Exploring Intrusive Thoughts, Psychotic-Like Experiences and Mental Health Recovery Outcomes in the Perinatal Period

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Portfolio Abstract

Background

The perinatal period is a time of great change for parents, and many can experience difficulties with their mental health (MH), which can negatively impact parents, babies, and surrounding systems. Consequently, perinatal services have received increased funding and are an NHS priority. However, gaps in our understanding of perinatal mental health (PMH) difficulties remain, particularly in community (non-clinical) samples. This portfolio aims to explore longitudinal PMH symptom outcomes and associated predictors; and aims to understand the distress of parents' postnatal intrusive thoughts (ITs) and psychotic-like experiences (PLEs) and their associations with parenting experiences and MH.

Method

The systematic review included 20 studies with 45,130 mothers without a MH diagnosis; MH symptoms were assessed at three time-points across the perinatal period. The empirical project applied a cross-sectional, quantitative, online survey design, and recruited a community sample of 349 postnatal parents.

Results

The systematic review found PMH symptoms typically improve from pregnancy to postpartum and most mothers report 'no' to 'mild' symptoms. A history of MH, stress, marital status, and low income predicted maintained PMH symptoms.

The empirical project found 93% of parents reported ITs and 90% reported associated distress; 88% reported PLEs and 83% reported associated distress. ITs and PLEs were significantly associated with lower parental competence, and increased parenting stress and MH; ITs and PLEs predicted parenting experiences,

although this relationship was mediated by depression and anxiety. Significant differences were found between female and male parents.

Conclusions

The systematic review highlights how PMH symptoms can fluctuate during the perinatal period, although greater research is warranted to explore a wider range of symptoms and better understand factors predicting symptom improvement. The empirical paper demonstrates that distressing ITs and PLEs can negatively impact parenting experiences and MH. Increased PMH awareness and wider symptom screening could identify parents in need of support.

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CHAPTER ONE

Introduction to the Thesis Portfolio

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Note. Material from the ClinPsyD Thesis Proposal has been used in this portfolio.

This chapter outlines a conceptualisation of the perinatal period and defines key terms used throughout the portfolio. Existing literature is reviewed to understand the prevalence and impact of perinatal mental health (PMH) difficulties and consideration is given to the importance of expanding PMH research. Finally, the structure and aims of each chapter of the thesis portfolio are outlined.

Perinatal Mental Health

The perinatal period, is defined as the time from conception to one year post-birth (NHS 2018), although some argue this timeframe should extend to two years after birth (NHS 2019). This period involves great change in identity, routine, family dynamics and relationships; mothers also experience bodily changes, increased levels of stress and fluctuating hormones (Howard & Khalifeh, 2020). Consequently, there is increased vulnerability for developing emotional disorders during this time (Mannion & Slade, 2014). Estimates suggest 10-20% of mothers will experience PMH difficulties during this period (Bauer et al., 2014); although recent figures suggest this could be as high as 27% in England (NHS England 2023). Many mothers may have difficulty identifying PMH symptoms, and are reluctant to disclose their difficulties or seek professional support (Daehn et al., 2022); this is thought to be linked to barriers of stigma, feelings of shame, poor mental health (MH) literacy and concerns around losing child custody if MH problems are disclosed (Cheng et al., 2018; Dolman et al., 2013).

PMH concerns can include depression, anxiety, psychosis, obsessive compulsive disorder (OCD), post-traumatic stress disorder (PTSD), bipolar disorder and personality disorders (Russell et al., 2013; Shorey et al., 2018; Viswasam et al., 2019). Most commonly reported is perinatal depression, experienced by up to 17% of mothers (Shorey et al., 2018; Stuart-Parrigon & Stuart, 2014) and perinatal anxiety

experienced by up to 13% of mothers (Viswasam et al., 2019). PMH difficulties vary in prevalence, severity, and level of distress caused; for example, estimates indicate two in every 1000 women with postpartum psychosis will require hospital admission (Jones et al., 2014). The risk of more severe perinatal mental illness is greater for women with pre-existing MH difficulties, or a past history of MH difficulties (Wesseloo, 2016).

Impact

PMH difficulties can negatively impact mothers, partners, the baby, and surrounding systems. Maternal PMH difficulties have been linked to increased rates of self-harm, substance misuse, suicide, and mortality (Howard & Khalifeh, 2020). In children, long-term negative outcomes can include emotional and behavioural problems, attachment difficulties, delays in cognitive and emotional development, poorer educational outcomes, and later MH difficulties for the child (Aktar et al., 2019; Leis et al., 2014; Stein et al., 2014). The hypothesised mechanism by which this occurs, suggests mothers experiencing PMH problems have greater difficulty identifying and reading emotional signals from their baby, are less emotionally expressive, have poorer quality interactions and greater difficulty bonding and responding to their baby's needs (Binda et al., 2019; Leahy-Warren & McCarthy, 2011).

Considering the impact of such difficulties, the World Health Organisation (WHO) have identified PMH to be a public health issue (WHO 2022). Accurate and timely identification of PMH problems is a healthcare priority. Current identification methods have been criticised for inaccuracy due to false positives and subsequent financial costs (Hewitt et al., 2009). A report by Bauer et al. (2014) estimated PMH problems to cost approximately £8.1 billion per year in the UK. As part of the Five

Year Forward View (NHS 2016), additional funding of £365 million aims to improve recovery from PMH difficulties for women and reduce long-term financial costs that could occur should this support not be available. This includes increased access to specialist PMH community services, extending the period of support from 12 to 24 months postpartum, improved access to evidence-based therapies for mothers and partners, and the development of new mother and baby units. The National Health Service (NHS) long-term plan further outlines a commitment to the transformation of specialist PMH services, to provide additional support in order to improve long-term outcomes (NHS 2019).

Why Research Perinatal Mental Health?

Some evidence suggests PMH concerns have become more prevalent, although it is unclear if this is accurate, or if it is a result of increased awareness, detection, and reporting of PMH concerns in recent years (Abel et al., 2019). Perinatal research explores a range of features, including the prevalence of PMH difficulties, risk factors, outcomes, and treatment intervention options and efficacy (Moore et al., 2021). Ultimately, PMH is a growing area of research interest given the long-term impacts for mothers, babies, and surrounding systems, yet gaps in the literature remain.

Clinical vs Non-Clinical

PMH research often utilises ‘clinical’ samples, using particpants who have a diagnosed PMH condition, who score above clinical cut-offs, experience impaired functioning and are seeking/receiving treatment for their PMH difficulty. Yet, PMH difficulties can also occur in community populations, often considered a ‘non-clinical’ sample, who may experience symptoms at a subclinical level i.e., below clinical cut-offs, not meeting diagnostic criteria, and/or not ‘help-seeking’. Although, symptoms

can occur at a clinical level even within a community sample (Thurston et al., 2008). Some suggest MH difficulties such as depression are better thought of as existing on a spectrum, from subclinical to clinical levels (Angst & Merikangas, 1997). Parents with subclinical symptoms may not meet diagnostic threshold or criteria to access support from specialist perinatal services, yet these symptoms can have adverse effects. Subclinical PMH difficulties are also documented as a risk factor for later psychopathology if left untreated (Dominguez et al., 2011; Karsten et al., 2011), albeit specific transition rates in this population remain unclear. It is therefore important to explore MH symptoms within community (non-clinical) samples, to identify the prevalence of parents with symptoms at a clinical level who may benefit from MH service support, and better understand the development and maintenance of such difficulties.

Research Gaps

Much of the research literature focuses on perinatal depression, as it is the most commonly reported PMH concern, though at the detriment of neglecting other PMH symptoms, such as intrusive thoughts (ITs) and psychotic-like experiences (PLEs) that can be frequent and distressing (Collardeau et al., 2019; Holt et al., 2018). There is also limited research exploring longitudinal symptom outcomes for a range of PMH conditions and symptoms, particularly in community samples. Additionally, literature has focused on experiences of mothers, often neglecting those of fathers. Yet, reviews suggest 5-11% of fathers experience postnatal depression (Cameron et al., 2016; Paulson et al., 2010) and 10.7% experience perinatal anxiety (Leiferman et al., 2021). Other MH symptoms, like PLEs and ITs are less researched in fathers, highlighting a clear gap in the literature.

Outline of the Thesis Portfolio

This thesis portfolio includes two papers which aim to further understand different aspects of PMH. The first paper, a systematic review, aims to examine the longitudinal PMH symptom outcomes for community samples of mothers experiencing PMH symptoms. This review aims to synthesise research exploring a range of PMH symptoms at different timepoints across the whole perinatal period and will also investigate factors associated with predicting improvement or maintenance of PMH symptoms. The review will conclude by considering clinical implications of the findings and recommendations.

A bridging chapter outlines gaps in the literature, particularly regarding perinatal ITs and PLEs.

Following this, the empirical project is a quantitative study using a community sample to explore parental experiences of ITs and PLEs, particularly the distress caused by these experiences and potential associations with parenting experiences, (such as parental competence, satisfaction and stress), and other MH symptoms. This study also aims to explore if the above experiences differ between female and male parents. Supplementary results are presented in an additional results chapter. Data collection for this study was completed jointly with another UEA trainee, who utilised the dataset to explore demographic predictors of ITs and PLEs within the sample.

Finally, this portfolio ends with a discussion and critical evaluation chapter, which considers the findings from the portfolio, methodological strengths and weaknesses of the projects, clinical and theoretical implications, and future research directions.

CHAPTER TWO

Systematic Review

Prepared for Submission to: Journal of Affective Disorders

Author guidelines included in Appendix A

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Longitudinal Perinatal Mental Health Symptom Change and Predictors in Community Samples: A Systematic Review

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Abstract

Background

Many women experience mental health (MH) symptoms of varying severity during the perinatal period, yet there is a lack of research exploring symptom improvement outcomes and related predictors in community (non-clinical) samples, without a MH diagnosis. Literature suggests subclinical symptoms can develop into clinical symptoms, if undetected and untreated.

Method

A systematic literature search of four databases resulted in 1,857 studies, 20 of which met the inclusion criteria. All studies had three perinatal assessment points, two of which occurred in the 12 months after birth. A total of 45,130 participants were included from 16 countries. Studies varied in measures utilised, methodology, analysis, and reporting.

Results

All studies explored depressive symptoms, two also explored symptoms of anxiety and two explored other symptoms (OCD, wellbeing, and self-esteem). In the majority of studies, MH symptoms improved from pregnancy to postpartum, although symptoms fluctuated across the postpartum period and three studies found symptoms worsened. Most mothers experienced mild symptoms (72-85.2%), and a small proportion experienced chronic maintained symptoms (1.3-10.8%). No studies explicitly explored predictors of symptom improvement. Eleven explored maintained chronic symptoms, which were predicted by: a history of MH difficulties, life stressors, low income, marital status, and relationship difficulties.

Limitations

Studies varied considerably in methodology, assessment points, measures, and analysis, which limited synthesis. Most were from high-income countries, limiting global generalisability.

Conclusions

Perinatal MH symptoms fluctuate, although appear to improve from pregnancy to postpartum, and most women report ‘mild’ symptoms. Further research is needed to establish clear predictors of symptom improvement.

Keywords: Perinatal Mental Health; Longitudinal; Symptoms; Maternal; Non-clinical.

Highlights

- Perinatal mental health symptoms appear to improve from pregnancy to postpartum.
- Most women (72-85.2%) experience ‘no’ to ‘mild’ perinatal mental health symptoms.
- A small proportion (1.3-10%) experience maintained chronic mental health symptoms.
- Several predictors of maintained chronic mental health symptoms were identified.

Introduction

Perinatal Mental Health

The perinatal period is a time of significant change and stress, and mental health (MH) difficulties are common; recent figures suggest up to 27% of mothers experience MH difficulties during this period (NHS England, 2023). These can vary in prevalence, severity and distress, and impact mothers' quality of life, functioning and relationships (Schmied et al., 2013); there are also negative impacts for the baby, partners and the wider family system, particularly if difficulties are left untreated (Howard & Khalifeh, 2020). Consequently, perinatal mental health (PMH) is a growing area of research focus and a priority for the NHS. In England, access to specialist support has been variable (NHS England, 2023). Increased funding proposed in 2016 has been allocated to perinatal services as part of the National Health Service (NHS) Long Term Plan (NHS, 2019). Perinatal research is vital in informing the continued growth of these services.

Outcomes of PMH problems

PMH problems can have negative outcomes for both mother and baby.

Child Outcomes

Ample research highlights the adverse effect PMH disorders have upon child outcomes. Much literature focuses on perinatal depression and anxiety, which suggests infants of mothers with these difficulties may experience emotional, cognitive, developmental delays and display a difficult temperament (Aktar et al., 2019; Deave et al., 2008). Longitudinal studies suggest children are more likely to experience emotional and behavioural problems, and experience difficulties with their own MH in adolescence (Glasheen et al., 2010; Leis et al., 2014). However, this link is not necessarily causal, and research findings in this area are inconsistent

(Stein et al., 2014). The link between PMH and child outcomes is complex and can be mediated by a range of environmental factors, including social support, family structure and resilience (Harder & Davidsen, 2020).

Links to Attachment

PMH difficulties have been linked to attachment; the theory that we have an innate need for social connection and support, largely shaped through caregiving received during infancy (Bowlby, 1988). Mothers experiencing perinatal depression can have difficulty reading emotional signals from their baby, be less emotionally expressive, have poorer quality interactions and difficulty bonding with their baby (Binda et al., 2019). As a result, the mother may have difficulty responding to the baby's needs, which can result in low levels of confidence and perceived self-efficacy (Leahy-Warren & McCarthy, 2011). Attachment theory suggests these experiences can negatively impact the child's internal working models and are linked to poor attachment styles in adulthood (Ainsworth, 1978; Ainsworth & Bell, 1970). Developmental literature highlights how early attachment experiences impact upon later wellbeing for the child, and suggests targeted intervention in the perinatal period can improve mother-baby bonding and thus improve outcomes (Loh et al., 2023).

Maternal Outcomes

Maternal outcomes of PMH difficulties receive less attention than child outcomes, although are still of great importance. PMH disorders are associated with maternal substance misuse, suicide, and self-harm (Howard & Khalifeh, 2020). This risk is increased for mothers with a history of severe mental illness (Johannsen et al., 2016). Maternal suicide is the fourth highest cause of death in the perinatal period, however prevalence rates could be higher, given that studies often focus on the first

6-weeks post-birth and PMH difficulties can occur across the postpartum period (Grigoriadis et al., 2017). Mothers with PMH difficulties are at greater risk of self-neglect, reduced functioning (at work and home) and risk of developing future MH problems (Howard et al., 2014). Mothers have described feelings of guilt, isolation, challenges in managing a dual identity and a fear of stigma, which was linked to worries of being a 'bad' mother (Dolman et al., 2013). Additionally, many mothers experiencing perinatal mental illness are thought to 'mask' their symptoms and be reluctant to seek help, in fear of losing custody of their child (Montgomery et al., 2006). This could suggest an underreporting in the prevalence of PMH difficulties (Howard et al., 2014). Women experiencing PMH difficulties during pregnancy are at increased risk of adverse obstetric and pregnancy outcomes such as premature birth (Jarde et al., 2016; Vigod et al., 2014).

Family Outcomes

Maternal PMH difficulties can impact wider family systems; fathers are affected, both by directly experiencing PMH difficulties themselves, and indirectly, by supporting and coping with their partners symptoms (Wong et al., 2016). When a mother has poor PMH, this can place additional burden on the family, in terms of support needed, negatively impacts social activities, adds financial burden, and can contribute to poorer partner MH (Boath et al., 1998; Letourneau et al., 2012).

Long-Term Outcomes and Predictors

Given the prevalence of PMH difficulties, and associated adverse outcomes, it is important to understand long-term outcomes and factors predicting the likelihood of PMH symptom improvement ('recovery') or maintenance. There is a lack of research using longitudinal samples and the majority of studies focus solely on depression, neglecting other MH difficulties, or focus on outcomes for the child, not

the mother. Many studies focus on only one aspect of the perinatal period i.e., pregnancy, or postpartum, not exploring the entire period and trajectory of symptoms (Ahmed et al., 2018), despite literature highlighting the importance of exploring the entire perinatal period (Vanwetswinkel et al., 2022). Witt et al. (2011) highlight postnatal MH symptoms are more likely if a women experienced symptoms whilst pregnant. Some literature suggests symptoms are worst during pregnancy and early postpartum, but overall improve postnatally, usually without treatment (O'Hara & Wisner, 2014), yet other literature suggests symptoms can be stable across the perinatal period (Paulson et al., 2016). Research has also identified different trajectory groups for perinatal depression, suggesting most mothers experience minimal symptoms, although others have improving, worsening or persistent symptoms (Baron et al., 2017).

Considering predictors, Howard et al. (2014) summarise findings from systematic reviews exploring perinatal depression. Predictors of onset identified include low socioeconomic status; exposure to trauma, stress, and negative life events; domestic violence; low social/marital support; prior history of psychopathology; certain personality traits; age; health and pregnancy complications. Schmied et al. (2013) also found a history of depression and a poor relationship with a partner were strong predictors for perinatal depressive symptoms. There is a scarcity of literature exploring predictors of PMH recovery, although factors such as a supportive cohabiting partner, and exercise, can aid recovery, however these results are from small samples (Sexton et al., 2012).

Given that mothers have increased contact with health professionals during the perinatal period, these professionals are well placed to monitor long-term

outcomes and potential predictors to PMH difficulties and work towards prevention, hence why developing our understanding is vital.

The Current Review

Many mothers experience MH symptoms and difficulties during the perinatal period. However, there is less evidence about the long-term outcomes of PMH symptoms and associated predictors of recovery. There is also a tendency for literature to focus on clinical depression, neglecting other distressing PMH symptoms and consequently long-term symptom outcomes for other difficulties are largely unknown. Most PMH research uses clinical samples (where a diagnosis is given, e.g. psychosis, depression, bipolar), based on the associated negative impacts of clinical level difficulties. However, in community (non-clinical) samples, many mothers may mask difficulties or not seek help for fear of stigma and judgement, which could result in an underreporting of difficulties, although symptoms still cause considerable distress. Literature suggests subthreshold symptoms, can develop into symptoms of clinical severity and should be considered risk factors for later MH problems (Dominguez et al., 2011; Karsten et al., 2011; Merikangas et al., 2003). In the general population transition rates from subthreshold to clinical level MH symptoms are reported to be 11% (Zhang et al., 2023), however, to the authors knowledge, there are no reported transition rates in perinatal samples. Whilst this risk is routinely recognised in the literature, there appears to be no clear rate of transition from parents experiencing subthreshold symptoms to those of clinical severity, likely due to the lack of research exploring subthreshold symptoms and community samples. Given the understanding PMH problems can have adverse outcomes, it is vital that subthreshold symptoms are explored further in community perinatal samples, to understand longitudinal symptom change and associated

predictors, in the aim of identifying mothers at greater risk, and provide preventative interventions and improve outcomes.

