

UNIVERSITY OF NEW ENGLAND

**Treatment Access, Engagement and Cognitive Behavioural
Therapy for Perinatal Anxiety**

A Dissertation submitted by

Peta N. Maguire

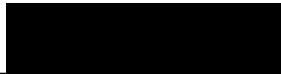
For the award of Doctor of Philosophy (Clinical Psychology)

2022

Certification of Dissertation

I certify that the work in this thesis, titled 'Cognitive Behavioural Therapy for the Treatment of Perinatal Anxiety', are entirely my own effort, except where otherwise acknowledged.

I also certify that the thesis is an original piece of research written and has not previously been submitted for a degree or submitted as part of the requirements for a degree or award to any other university or institution other than the University of New England.



Signature of Candidate

10/07/2022

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ENDORESMENT



Signature of Supervisor/s

11/07/2022

Date



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Abstract

Perinatal anxiety disorders are common and are associated with significant burden on women and their families, and with increased health care costs. Cognitive behaviour therapy (CBT) is considered the psychological treatment of choice for anxiety disorders in the general population; however, the efficacy of CBT for perinatal anxiety is less understood. The overarching aim of this program of research was to evaluate the acceptability and efficacy of CBT for perinatal anxiety. This was achieved across four separate studies. Study 1 synthesised the current empirical status of CBT for perinatal anxiety using a meta-analytic approach. The meta-analysis included 13 studies and found that CBT is an effective treatment for perinatal anxiety. Study 2 used a qualitative approach to explore women's experiences of perinatal anxiety, as well as facilitators and barriers to accessing treatment during the perinatal period. The study included 20 women ($M_{age} = 34.65$ years, $SD = 8.68$) who participated in semi-structured interviews. The findings indicated two overarching themes, facilitators and barriers to accessing treatment in the perinatal period; and common experiences of perinatal anxiety and what treatment would ideally provide - with each overarching theme encompassing numerous global and organising themes. Study 3 used a quantitative approach to further explore the perceived barriers to help-seeking intention for perinatal anxiety and women's treatment preferences, and to examine the utility of the Health Belief Model (HBM) in predicting future help-seeking intention specific to perinatal anxiety. A total of 216 women ($M_{age} = 28.53$ years; $SD = 4.97$) with perinatal anxiety symptoms participated in the study by completing a battery of online self-report measures. The study found the most common barriers to accessing treatment were the cost of treatment; wanting to solve the problem on their own; and thinking the problem would go away, and found that face-to-face individual CBT was women's preferred treatment approach. The study also found that the HBM variables together predicted approximately 35% of the variance in help seeking intention.

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Study 4 used a case series design to investigate the efficacy and acceptability of remotely delivered transdiagnostic CBT for postnatal anxiety. Three women ($M_{\text{age}} = 28.33$ years; $SD = 4.04$) were treated using transdiagnostic CBT delivered remotely via internet videoconferencing. The study found significant reductions from pre-treatment to post-treatment on both anxiety and depression measures. Taken together, the findings of this program of research can be used to enhance treatment uptake and improve treatment access during the perinatal period.

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List of Publications Included as part of the Thesis

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Maguire, P.N., Clark, G., Cosh, S.M., & Wootton, B.M. (2021). *Exploring experiences, barriers and treatment preferences for self-reported perinatal anxiety in Australian women: A qualitative study*. [Manuscript submitted for publication]. School of Psychology, University of New England.

Maguire, P.N., Bhullar, N., Cosh, S.M., & Wootton, B.M. (2022). *Help-seeking and treatment preferences for women experiencing perinatal anxiety symptoms*. [Manuscript accepted for publication]. School of Psychology, University of New England.

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Other Publications Contributed to during the Candidature Period

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Dimensions of Wildlife, 25(2), 105-120.

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Note to Examiners

This thesis is by publication. The thesis is composed of an introductory chapter, which provides context on the topic and subsequent chapters. The main body of the thesis contains four publications that have been integrated as four separate chapters. As the University of New England requires chapters be presented as published manuscripts, some explanatory notes will assist the examiner to navigate its contents.

First, some of the chapters have been submitted to journals which use American English, while others have been submitted to journals that use British English. To improve readability, all chapters that have not yet been published have been converted to British English. Likewise, all Figures and Tables have been placed in their corresponding positions within the chapters of the thesis, rather than at the end of the chapter as per requirements of some journals. The numbering of Tables and Figures has also been altered to reflect the chronological order of how they appear in the thesis. Furthermore, the formatting and subheading requirements of journals vary, thus subheading styles may vary from chapter to chapter. Additionally, all chapters that have not yet been published adhere to the APA 7 formatting.

Second, there is some overlap in content between chapters as a result of the number of publications. This was unavoidable in a thesis by publication. I have tried to minimise repetition where possible.

Third, to reduce space and improve readability, all references appear in a consolidated reference list towards the end of the thesis rather than at the end of each chapter.

Fourth, the thesis includes two appendices, one which is a published version of Study 1 (Chapter Two) and second contains supplementary material for Study 2 (Chapter Four). Both appendices are at the end of the thesis.

Finally, to reduce space, some minor editing of published and submitted chapters has occurred, such as deleting journal specific author notes, funding sources and conflicts of interest statements.

Statement of Contribution

Study 1 (Chapter Two):

The candidate (PM) participated during all stages of the development of this paper and overall provided a contribution greater than that of any co-author. PM completed the systematic review and ran the statistical analyses with guidance from GC and BW.

PM also wrote the initial manuscript which was revised with feedback from the co-authors.

Study 2 (Chapter Four):

The candidate (PM) participated during all stages of the development of this paper and overall provided a contribution greater than that of any co-author. PM completed the recruitment, interviews, and majority of the analysis with guidance from GC and SC.

PM also wrote the initial manuscript which was revised with feedback from the co-authors.

Study 3 (Chapter Six):

The candidate (PM) participated during all stages of the development of this paper and overall provided a contribution greater than that of any co-author. PM developed the data collection materials and completed the recruitment and statistical analyses with guidance from NB, SC, and BW. PM also wrote the initial manuscript which was revised with feedback from the co-authors.

Study 4 (Chapter Eight):

The candidate (PM) participated during all stages of the development of this paper and overall provided a contribution greater than that of any co-author. PM developed the data collection materials and completed the recruitment, intervention, and statistical analyses with

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guidance from NB, SC, and BW. PM also wrote the initial manuscript which was revised with feedback from the co-authors.

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List of Abbreviations

ACES	The Anxiety Change Expectancy Scale
ANCOVA	Repeated measure analysis of covariance
ANZCTR	Australian New Zealand Clinical Trials Registry
AS	Anxiety specific intervention
ASGS	Australian Statistical Geography Standard
BACE	Barriers to Access to Care Evaluation
BAI	Beck Anxiety Inventory
CA	Completer analysis
CBT	Cognitive behaviour therapy
CCBT	Computer administered cognitive-behavioural therapy
CI	Confidence interval
CSQ	The Client Satisfaction Questionnaire
DASS-21	Depression Anxiety Stress Scale-21
DIAMOND	Diagnostic Interview for Anxiety, Mood, and OCD and Related Neuropsychiatric Disorders
DS	Depression specific intervention
DS	Diagnostic specific
DS-CBT	Diagnosis specific cognitive behavioural therapy
DSM-5	Diagnostic and Statistical Manual of Mental Disorders – 5 th Edition
EPDS	The Edinburgh Postnatal Depression Scale
FMPS- Personal Standard	Frost Multidimensional Perfectionism Scale - Personal Standards

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GAD	Generalised anxiety disorder
GAD-2	General Anxiety Disorder 2-Item
GAD-7	General Anxiety Disorder 7-Item
GCBT	Group delivered CBT
GP	General Practitioner
GSH	Guided self-help
HADS	Hospital Anxiety and Depression Scale
HAM-Anxiety	Hamilton Rating Scale for Anxiety
HBM	Health Belief Model
HBMI-B	Health Beliefs about Mental Illness- Benefits Scale
HBMI-S	Health Beliefs about Mental Illness - Susceptibility Scale
ICBT	Internet delivered cognitive behaviour therapy
ITT	Intention-to-treat
K-10	The Kessler 10-Item Psychological Distress Scale
KPCS	The Karitane Parenting Confidence Scale
<i>M</i>	Mean
MGCBT	Mindfulness Group CBT
MHSIQ	Mental Help Seeking Intention Question
MPAS	The Maternal Postnatal Attachment Scale
NICE	National Institute for Health and Clinical Excellence
OASIS	Overall Anxiety Severity and Impairment Scale
OCD	Obsessive Compulsive Disorder
OT	Open trial
PASS	Perinatal Anxiety Screening Scale

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PD	Panic disorder
PP	Postpartum (birth to 12 months post birth).
PRAQ	Pregnancy-Related Anxiety Questionnaire
PRAQ-R	Pregnancy-Related Anxiety Questionnaire-Revised
PrAS	Pregnancy-related Anxiety Scale
PSAS	Postpartum Specific Anxiety Scale
PSS	The Partner Support Scale
PTSD	Post-traumatic stress disorder
RCT	Randomized controlled trial
RRMA	Australian Rural, Remote, and Metropolitan Areas
SD	Standard deviation
SE-SMHC	Self-Efficacy Scale for Seeking Mental Health Care
SMD	Standardized mean difference
SP	Specific Phobia
SPSS	Statistical Package for Social Sciences
SSRI	Selective Serotonin Reuptake Inhibitor (medication)
STAI	State-Trait Anxiety Inventory
STICSA	State-Trait Inventory for Cognitive and Somatic Anxiety
T1	Trimester 1 (0-12 weeks pregnant)
T2	Trimester 2 (13-27 weeks pregnant)
T3	Trimester 3 (28-40 weeks pregnant)
TAU	Treatment as usual
TCBT	Transdiagnostic cognitive behavioural therapy
TD	Transdiagnostic

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TPQ	Treatment Preferences Questionnaire
TSS	Tokophobia Severity Scale
VCBT	Videoconferencing delivered CBT
W-DEQ	Wijima Delivery Expectancy/ Experience Questionnaire
YBOCS	Yale-Brown Obsessive Compulsive Scale

Chapter One

Mental illness during the perinatal period, defined as the period from conception to 12-months post birth (The Royal Australian and New Zealand College of Obstetricians and Gynaecologists, 2018), has been recognized and well-documented through the centuries, dating back to the time of Hippocrates (Sigerist, 1951). Across the 19th century there was an increase in medical interest in perinatal mental illness, and in 1958, Marce, the namesake of the first international society dedicated to the study of perinatal illness, published a series of case studies documenting women suffering from various perinatal mental illnesses over a 150-year timespan (as cited in Trede et al., 2009). In the 20th century, research into the prevalence, risk factors, and consequences of perinatal mental illness for the mother, foetus, and infant increased immensely (O'Hara & Wisner, 2013). The increased professional and clinical interest resulted in the development of clinical guidelines to inform the detection and management of perinatal mental illness (Beyondblue, 2011).

The Mental Health Care in the Perinatal Period Australian Clinical Practice Guideline (Austin et al., 2017) highlights that mental health conditions in the perinatal period often go undetected, and recommends repeated assessment and screening for symptoms of perinatal anxiety and depression for all women. The Guideline further outlines the importance of detecting mental health conditions during the perinatal period so that appropriate intervention can be provided. Furthermore, the Guideline highlights that anxiety disorders are common during the perinatal period and offers Australian clinicians information relating to best-practice management of perinatal anxiety, which includes psychoeducation, social support, or individual structured psychological interventions (Austin et al., 2017). Additionally, the Guideline, together with international guidelines (National Institute for Health and Clinical Excellence (NICE), 2007; SIGN, 2012), discusses the importance of appropriate detection, diagnosis and treatment of perinatal anxiety due to the potential negative impact of perinatal

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anxiety on obstetric, foetal and perinatal outcomes, including increased aversive symptoms during pregnancy, increased medical visits, pre-eclampsia and preterm birth, and increased tobacco or alcohol consumption (Austin et al., 2017).

At the time of preparing the research studies included in this thesis, there was limited research investigating women's treatment preferences during the perinatal period and few studies exploring the efficacy and acceptability of remotely delivered cognitive behavioural therapy (CBT) for perinatal anxiety. Given the potential for remotely delivered interventions to improve access to evidence-based treatments for people with perinatal anxiety, the studies described in this thesis aimed to answer the following questions:

1. Is CBT efficacious in the treatment of perinatal anxiety?
2. What are the perceived barriers to accessing mental health intervention during the perinatal phase?
3. What are the facilitators to accessing mental health intervention during the perinatal phase?
4. Can the Health Belief Model predict help-seeking intention for perinatal anxiety?
5. Which CBT treatment delivery modalities do women prefer during the perinatal period?
6. Can CBT for perinatal anxiety be delivered remotely?

The following sections will review the existing literature concerning perinatal anxiety disorders and their treatment, including the nature of perinatal anxiety, a relevant theoretical model of perinatal anxiety, current literature on screening for perinatal anxiety, and various treatment approaches for perinatal anxiety. Following this, Chapter Two synthesises the current empirical status of CBT for perinatal anxiety using a meta-analytic approach, and Chapter Four and Six explore women's previous and current experiences of perinatal anxiety and their

treatment preferences using qualitative and quantitative methods. Additionally, Chapter Six explores women's help-seeking intention during the perinatal period. Chapter Eight uses a case series design to explore the feasibility of a remotely delivered CBT intervention for postnatal anxiety. Chapter Nine discusses the overall findings and conclusions of each chapter and discusses future research recommendations.

The Nature of Perinatal Anxiety

Definition

Perinatal anxiety, also known as antenatal anxiety or postpartum anxiety, are anxiety disorders that occur during pregnancy or up to 1 year postpartum (Austin et al., 2017). Whilst the Diagnostic and Statistical Manual of Mental Disorders-5 (DSM-5; American Psychiatric Association, 2013) allows the use of the “with peripartum onset” specifier to characterise episodes of major depressive disorder and bipolar disorder, there remains no specifier or acknowledgement in the text that is related to anxiety disorders. Perinatal anxiety is often misdiagnosed by health professionals as a major depressive disorder or misattributed to aspects of pregnancy, such as hormonal changes (Sharma & Sommerdyk, 2015).

Perinatal anxiety has distinctive characteristics when compared to other mental health conditions that occur in other periods of a woman's life. The perinatal period has unique physiological (i.e., affectivity, sexuality), psychological (i.e., frequent mood changes, ambivalence) and biological foundations (i.e., hormonal changes, disrupted sleep) for women, which are often accompanied by unique psychosocial changes (i.e., changes in social role, changes to social environment) (Bjelica et al., 2018). The following section first presents information on the characteristics and prevalence of perinatal anxiety, and specific anxiety and related disorders in the perinatal period, followed by the information on comorbidity and economic costs associated with perinatal anxiety.

Classification

It is normal for women in the perinatal period to experience and report anxiety symptoms, which most commonly include reporting worries and fears about having an ‘abnormal’ baby, complications during birth, changes to their body, changes to their intimate relationships, and their ability to care for their baby (Williams & Koleva, 2018). Perinatal anxiety can include all anxiety disorder presentations, and is characterised by excessive fear and anxiety, and anxiety-related behavioural changes (such as pervasive avoidance, maladaptive cognitions, and hypervigilance) that are experienced during the perinatal period (Misri et al., 2015). Fear is the emotional response to an imminent threat (perceived or real), while anxiety is defined as anticipation of a future threat (Hofmann & Hay, 2018). Whilst the two states often overlap, fear is frequently associated with urgencies of autonomic arousal required to activate the ‘fight or flight’ response, thoughts of danger and safety escape-oriented behaviours, whereas anxiety is associated with hypervigilance, muscle tension and avoidant behaviours (American Psychiatric Association, 2013; Hofmann & Hay, 2018). Fear and anxiety levels are generally maintained by pervasive avoidance behaviours and maladaptive cognitions (Hofmann & Hay, 2018; Kaczrukin, 2015). Anxiety disorders vary from one another dependent on the types of situations or objects that induce the fear, anxiety, and subsequent behavioural changes. Thus, whilst anxiety disorders are highly comorbid with one another (Goldstein-Piekarski et al. 2016; Hofmann & Hay, 2018), they can be differentiated by exploration of the types of stimulus and situation eliciting the fear or anxiety and by examining the content of the associated beliefs and thoughts (Hofmann & Hay, 2018). Outlined below are the most common anxiety (and anxiety-related) disorders and how these might present in the perinatal period.

Generalised anxiety disorder. Generalised anxiety disorder (GAD) is typified by excessive and uncontrollable worry that leads to distress and/or functional impairment

(American Psychiatric Association, 2013). Perinatal GAD is often characterised by specific worries and concerns in relation to foetal well-being, their partner's health, and maternal health and wellness (American Psychiatric Association, 2013). Despite GAD symptoms being common during the perinatal period, applying the Diagnostic and Statistical Manual of Mental Disorders (DSM; American Psychiatric Association, 2013) criteria for the general population to women in the perinatal period is often difficult because the criteria requires symptoms to be present for at least 6 months (Misri et al., 2015). Thus, some researchers propose diagnosing perinatal GAD if the DSM-5 criteria are met and symptoms have been present for at least one month (Misri et al., 2015). An additional complication with diagnosis is that physiological symptoms associated with GAD, such as irritability, tension, fatigue, difficulties with concentration, and insomnia are common during the perinatal period (Misri et al., 2015), thus distinguishing normal pregnancy-related physical symptoms from those related to GAD can make diagnosing GAD difficult during this period (Weisberg & Paquette, 2002).

Specific phobia. Specific phobia (SP) is defined as a marked fear or anxiety about a specific object or situation, which “almost always provokes immediate fear or anxiety and which is actively avoided or endured with intense fear or anxiety (American Psychiatric Association, 2013). While anxiety and fear about childbirth, and other aspects of pregnancy are common during the antenatal period, and usually do not require psychological or medical intervention (Calderani et al., 2019), some women present with severe distress, worries, and anxieties as well as avoidance behaviours (Calderani et al., 2019). When this fear or anxiety causes significant distress or impairs functioning, a diagnosis of a specific phobia can be assigned. One specific phobia of particular relevance to the perinatal period is tokophobia (or tocophobia), which is a specific phobia of childbirth (Calderani et al., 2019; Jomeen et al., 2021; Striebich et al., 2018). Tokophobia can be classified as primary, which is a morbid fear

of childbirth in nulliparous women (i.e., a female that has not previously given birth), or secondary tokophobia, which is a morbid fear of childbirth that developed as a result of a previously distressing birth experience (Hofberg & Ward, 2004).

Panic disorder. Panic disorder (PD) is characterised by the presence of recurring and unexpected panic attacks, excessive worry about having another panic attack or about the potential consequences of having a panic attack, and significant changes in behaviour as a result of the fears of having a panic attack (American Psychiatric Association, 2013). Panic attacks during the perinatal period are similar in presentation to those that occur in the general population, and include outbursts of extreme fear and panic that is overwhelming and difficult to control, which may significantly impair a woman's self-esteem and parenting confidence (Williams & Koleva, 2018). Furthermore, panic disorder in the perinatal period is associated with increased help-seeking behaviours, including frequent perinatal medical checks and emergency department presentations for both the mother and infant (Williams & Koleva, 2018).

Agoraphobia. Agoraphobia is characterised by fear or anxiety about actual or expected exposure to being in situations where escape may be difficult, which occurs most of the time, and in at least two different situations (i.e., being in open spaces, public transportation, being in a crowd, being outside of the home alone, or being in enclosed spaces) (American Psychiatric Association, 2013). The fear of experiencing panic-like symptoms or physiological sensations leads to avoidance of these situations. Agoraphobia is associated with serious functional impairment, and in severe cases may result in the person being unable to leave their house (Cullinan & Gaynor, 2015). Whilst there is research demonstrating the prevalence of agoraphobia in the perinatal period (i.e., Cullinan and Gaynor, 2015) there is a lack of research examining the specific fears associated with agoraphobia in the perinatal period.

Social anxiety disorder. Social anxiety disorder is characterised by persistent and intense fear or anxiety about specific social situations due to a fear of being negatively perceived, embarrassed or humiliated (American Psychiatric Association, 2013). The DSM-5 outlines that the fear and anxiety must result in avoidance of anxiety-producing social situations, that the anxiety is out of proportion to the situation, and that the anxiety or fear interferes with daily living (American Psychiatric Association, 2013). Women who present with social anxiety disorder during the perinatal period may experience symptoms of avoidance of social situations, and anxiety about new experiences, which may challenge new mothers' ability to adapt to motherhood. Furthermore, social anxiety disorder may prevent a woman in the perinatal period attending routine medical appointments, and may lead to a strained relationship with their partner and family, and to difficulties with adjusting to social situations during pregnancy and postpartum (Williams & Koleva, 2018).

Separation anxiety disorder. Separation anxiety disorder is characterised by excessive or unwanted fear or anxiety due to separation from certain individuals and includes excessive worry about losing the individual or the individual being harmed; excessive worry about experiencing an unfortunate event that causes separation from certain individuals; and persistent reluctance or refusal to go places or stay away from certain individuals (American Psychiatric Association, 2013). Whilst some feelings of separation anxiety are normal in mothers, maternal separation anxiety disorder is defined as excessive worry, guilt, and sadness associated with a mother's temporary separation from their child (Hock et al., 1989; Hock & Schirtzinger, 1992). Maternal separation anxiety disorder is associated with poorer marital quality and social support, as well as difficulties within the caregiving system and infant reactivity (Hui-Chin & Sung, 2008).

Obsessive compulsive disorder. Obsessive-compulsive disorder (OCD) is characterised by recurrent, unwanted and intrusive obsessions, thoughts, images or urges, and

compulsions, including repetitive behaviours (i.e., washing or checking) or mental acts performed in response to an obsession (American Psychiatric Association, 2013). Intrusive thoughts are common in the perinatal period, and usually revolve around concerns about possible harm to the baby, such as suffocating, dropping or accidental harm; fear of contamination to the baby; or concerns about symmetry or exactness of the baby (Sharma & Sommerdyk, 2015; Williams & Koleva, 2018). Compulsive behaviours during the perinatal period often involve repetitive washing, checking, and reassurance seeking (Sharma & Sommerdyk, 2015). When perinatal OCD symptoms are severe they may lead to avoidance of the baby and increased reassurance and help-seeking behaviours, such as the mother requesting more help from their partner and family to care for the baby (Williams & Koleva, 2018).

Post-traumatic stress disorder. Post-traumatic stress disorder (PTSD) is characterised by exposure to a traumatic event; intrusive or recurrent recollections and thoughts of the event; avoidance of people, places, thoughts, feelings or activities associated with the traumatic event; marked changes in mood and cognitions; and arousal and hyper-reactivity, such as hypervigilance, irritability, aggressive/reckless behaviours, difficulty maintaining concentration and sleep disturbances (American Psychiatric Association, 2013). During the perinatal period, PTSD can develop as a result from negative experiences and severe fear of childbirth (Dekel et al., 2017), a previous traumatic experience during labour, such as pregnancy and labour complications (Williams & Koleva, 2018), and psychological difficulties in pregnancy (Söderquist et al., 2009). Post-traumatic stress disorder can be associated with high-risk behaviours (i.e., smoking, drug and alcohol use), poor prenatal care during pregnancy, depression, parenting difficulties, and barriers to breastfeeding postpartum (Weinreb et al., 2018).

Adjustment disorder. An adjustment disorder is characterised by the DSM-5 (American Psychiatric Association, 2013) as “the presence of an emotional or behavioural response to an identifiable stressor”. The stressor may be a single event or may include multiple stressors, and may accompany specific developmental events, such as becoming a parent (American Psychiatric Association, 2013). An adjustment disorder must begin within three months of the stressor and last no longer than six months post the stressor (or its consequences) being removed. During the perinatal period, adjustment disorders are commonly associated with unwanted pregnancy, unemployment, family history of psychopathology, pregnancy complications, or a previous abortion (Ferrari et al., 2021).

Prevalence and Comorbidity

Estimated prevalence rates of perinatal anxiety vary greatly between studies. In the largest meta-analysis conducted to date, Dennis et al. (2017) explored estimates of the prevalence of maternal anxiety in the perinatal period. The meta-analysis included 102 studies incorporating 221,974 women from 34 different countries and included both clinical diagnoses of an anxiety disorder and self-reported anxiety symptoms. The results of the study indicated that the pooled prevalence for self-reported general anxiety symptoms during pregnancy was 18.2% in the first trimester, 19.1% in the second trimester, and 24.6% in the third trimester (Dennis et al., 2017). The overall prevalence for a clinical diagnosis of any anxiety disorder during pregnancy was 15.2%. The study further reported that 17.8% of women self-reported general anxiety symptoms at 1-4 weeks postpartum, 14.9% at 5-12 weeks postpartum, and 14.8% at > 24 weeks postpartum. The overall prevalence of having a clinical diagnosis of any anxiety disorder during the postpartum period was 9.9% (Dennis et al., 2017). Compared to the general population, where self-reported 12-month prevalence rates are approximately 14% for Australian adults (ABS, 2007) and 19.1% for U.S adults (NCS, 2007), prevalence rates are heightened during the perinatal period.

Whilst the Dennis et al. (2017) meta-analysis included all anxiety symptoms and any anxiety disorder diagnosis, Leach et al. (2017) reviewed the prevalence of specific anxiety and related disorders (identified through diagnostic interviews) in the existing perinatal anxiety literature and found that across studies the prevalence of generalised anxiety disorder ranged from 1 to 11%; specific phobias from 7 to 20%; panic disorder <1 to 8%; social anxiety disorder <1 to 8%; agoraphobia 1 to 17%; obsessive compulsive disorder 4 to 11%; and post-traumatic stress disorder 1-3% (Leach et al., 2017). Due to heterogeneity in the included studies methodologies, Leach et al. (2017) did not include pooled prevalence rates for each specific anxiety and related disorder type. A meta-analysis examined the prevalence of tokophobia and found prevalence rates ranged from approximately 4% to 43%, with an overall pooled prevalence of 14% (O'Connell et al., 2017). Similarly, an Australian study reported that approximately 24% of new mothers fulfilled criteria for an adjustment disorder over a six month period (Wynter et al., 2013).

Anxiety disorders experienced during the perinatal period are highly comorbid with other psychological disorders, including depressive disorders (Austin et al., 2010; Dikmen-Yildiz et al., 2017; Falah-Hassani et al., 2016). Falah-Hassani et al. (2017) conducted a meta-analysis incorporating 66 studies and 162,120 women to explore the prevalence of self-reported perinatal anxiety and comorbid depressive symptoms, as well as the prevalence of a clinical diagnosis of any anxiety disorder and major depressive disorder, in the perinatal period. The analysis found the prevalence estimates of comorbid self-reported perinatal anxiety and depressive symptoms to range across studies from 3% to 12%, with an overall pooled prevalence of 10%, and for clinical diagnosis, estimates ranged between 3% to 15%, with an overall pooled prevalence of 8% (Falah-Hassani et al., 2017).

Given the large variations in the above prevalence and comorbidity rates across disorders, further research is needed to refine the current prevalence estimates for perinatal

anxiety disorders and comorbid mental health conditions. It is important to note that there is wide variability in the measures used to detect and diagnose perinatal anxiety and comorbid conditions, thus prevalence/comorbidity rates should be interpreted with caution. Further, given prevalence and comorbidity rates are frequently based on self-report symptoms, future research exploring prevalence, comorbidity and treatment of anxiety during the perinatal period should include participants with both self-reported and clinically diagnosed anxiety.

Financial Cost

To date, there is a lack of literature reporting on the financial cost of perinatal anxiety, however, there are a few small studies which have examined the cost of depression or comorbid anxiety and depression in the perinatal period. First, Petrou et al. (2002) examined the economic costs of health care provided to a sample of 206 British women deemed as at high risk of developing a mental health diagnosis over the first 18 months postpartum. The results indicated a mean cost increase of 392 British pounds per woman experiencing depression compared to women whom did not experience depression (Petrou et al., 2002). Second, Bauer et al. (2016) conducted a systematic review and pathway analysis to predict the total lifetime costs of perinatal anxiety and found that, if prevalence estimates were applied, the respective costs were 4320 British pounds for health and social care, 5499 British pounds for productivity losses, and 10,975 British pounds for health-related quality of life losses per year. The study further predicted that the costs of health and social care for adverse childhood effects, such as emotional problems and conduct problems, would be 273 British pounds and 236 British pounds, respectively, per woman with perinatal anxiety (Bauer, Knapp, & Pasonage, 2016).

However, it is important to highlight the aforementioned estimated costs do not include the hidden costs of perinatal mental health, such as informal care and support provided on an unpaid basis, the cost of childcare, and longer-term costs due to ongoing indirect healthcare

costs, such as costs associated with chronic diseases and substance use arising from perinatal mental health disorders (Wenzel & Stuart, 2011). Similarly, reduced earnings, productivity loss, and quality of life impacts on the individual and society more broadly, such as the cost to society of increased taxes in order to fund health care expenditure (Wenzel & Stuart, 2011) are not considered in the above costs. Thus, further research exploring cost effective preventative measures and treatment options for perinatal mental health, and more specifically for perinatal anxiety, is needed.

Risk Factors for the Development of Perinatal Anxiety

Anxiety disorders in the general population frequently run a chronic course (Bandelow et al., 2017), therefore many women enter pregnancy with an existing anxiety disorder (O'Hara & Wisner, 2013). While there is limited evidence to suggest the prognosis of perinatal anxiety is significantly different from anxiety disorders that develop at other times, longitudinal studies exploring the development and long-term prognosis of perinatal anxiety are urgently needed (Meltzer-Brody & Stuebe, 2013). While there is limited research examining risk factors for the development of perinatal anxiety, there is some evidence to suggest that there are genetic, socio-demographic, psychological, and sleep related factors that may enhance the likelihood of a women developing perinatal anxiety.

Genetic Risk Factors

Research has indicated there is a strong genetic component to the aetiology of certain anxiety disorders (i.e., panic disorder) (Bandelow et al., 2002) in the general population, and a moderate degree of heritability in others (i.e., generalised anxiety disorder) (McLaughlin et al., 2008). Thus, it has been hypothesised that perinatal anxiety is most likely to manifest in women who have an existing predisposition or vulnerability to the development of an anxiety disorder, generally in the form of a personal or family history (Wenzel & Stuart, 2011).

Socio-demographic Risk Factors

Several studies have found a significant negative correlation between the presence of perinatal anxiety and age of the mother (Martini et al., 2015; Rubertsson et al., 2014), however, conversely, a number of studies have found a positive relationship between perinatal anxiety and depression with age (Fisher et al., 2012). There is also evidence to suggest that women with current or past birthing complications, or pregnancy loss are more likely to develop perinatal depression or anxiety, and to develop pregnancy specific anxieties (Chojenta et al., 2014; Waqas et al., 2015). Additionally, a history of caesarean section or negative birth experience has also been found to be associated with the development of perinatal anxiety and depression (Waqas, et al., 2015). Research has also found that a lower maternal education, an unplanned pregnancy, and premenstrual syndrome (i.e., the emotional, physical and behavioural changes during certain days of the menstrual cycle) are associated with increased anxiety during pregnancy, whilst social support, partner satisfaction, self-esteem and self-efficacy appear to be protective factors (Martini, et al., 2015).

Maladaptive Beliefs

Research has demonstrated that the presence of cognitive biases has a significant impact on mothers and their parenting confidence during the perinatal period. For instance, Sockol et al. (2014) found maternal attitudes regarding motherhood, such as beliefs related to others' judgements, beliefs related to maternal responsibility (i.e., if I love my baby, I should want to be with him/her all the time), and beliefs related to maternal role idealization (i.e., if I fail at motherhood, then I am a failure), are strongly associated with psychological symptoms during the perinatal period. Thus, during the perinatal period, those experiencing maladaptive beliefs about motherhood are at increased risk of experiencing feelings of guilt, sadness, and

anxiety when their feelings do not match their expectations and attitudes (Sockol et al., 2014).

Sleep Disturbances

Studies have found an association between insomnia and poor sleep quality/quantity with symptoms of perinatal anxiety. Sleep/wake patterns are significantly challenged and disrupted during the perinatal period (Bei et al., 2015). Women are often exposed to chronic sleep deprivation during pregnancy, labour and the immediate postpartum periods, as well as chronic partial sleep and disrupted sleep cycles during the first several months postpartum (Bei et al., 2015). Osnes et al. (2019) examined the relationship between late-pregnancy insomnia and perinatal anxiety in a large longitudinal cohort study of 1563 pregnant women. The study found the majority (62%) of women had insomnia at week 32 of pregnancy, and the women with insomnia had significantly higher scores for perinatal anxiety, fear of childbirth (tokophobia) and stress factors than those without insomnia. The study concluded that insomnia and disrupted sleep may be an independent predictor of developing perinatal anxiety (Osnes et al., 2019), however, it is also important to note that sleep difficulties may also be a symptom of perinatal anxiety. Given that there are potential serious health consequences from insomnia for both mother and infant, healthcare providers should be aware of the frequent occurrence of insomnia and perinatal anxiety among women in the perinatal period.

Consequences of Perinatal Anxiety

Neonatal. There is a growing body of research examining the effects of perinatal anxiety on neonatal birth outcomes. For example, Grigoriadis et al. (2018) explored the association between maternal perinatal anxiety and perinatal outcomes in a meta-analysis consisting of 29 articles. The analysis found perinatal anxiety was associated with increased odds for preterm birth (pooled odds ratio [OR] = 1.54; 95% confidence interval [CI], 1.39 to

1.70, 16 studies), being small for gestational age (OR = 1.48; 95% CI, 1.26 to 1.74, 7 studies), and smaller head circumference (mean difference = -0.25cm; 95% CI, -0.45 to -0.06cm, 4 studies). Further, Glasheen et al. (2009) conducted a systematic review on the known effects of postnatal maternal anxiety and found inconsistent results in relation to somatic outcomes for infants, such as colic and infant food refusal. For example, the review found infant food refusal and the duration of food refusal was not associated with anxiety, however that maternal state anxiety was associated with unresolved food refusal at 11 months, however the finding was not significant. Thus further research exploring somatic infant outcomes is warranted.

Child mental health. A systematic review conducted by Rees et al. (2019) explored the impact of perinatal anxiety on offspring's emotional needs in children between 2 and 5 years of age and between 6 and 9 years of age. The study found that perinatal anxiety was associated with increased emotional problems, including internalizing difficulties and demonstrating withdrawn behaviours, in both age groups. Similarly, Betts et al. (2015) conducted a longitudinal study examining the relationship between mother's levels of depressive, anxious and stress symptoms during pregnancy and offspring outcomes at birth, 6 months, and 5, 14 and 21 years. The study included 3099 mother-offspring dyads and found ongoing maternal depressive, anxious and stress symptoms during infancy and childhood predicted internalizing behaviour and depressive symptoms in offspring, even in to early adulthood (Betts et al., 2015). Furthermore, research has found that infants exposed to parental anxiety and the associated behaviours in specific situations are more likely to demonstrate avoidant tendencies in these situations due to modelling (Aktar et al., 2013). Additionally, anxious parents are reported to show "exaggerated behaviours" (i.e., exaggerated facial expression and vocalisations) while playing with their infants (Kaitz et al., 2010), and infants of mothers experiencing perinatal anxiety are less likely to show negative

affect during stranger challenges (i.e., when strangers enter their space) (Kaitz et al., 2010). This type of behaviour may reflect flattened affect, avoidance and inhibition in infants and children who may be stressed due to their mother's anxiety, which could result in social communication difficulties (Kaitz et al., 2010).

Cognitive development. Reck et al. (2018) conducted a longitudinal study investigating the effects of perinatal anxiety on infantile cognitive development at twelve months. The results indicated that perinatal anxiety, as measured at four and 12 months postpartum, had a significant negative effect on infant language development and maternal avoidant behaviours predicted poorer infant cognitive performance (Reck et al., 2018). Specifically, the study found the strongest negative predictor of infant cognitive development at four and 12 months of age was maternal neutral engagement (characterised by a lack of positive affect and vocalisms) (Reck et al., 2018).

Attachment. Research indicates that perinatal mental health disorders can negatively influence mother-child interactions and maternal-foetal bonding (Kaitz et al., 2010; Moehler et al., 2006; Moehler et al., 2007; Newman et al., 2015). Dubber et al. (2015) explored the relationship between pre-and postnatal symptoms of anxiety and depression on maternal-foetal bonding during pregnancy and at three months postpartum. The study found maternal-foetal bonding during pregnancy was significantly correlated with postpartum bonding, where mothers who reported higher scores of attachment to their foetus during pregnancy reported less bonding impairment postpartum (Dubber et al., 2015). Additionally, maternal anxiety, when associated with insecure attachment, may adversely affect attention and memory processes, which may affect mother-infant interactions (Zeijlmans van Emmichoven et al., 2003). Attachment during infancy and childhood is imperative, as the attachment system is seen to be a homeostatic system which regulates contact-maintaining behaviours

(Newman et al., 2015). Early deprivation of comfort, attachment and security have been found to adversely affect several domains, including psychological, emotional, neurological and physical functioning in childhood (Newman et al., 2015). Further, childhood disruptions to the attachment system have been found to influence subsequent caregiving behaviour in adulthood, highlighting the salient role of attachment and bonding during infancy and childhood.

Child maltreatment. There is some literature to suggest a relationship between perinatal mental health and child maltreatment. For example, a meta-analysis of 17 studies, with a total sample size of 22,042 parents with perinatal mental health concerns found a strong relationship between perinatal mental ill health and child maltreatment (i.e., physical and emotional abuse, neglect, smothering etc.), with an average odds ratio of 3.04 (95% CI 2.29-4.03) indicating that the offspring of those with perinatal mental health problems are at increased risk of childhood maltreatment (Ayers et al., 2019). However, the review highlighted that the focus of the majority of included studies was depression, thus it is difficult to draw conclusions about the impact of anxiety disorders on the risk of child maltreatment (Ayers et al., 2019).

Summary

Perinatal anxiety is associated with multiple adverse physical, psychological, behavioural and developmental outcomes for offspring. Thus, early identification and treatment of perinatal mood disorders is imperative to ensure optimal infant outcomes. However, it is also important to highlight that in studies examining perinatal anxiety and adverse outcomes, only a small proportion of variance can be attributed to perinatal anxiety (Satyanarayana et al., 2011). This indicates that perinatal anxiety is not solely responsible for infant outcomes, and that several other factors can exacerbate problems in child development.

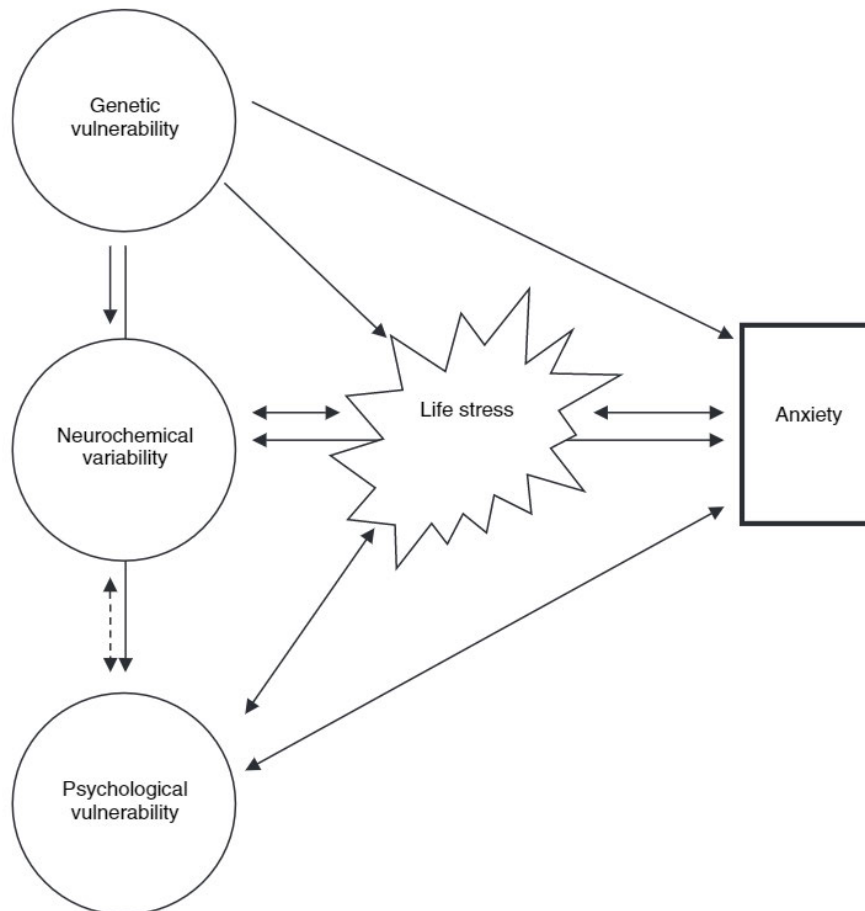
Biopsychosocial Model of Perinatal Anxiety

Wenzel's (2011) biopsychosocial model (see Figure 1.1) defines the multiple factors and vulnerabilities that contribute to the development of perinatal distress. The model includes three domains of vulnerability that have relevance in understanding the aetiology of perinatal distress (Wenzel & Stuart, 2011). The first domain is genetic vulnerability, which refers to the extent to which a woman has a genetic predisposition for depression, anxiety, or other related disorders (Wenzel & Stuart, 2011). Whilst there is a lack of literature specifically examining genetic vulnerability for perinatal anxiety, research has found a relationship between family history of psychiatric illness and perinatal depression (Lydsdottir et al., 2014), and between genetics and the development of generalised anxiety disorder in the general population (Gottschalk & Domschke, 2017). However, further research is required.

