster presentation is to enhance primary care practitioners (PCP) clinical understanding of perinatal anxiety by outlining the associated risk factors, prevalence, and subsequent consequences. Furthermore, recommendations for screening, diagnosis, treatment, and management are highlighted to improve clinical management of anxiety in perinatal women. The principle objective of this poster will be to improve PCPs knowledge and awareness of prenatal and PP anxiety and help mitigate barriers hindering PCPs from initiating early screening and appropriate tailored treatments in the primary care setting.

PREVALENCE OF PERINATAL ANXIETY

8.5 % of perinatal women experience anxiety.

RISK FACTORS FOR ANXIETY

SYMPTOMS OF ANXIETY

- Easily tired
- Restlessness
- Difficulty concentrating
- Muscle tension
- Irritability
- Difficulty falling asleep
- Difficulty staying asleep
- (Ross & McLean, 2007)

CONSEQUENCES OF PERINATAL ANXIETY

Psychological Implications	• Children of mothers who experienced prenatal anxiety have an increased risk of developing cognitive delays, hyperactivity, conduct disorders, and psychiatric conditions later on in life (Biagi et al., 2016).
Physiological Implications	• Prenatal anxiety causes vasoconstriction of the maternal blood supply and reduction of essential nutrients and oxygen to the fetus (Ross & McLean, 2007).
Social Implications	• Women with prenatal anxiety are more likely to make cavalier lifestyle choices and have unhealthier pregnancies. They have higher rates of alcohol and substance overuse.

SURVEILLANCE

Screening: Screening for perinatal anxiety should occur at the initial clinical visit and each subsequent visit thereafter (Rallis et al., 2014).

Although screening tools for anxiety remain inconclusive, currently, the Edinburgh postnatal depression scale is the screening tool used to measure anxiety in perinatal women. Further research addressing a screening tool directed at anxiety in prenatal and postpartum women is warranted.

Diagnosis: Before diagnosing anxiety in perinatal women, it is essential that PCPs have excluded all medical disorders that can potentially mimic anxiety (William, 2014).

While screening instruments help identify women at risk for developing perinatal anxiety, they are not diagnostic. Diagnosis can only be confirmed once a clinical diagnostic assessment interview has been conducted by the PCP and when DSM-V criteria is met.

TREATMENT STRATEGIES

- **Mild to Moderate Anxiety:** Treatment strategies for anxiety in perinatal women encompass both non-pharmacological and pharmacological measures. The NEST-S program was developed by the BC mental health and reproductive program as an non-pharmacological initiative to improve self-management of perinatal anxiety using a cognitive behavioural therapy (CBT) approach. The NEST-S program has five components that are essential to self care: nutrition, exercise, sleep and rest, time for yourself, and support (William, 2014).
- **Moderate to Severe Anxiety:** In addition to non pharmacological strategies, selective serotonin reuptake inhibitors (SSRI) and selective norepinephrine reuptake inhibitors (SNRI) are first line pharmacological agents utilized for perinatal women with moderate to severe anxiety.

FOLLOW UP AND REFFERAL

PCPs should consider referring their perinatal patients with anxiety to the perinatal mental health care team when they are unsure how to continue treatment, are uncomfortable managing perinatal anxiety, or their patient's mood becomes unstable. Anxiety should be assessed at each clinical visit (Bowmen, Hellier, & Cline, 2015).

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