This review, therefore, aims to explore change in PMH symptoms, across the perinatal period, in community samples, and factors which may predict improvement or maintenance of PMH symptoms, by answering the following questions:

1. What are the long-term symptom outcomes for women experiencing perinatal mental health symptoms?
2. What factors predict change in mental health symptoms in women during the perinatal period?

Method

Protocol and Preregistration

The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidance was adhered to throughout this review (Page et al., 2021). The review was registered on PROSPERO (CRD42023404881).

Search Strategy

Preliminary searches indicated a scarcity of literature exploring paternal experiences; hence the decision was made to explore maternal experiences only.

Four databases were used in this review: Medline, PsychINFO, CINAHL Ultimate and Scopus. ‘Perinatal’ and ‘Mental Health’ search terms were entered at title level. Search terms related to methodology (predictors and longitudinal) were entered at abstract level in an attempt to capture all relevant papers. Finally, search terms related to the specific population (non-clinical) were entered at whole text level, as it was identified these terms were occasionally not included in abstracts. Search terms used ‘*’ to capture studies using variations of a word, for example

‘depress*’, to capture depression, depressive. Phrases were included in quotations, to capture specific terms i.e., “mental health symptoms”.

Searches were run by the first reviewer in May 2023, and again in March 2024, although no additional studies were identified to meet inclusion criteria.

The following search terms were entered into each database:

Perinatal: Perinatal OR “perinatal period” OR postnatal* OR postpartum* OR prenatal* OR antenatal* OR antepartum OR pregnancy OR pregnant OR maternal

AND

Mental Health: “Mental Health” OR “Mental Health Symptoms” OR “Mental Health Experience*” OR “Mental Health Disorder*” OR “Mental Health Difficult*” OR “Mental Health Problem*” Or “Mental Health Outcome*” OR “Mental health trajector*” OR ”Mental illness” OR anxi* OR depress* OR “low mood” OR “mood disorder*” OR “obsessive-compulsive disorder” OR OCD OR Panic OR “posttraumatic stress” OR “personality disorder*” OR Schizophrenia OR bipolar OR psychosis OR psychotic OR “delusion*” OR “intrusive thought*” OR paranoia OR “psychotic experience*”

AND

Predictor: Predict* OR “Risk factor*” OR Outcome*

AND

Longitudinal: Cohort OR longitudinal OR prospective OR “follow-up”

AND

Non-Clinical: Community OR “Non-clinical” OR subclinical OR “sub-clinical” OR subthreshold OR “general population”

Eligibility Criteria

Table 1 details inclusion and exclusion criteria applied in the screening process.

Table 1

Inclusion and Exclusion Criteria Applied During Screening

Inclusion Criteria	Exclusion Criteria
Studies must include perinatal samples (from conception to 12 months post birth), aged 16+.	Studies that do not have sufficient follow-ups; follow-ups occur solely during pregnancy or postnatally; follow-up only occurs outside of perinatal period (i.e., 12+ months post-birth).
Studies must focus on maternal experiences/outcomes.	Studies that focus on fathers/partners.
Studies must include a longitudinal prospective cohort design, with at least three time-points (at least one during pregnancy and at least two after birth.	Studies that are retrospective.
Studies must focus on outcome (trajectory/course) of mental health symptoms/difficulties.	Studies that are not longitudinal, or have alternative methodology e.g., RCT.
Studies where mental health symptoms/difficulties are reported using validated measures.	Studies that recruit participants with a clinical mental health diagnosis (clinical sample).
Studies must include community (non-clinical) samples i.e., without a formal mental health diagnosis/help-seeking/below diagnostic cut-off when recruited.	Studies where mental health symptoms/difficulties occurred outside of the perinatal period.
Studies must include predictors of improvement/maintenance of PMH symptoms.	Studies where child/family outcome is the primary focus.
Studies must utilise a quantitative design.	Studies where professionals are the primary focus.
Studies must be published in English.	Studies that do not include predictors of improvement/maintenance of PMH symptoms.
Studies must be peer reviewed.	Studies with no mental health outcomes.
	Studies where the focus is on abortion, stillbirth, or miscarriage.
	Grey literature.
	Existing reviews or meta-analysis.

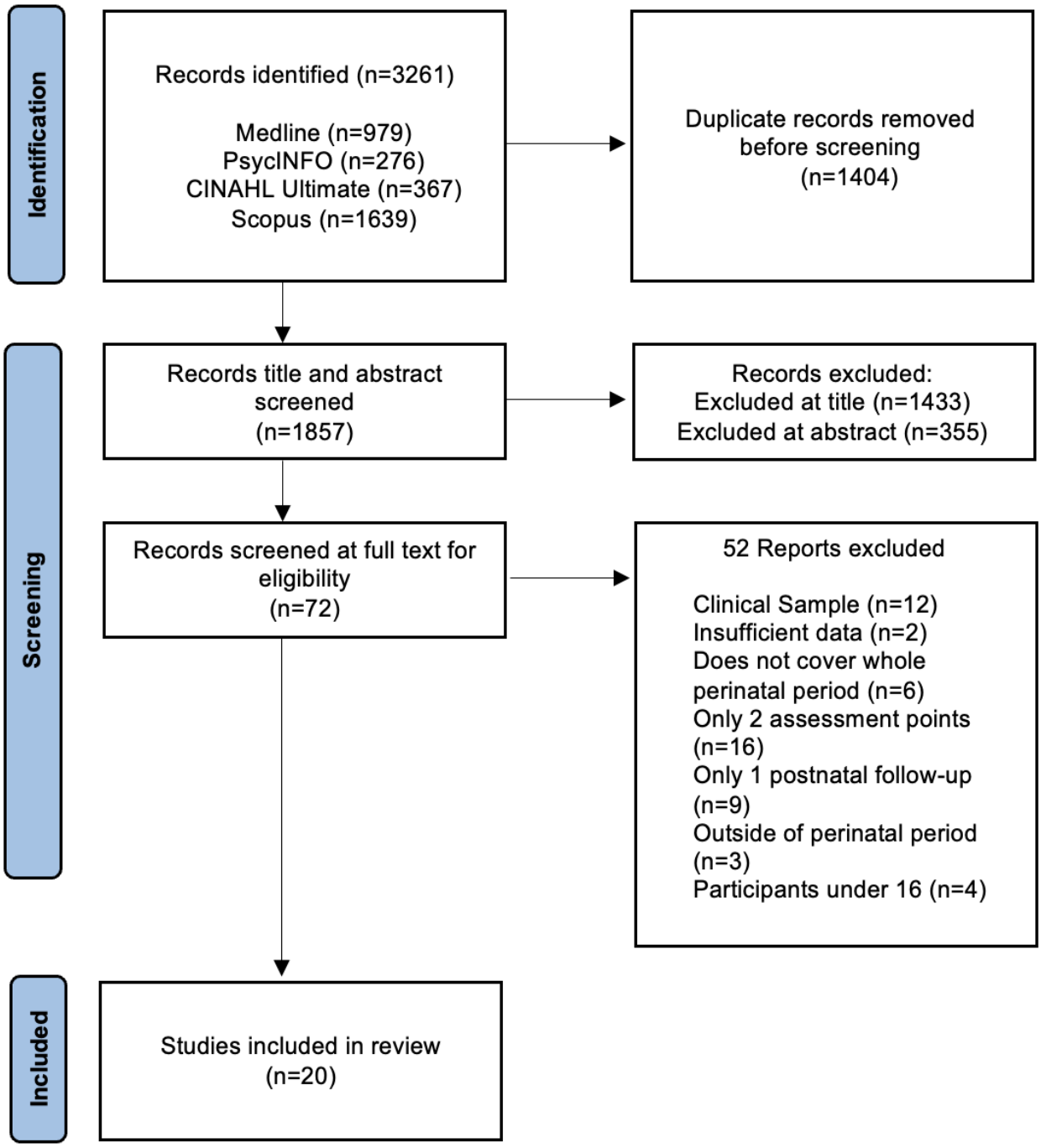
In attempt to achieve a community (non-clinical) sample, studies where a diagnosis was pre-existing or given during the study, were excluded, as clinical samples can be considered their own distinct group and not directly comparable in symptomatology. Studies focusing on maternal experience of miscarriage, abortion, or stillbirth in relation to MH, were excluded, on the premise these experiences would likely be related to increased MH symptoms and form their own distinct group, which should be analysed separately.

Study Selection

Studies identified from database searches using the above strategy, were downloaded into the reference management software EndNote. Upon importing all identified studies, duplicates were removed, leaving 1,857 papers for title and abstract screening. Seventy-two studies remained for full-text screening. Excluded studies were moved into separate folders indicating the point of removal, to ensure they were not lost. To ensure quality of screening and inter-rater reliability, a second researcher checked 20% of full text studies. No disagreements regarding inclusion arose. Reference lists of final papers were hand searched; no additional studies were identified as appropriate. A final sample of 20 studies were included (see Figure 1 for the PIRSMA flowchart).

Figure 1

PRISMA Flowchart of Search Strategy and Study Selection



Quality of Studies

The CASP Cohort Study Checklist (Critical Appraisal Skills Programme, 2023) was used to explore study quality. Studies are appraised according to 12 questions in the checklist, with three sections. Section A (six questions) explores whether study results are valid, Section B (one question) items are about the actual results and Section 3 (3 questions) asks questions about if results will help locally. Two questions have two parts; therefore the total number of questions is ten. Answers to items are ‘yes’, ‘no’ or ‘can’t tell’. The CASP tool does not give individual ratings, although for the purpose of this review, the answer ‘yes’ was allocated a score of one; answers ‘no’ or ‘can’t tell’ were allocated a score of zero, to allow a total score to be calculated. Total scores range from 6 to 9, with an average score of 8. All studies present results which were useful, although scores regarding validity, and if results would help locally, varied. No studies were excluded based on quality. Overall the quality of included studies was good. Table 2 details scores for each study.

Table 2

CASP Quality Ratings of Included Studies

Study	**Section A Are the results of the study valid?** 6 questions	**Section B What are the results?** 1 question	**Section C Will the results help locally?** 3 questions	**Total Score** 10 questions
1. Abdollahi et al., (2014)	5	1	3	9
2. Abdul et al., (2018)	4	1	2	7
3. Bayrampour et al., (2016)	4	1	3	8
4. Fairbrother et al., (2016)	3	1	2	6
5. Fredriksen et al., (2017)	4	1	2	7
6. Giallo et al., (2017)	5	1	2	8
7. Heron et al., (2004)	5	1	2	8
8. Jacques et al., (2020)	5	1	2	8
9. Li et al., (2017)	4	1	2	8
10. Luciano et al., (2022)	6	1	3	9
11. McCall-Hosenfeld et al., (2016)	5	1	2	8
12. Mohamad et al., (2015)	5	1	2	8
13. Mohammad et al., (2011)	4	1	3	8
14. Mora et al., (2009)	5	1	2	8
15. Mughal et al., (2023)	5	1	3	9
16. Pellowski et al., (2019)	4	1	2	7
17. Phoosuwan et al., 2019)	5	1	2	8
18. Sutter-Dallay et al., (2020)	5	1	2	8
19. Wilkman et al., (2020)	5	1	2	8
20. Woolhouse et al., (2015)	5	1	2	8

Risk of Bias

All studies underwent a systematic screening process. Full-text screening involved checks against inclusion and exclusion criteria; 20% of full-text studies were further checked by a second researcher. The final studies for inclusion have been agreed as appropriate by the team. The quality of 50% of included studies was checked by a second researcher using the CASP tool. Any disagreements in study inclusion or quality rating were discussed and resolved by consensus.

Risk of bias in the included studies themselves was considered. When cohort studies had a companion study (using the same/wider set of participants) these were checked for appropriateness.

Results

Data Extraction and Synthesis

Data was extracted using a predetermined template of key study characteristics (see Table 3) including author, year of publication, country, sample size, sample characteristics, MH symptoms explored, follow-up time points, measures used, and a brief summary of key findings.

A narrative synthesis approach was taken to analyse results (Popay et al., 2005). All included studies reported quantitative data for self-reported MH symptoms using validated outcome measures.

Study Characteristics

The 20 included studies are from 16 countries and were published between 2004-2023, although data collection occurred between 1991-2015. A total of 45,130 participants are included, ranging from a sample of 100 to 14,170. The mean age of participants (where reported) was 24-32 years, 25-100% of particpants were married/cohabiting, and a range of household incomes were represented. Participant ethnicity was not collected/reported in ten studies. All studies had a minimum of three assessment points, most had 3-4 assessment time points, although ranged from 3-10 (Mughal et al., 2023). Some studies explored symptoms of more than one MH difficulty; all included studies explored depressive symptoms, two also explored anxiety and two explored other symptoms including OCD, self-esteem, and psychological wellbeing.

MH measures varied, the most common being the Edinburgh Postnatal Depression Scale (EPDS), used in 17 out of 20 studies, although cut-offs applied vary from <10 to >13. The EPDS is widely used postnatally and has also been validated for use during pregnancy (Bergink et al., 2011). Other measures of

depression validated for use in perinatal samples, included: Centre for Epidemiological Studies Depression Scale (CES-D) and Beck Depression Inventory (BDI). Measures of anxiety included the State Trait Anxiety Inventory (STAI). Measures reporting MH symptomology across time points are recorded as ‘primary’ outcome measures, other measures are listed as ‘secondary’.

The primary outcome of interest is improvement in self-reported MH symptoms. Typically in clinical samples, MH improvement is considered ‘recovery’, and can be defined as someone no longer meeting criteria/threshold for a MH diagnosis or needing medication; who may be said to be ‘in remission’; demonstrate an improvement in functioning; reduced symptoms; discharge from MH services and greater sense of control (Jacob, 2015). In this review, where community samples are utilised, participants did not have a formal MH diagnosis and by medical definition are not ‘clinically unwell’; hence why the current review focuses on symptom change as measure of improvement. As studies use different outcome measures and cut-offs, follow-up time points, analysis methods, and reporting, data will be taken from changes in reported prevalence (% or n), mean symptom changes on measures across timepoints, and/or trajectory modelling group categories, depending on the study. Given the wide range of follow-up points (3 days to 11 years postpartum), the following categories will be applied to all studies for analysis in attempt to have similar number of papers in each group for ease of synthesis: ‘Short-term’ refers to a postpartum follow-up period of up to 3 months, ‘medium-term’ refers to a follow-up period of up to 8 months and ‘long-term’ is follow-up of greater, than 8 months.

Secondary outcomes will explore factors associated with or predictive of MH symptom improvement and/or maintenance i.e., what factors make symptom improvement more or less likely to occur.

Table 3

Characteristics of Included Studies

Study (number, author, publication year; *data collection period)*	**Country of Origin**	**Sample Size** (*n*)	**Sample Characteristics** a. Age: M (range) b. Ethnicity c. Marital status d. Low income	**MH symptoms explored**	**Follow-up time points** (total, *antenatal*, postnatal)	**Outcome Measures** (primary, *secondary)*	**Summary of Findings**
1. Abdollahi et al. (2014) *2010*	Iran	1950	**a**. 26.07 (16-44) **b**. NR **c**. 85.3% married **d**. 64.5%	Depression	3 *32-34W*. 2 & 12W.	EPDS *GHQ*	Of women who experienced depression during pregnancy, 47.2% had recovered by 12 weeks pp. Overall prevalence of depression decreased from pregnancy (21.4%) to 12 weeks postpartum (19.6%).
2. Abdul Raheem et al. (2018) *NR*	Maldives	458	**a**. NR, 61% 25-34 **b**. NR **c**. 98.9% married **d**. 24%	Depression	3 *36W*. 1 & 3M.	EPDS	Overall prevalence of depression symptoms (EPDS>13) decreased from pregnancy (24%) to 3 months pp (12%), indicating 50% recovery rate.
3. Bayrampour et al. (2016) *2008-2010*	Canada	1445	**a**. NR, 72.8% 25-34 **b**. NR **c**. 95.7% married **d**. 26.8%	Depression, Anxiety	4 *2nd & 3rd trimester.* 4 & 12M.	EPDS, STAI. *PSS, MOS-SSS*	5 trajectory groups identified. Most experienced consistently minimal or mild depressive (77%) and anxiety (87%) symptoms.
4. Fairbrother et al. (2018) *NR*	Canada	100	**a**. 32 (23-41) **b**. 76% Caucasian, 13% Asian **c**. 97% married/cohabiting **d**. 31%	Depression, Obsessive Compulsive Symptoms	3 *36W*. 4 & 12M.	OBQ, PPII, BDI-II. *MAF, PSQI*	Depressive symptoms and obsessional beliefs decreased from pregnancy to 12 weeks pp.
5. Fredriksen et al. (2017)	Norway	1036	**a**. 30.3 (17-43)	Depression	7	EPDS.	4 trajectory groups identified. Mean depression scores decreased from early pregnancy to 12 months pp. 82.9%

2011-2012			**b**. 93.9% Norwegian, 6.1% other **c**. 95.9% married/cohabiting **d**. 31.1%		*8-25, 26-29, 30-34 & 36W*. 6W, 6 & 12M.	*ECR, PSI, PRAQ-R, ACE*	experienced minimal depressive symptoms. 10.5% experienced moderate-persistent symptoms.
6. Giallo et al. (2017) *2003-2005*	Australia	1102	**a**. NR, most 25-34 **b**. NR **c**. 90.6% married/cohabiting **d**. 24.3%	Depression	6 *30-32W.* 6W, 6, 12, 18M & 4Y.	EPDS	3 trajectory groups identified: 58.4%: minimal depressive symptoms; 32.7%: subclinical symptoms; 9%: persistently high symptoms from pregnancy to 4 years pp. Depressive symptoms highest at 4 years pp and lowest at 3 months pp.
7. Heron et al. (2004) *1991-1992*	England	8323	**a**. NR **b**. NR **c**. NR **d**. NR	Depression, Anxiety	4 *18 & 32W.* 8W & 8M.	EPDS, CCEI	Depression and anxiety symptoms highest during pregnancy (32 weeks) and decreased pp. 43% had elevated depression antenatally and pp. 64% had elevated anxiety antenatally and pp.
8. Jacques et al. (2020) *2015*	Brazil	3040	**a**. 27.4 **b**. 73.2% White **c**. 12.6% Single **d**. 13.7%	Depression	4 *16-24W*. 3, 12 & 24M.	EPDS	5 trajectory groups identified. 23.4% presented with persistent depressive symptoms, 3.9% showed chronic high depressive symptoms.
9. Li et al. (2017) *2013*	China	240	**a**. 29 **b**. NR **c**. NR **d**. 3.33%	Depression	3 *28+W*. 1 & 4W.	EPDS. *PSSS, CTQ*	Depressive symptoms decreased from pregnancy to 4 weeks pp; scores at 4 weeks pp were higher than at 1 week pp.
10. Luciano et al. (2022) *2019-2021*	Italy	268	**a**. 32.24 **b**. NR **c**. 100% married/cohabiting **d**. 7.4%	Depression	8 *x3 trimesters*. 3 days, 1, 3, 6, & 12M.	EPDS	Depressive symptoms (EPDS>10) were highest during pregnancy and most prevalent during the third trimester (37.8%) and decreased at 12 months pp (11.9%).
11. McCall-Hosenfeld et al. (2016)	USA	3006	**a**. NR, 67.7% 21-30 **b**. 83.2% White (English/Spanish)	Depression	4 *3rd trimester*. 1, 6 & 12M.	EPDS. *MOSS-SSS*	6 trajectory groups identified. Overall symptom reduction: in pregnancy 8.52% had depressive symptoms (EPDS>12),