Neurochemical variability is the second domain and is a proximal factor that can vary as a function of time or circumstances (Wenzel & Stuart, 2011). The domain is based on the existing research that indicates any changes in hormone levels can affect neurotransmitters associated with mood (e.g. catecholamines, serotonin), thus the domain indicates some women who are vulnerable to perinatal distress might be sensitive to rapid changes in hormone levels (Blount et al., 2021; Ross et al., 2004; Wenzel & Kleiman, 2014; Wenzel & Stuart, 2011). Supporting research has demonstrated that, for some women, pregnancy is a time of elevated risk for psychiatric morbidity (Cohen et al., 2006) due to the rapid changes in hormone levels which may affect the neurotransmitters that play a role in mood regulation (Wenzel & Kleiman, 2014). It is likely, however, that some hormones are particularly important at certain time points throughout pregnancy and the postpartum period. For example, research indicates that oxytocin levels significantly increase right before delivery and remain heightened through lactation, thus changes in oxytocin might partly explain increased observed anxiety at the time of delivery and in the postpartum period rather than

earlier in pregnancy (Wenzel & Kleiman, 2014). However more studies are required to investigate the relationship between hormones in pregnancy and neurochemical changes.

Figure 1.1



Note. Solid lines represent associations that have been demonstrated with empirical data in both perinatal and non-perinatal samples, whereas the dotted line represents a proposed association. Reprinted from “Anxiety in Childbearing Women: Diagnosis and Treatment”, by Wenzel, A. (2011), *American Psychological Association*, 129. Copyright 2011 American Psychological Association.

The last domain includes psychological vulnerability and refers to psychological styles that have the potential to increase or decrease the likelihood of women in the perinatal period experiencing difficulties adjusting to the transition of parenthood (Ross et al., 2004; Wenzel & Stuart, 2011). The existing literature indicates several psychological vulnerabilities associated with anxiety during the perinatal period, including intolerance of uncertainty, poor problem orientation and cognitive avoidance (Dugas et al., 1998; Kaczukruin, 2015). According to Wenzel and Kleiman (2014), the most common beliefs specific to the perinatal population includes judgements about one's competence as a parent, what it means to be a mother, and what and how a family "should" look and behave like. Further research is required to understand these psychological vulnerabilities and to also understand whether these problematic beliefs shift with treatment.

The biopsychosocial model of perinatal distress demonstrates the inter-connectedness between the three domains of vulnerability that contribute to the development of perinatal distress. The model speculates that a genetic vulnerability for anxiety is associated with both biological and psychological mechanisms, and that hormonal changes associated with childbirth affect psychological vulnerability. While the model provides a helpful understanding of perinatal distress, more research is required to understand the associations between the three vulnerability domains and perinatal distress.

Perinatal Screening

Despite perinatal mood disorders being common, perinatal mood disorders are often overlooked or not identified by health care professionals working with women in the perinatal period. The perinatal period is an opportune time for mental health screening and psychoeducation due to the frequency of contact with health care professionals.

Unfortunately, however, research shows that only 44% of obstetricians routinely screen for depression, and fewer routinely screen for anxiety (Coleman et al., 2008). Early identification

and treatment of perinatal mood disorders are especially important during this time in relation to maternal and family functioning (Accorrtt et al., 2017). Thus, routine mood disorder screening and referral is essential in primary care settings.

The evidence base for perinatal mood disorder screening has been extensively examined in the process of developing the British (National Institute for Health and Clinical Excellence (NICE), 2007), Scottish (SIGN, 2012), and Australian (Austin, et al., 2010) Clinical Practice Guidelines. While the three Guidelines vary in their recommendations, all recommend the use of the Edinburgh Postnatal Depression Scale (EPDS; Cox et al. (1987) to screen for mood disorders. However, there is a lack of consensus regarding screening for perinatal anxiety disorders, including a lack of guidance on which measures to use, or how frequently screening should occur (Williams & Koleva, 2018).

The Australian National Perinatal Mental Health Guidelines (Austin et al., 2017) recommends that all women should be screened for psychosocial risk as early as practical in pregnancy and at 6-12 weeks post birth as part of routine care. However, these guidelines also identified a lack of validated screening measures. Based on the absence of a free, practical screening tool with adequate evidence for the detection of perinatal anxiety specifically, the Australian National Guidelines (Austin, et al., 2017) recommend that clinical judgement is used alongside screeners, such as EPDS, or psychosocial assessments. Similarly, international guidelines have made comparable recommendations, including the recommendation to use screeners as prompts and to use clinical judgement to further assess and diagnose (NICE, 2007; SIGN, 2013). Possible screening instruments for perinatal anxiety are outlined below. A summary of the psychometric properties of the measures are outlined in Table 1.1, including the sensitivity and specificity of the screeners.

Edinburgh Postnatal Depression Scale (Cox et al., 1987). The most widely used instrument for the detection of depression in the perinatal period is the Edinburgh Postnatal

Depression Scale (EPDS; Cox et al., 1987). The EPDS has demonstrated adequate psychometric properties in previous studies (Kheirabadi et al., 2012; Logsdon et al., 2009) and has moderate sensitivity and high specificity for detecting perinatal depression (Levis et al., 2020). The EPDS also has an anxiety subscale, the EPDS-3A, which contains items 3, 4, and 5 of the scale. The EPDS-3A aims to identify anxiety in addition to depression in the perinatal period (Smith-Nielsen et al., 2021). While the EPDS is widely used, there is limited research support for the EPDS in detecting anxiety disorders, with some research findings indicating the EPDS-3A does not meet the standard of clinical usefulness for screening for perinatal anxiety (Fairbrother et al., 2019). Further, research indicates that the EPDS has a high number of false positives in the detection of depression (Levis et al., 2020), thus results should be interpreted with caution.

The Perinatal Anxiety Screening Scale (Somerville et al., 2015). The Perinatal Anxiety Screening Scale (PASS; Somerville et al., 2015) is a 31-item scale that was developed to specifically screen for a range of anxiety symptoms during pregnancy and the postpartum period. The authors have defined three levels of clinical severity including minimal anxiety (total scores between 0-20); mild-moderate anxiety (21-41); and severe anxiety (42-93) (Somerville et al., 2015). The PASS has adequate convergent validity, and excellent reliability (Cronbach's $\alpha = 0.96$), however in previous research has only correctly identified 68% of women with a diagnosed anxiety disorder (Somerville, et al., 2015). Thus, whilst the PASS shows some promise as a screening tool, further research is required to confirm the specificity and sensitivity of the tool and to validate the scale across a number of anxiety diagnoses.

The Pregnancy-Related Anxiety Questionnaire-Revised (Huizink et al., 2004).

The Pregnancy-Related Anxiety Questionnaire-Revised (PRAQ-R; Huizink et al., 2004) is a 10-item revised version of the original 58-item PRAQ (Vanden Bergh, 1990). The PRAQ-R

is used to assess pregnancy-specific anxiety in nulliparous women, that is, women who have not previously given birth. Whilst the scale is widely used and has good psychometric properties (Huizink et al., 2004), it is limited to use in nulliparous women who are pregnant, thus cannot be used to assess anxiety across the perinatal period.

The Pregnancy-related Anxiety Scale (Brunton et al., 2018). The Pregnancy-related Anxiety Scale (PrAS; Brunton et al., 2019) is a recently developed 33-item measure designed to assess the specific characteristics of pregnancy-related anxiety. The scale consists of eight subscales which include childbirth concerns, attitudes towards childbirth, acceptance of pregnancy, body image concerns, worry about self, attitudes towards medical staff, avoidance, and baby concerns (Brunton et al., 2019). Whilst the scale has demonstrated adequate internal consistency among subscales (Cronbach's $\alpha = 0.80$) there are several limitations of the PrAS, including that the scale has not been validated in a clinical sample, the scale has not been used widely, and clinical cut-scores have not been established (Brunton et al., 2019).

The Postpartum Specific Anxiety Scale (Fallon et al., 2016). The Postpartum Specific Anxiety Scale (PSAS; Fallon et al., 2016) was developed to address the gaps in the existing screening scales and to specifically explore fears and worries related to the postpartum period. The scale includes 51-items and a 4-factor structure, which include items assessing competence and attachment anxieties; infant safety and welfare anxieties; practical baby care anxieties; and psychosocial adjustment to motherhood. The optimal cut-off for detecting clinical levels of anxiety and depression is 112, with a sensitivity and specificity of 0.75 and 0.31, respectively (Fallon et al., 2016). Whilst the scale has demonstrated excellent reliability (McDonald's $\omega = 0.95$) (Fallon et al., 2022), validation studies are limited and the scale can only be used in postpartum women.

Tokophobia Severity Scale (Wootton et al., 2020). The Tokophobia Severity Scale (TSS; Wootton et al., 2020) is a 13-item measure designed to assess cognitive (i.e., worry) and behavioural (i.e., avoidance) symptoms of tokophobia. While the TSS has demonstrated preliminary evidence of high internal consistency (Cronbach’s alpha = 0.93) and adequate convergent validity with other scales (Wootton et al., 2020), further validation studies are needed. Additionally, this measure only targets one anxiety disorder, thus may not be relevant to women with other anxiety disorders.

Table 1.1

Screening Instruments for Perinatal Anxiety

Name	Items	Specificity	Sensitivity
Edinburgh Postnatal Depression Scale (EPDS)	10	49%-100%	57-100%
Perinatal Anxiety Screening Scale (PASS)	31	NA	NA
Pregnancy-Related Anxiety Questionnaire – Revised (PRAQ-R)	10	NA	NA
Pregnancy-related Anxiety Scale (PrAS)	108	76%	45%
The Postpartum Specific Anxiety Scale (PSAS)	51	31%	75%
Tokophobia Severity Scale (TSS)	13	NA	NA

Note. NA= not applicable. Variation in specificity and sensitivity on the EPDS is noted due to the fact that studies have used different populations when assessing for this, e.g., some studies have used community samples, whilst others have used populations where mothers were “at risk” of developing a mental health problem.

Whilst some evidence of valid and reliable screening measures exists for the assessment of perinatal anxiety, several measures lack data regarding the specificity and

sensitivity of the tool, and all of the measures require further validation in larger clinical samples. Thus, the assessment of perinatal anxiety should not rely solely on screening instruments, and instead should be evidence-based and multi-modal. For example, in the general population, it is recommended that a collective multi-modal approach is used to assess anxiety disorders, which should include a clinical interview, diagnostic interview, patient reported outcome measures, observation and collateral reports (Moses et al., 2020). It is important that assessment of perinatal anxiety is multi-modal as relying on just one or two assessment types can result in underdiagnosed or misdiagnosed conditions (Moses et al., 2020).

Treatment Uptake

Early intervention and timely intervention is likely to improve the prognosis of perinatal anxiety, thus in many countries screening for perinatal anxiety and depression is incorporated as part of routine care (Earls, 2010; Kendig et al., 2017; Milgrom & Gemmill, 2014; Xue et al., 2020). However, for screening to work, women identified with positive screening results need to be followed by timely intervention following referral. If a woman does not attend treatment following referral after screening positive for anxiety or depression, the foundation of universal screening is weakened (Thombs et al., 2014).

To date, there is limited research exploring treatment uptake in women with perinatal anxiety specifically, however there is preliminary research exploring treatment uptake in perinatal depression. For example, Xue et al. (2020) completed a systematic review and meta-analysis exploring referral uptake and the effectiveness of interventions to increase treatment uptake in women with perinatal depression. The meta-analysis included 44 reported referral uptake rates from 40 observational or quasi-experimental studies. The pooled uptake rate was 43%, however significant heterogeneity ($I^2 = 97.7$) was observed across studies. Further, the study found uptake rate was associated with referral methods (i.e., referred to on-site

assessment or treatment or referred to external mental health services), where the uptake rate was significantly higher for on-site assessment or treatment compared to uptake rates for referral to external mental health services (Xue et al., 2020). Furthermore, research has found that referral and treatment rates, and treatment completion are high during the prenatal (80%) and postpartum (97.3%) period when obstetricians detect a woman's mood or anxiety disorder (Goodman & Tyer-Viola, 2010). However, when a woman screens positive for a perinatal mood or anxiety disorder and the obstetrician is unaware of the positive screen, referral, and treatment rates during the prenatal (33%) and postpartum (27.5%) period are low (Goodman & Tyer-Viola, 2010).

Whilst the above studies highlight several variables that can contribute to treatment uptake, including referral methods (i.e., referred to on-site or to external mental health services) and referrer (i.e., obstetrician), further research exploring barriers to treatment uptake during the perinatal period is warranted. Additionally, qualitative research exploring women's treatment delivery preferences, and the exploration of treatment utilisation frameworks and theories may enhance treatment uptake.

Cognitive-Behavioural Treatment of Perinatal Anxiety

Over the past several decades cognitive-behavioural approaches have dominated the treatment outcome literature for anxiety disorders in the general population (Carpenter et al., 2018; Stefan et al., 2019; Wootton et al., 2015). While cognitive-behavioural therapy (CBT) is also the recommended psychological treatment for mild to moderate anxiety and depression during pregnancy (Austin & Highet, 2017), few studies have examined the efficacy of CBT targeting perinatal anxiety specifically (Green et al., 2015; Lemon et al., 2015).

Cognitive behavioural therapists use a collaborative approach with clients to address the maladaptive cognitions and behaviours that maintain the client's distress. To address

maladaptive cognitions, clients are trained to notice and respond more rationally to *negative automatic thoughts* by exploring their *cognitive distortions* and by engaging in *cognitive restructuring* with the therapist (Beck et al., 2004). To address maladaptive behaviours, exposure therapy is typically used, whereby the client learns to eliminate their avoidance without engaging in any safety behaviours to reduce their anxiety (Kaczukruin, 2015). While exposure is central to CBT for the anxiety disorders (Kaczukruin, 2015), it is rarely included in treatment protocols for perinatal anxiety. Arch et al. (2012) posit that this is due to untested assumptions that exposure techniques may be harmful to the foetus by causing temporary increased heart rate, stress, and anxiety in the mother. Further research is required to understand the impact of exposure during pregnancy and to assess the efficacy and acceptability of exposure-based techniques for the treatment of perinatal anxiety.

CBT for the treatment of perinatal anxiety can be delivered individually (i.e., Burger et al., 2020) or in group format (i.e., Green et al., 2020), and may incorporate contemporary ‘third wave’ (i.e., Dunn et al., 2012) or transdiagnostic approaches (i.e., Bittner et al., 2020). Additionally, CBT can be delivered using traditional face-to-face methods or remotely. Table 1.2 provides a summary of randomised controlled trials that have been conducted in the past decade examining the efficacy of CBT for perinatal anxiety using traditional treatment approaches, including the treatment format and treatment length. Overall, the table demonstrates the limited number of randomised controlled trials to date exploring CBT for the treatment of perinatal anxiety specifically, as well as the significant heterogeneity in treatment approach (i.e., session length and length of treatment) and intervention focus.

CBT FOR PERINATAL ANXIETY

Table 1.2*Outcome of Randomised Controlled Studies Post 2000 Targeting Anxiety Symptoms*

Study	Treatment Type/ Contact Hours	Treatment Focus/ Disorder Type	Approach	N	Measure Used	Perinatal Period	Effect Size	Follow Up Time Frame	Follow Up Effect Size	Study Type
Asghari et al. (2016)	GCBT (12 x 90 min sessions)	Anxiety & Depression	TD	60	HADS	Pregnancy	$F = 19.93$	-	-	ITT
Austin et al. (2007)	GCBT (7 x 120 min sessions)	Anxiety & Depression	TD	132	EPDS	Pregnancy	$F = 5.81$	-	-	CA
Bittner et al. (2014a)	GCBT (8 x 90 min sessions)	Anxiety & Depression	TD	74	STAI	Perinatal Period	$F = 1.37$	12 weeks postpartum	$F=0.40$	CA
Burger et al. (2020a)	Individual CBT (10-14 x 50 min sessions)	Anxiety & Depression	TD	282	STAI	Pregnancy	$z = 1.09$	18 months postpartum	$Z=0.74$	ITT
Challacombe et al. (2017)	Individual CBT (4 x 180 min sessions)	OCD	DS	34	YBOCS	Perinatal Period	$d = 1.32$	-	-	ITT
Dunn et al. (2012)	Third wave GCBT (8 x 50 min sessions)	All anxiety	DS	19	EPDS	Perinatal Period	Not stated	6 weeks postpartum	-	ITT
Green et al. (2020)	GCBT (6 x 120 min sessions)	Anxiety	DS	86	STICSA	Perinatal Period	$d = 0.52$	12 weeks	$d = 0.33$	ITT
Karamoozian & Askarizadeh (2015)	Individual CBT + Stress management (12 x 90 min sessions)	Anxiety & Depression	TD	30	PRAQ	Pregnancy	$F = 34.83$	-	-	CA

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Lilliecreutz et al. (2011)	GCBT (2 x prolonged sessions, clinician time not reported)	Anxiety	DS	74	BAI	Pregnancy	Not stated	3 months	Not stated	CA
Misri et al. (2004)	Individual CBT (12 x 60 min sessions)	Anxiety & Depression	TD	35	HAM-Anxiety	Postpartum	Not Stated	-	-	ITT
Richter et al. (2012)	GCBT (8 x 90 min sessions)	Anxiety & Depression & Stress	TD	61	PSS	Pregnancy	$F = 1.498$	-	-	CA
Zemestani and Fazeli Nikoo (2019)	Third wave GCBT (8 x 120 min sessions)	Anxiety & Depression	TD	38	BAI	Perinatal Period	$F = 52.68$	-	-	ITT

Note. CBT=Cognitive Behaviour Therapy; GCBT=Group delivered CBT; ICBT = Internet delivered CBT; OCD = Obsessive Compulsive

Disorder; HADS = *Hospital Anxiety and Depression Scale*; EPDS = *Edinburgh Postnatal Depression Scale*; STAI = State-Trait Anxiety

Inventory; YBOCS = Yale-Brown Obsessive Compulsive; BAI = Beck Anxiety Inventory; STICSA = State-Trait Inventory for Cognitive and Somatic Anxiety; PRAQ = Pregnancy related anxiety questionnaire; GAD -2 = General Anxiety Disorder 2-Item; GAD-7 = General Anxiety

Disorder 7-Item; FMPS -Personal Standard= Frost Multidimensional Perfectionism Scale - Personal Standards; STAI -State = State-Trait

Anxiety Inventory – State; DASS-21 = Depression Anxiety Stress Scale – 21; HAM-Anxiety = Hamilton Rating Scale for Anxiety; PSS =

Perceived Stress Scale; Perinatal Period = Pregnancy to 12-months postpartum; Postpartum = birth to 12 months postpartum; *ITT*= Intention-to-

treat. CA = Completer analysis

Traditionally Delivered CBT for Perinatal Anxiety

Individual CBT for Perinatal Anxiety. Individually delivered CBT involves a client attending individual sessions, usually 50-60 minutes in duration with a therapist in their office. Individual CBT is demonstrated to be an efficacious (Carpenter et al., 2018; Cuijpers et al., 2014) and durable (Wootton et al., 2015) treatment for anxiety disorders in the general population, however, very few studies have analysed the efficacy of individual CBT during the perinatal period. As the perinatal period is a time of great change for women and given the underlying beliefs and thoughts precipitating the anxiety likely differ to those in the general population, the efficacy of CBT for perinatal anxiety warrants further investigation.

In the largest study to date, Burger et al. (2020) randomly assigned 282 pregnant women experiencing symptoms of depression and/or anxiety to either treatment as usual (TAU) or individual CBT. Whilst the primary outcome of the study was child emotional and behavioural problems at age 18 months, the study also explored maternal symptoms of anxiety and depression. The study found no statistically significant differences between the TAU and intervention groups on symptoms of anxiety at post-intervention or at 18 months postpartum (Burger et al., 2020a). Similarly, Challacombe et al. (2017) randomly assigned 34 postpartum woman experiencing OCD to either TAU or the intervention group who received four sessions of 180-minute length, time intensive CBT. The study found a significant reduction of OCD symptoms on the Yale-Brown Obsessive Compulsive Scale (Woody et al., 1995) from pre-treatment to post-treatment compared to those in the TAU group. At 12-month follow up, there was a statistically significant difference in number of participants meeting criteria for clinically significant change (based on the Yale-Brown Obsessive Compulsive Scale), where more participants from the treatment group met criteria for clinically significant change. The above studies highlight the mixed findings in the current literature exploring the efficacy of individually delivered CBT for the treatment of perinatal

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anxiety, indicating that further research exploring the efficacy of CBT for all perinatal anxiety is required.

Group CBT for Perinatal Anxiety. Group CBT (GCBT) interventions are based on standard CBT strategies, however, are delivered with multiple clients in one session. This approach is cost effective (Austin et al., 2007) and offers participants an opportunity to meet other people experiencing similar difficulties. In the most cited research exploring the efficacy of group GCBT to date, Austin et al. (2007) randomly assigned 277 pregnant women into either GCBT ($n = 191$) or a control condition (information booklet; $n = 86$). Despite a dropout rate of 52%, intention to treat analyses found significant differences between the GCBT group and the control group. The study found mean scores on the State-Trait Anxiety Inventory (Spielberger et al., 1970) declined over time for the CBT group, but remained constant for the control group, however the difference between groups was not significant. Further, women meeting diagnostic criteria for an anxiety disorder at pre-treatment reduced substantially at two months post-partum, and further reduced at four months postpartum, however this reduction was not statistically significant (Austin et al., 2007). Additionally, the study did not demonstrate an intervention effect on diagnosis of anxiety at two months post-partum or four months post-partum (Austin et al., 2007).

Similarly, Bittner et al. (2014) randomly assigned 74 pregnant women into either a GCBT intervention ($n = 21$) or a TAU control group ($n = 53$). The study found participants in both the GCBT and TAU reported a decrease in anxiety symptomology over time (as measured by the State-Trait Anxiety Inventory; Spielberger et al., 1970), however, from pre-treatment to post-treatment and from post-treatment to follow up, the difference was not statistically significant. Additionally, the study did not demonstrate an intervention effect on symptoms of anxiety or depression, or on anxiety sensitivity.

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More recently, Green et al. (2020) randomised women with perinatal anxiety to either GCBT ($n = 44$) or a waitlist control group ($n = 42$). The study found that compared to the waitlist control, there was a significantly greater reduction on the primary outcome measures of anxiety (State-Trait Inventory for Cognitive and Somatic Anxiety, Trait Version – STICS; Grös et al., 2007) in the GCBT condition from pre-treatment to post-treatment. Furthermore, the study found participants in GCBT reported significantly lower anxiety symptoms compared to participants in the waitlist control condition at 6 weeks post-baseline ($d = 0.52$, a medium effect size), and at 3-months follow up ($d = 0.33$, a small effect size) (Green et al., 2020).

‘Third Wave’ CBT for Perinatal Anxiety. Over the past decade, researchers have begun exploring the efficacy of ‘third wave’ mindfulness-based CBT interventions during the perinatal period. ‘Third wave’ CBT treatments were developed in the late 1980’s and 1990’s, and the frameworks focus on the person’s relationship to thought and emotion rather than on the content, and utilize alternative methods such as mindfulness, acceptance, values, and meta-cognition (Hayes & Hofmann, 2017). Goodman et al. (2014) examined the efficacy of a mindfulness-based cognitive therapy program in an open trial of 24 pregnant women and found clinically significant improvements in anxiety ($\eta^2=0.36$) and depression ($\eta^2=0.56$) severity on both clinician administered and self-report measures from pre-treatment to post-treatment. Similarly, Dunn et al. (2012) explored the effects of an eight week mindfulness based GCBT intervention on a sample of 19 women in the perinatal period. The results of the pilot study demonstrated clinically reliable declines in depression, stress and anxiety from pre-treatment to post-treatment, and similar results were found at the 6 weeks postpartum follow-up. Whilst the current literature indicates that mindfulness-based interventions may reduce perinatal anxiety symptoms, all studies to date have had small sample sizes and have

been uncontrolled trials (Dunn, et al., 2012; Goodman, et al., 2014), thus further research into the efficacy of third wave CBT for perinatal anxiety is required.

Transdiagnostic CBT. Whilst the efficacy of CBT protocols targeting specific anxiety disorders has been well established, over the past decade there has been an increased interest in the efficacy of transdiagnostic CBT (TCBT) for the treatment of anxiety disorders in the general population (Newby et al., 2015; Norton & Barrera, 2012; Pearl & Norton, 2017). Transdiagnostic CBT for anxiety disorders was founded on the principal that anxiety disorders share many common predisposing and maintaining factors, such as similar genetic vulnerabilities, negative affectivity, trait anxiety, and neuroticism (McEvoy et al., 2009), thus TCBT techniques target the common factors, making it a broadly applicable treatment. Additionally, TCBT can be beneficial for clients presenting with comorbid depressive and anxiety disorders, and complex anxiety diagnoses (Norton & Barrera, 2012). Further impetus to exploring TCBT treatment protocols relates to issues that frequently arise in providing anxiety treatments in clinical settings, for example, TCBT may be preferable in clinical settings where it is not feasible to provide a range of diagnostically homogenous treatments, or in areas where there is a high demand for services and limited resources (Norton & Barrera, 2012). Furthermore, the dissemination of empirically supported anxiety treatments may be improved with TCBT, as therapists could receive training in a single treatment for anxiety rather than multiple disorder-specific treatments (Clark & Taylor, 2009).

Transdiagnostic CBT treatment protocols for the treatment of anxiety disorders have generally shown efficacy in individual (Espejo et al., 2016) and group (Talkovsky et al., 2017) settings, as well as when used as part of remotely delivered treatments (Dear et al., 2016a; Wootton et al., 2018). More recently, researchers have started investigating transdiagnostic approaches across diagnostic categories (i.e., treating depressive disorders and anxiety disorders concurrently). Pearl and Norton (2017) conducted a meta-analysis to

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compare transdiagnostic and disorder specific CBT for the treatment of anxiety disorders in the general population. The study included 83 treatment conditions and found that whilst the effects for disorder-specific CBT ($g=0.95$) and TCBT ($g=1.06$) were large, there was no clinically significant difference between groups (Pearl & Norton, 2017). The results from this meta-analysis indicate that transdiagnostic CBT is an effective treatment modality in treatment of anxiety disorders in the general population. As demonstrated in Table 1.2., to date eight randomized controlled trials have explored the efficacy of TCBT for perinatal anxiety, with mixed findings. For example, Burger et al. (2020a) found no statistically significant differences between the TAU and TCBT groups symptoms of anxiety or depression post intervention, whereas Asghari et al. (2016) found TCBT significantly improved the mean scores of anxiety and depression in perinatal women compared to TAU.

Transdiagnostic CBT models and treatments are gaining research and clinical interest for anxiety disorders in the general population (Clark & Taylor, 2009). Motivation for the increased research attention stems from research identifying several shared underlying processes and clinical features among anxiety disorders, with the argument that the fundamental difference between anxiety disorders is the content of the perceived threat (Roz, 2001). As highlighted above and in Table 1.2, previous studies indicate that TCBT treatment results in considerable symptom improvement among those with anxiety and suggests that TCBT may be as efficacious in the treatment of anxiety as disorder-specific treatments. Given the effect sizes seen in the general population, positive preliminary findings in women in the perinatal period, and the potential for TCBT to reduce symptoms across comorbid disorders, TCBT for perinatal anxiety warrants further investigation.

Limitations of the Existing Literature

Whilst there is a growing body of research demonstrating the efficacy of CBT for perinatal anxiety, a number of limitations remain. First, at this stage there is an over-reliance

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on open trials (e.g., Kim et al, 2014; Lilliecreutz et al., 2010; Nieminen, et al., 2015), small sample sizes (e.g., Green et al., 2015; Karamoozian & Askarizadeh, 2015; Dunn et al., 2012; Misri et al., 2004), and a reliance on self-report measures (i.e., a lack of clinician administered severity measures or diagnostic interviews) (e.g., Challacombe et al. 2017; Zemestani and Fazeli Nikoo, 2019). Second, the majority of studies do not include information about adjunctive clinical support accessed by participants, thus the possible additional mental healthcare that they were potentially accessing was not accounted for. Third, several studies have explored the effectiveness of CBT on perinatal anxiety as a secondary outcome, rather than as the primary outcome (e.g., Forsell et al., 2017; Milgrom et al., 2016). That is, the interventions are frequently aimed at the treatment of perinatal depression, with anxiety reductions included as a secondary outcome. Fourth, to date there is a lack of literature exploring women's treatment preferences for perinatal anxiety. Instead, several studies have measured treatment satisfaction at the end of treatment, however, future research should include exploring women's treatment preferences and treatment expectations. Finally, the treatment protocols differ greatly, and the robustness, fidelity and adherence to the treatment protocols is frequently not reported. Given these limitations, the existing empirical support for CBT interventions for the treatment of perinatal anxiety must be considered preliminary. Further research addressing the above limitations and exploring the efficacy of CBT for the treatment of perinatal anxiety is warranted to establish the efficacy of perinatal anxiety CBT interventions.

Remotely Delivered CBT for Perinatal Anxiety

Remotely delivered treatments are those that can be delivered without being physically in the room with the client, which may facilitate improved access to evidence-based care. Remotely delivered treatments differ on a continuum of low intensity remote treatments to high intensity remote treatments (Titov, 2007). Low intensity remote treatments

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are those treatments that require minimal therapist contact, such as participants reading structured lessons or modules that present the same information that would typically be delivered in face-to-face treatment, and completing activities or modules, often with the support of a trained support person or clinician (Richards & Whyte, 2011; Titov, 2007). High intensity remote treatments on the other hand are those that use technology to deliver treatment in ‘real time’ with a therapist (Titov, 2007), and contain the same amount of therapist contact as standard face-to-face treatment. Approaches for delivering low intensity remote treatments include computer-administered cognitive-behavioural therapy (CCBT) and internet-administered CBT (ICBT), while high intensity remote treatments are generally delivered via internet videoconferencing (videoconferencing delivered CBT) or telephone (telephone delivered CBT). The efficacy of remotely delivered interventions for various mental health conditions in the general population is well established (Romijn et al., 2019). Meta-analyses exploring the efficacy of remotely delivered interventions have concluded that such treatments can be superior to control groups and as effective as face-to-face treatments in the treatment of depression and the anxiety disorders (Andrews et al., 2010; Romijn et al., 2019).

Despite the substantial evidence exemplifying the benefits of remotely delivered interventions in other populations, the evidence for remotely delivered interventions in the perinatal period is preliminary. While findings in the general population are promising, it is difficult to determine the effectiveness and acceptability of remotely delivered interventions for the treatment of anxiety during the perinatal period, as studies in the general population include a broad range of presentations, including complicated grief, trauma and post-traumatic stress disorder, which may not be applicable to the perinatal population (Loughnan et al 2019a). Further, studying treatment outcomes in the perinatal population is important given the high prevalence of anxiety during the perinatal period, including both during

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pregnancy and postpartum. In a recent systematic review and meta-analysis, Loughnan et al. (2019a) explored the efficacy of internet-delivered interventions developed specifically for the treatment of clinical levels of maternal depression, anxiety, and comorbid anxiety and depression during the perinatal period. The review included seven studies, and a total of 595 participants with self-reported clinical levels of depression or anxiety based on clinical cut-off scored on validated measures. The analysis found large improvements in anxiety ($g=1.08$) from pre-treatment to post-treatment, however between group differences between interventions and control conditions were moderate ($g=0.54$) (Loughnan et al 2019a). Whilst the results of the review are promising, a limitation of the review is that most of the included studies targeted depression, and no studies targeted specific anxiety disorders or comorbid depression and anxiety.

More recently, Lau et al. (2022) conducted a meta-regression to evaluate the effectiveness of digitally delivered (such as through the internet or on a mobile application) CBT on depression, anxiety and stress symptoms in perinatal women. The meta-analysis included a total of 18 studies, 11 of which assessed anxiety as an outcome, and 2514 perinatal women across 23 countries. The review found that digitally delivered CBT significantly reduced depression ($g = -0.56$), anxiety ($g = -0.30$), and stress ($g = -0.75$) symptoms at post-intervention compared to those in the control groups. Although these medium effect sizes are promising, the included studies varied in regard to research design, sample size, length of intervention and intervention focus, and a mixture of treatment modality (i.e., some studies included both face-to-face and digitally delivered CBT) (Lau et al., 2022). The findings from the above meta-analyses highlights a significant gap in the current literature on the treatment of perinatal anxiety specifically, as well as the use of remotely delivered CBT interventions in the perinatal population. A summary of the randomised controlled studies examining the efficacy of remotely delivered CBT, including digitally and via telephone, for perinatal

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anxiety is outlined in Table 1.3. The table demonstrates the small number of published studies exploring the efficacy of remotely delivered CBT specifically for perinatal anxiety and highlights the difference in focus, length and clinician contact between studies.

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Table 1.3*Outcome of Remotely Delivered Randomised Controlled Studies Post 2000 Targeting Perinatal Anxiety*

Study	Treatment Type/ Contact Hours	Treatment Focus/ Disorder Type	Approach	N	Measure Used	Perinatal Period	Effect Size	Follow Up Time Frame	Follow Up Effect Size	Study Type
Kelman et al. (2018)	ICBT (1 x online 45 mins course, no direct clinician contact)	Anxiety & Depression	TD	82	GAD-2	Perinatal Period	F = 21.28	-	-	CA
Loughnan et al. (2019)	ICBT 3 x unguided online lessons (Average clinician time per client across treatment = 14 mins)	Anxiety & Depression	TD	120	GAD-7	Postpartum	g = 0.76	4 weeks	g = 1.14	ITT
Lowndes et al. (2019)	Self-help CBT 4 topic self-help book	Perfectionism, Anxiety & Depression	TD	60	FMPS	Pregnancy	d = 0.62	12 weeks	d = 0.31	ITT

Note. CBT=Cognitive Behaviour Therapy; ICBT = Internet delivered CBT; STAI = State-Trait Anxiety Inventory; GAD-7 = General Anxiety Disorder 7-Item; FMPS = Frost Multidimensional Perfectionism Scale - Personal Standards; STAI -State = State-Trait Anxiety Inventory – State; DASS-21 = Depression Anxiety Stress Scale – 21; Perinatal Period = Pregnancy to 12-months postpartum; Postpartum = birth

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to 12 months postpartum; Hedges $g = 0.2$ small effect, 0.5 medium effect, 0.8 large effect; Cohen's $d = 0.2$ small effect, 0.5 medium effect, 0.8 large effect; Cohen's $f = 0.1$ small effect, 0.25=medium effect, 0.4=large effect size

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Low Intensity Remotely Delivered Treatment of Perinatal Anxiety

To date, three randomised controlled trials have examined the efficacy of low intensity CBT for perinatal anxiety. To date, all of the studies that have explored the efficacy of low intensity CBT treatments on perinatal anxiety have been transdiagnostic treatments targeting depressive disorders and anxiety disorders simultaneously. For instance, Kelman et al. (2018) compared brief internet delivered CBT and brief internet delivered compassionate mind training for 82 participants, who were randomly assigned to either treatment group. The CBT treatment consisted of a two-week course which included four brief, interactive modules. The study found that both treatment groups showed significant reductions on anxiety symptomology, however there was no main effect of treatment condition on anxiety.

More recently, Lowndes et al. (2019) explored the efficacy of a brief, guided TCBT self-help booklet for perfectionism and symptoms of anxiety and depression in the antenatal period. The study randomly assigned 30 women to the self-help group and 30 women to the waitlist control group. The intervention included a CBT based booklet which participants were required to work through over a four-week period. The study found significant reductions in perfectionism and symptoms of anxiety and depression in the treatment group from pre-treatment to post-treatment, and the results were maintained at 3-months follow up (Lowndes et al., 2019).

Similarly, Loughnan et al. (2019b) explored the efficacy and acceptability of a brief unguided ICBT intervention for perinatal anxiety and depression. The treatment consisted of three-lessons which involved reviewing a set of lesson slides that showcased characters' stories and described CBT specific skills to manage symptoms. The study demonstrated large between-group superiority of ICBT over the control group and found large improvements in parenting confidence and quality of life after treatment (Loughnan et al., 2019b).

Although the results of the above studies are preliminary, low intensity remotely delivered treatment options have the potential to minimize several barriers that women may experience when accessing care. For example, remotely delivered treatments may improve access to treatment for those whose transportation is limited, or who reside in rural areas, and may provide the opportunity to reach individuals who would otherwise avoid treatment due to fear or stigma (Reger & Gaham, 2009). Thus, further research exploring remotely delivered CBT for the treatment of anxiety during the perinatal period is required.

High Intensity Remotely Delivered Treatment of Perinatal Anxiety

The efficacy of high intensity remotely delivered CBT has been consistently shown in the treatment of anxiety disorders in the general population (Rees & Maclaine, 2015), however, to date no studies have examined the efficacy of high intensity remotely delivered CBT interventions for perinatal anxiety. For instance, a systematic review conducted by Rees and Maclaine (2015) explored the effectiveness of video-conferencing-delivered treatments for anxiety disorders in the general population. The review included 20 studies involving a total of 613 participants. The studies included in the review focused on PTSD ($n=10$), OCD ($n=5$), panic disorder ($n=2$), mixed anxiety and depression ($n=2$), and social anxiety disorder ($n=1$). The study found moderate to large effect sizes (Cohen's $d = 1.1$ to 2.88) across studies exploring the efficacy of videoconferencing delivered treatments for anxiety disorders (Rees & Maclaine, 2015). Whilst the existing literature demonstrates the efficacy of high intensity remotely delivered treatments for anxiety disorders in the general population, to date no studies have examined the efficacy of remotely delivered CBT specifically for perinatal anxiety. The above reviews suggest preliminary evidence that remotely delivered CBT is a promising intervention for alleviating symptoms of anxiety among perinatal women, however implementing remotely delivered CBT in clinical practice for the treatment of perinatal anxiety requires further investigation. Future research exploring the efficacy and

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acceptability of remotely delivered CBT for the treatment of perinatal anxiety specifically would further consolidate the aforementioned preliminary findings, where anxiety was commonly a secondary outcome. Additionally, to date, several studies have failed to report follow-up data, thus further research reporting follow-up data is needed.

Summary

The efficacy of remotely delivered CBT in the treatment of the anxiety disorders in the general population is well-established, with some research demonstrating remotely delivered treatment is as effective as face-to-face CBT. However, there is a lack of research exploring remotely delivered treatments for perinatal anxiety specifically. Whilst there are preliminary findings indicating the efficacy of remotely delivered treatments for perinatal anxiety, further research exploring the efficacy of all remotely delivered interventions, including low- and high-intensity interventions, for the treatment of perinatal anxiety is needed.

Barriers to Accessing Treatment for Perinatal Anxiety

In recent years, a key focus of government policies has been to improve public awareness, well-being, and access to mental health support (i.e., Better Access to Psychiatrists, Psychologists and General Practitioners through the MBS Initiative; Royal College of Psychiatrists, 2010). Although there is preliminary evidence to suggest that effective psychological treatments for perinatal anxiety exist, there are likely to be significant specific barriers to accessing care for women in the perinatal period, as evidenced by over half of women referred for treatment following a positive anxiety screen not accessing treatment (Xue et al., 2020). Several studies have examined barriers specific to women in the perinatal period, and these studies are described below.