2009-2014			**c**. 88.5% married/cohabiting **d**. 18.6%				5.06% at 1 month, 4.92% at 6 months at 4.97% at 12 months pp.
12. Mohamad Yusuff et al. (2015) *2009-2010*	Malaysia	2072	**a**. 26.7 **b**. 75% Indigenous **c**. NR **d**. 68.3%	Depression	4 *36-38W.* 1, 3, 6M.	EPDS	13.8% had depressive symptoms (EPDS>12) during pregnancy, 7.1% at 1 month, 6.9% at 3 months and 7.6% at 6 months pp, showing overall reduction.
13. Mohammad et al. (2011) *2005-2006*	Jordan	353	**a**. NR, 41.6% 25-34 **b**. Arabic (% NR) **c**. NR **d**. NR	Depression	3 *3rd trimester*. 6-8W & 6M.	EPDS. *DASS-21, MSSS, CWS, PSES, PKS*	Depressive symptoms (EPDS>13) were lowest during pregnancy (19%), increased to 22.1% at 6-8 weeks pp and decreased to 21.2% at 6 months pp. Overall increase in symptoms.
14. Mora et al. (2009) *2000-2004*	USA	1735	**a**. 24 **b**. 70% African American, 17% Latina, 13% White/other **c**. 25% married **d**. Majority low income (%NR)	Depression	4 *15W*. 3, 11, & 25M.	CES-D	5 trajectory classes identified. Most women (71%) did not experience depressive symptoms. 7% fell into the chronic class with persistent high symptoms.
15. Mughal et al. (2023) *1991-1992*	England	14, 170	**a**. NR, 66.1% 25+ **b**. 85.2% Caucasian **c**. 69.1% partnered **d**. 34.1%	Depression	10 *18 & 23 weeks*. 2, 8, 21, 33, 61, 73, 97, & 134M.	EPDS	4 trajectory classes identified. At 18 weeks' gestation depressive symptoms were highest and decreased over the remaining timepoints. Higher levels of depressive symptoms at 18 weeks' gestation associated with slower rate of deceleration in depressive symptoms over time.
16. Pellowski et al. (2019) *2012-2015*	South Africa	831	**a**. NR **b**. 52.8% Black African, 47.4% mixed ancestry **c**. 39.3% married/cohabiting **d**. 49.8%	Depression	5 *2nd trimester*. 10W, 6, 12, & 18M.	EPDS. *WMHLEQ, CTQ-SF*	5 trajectory groups identified. Mean scores for depressive symptoms were highest during pregnancy (24.2%) and consistently decreased across follow-up time points, reducing to 10.2% at 18 months pp indicating a 14% recovery rate.

17. Phoosuwan et al. (2020) *NR*	Thailand	449	**a**. NR, 82.3% 20+ **b**. NR **c**. 81.7% married **d**. 32.3%	Depression, Wellbeing, Self-Esteem	3 *28-37W*. 1 & 3M.	EPDS. *GHQ, SOC, RSES, DAS, PSSS, PSOC.*	Mean scores for depressive symptoms were highest during pregnancy and decreased pp. Decrease was statistically significant (p<.001) between pregnancy (T1) and 1 month pp (T2). Psychological wellbeing and self-esteem also improved pp.
18. Sutter-Dallay et al. (2012) *1996-1998*	France	579	**a**. 29.4 **b**. NR **c**. 53.1% married **d**. 28.7%	Depression	8 *8M*. 3 days, 6W, 3, 6, 12, 18, & 24M.	CES-D. *BATE*	4 trajectory groups identified. Most women (72%) 'never' experienced depressive symptoms. 4% had pp depression, 21% had antepartum depression and 3% were categorised as having 'chronic' (persistently high) symptoms.
19. Wikman et al. (2020) *NR*	Sweden	2466	**a**. NR **b**. NR **c**. NR **d**. NR	Depression	4 *17 & 32W*. 6W& 6M.	EPDS. *SLES, LITE*	5 trajectory groups identified. Most women (60.6) had no depressive symptoms ('healthy'). 14.6% = 'chronic depression' where mean scores remained high across the perinatal period.
20. Woolhouse et al. (2015) *2003-2005*	Australia	1507	**a**. 30.9 **b**. 74.4% Australian born **c**. 95.3% married/cohabiting **d**. NR	Depression	6 *Pregnancy.* 3, 6, 12, 18M & 4Y.	EPDS. *CAS*	22.5% women reported depressive symptoms during the perinatal period. Depressive symptoms were highest at 4 years pp (14.5%) and lowest at 3 months pp (8.1%), indicating overall symptom increase.

Note. NR = not reported; W = weeks; M = months; Y = years; pp = postpartum.
Outcome measure abbreviations: EPDS = Edinburgh Postnatal Depression Scale; GHQ = General Health Questionnaire; STAI = State Trait Anxiety Inventory; PSS = Parental Stress Scale; MOS-SSS = Medical Outcomes Social Support Survey; OBQ-44 = Obsessional Beliefs Questionnaire; PPII = Postpartum Intrusions Interview; BDI = Beck Depression Inventory; MAF = Multidimensional Assessment of Fatigue Scale; PSQI = Pittsburgh Sleep Quality Index; ECR = Experiences in Close Relationships Scale; PSI = Parenting Stress Index; PRAQ-R = Pregnancy Related Anxiety Questionnaire – Revised; ACE = Adverse Childhood Experiences scale; CCEI = Crown-Crisp Experiential Index; CTQ = Childhood Trauma Questionnaire (SF = Short Form); MSSS = Maternal Social Support Scale; CWS = Cambridge Worry Scale; PSES = Perceived Self-Efficacy Scale: PKS = Perceived Knowledge Scale; RSES = Rosenberg Self-Esteem Scale; WMHLEQ = World Mental Health Life Events Questionnaire; PSOC = Parental Sense of Competence Scale; BATE = Bonis Anxiety Trait-State Inventory; SLES = Stressful Life Events Scale; LITE = Lifetime Incidence of Traumatic Events; CAS = Composite Abuse Scale.

Depression Short Term

Five studies (1, 2, 4, 9, 17) explored depressive symptoms, up to 3 months postpartum. Four utilised the EPDS, although applied different cut-offs (between 10-13). Four studies are from low-middle income countries (LMIC); therefore results may not be generalisable to wider western populations or high income counties (HIC). Four completed follow-ups at one and three months postpartum, and Li et al. (2017) re-assessed at one week and one month postpartum. All papers reported overall depression symptoms improved from pregnancy (T1) to postpartum (T2-3). However this improvement was not linear; at the first postnatal assessment (T2) scores were higher than at the second postnatal follow up (T3). One study reported higher T2 postnatal scores than initial pregnancy assessment (Abdul Raheem et al., 2018). Phoosuwan et al. (2020) found significant (p<.001) symptom improvement between T1 and T2, but not between T2 and T3; significance was not tested in other studies. This is interesting and suggests symptoms may worsen immediately after birth, then begin to improve. This could be linked to changes in hormonal changes in the first weeks after birth. However, Li et al. (2017) found the opposite: postnatal scores were lowest at 1 week postpartum, and increased at 1 month, although not above scores reported in pregnancy. Although, their study had an assessment gap of only 3 weeks (the shortest timeframe of all 20 included papers) and significance was not tested; caution should be taken when considering these results as it could be argued this measurement time frame is too short for meaningful symptom change to occur.

Table 4 depicts overall symptom change by term.

Note. Numbers within text in brackets relate to study numbers as detailed in Table 3.

Table 4

Pattern of Overall Symptom Change

Term	**Study**	**Overall Symptom Change**	**Trajectory Group/Category** (%)
Short-term (up to 3 months)	1. Abdollahi et al. (2014)	Improvement*	-
	2. Abdul Raheem et al. (2018)	Improvement*	-
	4. Fairbrother et al. (2018)	Improvement*	-
	9. Li et al. (2017)	Improvement*	-
	17. Phoosuwan et al. (2020)	Improvement*	-
Medium-term (up to 8 months)	7. Heron et al. (2004)	Improvement*	-
	12. Mohamad Yusuff et al. (2015)	Improvement*	-
	13. Mohammad et al. (2011)	Worsen*	-
	19. Wikman et al. (2020)	-	Healthy (60.6); Pregnancy (8.5); Early postpartum onset (10.9); Later postpartum onset (5.4); Chronic depression (14.6).
Long-term (8 months or greater)	3. Bayrampour et al. (2016)	-	*Depression*: Minimal (26.3); Mild (51.4); Postpartum (9.6); Antepartum (10.2); Chronic (2.4). *Anxiety*: Minimal (54.3); Mild (32.9); Postpartum (4.7); Antepartum (6.6); Chronic (1.5).
	5. Fredriksen et al. (2017)	Improvement	Pregnancy only (4.4); Postpartum only (2.2); Moderate-persistent (10.5); Minimum symptoms (82.9).
	6. Giallo et al. (2017)	Worsen*	Minimal symptoms (58.4); Subclinical symptoms, (32.7); Persistent high symptoms (9).
	8. Jacques et al. (2020)		Low (36.5); Moderate low (40.1); Increasing (9.8); Decreasing persistent (9.7); Chronic high (3.9).
	10. Luciano et al. (2022)	Improvement*	-
	11. McCall-Hosenfeld et al. (2016)	Improvement	Trajectory 1: (6.5); 2: (42.2); 3: (36.5); 4: (1.7); 5: (11.9); 6: (1.3).
	14. Mora et al. (2009)	-	Always or chronic depressive symptomatology (7); Antepartum only (6); postpartum, which resolves after the first year postpartum (9); Late, present at 25 months postpartum (7); Never having depressive symptomatology (71).

15. Mughal et al. (2023)	Improvement*	Increasing symptoms (5.9); Minimal symptoms (78.8); Persistent symptoms (10.8); Decreasing symptoms (4.5).
16. Pellowski et al. (2019)	Improvement*	Mild, slight decrease postpartum (82.9); Minimal during pregnancy, increasing postpartum (3.7); Unstable, peak at 12 months postpartum – 6.6); Moderate during pregnancy, minimal postpartum (3.5); Severe during pregnancy and postpartum (3.1).
18. Sutter-Dallay et al. (2012)	-	Never (72); Postpartum (4); Antepartum (21); Chronic (3)
20. Woolhouse et al. (2015)	Worsen*	-

Note. Improvement = Overall mental health symptom improvement (reduction) from pregnancy to final postpartum assessment.
* = Improvement/decline not linear: fluctuations in symptoms occur across timepoints.
- = Not reported/tested.

Depression Medium Term

Four studies (7, 12, 13, 19) explored depressive symptoms up to 8 months postpartum. All utilised the EPDS, with cut-offs between 12-13. Two studies report depressive symptoms improved from pregnancy to postpartum. However, this symptom change fluctuated across assessment points. Heron et al. (2004) included two pregnancy assessment points and noted depressive symptoms worsened from early to late pregnancy, although gradually decreased postnatally. Mohamad Yusuff et al. (2015) found depressive symptoms decreased at 1 and 3 months postpartum but increased at 6 months postpartum. In contrast, Mohammad et al. (2011) found depressive symptoms worsened from pregnancy (19%, *N*=68) to 6 months postpartum (21.2%), with depression most prevalent at 6-8 weeks postpartum (22.1%, *N*=75). However, it is important to consider these percentage changes are small and represent a small proportion of the sample, additionally, they were not tested for significance. Further, Mohammad et al. (2011) study has a small sample size (*N*=353) when compared to papers 7, 12 & 19 (*N* range = 2072 – 8323). Wikman et al. (2020) identified 5 trajectory groups, including a ‘chronic’ group (14.6%) with persistent symptoms (EPDS>13), a ‘healthy’ group (60.6%) with low depressive symptoms, and a ‘pregnancy only’ group (8.5%) where symptoms improved from pregnancy to 6 months postpartum. Even within the ‘healthy’ group, depressive symptoms fluctuated, gradually increasing across pregnancy to 6 weeks postpartum before reducing at 6 months.

Depression Long Term

Eleven studies (3, 5, 6, 8, 10, 11, 14, 15, 16, 18, 20) explored depressive symptoms after 8 months postpartum, the longest follow-up being 11 years. Nine utilised the EPDS, with cut-offs between 10-13. Ten studies applied latent growth

modelling (trajectory groups), and some also report prevalence/mean symptom change across timepoints. Five studies (5, 10, 11, 15, 16) show overall improvement in symptoms, although fluctuations occur across the postnatal period. For example, Pellowski et al. (2019) reported 24.4% mothers met depression criteria during pregnancy, which decreased to 10.2% at 18 months postpartum, although increased slightly from 6 (14.5%) to 12 (16.5%) months postpartum. Luciano et al. (2022) noted a linear increase in symptoms across pregnancy trimesters, but this gradually fell across postnatal assessment points. Few included studies apply multiple pregnancy assessment points, this study is useful in indicating how symptoms can worsen during pregnancy. In contrast two studies (6, 20) using 5 postpartum follow-ups identified an overall decline in symptoms from pregnancy to postpartum; both report depressive symptoms to be greatest at 4 years postpartum (Giallo et al., 2017; Woolhouse et al., 2015). Albeit these studies utilise follow-up assessments outside of the perinatal period, this suggests symptoms can worsen several years after birth. Interestingly both studies took place in Australia, a HIC, have similar sample sizes, and otherwise appear representative of perinatal samples. When viewing through a short-term lens, both studies show symptom improvement from pregnancy to 3 months postpartum; after this symptoms gradually decline. In Giallo et al. (2017) study differences between 3 months and 4 years postpartum were statistically significant. Specific reasons for this increase are unclear, although Woolhouse et al. (2015) suggest having only one child was linked to increased depression. Additionally, Giallo et al. (2017) reported 27.2% missing data at the 4-year follow-up, which likely influenced results; one hypothesis is mothers experiencing fewer symptoms did not feel the need to complete the EPDS, possibly leading to an overreporting of depression at this time point. At 4 year follow-up, Woolhouse et al.

(2015) report 83.4% retention rate and highlight how these participants were more likely to be older, educated, not reliant on government benefits and less likely to report depressive symptoms in the first 12 months postpartum. This is interesting and suggests the depressive symptoms were not caused by the perinatal period in this group.

Trajectory groups identified range from 3-6. All studies identified a 'chronic' group who experience persistent high symptoms (above measure cut-offs), ranging from 1.3%-10.8% of samples. Similarly, studies identified a 'healthy' group of mothers who experienced 'no'/'mild' symptoms; it is encouraging that the majority of women fell into this group (72%-85.2%). Considering symptom improvement (recovery), studies identified a group of mothers whose symptoms improved from pregnancy to postpartum (4.4%-48.4%), and a group whose symptoms worsened after birth (1.7%-9.8%).

All 20 studies are from a range of countries, yet there does not appear to be a difference in depressive symptom improvement, for example by LMIC or HIC.

Anxiety

Two included studies explored long-term symptoms of anxiety; therefore definitive conclusions cannot be drawn. Heron et al. (2004) found anxiety symptoms were highest in pregnancy (14.6%) and decreased (9.3%) at 8 months postpartum. Bayrampour et al. (2016) identified 5 anxiety trajectory groups up to 12 months postpartum. Most (87%) experienced low symptoms, and a small group (1.5%) experienced consistently high symptoms.

Other Symptoms

One study (Fairbrother et al., 2018) explored OCD symptoms, specifically obsessive beliefs, and obsessive compulsive symptoms (OCD thoughts and

associated feelings) from pregnancy to 4 and 12 weeks postpartum. Mean scores show a reduction in obsessional beliefs, and obsessive-compulsive symptoms from pregnancy to 12 weeks postpartum. However, it is important to consider these findings in the context of the small sample (*n*=100) and 16% participant loss at follow-up. Phoosuwan et al. (2020) also explored psychological wellbeing, and self-esteem, assessed at pregnancy, 1 and 3 months postpartum and found improvement across both from pregnancy to postpartum. Although, significance was not explored, and retention rate was 61%.

Predictors of Symptom Improvement

None of the 20 included studies explicitly explored predictors of PMH symptom improvement or other outcomes i.e. social or occupation functioning, future pregnancies, etc. Ten studies identified trajectory groups for PMH symptoms, including ‘antepartum’ and ‘postpartum’ groups, although here focus is on the development of PMH symptoms, as opposed to improvement or maintenance. One further study also explored predictors of maintained depressive symptoms. Therefore, factors associated with maintained PMH symptoms, membership of ‘chronic’ groups, where symptoms were persistently high (without improvement) across the perinatal period, were explored. A range of socio-demographic, psychological, physiological, and obstetric factors were identified as predictors of maintained poor PMH symptoms. Eight out of 11 studies identified past MH problems to be a significant predictor. Interestingly, of the three (14, 16, 18) studies that did not identify this as a predictor, two (14, 16), conducted in the USA and Australia, have a high proportion of Black/African American participants. This was followed by stress/stressful life events and a single marital status, as identified in six studies. A low household income (typically <£40,000) and relationship difficulties (including

intimate partner violence) were also predictors, in five studies. Table 5 details all predictors of maintained depressive symptoms identified.

Considering predictors of maintained anxiety symptoms, in their ‘chronic’ group, Bayrampour et al. (2016) found: a history of MH difficulties, a history of abuse/neglect, low social support, high stress, unplanned pregnancy and poor physical health were significant predictors.

Predictors of other PMH symptoms (OCD, wellbeing, self-esteem) were not explored.