First, Smith et al. (2019) reviewed the existing qualitative literature on the perceived barriers to accessing mental health services for women experiencing perinatal mental illness

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in the United Kingdom. The review identified four overarching levels of barriers to accessing care, including structural (i.e., unclear policy regarding appropriate and acceptable use of assessment tools for practitioners); organisational (i.e., service fragmentation in terms of role clarity and conflict, service inadequacies); sociocultural (i.e., language barriers or differences in cultural values); and individual (i.e., stigma, poor self-awareness, negative attitudes towards mental health).

Second, Kopelman et al. (2008) investigated the individual-level influences that impact on pregnant women's access to mental health treatment for depression. The results identified that the cost of treatment, lack of transportation to the service, long wait lists for treatment, previous negative experiences with mental health care, and lack of knowledge on mental health treatment options were rated by participants as the largest barriers to accessing mental health care for depression (Kopelman et al., 2008).

Third, Goodman (2009) examined women's attitudes, preferences, and perceived barriers for perinatal depression treatment. The study found that the highest perceived barrier to accessing mental health care during the perinatal period was due to a lack of time for the mother, followed by the perceived stigma of accessing mental health and due to the unavailability of childcare whilst attending appointments (Goodman, 2009).

Fourth, Higgins et al. (2018) examined the barriers that midwives and nurses face to addressing mental health issues with patients during the perinatal period. The study found the greatest barriers were organisational structure and practitioner-related barriers, including a lack of perinatal mental health services, absence of care pathways, lack of time, lack of knowledge and skills on responding to perinatal mental health, and fears of causing offence and distress to women (Higgins et al., 2018).

Finally, a recent cross-sectional Australian study explored women's reported comfort and their reported degree of honesty when questioned about their emotional wellbeing during

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the perinatal period, the relationship between women's reluctance to respond honestly when questioned about mental health, and the association between reluctance to disclose and perinatal mental illness (Forder et al., 2020). The study incorporated both qualitative and quantitative data and found that over 20% of the sample indicated they had not always answered honestly regarding their emotional wellbeing to their health practitioners. The study found that those who indicated not always answering honestly, were more likely to be having difficulty managing their household income, were not receiving emotional support from friends or family, had experienced a recent violent relationship with a partner or spouse, and had a history of mental illness.

Summary

In summary, despite preliminary evidence indicating effective psychological treatments for perinatal anxiety exist, several studies have found specific barriers to accessing treatment during the perinatal period. These barriers include structural, organisational, sociocultural, and individual barriers, including cost, long wait lists, lack of knowledge of available treatments, lack of time for the mother, and perceived stigma of accessing mental health. Preliminary research also indicates women's experiences of perinatal anxiety and of accessing treatment during the perinatal period differ greatly, thus women's past and current experiences of perinatal anxiety warrants further investigation. Furthermore, health practitioners should be mindful of the significant proportion of women that may not be forthcoming about their own emotional distress. Thus, further research exploring screening, stigma and barriers to accessing support during the perinatal period is warranted, as this information may be used to enhance treatment uptake, which remains suboptimal.

Treatment Utilisation and Help-seeking Theory

Several theories and models have been proposed and examined in understanding help-seeking for mental health problems. One theoretical approach to understanding help-seeking

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is the Theory of Planned Behaviour (*TPB*; Ajzen, 1991). The TPB is a prominent model designed to explore how attitudes, perceived control of the behaviour and perceived projective norms interrelate to influence help-seeking behaviours (Ajzen, 1991). The model has been used to explore help-seeking in several areas, such as alcohol consumption (Cooke et al., 2016) and eating behaviours (McDermott et al., 2015) and more recently in predicting help-seeking for mental health concerns (i.e. Tomczyk et al., 2020). Another approach is the Transtheoretical Model of Change (DiClemente & Prochaska, 1982) which include five stages of change: 1) precontemplation; 2) contemplation; 3) preparation; 4) action; and 5) maintenance (Prochaska et al., 1992). According to this model, people choose to address problems by cycling through the different stages of change. Whilst research for the transtheoretical model is robust, with a body of literature supporting the process of change, the literature supporting the model for exploring mental health help-seeking processes is lacking (Young, 2003).

One of the most widely applied theories of health behaviour is the Health Belief Model (*HBM*; Becker, 1974). The HBM predicts that individuals are likely to engage in help-seeking behaviour depending on the individual's perception of their susceptibility to a given condition, their perception of the severity of the illness, and a cost-benefit analysis of the treatment barriers and outcomes. Further, in line with the HBM, research examining the HBM and treatment utilisation for common mental health disorders has found several demographic factors (i.e., age, education, marital status, and geographic location), perceived health care needs, severity of illness, and stigma to be associated with treatment uptake (Blais & Renshaw, 2013; Langley et al., 2018).

Langley et al. (2018) explored treatment barriers specific to anxiety disorders in the general population and examined the utility of the HBM variables in predicting help-seeking intention specific to anxiety disorders. The study found 51% of the variance in help-seeking

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for anxiety can be accounted for by the HBM variables, and perceived treatment benefits were the strongest predictor of help-seeking intention (Langley et al., 2018). Thus, it is important to ensure those with perinatal anxiety perceive treatment as beneficial for themselves in order to promote treatment uptake. Similarly, Roberts et al. (2018) reviewed the existing literature on health service utilization for common mental health disorders and found an association between treatment utilization and several demographic factors, including higher education status, Caucasian ethnicity, female gender, being unmarried, and having sought treatment before. The review also found self-evaluated health status or healthcare needs, comorbidity, panic symptoms, duration of symptoms, and severity of symptoms were positively associated with treatment utilization (Roberts et al., 2018).

To date a lack of research has explored the utility of treatment utilisation models for perinatal anxiety. Given the prevalence of perinatal anxiety and the small proportion of women who access psychological treatment, further research exploring help-seeking during the perinatal period is required, as this information is crucial in enhancing treatment uptake for women who experience perinatal anxiety.

Summary and Limitations of the Literature

Perinatal anxiety disorders are common, and the effects extend beyond the mother, to the infant and family. While CBT is the recommended psychological treatment for anxiety disorders in the general population, there is a lack of research examining the efficacy of CBT targeting perinatal anxiety specifically. While research interest in the area is growing, to date the existing research relies primarily on open trials, small sample sizes, and self-report tools as outcome measures, rather than clinician-administered, or diagnostic assessments.

A key focus of government policies has been to improve public awareness, well-being, and access to mental health support (i.e., Better Access to Psychiatrists, Psychologists and General Practitioners through the MBS Initiative; Royal College of Psychiatrists, 2010).

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However, whilst treatments for perinatal anxiety exist, few people receive treatment.

Preliminary research demonstrates women experience significant barriers to accessing care during the perinatal period, including structural, organisational, sociocultural, and individual.

Furthermore, research indicates that a significant proportion of women may not be forthcoming to health practitioners about their own emotional distress due to stigma. Given this further research exploring barriers to accessing treatment during the perinatal period is warranted. Further, to date there is a lack of research specifically examining Australian women's barriers to accessing treatment for perinatal anxiety. The Australian healthcare system is somewhat different to those in other countries, thus further research specifically exploring this population is needed. Given the lack of knowledge in this area, both qualitative and quantitative studies are needed to enhance the literature on barriers to accessing care, women's experiences of perinatal anxiety and treatment preferences during the perinatal care.

Furthermore, the HBM postulates that individuals are likely to engage in help-seeking behaviour depending on the individual's perceived susceptibility to the condition, perceived severity of the illness, and a cost-benefit analysis of the treatment barriers and outcomes. The HBM may help to understand treatment utilisation in women with perinatal anxiety, however to date this has not been examined in the literature. Exploration of treatment utilisation theories and frameworks, such as the HBM, may assist in developing protocols and guidelines which target help-seeking behaviours to accessing treatments.

Over the last decade both low intensity and high intensity remote CBT interventions have been demonstrated to be efficacious in the treatment of anxiety disorders in the general population. There is also preliminary evidence to suggest that low intensity CBT interventions are efficacious in perinatal anxiety. However, there are several limitations of the existing literature, including the overall low quality of the studies, and differences in treatment protocols (i.e., amount of clinician time, intensity of the treatment etc.) and

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treatment modalities used. Additionally, to date there is a lack of research examining low intensity remotely delivered TCBT for perinatal anxiety. This treatment approach has the potential to address multiple anxiety presentations in one treatment, and to address several barriers women with anxiety face during the perinatal period, which may increase treatment uptake.

Aims of the Thesis

The aim of this thesis is to address some of the abovementioned limitations of the literature by examining the acceptability and efficacy of CBT for perinatal anxiety. In order to achieve this, the following four studies were conducted.

Study 1 (Chapter Two)

The aim of Study 1 was to synthesise the current empirical status of CBT for perinatal anxiety using a meta-analytic approach. The secondary aim was to explore the efficacy of different CBT approaches in the existing literature.

Study 2 (Chapter Four)

This aim of Study 2 was to explore Australian women's experiences of perinatal anxiety, common symptomology, treatment preferences, and facilitators and barriers to accessing treatment during the perinatal period using a qualitative approach.

Study 3 (Chapter Six)

The aim of Study 3 was to examine the perceived barriers to help-seeking intention for perinatal anxiety, and to examine the utility of the Health Belief Model in predicting help-seeking intention specific to perinatal anxiety using a quantitative approach.

Study 4 (Chapter Eight)

The aim of Study 4 was to examine the efficacy and acceptability of a 5-session remotely delivered TCBT intervention for postnatal anxiety using a case-series design.

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This thesis used a multi-methods study design that incorporated both meta-analytic, qualitative, explanatory and exploratory, and case series approaches. As indicated below (Figure 1.2), each study provided context for the subsequent study, and each subsequent study consolidated the previous study's findings. It was anticipated that the completion of the above studies would contribute to a more in depth understanding of women's experiences of perinatal anxiety, women's perceived barriers to accessing mental health support during the perinatal period, and women's treatment preferences. Additionally, it was anticipated that the findings of the above studies would contribute to the development of more accessible evidence-based interventions for women experiencing perinatal anxiety.

Figure 1.2*Conceptual Overview of the Thesis*

Problem 1 – Perinatal anxiety. Perinatal anxiety disorders are common, however to date, there has been limited research exploring these disorders. Chapter One reviews the current literature concerning perinatal anxiety disorders and their treatment. Study 1, Chapter Two, synthesises the current empirical status of CBT for perinatal anxiety using a meta-analytic approach.



Problem 2 – Women's experiences of perinatal anxiety, and treatment preferences. There is a lack of research exploring women's experiences of perinatal anxiety and their treatment preferences. Study 2 and 3, Chapter Four and Six, explore women's previous and current experiences of perinatal anxiety and their treatment preferences. Study 2, Chapter Four, uses a qualitative approach to explore women's experiences, which was then further explored using a quantitative approach in Study 3, Chapter Six. Chapter Five further discusses the advantages of utilising both qualitative and quantitative research approaches.



Problem 3 – Perceived treatment barriers. Effective treatments for perinatal anxiety exist, see Chapter One and Two (Study 1), however many women do not access treatment. Study 2 and 3, Chapter Four and Six, further explore women's perceived barriers to accessing mental health treatment during the perinatal period. Study 3, Chapter Six, explores the utility of the Health Belief Model in predicting help-seeking intention specific to perinatal anxiety.



Problem 4 – Transdiagnostic approaches. Chapter Seven highlights the recent shift towards transdiagnostic CBT approaches in the general population and the benefits of such approaches. Transdiagnostic approaches have also recently been used in the treatment of anxiety disorders in the perinatal period, see Study 1(Chapter Two). The preliminary efficacy of face-to-face transdiagnostic CBT has also been demonstrated in the postnatal period, however there is a lack of research exploring remotely delivered transdiagnostic approaches. Study 4, Chapter Eight, uses a case series design to explore the efficacy of a remotely delivered transdiagnostic CBT intervention for the treatment of postnatal anxiety.



Problem 5 – Implications for treatment design and implementation. The combined findings from the studies included in this thesis have important clinical and theoretical implications. Chapter Nine discusses the overall findings and conclusions of the studies and discusses future research recommendations.

Chapter Two

(Study 1)

The Efficacy of Cognitive Behaviour Therapy for the Treatment of Perinatal Anxiety

Symptoms: A Preliminary Meta-analysis

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Abstract

Cognitive-behaviour therapy (CBT) is considered the psychological treatment of choice for anxiety disorders in the general population. However, the efficacy of CBT for anxiety that occurs during the perinatal period, defined as the period from conception to 12 months post birth, is less understood. Perinatal anxiety is a complex and multifaceted problem that can affect both the pregnant women and the unborn child, as well as the wider family unit. The aim of this study was to synthesize the current empirical status of CBT for perinatal anxiety using a meta-analytic approach. Relevant articles were identified through a search of electronic databases through to June 2018. The search terms used include ‘anxiety’ or ‘phobia’ AND ‘perinatal’ or ‘pregnan*’ or ‘postnatal’ or ‘postpartum’ AND ‘CBT’ or ‘cognitive behav* therapy’. Randomized and non-randomized studies were included within the meta-analysis. A total of 13 studies met the inclusion criteria and were included in the meta-analysis. The pooled between-group mean effect size was small at post treatment ($k = 7$; $d = 0.49$; 95% CI: 0.08-0.91) favouring the CBT treatments ($Q=30.13$, $p < .001$). Heterogeneity was high ($I^2 = 80.09$). The pooled within-group mean effect size was large across the treatment groups from pre-treatment to post-treatment when combining all of the studies (i.e., controlled and uncontrolled studies; $k = 14$; $d = 0.90$; 95% CI: 0.63-1.17). Heterogeneity was high ($I^2 = 88.55$). Some preliminary and exploratory moderator analyses were also conducted to inform potential future research in this field.

Keywords: Perinatal, treatment, cognitive behaviour therapy, anxiety

The Efficacy of Cognitive Behaviour Therapy for the Treatment of Perinatal Anxiety Symptoms: A Preliminary Meta-analysis

The perinatal period, considered as the period from conception to 12 months post birth (Austin, Highet, & Expert Working Group, 2017), involves significant change for the child-bearing woman and can bring anticipation and happiness, as well as uncertainty and stress (Nakamura, 2010). Over the last several years a plethora of research has examined the assessment and treatment of perinatal depression (O'Mahen et al., 2012; Sockol, 2015), however a lack of research has examined the assessment and treatment of perinatal anxiety, despite research suggesting that anxiety disorders are more frequent during pregnancy than depression (Brockington et al., 2006).

During the perinatal period anxiety disorders may be a continuation of a pre-existing condition, the reoccurrence of a previous episode, or a newly developed disorder. Giardinelli et al. (2012) found that in a large sample of Italian women interviewed between 28-32 gestational weeks, approximately 5% met criteria for a lifetime anxiety disorder, and 21% met criteria for a current anxiety disorder. In terms of specific anxiety disorders, generalized anxiety disorder appears to be the most prevalent perinatal anxiety disorder, with reported rates of 1-11% (Leach et al., 2017). The prevalence of specific phobias ranges from 7-20%; panic disorder <1-8%; social anxiety disorder <1%-8%; agoraphobia 1-17%; obsessive-compulsive disorder 4-11%; and posttraumatic stress disorder 1-3% (Leach, et al., 2017).

Perinatal anxiety is associated with increased health care costs for pregnant women and their families (Bauer, Knapp, & Pasonage, 2016). While the symptoms associated with perinatal anxiety often resolve within the first six months of birth (Vismara et al., 2016), for many women the symptoms continue for numerous years after the baby's birth. The effects of perinatal anxiety may also extend beyond the mother. For example, maternal health problems may be associated with problems in the maternal-infant relationship (Nicol-Harper et al.,

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2007), with the child's development (Kingston & Tough, 2014), and with difficulties in the intimate partner relationship (Burke, 2003). Additionally, a mother preoccupied with her own anxieties may be less available for her infant, which may heighten the possible risk of neglect and insecure attachments between mother and infant (Austin et al., 2005). Based on the significant impact of perinatal anxiety on both the mother and infant, it is important that such symptoms are appropriately identified and treated.

Cognitive-behaviour therapy (CBT) is considered the psychological treatment of choice for anxiety disorders in the general population, however few studies have examined the efficacy of CBT targeting perinatal anxiety. Cognitive behaviour therapy focuses on modifying maladaptive thoughts and cognitive distortions and changing behaviours that maintain the patient's distress. Cognitive behaviour therapy is demonstrated to be efficacious as a treatment for the anxiety disorders when delivered in an individual format with effect sizes ranging from 0.70 – 0.97 (Newby, et al., 2015; Acarturk, Cuijpers, van Straten, & de Graaf, 2009). Furthermore, CBT has been demonstrated to be effective in real world clinical practice. For example, large effect sizes of 0.90 to 1.91 have been found in meta-analyses of effectiveness studies (Hans & Hiller, 2013). Importantly, the literature suggests that symptom reductions after the completion of CBT for anxiety and related disorders are durable, with changes maintained up to three years post treatment (Wootton, Bragdon, Steinman, & Tolin, 2015). Despite the evidence supporting the effectiveness and durability of CBT in the treatment for anxiety disorders in the general population, few studies have specifically examined the efficacy of CBT in the treatment of anxiety during the perinatal period and there are significant variations in the provision of this treatment, which are outlined below.

Firstly, some studies have included aspects of 'third wave' interventions (i.e., mindfulness) within the CBT treatment (e.g., Dunn, et al., 2012), others have integrated CBT with art therapy (e.g., Sarid, Cwikel, Czamanski-Cohen, & Huss, 2017), whilst other studies

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have strictly adhered to CBT methods (e.g., Green, et al., 2015). Of those that do utilize a CBT treatment many studies heavily focus on relaxation techniques (e.g., Karamoozian & Askarizadeh, 2015) or cognitive interventions (e.g., Milgrom, et al., 2015a), often neglecting behavioural interventions for anxiety, such as exposure. Moreover, the existing studies vary greatly in number of sessions provided, ranging from two sessions (e.g., Lilliecreutz, Josefsson, & and Sydsjö, 2009) to 12 sessions (e.g., Karamoozian and Askarizadeh, 2015) and often include small sample sizes (e.g., Green, et al., 2015; Dunn, Hanieh, Roberts, & Powrie, 2012).

Secondly, some studies have used individually delivered CBT (e.g. Milgrom et al., 2015a) while others have used group-based CBT (e.g. Bittner et al., 2014). The existing literature for anxiety disorders more generally indicates that treatment modality may affect treatment outcomes. For example, Sharp, Power, and Swanson (2004) examined the differences between group CBT, individual CBT, and a control waitlist in the treatment of panic disorder and agoraphobia and demonstrated that individual CBT is not only favoured by participants, it also consistently showed the greatest reduction in anxiety symptoms.

Finally, some studies have used anxiety specific interventions (focusing exclusively on anxiety symptomatology) (e.g., Lilliecreutz, et al., 2009), while others are transdiagnostic in nature, focusing on the simultaneous treatment of depression and anxiety (e.g., Bittner et al., 2016). Recently, there has been an increasing body of literature supporting the effectiveness of transdiagnostic treatments in comorbid samples in the general population. For example, Talkovsky, Green, Osegueda, and Norton (2017) examined the effectiveness of a 12-week transdiagnostic group CBT program for anxiety and depression and found that transdiagnostic group CBT is effective for the treatment of anxiety and depression. Similarly, Dear, et al., (2016) and Wootton, et al., (2018) found large effect sizes for remotely delivered transdiagnostic CBT for the treatment of anxiety and depression. More recent studies have

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also demonstrated the equivalence of transdiagnostic and disorder specific interventions for some anxiety disorders (Dear, et al., 2016; Titov, et al., 2015; Barlow, et al., 2017).

There are now a small number of published studies examining the efficacy of CBT for perinatal anxiety. However, to date, no meta-analyses have been conducted examining the pooled efficacy of CBT for the treatment of perinatal anxiety. Therefore, the aim of the current study is to synthesize the research on the efficacy of CBT for perinatal anxiety using a meta-analytic approach. Additionally, because of the significant heterogeneity seen in this literature exploratory moderators of treatment outcome were also investigated.

Method

Search procedure

Relevant articles were identified through electronic databases including PsychINFO, Scopus, and PubMed, and included articles published through to June 2018. The search terms used in the electronic database search included ‘anxiety’ or ‘phobia’ AND ‘perinatal’ or ‘pregnan* or ‘postnatal’ or ‘postpartum’ AND ‘CBT’ or ‘cognitive behav* therapy’.

Study selection

To be included in the meta-analysis individual studies were required to: 1) be a clinical trial; 2) use a CBT intervention; 3) describe the CBT intervention used in sufficient detail and include active challenging of cognitions and/or include a behavioural component such as exposure or behavioural experiments to address anxiety symptoms at a minimum; 4) use a validated and psychometrically sound measure of anxiety symptomatology; and 5) provide treatment within the perinatal period (considered as the period from conception to 12 months post birth (Austin, Highet, & Expert Working Group, 2017). Individual studies were excluded if they: 1) did not provide pre-treatment and post-treatment (or follow-up) means and standard deviations on anxiety outcome measures; 2) used a treatment other than CBT as

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described above; and 3) were published in a language other than English. The characteristics of the included studies are outlined in Table 2.1. Due to the small number of studies in this area both randomized, as well as non-randomized studies were included within this preliminary meta-analysis, as well as anxiety specific and non-anxiety specific protocols. The most conservative data from each study were used to inform the meta-analysis (i.e., intention to treat (ITT) data were used where possible).

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Table 2.1*Characteristics of included studies*

Study	Country	Study type	Outcome measure	Gestational phase at treatment	Treatment type	Treatment modality	Treatment protocol	<i>n</i>	Mean age (years)	Number of sessions	Longest follow-up (months)	Study quality rating
Bittner, et al., (2014)	Germany	RCT	STAI	T1	CBT	G	TD	39	29.40	8	3	0.95
					Control	-	-	79	29.70	-	-	(0.72)
Fathi-Ashtiani, Ahmadi, Ghobari-Bonab, & Saheb-Alzamani (2015)	Iran	RCT	BAI	T3	CBT*	I	TD	64	25.00	8	-	0.77
					Control	-	-	71	26.00	-	-	(0.81)
	Sweden	RCT	GAD-7	T2	CBT	GSH	TD	22	31.2	N/A	-	1 (0.75)

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Forsell, et al., (2017)					Control	-	-	20	30.8	-	-	
Karamoozian & Askarizadeh (2015)	Iran	RCT	PRAQ	T2	CBT	G	TD	14	-	12	-	0.41 (0.73)
					Control	-	-	15	-	-	-	
Kim, et al., (2014)	United States	OT	BAI	T2 and 3	CBT	GSH	DO	12	29.1	8	3	1.05 (0.72)
Leung, et al., (2013)	Hong Kong	RCT	HAD-A	T2 and 3	CBT	G	DO	47	-	6	-	1.09 (0.81)
					Control	-	-	50	-	-	-	
Lilliecreutz, Josefsson, and Sydsjö (2009)	Sweden	OT	BAI	T1	CBT*	G	AS	29	28.50	2	3	0.73 (0.83)
Milgrom, et al., (2015a)	Australia	OT	BAI	T1 and 2	CBT	I	TD	25	32.6	8	6	0.64 (0.79)
	Australia	RCT	BAI	T1 and 2	CBT	I	TD	27	32.79	8	9	0.82 (0.73)

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Milgrom, et al.,

(2015a)

Control	-	-	27	30.78	-	-
CBT	G	DO	15	28.50	12	6

Milgrom, et al.,

(2015b)

Australia

RCT

BAI

PP

SSRI	-	-	14	31.60	-	6	0.86 (0.71)
CBT+SSR	G	DO	16	30.10	12	6	
I							

Misri, Reebye,

Corral, & Milis

(2004)

Canada

RCT

HAM-A

PP

CBT	I	TD	19	29.52	12	-	0.86 (0.83)
Control	-	-	16	30.81	-	-	

Nieminen,

T2

Andersson,

Wijma, Ryding,

&Wijma (2016)

Sweden

OT

W-DEQ

CBT*	-	AS	15	30.50	8	3	1.05 (0.65)
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Salehi,

T2

Pourasghar,

Iran

RCT

STAI

CBT	G	AS	31	26.16	4	-	0.45 (0.74)
Control	-	-	30	24.93	-	-	

Khalilian, &

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Shahhosseini

(2016)

Note. RCT= randomized controlled trial; OT= open trial; G=intervention administered in a group; I= intervention administered individually; GSH = guided self-help; *= includes exposure component of therapy; AS= anxiety specific intervention; TD= transdiagnostic intervention; DO= depression specific intervention; STAI= State-Trait Anxiety Inventory (40 item self-report assessment assessing for trait and state anxiety); BAI= Beck Anxiety Inventory (21 item self-report questionnaire measuring anxiety severity) ; GAD-7= Generalized Anxiety Disorder 7-item Scale (7 item self-report measure of generalized anxiety) ; PRAQ= Pregnancy-Related Anxiety Questionnaire (55 item self-report measure assessing for pregnancy-related fears and concerns); HAD-A= Hospital Anxiety and Depression Scale (7 item self-report scale measuring severity of anxiety symptomatology); HAM-A= Hamilton Rating Scale for Anxiety (14 item self-report scale designed to measure both physical and psychological symptoms of anxiety); W-DEQ= Wijma Delivery Expectancy/ Experience Questionnaire (55 item self-report measure assessing for pregnancy-related fears); T1= Trimester 1 (0-12 weeks pregnant); T2 = Trimester 2 (13-27 weeks pregnant); T3 = Trimester 3 (28-40 weeks pregnant); PP = Postpartum (birth to 12 months post birth).

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Data analysis

Effect size data was analysed using Comprehensive Meta-Analysis Version 2.2 (Borenstein et al., 2011). Within-group and between-group analyses were conducted using random effects models. Cohen's d for within-group effect sizes were calculated using the following formula $\frac{x_1 - x_2}{S_{diff}}$ where x_1 is the pre-treatment mean, x_2 is the post-treatment means, and S_{diff} is the standard deviation of the difference scores. The S_{diff} was calculated based on the following formula $\frac{\sqrt{SD_1^2 + SD_2^2 - 2r \times SD_1 \times SD_2}}{\sqrt{2(1-r)}}$ where SD_1 is the pre-treatment standard deviation, SD_2 is the post-treatment standard deviation and r is the correlation between the pre-treatment and post-treatment scores (Borenstein et al., 2011). Consistent with previous meta-analyses (Winkler, Dörsing, Rief, Shen, & Glombiewski, 2013; Wootton, 2016), a conservative correlation of $r = .70$ was used when the correlations between pre-treatment and post-treatment scores were not available. A positive d value indicated a decrease in perinatal anxiety symptoms and the larger the value, the greater the effect of treatment. Cohen's d was interpreted as follows: 0.2 (small effect); 0.5 (medium effect); 0.8 (large effect) (Cohen, 1992).

Between-group analyses were conducted between the treatment group and the non-active control conditions for the randomized controlled trials. The post-treatment scores of the CBT treatment were compared with the post-treatment scores of the non-active control group. Cohen's d was calculated for between-group comparison effect sizes using the following formula $\frac{x_1 - x_2}{S_{pooled}}$, where x_1 is the post-treatment score for the CBT condition, x_2 is the post-treatment score of the control condition, and S_{pooled} was calculated using the following formula $\frac{\sqrt{(N_1 - 1) \times SD_1^2 + (N_2 - 1) \times SD_2^2}}{N_1 + N_2 - 2}$, where N_1 is the sample size of the CBT treatment group,

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N_2 is the sample size of the control group, SD_1 is the standard deviation of the CBT treatment group and SD_2 is the standard deviation of the control group. A positive d value in the between-group comparisons indicates that the CBT treatment is superior to the control condition and interpretation of effect sizes was identical to that described above for the within-group analyses.

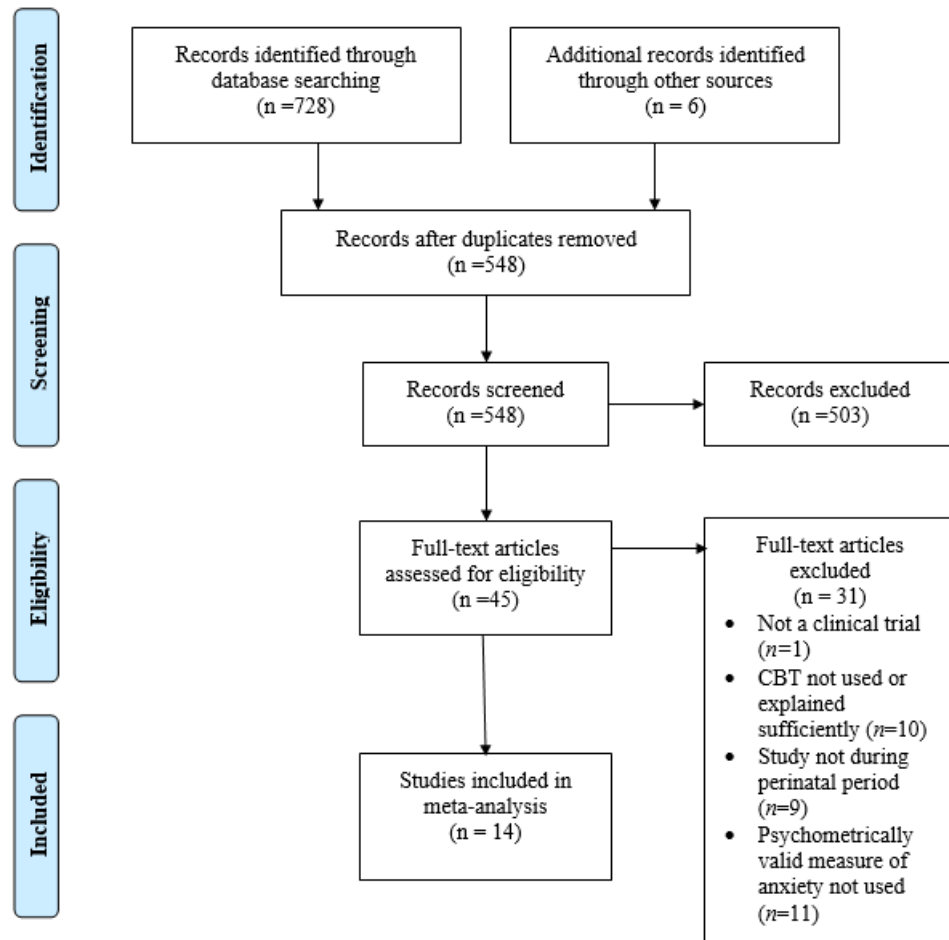
To obtain the most precise estimate of the overall mean, the weighted mean of each study was calculated for both within-group and between-group comparisons. The weight assigned to each study is the inverse of that study's variance (Borenstein et al., 2011). The I^2 statistic was used to assess for homogeneity of effect sizes. The I^2 statistic can be interpreted as follows: 25% (low heterogeneity among studies), 50% (moderate heterogeneity among studies) and 75% (high heterogeneity among studies) (Higgins, Thompson, Deeks, & Altman, 2003). The 'one study removed' method was also used to test for sensitivity by systematically removing each study to explore the impact of each study on the combined effect size. The Trim and Fill method (Duval & Tweedie, 2000) was used to assess for publication bias. This method 'trims' the most extreme small positive studies and 'fills' these removed studies with a mirror image, which results in an unbiased approximation of the effect size (Duval & Tweedie, 2000).

Exploratory moderator analyses were also conducted and moderators included: 1) the use of exposure in the intervention (i.e., the inclusion of an exposure component in therapy vs. no exposure component); 2) the use of an anxiety specific intervention (vs. a depression only or transdiagnostic treatment); 3) the treatment modality (i.e., group vs. individual CBT); 4) study type (RCT vs. open trial); 5) treatment approach (brief treatment vs. standard treatment); and 6) analysis type (ITT vs. completer). The treatment approach was deemed to be a 'brief' intervention if the intervention was ≤ 6 sessions and a 'standard' intervention if ≥ 7 sessions.

Study quality was assessed using the Psychological Outcome Study Methodology Rating Form (Öst, 2007). The scale consists of 22-items in the form of statements that are rated on a 3-point likert scale ranging from 0 (*poor*) to 2 (*good*). The first author (P.N.M) and the final author (B.M.W) independently completed the scale for each included study to ensure reliability. The second author (G.I.C) provided consensus as needed. Consensus scores were determined using the process devised by Hootman, et al., (2011) whereby if the scores of rater 1 and rater 2 agreed, then that score was used as the consensus score, if the scores of rater 1 and rater 2 scores varied by one point, a consensus score was agreed upon by both raters; and if the scores of rater 1 and rater 2 varied by two or more points, than rater 3 was used for discussion and all three raters would agree on a final consensus score.

Results

Figure 2.1 outlines the PRISMA flowchart. The search returned 734 articles, of which 186 were removed due to being duplicates, resulting in 548 articles. The abstracts of these articles were then reviewed and a further 503 articles were excluded, resulting in 45 articles. These 45 articles were then reviewed in their entirety against the inclusion and exclusion criteria and an additional 32 articles were excluded, resulting in a total of 13 articles (14 comparisons) included in the meta-analysis. The eligibility of each article was assessed using a comprehensive coding sheet by the first author (P.N.M) and rechecked using the same coding sheet by the final author (B.M.W) to ensure eligibility.

Figure 2.1*Study flow chart**Study characteristics*

Across the 13 studies (14 comparisons), a total of 726 females (M age = 27.39; SD = 7.17) were included in the analysis. There were 496 individuals in the treatment conditions and 330 individuals in the control conditions. Control conditions included waitlist controls, pharmacotherapy treatment conditions, and treatment as usual (TAU) conditions, which included continuing with medical practitioner appointments. The focus of the active treatment intervention varied widely across studies. In the majority of studies ($n=6$) the intervention

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focused on reducing pregnancy specific anxiety and/or depression. In two studies the intervention was aimed at reducing generalized anxiety and/or non-pregnancy related depression. An additional two studies evaluated interventions aimed at reducing a pregnancy related specific phobia (i.e., severe fear of childbirth, fear of blood and injection phobia), and in the final four studies the intervention aimed to reduce a postpartum mood disorder.

Table 2.1 outlines the characteristics of the included studies including treatment type. The majority of studies ($n=10$) included in the analysis were RCTs, the remaining studies ($n=4$) were open trials. The majority of studies were conducted in Australia ($n=4$), followed by Iran ($n=3$), and Sweden ($n=3$). The remaining studies were conducted in Hong Kong ($n=1$), United States ($n=1$), Canada ($n=1$), and Germany ($n=1$). Treatment modality varied across studies, for example most of the studies were provided treatment in a group format ($n=7$), several studies provided individual treatment ($n=5$) and two studies provided treatment via online self-help modalities. The number of treatment sessions conducted varied across studies, ranging from two sessions to 12 sessions (mean number of sessions = 8.5), two studies were classified as ‘brief’ treatments, ten studies were classified as ‘standard’ treatments, and two studies used a multimodal approach which did not include sessions with a therapist.

Measures of anxiety symptomatology varied widely across studies and the measures used and a brief description of these measures are outlined in Table 2.1. Study quality was also highly variable ranging from 0.45 (0.74) (Salehi, et al., 2016) to 1.09 (0.81) (Leung et al., 2013). The mean quality rating for the uncontrolled studies, randomized controlled trials, and all studies combined was 0.72 (0.67), 0.72 (0.57) and 0.67 (0.58) respectively. The overall study quality score for each individual study is outlined in Table 2.1. The inclusion and exclusion criteria of each study also varied widely, however all studies excluded participants with severe psychiatric illnesses and those that presented with suicidality.

Within group analysis

The results of the within-group analyses can be seen in Table 2.2. The pooled within-group mean effect size was large across all of the treatment groups from pre-treatment to post-treatment in the RCT studies ($k = 10$; $d = 0.81$; 95% CI: 0.51-1.12) and heterogeneity was high ($I^2 = 89.08$). Publication bias was not detected using the Trim and Fill method and the one study removed method also indicated no change to the effect size. From pre-treatment to follow up the RCT studies within-group mean effect size was large ($k = 4$; $d = 0.82$; 95% CI: 0.43-1.21). Heterogeneity was high ($I^2 = 82.72$). Publication bias was not detected using the Trim and Fill method. The one study removed method indicated no change to the effect size.

The pooled within-group mean effect size was large across the treatment groups from pre-treatment to post-treatment when combining all of the studies (i.e., controlled and uncontrolled studies; $k = 14$; $d = 0.90$; 95% CI: 0.63-1.17). Heterogeneity was high ($I^2 = 88.55$). Publication bias was not detected using the Trim and Fill method and the one study removed method also indicated no change to the effect size. From pre-treatment to follow up the within-group mean effect size was large ($k = 7$; $d = 0.93$; 95% CI: 0.53-1.33) across of studies. Heterogeneity was high ($I^2 = 88.47$). Publication bias was not detected using the Trim and Fill method. The one study removed method indicated no change to the effect size.

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Table 2.2*Within-group effect sizes from pre-treatment to post-treatment and pre-treatment to follow-up*

Study	Data Analysis	Pre-treatment to post-treatment		Weight of included study	Pre-treatment to follow-up		Weight of included study
		<i>SDM</i>	95% CI		<i>SDM</i>	95% CI	
Bittner et al. (2014)	C	0.45	0.19-0.72	7.89	0.48	0.21-0.74	15.28
Fathi-Ashtiani, Ahmadi, Ghobari-Bonab, and Saheb-Alzamani (2015)	C	0.60	0.39-0.80	8.14	-	-	-
Forsell, et al., (2017)	ITT	1.02	0.62-1.42	7.21	-	-	-
Karamoozian & Askarizadeh (2015)	C	1.43	0.86-2.01	6.15	-	-	-
Kim, et al., (2014)	ITT	0.50	0.04-0.97	6.82	0.18	-0.26-0.62	13.68
Leung, et al., (2013)	ITT	0.70	-0.15-0.29	8.08	-	-	-
Lilliecreutz, Josefsson, and Sydsjö (2009)	C	0.94	0.60-1.28	7.53	2.08	1.58-2.58	13.05
Milgrom, et al., (2015a)	ITT	1.29	0.89-1.68	7.23	1.52	1.09-1.95	13.81

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Milgrom, et al., (2015a)	ITT	0.90	0.54-1.26	7.42	1.00	0.63-1.38	14.37
Milgrom, et al., (2015b)	ITT	1.09	0.73-1.44	7.43	0.78	0.46-1.11	14.80
Milgrom, et al., (2015b)	ITT	0.15	-0.13-0.43	7.83	0.60	0.30-0.90	15.01
Misri, Reebye, Corral, & Milis (2004)	ITT	1.85	1.28-2.42	6.18	-	-	-
Nieminen, Andersson, Wijma, Ryding, and Wijma (2016)	ITT	2.94	2.03-3.84	4.38	-	-	-
Salehi, Poursaghar, Khalilian, & Shahhosseini (2016)	C	0.67	0.37-0.98	10.49	-	-	-
OT Mean		0.99	0.58-1.40	-	1.08	0.09-2.07	-
RCT Mean		0.81	0.51-1.12	-	0.82	0.43-1.21	-
Overall Mean		0.90	0.63-1.17	-	0.93	0.53-1.33	-

Note. C= Completer analysis; ITT=Intention-to-treat analysis; SMD = Standardized Mean Difference

Between group analyses

Seven studies included in this meta-analysis used a randomized controlled design to compare CBT treatment to a non-active control condition. The between-group post-treatment effect sizes for each study can be seen in Table 2.3. The pooled between-group mean effect size was small at post treatment ($k = 7$; $d = 0.49$; 95% CI: 0.08-0.91) favouring the CBT treatments ($Q_I=30.13$, $p < .001$). Heterogeneity was high ($I^2 = 80.09$) suggesting high variability across outcomes in the studies. Publication bias was not detected using the Trim and Fill method and the one study removed method indicated no change to the effect size. The between-group mean effect size was also small at follow-up ($k = 2$; $d = 0.40$; 95% CI: -0.14 - 0.94). Heterogeneity was also low at follow up ($I^2 = 39.35$).