Table 5

Predictors of Maintained Depressive Symptoms

Predicting Factors \ Paper Number		3	5	6	8	11	14	15	16	18	19	20
Socio-demographic Factors	Low income / socioeconomic status	P	-	P	P	-	-	P	X	X	-	P
	Unemployment	-	-	P	-	-	-	-	-	-	P	-
	Marital status: Single / not living with partner	P	-	-	P	P	X	P	-	X	P	P
	Age (<25)	P	X	P	-	-	X	X	-	X	P	P
	Education level / low educational attainment	X	P	X	P	X	X	-	-	-	P	X
	From non-English speaking background / foreign born	X	-	P	-	-	-	-	-	-	P	-
	Ethnicity	-	-	-	-	-	P	P	-	-	-	-
	Low / inadequate perceived social or partner support	P	-	-	-	-	-	P	-	-	P	-
	Relationship problems / partner conflict / partner violence	-	-	P	-	-	-	P	P	-	P	P
Psychological Factors	Previous/History of Mental Health Difficulties	P	P	P	P	P	-	P	-	X	P	P
	Abuse/neglect history (trauma)	P	-	P	-	-	-	-	-	-	P	-
	Adverse childhood experiences (ACEs)	-	P	P	-	-	-	-	X	-	P	-
	Poor emotional health	-	-	-	-	-	P	-	-	-	-	-
	Trait Anxiety / persistent anxiety symptoms	-	-	P	-	-	-	-	-	P	-	-
	Persistent depressive symptoms	-	-	P	-	-	-	-	-	-	-	-
	High perceived stress / stressful life events	P	P	-	-	-	P	P	P	-	X	P
	Anxious attachment orientation	-	P	-	-	-	-	-	-	-	-	-
	Partner with poor mental health	-	-	-	-	-	-	-	-	-	P	-
Physiological / Obstetric Factors	Preterm birth	P	-	-	-	-	-	X	-	-	-	-
	Unplanned pregnancy	P	-	-	P	-	-	-	-	-	P	-
	Attended <6 antenatal consultations	-	-	-	P	-	-	-	-	-	-	-
	Infertility History	X	-	-	-	-	-	-	-	-	-	-
	Parity / Number of children	-	X	-	P	-	P	-	-	X	-	P
	Pregnancy ambivalence	-	-	-	-	-	P	-	-	-	-	-
	Pregnancy/birth complications (e.g., neonatal admission)	-	-	-	-	-	-	-	-	-	P	-
	Delivery choices: Caesarean section, induction	X	-	-	P	-	-	-	-	-	-	-
	Miscarriage	-	-	X	-	-	-	-	-	-	-	-
	Pregnancy termination	-	-	X	-	-	-	-	-	-	-	-

Not breastfeeding	-	-	-	-	-	-	-	-	-	P	-
Difficult infant temperament	-	-	-	-	-	-	-	-	-	P	-
Postpartum sexual health problems	-	-	P	-	-	-	-	-	-	-	-
Low / perceived low physical health	P	-	-	P	-	X	-	-	-	-	-
Smoking / tobacco use	-	-	-	X	-	P	P	P	-	P	-
Drug / Alcohol use	-	-	-	X	-	-	X	X	-	X	-
Sleep Deprivation / Postpartum Exhaustion	-	-	P	-	-	-	-	-	-	P	-
Being Overweight / Pregnancy BMI	-	-	-	-	X	-	-	-	-	P	-
Physical health difficulties: migraine, irritable bowel syndrome, premenstrual syndrome	-	-	-	-	-	-	-	-	-	P	-

Note. P = identified to be a significant predictor; X = not found to be a predictor; - = not explored.
3 = Bayrampour et al. (2016); 5 = Fredriksen et al. (2017); 6 = Giallo et al. (2017); 8 = Jacques et al. (2020); 11 = McCall-Hosenfeld et al. (2016); 14 = Mora et al. (2009); 15 = Mughal et al. (2023); 16 = Pellowski et al. (2019); 18 = Sutter-Dallay et al. (2012); 19 = Wikman et al. (2020); 20 = Woolhouse et al. (2015).

Discussion

Summary

All 20 studies explored depressive symptoms, two also explored anxiety, one explored OCD and one explored other aspects of MH (wellbeing, self-esteem). There was considerable heterogeneity of assessment points between studies, with variations of a few weeks to months and years apart; studies with larger gaps between timepoints may therefore have missed symptom changes. Consequently, studies were categorised into short, medium, or long-term follow-ups to allow for more meaningful comparisons. The number of participants also varied considerably, most studies had >1000 participants, yet ranged from 100 – 14,170. Studies also varied in assessment tools, cut-offs and analysis and reporting applied making direct comparisons more challenging. Whilst studies reported changes in symptoms (M, %, prevalence) across the perinatal period, this was often not explored within an improvement (recovery) context and the statistical significance of these changes often not tested or reported.

The majority of studies indicate PMH symptoms improve from pregnancy to postpartum, although this improvement is not linear, and can fluctuate across timepoints. Two studies found symptoms declined several years after birth. It is encouraging that most mothers (72%-85.2%) experience mild symptoms and a small proportion experience persistent difficulties (1.3%-10.8%). Exploration of predictors of PMH symptom improvement remains limited. Predictors of maintained symptoms included: previous MH difficulties, stress, low income, marital status, and partner conflict.

What are the long-term symptom outcomes for women experiencing perinatal mental health symptoms?

All 20 studies explored depressive symptoms and the majority found symptoms were worst during pregnancy and improved postnatally, but fluctuations were evident, and improvement was not linear. In contrast, three studies identified depressive symptoms to worsen from pregnancy to postpartum and reasons for this remain unclear. In one of these three (Mohammad et al., 2011) percentage symptom change was small, seen in a small number of participants and significance was not tested, therefore doubts arise around the reliability of this finding. The other two (Giallo et al., 2017; Woolhouse et al., 2015) included a 4 year assessment point, where symptoms were worst. Reasons for this are unclear, both studies were conducted in Australia, a HIC, with similar sample sizes, that appear representative of perinatal populations. Much change can occur in the first 4 years after birth, such as child development and meeting milestones, parents returning to work, children attending nursery and starting school (at age 4); it could be argued that these and other factors that were not captured, contributed to the increased depressive symptoms. Furthermore, most studies applied shorter follow-up points, it is therefore unclear if a similar pattern would have been present, had longer follow-ups occurred. Longer follow-ups may be needed, particularly given the evidence that PMH can negatively impact upon child outcomes (Aktar et al., 2019; Deave et al., 2008). It would be helpful to better understand the factors linked to this later deterioration.

Eleven studies explored predictors; 10 of which identified trajectory groups for depressive symptoms, ranging from ‘no’ symptoms to chronic/persistent symptoms. Most women fell into the ‘no’ to ‘mild’ symptom trajectory (72%-85.2%); a small number of women experienced persistent, high symptoms (1.3%-10.8%) who may have met threshold for diagnosis and support from perinatal services. These findings are consistent with other figures suggesting rates of PMH difficulties are between 10-

20% (Bauer et al., 2014; Howard & Khalifeh, 2020) and persistent symptoms identified in 1.1-14.6% mothers (Vanwetswinkel et al., 2022). In the general population, approximately 5% of people experience depression, and women are twice as likely as men to have difficulties (WHO, 2023). Findings from the current review, are consistent with those of other reviews (Baron et al., 2017; Vanwetswinkel et al., 2022; Woody et al., 2017) and highlight the importance of regularly measuring symptoms across the perinatal period. Often literature exclusively explores the antenatal or postnatal period, meaning longitudinal changes may be missed (Bennett et al., 2004; Vliegen et al., 2014). Additionally, in the current study, results show greater fluctuations are seen in studies applying more assessment points, again highlighting the need to frequently measure symptoms across the perinatal period to explore changes in symptoms.

Two studies explored anxiety symptoms. Heron et al. (2004) found anxiety symptoms improved from pregnancy to postpartum, although scores fluctuated across the postpartum timepoints. Bayrampour et al. (2016) identified most participants experienced low/mild symptoms, and a small percentage had persistently high symptoms. Again, these findings are consistent with those found in existing research (Ahmed et al., 2019; Ahmed et al., 2018; Leach et al., 2017). Although, both studies utilised different measures, and analysis methods, it is therefore difficult to draw firm conclusions about anxiety recovery.

One study (Fairbrother et al., 2018) explored OCD symptoms; and found a reduction in symptoms from pregnancy to postpartum, findings similar to limited existing research (Miller & O'Hara, 2020). Although as this was the only included study exploring OCD symptoms, conclusions cannot be drawn.

Literature highlights how PMH difficulties can be more prevalent in low-middle income countries and differences occur between countries (Steel et al., 2014). The current review included 20 studies from 16 different countries, yet no differences in PMH symptom improvement were identified between counties. Reasons for this are unclear, although could be attributed to the relatively small number of countries included and fact the majority are considered HIC, so many not be globally or culturally representative.

Overall, findings indicate PMH symptoms approve from pregnancy to postpartum, yet fluctuations occur, and, in limited cases, symptoms can worsen several years after birth. This highlights a role for regular screening of a range of PMH symptoms across and beyond the perinatal period, to enable detection of symptom changes and for potential interventions to be offered. Additionally, research should focus on other PMH difficulties other than depression and other 'recovery' outcomes, including social and occupational functioning.

What factors predict change in mental health symptoms in women during the perinatal period?

We aimed to explore predictors of PMH symptom improvement, however found no studies included in this review explicitly explored this, highlighting a clear role for future research to explore these predictors further. It is possible symptom improvement or 'recovery' is a challenging concept to operationalise and measure within non-clinical samples, reliant on self-report methods, compared to clinical samples who are more likely to be supported by perinatal services, where relapse rates and hospital admissions can be monitored.

We therefore explored predictors of PMH symptom maintenance in 'chronic' trajectory groups where symptoms were maintained/persistently high across the

period, indicating improvement/recovery did not occur. Previous MH difficulties were identified as the main predictor in eight studies, a finding consistent with previous research (Vanwetswinkel et al., 2022). Considering the three studies that did not find this to be a predictor, two (14, 16) were conducted in Australia and were similar in sample size, however they recruited a larger proportion of Black/African American mothers. This could explain the finding, given evidence highlights Black women are disproportionally effected by depression than white women (O'Hara & Mc Cabe, 2013), largely due to barriers in accessing support (Dwarakanath et al., 2023). Unfortunately, studies did not routinely collect/report ethnicity, therefore further comparison was not possible. Life stress/stressful life events and marital status (being single) were the second most prevalent predictors, followed by relationship problems/partner conflict, and low socioeconomic status. Other predictors included maternal age, social support, trauma history, ACEs, number of children and smoking. These findings are consistent with existing literature which also identified these to be predictors of maintained poor PMH (Biaggi et al., 2016; O'Hara & McCabe, 2013; O'Hara & Wisner, 2014; Parker et al., 2015). Notably, included studies typically assessed predictors at baseline assessment (during pregnancy), therefore neglecting to explore later factors that could also have influence e.g., traumatic birth, postpartum support, bonding, family outcomes. Additionally, many studies only explored a small range of predictors and other key factors were not explored (i.e., personality factors, substance misuse, pregnancy history, etc). Overall, a range of factors predict PMH symptom maintenance; yet there remains gaps; it is important to identify and understand factors that predict PMH symptom improvement or maintenance, as this can inform services about potential risk factors and support needed.

Strengths

A strength of this review is consideration of all subclinical PMH symptoms, albeit all our studies explored depressive symptoms, a small proportion also explored other symptoms (anxiety, OCD, wellbeing). PMH symptoms were also explored across countries and the whole perinatal period. Additionally, studies utilised community perinatal samples, excluded those with a clinical diagnosis, meaning findings can be generalised to community, perinatal populations. Similarly, the review was inclusive of a range of methodologies including trajectories, prevalence, and persistence studies, whereas other reviews have focused solely on a particular analysis e.g., trajectory groups (Vanwetswinkel et al., 2022). Finally, the review adhered to PRISMA protocols, and a systematic approach and strict inclusion criteria was applied throughout all stages of the review. High inter-rater reliability was found during full-text screening and quality appraisal with another researcher. We believe this review is the first of its kind to include all PMH symptoms across the whole perinatal period, in a community population.

Limitations

It is important to interpret findings in the context of some limitations. Whilst this review was inclusive of all PMH symptoms, the final pool of studies was limited to few symptoms, primarily focusing on perinatal depression, potentially as a result of our strict inclusion criteria. It is possible other MH symptoms such as trauma (PTSD), or psychotic-like symptoms, are experienced and/or measured at a clinical level, and were therefore not captured using the current criteria, or arguably these are symptoms associated with more complex MH conditions, not typically explored in community perinatal samples. Many studies included more than one measure of MH symptoms yet did not report results for these across time points, instead focusing on

depression; this data would have been useful in informing about potential comorbidities of PMH symptoms. The continued focus of research on perinatal depression, neglects to explore other difficulties such as anxiety, OCD and psychosis, meaning our knowledge of these difficulties remains limited. Furthermore, most studies specified exclusion of mothers with clinical diagnosis, however, most did not explicitly report asking if mothers were receiving MH treatment/open to a perinatal MH team, so it is possible some studies unknowingly included participants with a clinical diagnosis, which may have skewed results. Studies utilised community samples, however there is increased likelihood of self-selection bias within this sample, which could lead to an overrepresentation of 'healthy' women and potential underrepresentation of those who are more unwell. Study quality varied, as indicated on the CASP checklist. Whilst average quality scores were 8, this ranged between 6-9. Fifty percent of included studies were rated by a second researcher, this could have been enhanced had all included studies been second rated. Studies with only one postnatal assessment point were excluded, though may have provided useful information regarding PMH symptom outcomes.

Studies varied widely in measures used, sample size, follow-up intervals and analysis methods. Many studies did not report clear details of measure results (%, n, or M) at each time point making synthesis of findings more challenging. Consequently, due to the variability in data, a meta-analysis was unable to be conducted. Many studies used the EPDS to measure depressive symptoms, although cut-offs varied from 10 to 13, meaning some results may have been over/understated; a cut off of 10 is recommended for community samples (Levis et al., 2020). A consistent cut-off would have allowed for more valid synthesis. The EPDS is also not designed for use outside the postnatal period, therefore items may

not have been relevant several years after birth and alternative measures may have been more appropriate. Studies utilised self-report tools, which some suggest overestimate true prevalence (Gavin et al., 2005). Studies varied in time-points, and some had gaps in follow-ups of several years, meaning fluctuations in symptoms between these points may not have been captured. Short, medium and long-term categories were applied to ease synthesis and ensure short-term change was not missed, e.g. 16/20 papers included follow-ups of 6 months and greater, hence why the 'long-term' category was defined as follow-ups of 8 months or longer, to reduce the number of studies in this category (to 11). Albeit the long-term category ranged from 8 months to 11 years; it may have been helpful to further split this. Furthermore, few studies with long-term follow ups specified if further pregnancies and/or births occurred, which will undoubtably have impacted upon PMH symptoms and could explain later symptom fluctuations.

There is a lack of participant diversity in the included studies, participants were largely white, partnered, and from HIC, which limits overall generalisability. This is further limited by studies not consistently reporting demographic information or other important characteristics. Studies were conducted in a range of countries, the majority of which are considered HIC; it is important to consider the different cultural and healthcare practices across countries, and generalisation to other countries may be limited. Data collection across studies occurred over a 20-year period, during which MH care practices and attitudes have changed and the literature field expanded.

Finally, no studies included explicit measures of symptom improvement (recovery), at a functional or wider level, this would have been of interest and

allowed a better understanding of PMH improvement, which in turn informs about outcomes and need for perinatal services.

Clinical Implications

This review informs about the symptom outcomes of PMH difficulties across the perinatal period and a range of PMH symptoms. Findings indicate symptoms are worst during pregnancy and typically improve postpartum, although fluctuations are common, and symptoms may worsen several years after birth for some mothers. Findings also inform about mothers who are less likely to see improvement in PMH symptoms. Clinically, services could consider frequent review of a range of PMH symptoms across the period and demonstrate awareness of potential fluctuations in symptoms. Early detection of worsening symptoms would allow for opportunity to provide appropriate intervention and support in order to prevent further deterioration in symptoms. Whilst the majority of mothers appear to experience no to mild symptoms, rates of depressive symptoms vary over the perinatal period and beyond, and a small sample of mothers experience persistently high symptoms (1.3-10.8%), indicating a need for greater support, sometimes beyond the perinatal period.

At a wider level, public health educational campaigns will be important in informing parents, surrounding systems, and healthcare professionals about the prevalence and predictors of subclinical PMH symptom improvement. Training for NHS professionals/services such as GPs, health visitors, and midwifes, who regularly come into contact with mothers should be offered, to provide further education and increase awareness of factors that may increase the likelihood of symptom maintenance, and to promote recovery to mothers and aim to reduce the need for intensive or long-term intervention. By understanding and regularly monitoring identified predictors/symptoms, services can offer early intervention to

women at greater risk, e.g. with previous MH difficulties. Additionally, greater consensus is needed regarding use of assessment tools and symptomatic cut-offs, to identify mothers at increased risk.

Future Research

Opportunities remain for future research to expand on findings from this review. Preliminary searches indicated minimal studies exploring PMH symptom outcome in fathers; as the literature field grows, it would be of interest to explore this further and compare findings to those of mothers. Additionally, exploration of the broader impact of subclinical PMH symptoms, for example on social/occupational functioning, and parenting, is of interest. There remains a lack of longitudinal research within PMH; this type of research allows understanding of how PMH symptoms can develop and change over time and inform our understanding of when is best to intervene and support. The current review required at least three assessment time-points, two of which occurred postnatally to allow understanding of changes in symptoms over time. Future research could expand on this by altering inclusion criteria or including studies utilising qualitative methodology. There is a clear gap in literature exploring predictors of PMH recovery such as social and occupational functioning in non-clinical samples. Studies should also aim to explore a range of PMH symptoms rather than solely focusing on perinatal depression; this can allow for understanding of potential comorbidities and comparison to equivalents in clinical samples. It would also be helpful to include mothers with lived-experience in research to inform our understanding and direct future research. Additionally, further longitudinal research will enable an understanding of transition rates of mothers who's subthreshold symptoms may develop into those of clinical diagnostic level.

Next Steps and Recommendations

The above highlights clear steps and recommendations including: (1) explore a range of PMH symptoms in both mothers and fathers; (2) clearer definitions and focus on recovery from PMH symptoms e.g., functioning; (3) greater consensus on measurement cut-offs.

Conclusions

This systematic review found outcomes for mothers experiencing PMH symptoms vary across the perinatal period. Studies varied in assessment tools, cut-offs and analysis making comparisons more challenging. The majority of mothers experience ‘no’ to ‘mild’ symptoms. Most suggested PMH symptoms are highest during pregnancy and improve postnatally, though can fluctuate, and may deteriorate several years after birth in some cases. These findings are useful and can inform service provision and highlight the need to monitor mental health symptoms across and beyond the perinatal period. This review found no studies exploring predictors of PMH symptom improvement, though identified past MH difficulties, stress, low income, marital status, and relationship difficulties, to be predictors of maintained PMH symptoms. Future research is needed to identify factors predicting PMH symptom improvement. Ultimately, there remains a need for more longitudinal research, to explore a range of PMH symptoms, across the perinatal period.

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CHAPTER THREE

Bridging Chapter

Word Count: 699

The systematic review explored longitudinal perinatal mental health (PMH) symptom change and associated predictors, in mothers without a formal MH diagnosis. The review included 20 papers, from 16 countries; each paper had three assessment time points, two of which occurred postnatally. All papers explored symptoms of depression, two also explored anxiety symptoms, one explored OCD symptoms and one explored symptoms of overall wellbeing, and self-esteem. Studies varied considerably in methodology, analysis, and data reporting. Studies were categorised into short, medium, and long-term follow-up for ease of synthesis given the wide range of assessment points (3 days to 11 years postpartum). Results showed PMH symptoms were worst during pregnancy and gradually improved postnatally, although this pattern was not homogeneous; two studies with follow ups of 4 years postpartum noted that symptoms worsened over time and were higher than in pregnancy. Several papers utilised trajectory modelling groups and found the majority of mothers (72-85.2%) had ‘no’ to ‘mild’ symptoms, and a small proportion (1.3-10.8%) experienced consistently high symptoms throughout the perinatal period. Findings highlighted key predictors of maintained PMH symptoms included a history of MH difficulties, high stress, low income, single marital status, and relationship difficulties.

Perinatal research has largely focused on depression, as evidenced in the above review, yet other PMH conditions are prevalent and distressing. For example, perinatal psychosis is a serious MH disorder that occurs suddenly, shortly after birth, and involves alerted perceptions and sense of reality which can present as distressing delusions, hallucinations, disordered beliefs, mood and behaviour changes, and withdrawal (Heron et al., 2008; Jairaj et al., 2023). It can result in

negative outcomes for mother and child, and impact mother-child interactions (Biaggi et al., 2023). If untreated, there is increased risk for maternal self-harm, suicide, substance misuse or infanticide, and future psychotic episodes (Ayre et al., 2019; Grigoriadis et al., 2017; Jones et al., 2014).

A further difficulty is perinatal OCD, which involves experiencing obsessions, ITs, and a desire to perform compulsions. Common examples include thoughts about harming the baby (intentionally or accidentally), and compulsions, commonly related to fear of contamination to baby, which can result in frequent checking of baby and reassurance seeking, however presentations vary widely. These obsessions and compulsions are maintained through misinterpretation of thought importance and overestimation of threat (Buchholz et al., 2020; Hudepohl et al., 2022).

Furthermore, PMH is often explored in clinical samples, perhaps as change can be better assessed in this population. However, subthreshold PMH symptoms, i.e., those below diagnostic threshold or clinical cut-offs, typically within community samples, are problematic and distressing and can develop into later affective psychopathology if not identified and treated (Lawrie et al., 2019; Wesseloo, 2016). For example PLEs, a subclinical feature of psychosis, can develop into psychosis, particularly if PLEs are frequent and appraised as distressing (Kaymaz et al., 2012). Similarly, ITs can become problematic when they are appraised as important and can result in increased compulsive behaviours and subsequently develop into clinical OCD (Barrett et al., 2016). Evidence suggests OCD and psychosis exist on a continuum, where symptoms vary from ‘subclinical’ to ‘clinical’ levels, usually dependent on how the experiences are appraised (Clark & Rhyno, 2005; Johns et al., 2014; Johns & Van Os, 2001). Currently, there is limited literature exploring ITs and PLEs in perinatal populations, particularly in community samples (typically

understood to represent a ‘non-clinical’ sample) . Given the understanding PMH difficulties are associated with negative long-term outcomes for parents, babies, and surrounding systems (Howard & Khalifeh, 2020), it is important to develop our understanding of distressing symptoms like ITs and PLEs.

Therefore, the empirical paper presented in chapter 4, aims to explore perinatal ITs and PLEs in greater detail. Using a quantitative online survey design and community sample (i.e., those without a clinical MH diagnosis), the study will explore ITs and PLEs of parents in the postnatal period, with particular attention to the severity and distress related to these experiences. The study will also explore associations of ITs and PLEs with parenting experiences (including parental competence, satisfaction, and parenting stress) and with other MH symptoms (including depression, anxiety, and stress). In addition, the study aims to explore if there are differences in these experiences between female and male parents.

CHAPTER FOUR

Empirical Research Study

Prepared for Submission to: Community Mental Health Journal

Author guidelines included in Appendix B

Word Count: 6,604

Note. Author guidelines specify size 10 font and tables and figures to be included at the end of the text. For ease of reading, font is size 12 and tables and figures are embedded within the text.

Postnatal Intrusive Thoughts and Psychotic-Like Experiences: Exploring Associations with Parenting Experiences and Mental Health

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Abstract

Background

During the perinatal period, many parents experience mental health (MH) difficulties of varying severity, which have been associated with adverse outcomes. Examples include perinatal obsessive-compulsive disorder (OCD) and psychosis, which are thought to exist on a continuum from subclinical symptoms (such as intrusive thoughts (ITs) and psychotic-like experiences (PLEs), respectively), to clinical diagnosis. Limited literature explores these difficulties in perinatal populations, and less is known about levels of distress experienced, or potential associations with parenting experiences and other MH symptoms.

Method

A cross-sectional, quantitative design was applied. Participants were parents in the postnatal period, recruited via social media and parenting forums. Parents completed an anonymous, online survey, which explored experiences of ITs, PLEs, parenting (competence, satisfaction, and stress) and MH symptoms (depression, anxiety, and stress).

Results

Of 349 participants, 93% reported at least one IT, 90% reported associated distress and 93.5% engaged in behaviours to cope with ITs. Considering PLEs, 88% experienced at least one PLE, 83% reported associated distress and 30.4% were considered ‘at-risk’ for psychosis. Distressing ITs and PLEs were significantly associated with lower parental competence and satisfaction, and increased parenting stress and MH symptoms. ITs and PLEs significantly predicted parental competence and parenting stress, although this relationship was indirectly mediated

by depression and anxiety. Male parents reported more frequent and distressing ITs than females.

Conclusions

Postnatal ITs and PLEs were prevalent, distressing and significantly linked to parenting experiences and MH. More research is needed to better understand experiences of ITs and PLEs across the perinatal period.

Keywords: Postnatal, intrusive thoughts, psychotic-like experiences, mental health, parenting.

Note. This study was designed jointly, and data collection was shared with another ClinPsyD trainee, though analysis and write-up was completed separately in line with individual research questions.

Introduction

The perinatal period is a time of great change for parents, and estimates suggest 10-20% experience perinatal mental health (PMH) difficulties (Bauer et al., 2014). Research focuses on experiences of perinatal depression and anxiety, given these are more commonly experienced (Shorey et al., 2018; Viswasam et al., 2019); yet there is a need for research to focus on a broader range of PMH experiences (Howard & Khalifeh, 2020).

Perinatal Intrusive Thoughts and Psychotic-Like Experiences

Intrusive thoughts (ITs) are unpleasant, unrealistic, and unwanted thoughts (Abramowitz et al., 2006; Fairbrother & Woody, 2008). Subclinical ITs are similar in context and form to those seen in obsessive compulsive disorder (OCD), but differ in frequency, intensity, distress caused and perceived thought control (Berry & Laskey, 2012; Clark & Rhyno, 2005). Approximately 70-100% of new mothers report ITs (Collardeau et al., 2019), compared to 80-90% of the general population (Clark & Rhyno, 2005). The nature of perinatal ITs vary, though are often related to infant safety (Garcia et al., 2023) and can include thoughts of harm to the infant, whether intentionally or accidentally (Fairbrother & Woody, 2008). Thoughts of intentional harm are understandably more distressing (Fairbrother et al., 2018), but accidental harm thoughts can be more frequent and time consuming (Fairbrother & Woody, 2008). ITs are said to peak in the first few weeks following birth (Brok et al., 2017) and many mothers are reluctant to disclose ITs due to feelings of shame (Melles & Keller-Dupree, 2023). Notably, the presence of ITs is not predictive of actual infant harming behaviours (Abramowitz et al., 2003). ITs are usually related to concerns about the infant following an increased sense of responsibility in the perinatal period

and can be more frequent in stressful, emotional situations, such as the time after having a baby (Frías et al., 2015).

Psychotic-like experiences (PLEs) are considered subclinical experiences typically seen in psychosis, including hallucinations or delusions e.g., thoughts of being followed, or seeing and hearing things that others cannot (Ising et al., 2012). It is suggested 93.5% of mothers experience at least one PLE postnatally (Holt et al., 2018), compared to 1-17.5% in the general population (Nordgaard et al., 2019). These include beliefs that conflict with reality, and sensory experiences without an external stimuli that are distinguishable from clinical symptoms in their severity, frequency, associated distress, interpretation, preoccupation, and conviction of beliefs (Derosse & Karlsgodt, 2015; Morrison & Baker, 2000; Peters et al., 2004). PLEs can occur at any point during the perinatal period, although are typically explored postnatally, given the potential adverse effects for mother and baby (Lu et al., 2022). There is a lack of research using more clinically focused measures of PLEs, therefore our understanding of such experiences at subclinical level remains limited. Evidence suggests those experiencing frequent PLEs are at greater risk for developing psychosis; it is therefore vital to better understand this experience in non-clinical, perinatal samples (Kaymaz et al., 2012).

Continuity Hypotheses

The continuum theory suggests psychosis exists on a spectrum (Johns & Van Os, 2001) from ‘no’/’mild’ (subclinical) symptoms to clinical psychosis, which requires support from MH services. Symptoms along this continuum vary in severity, frequency, associated distress, interpretation, preoccupation, and conviction of beliefs (Derosse & Karlsgodt, 2015; Morrison & Baker, 2000; Peters et al., 2004), and in how individuals appraise and respond to experiences (Johns et al., 2014; Van

Os et al., 2009). PLEs fall along this continuum and are defined as subclinical hallucinations or delusions, similar to those seen in psychosis, but in a diminished form (Cicero et al., 2013) and are relatively common in the general population (Staines et al., 2022). Within PLEs, hallucinations are reportedly more common than delusions (McGrath et al., 2015). The cognitive model of psychosis (Garety et al., 2001) highlights how an individuals' appraisal of PLEs is key; and may have a negative impact, greater distress and impairment if appraised in a maladaptive way (Dudley et al., 2007; Lovatt et al., 2010).

Similarly, OCD symptoms such as ITs and obsessions are thought to fall on a continuum (Clark & Rhyno, 2005), varying in frequency, intensity, and perceived thought control (Berry & Laskey, 2012). Cognitive models of OCD (Salkovskis, 1999), suggest ITs may be maintained, and develop into obsessions, or clinical OCD, if negative appraisals about the meaning or thought content are made i.e. appraised as being important and of high personal responsibility (Barrett et al., 2016) and result in greater distress and impairment (Frías et al., 2015).

It is hypothesised the postnatal period provides a unique setting in which themes of care and responsibility are activated, which is linked to parents attributing greater meaning and experiencing enhanced emotions/distress in regard to PLEs and ITs (Abramowitz et al., 2006). PLEs and ITs regarding the baby may be more likely to be negatively appraised and experienced as more distressing. Postnatal PLEs and ITs are not necessarily indicative of mental illness, and it is unclear if there are clear differences in the frequency, associated distress, and impact of these experiences perinatally, compared to the general population. Further understanding of these experiences and associated distress is needed to differentiate 'normal'

experiences, from those which may see parents require further support or at increased risk of developing further MH difficulties.

Perinatal PLEs and ITs have been linked to other MH symptoms such as depression, anxiety, and stress, (Collardeau et al., 2019; Doyle et al., 2015; MacKinnon et al., 2017; Miller & O'Hara, 2020) both as a risk factor and consequence of the experiences, although less is known about causal mechanisms.

ITs and PLEs have largely been explored separately, yet symptoms have been seen to overlap in the literature and clinically (Pirec & Grabowski, 2017) and in some cases perinatal OCD can be misdiagnosed as postpartum psychosis (Challacombe & Wroe, 2013). Morrison et al. (1995) suggest auditory hallucinations (a PLE) can occur when ITs are mistakenly attributed to an external sources. Morrison and Baker (2000) found that people who experience auditory hallucinations, experienced more ITs, and found these thoughts more distressing, uncontrollable, and unacceptable, compared with control groups. To our knowledge, there are currently no studies specifically investigating both PLEs and ITs in the postnatal period.

Parenting Experiences

The transition to parenthood can be challenging, causing some to question their parenting abilities or ‘competence’ (Deater-Deckard, 1998); broadly defined as “a parent’s belief and judgements in their ability to perform the parental role successfully”, (Wittkowski et al., 2017). Competence draws upon models of social learning theory, whereby the child observes positive modelling of attitudes and beliefs (Ardelt & Eccles, 2001; Bandura et al., 1999). Greater parental competence is linked to academic, social and psychological success in children (Jones & Prinz, 2005), and fewer MH concerns in parents (Kwok & Wong, 2000; Troutman et al.,

2012). Psychotic symptoms have been linked to reduced parental competence (Plant et al., 2002), lower self-reported parenting abilities (Strand et al., 2020) and lower perceived competence as rated by MH professionals (Strand & Rudolfsson, 2020); additionally ITs have been linked to parental self-efficacy (Olofsdotter Lauri et al., 2023). Yet, there is a lack of research exploring these parenting experiences and associations with ITs and PLEs in perinatal samples.

Parents consistently report greater levels of stress compared to non-parents (Umberson et al., 2010). Conceptually, parenting stress is “the emotional strain felt within the parenting role” (Abidin, 1992). High levels have been linked to poorer child outcomes, such as behaviour difficulties in school, a child’s level of social competence (Anthony et al., 2005) and increased risk of child maltreatment (Curenton et al., 2009). Perinatally, high parenting stress is linked to poorer parental MH outcomes (Redpath et al., 2019) and lower levels of competence (Razurel et al., 2017). Parenting stress can be predictive of ITs of intentional harm (Fairbrother & Woody, 2008) and psychosis symptoms (Biaggi et al., 2021). Increased stress can also exacerbate ITs and PLEs and vice versa; the link between stress and psychosis is well established (Xenaki et al., 2024), but is less clear in perinatal contexts (Hazelgrove et al., 2021).

Fathers

Most perinatal research focuses on experiences of mothers, yet PMH difficulties also occur in fathers, which can adversely impact on child development, and are linked to maladaptive parenting behaviour (Paulson et al., 2010). Fathers can experience distressing ITs about their infant (Abramowitz et al., 2006; Abramowitz et al., 2003), yet little is known about their experience of PLEs. There

are calls for perinatal research to be inclusive of all parents (Darwin et al., 2021; Kirubarajan et al., 2022); something the current study aims to do.

Current Study

The literature discussed highlights gaps in understanding of distressing perinatal ITs and PLEs, and associations with parenting experiences and MH symptoms. By better understanding these factors, psychologists will be better able to support the wider perinatal work force in identifying parents in need of additional support.

Therefore, the aim of the current study is to explore 1) the distress of postnatal ITs and PLEs, and 2) potential association to parenting experiences and MH symptoms and 3) if these experiences differ by gender. Whilst this study extends upon existing research, novel aspects include: (1) focus upon the distress of experiences of ITs and PLEs; (2) associations of with parenting experiences and MH symptoms and (3) exploration of experiences in male parents.

Primary Research Questions

1: How distressing are parents' postnatal ITs and PLEs?

2: Are distressing postnatal ITs and PLEs associated with perceived parental competence, parenting stress, or MH symptoms?

Secondary Research Question

3: Do experiences of distressing ITs and PLEs, parental competence, parenting stress, and MH symptoms differ between female and male parents?

Method

Participants

A community sample of parents were recruited (January-June 2023) via advertisement on social media and UK based parenting websites. Participants were

eligible if: they self-identified as a parent to an infant aged 12 months or younger; were aged 16+, based in the UK and able to read and comprehend English (study materials were written in English). No upper age limit was applied, and participants did not need to be first time parents. Sample size calculations indicated a minimum of 67 participants were required for analysis (using an effect size: 0.15; power: 0.8; alpha: 0.5; and based upon 2 predictor variables). The number of datasets exceeds this (*N*=349). Participants were aged between 20-44 years, 90.5% identified as female, and the majority (74.8%) were aged between 25-34.

Design

A cross-sectional, quantitative design was applied.

Ethical approval was granted from the University of East Anglia Faculty of Medicine and Health Sciences Research Ethics Committee (Appendix C).

Measures (Appendices D-I)

Demographic Information.

Participants reported their: (1) age; (2) gender identity; (3) relationship status; (4) number of conceptions and births; and if they (5) had a history of mental health difficulties; (6) were in current receipt of/awaiting PMH treatment; and (7) perceived their birth experience(s) to be traumatic.

Parental Thoughts and Behaviours Checklist (PTBC) (Thiséus et al., 2019).

The PTBC was developed into a self-report questionnaire from a semi-structured interview (Abramowitz et al., 2006). 33-items explore postpartum-specific ITs and 13-items explore related behaviours. Each item is rated as ‘yes/no/past’ (since birth). On a 0-4 scale the time, distress, impairment, resistance, and control related to the thoughts and behaviours is rated. This produces a total score (0-20), for the thought and behaviour subscales; higher scores indicate greater symptom

severity. In the current study, IT distress is of particular interest. There is no clinical cut-off score. The PTBC shows good to excellent internal consistency and psychometric properties (Abramowitz et al., 2006; Abramowitz et al., 2010; Abramowitz et al., 2007; Thiséus et al., 2019). In the current study alpha scores indicate excellent internal consistency α=.906.

Prodromal Questionnaire 16-items (PQ-16) (Ising et al., 2012).

The PQ is a 16-item self-report screening tool, derived from the 92-item prodromal questionnaire (Loewy et al., 2005), assessing for endorsement of psychotic symptoms on a 2-point (true/false) scale, where endorsed items are summed (range 0-16). To capture post-natal experiences, instructions were modified and parents to complete the measure based on the time since they became a parent as opposed to lifetime experiences. The PQ-16 has been used in perinatal populations (Levey et al., 2018). Distress is rated for endorsed items (0: 'none' to 3: 'severe') and summed to give a total distress score (range 0-48). Higher scores indicate a greater presence of and distress from PLEs. Six or more symptoms endorsed is a cut-off and indicates psychotic vulnerability. The PQ-16 is designed as a clinical screening tool for use in 'help-seeking' populations, as a measure of psychosis risk, as opposed to clinical psychosis, so is helpful in identifying PLEs (Savill et al., 2018). It is not a diagnostic tool and should not be used in isolation to assess for psychosis. The PQ-16 has been found to have good psychometric properties and internal consistency (de Jong et al., 2021; Ising et al., 2012). In the current study alpha scores indicate good internal consistency α=.831.