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Table 2.3*Between-group effect sizes comparing CBT to non-active control at post-treatment and follow*

Study	Data Analysis	Type of remote treatment	Type of control group	Post-treatment		Weight of included study	Follow-up		Weight of included study
				<i>SDM</i>	95% CI		<i>SDM</i>	95% CI	
Bittner, et al., (2014)	C	Group	TAU	0.26	-0.16-0.67	15.61	0.17	-0.33-0.68	58.73
Fathi-Ashtiani, Ahmadi, Ghobari-Bonab, and Saheb-Alzamani (2015)	C	Individual	TAU	-0.29	-0.63-0.05	16.51			
Forsell, et al., (2017)	ITT	Individual	TAU	0.62	-0.00 – 1.24	13.14			
Karamoozian and Askarizadeh (2015)	C	Group	TAU	1.56	0.73-2.39	10.64			
Leung, et al., (2013)	ITT	Group	TAU	0.10	-0.30-0.49	15.85			

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Milgrom, et al., (2015a)	ITT	Individual	TAU	0.90	0.34-1.46	13.88	0.73	0.05-1.41	41.27
Salehi, Poursaghar, Khalilian, and Shahhosseini (2016)	C	Group	TAU	0.79	0.27-1.31	14.37			
Mean		-	-	0.49	0.05 – 0.80	-	0.40	-0.14-0.94	

Note. C= Completer analysis; ITT=Intention-to-treat analysis; TAU= treatment as usual; SSRI= Selective Serotonin Reuptake Inhibitor

(medication). SMD = Standardized Mean Difference

Moderator analyses

Moderator analyses were conducted on the within-group data and given the small number of studies included are considered exploratory in nature.

Anxiety specific intervention

The pooled within-group effect size was large across studies that used an anxiety specific intervention from pre-treatment to post-treatment ($k = 3$; $d = 1.37$; 95% CI: 0.55-2.19), and heterogeneity was high ($I^2 = 90.80$). Large effect sizes were also found in the studies that did not use an anxiety specific intervention (depression specific and transdiagnostic interventions) ($k = 11$; $d = 0.81$; 95% CI: 0.52-1.10), and heterogeneity was high ($I^2 = 88.25$).

Use of exposure

The pooled within-group effect size was large across studies that used a component of exposure therapy within the treatment from pre-treatment to post-treatment ($k = 3$; $d = 1.33$; 95% CI: 0.53-2.12), and heterogeneity was high ($I^2 = 92.24$). Large effects were also seen in the studies that did not use an exposure component within therapy ($k = 11$; $d = 0.82$; 95% CI: 0.51-1.13), and heterogeneity was high ($I^2 = 88.27$).

Treatment approach

The pooled within-group effect size was large across brief CBT interventions (6 sessions or less) from pre-treatment to post-treatment ($k = 2$; $d = 0.80$; 95% CI: 0.53-1.06), and heterogeneity was low ($I^2 = 25.89$). Standard CBT interventions (more than six sessions) also resulted in a large reduction of symptoms ($k = 10$; $d = 0.97$; 95% CI: 0.61-1.34), however heterogeneity was high ($I^2 = 91.54$). The studies conducted by Forsell, et al., (2017)

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and Kim, et al., (2014) were excluded from this analysis as it did not include sessions with a therapist.

Treatment modality

The pooled within-group effect size was moderate across CBT interventions administered in a group format ($k = 7$; $d = 0.65$; 95% CI: 0.32-0.98), with high heterogeneity ($I^2 = 87.66$). For the individually administered CBT interventions large effects were seen ($k = 5$; $d = 1.40$; 95% CI: 0.82-1.9), and heterogeneity was high ($I^2 = 90.47$). Two studies (Forsell, et al., 2017; Kim, et al., 2014) were excluded from this analysis as they used multimodal approaches, thus did not include individual or group therapy sessions.

Analysis type

The pooled within-group effect size was moderate across studies that used completer analyses from pre-treatment to post-treatment ($k = 5$; $d = 0.74$; 95% CI: 0.50-0.98), and heterogeneity was moderate ($I^2 = 67.31$). Large effects were seen in studies that used intent to treat analyses ($k = 9$; $d = 1.01$; 95% CI: 0.57-1.46), and heterogeneity was high ($I^2 = 92.09$).

Discussion

The aim of the current study was to synthesize the research on the efficacy of CBT for perinatal anxiety using a meta-analytic approach. To date, few studies have been published in this area and therefore both randomized controlled studies and uncontrolled open trials were included in this meta-analysis. The results of this preliminary meta-analysis indicate that, overall, CBT is an efficacious treatment for perinatal anxiety with large within-group effect sizes seen from pre-treatment to post-treatment ($d = 0.81$) and from pre-treatment to follow-up ($d = 0.82$) in the more robust RCT studies. This result is consistent with the results seen in meta-analyses of CBT for anxiety disorders in the wider population (Stewart & Chambless, 2009) including in youth (Ewing, et al., 2015) and older adults (Gould, et al., 2012).

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However, it is important to note that while favouring CBT, between-group effect sizes were small ($d = 0.49$), indicating that CBT may not be more effective than non-active control conditions. Consequently, this result requires further investigation in future studies, particularly as heterogeneity was high within studies for both the within-group and between-group analyses. Furthermore, given that symptoms of anxiety remit for many individuals within 6 months of the birth of the child (Vismara et al., 2016), the large pre-treatment to follow-up effect sizes may be confounded by the possibility of remission post-delivery and, thus, controlled studies with long term follow up are required to investigate the role of spontaneous remission of anxiety symptoms post-delivery.

Due to the small number of studies included in this meta-analysis and the high levels of heterogeneity within the studies, the results of the moderator analyses should be considered exploratory and interpreted with caution. The first moderator analysis indicated that anxiety specific interventions may produce larger effect sizes for women with perinatal anxiety than depression specific or transdiagnostic interventions. However, further investigation is required in future studies to elucidate the differential response given that recent research has indicated that disorder specific and transdiagnostic interventions result in equivalent outcomes (Dear, et al., 2016; Titov, et al., 2015). Such an investigation may assist in understanding how to best treat women with perinatal anxiety in the most cost effective way, especially given the high co-morbidity between perinatal anxiety and depression (Barlow et al., 2017).

The results of the current study indicate preliminary evidence to suggest that interventions that contain an element of exposure produce larger effects than those that do not for women with perinatal anxiety. Given that exposure is one of the most effective components of anxiety treatment (Anderson, et al., 2013; Weck, et al., 2015), the role that this plays in the delivery of treatment for perinatal anxiety requires further investigation as

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few studies included in the current meta-analysis included an exposure component within the intervention. Future controlled studies which investigate the relative efficacy of the use of exposure within CBT for the treatment of perinatal anxiety are needed in order to ascertain the best approach to care for women with perinatal anxiety.

The findings of this study provide preliminary evidence to suggest that brief and standard CBT interventions result in similar effect sizes. Whilst these preliminary findings are consistent with the small existing literature (Marchand et al., 2009), further investigation is required. Furthermore, given the current findings, further investigations in controlled studies of brief CBT treatments would be beneficial as brief treatments are likely to be the most cost effective to deliver. Given the time pressure to improve anxiety symptomatology for women during pregnancy prior to birth, another treatment option to explore in future studies is accelerated treatment. Accelerated treatments are commonly used in the treatment of obsessive-compulsive disorder (Foa et al., 2005; Storch et al., 2007), and other studies have also explored this treatment modality for social anxiety disorder (Stangier, et al., 2003; Wootton, et al., 2018), agoraphobia (Knuts et al., 2015), and panic disorder (Chase et al., 2012; Teng et al., 2015; Wootton & MacGregor, 2016). Importantly, a recent meta-analysis indicated that accelerated treatments result in enhanced outcomes at post-treatment, and may also potentially reduce patient attrition (Öst & Ollendick, 2017). Therefore, investigating different treatment formats for women with perinatal anxiety is an important avenue for future research.

The present study also demonstrated preliminary evidence to suggest that individual CBT may be more effective than CBT delivered in a group setting for individuals with perinatal anxiety. This finding is largely consistent with the existing literature. For example, Sharp et al. (2004) examined the efficacy of individual and group CBT in the treatment of panic disorder and agoraphobia and found individual treatment showed superiority at post-

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treatment. Similarly, Stangier et al. (2003) found individual cognitive therapy to be superior to group cognitive therapy in treating social anxiety disorder at both post-treatment and follow up. Further research examining the efficacy of individual and group CBT for the treatment of perinatal anxiety is needed in order to inform best-practice treatment for this patient group.

The methodological quality assessment highlighted several methodological issues within the studies and the overall study quality was low for most studies. For example, in order to avoid confounding therapist and treatment condition it is important that treatment is delivered by more than one therapist, yet the majority of studies included in this analysis only included one therapist. Additionally, in order to ensure that the treatment the authors are describing is actually applied, it is necessary to have independent assessors rating a proportion of recorded sessions for treatment adherence. Several of the included studies either did not include treatment adherence or did not use independent assessors to rate this. Similarly, only a small number of studies rated the therapists' competence when carrying out the treatment. Therefore, as this field progresses, it is important that studies with higher methodological quality are conducted.

Longitudinal research indicates that perinatal mental health concerns are associated with negative outcomes for the child, including deficits in the child's attention and concentration abilities (Gutteling et al., 2006) and more problematic behaviours than offspring of mothers whom do not have perinatal mental health concerns (Loomans et al., 2011). Unfortunately, none of the studies included in this meta-analysis examined the long-term outcomes of children born during the period of perinatal anxiety, such as cognitive and attentional abilities of the child. Therefore, another important avenue for future research is to examine the effects of untreated and treated perinatal anxiety on children's development and cognitive abilities over time.

Limitations and strengths

Whilst the current meta-analysis provides a preliminary study of the effectiveness of CBT for the treatment of perinatal anxiety disorders, there were several methodological limitations of the included studies that should be acknowledged. First, due to the small number of studies in the field, both RCTs and open trials were included in the analyses. Emphasis in the future should be placed on internally valid RCT's that examine the effectiveness of CBT on perinatal anxiety. Additionally, as mentioned above, the overall quality of the included studies was generally poor, and it is important that future studies seek to improve methodological rigor of research conducted in this field. Second, a range of treatment protocols were used in the included studies, many of which were unpublished, and thus not available to other researchers to facilitate replication. Furthermore, the majority of the included studies did not include interventions designed to elicit behaviour change, such as exposure or behavioural experiments. Behavioural interventions are considered to be the most effective components of treatment for anxiety disorders (Weck, et al., 2015; Anderson, et al., 2013) and, consequently, evaluating the efficacy of behavioural techniques in the treatment of perinatal anxiety should be emphasized in future studies. Thirdly, the majority of studies do not report the onset of the anxiety related symptoms. Thus, it cannot be determined whether the anxiety was pre-existing, a re-emergence of a prior condition, or pregnancy specific in many of the included studies. This information would be beneficial as it would enhance the development of effective interventions for women experiencing perinatal anxiety. Finally, unpublished data in the perinatal field may exist, which may overturn the results from this meta-analysis.

The current preliminary meta-analysis provides evidence that CBT is efficacious in the treatment of perinatal anxiety. However, studies utilizing large, adequately powered samples and randomized designs are needed to ensure accurate interpretations and

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replications. The results of this meta-analysis may guide future research in the field and help to inform optimal service delivery for women with perinatal anxiety in the future.

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STATEMENT OF AUTHORS' CONTRIBUTION

(To appear at the end of each thesis chapter submitted as an article/paper)

We, the PhD candidate and the candidate's Principal Supervisor, certify that all co-authors have consented to their work being included in the thesis and they have accepted the candidate's contribution as indicated in the *Statement of Originality*.

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Higher Degree Research Thesis by Publication University of New England**STATEMENT OF ORIGINALITY**

We, the PhD candidate and the candidate's Principal Supervisor, certify that the following text, figures and diagrams are the candidate's original work.

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Chapter Three

Study 1 (Chapter Two) found preliminary evidence to suggest that CBT is efficacious in the treatment of perinatal anxiety. In this study there was significant variability in how the CBT interventions were delivered and included group-based treatments ($n = 7$), individually delivered treatments ($n = 5$), and self-help/online administered treatments ($n = 2$). The results from Study 1 demonstrate that individually delivered treatments may result in improved outcomes over group-based treatments, however as the literature advances it will be important to evaluate whether there are differences in the efficacy of these approaches in the treatment of perinatal anxiety.

Given the number of treatment methods available to deliver CBT, it is also important to examine the acceptability of these different approaches and the preferences of the individual when choosing between these treatment options, as there is significant emerging literature that indicates that individuals with a variety of mental health conditions prefer individual treatments over group-based treatments. For example, Osma et al. (2019) explored treatment preferences in a sample of 267 Spanish patients in public mental health settings with a primary diagnosis of an emotional disorder and found that the majority of participants (85.4%) preferred individually delivered psychological treatment. The study found that participants' preference for individual treatment was due to concerns in relation to privacy and difficulty with expression of emotions in a group format (Osma et al., 2019). More recently, McCausland et al. (2021) and Robertson et al. (2020) explored CBT treatment preferences for varying disorders in Australian samples and found similar findings to Osma et al. (2019), with participants in both studies reporting a strong preference (63% and 41.3% respectively) for individually delivered treatments.

Currently, there is a lack of research exploring women's treatment preferences for those in the perinatal period. In one of the few studies conducted to date, Goodman (2009)

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explored women's preferences for the treatment of depression and found that most women (92%) indicated a preference for individual therapy if help was needed. The study further found that the minority (14%) of participants indicated that they would participate in group therapy or would be likely to take medication (35%) if recommended. Additionally, the results of this study indicated a preference to receive mental health care at the obstetrics clinic, either provided by their obstetrics practitioner or by a co-located mental health clinician (Goodman, 2009). Similarly, in a recent meta-analysis, Xue et al. (2020) explored treatment uptake in women with perinatal depression and found that uptake was significantly higher when women were referred to an 'on-site' assessment or treatment service (i.e., treatment for mental health conditions was at the same site as their other treatment) compared to women who were referred to external mental health services (OR=1.31, 95% CI 1.13-1.52).

Whilst these studies provide a preliminary understanding of women's treatment preferences for perinatal depression, research specifically exploring women's treatment preferences for perinatal anxiety is warranted, as treatment preferences in these diagnostic populations may differ. For example, in the general population, compared to those with affective disorders, those with anxiety disorders are less likely to seek professional treatment for their condition (Wang et al., 2005). Given the low rates of treatment uptake for perinatal anxiety disorders overall (Goodman & Tyler-Viola, 2010), understanding women's treatment preferences may assist in improving treatment uptake and thus reduce the burden that these disorders have on the mother, child, and community (Bauer, Knapp, & Parsonage, 2016; Dubber et al., 2015; Rees et al., 2019).

There is a plethora of research exploring barriers to accessing psychological care in the general population (i.e., McCausland et al. 2021; Robertson et al., 2020). However, there is limited research exploring the specific barriers women face to accessing psychological

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intervention during the perinatal period. The literature that currently exists highlights that time constraints, geographical isolation, and cost, are all barriers that women with perinatal anxiety face when accessing treatment (Forder et al., 2020; Goodman, 2009; Kopelman et al., 2008), however, these studies have not specifically explored perinatal anxiety in an Australian sample. Given that Australians have access to subsidised psychological services through the Better Access to Psychiatrists, Psychologists and General Practitioners through the MBS Initiative (Royal College of Psychiatrists, 2010), there may be differences in Australian women's perceived barriers based on their geographical location.

There are other important areas of research that are thus far neglected in the literature: for instance, there is currently limited research exploring women's experiences of perinatal anxiety, and the existing literature is generally limited by examining perinatal anxiety and depression together, rather than each condition individually (e.g., Highnet et al., 2014). It is therefore unclear how women perceive and understand perinatal anxiety, and their specific symptoms and experiences of the disorder. Research focussing on exploring women's experiences of perinatal anxiety is warranted, as such information may enhance our understanding of women's mental health needs during the perinatal period and allow us to develop treatments that are more specific to the experiences of women with perinatal anxiety.

Taking the above literature gaps into consideration, Study 2 (Chapter Four) explored women's experiences of perinatal anxiety including the most prevalent symptoms, as well as the perceived facilitators and barriers to accessing treatment, and women's preferences for treatment of perinatal anxiety. Given the small existing research base, these research questions were examined using a qualitative approach.

Qualitative research approaches are diverse, nuanced and complex (Holloway and Todres, 2003) and are useful in answering questions about experience, meaning and perspective and allows for complexities and subtleties of the responses to be identified and

explored (Anderson, 2010). Due to the nature of Study 2 (Chapter 4), a thematic analysis methodology was adopted. Thematic analysis is a flexible qualitative approach which has the potential to provide rich and detailed data. Braun and Clarke (2020) have identified a number of theoretical assumptions that should be considered when conducting thematic analysis to assist in conceptualising theoretically how the researcher understands their data and how the findings should be interpreted. The assumptions are conceptualised as a series of continua as follows 1) essentialist versus constructionist epistemologies; 2) experiential versus critical; 3) inductive versus inductive/ theoretical analysis; and 4) semantic versus latent coding of the data. Below details the assumptions adopted in Study 2 (Chapter 4).

Epistemological considerations were discussed between the researchers when Study 2 (Chapter 4) was first conceptualised and when the study protocol was created. An essentialist approach was chosen for Study 2 (Chapter 4), where a simple unidirectional relationship was assumed between meaning, experience and language (Braun & Clarke, 2006), that is, the participants' responses were assumed to accurately reflect their intended meaning.

In order to emphasise meaning and meaningfulness recognised by participants, Study 2 (Chapter 4) adopted an experiential orientation to data interpretation. Given this, the analysis did not seek to make claims about the social construction of the research topic, and instead acknowledged the socially constructed nature of the research topic when examining the subjective responses of participants (Byrne, 2021). This approach was deemed most appropriate by the research team and the aim of the study was to understand women's own experiences of perinatal anxiety and their perceived barriers and treatment preferences to accessing support. Most importantly, the research questions aimed to examine women's attitudes and experience of perinatal anxiety, or the "meanings made", and did not, for example, attempt to understand the underlying socio-cultural factors that may have led to these attitudes, or the "meaning making" (i.e. as per a critical perspective) (Byrne, 2021).

Study 2 (Chapter 4) adopted an inductive approach (i.e. interpretive and generates theory from data or the “bottom up” approach), where codes were solely reflective of the content of data, and free from pre-conceived theories or conceptual frameworks (Byrne, 2021). Thus, data was not coded to fit a pre-existing frame, and instead were “open-coded” in order to best capture meaning as communicated by participants (Braun and Clarke, 2013). This approach was chosen as the study sought to understand women’s experiences and perceptions without a pre-specified framework.

Lastly, Study 2 (Chapter 4) utilised semantic coding. Semantic codes are identified by examining the explicit meanings of the data, whereas latent coding is more interpretive and explorative in trying to identify hidden meaning or underlying assumptions of the data that may shape the semantic content of the data (Byrne 2021). Given the nature of this study, meaningful semantic codes were interpreted by the research team without underlying frameworks or theory being present. This was reflective of the interpretive epistemology and ontology of the study which considered what the participant communicated as accurately reflecting their intended meaning.

Chapter Four

(Study 2)

Exploring Experiences, Barriers and Treatment Preferences for Self-Reported Perinatal Anxiety in Australian Women: A Qualitative Study

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Abstract

Objective: *Perinatal* anxiety is common, yet few studies have examined the perceived barriers to accessing mental health services and treatment preferences for women in the perinatal period. **Method:** The current study explored the experiences and views of twenty women ($M_{age} = 34.65$, $SD = 8.68$) who were experiencing, or who had previously experienced, perinatal anxiety using semi-structured interviews. The interview questions focused on their experiences of perinatal anxiety and the perceived barriers and facilitators to accessing treatment. **Results:** Verbatim scripts were analysed using inductive thematic analysis and several global themes were identified, including 1) modality and accessibility as facilitators to accessing therapeutic support; 2) stigma regarding being a good enough mother; 3) excessive worries concerning fear of labour, and fear of caring for the baby; 4) making sense of pregnancy, motherhood, and anxiety symptoms; 5) uncertainty concerning changes during pregnancy and postpartum; 6) understanding, validation, and improvement of perinatal anxiety; and 7) modality and formality of treatment preferences. Each global theme encompassed several organizing themes. **Conclusions:** The results of the study identified several common experiences of perinatal anxiety and indicated numerous barriers and expectations in relation to treatment uptake. The findings from this study can be used to inform future service design and delivery for the treatment of perinatal anxiety.

Keywords: Anxiety; Perinatal; Preferences; Treatment Barriers; Qualitative

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Key Points:

What is already known about this topic:

- Perinatal anxiety, it is often undiagnosed and undertreated
- Treatment uptake for perinatal anxiety is low despite effective treatments being available
- Several barriers to accessing mental health treatment in the general population exist

What this topic adds:

- Women with perinatal anxiety experience several specific barriers to accessing treatment.
- Treatment uptake and the delivery of psychological care for perinatal anxiety may be enhanced by reducing barriers, and by increased education regarding available treatment option.
- Online treatments may be a more accessible treatment option for those with perinatal anxiety than traditional face-to-face treatment

Exploring Experiences, Barriers and Treatment Preferences for Self-Reported Perinatal Anxiety in Australian Women: A Qualitative Study

One in six women experience clinically significant anxiety during the perinatal period, which is defined as the period encompassing pregnancy up to 12-months postpartum (Austin et al., 2017). Perinatal anxiety is characterized by excessive fear and anxiety, as well as related behavioural changes (Austin et al., 2017). Perinatal anxiety has important health consequences and risks for both the mother and infant (Nicol-Harper et al., 2007). For instance, perinatal anxiety in mothers is associated with increased incidence of preterm birth and lower birth weight (Grigoriadis et al., 2018), as well as increased risk of emotional difficulties in toddlers (Rees et al., 2019). Despite the prevalence and impairment associated with perinatal anxiety, it is often undiagnosed (Ride & Lancsar, 2016) and under-treated (Kendig et al., 2017) in clinical practice.

It is normal for women in the perinatal period to report worries and fears about the health of their baby, complications during birth, changes to their body, changes to their partner relationships, and their ability to care for their baby (Williams & Koleva, 2018). When these worries and anxiety symptoms cause significant distress and interfere with daily functioning they are considered abnormal and may be classified as a perinatal anxiety disorder. There is currently limited research exploring how women experience perinatal anxiety, and the data that does exist is generally limited by examining perinatal anxiety and depression transdiagnostically, rather than each condition individually (e.g., Highnet et al. (2014)). Thus, further research exploring women's experiences of perinatal anxiety in diverse samples is needed in order to enhance our understanding of the mental health needs of women during the perinatal period.

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Effective psychological treatments for perinatal anxiety exist, such as cognitive-behaviour therapy (CBT) (Maguire et al., 2018) however, there are a number of barriers to accessing psychological support during the perinatal period (Goodman, 2009; Millett et al., 2018; Woolhouse et al., 2009). For instance, in a North American sample of pregnant women, the top three perceived barriers to obtaining professional help were stigma, lack of time, and lack of childcare options (Goodman et al., 2009). Similar barriers were also identified in an Australian sample of nulliparous women (Woolhouse et al., 2009). The existing literature on the barriers to mental health treatment for perinatal anxiety has several limitations, and despite this prior research, uptake of treatment remains low (Schmied et al., 2013). Firstly, the majority of the studies are conducted internationally and research specifically in the Australian context is scarce. Secondly, the existing literature tends to focus on postnatal depression, rather than perinatal anxiety, and it is possible that barriers to treatment may be diagnosis specific (Goodman, 2009). Thirdly, the existing research has primarily used questionnaires focussing on perceived barriers rather than an exploration of subjective experiences approach, thus a qualitative approach may elicit more rich information on womens perceived barriers to accessing mental health treatment. Finally, much of this research was conducted over a decade ago and treatment barriers may have changed during this time in response to changes in healthcare systems and service delivery options, Thus a contemporary investigation of treatment barriers in an Australian sample is urgently needed.

Psychological treatments for perinatal anxiety may be delivered using various modalities. For example, CBT for perinatal mental health disorders has been delivered using individual (Milgrom et al., 2015) and group-based face-to-face delivery (Bittner et al., 2014), as well as via low intensity internet-delivery (Forsell et al., 2017; Loughnan et al., 2019b). Other remote treatment approaches, such as bibliotherapy-delivered treatment, telephone-delivered treatment, and internet-delivered videoconferencing have also been shown to be

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efficacious for anxiety and related disorders more generally (Brenes, 2015; Carpenter et al., 2018; Hedman et al., 2016; Wootton et al., 2018). Such remote treatment options may help to reduce barriers to treatment for individuals with perinatal anxiety. Despite the availability of a variety of CBT treatment options for women with perinatal anxiety (e.g., incorporating remote approaches), few studies have explored women's treatment preferences during this period. It is possible that women who are pregnant, or have a small child, may prefer remote delivery options over more traditional face-to-face services.

Research to date has demonstrated that women in the perinatal period generally prefer psychotherapy over pharmacotherapy (Goodman, 2009; Ride & Lancsar, 2016). Individual treatment options are also preferred over group-based treatment options (Ride & Lancsar, 2016), which is consistent with treatment preferences for individuals with anxiety and related disorders more generally (McCausland et al., 2021; Robertson et al., 2020). However, this preference for individual over group-based treatments may be influenced by previous mental health experiences, as well as baseline anxiety symptoms (Goodman, 2009). While the existing literature provides some evidence to suggest that women experiencing perinatal mental health problems may prefer certain treatment approaches over others, there is limited research exploring treatment preferences for women specifically with perinatal anxiety when the broad range of CBT treatment options are included. Given remote treatment approaches are efficacious in the treatment of anxiety and related disorders in the general population (Wootton et al., 2019) and in treatment of perinatal anxiety (Loughnan, et al., 2019b; Forsell, et al., 2017), it is important that research further examines whether these treatments are acceptable to individuals with perinatal anxiety given the unique challenges faced during the perinatal period.

The aim of the current study was to enhance the existing literature by examining the following research questions using a qualitative approach: 1) what are the experiences of

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women who have suffered from perinatal anxiety and what are the most prevalent symptoms; 2) what do women perceive as the main facilitators and barriers to accessing treatment during the perinatal period; and 3) what are women's preferences for treatment of perinatal anxiety? The findings may inform mental health policy and guide how to best deliver CBT to women experiencing perinatal anxiety.

Method

Participants

A total of 20 women who self-reported either currently experiencing or previously experiencing perinatal anxiety were recruited (age range 23-55years; $M_{age} = 34.65$, $SD = 8.68$). Women were eligible to participate in the study if they: 1) were 18 years of age or over; 2) competent in written and spoken English; and 3) currently or previously suffered from anxiety (self-reported) during the perinatal period. Women who had, and had not, previously engaged in formal help-seeking were eligible to generate a sample with and without clinical experience, which ensured a variety of views and experiences to provide a more robust understanding of women's experiences. The demographic characteristics of the sample are outlined in Table 3.1.

There are several factors which may contribute to determining the required sample size when conducting thematic analysis in qualitative research (Baker & Edwards, 2012). Data saturation, considered to have occurred when the gathering of additional data does not provide new information and the analysis of new data does not return additional themes (Mason, 2010), is considered an adequate criterion for determining sample size. A variety of empirical studies have indicated that 12 participants is sufficient for data saturation to have been achieved (Guest et al., 2006). Based on this indicative number, 12 participants were initially recruited. Review of the interview transcripts for the 12 participants recruited

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indicated that new information and perspectives were generated across the final four interviews conducted. Consequently, a further eight participants were recruited providing a final sample size of 20 participants. Data saturation was judged to have occurred as the responses of the initial 15 participants yielded the same global and organizing themes as the responses of the total sample of 20 participants (see “Data Analysis” section for further details).

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Table 3.1*Sample demographics (N= 20)*

Variables	<i>N</i>	%
Pregnant at time of interview	3	15
Previously pregnant	17	85
Nulliparous	1	5
Primiparous	7	35
Multiparous	12	60
Relationship status		
<i>Relationship</i>	18	90
<i>Single</i>	2	10
Highest level of education completed		
<i>Secondary school qualification</i>	3	15
<i>Trade certificate</i>	3	15
<i>University bachelor level qualification</i>	10	50
<i>University postgraduate qualification</i>	4	20
Employment Status		
<i>Employed full time</i>	5	25
<i>Employed part time</i>	8	40
<i>Maternity leave/ home duties</i>	6	30
<i>Unemployed/ unable to work</i>	1	5
Private Health Insurance		
<i>Yes</i>	15	75
<i>No</i>	5	25
Accessed mental health support previously	12	60

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<i>Accessed support due to anxiety alone</i>	7	35
<i>Accessed support due to anxiety and depression</i>	5	25
Geographical location		
<i>RA1</i>	9	45
<i>RA2</i>	3	15
<i>RA3</i>	6	30
<i>RA4</i>	1	5
<i>RA5</i>	1	5

Note. Australian Rural, Remote, and Metropolitan Areas (RRMA), where RA1 is a major city, RA2 is an inner regional area, RA3 is an outer regional area, RA4 is a remote area, and RA5 is a very remote area (Australian Institute of Health and Welfare, 2016).

Procedure

Ethical approval was obtained from the Human Research Ethics Committee at the University of New England. Participants were recruited through advertisements posted on online social media pregnancy related platforms. The study advertisement contained a link which took the participants to the online participant information sheet, which participants were required to read before emailing the researcher to arrange a telephone interview time.

Interviews were conducted via telephone by the first author, a registered psychologist, between December 2018 and January 2019. Verbal consent was provided at the commencement of the interview and participants were given the option to withdraw from the telephone interview at any time. Interviews lasted between 15 and 45 minutes and were audio recorded then transcribed verbatim by the first author.

A brief demographic questionnaire was firstly administered by the interviewer which included questions relating to demographics (i.e., age, education, mental health history). Following the demographic questionnaire, participants engaged in a semi-structured interview. The interview questions were developed based on the literature and are outlined in Appendix A.

Data Analysis

The analysis focused on examining women's experiences with and symptoms of perinatal anxiety and their perceived barriers and facilitators to accessing treatment during the perinatal period. An inductive thematic analysis located in an 'essentialist/realist' epistemology (Braun & Clarke, 2006, 2019) was conducted by the first author (PM), with validation of codes and themes provided by the second author (GC) at each stage of the coding process (Braun & Clarke, 2006). Themes were derived from the entire interviews rather than from single questions. Initially, each transcript was read multiple times by the first author (PM). Whilst the interviewer and first author (PM) has no personal experience with perinatal anxiety, to aid in identifying and managing researcher subjectivity, bias, and theoretical assumptions (Braun & Clarke, 2019), throughout the analysis ongoing self-reflection and reflection through discussion with the co-authors was facilitated. A systematic approach was employed, and initial codes were identified from the data. The second author (GC) read each transcript before reviewing the initial codes generated by the first author. The authors then met to discuss each code and any discrepancies and to reach a consensus. A consensus reached before the first author proceeded to the next stage of analysis (Braun & Clarke, 2006). The coded data was organized into potential themes based on their conceptual overlap and similarities, and, where relevant, reflecting recurring themes across the data. During these discussions, the authors used quotes from the transcripts to illustrate the themes. Recurring themes were determined based on their prevalence across responses (Braun &

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Clarke, 2006), with themes being reflected across the responses of at least two participants. All relevant participant responses were categorized under provisional thematic headings, which were then organized under ‘organizing themes’ (i.e., themes that organize the basic themes into clusters of similar themes) and ‘global themes’ (i.e., overarching themes) to produce a thematic map. The audit of themes was then conducted in consultation with the second author in order to ensure rigour and validity of the themes. Difference in opinions were resolved through discussion and a consensus on themes was reached. Following this, themes were refined, defined and named to reflect the “essence” of what each theme encompassed (Braun & Clarke, 2006) and the number of participants who addressed each theme was also noted.

Results

The analysis focused on women’s experiences of perinatal anxiety and on the main facilitators and barriers to accessing treatment during the perinatal period. Seven global themes were identified, each with several organizing themes. The thematic networks can be seen in Figure 3.1 and 3.2. These themes are outlined below.

Facilitators and Barriers to Accessing Treatment in the Perinatal Period

Global Theme 1: Modality and accessibility as facilitators to accessing therapeutic support

The responses of the majority of participants (75% of sample) outlined issues relating to treatment modality and accessibility as facilitators to accessing therapeutic support. When queried about perceived facilitators to accessing treatment, participants responses highlighted “*accessibility*” (aged 39 years; Participant 9), “*flexibility*” (aged 29 years; Participant 5), and the option of “*home visits*” (aged 23 years; Participant 1) as main facilitating factors to accessing treatment during the perinatal period. Participants with past experience of accessing

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support services suggested that supports that provided “*stability*” (aged 42 years, Participant 4), and that would “*visit at home*” (aged 36 years; Participant 18) were the supports they were more likely to engage with and recommend. One participant with past experience explained that “*...something with continuity and stability. I think that is what made the massive difference for me, having the experience and support of perinatal support previously for the anger I had, they definitely weren’t as good as having the continuity care throughout pregnancy and after*” (aged 42 years, Participant 4). Moreover, the discussions relating to facilitators and barriers to accessing care highlighted several extrinsic and intrinsic barriers to accessing interventions (Figure 3.1).

Organising theme 1: Intrinsic barriers to accessing therapeutic intervention during the perinatal period. An important organising theme was that of intrinsic barriers to accessing intervention during the perinatal period. When queried, barriers to accessing treatment were reported by several participants, with all participants highlighting strong beliefs about being time poor. One participant described several intrinsic barriers to accessing support, stating that during the perinatal period “*... sometimes time management and identifying that you may need help, you may be in denial and just keep trying to cope, I think that might be a problem... I was so busy with my work and baby that I would forget to look after myself, then at night the voices would start and the worries would be there.*” (aged 37 years; Participant 11). The beliefs identified above regarding poor time management as a barrier to accessing treatment were reiterated, with participants highlighting “*time management...sometimes people are busy...I would forget to look after myself, then at night the worries would start*” (aged 37 years; Participant 2) and being too “*busy [with taking care of the baby]*” (aged 47 years; Participant 15). Additionally, participants outlined several other intrinsic barriers, such as “*lack of information [about mental health and recognising symptoms]*” (aged 38 years; Participant 17), “*cultural beliefs [about accessing professional*

support]” (aged 24 years; Participant 20), and not being “*accountable [to accessing support]*” (aged 42 years; Participant 4).

Organising theme 2: Extrinsic barriers to accessing therapeutic intervention during the perinatal period. Participants also discussed several extrinsic barriers to accessing treatment, including “*lack of availability [of treatment services]*”, (aged 27 years; Participant 14), “*long waiting periods [to accessing treatment]*” (aged 38 years; Participant 17), “*financial pressure*” (aged 37 years; Participant 2), and “*not having access to the internet*” (aged 50 years; Participant 3) or experiencing “*connectivity issues [either phone or internet]*” (aged 37 years; Participant 17). Furthermore, 5 (25%) participants from rural or remote geographical locations (RA3-RA5) identified “*distance*” and “*living remotely*” as the main barrier to accessing treatment. Participants described several of the barriers associated with residing in a rural location “*Distance was the big thing for me. And with my husband being away all the time it’s hard to get your baby and drive 5 hours just to do something for yourself ... distance... and being isolated [is most difficult]*” (aged 50 years; Participant 3). Furthermore, four of those participants residing in a rural location indicated that they lacked a “*support network*” (aged 33 years; Participant 10) which made it difficult to access services.

Global Theme 2: Stigma Regarding Being a “Good Enough” Mother

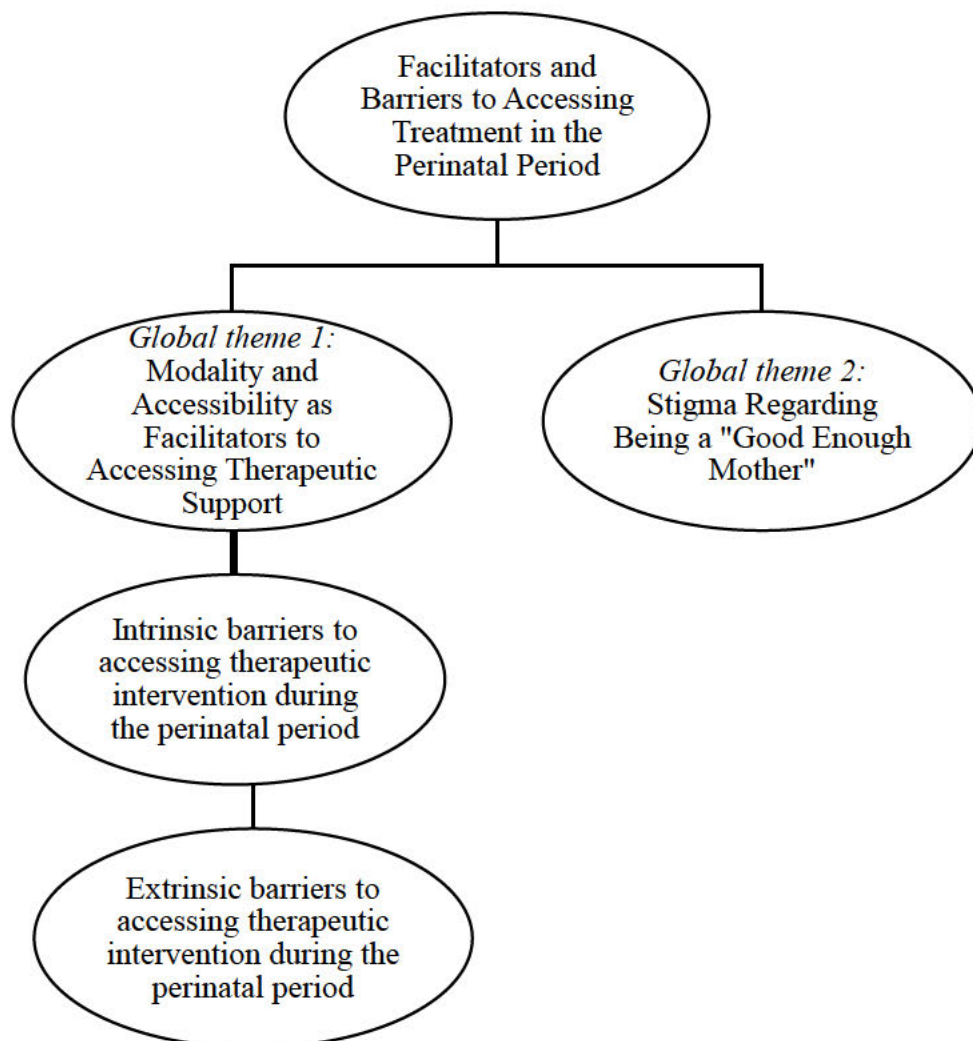
Perceived stigma regarding being a good enough mother was a theme identified as a core barrier to accessing treatment (Figure 3.1). Participants discussed feeling “*worried about accessing supports [due to the associated stigma]*” (aged 37 years; Participant 11) and the associated “*stigma around admitting that [you have anxiety]*” (aged 23 years; Participant 1) or the “*stigma around you needing help*” (aged 29 years; Participant 13). More specifically a barrier to accessing treatment was concerns about professionals and services taking the infant off the mother due to her mental health problems. Participants explained “*...in general conversation with other friends when they’ve been struggling, their biggest concern is being*

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labelled a bad parent and having them [Community Services] take their baby... away cause you're not ok, that kind of thing is the main reason" (aged 36 years; Participant 7). While several participants reported concerns about stigma and indicated that treatment should address this, such concerns were particularly reported by those who had previously accessed a mental health service.

Figure 3.1

A Thematic Map of "Facilitators and Barriers to Accessing Treatment in the Perinatal Period"



Common Experiences of Perinatal Anxiety and What Treatment Would Ideally Provide

Global Theme 1: Excessive Worries Concerning Fear of Labour, and Fear of Caring for the Baby

When queried about current or past experiences of perinatal anxiety, the majority of participants reported experiences of anxiety driven by worry, with worries relating to “...*worried something would go wrong [with birth or the baby]*” (aged 29 years; Participant 13) and worry about being perceived as “*an unfit parent*” (aged 29 years; Participant 5). Several described their primary concerns and worries related to parenting efficacy, including breast feeding, giving their baby adequate nutrition, and the impact of the baby on the family unit. Participant 12 highlighted several worries that perpetuated her anxiety, “*I also worried about whether or not my baby was getting enough milk and about SIDS [Sudden Infant Death Syndrome]. I worried about my baby crying and became very anxious in situations where I thought my baby might cry e.g., in the car, in the shops, during social visits/ appointments... I avoided driving anywhere or doing anything outside of the home unless absolutely necessary. I slept with my baby in bed with me rather than in the cot*”.

Participants who had multiple children discussed the increasing “*fear of labour*” (aged 42 years; Participant 4) due to previous “*distressing experiences [in regards to labour]*” (aged 29 years; Participant 4), which for some participants lead to “*panic attacks*” (aged 27 years; Participant 12) in the lead up to birth. Participants conferred that information and strategies to manage such worries and fears would be an integral part of treatment during the perinatal period, as the worries caused “*distressing thoughts*” (aged 39 years, Participant 9) for participants.