Parenting Sense of Competence Scale (PSOC) (Gibaud-Wallston & Wandersman, 1978).

This 17-item self-report scale consists of two subscales: eight items measure perceived parental self-efficacy (perceived competence in the parenting role), and nine items measure parental satisfaction (liking of the parental role). Items are rated on a 6-point Likert scale (1: 'strongly disagree' to 6: 'strongly agree'). Nine items are reverse coded. Summed scores create an overall total score (range 26-102), and score for each subscale; higher scores indicate a higher sense of parental competence. There is no clinical cut-off. Good reliability and validity have been found (Gibaud-Wallston & Wandersman, 1978; Gilmore & Cuskelly, 2009; Johnston & Mash, 1989). In the current study alpha scores indicate good internal consistency α=.872.

Parental Stress Scale (PSS) (Berry & Jones, 1995).

The PSS is an 18-item self-report measure, developed as an alternative to the Parenting Stress Index (PSI) (Abidin, 1997), to measure parental stress levels. Participants rate their level of agreement to each item, using a 5-point Likert scale (1: 'strongly disagree' to 5: 'strongly agree'). Summed scores provide a total score between 18-90; higher scores indicate higher levels of parental stress. There is no clinical cut-off. The PSS has been found to have good reliability and validity (Algarvio et al., 2018; Berry & Jones, 1995). In the current study alpha scores indicate good internal consistency α=.896.

Depression Anxiety Stress Scale 21-item (DASS-21) (Lovibond & Lovibond, 1995).

The DASS-21 is a 21-item, self-report measure assessing depression, anxiety, and stress. Participants use a 4-point scale to rate the extent to which they have experienced each item in the past week (0: 'did not apply to me at all' to 3: 'applied to me very much, or most of the time'). Scores are summed and multiplied

by two and range from 0-42. Higher scores indicate greater difficulties. Scores ‘moderate’ and above can be considered a severity cut-off (depression: 14+; anxiety: 10+; stress: 19+). The DASS-21 is recommended for use in non-clinical and perinatal populations (Meades & Ayers, 2011; Miller et al., 2006; Xavier et al., 2016). It shows convergent and divergent validity (Miller et al., 2006), excellent reliability (Osman et al., 2012), excellent criterion validity, and good to excellent internal consistency (Gloster et al., 2008). In the current study alpha scores indicate excellent internal consistency α=.949.

Procedure

The study poster (Appendix J) was shared on UK parenting sites (Mumsnet, Netmums), and social media (Facebook, Twitter, and Instagram) where targeted advertising was applied. The anonymous survey was distributed via the Jisc Online Surveys platform, where participants were presented with the participant information sheet and consent form (Appendix K-L). Participants could withdraw until responses were submitted. Measures were completed in the order detailed above, then participants were directed to the debrief form (Appendix M). A prize draw for vouchers was offered via a separate link as renumeration for participants' time. Average completion time was 24 minutes.

Analysis

Data were analysed using IBM SPSS Statistics Version 28. Statistical analysis was completed using two-tailed analysis and $p<0.05$ alpha level. Data were screened for parametric requirements and assumptions tested, with no serious violations identified. Descriptive statistics include frequencies and percentages for categorical variables and mean and standard deviation for continuous variables. Participants with scores 6+ on the PQ-16 (endorsement) were considered an ‘at-risk’

group. A Persons correlation was run, using correlation coefficients to interpret effect sizes, to explore IT and PLE associations with parenting experiences and MH. A follow-up hierarchical multiple linear regression was conducted, where MH (depression, anxiety, and stress) and other factors (birth trauma, MH history, MH treatment) were entered separately into the model to control for their influence. Multiple mediation analyses using PROCESS (SPSS Macro, version 4.2, model 4), were conducted to explore whether the relationship between ITs and PLEs to parental competence and parenting stress, is mediated by depression and anxiety. Finally, a one-way MANOVA was run to explore gender differences between experiences and a chi-square test applied for categorical data. Bonferroni corrections were employed as corrections for multiple testing.

Results

Most participants were married (49%) or in a cohabiting relationship (41.3%). A total of 475 births (*M*=1.36) and 670 conceptions (*M*=2) were reported. Forty-eight percent of participants reported a history of MH difficulties, 25.2% were awaiting/receiving MH treatment, and 49.9% reported their birth experience(s) to have been traumatic. 20.3% participants (*N*=72) had both a history of MH difficulties and were awaiting/receiving MH treatment.

Social media data indicated the study advertisement reached 56,831 people, and 1,771 clicked/interacted with the advert (Appendix N).

Table 6 details demographic information and Table 7 details descriptive statistics for study variables.

Table 6

Participant Demographic Information

Variable	Total N (%)
Age	
16-19	0
20-24	33 (9.5)
25-29	127 (36.4)
30-34	134 (38.4)
35-39	44 (12.6)
40-44	11 (3.2)
45+	0
Gender Identity	
Female	316 (90.5)
Male	28 (8)
Non-Binary	3 (0.9)
Transgender	1 (0.3)
Other	0
Prefer not to say	1 (0.3)
Marital Status	
Single	13 (3.7)
In a relationship, not cohabiting	18 (5.2)
In a relationship, cohabiting	144 (41.3)
Married	171 (49)
Divorced/Separated	1 (0.3)
Civil Partnership	2 (0.6)
Widowed	0
Other	0
History of Mental Health Difficulties	
Yes	169 (48.8)
No	180 (51.6)
Receiving/awaiting Mental Health Treatment	
Yes	88 (25.2)
No	261 (74.8)
Traumatic Birth Experience	
Yes	174 (49.9)
No	175 (50.1)

Table 7

Descriptive Statistics of Study Variables

Subscale	Mean	SD	Min	Max	Scores in Clinical Range N (%)
PTBC Thoughts	6.42	3.36	0	17	-
PTBC Behaviours	5.96	3.61	0	15	-
PQ-16 Symptom Endorsement	4.85	3.75	0	16	128 (36.7)
PQ-16 Distress	7.08	7.57	0	38	-
PSOC Total	65.95	13.44	26	101	-
PSOC Satisfaction	33.07	8.03	14	54	-
PSOC Self-Efficacy	32.89	8.09	8	48	-
PSS	45.60	11.33	19	86	-
DASS-21 Depression	13.42	10.91	0	42	162 (46.4)
DASS-21 Anxiety	10.46	9.54	0	42	166 (47.6)
DASS-21 Stress	19.51	10.08	0	42	174 (49.9)

Note. *N* = 349; SD = Standard Deviation. PTBC = Parental Thoughts and Behaviours Checklist (thoughts and behaviour scales); PQ-16 = Prodromal Questionnaire 16-items (symptom endorsement and distress); PSOC = Parental Sense of Competency Scale (Self-Efficacy and Satisfaction Subscales); PSS = Parental Stress Scale; DASS-21 = Depression Anxiety Stress Scale.
36.1% of participants scored in the clinical range for both depression and anxiety.

How distressing are parents' postnatal ITs and PLEs?

Over 93% of participants endorsed at least one IT and 90% experienced distress related to ITs. In addition, 93.5% spent time engaging in (coping) behaviours following ITs, and 80% indicated they would feel distressed if unable to perform these.

Over 88% of participants endorsed at least one PLE and 83% reported associated distress. Item 16 of the PQ-16 ("I feel that parts of my body have changed in some way, or that parts of my body are working differently than before"), was most frequently endorsed (51.3%). It is important to consider this in a perinatal context, whereby mothers experience bodily changes, potentially resulting in increased endorsement of this item. Item 16 was therefore removed from total endorsement scores. Consequently, 30.4% participants endorsed six or more items

and can be considered an ‘at-risk’ group. A greater proportion of the at-risk group, fell into the clinical range for depression (76.4%) and anxiety (78.3%).

Please see chapter five for additional results and further discussion of findings of ITs and PLEs.

Are distressing postnatal ITs and PLEs associated with perceived parental competence, parenting stress, or MH symptoms?

A Pearsons correlation analysis explored associations between ITs (thoughts and behaviours) and PLEs (endorsement and distress), to parental competence (self-efficacy and satisfaction), parenting stress, and MH (depression, anxiety, stress).

As anticipated, ITs and PLEs correlate highly with each other, with medium to high effect sizes, indicating as the experience of ITs (thoughts and behaviours) increases, so do PLEs (endorsement and distress), and vice versa.

Significant positive correlations were found between ITs and PLEs, to parenting stress, and MH symptoms and significant negative correlations to parental competence (self-efficacy and satisfaction). This indicates as the frequency of ITs and PLE increase, so does parenting stress, and MH symptoms, and parental competence decreases. Correlation coefficients indicate small to medium effect sizes. Table 8 details full results.

Table 8

Correlations of Study Variables

Variable	1	2	3	4	5	6	7	8	9	10	11
1. PTBC Thoughts											
2. PTBC Behaviours	.815**										
3. PQ-16 Endorsement	.489**	.441**									
4. PQ-16 Distress	.555**	.511**	.905**								
5. PSOC Total	-.432**	-.408**	-.382**	-.411**							
6. PSOC Satisfaction	-.357**	-.355**	-.401**	-.415**	.833**						
7. PSOC Self-Efficacy	-.364**	-.326**	-.238**	-.272**	.835**	.391**					
8. PSS Total	.336**	.355**	.299**	.339**	-.811**	-.699**	-.655**				
9. DASS Depression	.487**	.472**	.553**	.619**	-.617**	-.595**	-.434**	.603**			
10. DASS Anxiety	.505**	.476**	.523**	.581**	-.398**	-.391**	-.273**	.359**	.734**		
11. DASS Stress	.538**	.482**	.537**	.582**	-.540**	-.539**	-.363**	.497**	.792**	.726**	

Note. ** Correlation is significant at $p<.001$ (2-tailed).

Multiple hierarchical regression analysis were conducted to explore if ITs (thoughts and behaviours) and PLEs (endorsement and distress) predicted 1) parental competence and 2) parenting stress, whilst controlling for MH symptoms (anxiety, depression, stress) and other characteristics known to impact MH experiences: a) birth trauma, b) MH history and c) MH treatment. A Bonferroni-adjusted alpha level of .007 was applied to analysis of each predictor to correct for multiple analysis.

In the parental competence model, ITs and PLEs were entered into step one ($F(4, 344)= 26.54$, $p=<.001$, $R^2 = .236$), MH symptoms into step two ($F(7, 341)= 36.42$, $p=<.001$, $R^2 = .428$) and birth trauma, MH history and MH treatment into step three ($F(10, 338)= 26.41$, $p=<.001$, $R^2 = .439$). All models significantly predicted parental competence. Variability increased by 2.03% in step three, suggesting these variables add to the prediction. Depression and anxiety, were found to be significant predictors of parental competence in model 3, suggesting they drive the relationship between ITs, PLEs and parental competence.

In the parenting stress model, ITs and PLEs were entered into step one ($F(4, 343)= 16.48$, $p=<.001$, $R^2 = .161$), MH symptoms into step two ($F(7, 341)= 32.24$, $p=<.001$, $R^2 = .398$) and birth trauma, MH history and MH treatment into step three ($F(10, 338)= 23.77$, $p=<.001$, $R^2 = .413$). All models significantly predicted parental competence. Variability increased by 2.5% in step three, suggesting these variables add to the prediction. Depression and anxiety were found to be significant predictors of parenting stress in model 3, suggesting they drive the relationship between ITs, PLEs and parenting stress. Table 9 details full results.

Table 9

Hierarchical Regression Analysis Results

	F-Statistic	**SE**	**p-value**	**R^2**	**$R^2\Delta$**
Parental Competence					
Model 1	26.54	1.53	<.001	.236	.227
Model 2	36.42	1.52	<.001	.428	.416
Model 3	26.41	3.91	<.001	.439	.422
Parenting Stress					
Model 1	16.48	1.35	<.001	.161	.151
Model 2	32.24	1.31	<.001	.398	.386
Model 3	23.77	3.73	<.001	.413	.396
Outcome Variable	**Predictor Variable**	**B**	***β***	**t-value**	**p-value**
Parental Competence (Model 3)	(Constant)	88.98		22.74	<.001
	PTBC Thoughts	-.522	-.131	-1.74	.083
	PTBC Behaviours	-.303	-.081	-1.13	.258
	PQ-16 Endorsement	-.283	-.074	-.771	.441
	PQ-16 Distress	.126	.067	.629	.530
	Depression	-.717	-.581	-7.77	<.001*
	Anxiety	.262	.186	2.74	.006*
	Stress	-.189	-.142	-1.91	.057
	Birth Trauma	-2.52	-.094	-2.21	.028
	MH History	-.646	-.024	-.523	.602
	MH Treatment	-1.20	-.039	-.802	.423
Parenting Stress (Model 3)	(Constant)	26.27		7.79	<.001
	PTBC Thoughts	-.020	-.006	-.079	.937
	PTBC Behaviours	.464	.148	2.02	.045
	PQ-16 Endorsement	-.082	-.026	-.260	.795
	PQ-16 Distress	-.048	-.030	-.276	.573
	Depression	.698	.672	8.77	<.001*
	Anxiety	-.229	-.192	-2.77	.006*
	Stress	.142	.126	1.66	.097
	Birth Trauma	1.65	.073	1.67	.096
	MH History	1.59	.071	1.50	.135
	MH Treatment	1.55	.060	1.20	.230

Note. $R^2\Delta$ = R^2 adjusted; SE = Standard Error; B = Unstandardised Regression Coefficient; β = Standardised Regression Coefficient.
*Significant at Bonferroni adjusted correction of p<.007.

Mediation analyses results are presented in Figures 2-3. Results indicate significant direct effects of PLE (endorsement) to depression and anxiety; and ITs to depression and anxiety (p<.001 for all).

Considering PLEs, there is a significant direct effect of depression (p<.001) to parental competence. The direct effect of PLEs to parental competence is significant (p<.001), but not when considering depression and anxiety as mediators (p=.106), suggesting the mediators indirectly influence this relationship.

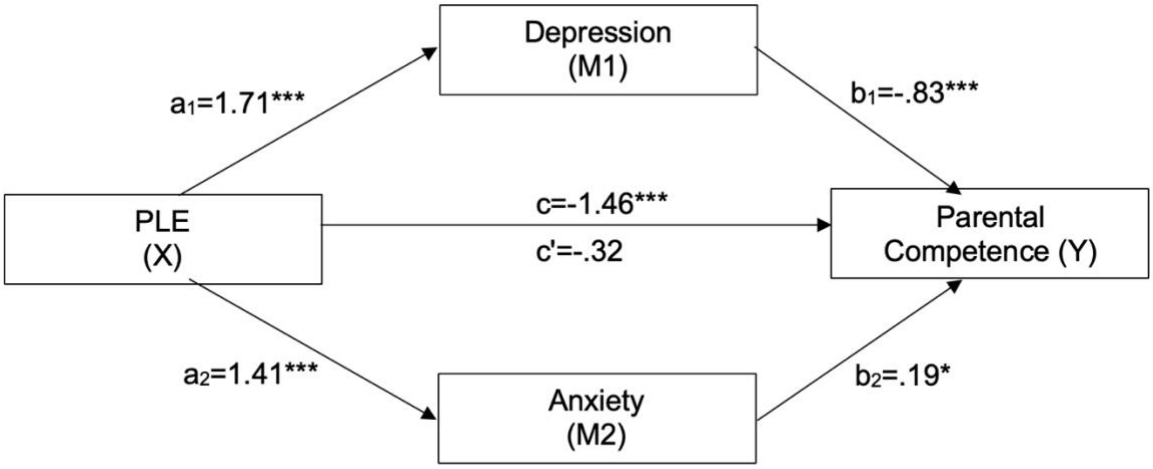
Considering ITs, a significant direct effect is seen for depression (p<.001) and anxiety (p=.003) to parental competence. The direct effect of ITs to parental competence is significant (p<.001) and remains significant when considering depression and anxiety as mediators (p<.001).

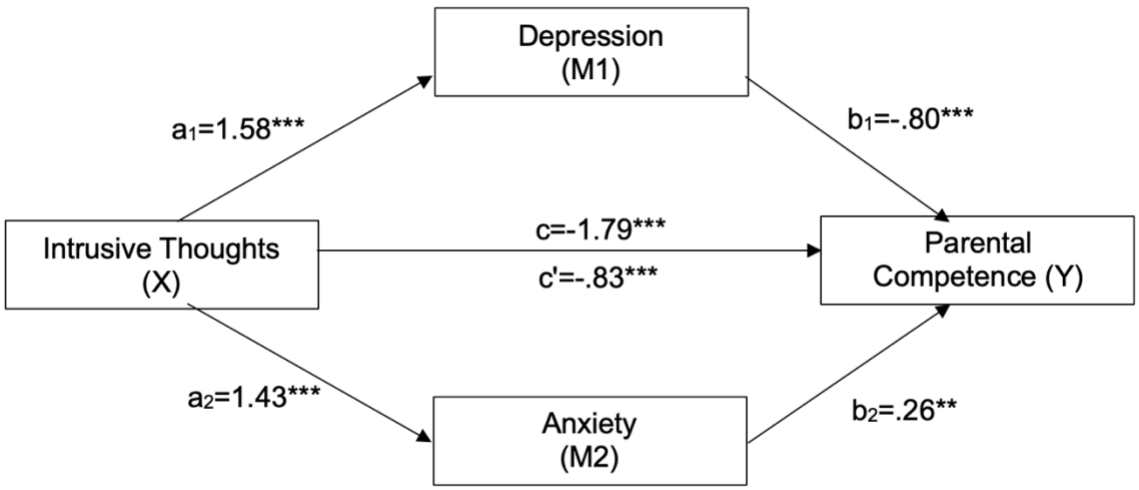
Considering PLEs, there is also a significant direct effect of depression (p<.001) and anxiety (p=.005) to parenting stress. The direct effect of PLEs to parenting stress is significant (p<.001), but not when considering depression and anxiety as mediators (p=.71), suggesting the mediators indirectly influence this relationship.

Considering ITs, a significant direct effect is seen for depression (p<.001) and anxiety (p=.001) to parenting stress. The direct effect of ITs to parenting stress is significant (p<.001), but not when considering depression and anxiety as mediators (p=.054), suggesting the mediators indirectly influence this relationship.