Global Theme 2: Making Sense of Pregnancy, Motherhood, and Anxiety Symptoms

In response to discussions regarding women’s experiences of pregnancy and perinatal anxiety, two themes were identified, specifically *seeking validation and attempting to*

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prepare, and understandings of types of anxiety experienced during the perinatal period.

Participants identified several types of anxiety, common concerns and worries when discussing their experience of perinatal anxiety, and discussed their difficulties transitioning to motherhood, their personal identity, and their desire for validation regarding their ability as a mother and partner.

Organising theme 1: Seeking validation and attempting to prepare. Half the sample reported feeling underprepared during pregnancy and discussed the perinatal period as an overwhelming time. Participants described feeling “*confused and overwhelmed by the advice from family and mental health professionals*” (aged 39 years; Participant 9) and described the “*information overload*” as “*very anxiety provoking*” and oftentimes “*contradictory*” (aged 50 years; Participant 3).

Furthermore, participants indicated that their anxiety was often experienced due to having insufficient “*knowledge*” (aged 37 years; Participant 11) in relation to trying to “*prepare*” (aged 36 years; Participant 18) or in relation to “*looking after [the baby]*” (aged 38 years; Participant 17). Several participants discussed how they frequently sought validation from their supports, however a number of participants stated that this often resulted in higher anxiety due to supports, such as their partner or mother, “*understanding*” (aged 33 years; Participant 10) their anxiety as “*they’ve never experienced mental health issues*” (aged 33 years; Participant 10). Furthermore, some participants indicated that they would search online when concerned about their baby or their parenting abilities or to search for information. Participant 2 stated “*When I became pregnant, I was Googling a lot ... there is a lot of stuff to Google and you just want to have your baby and have everything go well*”.

Organising theme 2: Understandings of types of anxiety experienced during the perinatal period. In response to the negative perceptions of their pregnancy and motherhood experiences, participants reported difficulties “*dealing with the changes in your life*” (aged

37 years; Participant 11) and being unable to “*cope with little things [post birth]*” (aged 55 years; Participant 16). In addition to describing anxiety symptoms generally, the majority of participants described their anxiety symptoms using a diagnostic label (i.e., posttraumatic stress disorder - 10% of the sample; generalised anxiety identified - 30% of the sample; obsessive-compulsive disorder - 5% of the sample; panic-related symptoms - 25% of the sample; phobias - 10% of the sample). Several participants described difficulties recognising their own anxiety and described feeling that they were “*on edge*” (aged 39 years; Participant 9), and feeling as though they “*overthought everything*” (aged 55 years; Participant 16).

Global Theme 3: Uncertainty Concerning Changes During Pregnancy and Postpartum

Participants reported that pregnancy and motherhood-related changes affected most areas of women’s lives, including “*limiting general functioning*” (aged 23 years; Participant 1), feeling “*emotionally unstable*” (aged 27 years; Participant 14), “*hormonal*” (aged 27 years; Participant 14), and “*sensitive*” (aged 37 years; Participant 2) (Figure 3.2). Participants discussed how such changes appeared to precipitate the development of their anxiety.

Organising theme 1: Altered functioning in both mental and physical health. In regards to changes during pregnancy, participants discussed experiencing altered functioning in both their mental and physical health. Participants described their mental health functioning in terms of one’s overall ability, the interaction between physical and emotional health, and the ability to cope with day-to-day life. Participant 14 explained mental health as “*your ability, your emotions and how it comes together to make you function as a person, so your physical health, but also your mental health...*”.

Changes in physical appearance reinforced the experience of change from a different perspective, and several participants discussed feeling worried about their weight gain and their attractiveness. Participant 12 stated “*I also felt worried about my weight gain and didn’t*

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feel like myself. My identity was compromised... I wasn't sure how to dress my new shape.... I worried about how I would get back into shape after giving birth and whether or not my partner would find me attractive”.

Organising theme 2: Increased emotionality. Several participants identified that a lack of sleep resulted in them feeling more exhausted, tearful and angry. Participants discussed “*experiencing a lot of mistrust in people who were meant to be supporting me [referring to friends and family]*” (aged 39 years; Participant 9) and being “*hesitant to give my baby to others.... because I feared whether others would care for [baby] properly*” (aged 27 years; Participant 12).

Global Theme 4: Understanding, Validation and Improvement of Perinatal Anxiety.

Throughout the interviews there was a theme of participants wanting treatment for “*validation*” (aged 36 years; Participant 7) so that they did “*not feel bad about [themselves]*” (aged 37 years; Participant 11). Participants who had previously accessed formalised treatments discussed feeling “*liberated*” (aged 36 years; Participant 7) after finding out that their symptoms are “*really common*” (aged 36 years; Participant 7), “*normal*” (aged 23 years; Participant 19), and that they can “*fix*” (aged 23 years; Participant 19) their symptoms with support.

Organising theme 1: Psychoeducation. Several participants indicated that an important component of standard perinatal care should include information on support and mental health services available. Participant 8 discussed feeling underprepared and stated “*I don't think I was very well informed about how to look after myself after having children. We also weren't told, like we weren't given brochures during pregnancy about different mental health providers to contact during pregnancy*”.

Participants discussed wanting information that made them feel “*normal*” (aged 33 years; Participant 10). Participant 13, who had previously accessed mental health support,

highlighted the importance of having a mental health professional normalize their experience, stating *“talking to someone really helped me both times in realizing that... what I was feeling was normal. It was normal to feel overwhelmed after having a baby as your life is changing”*.

Furthermore, participants highlighted that their expectations of treatment would include *“coping strategies...a mental script to go through when you’re feeling anxious to manage them... activities to do when you’re having thoughts...understanding the causes of the anxiety”* (aged 24 years; Participant 20). Responses suggested psychoeducation on *“the right way to get my baby to sleep, or feeding my baby, or enjoying time with my baby”* (aged 39 years; Participant 9), as well as *“information about medication”* (aged 38 years; Participant 17) would also be beneficial in treatment.

Global Theme 5: Modality and Formality of Treatment Preferences

In response to discussions regarding women’s ideal treatment modality and formality, three themes were found to capture participants’ preferences, namely *formalised treatment preferences*, *non-formalised treatment preferences*, and *treatment modality* (Figure 3.2).

Organising theme 1: Formalised treatment preference. The majority of participants indicated a preference of formalised treatments when reflecting on their past or current experience of perinatal anxiety. A preference for formal treatment was particularly common in participants who had previously accessed a mental health service. Several participants described *“going to the GP [general practitioner] to make sure everything was ok”* (aged 37 years; Participant 2) as their first point of contact. These participants indicated that they would prefer to access a psychologist that their medical practitioner had recommended. Those participants who had previously accessed treatment discussed wanting *“practical”* (aged 36 years; Participant 7) treatment involving *“problem solving”* (aged 27 years; Participant 12) and *“cognitive behavioural therapy”* (aged 37 years; Participant 11). Furthermore, many participants indicated they would consider accessing a *“psychiatrist”*

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(aged 38 years; Participant 17) or “*medication*” (aged 47 years; Participant 15). Participants who indicated that they would consider pharmacotherapy recalled their past experiences with mental health during the perinatal period and discussed their preference for preventative practices in relation to medication to reduce the likelihood of relapse. Examples given for preventive measures included a collaboratively created “*[relapse] plan*” (aged 38 years; Participant 17) with all of the treating team involved.

Organising theme 2: Non-formalised treatment preference. Several participants indicated that they would initially contact social supports, such as friends and family, or join a mother’s group for additional support rather than access professional support or treatment. Participant 9 recalled “*I joined a mothers group, which I would whether I had the anxiety or not, but 1 or 2 of the other mums were experiencing similar things which helped me push through knowing it wasn’t just me*”. The majority of participants that discussed their preference for non-formalised treatments indicated that they would “*contact supports [Lifeline or GP]*” (aged 29 years; Participant 5) if the severity of their symptoms increased. Moreover, participants who indicated that they would contact formal supports if their symptoms worsened had histories of accessing supports previously.

Organising theme 3: Treatment modality. The majority of participants indicated a preference for accessing services “*face-to-face*” (aged 36 years; Participant 7) opposed to accessing services over the phone or over the internet due to it feeling more “*personal*” (aged 36 years; Participant 7) and “*rappport*” (aged 42 years; Participant 4) being better established in face-to-face treatment. Whilst face-to-face was most participants’ preference, several participants indicated they would also utilise treatments over internet-videoconferencing. Participant 11 described a preference for “Skype”, stating “*Actually preferably Skype because then you can do it while your baby is asleep, at home, especially when they are quite young, because trying to find someone to look after them for you can be quite a big anxiety in*

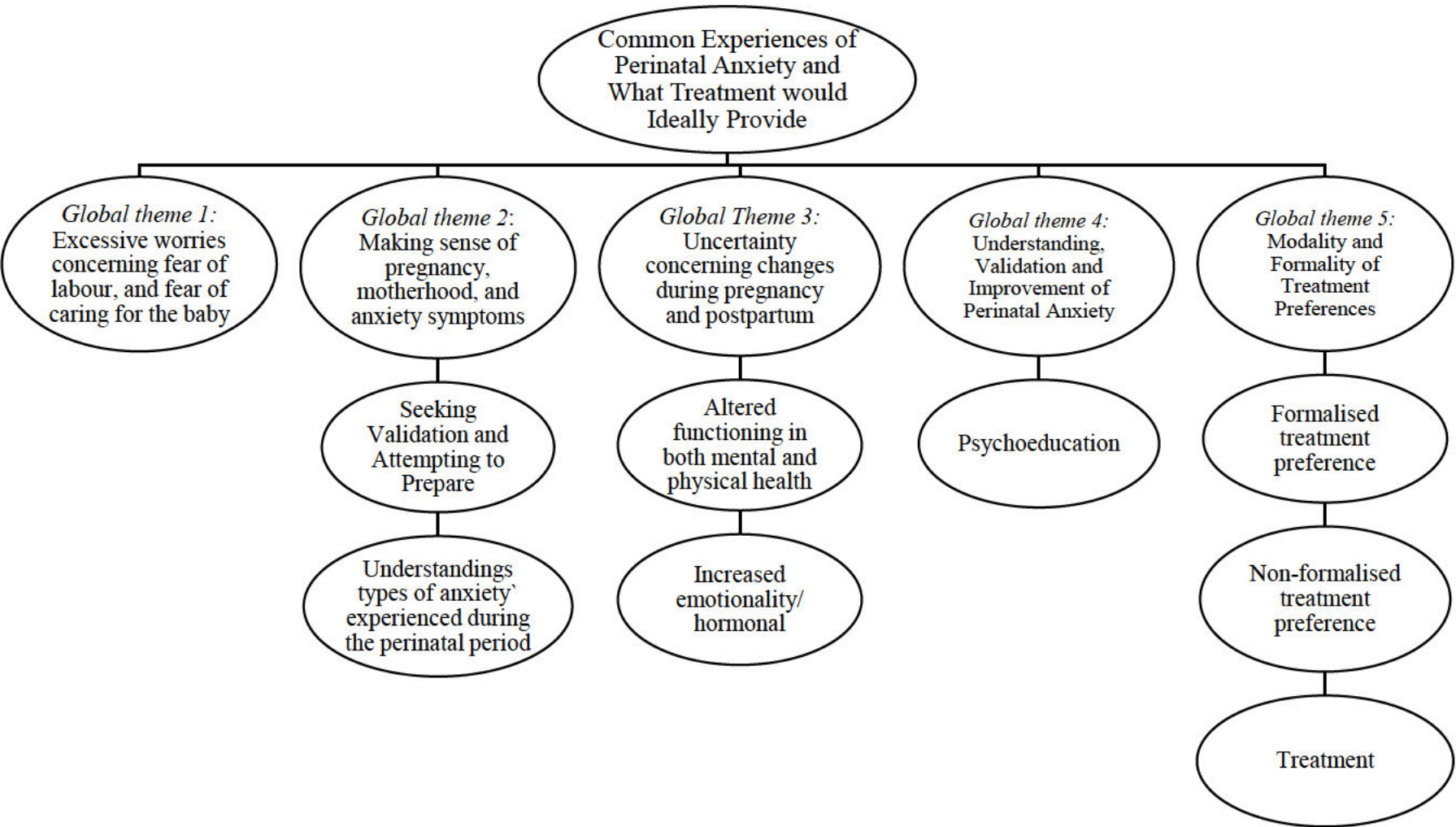
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mothers lives as well". Participants from rural or remote geographical locations perceived remotely delivered treatments as more acceptable and highlighted the barriers that this treatment modality would reduce (i.e., distance, time, childcare costs etc.). However, participants also identified that internet connectivity is often poor in such geographical locations.

Participants also indicated their preference of having a "*choice*" (aged 27 years; Participant 14) in treatment modality, and several participants indicated they would access several different treatment modalities to suit their needs. Despite treatment modality, participants highlighted the importance of "*rapport*" (aged 38 years; Participant 17) and feeling "*a connection*" (aged 32 years; Participant 8) with the therapist. Participants whom had previously accessed support services discussed their past positive and negative experiences with therapists and rapport building.

Figure 3.2

A Thematic Map of “Common Experiences of Perinatal Anxiety and What Treatment Would Ideally Provide”



Discussion

The aim of the present study was to explore Australian women's experiences of perinatal anxiety, as well as treatment preferences during the perinatal period. The study further aimed to gain an understanding of the perceived barriers and facilitators specific to accessing treatment during the perinatal period. The findings from the current study highlight that the focus of anxiety during the perinatal period includes anxiety focused on the baby (i.e. scare of harming the baby), on relational connections (i.e., fear of being unloved due to body image changes), on the self (i.e., fear of lost or changed identity) and others perceptions of the self (i.e., am I normal?). Additionally, the study found women experience difficulties transitioning to motherhood and their desire for validation regarding their ability as a mother and partner, and their personal identity. In the current study, women discussed experiencing difficulties in relation to their own identity, in regard to the physical changes they experienced, and discussed experiencing difficulties in everyday functioning due to anxiety. Further, women reported feeling underprepared for caring for a baby and discussed excessive information seeking. Conversely, women also discussed their concerns and worries in relation to feeling overwhelmed by the conflicting information they received regarding motherhood. These conflicting findings highlight the impact of anxiety on women's capacity to process information received during the perinatal period.

Furthermore, the current study identified several barriers to accessing treatment including accessibility, cost, and stigma. Participants also reported focussing on their baby's needs and avoiding their own distress and anxiety, consistent with previous literature exploring postnatal depression (Coates et al., 2014; Razurel et al., 2013). The results of the current study are consistent with research examining treatment barriers in women with perinatal/postnatal anxiety and depression (Millett et al., 2018; Woolhouse et al., 2009),

however also offer further insight into the barriers experienced by Australian women, especially those residing in rural and remote areas.

Furthermore, in the current study, 60% of participants resided in major cities or inner regional geographical locations, whilst the remaining 40% were from outer regional, remote, or very remote geographical locations. Participants residing in rural or remote geographical locations discussed more barriers to accessing treatment during the perinatal period, including distance, isolation, lack of support network, and difficulties due to their partner's working away, suggesting that women residing in rural and remote locations may face more barriers than those residing in metropolitan areas and may not access treatment. This is consistent with the existing literature in the general population which indicates that those residing in rural or remote geographical locations in Australia report more barriers to accessing mental health support, including more structural barriers (i.e., costs, distance) and time restraints (Handley et al., 2014), which may be especially amplified in the perinatal period due to childcare difficulties and related costs, and due to time management difficulties associated with having a new born baby. Further research exploring accessible treatment options and facilitators to accessing treatment is needed.

The findings from this study indicate women would prefer face-to-face treatment due to the perception of face-to-face treatment being more personal and leading to the establishment of rapport. However, it is important to highlight that in the current study participant's preference for online/remote treatments may also be due to lack of familiarity with such treatments. Despite this, twelve participants (60%) indicated they would use remote treatments delivered via internet videoconferencing. These findings are consistent with the growing literature in this field demonstrating that while most participants with anxiety and related disorders would prefer face-to-face treatment, a large proportion would utilise remote treatments (Berle et al., 2015; McCausland et al., 2021; Robertson et al., 2020), and for many

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remote treatments during the perinatal period may be more convenient due to it minimising the barriers, such as childcare costs, travel distance, associated with face-to-face treatments.

Interestingly, several participants in the current study indicated their interest in pharmacotherapy. This finding is inconsistent with previous research in similar populations (Arch, 2014), which found that women in the perinatal period prefer non-pharmacological treatments. This may be explained by the high number of participants in this study who reported being well supported by a medical team during pregnancy and who have previously accessed mental health support and pharmacotherapy during the perinatal period. Further research in to the acceptability of pharmacotherapy for women in the perinatal period is required.

Clinical Implications

The findings from this study highlight several important clinical implications. First, because of the findings highlighting that women are concerned about the meaning and implications of accessing mental health support during the perinatal period, treatments for perinatal anxiety should use language that is non-labelling. Second, the results highlight women feel overwhelmed when provided with information, however the results also highlight a lack of knowledge and resources in relation to perinatal anxiety symptomology, comorbidities, prevalence and available treatments in the perinatal period. This raises several practical implications for perinatal treatment providers, including understanding the impact of anxiety on women's capacity to process information provided, whilst considering women's lack of knowledge of perinatal anxiety, and lack of knowledge on treatments available. Third, the findings indicate women's preferences for treatment that is active, and solution focused, that helps them understand their anxiety, and that validates their experiences. Lastly,

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treatment during the perinatal period should be accessible for women and provide flexibility in session times, which may enhance treatment uptake and adherence.

The findings from this study indicate women are concerned about videoconferencing hindering their ability to build rapport with the therapist. This is consistent with previous research which has shown that rapport is an essential factor underlying successful therapy and client engagement (Simpson et al., 2005; Simpson & Reid, 2014). Despite participants concerns, the existing literature indicates that treatments delivered via videoconference may enhance client engagement and reduce feelings of shame and self-consciousness in the general population (Simpson et al., 2005; Simpson & Reid, 2014). Further, research indicates that clinicians delivering treatments via videoconference also find rapport building a challenge, however that rapport can be established if these difficulties are addressed in session by the clinician and if the clinician displays additional efforts to build therapeutic alliance (Simpson & Reid, 2014). There is also a growing body of research indicating that CBT delivered via internet videoconferencing is effective in the treatment of anxiety and related disorders and results in high rates of treatment satisfaction (Matsumoto et al., 2018). Given the findings from this study indicate women are likely to disengage from treatment if they do not feel a connection with the therapist, remote treatments aimed at women experiencing perinatal mental health issues are likely to benefit from the addition of therapist contact.

The data from this study reflects a breadth of experiences in the perinatal period and show commonalities across women, despite age, geographical location, education, and recency of pregnancy, which might enhance naturalistic generalisability to the broad population of child-bearing women. This study builds on the limited literature investigating women's treatment preferences for perinatal anxiety and the barriers and facilitators to treatment uptake. Despite providing preliminary data to highlight treatment preferences, as

well as barriers and facilitators in this population, several important limitations should be acknowledged.

Limitations

The current study has several limitations. First, whilst a sample size of 20 participants is considered appropriate for qualitative investigations and data saturation was established, the generalisability of the findings are limited due to the participants differing experiences of perinatal anxiety (i.e., some participants had been formally diagnosed with anxiety whilst others had self-reported anxiety) and due to the geographical differences between participants, which may have impacted their experiences of perinatal anxiety and influenced their perceived barriers. Thus, future research may wish to examine women's experiences in metropolitan and rural locations separately, as the specific barriers and facilitators to accessing treatment in these locations may differ. Second, inherent to qualitative data collection and analysis, analysis remains somewhat subjective and included a component of the interviewer's judgement in probing and asking questions. Third, the entirety of recruitment was conducted online through social media advertisements, thus all participants are likely to have sound online and computer skills, which may have influenced their likelihood in indicating acceptability of online treatments. In addition, all interviews were conducted over the phone, and ranged in duration from 15 to 45 minutes, thus participants responses to discussing their experiences with perinatal anxiety was limited to their verbal discussions. Future research may benefit from face-to-face interviews to obtain a richer understanding of participant's experiences of perinatal anxiety and the effect of such experiences. Furthermore, the sample demographics are consistent with research in perinatal populations, however given the study sample comprised primarily of well-educated, older, and partnered women, the results may not be fully transferable to the general population. Additionally, inclusion criteria included self-reported anxiety, which was not verified through

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diagnosis or psychometric measures. Whilst self-reported symptoms can be prone to bias and may not reflect clinically relevant symptoms, during the interview participants were asked to discuss their experience and symptoms of perinatal anxiety, thus the veracity of their symptoms was ascertained by their explanation of their experiences. Nonetheless, future research should include self-report severity measures of anxiety and/or a diagnostic interview to confirm an anxiety diagnosis. Research exploring the specific experiences of differing anxiety presentations (i.e., social anxiety, generalized anxiety disorder, obsessive compulsive disorder, birth trauma etc.) may also offer a more comprehensive understanding of women's experiences and their perinatal specific worries and concerns.

Furthermore, there were a limited number of participants in the perinatal period, and the time between pregnancy and the experience of perinatal anxiety was not measured. This should be considered in future research, as participants' support systems and the health of the new infant, may have impacted women's treatment preferences and anxiety concerns during this period. Additionally, given the large age range in participants, different services may have been available at different times, and services currently available may not have been a viable option previously. Thus, future research should include a measure of anxiety and include a larger sample of participants in the perinatal period. Lastly, stated treatment preferences may not translate into actual treatment choices, thus observational studies may be more reliable in determining women's actual treatment choices.

Conclusion

The findings of this study indicate preliminary evidence to suggest that online treatments may be a more accessible treatment option for those with perinatal anxiety than traditional face-to-face treatments. However, several barriers, including accessibility, cost, and flexibility in session times, may need to be addressed in order for this modality of

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treatment to be widely accepted and utilised in this population. The findings suggest initial indication that an increased awareness of treatment options, especially psychological treatments delivered online, facilitated through general practitioners and obstetricians may have the potential to increase formal treatment uptake in this population.

Higher Degree Research Thesis by Publication
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STATEMENT OF AUTHORS' CONTRIBUTION

(To appear at the end of each thesis chapter submitted as an article/paper)

We, the PhD candidate and the candidate's Principal Supervisor, certify that all co-authors have consented to their work being included in the thesis and they have accepted the candidate's contribution as indicated in the *Statement of Originality*.

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Higher Degree Research Thesis by Publication University of New England**STATEMENT OF ORIGINALITY**

We, the PhD candidate and the candidate's Principal Supervisor, certify that the following text, figures and diagrams are the candidate's original work.

Type of work	Page number/s
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Chapter Five

The aim of Study 2 (Chapter Four) was to explore women's experiences of perinatal anxiety, the perceived barriers to accessing mental health services, and treatment preferences for women in the perinatal period using a qualitative approach. In terms of women's experiences of perinatal anxiety, several themes were identified including excessive worries about labour and of caring for the baby post-birth; worries relating to motherhood; and worries around functional impairment due to both mental and physical ill health during pregnancy and postpartum. Women identified feeling overwhelmed by the conflicting information they received regarding motherhood and discussed difficulties in relation to the physical changes they experienced and the impact of this on their identity. This information may assist in the development of perinatal anxiety specific treatment protocols that target the worries and concerns identified in the above study, however further research examining the most prominent symptoms of perinatal anxiety is needed to ensure treatment protocols target these.

Study 2 (Chapter Four) identified several perceived barriers to accessing treatment during the perinatal period, including accessibility, cost, and stigma, which are largely consistent with the existing literature that has been conducted in other countries (Arch, 2014; Millett et al., 2018; Woolhouse et al., 2009). However, the findings also indicated that Australian women residing in rural or remote locations experience additional barriers to those residing in metropolitan areas, including greater distance to accessing treatment, and isolation. This urban/rural difference has also been found to be significant for mental health conditions more broadly (Judd et al., 2006), and is due to attitudinal barriers, treatment costs, and distance to services (Handley et al., 2014).

Study 2 (Chapter Four) also found that women have a preference for face-to-face treatment and believe that this treatment approach is more personal and assists in establishing

rapport. This result is consistent with previous Australian research which has found that face-to-face treatment is the most preferred treatment delivery method for a variety of mental health conditions (Berle et al., 2015; McCausland et al., 2020; Robertson et al., 2020).

Participants in Study 2 (Chapter Four), however, also indicated that they were unaware of online treatment options. Given the numerous methods available for delivering psychological treatment, it is important to examine treatment preferences for perinatal anxiety when women are informed about the full range of treatment options.

While Study 2 (Chapter Four) identified women's treatment preferences and several barriers to accessing care, the existing literature indicates that treatment uptake is low (Xue et al., 2020). Thus, help-seeking intention and help-seeking behaviour warrants further investigation in this sample. Several theories and models have been proposed and examined in understanding help-seeking for mental health problems, including the Theory of Planned Behaviour (*TPB*; Ajzen, 1991), the Transtheoretical Model of Change (DiClemente & Prochaska, 1982), and Health Belief Model (HBM; Rosenstock, 1966). While these models have all been used to explore help-seeking they are not without their limitations. For example, the *TPB* and the transtheoretical model of change do not consider demographic factors in help-seeking intention. The HBM is one of the most widely applied theories of health behaviour and postulates that individuals are likely to engage in help-seeking behaviour depending on the individual's perceived susceptibility to the condition, perceived severity of the illness, and a cost-benefit analysis of the treatment barriers and outcomes (Rosenstock, 1966). The exploration of the HBM may help to understand treatment utilisation in women with perinatal anxiety, however, to date this has not been examined in the literature.

Despite providing preliminary data to highlight treatment preferences as well as barriers and facilitators in this population, several important limitations were apparent in

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Study 2 (Chapter Four). For instance, the study sample was comprised primarily of well-educated, older, and married or partnered women, thus the results may not be generalizable to the broader population. Additionally, the entirety of recruitment was conducted online through social media advertisements, thus all participants are likely to have sound online and computer skills, which may have influenced their openness to online treatments. Furthermore, there were a limited number of participants currently experiencing anxiety or currently within the perinatal period, and the time between the perinatal period and the interview was not recorded. Thus, the majority of participants were discussing their experience of perinatal anxiety in retrospect which may have been subject to bias and participants' accurate memory recall. Finally, an inclusion criterion for the study was self-reported anxiety during the perinatal period, which was not verified through diagnosis or psychometric measures. Given this, future research should focus on recruiting a larger sample of participants who are currently in the perinatal period, and should include a well-established measure of anxiety to ensure participants are experiencing clinically significant levels of anxiety.

Therefore, the aim of Study 3 (Chapter Six) was to replicate and extend the findings of Study 2 (Chapter Four) using a quantitative research methodology. A quantitative approach was used for this study as such approaches are valuable in collecting 'factual' data regarding general, or previously obtained, information in relation to opinions, attitudes, beliefs and preferences (Hammarberg et al., 2016; Johnson et al., 2007). Additionally, all research methods are inherently flawed and thus mixed methods and multi-methods research, which combines methodologies to provide richer information, can mitigate the limitations of any one approach (Turner et al., 2017). Mixed and multi-methods research is founded on the idea of increased understanding through methodological triangulation (Turner et al., 2017). Triangulation refers to using multiple, differing approaches to generate better understanding

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of given concepts or theories (Burton & Obel, 2011) and may include the use of both qualitative and quantitative research (Hammarberg et al., 2016; Risjord et al., 2002).

Chapter Six

(Study 3)

Help-Seeking and Treatment Delivery Preferences for Women Experiencing Perinatal Anxiety Symptoms

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Abstract

Background: Anxiety is common during the perinatal period and despite effective treatments being available, many women with perinatal anxiety disorders experience barriers when accessing treatment. **Aims:** The aims of the current study were to explore women's perceived barriers to treatment uptake; cognitive behavioural therapy treatment delivery preferences; and the utility of the Health Belief Model (HBM) in predicting intention to seek psychological help for women with perinatal anxiety symptoms. **Method:** This study employed a cross-sectional design comprising women with self-reported anxiety in the perinatal period. A total of 216 women ($M_{\text{age}} = 28.53$ years; $SD = 4.97$) participated in the study by completing a battery of online self-report measures. **Results:** The results indicated that the most salient barriers to accessing care were: (1) the cost of treatment, (2) wanting to solve the problem on their own, and (3) thinking the problem would go away without treatment. Group-delivered CBT was the least acceptable treatment method, while face-to-face individual CBT was the most acceptable treatment method. The HBM variables predicted approximately 35% of the variance in help seeking intention. **Discussion:** This study has important implications for the delivery of psychological care in the perinatal period and may be used to improve treatment uptake.

Keywords: Pregnancy; Perinatal; Anxiety; Treatment; Health Belief Model

Help-Seeking and Treatment Delivery Preferences for Perinatal Anxiety

Perinatal anxiety refers to anxiety symptoms experienced during the perinatal period, defined as pregnancy through to 12-months postpartum (Austin et al., 2017). The Mental Health Care in the Perinatal Period Australian Clinical Practice Guideline (Austin et al., 2017) highlights that mental health conditions in the perinatal period often go undetected, however research indicated that up to 15% of women experience significant anxiety symptoms during pregnancy, and up to 20% of women experience significant anxiety symptoms postpartum (Goodman et al., 2016). Numerous studies have demonstrated women with perinatal mental health symptoms often do not seek help, despite treatment options being available (Maguire et al., 2018). For example, Henshaw et al. (2013) and Woolhouse et al. (2009) found that only about half of women with significant anxiety or depressive symptoms during the perinatal period had sought help from a mental health professional. Furthermore, it appears that the majority of women who are given referrals to treatment for mental health conditions experienced during the perinatal period do not follow through with attending their first appointment or taking their prescribed medication (Woolhouse et al., 2009).

To date, few studies have specifically explored the perceived barriers to accessing psychological support for women experiencing perinatal anxiety symptoms. Goodman (2009) found that the most prevalent perceived barriers to accessing treatment for perinatal depressive symptoms were a lack of time, stigma associated with accessing mental health, and lack of childcare whilst attending appointments. In a qualitative study, Maguire et al. (2022) found similar results, with lack of time, concerns about confidentiality, and stigma identified as the main barriers to help-seeking. This study also found that women residing in rural or remote geographical locations reported additional barriers to accessing psychological treatment during the perinatal period, including distance, isolation, and lack of support network

(Maguire et al., 2022). Whilst the aforementioned studies have provided preliminary data on the barriers to accessing care, both studies have several limitations, including a small sample size (Maguire et al., 2022) and a focus on depressive rather than anxiety symptoms (Goodman, 2009). Additionally, due to Australia's unique healthcare system, which allows access to government subsidised psychological sessions, the barriers experienced in the Australian context may differ from those reported in international studies. Thus further research specifically exploring the ubiquity of these perceived barriers to accessing treatment in Australian women experiencing clinically significant symptoms of perinatal anxiety is needed.

The Health Belief Model (HBM; (Rosenstock, 1966) is a useful theoretical framework to examine help-seeking behaviour. The model postulates that an individual's engagement in health behaviours depends on the degree to which an individual perceives: (1) they are susceptible to the illness, (2) that the illness is severe, (3) the benefits to taking action, and (4) limited barriers to acting against the illness (Rosenstock, 1966). The HBM postulates that demographic variables (e.g., age, gender, education) and external influences (e.g., cues to action such as information, past health behaviour) influence an individual's perceptions of illness susceptibility and severity, benefits of treatment, and barriers to accessing treatment. There is a growing body of evidence indicating that the HBM can accurately predict physical health help-seeking behaviours, such as those relating to healthy eating (Mascioli & Davis, 2019), vaccinations (Scherr et al., 2017), and breast screening (Farajzadegan et al., 2016).

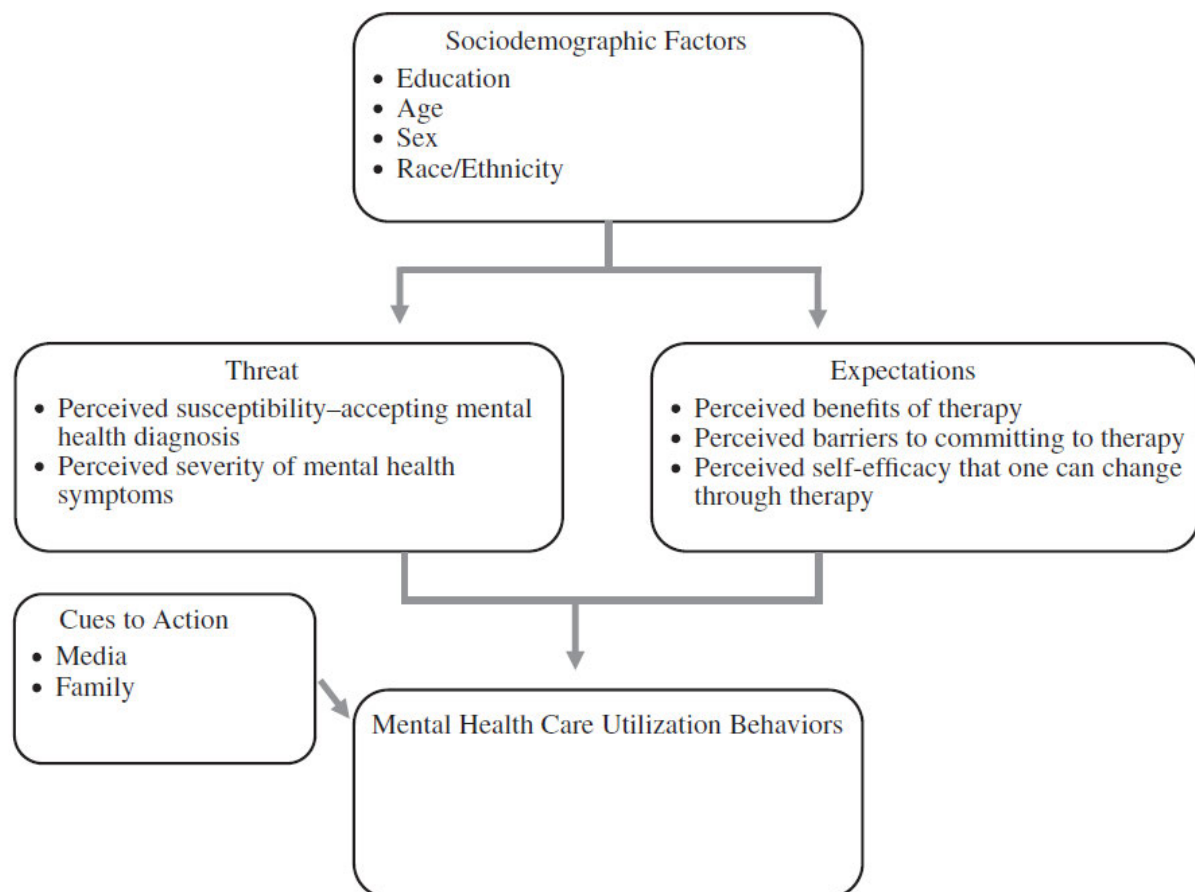
While the bulk of the literature examining the HBM is focused on help-seeking in relation to physical health conditions, a modified HBM has been proposed to predict help-seeking behaviour in relation to mental health conditions (Henshaw & Freedman-Doan, 2009). The amended model (Figure 4.1) proposes that three variables impact treatment utilisation behaviours in mental health conditions, including threat (i.e., the individuals

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beliefs about their susceptibility to the condition and the severity of the condition); expectations (i.e., perceived benefits, perceived barriers, and self-efficacy); and cues to action (i.e., factors that make the threat of the condition prominent). Consistent with the original HBM, the amended HBM indicates that several demographic variables (i.e., education, sex, ethnicity, and age) impact threat and expectancies correlates of help-seeking behaviour (Henshaw & Freedman-Doan, 2009). This modified HBM has been examined in participants with mental health conditions such as anxiety and depression and has been found to explain 49% and 51% of the variance in help-seeking in these diagnostic groups, respectively (Langley et al., 2020; Langley et al., 2018).

Figure 4.1

Conceptualising mental health care utilisation using the Health Belief Model (Henshaw & Freedman-Doan, 2009)



To promote and deliver acceptable treatment for women experiencing perinatal anxiety, it is important to examine women's treatment preferences. While few studies have explored this important topic, preliminary research indicates that during the perinatal period women have a preference for psychotherapy over medication (Goodman, 2009) when accessing treatment for mental health conditions. Cognitive behavioural therapy (CBT) has been found to be an efficacious treatment for perinatal anxiety symptoms (Maguire et al.,

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2018) and can be effectively delivered via a number of different treatment modalities. For instance, low intensity CBT interventions, such as internet-delivered CBT and bibliotherapy delivered CBT (which are largely self-help in nature) have been demonstrated to be effective in the treatment of anxiety and related disorders (i.e., Kladnitski et al., 2020; Wootton et al., 2011). High intensity CBT interventions include face-to-face individual and group-based CBT, as well as internet-videoconferencing and telephone delivered CBT. These high intensity treatment modalities have all been demonstrated to be effective in the treatment of a variety of mental health conditions in the general population (Matsumoto et al., 2020; Rees & Maclaine, 2015; Varker et al., 2019). There is also emerging evidence that both low intensity (Forsell et al., 2017) and high intensity (i.e., Milgrom et al. 2015; Misri et al. 2004) CBT can be effectively delivered specifically for perinatal anxiety symptoms. Despite the many treatment options available, there is a lack of research exploring treatment preferences for women experiencing perinatal anxiety symptoms.

Remote CBT has been an especially important treatment option during the COVID-19 pandemic. During this time therapists (and patients) were required to utilise these treatment approaches for the first time. Some studies have emerged demonstrating the efficacy of these approaches during the pandemic. For example, Komariah et al. (2022) conducted a meta-analysis exploring the efficacy of internet delivered CBT for the treatment of anxiety and depressive symptoms in the general population during the COVID-19 pandemic. The analysis included 12 randomized controlled studies and found the internet delivered CBT significantly decreased depression and anxiety scores (Komariah et al., 2022). In perinatal samples in particular, Puertas-Gonzalez et al. (2022) explored the efficacy of an eight-session internet delivered group CBT program for stress management in pregnant women. The study found that pregnant women who participated in the online intervention presented with lower rates of

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pregnancy-specific stress, and decreased anxiety, depression, and obsessions-compulsions symptoms (Puertas-Gonzalez et al., 2022).

Given the prevalence of perinatal anxiety and the small proportion of women who access psychological treatment, further research is required in order to increase treatment uptake. Therefore, the present study aims to address the abovementioned gaps in the existing literature by examining: (1) the barriers to treatment uptake for women with perinatal anxiety; (2) the CBT treatment delivery preferences of women with perinatal anxiety; and (3) the utility of the HBM to predict treatment intention of women with perinatal anxiety. The study is exploratory with no a-priori hypotheses.

Method

Participants

A total of 216 women ($M_{\text{age}} = 28.57$ years; $SD = 4.91$) provided consent and met study inclusion criteria. To be included in this study, participants were required to be: (a) a woman within the perinatal period (i.e., in their first trimester of pregnancy up to 12 months post birth), (b) 18 years of age or older, (c) be experiencing symptoms of anxiety as determined by a score of ≥ 8 on the Overall Anxiety Severity and Impairment Scale (OASIS; Norman et al., 2006), (d) be fluent in written and spoken English, and (e) be located in Australia. Exclusion criteria included high levels of suicidality as indicated by a score of 3 on question 10 of the Edinburgh Postnatal Depression Scale (EPDS; Cox et al., 1987). Table 4.1 outlines participant demographic information and descriptive statistics for all key study variables.

Procedure

The current study was approved by the Human Research Ethics Committee of the University of New England. The authors have abided by the Ethical Principles of

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Psychologists and Code of Conduct as set out by the British Association for Behavioural and Cognitive Psychotherapies and the British Psychological Society. The study employed a cross sectional design and participants were a convenience sample of women who were recruited using noticeboard advertisements in community health centres, and social media posts on pregnancy-related social media pages. The measures were administered online using QualtricsTM (Qualtrics, Provo, UT). Participants accessed the online study link provided on the advertisements, which opened the participant information sheet and consent form. Participants who provided consent moved on to study questionnaires and participants could opt out at any time (however questions could not be skipped). Participants who did not meet inclusion criteria were automatically excluded from the study and were taken to an exit page of the survey. This final page contained information on 24-hour crisis lines and recommended that the participant speak with their General Practitioner about their mental health concerns. All participants were provided information on 24-hour crisis services in both the participant information sheet as well as the final page of the survey. Participants who met inclusion criteria were offered the opportunity to enter a prize draw to win a \$50 gift card to a large Australian grocery chain on completion of the questionnaire. The questionnaire was administered in a fixed order and took approximately 25 minutes to complete.

Measures

Demographic Questions

Participants completed a demographic questionnaire to obtain information relating to age, postcode, marital, employment and education status, medication use, and pregnancy details.

Overall Anxiety Severity and Impairment Scale (Norman et al., 2006)

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The Overall Anxiety Severity and Impairment Scale (OASIS) is a 5-item self-report measure used to assess the severity and impairment associated with anxiety symptoms. The OASIS total scores range from 0 to 20 and a cut-score of ≥ 8 demonstrates a probable anxiety disorder (Campbell-Sills et al., 2008). The scale has demonstrated excellent internal consistency in previous samples in the general population (Cronbach's α ranging from .80 to .84) (Campbell-Sills et al., 2008; Norman et al., 2006), however to date the psychometric properties of the scale have not been measured in a perinatal sample. Cronbach's α in the current sample was .72.

The Edinburgh Postnatal Depression Scale (Cox et al., 1987)

The Edinburgh Postnatal Depression Scale (EPDS) is the most widely used instrument for the assessment of depressive symptoms during the perinatal period. The scale consists of 10 items, where a cut-score of ≥ 13 demonstrates a probable depressive disorder (Cox et al., 1987). The EPDS reflects women's experiences over the past 7 days and includes one question (Item 10) regarding suicidal thoughts. The scale has demonstrated adequate internal consistency in previous perinatal samples ($\alpha = .79 - .88$) (Kheirabadi et al., 2012; Logsdon et al., 2009). Cronbach's α in the current sample was .83.

Barriers to Access to Care Evaluation Scale (Clement et al., 2012)

The Barriers to Access to Care Evaluation (BACE) is a 30-item scale designed to assess stigma, institutional, and attitudinal barriers related to help-seeking for mental health care. Participants were asked to indicate on a 4-point-Likert-scale, where 0 is *not at all* and 3 is *a lot*, which barriers are likely to inhibit their ability to access treatment. The BACE can be scored to create an overall score, or the mean of each individual barrier can be scored. Whilst the BACE has been adapted by other authors (i.e. to remove items such as "*concern that it might harm my chances when applying for jobs*" and "*not wanting a mental health problem to be on my record*"), and has been used in exploring help-seeking for postpartum depression

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in international studies (i.e. Azale et al., 2016), the original BACE was used in the current study as all items are applicable in the Australian context. Furthermore, the scale has demonstrated good internal consistency in previous samples in the general population ($\alpha = .61$ to $.80$) (Clement et al., 2012), however to date the psychometric properties of the scale have not been measured in perinatal samples. Cronbach's α in the current sample was $.90$.

Health Beliefs about Mental Illness – Susceptibility Scale (Saleeby, 2000)

The Health Beliefs about Mental Illness - Susceptibility Scale (HBMI-S) is a 5-item scale used to measure perceived susceptibility to developing an anxiety disorder. The scale was modified by the investigators to be specific to perinatal anxiety. For example, questions included perinatal anxiety specifiers, such as “*it is extremely likely that I will have emotional or nervous problems during the perinatal period*”. The scale is scored on a 5-point Likert scale where 1 = *strongly disagree* and 5 = *strongly agree*. The scale demonstrates adequate construct and content validity (Saleeby, 2000) and good internal consistency in previous samples ($\alpha = .76$ to $.95$) (Langley et al., 2018; Saleeby, 2000), however, to date the psychometric properties of the scale have not been measured in a perinatal sample. Cronbach's α in the current sample was $.88$.

Health Beliefs about Mental Illness – Benefits Scale (Saleeby, 2000)

The HBMI– Benefits Scale (HBMI-B) is a 4-item measure designed to measure perceived benefits of psychological help. The scale was modified by the investigators to be specific to perinatal anxiety symptoms. For example, questions included perinatal anxiety specifiers, such as “*Getting help for emotional or nervous problems during the perinatal period would prevent major problems with family and friends*”. The scale is scored on a 5-point Likert scale where 1 is *disagree* and 5 is *agree*. The scale has demonstrated good internal consistency in previous samples ($\alpha = .68$ to $.82$) (O'Connor et al., 2014; Saleeby,

2000), however to date the psychometric properties of the scale have not been measured in a perinatal sample. Cronbach's α in the current sample was .80.

Self-Efficacy Scale for Seeking Mental Health Care (Moore et al., 2015)

The Self-Efficacy Scale for Seeking Mental Health Care (SE-SMHC) is a 9-item scale that assesses participant's confidence in their ability to do each of the listed behaviours relating to seeking mental health care, such as *"find a place to get mental health treatment"*. The scale is scored on a 10-point Likert scale from 1 (*no confidence*) to 10 (*complete confidence*). The scale contains two subscales, SE-KNOW (one's confidence in their own ability to know how to successfully interface with mental health care systems) and SE-COPE (one's own confidence in their ability to cope with consequences of seeking care). The overall scale has demonstrated excellent internal consistency ($\alpha = .90$ to $.93$) in previous studies (Langley et al., 2020; Moore et al., 2015). Cronbach's α in the current sample was .87.

Mental Help Seeking Intention

Participants first read information about common symptoms and features of various anxiety disorders that may present during the perinatal period to ensure an informed response. Participants were asked to rate their degree of intention to access mental health professionals, with higher scores indicating greater intention to seek help. To assess help-seeking intention participants were asked to respond to the following question using a 7-point Likert scale, where 1 is *extremely unlikely* and 7 is *extremely likely*, *"if I had a mental health concern, I would seek help from a mental health professional"*. Participants were informed that *"for the purposes of this survey, "mental health professionals" include psychologists, psychiatrists, clinical social workers, and counsellors. Likewise, "mental health concerns" include issues ranging from personal difficulties (e.g., loss of a loved one) to mental illness (e.g., anxiety, depression)*. Given the scale only included one item, Cronbach's α was not computed.

Treatment Preferences Questionnaire

The Treatment Preferences Questionnaire (TPQ) has been used in previous studies (Robertson et al., 2020; Smith et al., 2021) and assesses cognitive-behavioural treatment delivery preferences. Participants were asked to indicate on a 10-point-Likert-scale, where 1 is *extremely unlikely* and 10 is *extremely likely* their likeliness to engage in each treatment type. Treatment types assessed included low intensity (i.e., self-help workbook etc.) and high intensity treatment options (i.e., therapy conducted in a therapist's office etc.). The TPQ has not been validated using perinatal samples previously.

Data analytic plan

Perceived barriers and treatment preferences were analysed using descriptive statistics. Independent samples *t* tests were used to explore differences in participant groups. Where assumptions were violated, the Mann-Whitney *U* test was conducted. For group differences effect estimates for Cohen's *d* were calculated for the model using the following equation, $d = \frac{M_1 - M_2}{S_P}$ (Cohen, 1992), where M^1 is the mean of group 1, M^2 is the mean of group 2, and S_P is the pooled standard deviation.

Finally, a hierarchical multiple regression analysis was conducted to examine whether intention to seek help for perinatal anxiety could be predicted by a set of the HBM variables (perceived susceptibility to the illness, perceived severity of the illness, perceived benefits of accessing treatment, perceived barriers to accessing treatment, self-efficacy and demographic variables). Before interpreting the results of the analysis, several assumptions were tested, and checks were performed. An examination of the Mahalanobis distance scores indicated multivariate outliers, which on further investigation of the cases revealed the individual response pattern across the variables was not sufficiently abnormal to indicate illegitimate respondents, or unrepresentative of the participant population. Examination of the parameter estimates, when excluded from the model, confirmed this, indicating that no cases

had a large influence on the regression parameters (Field, 2018), thus bootstrapping methods were employed. For regression analysis, effect estimates for Cohen's f^2 , and 95% confidence intervals, were calculated for the model using the following equation, $f^2 = \frac{R^2}{1-R^2}$ (Cohen, 1992), where R^2 = coefficient of determination. With these parameters, a minimum sample size of 193 participants was calculated. Furthermore, in line with Cohen (1992), values of .02, .15, and .35 were interpreted conventionally as small, medium, and large respectively. All data were analysed using IBM SPSS Statistics for Windows, Version 22 (Corp, 2020).

Results

Participant Characteristics

Table 4.1 presents descriptive statistics for all key study variables. The majority of the sample (73.6%; $n = 159$) reported either currently or previously seeking help from a mental health professional. All participants scored ≥ 8 on the OASIS, indicating clinically significant anxiety symptom, and (77.3%; $n=167$) indicated clinically significant depressive symptoms.

Table 4.1*Sample Characteristics (N = 216)*

Category	<i>n</i>	%	<i>M</i>	<i>SD</i>
Age	-	-	28.57	4.91
Relationship status				
<i>Married</i>	123	56.9	-	-
<i>Divorced</i>	5	2.3	-	-
<i>Separated</i>	9	4.2	-	-
<i>Never married</i>	79	36.6	-	-
Ethnicity				
<i>Australian</i>	191	88.4	-	-
<i>Indigenous or Torres Strait Islander</i>	9	4.2	-	-
<i>New Zealander</i>	1	0.5	-	-
<i>Asian</i>	2	0.9	-	-
<i>Middle Eastern</i>	2	0.9	-	-
<i>European</i>	4	1.9	-	-
<i>North American</i>	1	0.5	-	-
<i>South American</i>	1	0.5	-	-
<i>African</i>	1	0.5	-	-
<i>Other</i>	4	1.9	-	-
Education				
<i>Secondary school or below</i>	66	30.6	-	-
<i>Above secondary school (tertiary/trade qualification)</i>	150	69.4	-	-
Employment Status				

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<i>Employed full time</i>	28	13.0	-	-
<i>Employed part time/casual</i>	52	24.1	-	-
<i>Maternity leave/home duties</i>	116	53.7	-	-
<i>Student</i>	7	3.2	-	-
<i>Unemployed</i>	13	6	-	-
Medication Use (previously or current) (%yes)	56	25.9	-	-
Geographic location *				
<i>Urban</i>	200	92.6	-	-
<i>Rural/Remote</i>	16	7.4	-	-
Sexual Orientation				
<i>Heterosexual</i>	182	84.3	-	-
<i>Homosexual</i>	3	1.4	-	-
<i>Bisexual</i>	21	9.7	-	-
<i>Other</i>	6	2.8	-	-
<i>Decline to answer</i>	4	1.9	-	-
Parity				
<i>Nulliparous</i>	100	46.3	-	-
<i>Primiparous/multiparous</i>	116	53.7	-	-
Perinatal time point				
<i>First trimester</i>	14	6.5	-	-
<i>Second trimester</i>	42	19.4	-	-
<i>Third trimester</i>	39	18.1	-	-
<i>≤ 12 months post birth</i>	121	56.0	-	-
Variables				
<i>OASIS</i>	-	-	11.08	2.71

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<i>EPDS</i>	-	-	15.93	4.55
<i>MHSIQ</i>	-	-	4.82	1.75
<i>BACE</i>	-	-	31.55	16.14
<i>HBMI – S</i>	-	-	20.49	4.13
<i>HBMI – B</i>	-	-	16.69	3.25
<i>SE-SMHC</i>	-	-	66.54	17.79
<i>SE-know</i>	-	-	39.38	9.18
<i>SE-cope</i>	-	-	27.15	10.20

Note. *Geographical location based on Australian Statistical Geography Standard (ASGS)

Volume 5 – Remoteness Structure (*Australian Statistical Geography Standard (ASGS):*

Volume 5 - Remoteness Structure, 2018); OASIS=Overall Anxiety Severity and Impairment

Scale; EPDS =Edinburgh Postnatal Depression Scale; MHSIQ=Mental Help Seeking

Intention Question; BACE = Barriers to Access to Care Evaluation; HBMI=Health Beliefs

about Mental Illness Instrument; SE-SMHC=Self-Efficacy Scale for Seeking Mental Health

Care.

Barriers to Accessing Treatment

Table 4.2 provides a summary of the mean score and standard deviation of each individual perceived barrier to accessing treatment during the perinatal period. On a scale of 0 (*not at all*) to 3 (*a lot*), the most frequently endorsed major barrier was “*not being able to afford the financial costs involved*” ($M = 1.95$; $SD = 1.12$), followed by “*wanting to solve the problem on my own*” ($M = 1.85$; $SD = 1.07$), “*thinking the problem would get better by itself*” ($M = 1.67$; $SD = 1.04$), and “*concern that I might be seen as a bad parent*” ($M = 1.55$; $SD = 1.19$).

Independent samples t tests were used to compare barriers (calculated by mean score for each barrier) by participants with comorbid depressive symptoms ($n = 167$) to the barriers reported by those without comorbid depressive symptoms as assessed by the EDPS ($n = 49$). There were statistically significant differences between groups for several barriers (see Table 4.2) with those with comorbid depressive symptoms reported higher mean scores. Comparison of barriers for those living in a rural/remote location ($n = 16$) and those living in an urban location ($n = 200$) showed significant differences on several barriers (see Table 4.2), where those residing in urban locations reporting higher mean scores on the barrier.

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Table 4.2*Perceived Barriers to Accessing Treatment and Group Differences Based on Comorbid Depression Status and Location*

	Total		Group differences: Comorbid		Group differences: Location	
	Sample		depression			
Barriers	<i>M</i>	<i>SD</i>	<i>Statistic</i>	<i>Cohen's</i> <i>d</i>	<i>Statistic</i>	<i>Cohen's</i> <i>d</i>
Not being able to afford the financial costs involved	1.95	1.12	--	--	$t = 2.18, p = .031$	1.11
Wanting to solve the problem on my own	1.85	1.07	$t = -3.03, p = .003$	1.05	--	--
Thinking the problem would get better by itself	1.67	1.04	--	--	--	--
Concern that I might be seen as a bad parent	1.55	1.19	$t = -4.47, p = <.001$	1.15	--	--
Feeling embarrassed or ashamed	1.51	1.16	$t = -3.43, p = <.001$	1.13	--	--
Concern that I might be seen as weak for having a mental health problem	1.50	1.12	$t = -2.83, p = .005$	1.11	--	--
Dislike of talking about my feelings, emotions or thoughts	1.44	1.11	$t = -3.38, p = <.001$	1.08	--	--
Concern about what my family might think, say, do or feel	1.30	1.18	$t = -3.57, p = .001$	1.15	--	--
Thinking that professional care probably would not help	1.26	1.02	$t = -2.54, p = .01$	1.01	--	--

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Concerns about the treatments available (e.g., medication side effects)	1.25	1.10	$t = -4.11, p = <.001$	1.07	$t = 3.71, p = .001$	1.08
Concern that I might be seen as ‘crazy’	1.22	1.22	$t = -5.30, p = <.001$	1.17	--	--
Fear of being put in hospital against my will	1.10	1.19	$t = -4.56, p = <.001$	1.16	$t = 2.94, p = .008$	1.18
Having had previous bad experiences with professional care for mental health	1.10	1.11	$t = -3.31, p = .001$	1.09	--	--
Not wanting a mental health problem to be on my medical records	1.05	1.18	$t = -2.66, p = .009$	1.17	--	--
Concern that people I know might find out	1.00	1.19	$t = -5.52, p = <.001$	1.08	--	--
Concern that people might not take me seriously if they found out I was having professional care	0.99	1.11	$t = -4.86, p = <.001$	1.07	--	--
Being unsure where to go to get professional care	0.95	0.92	--	--	--	--
Thinking I did not have a problem	0.91	1.00	--	--	--	--
Having problems with childcare while I receive professional care	0.89	1.11	$t = -2.31, p = .023$	1.11	--	--

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Concern that my children may be taken into care or that I may lose access or custody without my agreement	0.88	1.17	$t = -4.61, p = <.001$	1.14	$t = 3.09, p = .005$	1.17
Difficulty taking time off work	0.82	1.10	--	--	--	--
Concern that it might harm my chances when applying for jobs	0.79	1.07	$t = -4.65, p = <.001$	1.04	--	--
Concern about what my friends might think, say or do	0.75	0.98	$t = -3.38, p = .001$	.96	--	--
Concern about what people at work might think, say or do	0.73	1.05	$t = -2.86, p = .005$	1.04	--	--
Problems with transport or travelling to appointments	0.70	1.00	--	--	--	--
Having no one who could help me get professional care	0.66	0.84	$t = -3.63, p = <.001$	.82	--	--
Preferring to get help from family or friends	0.61	0.92	--	--	--	--
Being too unwell to ask for help	0.57	0.87	$t = -2.85, p = .005$	.86	--	--
Preferring to get alternative forms of care (e.g., traditional / religious healing or alternative / complementary therapies)	0.43	0.77	--	--	--	--
Professionals from my own ethnic or cultural group not being available	0.15	0.50	--	--	--	--

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Note. $N = 216$. Each barrier item is scored on a 4-point scale, where 0 = *not at all* and 3 = *is a lot*, and higher mean scores on each barrier indicates greater endorsement of the barrier.

Utility of the HBM

In Step 1 of the hierarchical multiple regression, the demographic variables (age, geographical location, and education) were added to the model and accounted for a non-significant 0.5% of variance in help seeking intention, $F(3, 212) = .33, p = .81, R^2 = <.01$. The OASIS, perceived barriers, self-efficacy, perceived treatment benefits, and perceived susceptibility scales were added to the multivariate model in Step 2 and accounted for an additional 35% of variance in help seeking intention, $F(8, 207) = 13.95, p < .001, R^2 = .35$. Table 4.3 provides a summary of the correlation matrix of the study variables. According to Cohen's (1988) guidelines, a combined effect of this magnitude can be considered "large" ($f^2 = .54$). Results, summarised in Table 4.4, showed that self-efficacy ($\beta = .45, p < .001$) and perceived treatment benefits ($\beta = .25, p < .001$) were the only significant predictors and explained unique variance (13% and 5%, respectively) in help-seeking intention. This indicated that for each one standard deviation increase in perceived treatment benefits, there was an associated .25 *SD* increase in help-seeking intention. Similarly, for one *SD* increase in self-efficacy, there was .45 *SD* increase in help-seeking intention. The OASIS, perceived barriers, and perceived susceptibility scales were not significantly associated with greater help seeking intention.

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Table 4.3*Correlation Matrix of the Multivariate Model Variables*

Variable	1	2	3	4	5	6	7	8	9
1. Geographic location	-								
2. Education	-.20**	-							
3. Age	-.21***	.14*	-						
4. OASIS	-.03	.01	-.08*	-					
5. Perceived Barriers	-.09	-.10	-.16*	.23***	-				
6. SE-SMHC	.07	.10	.19	-.17*	-.57***	-			
7. HBMI – Perceived Benefits	.09	.03	.02**	.10**	-.07	.13	-		
8. HBMI – Susceptibility Scale	.07	.08	-.00	.23***	.14*	-.16**	.42***	-	
9. MHSIQ	-.00	.06	.03	-.04	-.34***	.50***	.34***	.11	-

Note. $N=216$. OASIS=Overall Anxiety Severity and Impairment Scale; HBMI=Health Beliefs about Mental Illness Instrument; SE-SMHC=Self-Efficacy Scale for Seeking Mental Health Care; MHSIQ=Mental Help Seeking Intention Question.

* $p < .05$. ** $p < .01$. *** $p < .001$.

Table 4.4*Summary of Hierarchical Multiple Regression Analysis: Predictors of Help-Seeking Intention*

Predictors	R^2	B	SE	β	BCa 95% CIs for B		sr^2
					LL	UP	
Step 1	<.01						
Constant		4.09	1.07		1.83	6.32	
Geographic location		.10	.48	.02	-.76	.98	<.01
Education		.24	.27	.06	-.27	.76	<.01
Age		.01	.03	.02	-.04	.05	<.01
Step 2	.35***						
Constant		1.10	1.21		-1.43	3.59	
Geographic location		-.62	.40	-.09	-1.43	-.14	.01
Education		-.04	.22	-.01	-.50	.41	<.01
Age		-.04	.02	-.10	-.07	<.01	.01
OASIS		.00	.04	<.01	-.08	.07	<.01
Perceived Barriers		-.01	.01	-.11	-0.03	.00	.01
SE-SMHC		.04	.01	.45***	.03	.06	.13
HBMI – Perceived Benefits		.13	.03	.25***	.05	.20	.05
HBMI – Susceptibility		.04	.03	.10	-.01	.10	.01

Note. $N = 216$. OASIS=Overall Anxiety Severity and Impairment Scale; SE-SMHC=Self-Efficacy Scale for Seeking Mental Health Care; HBMI=Health Beliefs about Mental Illness Instrument.

R^2 =the amount of variation in the outcome variable accounted for by the model,

B =unstandardised beta coefficients, SE = standard errors, β =standardised beta coefficients

BCa CIs=Bias-corrected and accelerated confidence intervals based on 1000 bootstrapped

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samples; *LL*=lower limit; *UL*=upper limit, and sr^2 =squared semi-partial correlation (amount of unique variance in the DV explained by a predictor after controlling for the other predictors in the model). *** $p < .001$

CBT Treatment Preferences

Overall, high-intensity individual face-to-face therapy was the most endorsed treatment preference ($M = 8.32$; $SD = 2.43$) followed by low-intensity therapy delivered via the internet ($M = 6.95$; $SD = 2.78$) or app ($M = 6.95$; $SD = 2.49$). The treatment endorsed the least favourably was group-based CBT ($M = 3.04$; $SD = 2.43$). Furthermore, therapy delivered via an app ($M = 6.95$; $SD = 2.49$) and therapy delivered via bibliotherapy (i.e., self-help books) ($M = 5.47$; $SD = 2.92$) were also rated highly by participants. Despite a preference for face-to-face therapy or therapy delivered via the internet, less than half of participants indicated that they would be extremely likely to utilise high intensity therapy delivered via videoconference ($M = 4.64$ $SD = 3.21$).

Mann-Whitney U tests were performed to compare CBT treatment preferences amongst those with and without comorbid depressive symptoms. Among all treatment preferences, group therapy was the only significant difference, where results indicated participants without comorbid depressive symptoms were more likely to engage in group therapy ($Mean Rank = 103.54$, $n = 167$), $U = 3536.00$, $z = -2.27$, $p = 0.02$, two-tailed), than those with comorbid depression. This effect can be described as medium in size ($r = .15$). Mann-Whitney U tests was also performed to compare CBT treatment preferences amongst those residing in urban areas and those residing in rural areas. There were no significant differences for treatment preferences amongst participants residing in rural areas and those residing in urban areas.

Discussion

The aims of the current study were to extend the literature by examining: (1) the barriers to treatment uptake for women experiencing perinatal anxiety symptoms, (2) the CBT treatment delivery preferences of women experiencing perinatal anxiety symptoms, and (3) the utility of the HBM to predict treatment intention of women experiencing perinatal

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anxiety symptoms. Given the small amount of literature in this research area, the study was designed as exploratory, with no a-priori hypotheses.

Barriers to Accessing Treatment

The current study revealed the most frequently endorsed barriers to accessing treatment during the perinatal period were related to: (1) the cost of treatment, (2) wanting to solve the problem alone, and (3) thinking the problem would go away. This finding is consistent with previous research exploring mental health help-seeking in the general Australian population (McCausland et al., 2021; Robertson et al., 2020; Smith et al., 2021) and in international studies (Marques et al., 2010), which have identified affordability as the most commonly reported barrier across mental health conditions. Previous research has also indicated that affordability is a pertinent barrier in perinatal samples. For instance, Smith et al. (2019) found that the cost of treatment was the most endorsed barriers to accessing care. Similarly, several Australian (Langley et al., 2020; Prins et al., 2011) and international studies (Heinig et al., 2021) conducted in the general population have identified a preference for dealing with one's own mental health concerns as a common barrier to accessing treatment, however to our knowledge this is the first study to report this barrier in a perinatal sample.

Further, the current study found participants experiencing symptoms of depression and anxiety were more likely to report higher mean scores on each barrier than those experiencing clinically significant anxiety symptoms alone. This is the first study to report these novel findings in the perinatal literature, however these findings are consistent with the literature demonstrating that those with higher levels of comorbidity have poorer mental health treatment outcomes in the general population (Gaspersz et al., 2018; Stålnert et al., 2022). These findings may have implications for the delivery of treatment, with those

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mothers' experiencing depression and anxiety symptoms potentially requiring additional assistance to overcome treatment barriers and greater support during treatment.

This study is one of the first to explore the difference in perceived barriers between Australian women residing in urban locations compared to those residing in rural locations. The findings indicate that barriers to accessing mental health care during the perinatal period are common for women residing in both rural and urban geographical locations, however some barriers were more significant for women residing in urban areas, including “not being able to afford the financial costs involved”, “concerns about the treatments available”, “fear of being put in hospital against my will”, and “concern that my children may be taken into care or that I may lose access or custody without my agreement”. Whilst this finding is consistent with international research which has found that some barriers, such as not knowing where to go for care, are more prominent in urban populations (Loftus et al., 2018), qualitative research exploring barriers to accessing mental health care in the perinatal period has found women residing in rural experience additional barriers to those residing in urban areas (Maguire et al., 2022).

Women's CBT Treatment Preferences

Consistent with the existing research exploring women's treatment preferences in the perinatal period (Goodman, 2009), the current study found the vast majority of women prefer individual face-to-face therapy. This result is also consistent with studies exploring CBT treatment preferences in the general population (McCausland et al., 2021; Robertson et al., 2020; Smith et al., 2021). Further, our results indicated participants with comorbid symptoms of anxiety and depression were less likely to engage in group therapy than those with symptoms of anxiety alone. Of the remote treatment options, women indicated a preference for CBT delivered via an app or via the internet and less than half of participants indicated they would be extremely likely to utilise high intensity therapy delivered via internet

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videoconferencing software. It is important that there is the availability of a variety of evidence-based treatment approaches for women experiencing clinically significant symptoms of perinatal anxiety to ensure treatments are available to meet the needs of all consumers.

Utility of the Health Belief Model

According to the HBM, individual's engagement in health behaviours is dependent on their perceived susceptibility to the illness, perceived severity of the illness, perceived benefits to taking action, and perceived barriers to acting against the illness (Rosenstock, 1966). Our study findings support the utility of the HBM in predicting help-seeking intention, as the HBM variables accounted for approximately 35% of variance in help-seeking intention, with self-efficacy and perceived treatment benefits as significant predictors. Though the HBM predicted help-seeking intention in the current study, the existing literature exploring the utility of the HBM in the general population in different diagnostic groups including depression (Langley et al., 2020) and anxiety (Langley et al., 2018) have found the HBM accounts for a higher variance in help-seeking intention (49% and 51%, respectively).

Perceived treatment benefits significantly predicted help seeking intention. This finding is consistent with the HBM model and similar studies findings in the general population (Hathorn et al., 2021; Langley et al., 2020). Therefore, mental health help-seeking may be increased if further emphasis is placed on increasing an individual's knowledge and understanding of the perceived treatment benefits. Providing brochures and posters in waiting rooms and examination rooms can provide information about perinatal anxiety symptoms and contact information for local, accessible, and evidence-based services, which may enhance perceived treatment benefits.

Self-efficacy also significantly predicted help seeking intention. While this is the first study to explore the HBM variables in predicting help-seeking intention during the perinatal

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period, this finding is consistent with other studies which have indicated that higher levels of self-efficacy are related to physical health help-seeking in premenopausal women (Chou & Shih, 2018) and in mental health help-seeking in adolescents (O'Connor et al., 2014).

Research suggests self-efficacy can be improved using brief interventions. For example, Franco-Antonio et al. (2021) explored interventions that encourage self-efficacy specifically in breastfeeding and found brief motivational interviewing resulted in higher self-efficacy and confidence in breastfeeding than a brief health education session. Given the current findings and literature exploring self-efficacy, it may be important for primary health physicians to provide women in the perinatal period with preventative education as well as a brief motivational interviewing session regarding help-seeking, as this may assist in building women's confidence, and subsequently their self-efficacy, resulting in higher levels of treatment seeking.

Furthermore, perceived symptom severity did not significantly predict help seeking intention. This finding is inconsistent with the HBM (Henshaw & Freedman-Doan, 2009) which indicates that symptom severity is associated with help seeking intention, however, to date the HBM has primarily been used to predict physical health help-seeking, thus physical health symptom severity may be perceived differently to mental health symptom severity. Despite this, the current findings are consistent with the existing research exploring help seeking intention in the general population, which has found that help seeking intention is not predicted by symptom severity (Langley et al., 2020; Langley et al., 2018). It is important to highlight, however, that the majority of participants (73.6%) in our sample reported either currently or previously seeking help from a mental health professional and while they were required to report clinically significant symptoms of anxiety, they were not provided with a formal anxiety disorder diagnosis. It is possible that the HBM may be more applicable to women who are treatment naïve and the provision of a formal diagnosis may also increase a

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patient's understanding of the severity of the condition which may potentially increase help-seeking behaviour.

Strengths and Limitations

The current study has several strengths. First, it builds on a small body of literature examining barriers to treatment for women with perinatal anxiety symptoms. Second, this study is the first to examine the CBT treatment preferences for women with perinatal anxiety symptoms, when a full spectrum of treatment options is presented. Finally, this was the first study to specifically explore the utility of the HBM in predicting future help-seeking intention for women experiencing significant perinatal anxiety symptoms.

The current study also has several limitations that require acknowledgement. First, the current study employed the use of a cross-sectional design which only allowed data to be collected at a single time point, therefore, casual inferences are not possible. The participants were also a self-selecting sample, rather than a representative sample, thus results may not be applicable to all women experiencing significant perinatal anxiety symptoms. There were also limitations to the collection of demographic information as it was assumed all participants were women. However gender was not explicitly assessed and participants may identify with a variety of other gender identities.

Second, the current study used self-report data obtained from screening assessments rather than a diagnostic interview, thus may not be generalisable to those with diagnosed anxiety disorders. Given we used a transdiagnostic measure of anxiety symptoms (i.e., OASIS), it is not clear what type of anxiety disorder the participant may be suffering from. Additionally, the assessed barriers were predetermined based on those outlined in the BACE. This measure has not previously been validated in a perinatal sample and individuals experiencing clinically significant anxiety symptoms during the perinatal period may have different barriers to those reported in the BACE. For example, women may seek treatment in

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order to reduce the impact of parental mental health problems on the child (Rominov et al., 2018). However, items assessing this are not included in the BACE. Similarly, the BACE asks at least one question about “*thinking professional care probably would not help*”, which may not be as relevant to a sample with a high proportion of individuals who are engaging or have had previous treatment, which is the case in this study.

Third, help-seeking intention was measured in this study by the use of a single item self-report questionnaire after reading information about various perinatal anxiety presentations and the measure does not measure actual help-seeking behaviour and while the HBM demonstrates potential in understanding help-seeking, it is not without limitations. For example, the HBM primarily explores the service user, rather than the services, thus the current study focuses predominantly on individual-related barriers, rather than service-related barriers. Further, the HBM does not explore motivation to seek help, for example research indicates that perinatal anxiety during pregnancy and early childhood is associated with increased emotional problems (Rees et al., 2019) and that perinatal anxiety has a significant negative effect on infant language development (Reck et al., 2018); which may prompt women to seek help.

Future Directions

It will be important for future research to examine a more exhaustive list of barriers that are more specific to women in the perinatal period, particularly in women who are treatment naive. Examining barriers in different gender identities may also be an important future research direction. Additionally, future research could assess the most prominent barriers in differing diagnostic groups (e.g., obsessive-compulsive disorder versus generalised anxiety disorder) and replicate our findings to investigate the different barriers that may be relevant to urban/rural participants and participants with a single-diagnosis vs. multiple diagnoses.

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Future research may also wish to investigate the efficacy of the various high intensity and low intensity CBT treatment approaches for women experiencing significant perinatal anxiety. This is especially important given the existing literature is currently quite small and the potential to require ongoing remote treatment options such as internet videoconferencing and telephone based treatment during the COVID-19 pandemic. It will also be important to examine the relative efficacy of the different treatments compared to each other in randomised controlled trials and ascertain how to potentially sequence treatments using a stepped-care model to ensure that treatments are provided in the future in the most cost-effective away.

Longitudinal research exploring help-seeking intention and subsequent behaviour over the gestation and the postnatal period is required to observe changes in components of the HBM. It would also be interesting to examine whether there are differences in help-seeking between the general population and the perinatal population. Given the role of perceived treatment benefits future research may wish to examine whether providing education and motivational interviewing as part of perinatal care can increase help-seeking. Lastly, based on the amount of variance self-efficacy and perceived treatment benefits contributed to the model, further research examining demographic factors that correlate with self-perception of perceived self-efficacy and perceived treatment benefits may be beneficial.

Conclusions

The aims of the current study were to examine treatment barriers and CBT treatment preferences for women experiencing perinatal anxiety symptoms as well as explore the utility of the HBM in predicting help-seeking intention. The study findings revealed that women with perinatal anxiety symptoms experience multiple barriers to accessing treatment, with the most salient barriers being (1) the cost of treatment, (2) wanting to solve the problem on their own, and (3) thinking the problem would go away without treatment. Additionally, the study

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found face-to-face individual CBT was the most acceptable treatment modality, whilst group-delivered CBT was the least favourable treatment method. In terms of predicting help-seeking for women with perinatal anxiety symptoms, only perceived self-efficacy and treatment benefits emerged as significant predictors. These findings have important implications for enhancing help-seeking for women who experience significant perinatal anxiety symptoms.

Higher Degree Research Thesis by Publication**University of New England****STATEMENT OF AUTHORS' CONTRIBUTION**

(To appear at the end of each thesis chapter submitted as an article/paper)

We, the PhD candidate and the candidate's Principal Supervisor, certify that all co-authors have consented to their work being included in the thesis and they have accepted the candidate's contribution as indicated in the *Statement of Originality*.

	Author's Name (please print clearly)	% of contribution
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Higher Degree Research Thesis by Publication University of New England**STATEMENT OF ORIGINALITY**

We, the PhD candidate and the candidate's Principal Supervisor, certify that the following text, figures and diagrams are the candidate's original work.

Type of work	Page number/s
All aspects, except for the assistance described in the Statement of Authors' Contribution above.	N/A

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Chapter Seven

Study 3 (Chapter Six) examined barriers to treatment uptake, CBT treatment delivery preferences and the utility of the HBM to predict help-seeking treatment intention in a large sample of women who were experiencing perinatal anxiety. The study found the most frequently cited perceived barriers to accessing treatment during the perinatal period were related to: (1) the cost of treatment, (2) wanting to solve the problem alone, (3) concern about being perceived as a bad parent, and (4) feeling ashamed or embarrassed. This is consistent with findings of Study 2 (Chapter Four) which indicated cost, and stigma were the most common barriers to accessing support during the perinatal period and is consistent with research studies examining treatment barriers in other samples (Blais & Renshaw, 2013; Robertson et al., 2020).

Study 3 (Chapter Six) also found a preference for individual therapy rather than group therapy, which is consistent with the existing literature on treatment preferences during the perinatal period of depressive symptoms (Goodman, 2009). Furthermore, findings of Study 3 (Chapter Six) indicated a preference for low intensity therapy delivered via the internet or via an app, followed by a preference for high intensity therapy conducted in a therapist's office. Interestingly, despite the aforementioned preferences, high intensity therapy delivered via videoconference was scored as '*extremely likely*' to be utilised by less than half of the participants. This may be due to the participants reporting they value rapport and their relationship with their therapist, which may be perceived as unattainable or reduced when treatment is provided via videoconference. Recent research exploring 'telepresence', (i.e., the sense that one is in the room with another and not in a remote location (Bouchard et al., 2011)) in CBT delivered via teleconference in the general population has found participants report high telepresence and high satisfaction with therapeutic alliance (Song & Foster, 2022). Given that therapy delivered via videoconference would offer women a treatment option that

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incorporates the most preferred treatment modalities (i.e., face-to-face and remote treatments), and as research indicates CBT delivered via videoconference is highly acceptable in the general population (Matsumoto et al., 2018a; Rees & MacLaine, 2015) therapy delivered via videoconference for the treatment of perinatal anxiety warrants further investigation.

In the general population, due to the high rates of comorbidity amongst internalising disorders (Falah-Hassani et al., 2016), there has been a shift towards the use of transdiagnostic CBT approaches rather than disorder-specific CBT (Dear et al., 2016a). To date, there are a small number of published studies exploring the efficacy of CBT for perinatal anxiety, however Study 1 (Chapter Two) provides preliminary evidence to suggest that transdiagnostic approaches are efficacious in the treatment of perinatal anxiety (Maguire et al., 2018). Given these findings, and the high prevalence of comorbidity amongst internalising disorders, further research is needed exploring the efficacy of transdiagnostic CBT for women experiencing perinatal anxiety disorders.

Thus, the aim of Study 4 (Chapter Eight) was to examine the acceptability and efficacy of a remotely delivered transdiagnostic treatment for postnatal anxiety. Postnatal anxiety (as opposed to perinatal anxiety) was specifically examined in this study for several reasons. First, consistent with Wenzel and Kleiman's (2014) model as well as the findings from Studies 2 and 3, the most common beliefs specific to perinatal anxiety are those related to post-birth experiences such as judgements about one's competence as a parent, what it means to be a mother, and concerns in relation to their baby being removed by child protection service. Second, if women in the prenatal period were included in the study they may give birth during the study and follow up time period, thus for pragmatic reasons the focus was on postnatal anxiety. Third, there are untested assumptions that exposure techniques and behavioural activation may be harmful to the foetus by causing temporary

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increased heart rate, stress, and anxiety in the mother (Arch et al. 2012), suggesting the infant may be subsequently negatively affected. Therefore, in the absence of clear evidence to support or contradict this assumption, for ethical reasons we decided to focus on the treatment of women who had already given birth.

While videoconferencing delivered CBT has been demonstrated to be efficacious in the treatment of anxiety disorders in the general population (Rees & Maclaine, 2015), it has not yet been evaluated in the treatment of perinatal anxiety. Thus, for this reason Study 4 used a case series design to explore the feasibility, efficacy, and acceptability of videoconferencing delivered transdiagnostic CBT for the treatment of postnatal anxiety. It is expected the results of the case design would be used to inform larger studies exploring the efficacy of this treatment approach.

Chapter Eight

(Study 4)

Efficacy and Acceptability of a Remotely Delivered Transdiagnostic CBT Treatment for Postnatal Anxiety: A Case Series

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Abstract

Objective: Women in the postnatal period are at a high risk of developing clinically significant symptoms of anxiety. Cognitive-behavioural therapy (CBT) is effective in the treatment of postnatal anxiety, however, there are many barriers to accessing this treatment.

Method: In the current study, three women ($M_{\text{age}} = 28.33$ years; $SD = 4.04$) with a postnatal anxiety-related disorder were treated using transdiagnostic CBT delivered remotely via internet videoconferencing. The treatment was delivered once per week over a 5-week period.

Results: Significant reductions were observed in anxiety symptoms from pre-to post-treatment, $t(2) = 6.43, p < .05$, and from pre-treatment to 3-month follow up, $t(2) = 12.12, p < .01$). There were also significant reduction in depressive symptoms from pre-treatment to 3-month follow up, $t(2) = 12.12, p < .05$. All participants met criteria for clinically significant change in anxiety symptoms at post-treatment, and one participant met criteria for clinically significant change in depressive symptoms, which was maintained at 3-month follow up. At post-treatment, 1/3 (33%) participants no-longer met diagnostic criteria for their primary anxiety-related disorder, at 3-month follow up this increased to all participants (100%). The intervention was also found to be acceptable by participants. **Conclusion:** The results provide preliminary evidence to suggest that remotely delivered transdiagnostic CBT is an acceptable and efficacious intervention for postnatal anxiety disorders.