Figure 2

Multiple Mediation Analysis of the Effect of PLEs and ITs on Parental Competence, Mediated by Depression and Anxiety

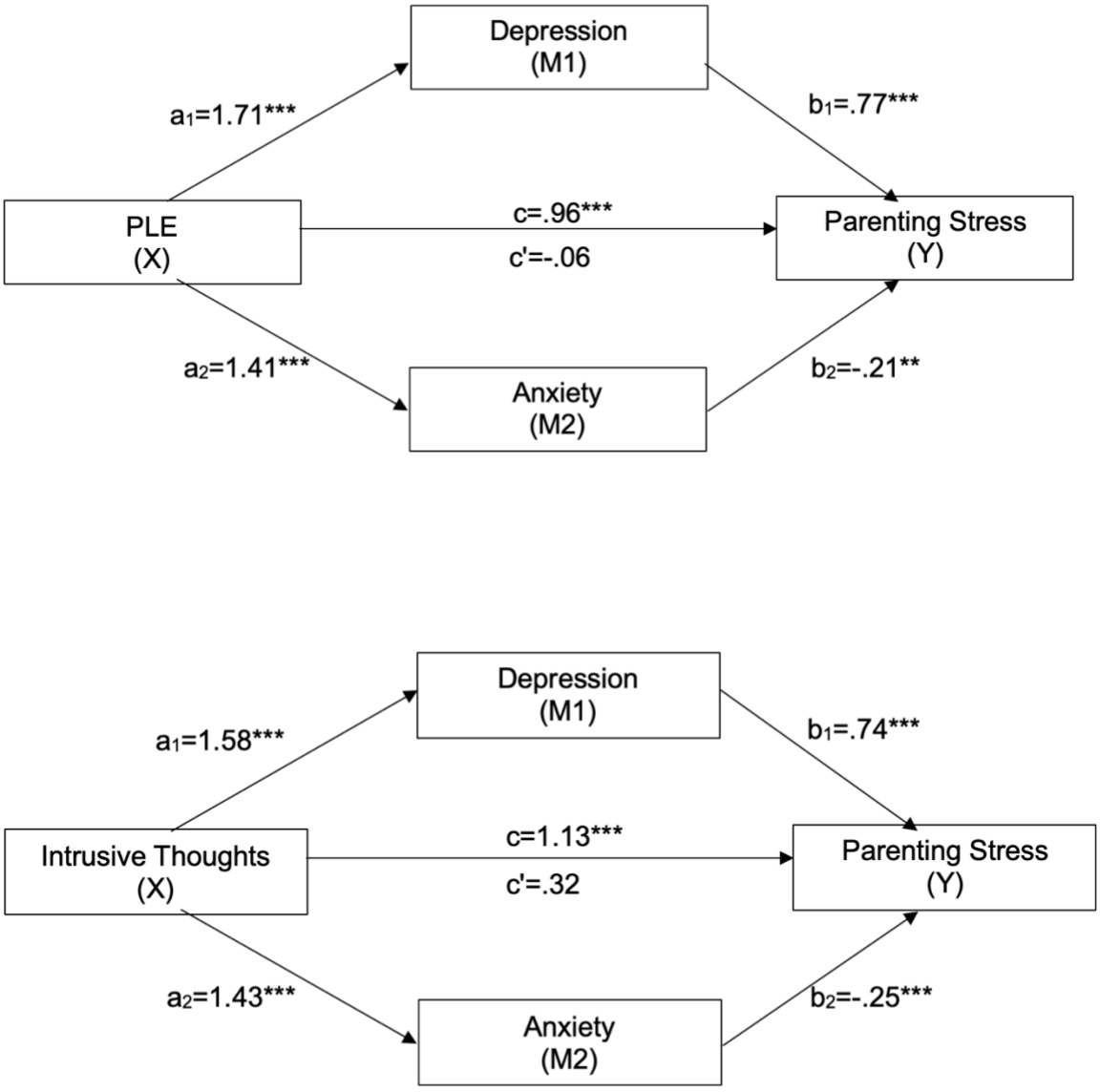




Note. ***p<.001, **p<.01, *p<.05.

Figure 3

Multiple Mediation Analysis of the Effect of PLEs and ITs on Parenting Stress, Mediated by Depression and Anxiety



Note. ***p<.001, **p<.01.

Do experiences of distressing ITs and PLEs, parental competence, parenting stress, and MH symptoms differ between female and male parents?

A one-way MANOVA was run; gender (male vs female) was entered as the independent variable, and PLEs (endorsement and distress), ITs (thoughts and behaviours), parenting experiences (parental competence and parenting stress), and MH (depression, anxiety, stress) were entered as dependent variables (DVs). Pillai's Trace was used for interpretation, which is robust to difference in group sizes, but results should still be interpreted with caution. A Bonferroni-adjusted alpha level of .004 was applied to analysis of each DV to correct for multiple analysis. Results indicated a statistically significant difference in experiences based on gender, with a large effect size $F(1, 342)=5.47$, $p<.001$, Pillai's Trace=.141, $\eta_p^2=.141$. Higher mean scores were seen for males across all DVs with the exception of parental competence (and associated subscales). Differences were significant, with males reporting more ITs, parenting stress, depression, and anxiety, compared to females. Females were observed to have higher parental competence (both self-efficacy and satisfaction) than males. No significant differences were observed for PLEs or stress. Table 10 details full results.

A Chi-Square test shows more males were in the 'at-risk' PLE group $\chi(1)= 5.85$, $p=.016$, the clinical range for depression $\chi(4)= 18.81$, $p=<.001$, and anxiety $\chi(4)= 9.73$, $p=.045$, but not stress $\chi(4)= 5.88$, $p=.209$.

Table 10

Gender MANOVA results

Subscale	Female (*N*=316) M (SD)	Male (*N*=28) M (SD)	F Value	Sig	η_p^2
PTBC Thoughts	6.22 (3.38)	8.11 (2.27)	8.45	.004*	.024
PTBC Behaviour	5.71 (3.58)	8.18 (3.12)	12.45	<.001*	.035
PQ-16 Symptoms	4.21 (3.45)	5.64 (4.08)	4.33	.038	.012
PQ-16 Distress	6.12 (6.98)	8.64 (7.25)	3.37	.067	.010
PSOC Total	66.92 (13.27)	55.89 (10.74)	18.29	<.001*	.051
PSOC Satisfaction	33.59 (7.69)	27.21 (9.40)	16.99	<.001*	.047
PSOC Self-Efficacy	33.36 (7.91)	28.68 (8.76)	8.76	.003*	.025
PSS	44.47 (10.87)	56.93 (10.06)	34.19	<.001*	.091
DASS-21 Depression	12.64 (10.64)	20.93 (10.35)	15.67	<.001*	.044
DASS-21 Anxiety	9.90 (9.10)	16.21 (12.20)	11.65	<.001*	.033
DASS-21 Stress	19.16 (10.06)	22.93 (9.23)	3.65	.057	.011

Note. *N* = 344. *Significant at Bonferroni adjusted correction *p*=.0045.

Discussion

ITs and PLEs were found to be prevalent, distressing and significantly associated with lower parental competence (self-efficacy and satisfaction), higher parental stress and increased symptoms of depression, anxiety, and stress. ITs and PLEs were predictive of parenting experiences, whereby more ITs and PLEs were predictive of higher parenting stress and lower parental competence, although this relationship is indirectly mediated by depression and anxiety. Additionally, males experienced significantly more ITs, parenting stress, depression, anxiety, and lower competence than females; no significant differences were found in PLEs or stress. Males were more likely to be in the ‘at-risk’ group for PLEs and clinical range for depression and anxiety.

Findings and Interpretation

Experiences such as hallucinations and delusions typically seen in clinical psychosis, were less frequently endorsed in the sample. Rates and distress of ITs and PLEs in the current study are greater than those in existing research, we also

found 30.4% participants to be considered ‘at-risk’ for psychosis. We found 83% of participants reported at least one PLE to be distressing, a figure greater than Mannion and Slade (2014), who report 10%. Fairbrother and Woody (2008) reported minimal or low distress related to ITs, and Abramowitz et al. (2003) reported most parents experienced ITs to be mildly distressing; this contrasts to the current study, where 90% indicated distress related to ITs. Abramowitz et al. (2006) suggested parents experiencing more OCD symptoms were more likely to believe their thoughts, which supports our finding that more ITs were linked to greater distress. Literature highlights how the presence of experiences of ITs and PLEs alone does not necessarily cause distress, instead suggesting the appraisal of and response to experiences predicts distress (Lincoln, 2007). Considering high levels of distress in our study, it could be hypothesised participants negatively appraised these experiences, however, given we did not explore appraisals explicitly, definite conclusions cannot be drawn.

Additionally, a higher proportion of the current sample scored in the clinical range for depression and anxiety than seen in existing perinatal research (Miller et al., 2006). One possible explanation could be the high proportion of the sample with a history of MH difficulties (48.8%) and awaiting/receiving MH treatment (25.2%), which are risk factors for PMH difficulties (Yang et al., 2022). Melles and Keller-Dupree (2023) found participants were more likely to disclose ITs when they felt less shame; considering the anonymity of the current study, participants may have felt more able to honestly share their true experiences, which could have led to an over endorsement of responses.

We found ITs and PLEs were predictive of increased parenting stress and lower parental competence, however, this relationship is indirectly influenced by

depression and anxiety. Given PLEs and ITs have been linked to greater anxiety and depression (MacKinnon et al., 2017; Mannion & Slade, 2014) and vice versa, it is unsurprising we found high correlations between these variables. Our findings support those of Thiséus et al. (2019) who found ITs were associated with anxiety, depression and increased parenting stress. Additionally, Fairbrother and Woody (2008) found parenting stress was linked to ITs, a finding our study supports.

Our findings suggest depression and anxiety may indirectly drive parental competence and parenting stress, whereby those who feel more anxious and depressed, may feel less competent and satisfied in their parental role and experience more parenting stress. It is also likely increased parenting stress and lower parental competence could increase feelings of anxiety and depression; ultimately relationships between these features are likely to be reciprocal. These relationships could be further exacerbated by experiences of distressing ITs and PLEs, particularly if the content is targeted towards baby or parenting abilities. Parents with ITs and PLEs may also experience higher levels of anxiety and depression; as supported by our finding that a greater proportion of those ‘at-risk’ of psychosis, fell into the clinical range for depression (76.4%) and anxiety (78.3%), and understanding that complex MH difficulties are linked with the presence of PLEs (Stochl et al., 2015). In turn, this may indirectly increase parenting stress and decrease perceived parental competence, as indicated by the mediation analysis.

The current study found males reported significantly more ITs (thoughts and behaviours), parenting stress, depression, anxiety, and lower parental competence compared to females. Findings should be interpreted with caution due to the small sample of males yet highlight the importance of considering male wellbeing. Reasons for this are unclear, but could be attributed to anonymity of the study,

whereby males felt able to honestly share their experiences without judgement or stigma; perhaps males have greater difficulty transitioning to parenthood or they may feel less able to seek support for such experiences, given that perinatal support resources are often targeted towards females. Our findings contrast to those of Fairbrother et al. (2019) who found no gender differences in the number of ITs experienced. To our knowledge, no literature has explored PLEs in males, scarce literature mainly consisting of single case studies has explored postpartum psychosis in fathers (Shahani, 2012); our findings highlight males can also experience postnatal PLEs. Our findings contrast with the hypothesis that females are more susceptible to PMH difficulties due to hormonal changes experienced in the perinatal period (Trifu et al., 2019).

It is interesting that the majority of participants were married or cohabiting (90%), whilst this may represent traditional nuclear family dyads, it may not be representative of current relationship norms where 1 in 3 children have separated parents. One possible explanation is parents in married/cohabiting relationships had partner support and more time to complete the survey, compared to a single parent.

Strengths and Limitations

A strength of this study is the large sample size recruited (*N*=349) who completed the full survey; which could be attributed to the anonymous, cross-sectional design of the study. Additionally, the study aimed to be inclusive of all parents, albeit only a small sample of male parents were recruited; findings regarding their experience are still of interest.

It is important to consider limitations of the current study. A cross-sectional design was applied where all variables were assessed simultaneously, yet analysis such as mediation can imply a time sequence and may not reflect true causal

mediation pathways. Causal relationships between study variables remain unclear. It is likely the relationship between MH and parenting experiences is reciprocal, with high stress and low competence also exacerbating MH difficulties.

We found higher rates of ITs and PLEs compared to existing literature, reasons for this are unclear, however as the sample was self-selecting, selection bias may have occurred. The advertisement poster used language that was considered less stigmatising and referred to '*unwanted'* thoughts and *unusual'* experiences as opposed to 'intrusive' and 'psychotic' by way of encouraging parents to engage in the survey; however this may have attracted parents with experiences described, possibly resulting in an over-reporting of experiences, as evidenced by the proportion of the sample with a MH history/awaiting treatment. Additionally, previous rates cited are from several years ago, it could be argued that the narrative surrounding PMH has developed in an attempt to reduce stigma and encourage parents to speak about their experiences. Furthermore, the study was advertised as anonymous, therefore parents may have felt more able to honestly share their experiences without fear of repercussions or judgement. The survey platform only recorded completed responses, therefore attrition rate, characteristics, or potential differences in IT and PLEs of participants who disengaged is unknown. An exit survey would have been helpful but was not conducted.

Self-report measures can be open to desirability bias (Tourangeau & Yan, 2007), however survey anonymity aimed to minimise this effect. PLEs and ITs are multidimensional constructs that can be interpreted subjectively, which may not be captured using structured self-report tools. Furthermore, although the PQ-16 and DASS-21 have been used in perinatal populations, they are not perinatal specific tools, and some items may have been over/underrepresented, as seen with item 16

of the PQ-16. Existing perinatal literature also reports high endorsement for this item (Levey et al., 2018), though the authors did not modify measure scoring to account for this. Given the removal of item 16, consideration was given to also reducing the endorsement score from 6 to 5, however this has not been done in existing research, and is not an amendment mentioned by the measure author, furthermore, lowering the endorsement score could result in an overestimation of those 'at-risk'. In a systematic review of the PQ-16, Savill et al., (2018) discuss varying cut-off scores depending on the sample, these range from 5 to 6 for symptom endorsement, though this is for clinical samples. They report no clear consensus for endorsement cut-off score in non-help seeking populations, highlighting this as an area for future research. Distress scoring cut-off also varies between studies, ranging from 8 to 9. Additionally, the wording of PQ-16 instructions were modified changing 'lifetime' to 'since birth', to capture postnatal experiences only, however this may impact the reliability and validity of the measure. A perinatal specific measure to assess PLEs, such as the 'Postpartum Psychotic Experiences Scale' (Fekih-Romdhane et al., 2023), which was published after our data collection, may be a useful tool. Other validated perinatal specific tools for MH, such as the Edinburgh Postnatal Depression Scale (Cox et al., 1987) or Perinatal Anxiety Screening Scale (Somerville et al., 2014), may also have been helpful. Appraisals of PLEs and ITs are understood to impact distress; cognitive models (Garety et al., 2001; Salkovskis, 1999) explain that if an experience is negatively appraised, this is linked to increased distress and impairment. Appraisals are also central to determining symptom severity and whether symptoms will develop into clinical level psychosis or OCD (Peters et al., 2017). Yet appraisals were not explored in the current study, primarily due to a lack of suitable measures for perinatal samples, though would have been helpful when

interpreting distress. There remains a lack of suitable measurement tools also exploring appraisals.

Limited demographic information was collected, to minimise participant demand and protect anonymity. Information about ethnicity, socioeconomic status, and education level, would have been useful to know, given these can influence PMH experiences (Ban et al., 2012; Watson et al., 2019). Participants indicated if they had a history of MH difficulties and if they were awaiting/receiving MH treatment, and 20.3% of the sample fell into both these categories but were not asked if they had a MH diagnosis (current or historic), or what the treatment was (i.e., medication, formal therapy, self-help) or who it was delivered by; this information would have been useful to establish a clearer 'non-clinical' sample. Therefore, the recruited sample may not be representative of the wider community perinatal population or beyond.

Pregnancy loss such as miscarriage, can impact upon parents MH (Herbert et al., 2022), but were not investigated, therefore such experiences may have unknowingly skewed results. Furthermore, it would have been helpful to collect information about infant age (postpartum stage), given MH can fluctuate across the perinatal period, and change from early to late postpartum (Ahmed et al., 2019; Vanwetswinkel et al., 2022) as also evidenced in the review in Chapter Two.

Implications

Our findings highlight the need for increased awareness of perinatal ITs and PLEs, and of their impact upon parenting experiences. Clinically, our findings inform ITs and PLEs are prevalent and distressing and could be worse in parents with greater levels of depression, anxiety, and stress.

ITs or PLEs of causing intentional harm to baby are understandably upsetting and may not have been experienced before; this could increase anxiety and lower mood in parents and cause concerns of not being a ‘good’ parent. By way of coping, parents could present with increased ‘compulsive like’ behaviours such as checking, and reassurance seeking and may experience increased parenting stress. These parents may be less likely to disclose experiences of ITs and PLEs due to perceived stigma, and fear of the implications of disclosing (Cheng et al., 2018). These fears mean PMH symptoms could go unsupported, which could unintentionally maintain a parents difficulties and result in long-term adverse outcomes.

This highlights the importance of professionals screening for a range of PMH symptoms, to facilitate early detection of parents experiencing greater distress and risk of adverse outcomes. In our sample, we found a proportion of parents whose scores placed them ‘at-risk’ of developing psychosis, who also scored in the clinical range for depression and anxiety; this is important and highlights how, even in a community sample, clinical experiences are present. Early detection is vital in reducing the likelihood of adverse outcomes. We found 93.5% of our sample engaged in (coping) behaviours as a result of their ITs. Cognitive models of OCD (Salkovskis, 1999) indicate how such behaviours can develop into compulsions, rather than actually providing reassurance. This is important and indicates those parents engaging in more IT related behaviours could be at increased risk of developing clinical OCD.

Professionals should be mindful that parents presenting with increased depression, anxiety, parenting stress, low parental competence and satisfaction, could also be experiencing (or at increased likelihood to experience) ITs and PLEs. Increased training about ITs, PLEs and their associations to parenting and MH, to

professionals including GP's, midwives, health visitors and healthcare assistants, will be important in identifying parents in need of additional support.

At a wider societal level, increased education regarding PMH, ITs and PLEs is important in normalising the prevalence and distress of these experiences and helping others to better understand the mechanisms behind the experiences and work towards re-appraising their meaning, by way of reducing distress. Increased public awareness and conversation around ITs and PLEs is helpful in de-stigmatising the experiences and reducing treatment barriers (Clark et al., 2021). By showing ITs and PLEs are common in the perinatal period and not necessarily indicative of perinatal mental illness, parents may be more open to disclosing their experiences. Interventions including peer support groups (Jones et al., 2014) and digital support tools (Baumel, 2023) could also incorporate sharing of IT and PLE experiences and understanding. Education and parenting marketing campaigns could explain the mechanisms of these experiences and highlight how it is the appraisal of rather than the experience itself that is linked to distress. In the current study, we utilised targeted advertising on social media to recruit parents, a similar technique could be applied to promote awareness and understanding of ITs and PLEs.