Keywords: Postnatal; Anxiety; CBT; Remote treatment

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Key Points:

What is already known about this topic:

- Preliminary research indicates cognitive-behavioural therapy (CBT) is an effective treatment for postnatal anxiety
- Treatment uptake remains low, which may be due to several barriers that women experience accessing CBT during the postnatal period
- Limited research has explored the efficacy and acceptability of remotely delivered treatment

What this topic adds:

- Remotely delivered transdiagnostic CBT is an acceptable and efficacious intervention for postnatal anxiety
- Women reported the practical strategies discussed in the CBT intervention most helpful
- CBT may improve women's self-reported parenting confidence and maternal bonding with their infant

Efficacy and Acceptability of a Remotely Delivered Transdiagnostic CBT Treatment for Postnatal Anxiety and Related Disorders: A Case Series

Perinatal mental health is a leading public health concern due to its negative effect on both maternal and infant outcomes (Howard et al., 2014; Moehler et al., 2007). Anxiety disorders are common during the perinatal period (encompassing pregnancy and postpartum) (Austin et al., 2017). While anxiety disorders are frequently comorbid with depressive disorders during the perinatal period (Falah-Hassani et al., 2016), the treatment of perinatal anxiety disorders have received limited research and clinical attention. Elevated self-reported postnatal anxiety symptoms are found in approximately 18% of women in the first four weeks following childbirth and approximately 15% of women from four to 24 weeks post birth, with higher rates in low to middle-income countries (Dennis et al., 2017). Anxiety symptoms in the perinatal period may result in problems with mother-infant bonding and attachment difficulties (Moehler et al., 2006), negative and disengaged parenting, and overcontrolling maternal behaviours, which may increase the likelihood of future infant and child internalising and externalising behaviours (Shaw et al., 2020).

Postnatal anxiety is characterised by excessive fears and worry, often focussed on fear of childbirth, parenting, foetal well-being, or maternal and/or partner health and wellness, and resultant avoidance behaviours (Norman et al., 2006). Despite postnatal anxiety being common, to date the Diagnostic and Statistical Manual of Mental Disorders – 5th edition (DSM-5; American Psychiatric Association, 2013) does not include a specifier or acknowledgement regarding “with peripartum onset” to characterise anxiety disorders. Some DSM-5 anxiety disorders require symptoms to be present for at least 6 months, thus given the abrupt onset of symptoms post-delivery making a diagnosis of several anxiety disorders is difficult during the postnatal period. Given this, many women experiencing postnatal anxiety symptoms who do not meet DSM-5 diagnostic criteria for an anxiety disorder may be

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diagnosed with an adjustment disorder with anxious features. There is growing recognition that adjustment disorders characterised by symptoms of anxiety are prevalent among women in the postnatal period (Wynter et al., 2013). Despite anxiety and related disorders being common during the postnatal period, there are a lack of studies specifically examining the treatment of postnatal anxiety.

Cognitive-behavioural therapy (CBT) is considered the psychological treatment of choice for anxiety and related disorders in the general population, with multiple meta-analyses demonstrating that this treatment approach is efficacious in clinical trials (Carpenter et al., 2018), effective when disseminated as part of routine care (Etzelmueller et al., 2020), and acceptable to patients (Kayrouz et al., 2018). Improvements in symptoms after a course of CBT have also been found to be durable at 6-month follow-up (Carpenter et al., 2018). Despite CBT being an efficacious treatment approach for anxiety and related disorders in the general population, few studies have examined the efficacy of CBT targeting postnatal anxiety and related disorders. A recent meta-analysis that included a small number of studies ($N = 13$) demonstrated the preliminary efficacy of CBT for perinatal anxiety, finding an overall pooled effect size of $d = 0.90$ (Maguire et al., 2018). However, further research is required due to the significant methodological limitations seen in existing studies (Maguire et al., 2018).

Traditionally CBT was delivered in a disorder-specific format where the primary anxiety disorder was treated before moving on to the treatment of secondary disorders (Challacombe & Salkovskis, 2011; Green et al., 2020). However, CBT can be disseminated more efficiently through transdiagnostic approaches, which are designed to address underlying emotional processes across disorders and treat multiple anxiety and related disorders simultaneously (McEvoy et al., 2009). In recent years, considerable evidence has accumulated that demonstrates the efficacy of transdiagnostic CBT for the treatment of

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anxiety and related disorders in the general population (Newby et al., 2016; Wootton et al., 2015) and transdiagnostic CBT has also been shown to be equivalent to disorder-specific CBT approaches (Barlow et al., 2017; Dear et al., 2016; Titov et al., 2015). Given this, transdiagnostic approaches may be especially appropriate during the perinatal and postnatal period, as women may be diagnosed with an adjustment disorder, and anxiety disorder, or both. Recently, the efficacy of transdiagnostic CBT approaches have been explored in perinatal and postnatal populations with mixed findings. For example, some studies have reported CBT results in significant improvements in postnatal distress (Bittner et al., 2014b; Forsell et al., 2017; Milgrom et al., 2015), while other studies have reported non-significant findings (Kim et al., 2014).

Despite the preliminary efficacy of CBT for perinatal anxiety, patients encounter a number of barriers when accessing care. For example, Woolhouse et al. (2009) explored postpartum women's perceptions of help-seeking for psychological symptoms and their perceived barriers to accessing treatment. The study found that those reporting significant anxiety symptoms were significantly less likely to seek help from a health professional (25% of women experiencing anxiety symptoms) compared to 46% of women experiencing depressive symptoms, and 64% experiencing comorbid anxiety and depressive symptoms (Woolhouse et al., 2009). Further, the study found that feeling uncomfortable or embarrassed about talking to a healthcare provider as the primary barrier to help-seeking for postnatal anxiety (Woolhouse et al., 2009). Maguire et al. (2022) found several perceived barriers to accessing treatment for anxiety during the perinatal period, including the cost of treatment; stigma regarding mental health concerns, accessing support, and being a "good enough mother"; time management difficulties; and women's preference to focus on their baby's needs during the postnatal period rather than their own needs.

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Remotely delivered CBT using internet-delivered videoconferencing is one strategy for reducing barriers and improving access to evidence-based treatment for individuals with postnatal anxiety. Videoconferencing delivered CBT (VCBT) has been demonstrated to be efficacious across several disorders including mixed mood and anxiety disorders (Stubbings et al., 2013) as well as obsessive-compulsive disorder, panic disorder, and social anxiety disorder (Matsumoto et al., 2018a). The acceptability of VCBT is mixed in existing research. For example, one study found that 83% of participants indicated a preference for VCBT over in person CBT (Matsumoto et al., 2018b). However, other studies have indicated that participants overwhelmingly prefer face-to-face treatment over VCBT (McCausland et al., 2021; Robertson et al., 2020; Smith et al., 2021), and others have found that VCBT is acceptable and preferred once patients trial the modality (Granberg et al., 2022; March et al., 2018). Additionally, for some patients face-to-face treatment is not an option due to accessibility difficulties and limited available treatment options, costs and fears regarding stigma of attending a therapists office, thus VCBT may be the only option for some patients. Despite the promise of VCBT, limited studies have explored the efficacy and acceptability of this approach for the treatment of postnatal anxiety and related disorders.

Given the limitations of the existing literature, the aim of the current study was to examine the efficacy and acceptability of a brief transdiagnostic VCBT intervention for postnatal anxiety and related disorders. It was hypothesised that: (1) participants self-reported symptoms of anxiety would reduce from pre-treatment to post-treatment and pre-treatment to 3-month follow up; (2) participants would meet criteria for clinically significant change at post-treatment and 3-month follow up; (3) participants would no longer meet diagnostic criteria for their primary anxiety or anxiety-related disorder at post-treatment and 3-month follow up; (4) remotely delivered transdiagnostic CBT would be perceived as an acceptable form of therapy, with high levels of treatment satisfaction reported; and (5) remotely

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delivered transdiagnostic CBT would improve parenting confidence and maternal feelings of emotional bonding with their baby.

Method

Design

The study used a case series design where all eligible participants received immediate treatment following meeting the inclusion criteria. Outcome measures were administered at screening to assess eligibility, and again at pre-treatment, post-treatment, and at 3-month follow up. The trial protocol was approved by the Human Research Ethics Committee of the University of New England, Armidale and is registered with the Australian New Zealand Clinical Trials Registry (ACTRN:12621000843853).

Inclusion criteria

To be included in this study, participants were required to be: (i) Currently in the first 10 months postpartum; (ii) English speaking; (iii) 18 years of age or above; (iv) have regular access to the internet; (v) meet DSM-5 diagnostic criteria for an anxiety or related disorder as primary as assessed by the Diagnostic Interview for Anxiety, Mood, and Obsessive-Compulsive and Related Neuropsychiatric Disorders (DIAMOND); (vi) no history of psychotic illness or bipolar disorder; and (vii) meet clinical cut-off (a score of at least 8) on the Overall Anxiety Severity and Impairment Scale (OASIS; (Norman et al., 2006)). Exclusion criteria consisted of: (i) not on a stable dose of pharmacological medication; (ii) reporting current suicidal ideation and intent as assessed by the DIAMOND; (iii) recent (i.e., past 3 months) suicide attempts or deliberate self-harm; and (iv) are at high risk of suicide as determined by a score of 3 on item 10 of the Edinburgh Postnatal Depression Scale (EPDS; (Cox et al., 1987)) or during the telephone interview (which was administered following the initial EPDS completion).

Participants

Participants were recruited using social media posts on pregnancy-related social media pages between June and November 2021. During this time, 16 women completed the screening questionnaire of which 10 were excluded from participating in the study due to not meeting eligibility (see Figure 1). Of those meeting eligibility criteria from the screening survey, 3 withdrew their application and 3 completed further eligibility assessment, including the administration of the DIAMOND, via telephone. During the telephone assessment, relevant DIAMOND modules, as determined by participants completion of the DIAMOND screener during screening, were administered to determine participants diagnoses and that they met inclusion criteria. All 3 participants who completed the telephone assessment ($M_{\text{age}} = 28.33$ years; $SD = 3.30$) met inclusion criteria and were included in the study. At the end of the telephone assessment, participants scheduled their first appointment time, which was scheduled for the week following the telephone assessment. Participants were then emailed their session time, including a link to the online platform where their session was to be conducted. The day prior to their session, participants were emailed a session reminder alongside the link to the outcome measures (i.e., pre-treatment initially, then weekly outcome measures throughout the duration of treatment, and post-treatment outcome measures on completion of therapy). Participant flow is outlined in Figure 1. Participant characteristics are described below.

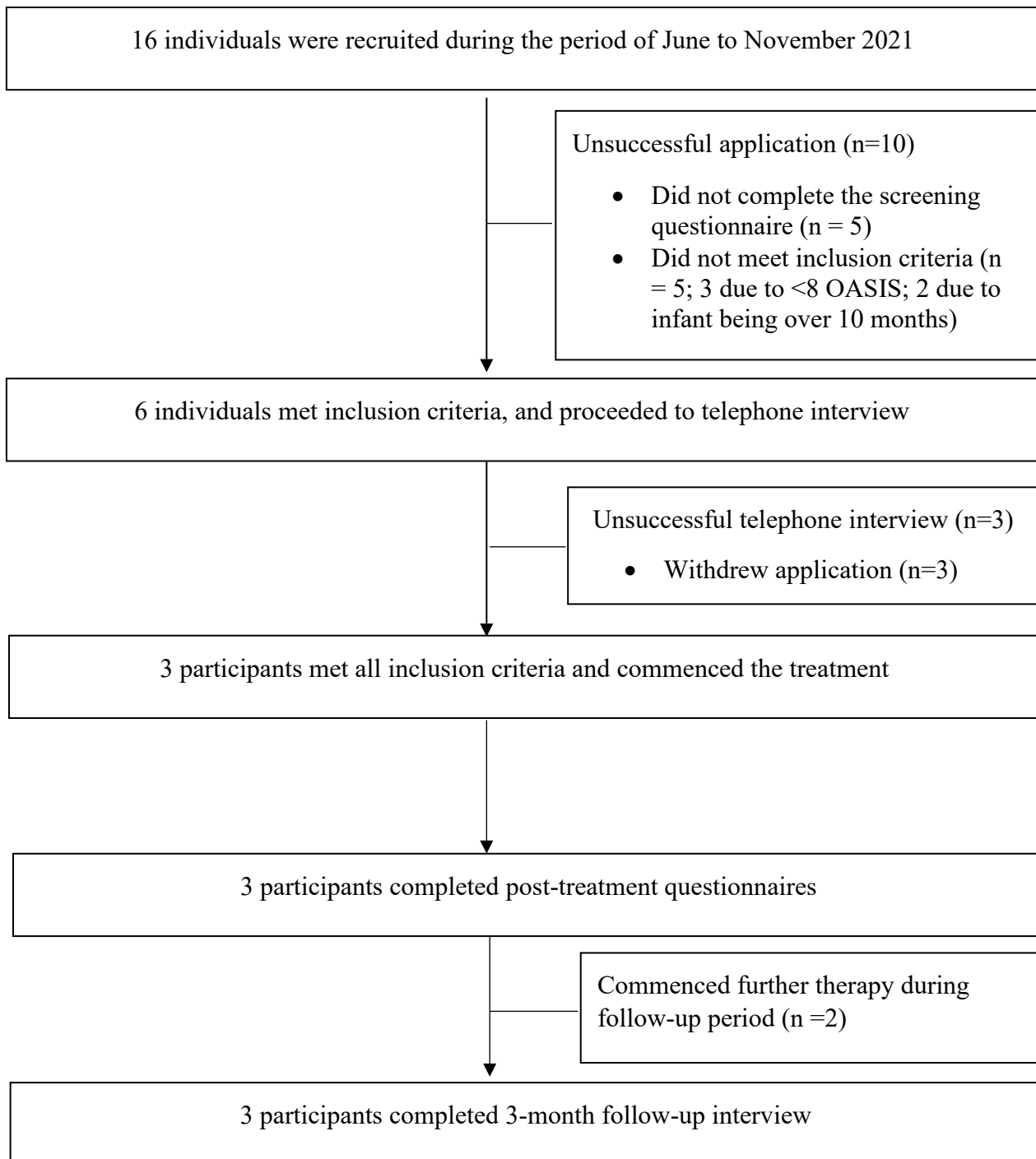
Participant 1. Participant was a 24-year-old nulliparous woman who experienced onset of anxiety symptoms following the birth of her child. Participant 1 was married/in a de facto relationship, and at the commencement of treatment, was three months postpartum. Her main worries and concerns were in relation to being a “good enough mother” and being “a good wife”. Participant 1 met criteria for an adjustment disorder, with anxiety (DSM code 309.24), including excessive and unreasonable worries, sleep disturbances (due to worrying),

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and checking behaviours. She was anxious about taking her child out in public and feared negative judgement from the public in relation to her being a bad mother. Participant 1 also met criteria for obsessive compulsive disorder (OCD; DSM code 300.3) as a secondary diagnosis. Participant 1 had previously accessed psychological support for symptoms of depression during late adolescence.

Participant 2. Participant was a 29-year-old nulliparous woman who had a history of mood disturbance. Participant 2 was married and at the commencement of treatment was 2 months postpartum. Participant 2 had previously accessed psychological support for symptoms of depression and anxiety and had a long-standing history of accessing supports, including therapy through a mental health care plan when aged 21 years, a hypnotherapist when aged 24 years, and several third wave interventions, as well as reading and watching self-help guides. Participant 2 reported a family history of anxiety and depression. Her anxiety primarily focused on her child being disadvantaged due to her being their mother, and around her own, as well as others, worth. She also discussed excessive worry regarding what others thought of her and others' perceptions of her as a mother, starting or maintaining conversations, meeting people who she did not know well, and eating or speaking in front of others. Specifically, she discussed excessive worries about going places where she did not know others (i.e., mothers' groups) due to concern about not liking the people there. Participant 2 reported a longstanding history of this, however stated the anxieties had recently magnified due to having a baby and having moved to a different town to reside. Participant 2 met diagnostic criteria for an adjustment disorder, with anxiety (DSM code 309.24), and for social anxiety disorder (DSM code 300.23) with mild impairment and distress. She also presented with current symptoms of major depressive disorder and met diagnostic criteria for major depressive disorder, recurrent, mild (DSM code 293.311).

Participant 3. Participant 3 was a 32-year-old multiparous woman with a history of postnatal depression and anxiety following the birth of her first-born child. Following the birth of her second child she had noticed increased anxiety and mood disturbance, thus commenced an antidepressant (selective serotonin reuptake inhibitor) medication to prevent a relapse of postnatal depression at three months postpartum. Participant 3's anxiety focused on her children's health, future plans and activities, and others' perceptions of her and her children. She met criteria for major depressive episode – severe in the past, and during the initial interview showed symptoms of major depressive disorder, however, did not meet DSM criteria for the diagnosis. She commenced the current program three months after initiating medication. Participant 3 met diagnostic criteria for an adjustment disorder, with anxiety (DSM code 309.24) and major depressive disorder in full remission (DSM code 296.26).

Figure 5.1*Participant flowchart*

Measures

Demographic Questions

The demographic questionnaire included questions relating to age, location, marital status, employment and education status, medication use, pregnancy details, and previous treatment history.

Diagnostic Interview for Anxiety, Mood, and OCD and Related Neuropsychiatric Disorders (DIAMOND) (Tolin et al., 2016)

Diagnostic status was assessed with the Diagnostic Interview for Anxiety, Mood, and Obsessive-Compulsive and Related Neuropsychiatric Disorders (DIAMOND), a structured diagnostic interview with strong psychometric properties that is consonant with the diagnostic criteria for DSM-5. The DIAMOND has very good to excellent test-retest reliability ($K = .68 - .96$) and very good to excellent ($K = .66 - .88$) interrater reliability for the anxiety disorders (Tolin et al., 2018b). The DIAMOND screener was delivered online, and the DIAMOND interview administered over the telephone. Participants responses on the DIAMOND screener determined which modules of the DIAMOND interview were administered during the telephone assessment. The DIAMOND was administered by the first author, who had completed a structured training course on the delivery of the DIAMOND.

Overall Anxiety Severity and Impairment Scale (Norman et al., 2006)

The Overall Anxiety Severity and Impairment Scale (OASIS) is a 5-item self-report measure designed to assess the severity and impairment associated with anxiety disorders. Total scores range from 0 to 20, and a cut-score of ≥ 8 has been determined as indicative of a probable anxiety disorder (Norman et al., 2006). The scale has high alpha reliability coefficients ranging from 0.80 to 0.84 (Campbell-Sills et al., 2008; Norman et al., 2006). The OASIS was the primary outcome measure in the current study.

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Kessler 10 (K-10) (Kessler et al., 2002)

The K-10 is a widely used scale designed to measure global psychological distress over the past two weeks. Total score ranges from 10 to 50, and results are divided into four levels to indicate prevalence and severity (i.e., 10-15 indicating *low*, 16-21 indicating *moderate*, 22-29 indicating *high*, and 30-50 indicating *very high*) (ABS, 2001). The scale shows strong internal consistency in antenatal samples, with an alpha coefficient of .83 (Spies et al., 2009).

The Edinburgh Postnatal Depression Scale (Cox et al., 1987)

The Edinburgh Postnatal Depression Scale (EPDS) is a widely used measure for assessing symptoms of anxiety and depression in the perinatal and postnatal period. The scale consists of 10 items and is scored on a Likert-scale. Scores range from 0 to 30, and a cut-off score of ≥ 13 has been determined as adequate for a diagnosis of depression (Cox et al., 1987). The scale is used internationally and is considered a valid and reliable measure, with high internal consistency and a Cronbach's alpha of .79 to .88 (Kheirabadi et al., 2012; Logsdon et al., 2009).

Maternal Postnatal Attachment Scale (Condon & Corkindale, 1998)

The Maternal Postnatal Attachment Scale (MPAS) is a 19-item scale designed to measure maternal feelings of emotional bonding to the baby. Whilst this is not a diagnostic assessment, higher scores indicate more adaptive mother-baby bonding style. The scale has demonstrated acceptable internal consistency in previous samples, with an alpha coefficient of .85 (Loughnan et al 2019b).

Karitane Parenting Confidence Scale (Crncec et al., 2008)

The Karitane Parenting Confidence Scale (KPCS) is a 15-item measure designed to assess perceived parental self-efficacy, with higher scores indicating higher parenting confidence. Whilst not a diagnostic tool, scores below 40 are indicative of lower-than-average parenting confidence. The KPCS has strong internal consistency in postpartum samples, with an alpha coefficient of .84 (Loughnan et al 2019b).

Client Satisfaction Questionnaire (CSQ-8) (Larsen et al., 1979)

The Client Satisfaction Questionnaire (CSQ-8) is an 8-item self-report measure designed to assess participants' satisfaction and acceptability of treatment. A score of 22 or above is indicative of adequate satisfaction with treatment (Kelly et al., 2018). The CSQ-8 has strong internal consistency in previous samples with Cronbach's alpha ranging from .92 - .93 (Kelly et al., 2018; Larsen et al., 1979). Additionally, participants were invited to provide verbal feedback during the post-treatment interview.

Adherence

Adherence was measured by participants self-reported time spent practising the skills discussed in session each day and treatment completion.

Treatment

The treatment consisted of 5 x 50-minute weekly sessions, which were conducted via Zoom. Treatment was manualised and the session content included: (1) psychoeducation; (2) cognitive restructuring; (3) arousal reduction; (4) exposure; and (5) relapse prevention. Participants received "homework" tasks at the end of each session which they were required to email to the clinician prior to the subsequent session. Sessions were recorded for quality and supervision purposes. The treatment was delivered by the first author (PM), who is a

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registered psychologist and treatment fidelity was assessed by the third (SC) and last (BMW) authors, who are experienced clinical psychologists with expertise in the treatment of anxiety disorders.

Procedure

The study was advertised on online pregnancy-related social media platforms and hardcopy advertisements on community noticeboards. Interested participants were required to read the participant information statement and provide consent prior to completing the following questionnaires in a fixed order: demographic questionnaire; DIAMOND screener; EPDS; and OASIS. Non-eligible persons were automatically taken to the end of the questionnaire and were strongly encouraged to speak to their primary care physician to identify local treatment options available.

Eligible participants were then contacted by the first author via telephone to arrange a suitable time to complete the DIAMOND interview and conduct a risk assessment. Participants who met all the inclusion criteria after this telephone screen then completed the online pre-treatment questionnaires (EPDS; OASIS; K-10; MPAS; KPCS) before commencing treatment.

Participants were also asked to complete online self-report questionnaires at post-treatment (EPDS; OASIS; K-10; MPAS; KPCS; CSQ) and at 3-month follow up (EPDS; OASIS; K-10; MPAS; KPCS). Several brief questionnaires (i.e., taking 2 to 5 minutes; EPDS; OASIS) were administered each week of treatment to allow the researcher to monitor participants' symptoms. All questionnaires were hosted on Qualtrics™ (Qualtrics, Provo, UT) and a link to the online survey was forwarded to participants via email prior to each study time point as well as prior their weekly treatment session. The DIAMOND module relevant to the primary diagnosis was also administered at post-treatment and 3-month follow up over the telephone.

Data Analysis

Descriptive data were used to describe the participant sample. Clinical improvement was calculated in three ways. First, outcomes were pooled across participants on the OASIS, K-10, EPDS, MPAS, and KPCS, and pre-treatment to post-treatment and pre-treatment to 3-month follow-up scores were compared using paired-samples *t*-tests. Within-group effect sizes were not calculated given the small sample size. Second, the proportion of participants meeting criteria for clinically significant change were calculated for the EPDS, K-10, and OASIS. To meet criteria for clinically significant change participants were required to meet the reliable change index (Jacobson & Truax, 1991) and score below the relevant cut score on the measure after treatment (i.e., 13 on the EPDS, 10 on the K-10, and 8 on the OASIS). Further, a clinically meaningful reduction in depression and anxiety symptoms is indicated by a 4-point reduction on the EPDS (Matthey, 2004), a 7-point reduction on the K-10 (Rickwood et al., 2015), and a 4-point reduction on the OASIS (Moore et al., 2015). Thus, a decrease of 4-points on the OASIS or EDPS and a 7-point decrease on the K-10 would be considered reliable improvement. Finally, the proportion of participants who no longer met diagnostic criteria for their primary anxiety (or related) disorder was explored using the DIAMOND at post-treatment and 3-month follow up. Treatment acceptability was examined by examining post-treatment scores on the CSQ.

Results

Adherence

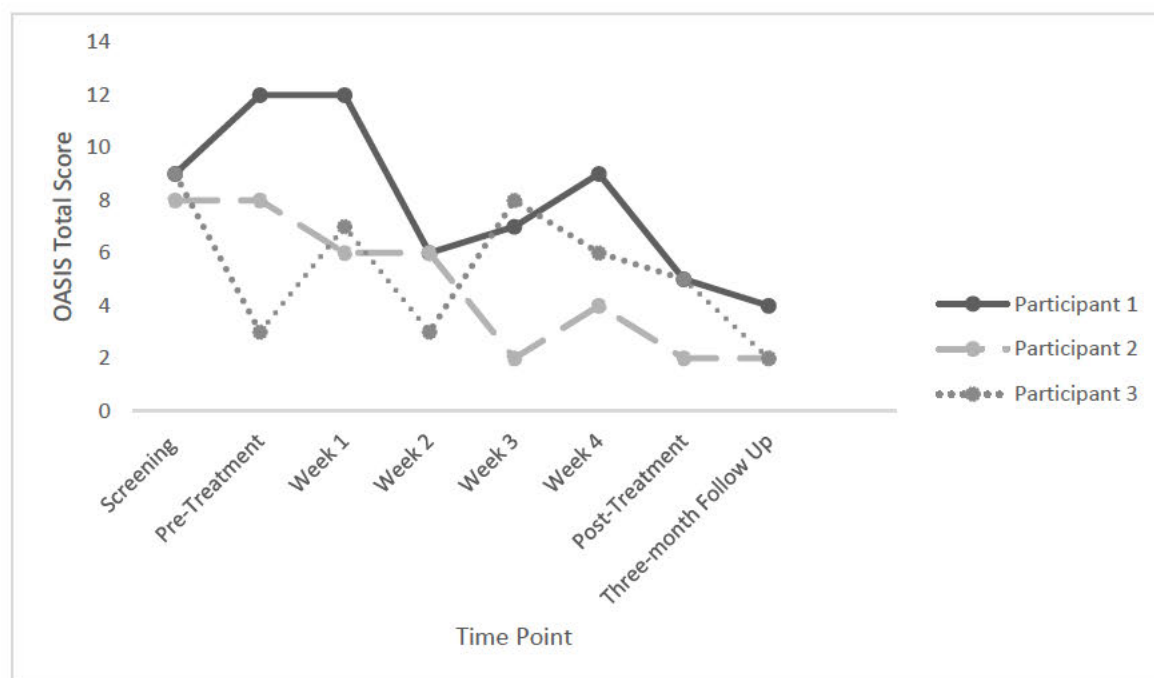
Adherence was measured by participants self-reported time spent practising the skills discussed in session each day. On average over the 5-week intervention participants reported they practiced their newly developed skills and completed their homework task for approximately 30 minutes each day ($SD = 29.54$ minutes per day). All participants attended all therapy sessions.

Symptom Change

The means and standard deviations for each of the outcome measures at pre-treatment, post-treatment and 3-month follow up are outlined in Table 5.1. Figure 5.2 demonstrates the weekly change on the OASIS for each participant. Paired-samples t -tests comparing pre-treatment and post-treatment scores revealed significant reductions on the primary outcome measure, the OASIS, $t(2) = 6.43, p < .05$. On the secondary outcomes, paired-samples t -tests demonstrated non-significant change from pre-treatment to post-treatment on the K-10, $t(2) = 1.53, p = .27$, EPDS $t(2) = 1.05, p = .41$, MPAS $t(2) = -1.58, p = .26$, and KPCS $t(2) = 0.00, p = 1.00$.

Figure 5.2

Participant's OASIS scores over the duration of treatment



Note. This figure demonstrates all participant's scores on the OASIS from pre-treatment through to three-month follow up.

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From pre-treatment to 3-month follow up, paired-samples t -tests indicated significant reductions on the primary outcome measure, the OASIS, $t(2) = 12.12, p < .01$. On the secondary outcomes, paired-samples t -tests demonstrated significant reductions from pre-treatment to 3-month follow up on the EPDS, $t(2) = 12.12, p < .05$. There was no statistical significant change from pre-treatment to 3-month follow up on the K-10, $t(2) = 3.05, p = .09$, MPAS, $t(2) = -1.55, p = .26$ and KPCS, $t(2) = 2.00, p = .18$.

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Table 5.1*Means and Standard Deviations for the Self Report Measures at Pre-Treatment, Post-Treatment and 3-Month Follow Up*

	Pre-treatment <i>M (SD)</i>	Post-treatment <i>M (SD)</i>	3-month follow up <i>M (SD)</i>
OASIS	9.67 (2.08)	4.00 (1.73)	2.67 (1.15)
EPDS	11.67 (4.51)	8.33 (2.89)	4.67 (4.04)
K-10	24.00 (7.55)	17.33 (4.04)	16.67 (3.06)
MPAS	71.00 (10.14)	77.63 (3.30)	78.10 (5.69)
KPCS	40.00 (3.61)	40.00 (3.00)	38.00 (3.61)
CSQ	-	31.33 (1.15)	-

Note. $N = 3$. OASIS = Overall Anxiety Severity and Impairment Scale; EPDS = Edinburgh Postnatal Depression Scale; K-10 = Kessler 10-Item Psychological Distress Scale; MPAS = Maternal Postnatal Attachment Scale; KPCS = Karitane Parenting Confidence Scale; CSQ = Client Satisfaction Questionnaire.

* $p < .05$. ** $p < .01$. *** $p < .001$.

Clinically Significant Change

At screening, all participants scored above the cut-off score of 8 on the OASIS. At pre-treatment, 2/3 (66%) of participants scored above this cut-off score, and at post-treatment 0/3 (0%) participants scored above this cut-off score, which was maintained at 3-month follow up. At screening, all participants scored above the cut-off score of 13 on the EPDS. At pre-treatment, 1/3 (33%) of participants scored above this cut-off score, and at post-treatment 0/3 (0%) participants scored above this cut-off score, which was maintained at 3-month follow up. Further, 2/3 (66%) of participants met criteria for reliable change on the primary outcome measure, the OASIS, from pre-treatment to post-treatment, and all participants met criteria for clinically significant change at 3-month follow up. Similarly, 2/3 (66%) of participants met criteria for reliable change on the secondary outcomes, the EPDS and K-10, from pre-treatment to post-treatment, and all participants met criteria for clinically significant change on the EPDS at 3-month follow up.

Diagnostic status

All participants met criteria for an adjustment disorder with anxiety at baseline on the DIAMOND as their primary mental health condition. At post-treatment, 1/3 (33%) participants no longer met diagnostic criteria for an adjustment disorder, and no participant met criteria for an adjustment disorder on the DIAMOND at 3-month follow up.

Acceptability

All participants scored above the cut-off score of 22 on the CSQ, indicating that the participants found the treatment to be acceptable. Text-based and verbal feedback indicated that the participants found the treatment helpful in recognising and understanding their emotions, thoughts and behaviours, and indicated participants found the strategies discussed and weekly homework tasks helpful. Participant feedback also indicated a preference for ongoing, longer-term treatment.

Discussion

The aim of the study was to assess the preliminary efficacy and acceptability of a transdiagnostic VCBT intervention for postnatal anxiety and related disorders. The hypotheses of the study were partially supported. Firstly, the study found that participants self-reported symptoms of anxiety on the OASIS reduced from pre-treatment to post-treatment and from pre-treatment to 3-month follow up. Secondly, all participants met criteria for clinically significant change at post-treatment and 3-month follow up on the OASIS, and one participant met criteria for clinically significant change in depressive symptoms, which was maintained at 3-month follow up. Thirdly, whilst it was hypothesised that participants would no longer meet diagnostic criteria for their primary anxiety or anxiety-related disorder at post-treatment and at 3-month follow up, this was only partially supported, as the findings found one participant no-longer met diagnostic criteria for their primary anxiety-related

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disorder, which increased to all participants at 3-month follow up. Fourthly, the study found that remotely delivered transdiagnostic CBT is an acceptable form of therapy, with all participants reporting high levels of treatment satisfaction. Lastly, whilst it was hypothesised that remotely delivered transdiagnostic CBT would improve parenting confidence and maternal feelings of emotional bonding, the current study found the intervention had little impact on this.

Overall, the results of this case series study provided preliminary evidence that significant reductions in anxiety symptomatology can be achieved from a brief, 5-session, VCBT intervention. The results of this study are consistent with previous studies that have examined the efficacy of CBT for post-natal anxiety and related disorders, such as Challacombe and Salkovskis (2011) study which explored the effectiveness of intensive CBT for women with postnatal obsessive-compulsive disorder, and found that all women improved on self-report and clinician-rated measures. Our findings are consistent with previous research examining the efficacy of VCBT for other anxiety and related conditions in the general population (Matsumoto et al., 2018a; Rees & Maclaine, 2015) and demonstrate that VCBT is a promising mode of delivery for women with perinatal anxiety and related disorders.

Symptom reduction on the secondary outcome measures was less pronounced in the present study. For example, depressive symptoms, as measured by the EPDS, significantly reduced only from pre-treatment to 3-month follow up. This might be due to low levels of depressive symptoms at baseline (pre-treatment) and post-treatment, and because the intervention did not specifically address depressive symptoms. Further, one participant's infant had ongoing health concerns, including several specialist medical appointments, which is likely to have impacted the participants mood and depressive symptoms throughout and following treatment. Furthermore, two participants sought mental health support between

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post-treatment and 3-month follow-up period, which may have affected their scores at the follow-up. Psychological distress, as measured by the K-10 did not change significantly from pre-treatment to post-treatment or from pre-treatment to 3-month follow up. This might be due to the K-10 having utility for the screening of only some anxiety and mood disorders in perinatal samples (Spies et al., 2009), and thus may not be sensitive to change in this sample.

The results of this study also indicate that beyond symptom reduction the VCBT intervention led to clinically meaningful change with all participants scoring below the OASIS cut score at post-treatment which was maintained at 3-month follow up. Similarly, diagnostic status also changed in response to the intervention with 1/3 (33%) participant no longer meeting diagnostic status for their primary mental health condition at post-treatment and all participants no longer meeting diagnostic status at 3-month follow up. However, it is important to consider that two participants pursued ongoing mental health support during the follow-up period, thus participants 3-month follow up data may not accurately reflect the extended outcomes of the treatment. Therefore, further research in larger samples with more diverse anxiety disorder diagnoses is required to explore the extended outcomes of the treatment.

The brief VCBT intervention was found to be highly acceptable to participants. Participants indicated that they found the treatment helpful in recognising and understanding their emotions, thoughts and behaviours. Further, the feedback received by participants in the current study indicated that women found the practical strategies discussed in session and weekly homework tasks helpful. This finding is consistent with other studies that have found that participants find remotely delivered CBT interventions to be acceptable (Marnoch, 2014; Romijn et al., 2021). However, despite the positive feedback, participants also indicated a preference for ongoing, longer-term treatment, and two of the participants sought ongoing mental health support during the follow-up period. Thus, future research might examine

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whether there is a dose-response relationship, or whether brief treatments are as effective as longer treatments. This is important given research in other anxiety and related disorders demonstrates equivalent outcomes in brief and lengthy treatments (Marchand et al., 2009).

However, our study found little impact of remote VCBT intervention in improving parenting confidence or maternal bonding. This could be due to the intervention not specifically addressing parenting confidence or maternal bonding, and might also reflect that the sample reported high levels of both parenting confidence and maternal bonding at pre-treatment. Our results are consistent with Burger et al (2020)'s findings, which found CBT for antenatal mental health problems has no-effect on mother-infant bonding (Burger et al., 2020b). Future research could include interventions within the treatment protocol to specifically address these variables.

While the results of this preliminary study are promising, it is also important to highlight a number of limitations. First, whilst the sample size was consistent with the aims of the study, which was to collect preliminary information regarding the efficacy and acceptability of the transdiagnostic VCBT intervention for perinatal anxiety, the small sample size limits generalisability. Additionally, two participants sought mental health support during the study follow-up period, which could have affected their follow-up outcomes and the associated change in participants' diagnostic status. It is important for future research to replicate this intervention with a larger sample size and using a more robust methodology, such a randomised controlled trial. Additionally, future research exploring the efficacy of this intervention should include qualitative reflections from both the participant and the researcher-clinician regarding the intervention and the different trajectories of each participant. This would provide further clinical information relating to the individual participants treatment and outcomes.

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Further, while numerous women attempted to participate, several did not meet eligibility criteria or did not proceed with the diagnostic interview. This could be due to women with newborn infants finding it difficult to find the time to participate in the telephone interview (Goodman, 2009), or based on the current findings, women may not have proceeded to the telephone interview due to anxiety regarding perceived judgement or concerns in relation to their baby being removed from their care (Maguire et al., 2022). Future research could explore alternative ways to complete diagnostic screening, including offering more psycho-education materials on the intervention and on the diagnostic interview process.

Third, our study sample experienced mild to moderate anxiety symptoms at baseline, reported a restricted number of anxiety disorders, and high levels of functioning, therefore, the efficacy of remotely delivered CBT with individuals with more marked/varied difficulties is unknown. Future research could examine the efficacy of a VCBT intervention in a larger sample of women with diverse backgrounds, levels of symptom severity, and more diverse anxiety and related disorders. This will help to assess whether the current findings are validated in larger samples and assess whether women of diverse backgrounds also deem VCBT for perinatal anxiety acceptable.

Fourth, the acceptability measures were administered at post-treatment, and thus were only completed by those who completed the treatment. The use of satisfaction measures throughout treatment could have been adopted which may have offered further information into which aspects of treatment participants were most satisfied with. It is also important to note that the first author conducted the diagnostic assessment, treatment, post-treatment diagnostic assessment and 3-month follow-up assessment, which might have resulted in bias from participants' feedback. Future research could utilise a treatment satisfaction measure weekly to further assess treatment satisfaction and acceptability and utilise independent

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therapists who are blind to the intervention to conduct the pre-, post-, and follow-up assessments.

The aim of the present case series was to evaluate the efficacy and acceptability of a remotely delivered VCBT protocol for postnatal anxiety. The results provide preliminary evidence for the efficacy of the protocol and for the acceptability of the remotely delivered treatment, however, further research using larger sample sizes is needed to consolidate these findings. Consolidation of these findings may inform future policy and may enhance treatment uptake during the postnatal period by offering an acceptable and alternative treatment approach.

Higher Degree Research Thesis by Publication**University of New England****STATEMENT OF AUTHORS' CONTRIBUTION**

(To appear at the end of each thesis chapter submitted as an article/paper)

We, the PhD candidate and the candidate's Principal Supervisor, certify that all co-authors have consented to their work being included in the thesis and they have accepted the candidate's contribution as indicated in the *Statement of Originality*.

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Higher Degree Research Thesis by Publication University of New England**STATEMENT OF ORIGINALITY**

We, the PhD candidate and the candidate's Principal Supervisor, certify that the following text, figures and diagrams are the candidate's original work.

Type of work	Page number/s
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Chapter Nine

Overall Discussion

Aims of the Research

The overarching goal of this thesis was to examine the efficacy and acceptability of CBT for the treatment of perinatal anxiety, and to explore the facilitators and perceived barriers of accessing treatment during the perinatal period. This was achieved across four separate studies, all of which are either published, or submitted for review in relevant journals. The specific aims of this program of research are outlined below.

1. To synthesise the current empirical status of CBT for perinatal anxiety;
2. To explore the efficacy of different CBT approaches in the existing literature;
3. To explore Australian women's experiences of perinatal anxiety, common symptomology, treatment preferences, and facilitators and barriers to accessing treatment during the perinatal period;
4. To examine the utility of the HBM variables in predicting future help-seeking intention; and
5. To examine the efficacy and acceptability of a remotely delivered transdiagnostic CBT intervention for postnatal anxiety using a case-series design.

Brief Review of the Study Outcomes

Study 1

Study 1 examined research aims 1 and 2 and used a meta-analytic approach. A total of 13 studies met the inclusion criteria and were included in the study. The results of Study 1 indicated that, overall, CBT is efficacious in the treatment of perinatal anxiety, with large within-group effect sizes seen from pre-treatment to post-treatment and from pre-treatment to

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follow-up. This result was consistent with the results of meta-analyses exploring the efficacy of CBT in the wider population (Stewart & Chambless, 2009) including in older adults (Gould et al., 2012) and in youth (Ewing et al., 2015). Whilst the results provided preliminary evidence of the efficacy of CBT for the treatment of perinatal anxiety, between-group effect sizes were small, indicating that CBT is only moderately more effective than non-active control conditions. Moderator analyses indicated that 1) interventions that contain an element of exposure produce larger effects than those that do not; 2) brief and standard CBT interventions result in similar effect sizes; and 3) individual CBT may be more effective than CBT delivered in a group setting. Study 1 also highlighted a number of limitations of the existing literature with the overall quality of most studies considered low. Study 1 demonstrated that there was a high level of heterogeneity within the studies, potentially due to differences in study design, CBT approaches used, suggesting not all treatments are equally effective.

This was the first meta-analysis that focused exclusively on CBT approaches for perinatal anxiety. This is an important addition to the existing literature, which to date has focused on the efficacy of treatments for perinatal depression. Given the existing literature indicates that perinatal anxiety is highly prevalent (Dennis et al., 2017) and frequently comorbid with depressive symptoms (Falah-Hassani et al., 2017) the current study further builds rationale for the use of TCBT techniques, as the findings indicated that TCBT may result in equivalent outcomes to disorder specific interventions. Further research to elucidate the true effects of the different treatment approaches are needed.

Study 2

Study 2 examined research aim 3 using a qualitative approach. The experiences and views of twenty women ($M_{age} = 34.65$ years, $SD = 8.68$) who were experiencing, or who had previously experienced, perinatal anxiety were examined using semi-structured interviews.

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Based on these interviews several global themes were identified in relation to treatment modality and accessibility, stigma regarding being a good enough mother, excessive worries concerning labour and caring for the baby and treatment preferences. Study 2 found women's anxiety was primarily driven by excessive worry relating to something happening to their infant, and their mothering abilities. Furthermore, results highlighted that the majority of women found information seeking overwhelming due to conflicting information regarding motherhood and due to concern about the stigma of accessing support and fear of being labelled a "bad parent". In relation to treatment preferences, Study 2 found women have a preference for face-to-face treatment due to their perception that this type of treatment delivery is more personal. Despite face-to-face treatment being the preferred modality, the majority of women indicated a preference for flexible, accessible treatment options, and indicated they would be willing to utilize remote treatments delivered via internet videoconferencing during the perinatal period if the treatments were available.

To date, this is the first study to explicitly explore women's experiences of perinatal anxiety. Further, whilst the existing literature provides some evidence to suggest that women experiencing perinatal mental health problems may prefer certain treatment approaches over others (i.e., psychotherapy is preferred over pharmacotherapy (Goodman, 2009; Ride & Lancsar, 2016)), the current study specifically explore women's treatment preferences in relation to formal versus informal treatment, treatment modality, and treatment focus. Thus, further research is needed to further build on and consolidate the results of Study 2 as these findings add important considerations to current treatment models for the treatment of perinatal mental health concerns.

Study 3

Study 3 examined research aims 3 and 4 and used a quantitative methodology. This study examined women's perceived barriers to treatment uptake; CBT treatment delivery

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preferences, and the utility of the HBM in predicting intention to seek psychological help for perinatal anxiety. A total of 216 pregnant women ($M_{\text{age}} = 28.53$ years; $SD = 4.97$) experiencing perinatal anxiety participated in the study and the results indicated that the most salient barriers to accessing care were: (1) the cost of treatment, (2) wanting to solve the problem on their own, and (3) thinking the problem would go away without treatment. This study further found that 35% of the variance in help-seeking intention can be accounted for by the HBM variables, however, self-efficacy and perceived treatment benefits were the only significant predictors and explained unique variance in help-seeking intention. Furthermore, and consistent with Study 2, Study 3 found most women prefer individual face-to-face therapy; and of the remote treatment options, women indicated a preference for CBT delivered via an app or via the internet.

The findings of Study 3 contribute to the existing literature exploring help-seeking and treatment uptake in the perinatal period and indicate that help-seeking intention can be accounted for primarily by self-efficacy and perceived treatment benefits. Additionally, this is one of the first studies to include remote treatment approaches when exploring women's treatment preferences. Given remote treatment approaches are efficacious in the treatment of anxiety and related disorders in the general population (Wootton et al., 2019) and in treatment of perinatal anxiety (Loughnan, et al., 2019b; Forsell, et al., 2017), the current study has important implications for service provisions during the perinatal period. Future research exploring actual help-seeking and treatment uptake, rather than help-seeking intention, and the efficacy and acceptability of remote treatment approaches is required.

Study 4

Study 4 examined research aim 5 by exploring the efficacy and acceptability of transdiagnostic CBT delivered remotely via internet videoconferencing. Three women ($M_{\text{age}} = 28.33$ years; $SD = 4.04$) with a postnatal anxiety-related disorder participated in the study.

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The results provided preliminary evidence suggesting that CBT may be efficacious in the treatment of postnatal anxiety, with all three participants meeting criteria for clinically significant change in anxiety symptoms at post-treatment, and one participant meeting criteria for clinically significant change in depressive symptoms, which was maintained at 3-month follow up. At post-treatment, 1/3 (33%) participants no longer met diagnostic criteria for their primary anxiety-related disorder, at 3-month follow up this increased to 3/3 participants (100%), however it is important to note that 2/3 (66%) of participants sought further mental health intervention between post-treatment and follow-up. Furthermore, there was no significant change in parenting confidence and maternal feelings of bonding towards their baby from pre-treatment to post-treatment or pre-treatment follow-up. Written and text-feedback indicated that the intervention was found to be acceptable by participants. The acceptability of the treatment protocol used in Study 4 is an important finding, as Study 2 and 3 found accessibility and cost as salient barriers to accessing treatment, which remotely delivered treatment may alleviate.

Additionally, in relation to the overall aim of this thesis to address some of the limitations in the existing literature regarding the acceptability and efficacy of CBT for perinatal anxiety, the findings from Study 4 add to the limited existing literature and consolidated the finding from Study 1, which highlighted transdiagnostic approaches may be as effective as disorder specific approaches in the treatment of perinatal anxiety. Further, the treatment protocol used in Study 4 was based on the amalgamated findings of Study 1, 2 and 3, and attempted to address women's treatment preferences, alleviate perceived barriers to accessing care, and treat common symptomology. Whilst the results from Study 4 provide preliminary evidence suggesting that remotely delivered transdiagnostic CBT is an acceptable and feasible intervention for postnatal anxiety, further investigation in more extensive studies with larger sample sizes is needed to consolidate these findings.

Theoretical Implications

The theoretical models utilised in thesis were the transdiagnostic CBT (TCBT) model (McEvoy et al., 2009) and the HBM (Rosenstock, 1966). The theoretical implications arising from the studies contained in this thesis are outlined below.

Transdiagnostic CBT Model

The TCBT model highlights that anxiety disorders share many common maintaining factors, including similar genetic vulnerabilities, negative affectivity, trait anxiety, and neuroticism (McEvoy et al., 2009). Thus, according to the model, treatment targeting those common factors can be applied across anxiety (and related) disorders. Additionally, TCBT treatment protocols have been found to be beneficial in treating clients presenting with complex anxiety diagnoses (Newby et al., 2015; Norton & Barrera, 2012; Pearl & Norton, 2017), and comorbid anxiety and depressive disorders (Norton & Barrera, 2012). This thesis contributed to the literature on the TCBT model in a number of ways. First, Study 1 (Chapter Two) demonstrated the preliminary efficacy of TCBT for the treatment of perinatal anxiety by pooling the results of TCBT for perinatal anxiety across studies. The findings demonstrated large effect sizes from pre-treatment to post-treatment in both the anxiety specific interventions and the TCBT interventions, indicating that TCBT is as effective as anxiety specific CBT interventions in the treatment of perinatal anxiety. This is consistent with the existing literature which indicates that TCBT is equivalent to disorder-specific CBT approaches (Barlow et al., 2017; Dear et al., 2016; Titov et al., 2015).

Second, Study 4 (Chapter Eight) demonstrated the acceptability and effectiveness of a remotely delivered TCBT intervention in the treatment of postnatal anxiety. The treatment protocol developed for this study contained transdiagnostic cognitive-behavioural techniques that aimed to address a range of anxiety symptoms which were identified in Study 2 (Chapter 4). The interventions were those that targeted the core maintaining factors of the model

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including cognitive beliefs and restructuring, arousal reduction, and behavioural modification and graded exposure. Consistent with the existing literature exploring CBT for postnatal anxiety (Challacombe & Salkovskis, 2011) and research examining the efficacy of VCBT for other anxiety and related conditions in the general population (Matsumoto et al., 2018; Rees & Maclaine, 2015), Study 4 found the TCBT intervention to be acceptable by participants and effective in the treatment of postnatal anxiety. Whilst the results provide preliminary evidence for the feasibility and acceptability of remotely delivered TCBT further research using larger sample sizes is needed to consolidate these findings. Consolidation of these findings may inform future policy and may enhance treatment uptake during the postnatal period by offering an acceptable and alternative treatment approach.

Health Belief Model

The HBM is one of the most widely applied theories of health behaviour. The HBM postulates that individuals are likely to engage in help-seeking behaviour depending on the individual's perception of their susceptibility to the condition, their perception of the severity of the illness, and a cost-benefit analysis of the treatment barriers and outcomes. The HBM was used in Study 3 to predict women's intention to seek help for perinatal anxiety.

Consistent with the existing literature (Langley et al., 2018), findings of Study 3 indicated 35% of variation in help-seeking is accounted for by the HBM variables. Based on the model (Henshaw & Freedman-Doan, 2009), it was expected the sociodemographic HBM variables (including age, education, and geographical location) would significantly contribute to the model, however findings from Study 3 found they did not make significant contributions to the model. This finding is consistent with the existing research examining help-seeking intention in an Australian population, which concluded that the sociodemographic HBM variables were not significant in predicting help-seeking intention (Langley et al., 2018). However, this finding is inconsistent with other studies that have found demographic

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variables are related to help-seeking behaviour. Study 3's findings may be related to restricted range within the sample, who were all female and mostly young and educated.

Further research is required to enhance our understanding of which demographic variables, and in which contexts, may be related to help-seeking intention and behaviour.

In line with the model (Henshaw & Freedman-Doan, 2009) and the existing literature, Study 3 found self-efficacy (Chou & Shih, 2018; O'Connor et al., 2014), and perceived treatment benefits (Kim & Zane, 2016; O'Connor et al., 2014) made significant contributions to the model. The findings further revealed perceived barriers and susceptibility did not make significant contributions to the model. This finding is inconsistent with the model, however is consistent with the existing literature exploring help-seeking intention using the HBM variables in Australian samples (Langley et al., 2020; Langley et al., 2018). This suggests that individuals must perceive themselves as having the capacity and confidence to access psychological treatment and must perceive the treatment as beneficial in order to seek help. This indicates that marketing strategies to increase help-seeking and appropriate use of psychological treatment during the perinatal period should consider focussing on the benefits of treatment. Furthermore, given the current findings indicate only some of the HBM variables are associated with help-seeking intention for perinatal anxiety, further research exploring help-seeking is required.

Clinical Implications and Recommendations

The collective findings from the studies included in this thesis have the following clinical implications and recommendations:

Development of perinatal anxiety specific treatment protocols

During the perinatal period women experience a range of common experiences, thoughts, and worries specific to pregnancy, childbirth, caring for an infant, and personal identity changes. Whilst women reported a preference for seeking support from friends and family

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initially, the majority of participants reported they would seek professional help and reported a preference for psychological help that offered psychoeducation on their symptoms, practical support, and validation. Given these findings, CBT protocols for the treatment of perinatal anxiety should be developed and further examined in large randomised controlled trials.

These protocols should include psychoeducation on anxiety, validation and practical therapeutic tools to assist in managing worries, thoughts, and anxiety. Based on the findings from Study 1 and the existing literature indicating that CBT with exposure components is the most effective intervention for specific phobias (Wolitzky et al., 2008), future CBT protocols for fear of childbirth and pregnancy specific anxieties should include exposure components. Furthermore, protocols including exposure components should ensure they are safe during pregnancy, for example certain interoceptive exposure activities such as hyperventilation practice (Furer et al., 2021) is not recommended during the perinatal period, however in vivo exposure, such as watching a video on childbirth or observing childbirth, and imaginal exposure, such as a multiparous woman being exposed to memories of a previous birth as well as cognitive restructuring (Stoll et al., 2018), deserve further research attention.

Reducing barriers to treatment

The results demonstrated women perceive several barriers to accessing treatment during the perinatal period, including intrinsic and extrinsic barriers. Women identified the primary perceived barriers to accessing care as the cost of treatment, wanting to solve the problem alone, and hoping the problem solves itself. The results of Study 2 and Study 3 highlighted that whilst women have a preference for face-to-face treatments, women would use remotely delivered treatments if available. Women also identified that remotely delivered treatments may minimize several of their perceived barriers, including travel times, childcare costs or difficulties, and time restraints, and improve treatment accessibility. Given this, it is recommended women are offered remotely delivered treatments during the perinatal period to

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assist in alleviating the aforementioned barriers. Treatments could also be delivered using a stepped-care framework where lower intensity and less costly interventions are trialled first before stepped up to higher intensity and more costly interventions.

Campaigns to increase awareness of treatment options

Study 3 found that perceived treatment benefits and self-efficacy are significant predictors of help-seeking intention. Thus, it is important for women to be provided with information about the benefits of a variety of treatment methodologies (e.g., face-to-face or remotely delivered CBT). Henshaw and Freedman-Doan (2009) proposed marketing campaigns should use both problem-solution marketing and social marketing theory to address the HBM variables and to develop effective mental health promotion campaigns. Therefore, psychoeducation and treatment information pamphlets and brochures could utilise social marketing theory and problem-solution marketing to highlight the benefits of accessing treatments. This information could ideally be provided to women in the early stages of pregnancy, with health professionals following up in subsequent visits to ask if the patient has any questions. Given the research appears to emphasise that women are more likely to access services if they are delivered in the same location as their antenatal appointments (Xue et al., 2020), it may be beneficial for mental health services to be more routinely delivered as part of these services.

Remotely delivered treatment platforms

Due to the recent COVID-19 pandemic there was an increase in the use of telehealth consultations in Australia, with a substantial 37% increase in the use of telephone and videoconferencing appointments (Reay et al., 2021). Thus, platforms to deliver treatments remotely are readily available, with many psychologists already familiar with delivering sessions remotely (Reay et al., 2021). Given the recent increase in the use of telehealth, online platforms to conduct therapy are more readily available to clinicians, thus more

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research exploring the efficacy of remotely delivered treatments when compared with standard face-to-face treatment is needed. Furthermore, Study 2 and 3 highlighted women's perceived barriers to accessing treatment, including cost and accessibility, and found that over half the sample indicated they would use remote treatments delivered via internet videoconferencing. Study 4 consolidated these findings by demonstrating the acceptability of remotely delivered treatments during the postnatal period. Given the increase in the use of telehealth consultations, alongside the current favourable findings, more guidance on which platforms are best to use when delivering psychological treatments via telehealth could be provided to clinicians to ensure adequate training in online service provisions, such as ensuring the use of secure systems.

Increased use of remotely delivered treatments

Studies 2 and 3 demonstrated that while most women would prefer face-to-face treatment, a significant proportion would utilise remote treatments if available. The results of Study 4 demonstrated that remotely delivered CBT was deemed as acceptable by participants. It is important for the field to utilise social marketing theory and problem-solution marketing to promote the efficacy and availability of remote treatment options to reduce treatment barriers, especially for those who live in rural or remote regions, or who have difficulty accessing face-to-face treatment for other reasons. Ideally, it is important for a variety of evidence-based treatment options to be available, including low intensity and high intensity remote and non-remote options, to allow patients to access the treatment that best suits their needs.

Research Implications and Recommendations

The findings from this thesis have resulted in the following research implications and recommendations:

Cost-effectiveness of remote treatments

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Remotely delivered treatments, and low intensity remote treatments in particular (such as internet-delivered CBT) have the potential to be significantly more cost-effective than standard face-to-face treatment. Research exploring the cost effectiveness of the various treatment methodologies/approaches is such needed to inform treatment planning and treatment options for women with perinatal anxiety. Less costly options can then be targeted to those who identify cost as the main barrier to help-seeking, which was one of the most commonly reported barriers in this program of research.

Transdiagnostic treatments

The findings from Study 4 highlighted the high comorbidity between perinatal anxiety and depression. These findings are consistent with the existing Australian literature exploring prevalence rates of perinatal mood and anxiety disorders (Austin et al., 2010). These high rates of co-morbidity demonstrate the importance of transdiagnostic treatments, which can treat anxiety and depressive symptoms concurrently. Transdiagnostic treatments may be more cost effective as fewer treatment sessions are required as transdiagnostic treatments treat multiple disorders simultaneously, however to date there is an absence of research specifically examining cost-effectiveness of TCBT (Andersen et al., 2016). Transdiagnostic treatments also reduce the need for clinicians to be trained in multiple disorder-specific manuals, thus have training benefits as well. There is also an emerging literature that demonstrates there may be clinical benefits to delivering transdiagnostic treatments over disorder specific treatments. For example, in a recent large-scale randomised control trial, Barlow et al. (2017) found more participants in the transdiagnostic CBT group (61.9%) showed remission of all of their anxiety and depressive diagnoses compared to those treated in the disorder specific CBT group (47.4%). Therefore, based on the existing research and the findings from the studies contained in the current thesis, transdiagnostic treatment approaches that offer strategies of managing both anxiety and depressive symptoms deserve further

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research attention in the perinatal period. It is important for these studies to be pre-registered controlled trials with adequate sample size to address some of the limitations of the existing literature.

Understanding predictors of treatment outcome

While there has been a significant amount of research exploring who responds best to CBT for the general population (Kunas et al., 2021; Olatunji et al., 2012), there is a lack of research exploring predictors of treatment response for perinatal anxiety. In one of the few studies conducted to date, Andersson et al. (2006) investigated the relationship between maternal characteristics and perinatal anxiety and depression and found the absence of a previous psychiatric disorder was associated with a greater likelihood of recovery and a positive treatment response. While Study 4 explored the efficacy and acceptability of transdiagnostic CBT for the treatment of postnatal anxiety, predictors of treatment response could not be explored due to the small sample size. Future studies could explore the predictors of treatment response.

Help-seeking behaviours during the perinatal period

Whilst the findings of Study 3 identified self-efficacy and perceived treatment benefits as predictors of help-seeking behaviour, further research exploring predictors of help-seeking behaviour beyond the variables of the HBM is warranted. For example, the existing literature in the general population indicates that personal treatment preferences have a significant influence on decision making about treatment (Pierce & Hicks, 2001), and access to treatment of preference has been associated with an increased likelihood of entering treatment, with treatment adherence, and with positive treatment outcomes (Goodman, 2009). Therefore, it is important for other variables to be examined to enhance our understanding of what predicts help-seeking behaviours for women with perinatal anxiety.

Strengths and Limitations of this Thesis

The studies included in this thesis aimed to evaluate the efficacy and acceptability of remotely delivered CBT for perinatal anxiety. The research included in this thesis has several strengths, including the following:

Novel research

Study 1 provided the first meta-analytic study examining the efficacy of CBT for perinatal anxiety. The findings highlighted the significant shortcomings in perinatal anxiety treatment research and highlighted the differences in treatment approaches (i.e., intervention length, treatment focus, clinician time etc). This study was used to inform the remaining three studies included in this program of research.

Mixed methods approach

This program of research used multiple methodologies to answer the research questions including meta-analysis, qualitative approaches utilising semi-structured interviews, quantitative approaches utilising surveys, and a case series design. Each study builds on the findings of the previous study to enhance our understanding of the efficacy and acceptability of CBT for perinatal anxiety.

Study 2 (Chapter 4) and Study 3 (Chapter 6) explored women's perceived barriers and facilitators to accessing treatment using a mixed-methods approach. A mixed methods approach was chosen to mitigate the limitations of using one approach (Turner et al., 2017). Mixed methods research is founded on the idea of increased understanding through methodological triangulation (Turner et al., 2017). Triangulation refers to using multiple, differing approaches to generate better understanding of given concepts or theories (Burton & Obel, 2011) and may include the use of both qualitative and quantitative research (Hammarberg et al., 2016; Risjord et al., 2002). Thus, Study 2 used qualitative methods to explore participant's experiences, meanings and perspectives and Study 3 then built on these

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findings and used quantitative methods to collect ‘factual’ data regarding general, and previously obtained (i.e., Study 2’s findings), information in relation to opinions, attitudes, beliefs and preferences (Hammarberg et al., 2016; Johnson et al., 2007). In line with the existing literature on research methods, (Hammarberg et al., 2016; Risjord et al., 2002), the qualitative and quantitative methods used in this thesis complemented each other, and strengthened the conclusions that can be drawn from the research.

Whilst the findings from this program of research are notable, it is important to highlight some of the main limitations of the included studies, including the following:

Power

While the sample size obtained in Study 2 were adequate for qualitative analysis, difficulties in recruitment may have resulted in the loss of statistical power in Study 3. Despite a lower sample size ($n=300$) than initially proposed, the actual sample size ($n=216$) of Study 3 was above the minimum sample size ($n=193$) calculated at the commencement of the study for a large effect size across analyses (Cohen, 1992). Similarly, due to difficulties in recruitment Study 4 had a lower sample size ($n=3$) than initially proposed ($n=6$). Given the initially proposed sample size was based on similar case studies and guidelines, the small sample size in Study 4 limits generalisability.

Sample characteristics

A potential limitation of the studies included in this thesis was that participants comprised women who self-referred, which may introduce bias and limit the generalisability of the results. However, the existing research exploring remotely delivered treatments for anxiety in the general population indicates similar demographics in presentations and referrals (Kladnitski et al., 2020; Wootton et al., 2013). Furthermore, recruitment for Study 2, Study 3 and Study 4 was primarily conducted online, thus participants were likely to have a sound knowledge of using computers and the internet which may introduce bias into their

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treatment preferences and their acceptability of remotely delivered treatments. Future research may wish to recruit participants from obstetrics and healthcare clinics, playgroups and noticeboards, as this may affect participants treatment preferences and their willingness to use, and acceptability of, remotely delivered treatments.

Use of Diagnostic Interview and Online Administration of Self-Report Questionnaires

In Studies 3 and 4, the choice of diagnostic interview, the Diagnostic Interview for Anxiety, Mood, and OCD and Related Neuropsychiatric Disorders (DIAMOND; Tolin et al., 2018b), and the use of online outcome self-report questionnaires represent additional potential limitations to the study. Whilst the DIAMOND (Tolin et al., 2018a) is widely used, its psychometric properties in a perinatal anxiety sample has not yet been established. To date, research exploring the diagnostic validity of diagnostic interviews in the perinatal period is sparse, thus the DIAMOND was utilised given its validity in identifying DSM-5 anxiety and mood disorders in the general population. Further, the DIAMOND has reliability training available to researchers and clinicians to ensure accuracy of use. Thus, training was completed prior to its use. Similarly, although several of the self-report measures, such as the OASIS and K-10, are widely used in both face-to-face and online outcome studies, their psychometric properties in a perinatal sample is either not established (i.e., OASIS) or is preliminarily established (i.e., K-10; Spies et al., 2009). However, the use of additional clinical self-report measures, including the EPDS, and the accordant findings across measures reduces the likelihood of threats to validity due to the diagnostic interview.

Blinding

Blinding was not used in the telephone administration of the DIAMOND in Study 4, which may have introduced bias. Whilst future studies investigating remotely delivered treatments for perinatal anxiety should ideally use interviewers who are blind to the treatment conditions, this was not possible in Study 4 due to the requirement of the University of New

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England for Doctoral Degree candidates to carry out the data collection associated with their theses. Despite the potential bias, data from the self-report questionnaires provided converging evidence regarding symptom reduction, indicating the potential threat to validity was minimal.

Conclusion

Perinatal anxiety is common and causes considerable impairment in functioning for the individual. The findings from this program of research add to the small, but emerging literature examining the efficacy and acceptability of remotely delivered CBT for perinatal anxiety. Specifically, this program of research has added to the literature on women's experiences and knowledge of perinatal anxiety, women's treatment preferences during the perinatal period, barriers to accessing treatment, the utility of the HBM in predicting help-seeking intention during the perinatal period, and lastly the acceptability and efficacy of remotely delivered CBT for anxiety during the perinatal period. While it is important for future research to replicate and extend on the findings of this program of research it is hoped that this research can be used to enhance treatment uptake and improve treatment outcomes for women with perinatal anxiety.

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Appendix B: Study 2 Interview Questions*Interview Questions:*

1. What does mental health mean to you?
2. Could you please describe your understanding of perinatal anxiety?
3. Have you previously, or are you currently suffering from perinatal anxiety?
4. What do you think may cause anxiety in the perinatal period? For example, are there any worries, fears, or experience that are likely to be particularly anxiety-provoking?
5. If you or a friend were suffering from perinatal anxiety what treatment/s would you suggest?
6. Why would you suggest this treatment?
7. If you were or a friend were suffering from perinatal anxiety, what type of help would the treatment need to offer?
8. If you were or a friend were suffering from perinatal anxiety, are there any potential reasons you would not access mental health assistance? If so, what are those reasons?
9. If you were to access mental health assistance, how would you prefer to access service, for example face-to-face, online, Skype, over the phone, self-help manuals etc., and why?
10. If you were offered an online treatment program for perinatal anxiety, that you could do by yourself or via Skype, would you be interested? Please explain your answers.
11. What do you think would make people with perinatal anxiety more or less interested in looking at an online treatment for anxiety so online treatments may be like Skype sessions with professional where you can see them or self-help manuals?



Appendix C: Study 2 Ethics Approval

Ethics Office
Research Development & Integrity
Research Division
Armidale NSW 2351
Australia
Phone 02 6773 3449
Fax 02 6773 3543
jo-ann.sozou@une.edu.au
www.une.edu.au/research-services

HUMAN RESEARCH ETHICS COMMITTEE

MEMORANDUM TO: A/Prof Navjot Bhullar, Dr Bethany Wootton, Dr Suzie Cosh
& Miss Peta Maguire

School of Psychology

This is to advise you that the Human Research Ethics Committee has approved the following:

PROJECT TITLE: Women's Treatment Preferences for Perinatal Anxiety

APPROVAL No.: HE18-181

COMMENCEMENT DATE: 10 August, 2018

APPROVAL VALID TO: 10 August, 2019

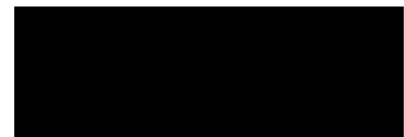
COMMENTS: Nil. Conditions met in full

The Human Research Ethics Committee may grant approval for up to a maximum of three years. For approval periods greater than 12 months, researchers are required to submit an application for renewal at each twelve-month period. All researchers are required to submit a Final Report at the completion of their project. The Progress/Final Report Form is available at the following web address:

<http://www.une.edu.au/research/research-services/rdi/ethics/hre/hrec-forms>

The NHMRC National Statement on Ethical Conduct in Research Involving Humans requires that researchers must report immediately to the Human Research Ethics Committee anything that might affect ethical acceptance of the protocol. This includes adverse reactions of participants, proposed changes in the protocol, and any other unforeseen events that might affect the continued ethical acceptability of the project.

In issuing this approval number, it is required that all data and consent forms are stored in a secure location for a minimum period of five years. These documents may be required for compliance audit processes during that time. If the location at which data and documentation are retained is changed within that five year period, the Research Ethics Officer should be advised of the new location.



Jo-Ann Sozou
Secretary/Research Ethics Officer

**Appendix D: Study 3 Ethics Approval**

Ethics Office
Research Development & Integrity
Research Division
Armidale NSW 2351
Australia
Phone 02 6773 3449
humanethics@une.edu.au
www.une.edu.au/research-services

HUMAN RESEARCH ETHICS COMMITTEE

MEMORANDUM TO: A/Prof Navjot Bhullar, Dr Bethany Wootton, Dr Suzie Cosh
& Miss Peta Maguire

School of Psychology

This is to advise you that the Human Research Ethics Committee has approved the following:

PROJECT TITLE: The Utility of the Health Belief Model Variables in
Predicting Help-Seeking Intentions of Perinatal Anxiety.

APPROVAL No.: **HE20-184**

COMMENCEMENT DATE: 30 November, 2020

APPROVAL VALID TO: 30 November, 2020

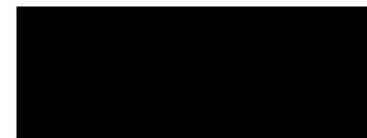
COMMENTS: Nil. Conditions met in full

The Human Research Ethics Committee may grant approval for up to a maximum of three years. For approval periods greater than 12 months, researchers are required to submit an application for renewal at each twelve-month period. All researchers are required to submit a Final Report at the completion of their project. The Progress/Final Report Form is available at the following web address:

<http://www.une.edu.au/research/research-services/rdi/ethics/hre/hrec-forms>

The NHMRC National Statement on Ethical Conduct in Research Involving Humans requires that researchers must report immediately to the Human Research Ethics Committee anything that might affect ethical acceptance of the protocol. This includes adverse reactions of participants, proposed changes in the protocol, and any other unforeseen events that might affect the continued ethical acceptability of the project.

In issuing this approval number, it is required that all data and consent forms are stored in a secure location for a minimum period of five years. These documents may be required for compliance audit processes during that time. If the location at which data and documentation are retained is changed within that five year period, the Research Ethics Officer should be advised of the new location.



Mrs Jo-Ann Sozou
HREC Secretary &
Research Ethics Officer

Appendix E: Study 4 Ethics Approval

Ethics Office
Research Development & Integrity
Research Division
Armidale NSW 2351
Australia
Phone 02 6773 3449
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HUMAN RESEARCH ETHICS COMMITTEE

MEMORANDUM TO: A/Prof Navjot Bhullar, Dr Bethany Wootton, Dr Suzie Cosh
& Miss Peta Maguire

School of Psychology

This is to advise you that the Human Research Ethics Committee has approved the following:

PROJECT TITLE: Efficacy and acceptability of a remotely delivered
transdiagnostic cognitive behavioural therapy
treatment for perinatal anxiety: A case series.

APPROVAL No.: **HE20-218**

COMMENCEMENT DATE: 21 January, 2021

APPROVAL VALID TO: 20 January, 2022

COMMENTS: Nil. Conditions met in full

The Human Research Ethics Committee may grant approval for up to a maximum of three years. For approval periods greater than 12 months, researchers are required to submit an application for renewal at each twelve-month period. All researchers are required to submit a Final Report at the completion of their project. The Progress/Final Report Form is available at the following web address:

<http://www.une.edu.au/research/research-services/rdi/ethics/hre/hrec-forms>

The NHMRC National Statement on Ethical Conduct in Research Involving Humans requires that researchers must report immediately to the Human Research Ethics Committee anything that might affect ethical acceptance of the protocol. This includes adverse reactions of participants, proposed changes in the protocol, and any other unforeseen events that might affect the continued ethical acceptability of the project.

In issuing this approval number, it is required that all data and consent forms are stored in a secure location for a minimum period of five years. These documents may be required for compliance audit processes during that time. If the location at which data and documentation are retained is changed within that five year period, the Research Ethics Officer should be advised of the new location.



Bethany Ayers
HREC Secretary
Research Ethics Officer

Appendix F: Study 4 ANZCTR Registration


ANZCTR
 Australian New Zealand Clinical Trials Registry

Logged in as Peta Maguire
 [Account details]

 DEFINITIONS
  HINTS AND TIPS
  FAQs
  REGISTER TRIAL
  MY TRIALS

Register a trial

Registering a new trial? To achieve prospective registration, we recommend submitting your trial for registration at the same time as ethics submission.



Request number 378956

Current page Review

< BACK

Trial registered on ANZCTR

Registration number	 ACTRN12621000843853
Ethics application status	 Approved
Date submitted	 27/05/2021
Date registered	 1/07/2021
Date data sharing statement initially provided	 1/07/2021
Date results information initially provided	 19/04/2022
Type of registration	 Prospectively registered

Titles & IDs

Public title	The Efficacy and Acceptability of a Remotely Delivered Transdiagnostic Cognitive Behavioural Therapy (CBT) Treatment for Perinatal Anxiety: A Case Series
Scientific title	The Efficacy and Acceptability of a Remotely Delivered Transdiagnostic CBT Treatment for Perinatal Anxiety in Women up to Ten Months Postpartum: A Case Series
Secondary ID [1]	Nil known
Universal Trial Number (UTN)	
Trial acronym	
Linked study record	

Health condition

Health condition(s) or problem(s) studied:

Perinatal anxiety

Condition category	Condition code
Mental Health	Anxiety

Intervention/exposure

Study type	Interventional
Description of intervention(s) / exposure	Treatment will consist of 5 x 50 minute weekly CBT sessions, which will be conducted via the secure online platform, Zoom. Sessions will be recorded for quality and supervision purposes. The intervention will be delivered via the student researcher, Peta Maguire, who is a registered psychologist. Participants will be required to complete weekly brief questionnaires so that the clinician can monitor participants symptoms. The session outline for the treatment is below: Session 1: Psychoeducation • Psychoeducation • Developing a CBT model • Homework: Symptom Monitoring Diary Session 2: Cognitive Restructuring • Homework check-in • Introduction to automatic thoughts • Identifying and challenging unhelpful automatic thoughts • Homework: Unhelpful Thinking Worksheet Session 3: Arousal Reduction • Homework check-in • Controlling physical symptoms using de-arousal strategies • Homework: Arousal reduction strategies Session 4: Exposure • Homework check-in • Identifying maladaptive behaviours • Education about graded exposure • Constructing an exposure stepladder • Homework: Graded exposure task Session 5: Relapse Prevention • Homework check in • Developing a relapse prevention plan • Extra resources
Intervention code [1]	Treatment: Other
Intervention code [2]	Behaviour
Comparator / control treatment	No control group
Control group	Uncontrolled

Outcomes

Primary outcome [1]	Diagnostic Interview for Anxiety, Mood, and OCD and Related Neuropsychiatric Disorders (DIAMOND) - diagnostic clarification
<i>Timepoint [1]</i>	Pre-treatment, post-treatment, 3 month follow up
Primary outcome [2]	The Overall Anxiety Severity and Impairment Scale (OASIS) - mean OASIS score
<i>Timepoint [2]</i>	Pre-treatment, weekly, post-treatment, 3 month follow up
Primary outcome [3]	The Edinburgh Postnatal Depression Scale (EPDS) - mean EPDS score
<i>Timepoint [3]</i>	Pre-treatment, weekly, post-treatment, 3 month follow up
Secondary outcome [1]	The Maternal Postnatal Attachment Scale (MPAS) - mean score on MPAS
<i>Timepoint [1]</i>	Administered pre-treatment, post-treatment, 3 month follow up
Secondary outcome [2]	The Karitane Parenting Confidence Scale (KPCS) - mean KPCS score
<i>Timepoint [2]</i>	Pre-treatment, post-treatment, 3 month follow up
Secondary outcome [3]	The Kessler 10-Item Psychological Distress Scale (K-10) - mean K-10 score
<i>Timepoint [3]</i>	Pre-treatment, post-treatment, 3 month follow up

Eligibility

Key inclusion criteria	(a) Currently in the first 10 months postpartum (participants must be within 10 months postpartum to ensure treatment is delivered during the perinatal period); (b) Proficient in English; (c) 18 years of age or above; (d) Have regular access to the internet; (e) Meet DSM-5 diagnostic criteria for an anxiety or related disorder as primary (as determined by the DIAMOND);
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	(f) No history of psychotic illness or bipolar disorder; (g) A score of at least 8 on the Overall Anxiety Severity and Impairment Scale (OASIS) (h) If using medication, the medication is a stable dose (i) Does not report suicidal ideation and intent (as identified through risk related questions during interview) (j) Does not report recent (i.e., past 3 months) suicide attempts or deliberate self-harm (k) Does not report past or present psychosis (assessed using the DIAMOND) (l) A score of below 3 on item 10 of the Edinburgh Postnatal Depression Scale (EPDS)
Minimum age	18 Years
Maximum age	No limit
Gender	Females
Can healthy volunteers participate?	No
Key exclusion criteria	(a) Currently not in the first 10 months postpartum (b) Not proficient in English (c) Under 18 years of age (d) Do not have regular access to the internet (e) Does not endorse one of the anxiety and related disorders on the DIAMOND screener (f) History of a psychotic illness or bipolar disorder (g) Does not have a score of at least 8 on the Overall Anxiety Severity and Impairment Scale (OASIS) (h) Not on a stable dose of pharmacological medication (i) Report suicidal ideation and intent (as identified through risk related questions during interview). (j) Recent (i.e., past 3 months) suicide attempts or deliberate self-harm (k) Report past or present psychosis (assessed using the DIAMOND) (l) Are at high risk of suicide as determined by a score of 3 on item 10 of the Edinburgh Postnatal Depression Scale (EPDS).

Study design

Purpose of the study	Treatment
Allocation to intervention	Non-randomised trial
Procedure for enrolling a subject and allocating the treatment (allocation concealment procedures)	
Methods used to generate the sequence in which subjects will be randomised (sequence generation)	
Masking / blinding	Open (masking not used)
Who is / are masked / blinded?	
Intervention assignment	Single group
Other design features	
Phase	Not Applicable
Type of endpoint(s)	Efficacy
Statistical methods / analysis	Data will be analysed using SPSS. The OASIS, EPDS, PHQ-9, and CSQ will be scored based on the method described in each individual questionnaires protocol. Data will be collected at pre-intervention (baseline, T1), post-intervention (T2), and 3-month follow-up (T3) and will be reported and examined using visual inspection of graphs. Clinically significant change will be calculated according to the method outlined by Jacobson and Truax (1991). Descriptive data (95% confidence intervals; means and standard deviations) will be used to describe the pooled participant outcomes at pre-treatment, post-treatment, and three month follow up).

Recruitment

Recruitment status		Completed	
Date of first participant enrolment			
Anticipated	5/07/2021	Actual	29/07/2021
Date of last participant enrolment			
Anticipated	30/11/2021	Actual	3/11/2021
Date of last data collection			
Anticipated	1/04/2022	Actual	4/03/2022
Sample size			

Target	Accrual to date	Final	3
Recruitment in Australia			
Recruitment state(s)	ACT,NSW,NT,QLD,SA,TAS,WA,VIC		

Funding & Sponsors

Funding source category [1]	University
Name [1]	University of New England
Address [1]	University of New England Armidale NSW 2351 Australia
Country [1]	Australia
Primary sponsor type	University
Name	University of New England
Address	University of New England Armidale NSW 2351 Australia
Country	Australia
Secondary sponsor category [1]	None
Name [1]	
Address [1]	
Country [1]	
Other collaborator category [1]	University
Name [1]	The University of Technology Sydney
Address [1]	The University of Technology Sydney Ultimo, NSW 2007 Australia
Country [1]	Australia

Ethics approval

Ethics application status	Approved
Ethics committee name [1]	University of New England Human Research Ethics Committee (HREC)
Ethics committee address [1]	University of New England Armidale NSW 2350 Australia
Ethics committee country [1]	Australia
Date submitted for ethics approval [1]	18/12/2020
Approval date [1]	21/01/2021
Ethics approval number [1]	HE20-218

Summary

Brief summary	The purpose of this project is to assess the efficacy and acceptability of a remotely delivered transdiagnostic cognitive behavioural treatment for perinatal anxiety in an Australian sample. Participants are asked to complete standardised questionnaire measures at pre-treatment, post-treatment, and 3 month follow up, and brief weekly questionnaires throughout treatment to monitor participants' symptoms and safety throughout treatment. Treatment will consist of 5 x 50-minute weekly sessions, which will be conducted via the secure online platform, Zoom. It is hypothesised that participants self-reported symptoms of perinatal anxiety will reduce from pre-treatment to post-treatment and that participants will no longer meet diagnostic criteria for anxiety.
Trial website	
Trial related presentations / publications	
Public notes	
Private notes	

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Data sharing statement

Will individual participant data (IPD) for this trial be available (including data dictionaries)?	No
No/undecided IPD sharing reason/comment	
What supporting documents are/will be available?	Study protocol Ethical approval

How or where can supporting documents be obtained?

Type [1]	Study protocol
Citation [1]	
Link [1]	
Email [1]	
Other [1]	Attached
Attachment [1]	/Steps11and12/378956-(Uploaded-30-07-2021-15-47-00)-Study-related document.docx
Type [2]	Ethical approval
Citation [2]	
Link [2]	
Email [2]	
Other [2]	Attached
Attachment [2]	/Steps11and12/378956-(Uploaded-27-05-2021-08-11-40)-Study-related document.pdf

Summary results

Have study results been	No
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published in a peer-reviewed journal?

Other publications

Have study results been made publicly available in another format?

Results – basic reporting

Results – plain English summary

Three postpartum women engaged in the remotely delivered treatment. All three women reported that they found the treatment helpful and acceptable. The three women no longer met diagnostic criteria for their primary anxiety disorder post treatment, which was maintained at three-month follow-up. The intervention was found to be an acceptable form of therapy, however parenting confidence and maternal feelings of bonding did not significantly improve from pre-treatment to post-treatment.

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