Our findings highlight the importance of considering wellbeing of male parents. Males are less likely to engage with perinatal services or research (Philpott et al., 2019). Some suggest they perceive services as not being accessible to them (Baldwin et al., 2019), or prioritise their partners wellbeing over their own (Darwin et al., 2017). More broadly, the associated stigma regarding male MH can impact help-seeking behaviour (Bradbury, 2020). It is therefore important to raise social awareness of male experiences of PMH difficulties in attempt to decrease stigma and barriers to accessing services. Perinatal services could consider additional

screening for fathers during postnatal follow-ups, to identify those experiencing increased PMH distress which could protect against adverse outcomes.

Considering theoretical implications, study results provide support for the continuum models of psychosis and OCD, suggesting subclinical ITs and PLEs occur in community perinatal populations. Existing literature suggests those experiencing persistent PLEs are at increased risk of developing psychiatric disorders (Dominguez et al., 2011), although transition rates to psychosis remain low in the general population (Werbeloff et al., 2012), even in those considered ‘high-risk’. PLEs are commonly reported in people with non-psychotic, affective disorders and found to be highly associated with depression and anxiety (Wigman et al., 2012) in the absence of psychosis.

Future Research Recommendations

Future research can expand on the current study by applying a longitudinal design to explore if the experiences of distressing ITs and PLEs differ across the perinatal period. Gutiérrez-Zotes et al. (2013) found higher psychoticism in pregnancy predicted an increased risk of postnatal ITs. To our knowledge very few studies have explored subthreshold PLEs (Fekih-Romdhane et al., 2023; Mannion & Slade, 2014; Mueller, 2021) and ITs (Collardeau et al., 2019; Fairbrother et al., 2018), longitudinally across the whole perinatal period, within community samples. By implementing longitudinal designs, researchers can establish better understanding of potential risk factors and long-term outcomes of ITs and PLEs. Future studies could benefit from adopting a qualitative design to allow for richer information and allow for exploration of how experiences were appraised. Case studies would also provide rich data. Additionally, many studies are correlational meaning causal links cannot be established. Future researchers could include

control groups when exploring ITs and PLEs, such as a sample with clinical diagnosis of postnatal OCD or Psychosis, to allow a direct comparison of experiences across the continuum. Additionally, studies should utilise tools that collect information about parents appraisals of ITs and PLEs, given that cognitive theories suggest appraisal is linked to distress, this will aid understanding about transition rates. Finally, future research should aim to recruit male parents to better understand their experiences.

Conclusions

Postnatal ITs and PLEs can be distressing experiences for parents. These associated with poorer MH, lower parental competence (self-efficacy and satisfaction) and increased parenting stress. Depression and anxiety may indirectly influence these relationships further. Additionally, male parents reported more frequent and distressing ITs and PLEs, more MH difficulties, lower competence, and higher parental stress than female parents. Our findings support the continuum models of psychosis and OCD, suggesting symptoms such as ITs and PLEs exist on a spectrum and can be experienced frequently and cause distress in community samples.

The findings of the study highlight the importance of exploring a range of PMH symptoms in postnatal parents, and the importance of supporting those who experience distress. Some parents are at risk of developing psychosis or future MH difficulties, it is important these parents are detected, to prevent negative longer-term outcomes for parents and babies. Services can provide psychoeducation regarding the prevalence, severity and distress of the experiences and help parents re-appraise unhelpful thoughts and feelings.

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CHAPTER FIVE

Additional Results

Word Count: 590

This chapter outlines further detail regarding the frequency of ITs and associated behaviour, and frequency of PLEs and associated distress. In addition, further analysis was conducted to explore whether there were significant differences in experiences of ITs and PLEs in participants who 1) experienced a traumatic birth, 2) had a history of mental health (MH) difficulties and 3) were currently receiving or awaiting treatment for a MH difficulty, and if these experiences differed between female and male parents. These findings are reported here, due to journal page limitations for the Empirical Research Paper presented in Chapter Four.

Intrusive Thoughts

The most frequently reported IT (since birth) was “thoughts baby might stop breathing”, reported by 93.4% participants. Over 90% participants indicated experiencing some distress from ITs; 94% experienced ITs at least occasionally each day; 62.8% felt ITs interfered with their daily functioning; 59.1% had to make some effort to resist the thoughts and 13.5% felt they had complete control over their thoughts.

Considering IT related behaviours, the most frequently reported was ‘reassurance seeking’ as reported by 95.4% participants; 93.5% spent time engaging in behaviours following ITs, and 54% felt these behaviours interfered with daily functioning. Eighty percent indicated they would feel distressed if they were unable to perform the strategies; 63.6% had to make some effort to resist performing strategies and 76.1% had a strong drive to perform strategies when experiencing an IT.

Tables 11-12 detail frequencies of ITs, related behaviours and follow-up questions.

Table 11

PTBC Frequencies

Thoughts Items	**Yes %**	**Past %**	**Total N (%)**
1. Stop breathing	79.9	13.5	326 (93.4)
2. Getting smothered	40.7	14.0	191 (54.7)
3. Suffocate while sleeping	70.5	14.9	298 (85.4)
4. Sudden infant death syndrome	72.5	16.9	312 (89.4)
5. Burp too hard	32.4	17.2	173 (49.6)
6. Scream, shake, or slap	30.7	14.9	159 (45.6)
7. Purposely drown	6.3	2.3	30 (8.6)
8. Stabbing baby	6.3	2.9	32 (9.2)
9. Burning with hot water	10.3	4.3	51 (14.6)
10. Mistakenly puncturing soft spot	28.1	14.3	148 (42.4)
11. Accidental death	65.9	11.5	270 (77.4)
12. Dropping baby	69.9	12.3	287 (82.2)
13. Dropping from height	30.9	8.0	136 (39)
14. Injured if picked up wrong	50.7	15.2	230 (65.9)
15. Choking	72.8	7.4	280 (80.2)
16. Animal attack	49.9	10.9	212 (60.7)
17. Drowning during a bath	35.2	12.9	168 (48.1)
18. Car accident involving the baby	64.8	8.6	256 (73.4)
19. Parent hurt/absent	74.8	8.6	291 (83.4)
20. Forget baby in car seat	23.8	4.6	99 (28.4)
21. Give the baby away	16.6	6.0	79 (22.6)
22. Baby taken away	49.0	7.2	196 (56.2)
23. Leaving the baby when crying	32.1	7.4	138 (39.5)
24. Sick from the floor/unclean surfaces	34.1	5.7	139 (39.8)
25. Sick from bodily waste	18.9	4.6	82 (23.5)
26. Concerns about household items	35.8	5.4	144 (41.3)
27. Concerns about animals or insects	28.4	5.2	117 (33.5)
28. Concerns about contamination	34.1	6.6	142 (40.7)
29. Thoughts about genitals	8.0	4.0	42 (12)
30. Thoughts about sexual orientation	20.9	4.0	87 (24.9)
31. Sexual breastfeeding thoughts	7.2	2.9	35 (10)
32. Other sexual thoughts	6.6	1.7	29 (8.3)
33. Medical illness/disease fears	39.0	7.7	163 (46.7)
Behaviours Items	**Yes %**	**Past %**	**Total N (%)**
1. Reassurance	90.3	5.2	333 (95.4)
2. Rationalise	73.1	6.0	276 (79.1)
3. Checking	86.0	7.4	326 (93.4)
4. Distraction activities	65.6	4.0	258 (73.9)
5. Distraction thoughts	75.9	4.0	279 (79.9)
6. Thought suppression	77.1	3.4	281 (80.5)
7. Avoid situations	43.6	7.7	179 (51.3)
8. Avoid baby	9.5	5.4	52 (14.9)
9. Get social support	52.7	8.9	215 (61.6)
10. Ask others if normal	37.2	8.9	161 (46.1)
11. Confess thoughts	38.7	9.2	167 (47.9)
12. Pray	15.2	1.1	57 (16.3)
13. Other strategies	33.0	2.9	125 (35.8)

Table 12

PTBC 'Thoughts' and 'Behaviours' Follow-Up Questions

Thoughts Items	**Response**	**N (%)**
1. How much of your time is occupied by senseless, unwanted thoughts about your new baby? How frequently do these thoughts occur?	None	20 (5.7)
	Less than 1 hour per day/occasional thoughts	197 (56.4)
	1-3 hours per day/frequent thoughts	100 (28.7)
	3-8 hours per day/very frequent thoughts	29 (8.3)
	More than 8 hours per day/near constant thoughts	3 (0.9)
2. How much do these thoughts interfere with your family, social, work or functioning?	None	130 (37.2)
	Slight interference but overall performance not impaired	120 (34.4)
	Definite interference, but still manageable	83 (23.8)
	Causes substantial impairment in performance	16 (4.6)
	Incapacitating	0 (0)
3. How much distress do these senseless and unwanted thoughts cause you?	None	32 (9.2)
	Not too disturbing	85 (24.4)
	Disturbing but still manageable	185 (53)
	Very disturbing	43 (12.3)
	Near constant disabling distress	4 (1.1)
4. How much of an effort do you make to resist these thoughts? How often do you try to turn your attention away, or disregard them?	Always make an effort to resist	143 (41)
	Try to resist most of the time	129 (37)
	Make some effort to resist	57 (16.3)
	Yield to thoughts without attempting to resist, but with reluctance	18 (5.2)
	Completely and willingly yield to all the thoughts	2 (0.6)
5. How much control do you have over the thoughts? How successfully are you at stopping/diverting them? Can you dismiss them?	Complete control	47 (13.5)
	Much control, usually able to stop/divert the thoughts	148 (42.4)
	Moderate control, sometimes able to stop or divert thoughts	109 (31.2)
	Little control, rarely successful in stopping or dismissing thoughts	39 (11.2)
	No control, I am unable to even temporarily alter them	6 (1.7)
Behaviour Items	**Response**	**N (%)**
1. How much time do you spend engaging in the strategies? How often do you use them in response to unwanted thoughts?	None	23 (6.6)
	Less than 1 hour per day/occasionally	226 (64.8)
	1-3 hours per day/frequently	81 (23.2)
	3-8 hours per day/very frequently	16 (4.6)
	More than 8 hours per day/near constantly	3 (0.9)
2. How much do these strategies interfere with your family, social, work or functioning? Are there things you can't do	None	161 (46.1)
	Slight interference but overall performance not impaired	122 (35)
	Definite interference, but still manageable	55 (15.8)
	Causes substantial impairment in performance	11 (3.2)
	Incapacitating	0 (0)

because of the strategies?		
3. How would you feel if you were prevented from performing these strategies when you felt you needed to perform them? How worried/anxious would you become?	None Not too disturbing Disturbing but still manageable Very disturbing Near constant disabling distress	70 (20.1) 99 (28.4) 118 (33.8) 48 (13.8) 14 (4)
4. How much of an effort do you make to resist these performing these strategies?	Always make an effort to resist Try to resist most of the time Make some effort to resist Yield to thoughts without attempting to resist, but with reluctance Completely and willingly yield to all the thoughts	127 (36.4) 96 (27.5) 96 (27.5) 21 (6) 9 (2.6)
5. How strong is the drive to perform these strategies when an unwanted thought comes to mind?	Complete control Much control, usually able to stop/divert the behaviours Moderate control, sometimes able to stop or divert behaviours Little control, rarely successful in stopping or diverting behaviours No control, drive to perform behaviours is overpowering, rarely able to even delay performance	83 (23.8) 133 (38.1) 93 (26.6) 34 (9.7) 6 (1.7)

Psychotic-Like Experiences

Over 88% participants endorsed at least one PLE. Over 83% of the whole sample experienced distress (mild or above) from endorsed items, and 77.7% indicated PLEs occurred at least occasionally each day. Lower percentages of participants endorsed items involving symptoms of visual or auditory hallucinations or delusions, more typical to those experienced in ‘true’ psychosis, i.e. at a clinical level. For example, 10.6% endorsed “I have seen things that other people apparently can’t see”, compared to 49.3% endorsing “I get extremely anxious when meeting people for the first time”. See Table 13 for details of PLE frequencies.

The ‘at-risk’ PLE group were more likely to experience ITs (p<.001) and related behaviours (p<.001), (F(2, 346) = 39.89, p=<.001, Wilks' Λ = .81, np^2= .187).

Table 13

PQ-16 Item Endorsement and Distress Frequencies

Item	Endorsement *N* (%)	Distress	Distress Rating *N* (%)
1. I feel uninterested in the things I used to enjoy	175 (50.1)	None	19 (5.4)
		Mild	70 (20.1)
		Moderate	66 (5.7)
		Severe	20 (5.7)
2. I often seem to live through events exactly as they happened before (Déjà Vu)	125 (35.8)	None	34 (9.7)
		Mild	43 (12.3)
		Moderate	35 (3.7)
		Severe	13 (3.7)
3. I sometimes smell or taste things that other people can't smell or taste	111 (31.8)	None	39 (11.2)
		Mild	48 (13.8)
		Moderate	19 (5.4)
		Severe	5 (1.4)
4. I often hear unusual sounds like banging, clicking, hissing, clapping, or ringing in my ears	120 (34.4)	None	23 (6.6)
		Mild	51 (14.6)
		Moderate	39 (11.2)
		Severe	6 (1.7)
5. I have been confused at times whether something I experienced was real or imaginary	138 (39.5)	None	12 (3.4)
		Mild	55 (15.8)
		Moderate	56 (16.0)
		Severe	15 (4.3)
6. When I look at a person, or look at myself in a mirror, I have seen the face change right before my eyes	33 (9.5)	None	4 (1.1)
		Mild	11 (3.2)
		Moderate	14 (4.0)
		Severe	4 (1.1)
7. I get extremely anxious when meeting people for the first time	172 (49.3)	None	1 (0.3)
		Mild	58 (16.6)
		Moderate	83 (23.8)
		Severe	30 (8.6)
8. I have seen things that other people apparently can't see	37 (10.6)	None	1 (0.3)
		Mild	12 (3.4)
		Moderate	17 (4.9)
		Severe	7 (2.0)
9. My thoughts are sometimes so strong that I can almost hear them	109 (31.2)	None	11 (3.2)
		Mild	31 (8.9)
		Moderate	46 (13.2)
		Severe	31 (6.0)
10. I sometimes see special meanings in advertisements, shop windows, or in the way things are arranged around me	51 (14.6)	None	14 (4.0)
		Mild	27 (7.7)
		Moderate	9 (2.6)
		Severe	1 (0.3)
11. Sometimes I have felt that I'm not in control of my own ideas or thoughts	142 (40.7)	None	7 (2.0)
		Mild	48 (13.8)
		Moderate	64 (18.3)
		Severe	23 (6.6)

12. Sometimes I feel suddenly distracted by distant sounds that I am not normally aware of	89 (25.5)	None Mild Moderate Severe	19 (5.4) 46 (13.2) 20 (5.7) 4 (1.1)
13. I have heard things other people can't hear like voices of people whispering or talking	44 (12.6)	None Mild Moderate Severe	3 (0.9) 19 (5.4) 15 (4.3) 7 (2.0)
14. I often feel that others have it in for me	105 (30.1)	None Mild Moderate Severe	3 (0.9) 36 (10.3) 46 (13.2) 20 (5.7)
15. I have had the sense that some person or force is around me, even though I could not see anyone	64 (18.3)	None Mild Moderate Severe	14 (4.0) 23 (6.6) 21 (6.0) 6 (1.7)
16. I feel that parts of my body have changed in some way, or that parts of my body are working differently than before	179 (51.3)	None Mild Moderate Severe	28 (8.0) 74 (21.2) 59 (16.6) 19 (5.4)

Frequency	**Item**	**N (%)**
How frequently do these thoughts, ideas or experiences occur?	None	78 (22.3)
	Less than 1 hour per day, or occasionally	159 (45.6)
	1 to 3 hours per day, or frequently	84 (24.1)
	3 to 8 hours per day, or very frequently	20 (5.7)
	More than 8 hours per day, or near constantly	8 (2.3)

Birth Trauma and Mental Health

To explore if there were differences in ITs and PLEs in participant groups who: 1) experienced a traumatic birth, 2) had a history of MH difficulties and 3) were receiving or awaiting treatment for a MH difficulty, three, one-way MANOVA's were conducted. Results show a statistically significant difference in ITs and PLEs in participants who experienced: 1) A traumatic birth $F(4, 344)= 3.09$, $p=.016$, Wilks' $\Lambda = .96$, $\eta_p^2 = .03$; 2) a history of MH difficulties $F(4, 344)= 11.16$, $p=<.001$, Wilks' $\Lambda = .88$, $\eta_p^2 = .11$; and 3) were awaiting or receiving MH treatment $F(4, 344)= 18.87$, $p=<.001$, Wilks' $\Lambda = .82$, $\eta_p^2 = .18$. Participants who experienced a traumatic birth, with a history of MH difficulties, or who were awaiting or receiving MH treatment experienced more ITs, behaviours related to ITs, more PLEs, and greater PLE distress, than those who did not. Table 14 details full results.

Table 14

Additional MANOVA Analysis

		Yes M (SD)	No M (SD)	F Value	Sig	η_p^2
		N = 174	*N* = 175			
Birth Trauma	PTBC Thoughts	6.79 (3.35)	6.06 (3.34)	4.09	.044	.012
	PTBC Behaviour	6.50 (3.66)	5.42 (3.48)	7.92	.005	.022
	PQ-16 Endorsement	4.79 (3.89)	3.89 (3.09)	5.91	.016	.017
	PQ-16 Distress	7.49 (7.99)	5.26 (5.89)	8.98	.003	.025
		N = 169	*N* = 180			
Mental Health History	PTBC Thoughts	7.38 (3.31)	5.52 (3.16)	28.93	<.001	.077
	PTBC Behaviour	6.87 (3.58)	5.11 (3.44)	22.09	<.001	.060
	PQ-16 Endorsement	5.37 (3.79)	3.37 (2.97)	30.31	<.001	.080
	PQ-16 Distress	8.68 (8.16)	4.21 (5.06)	28.42	<.001	.100
		N = 88	*N* = 261			
Mental Health Treatment	PTBC Thoughts	8.33 (3.26)	5.78 (3.15)	42.33	<.001	.109
	PTBC Behaviour	7.98 (3.69)	5.28 (3.32)	41.00	<.001	.106
	PQ-16 Endorsement	6.29 (4.33)	3.68 (2.95)	40.07	<.001	.104
	PQ-16 Distress	11.14 (9.44)	4.76 (5.22)	62.44	<.001	.152

Note. p<.05.

In Chapter Four, differences between female and male parents were explored regarding ITs, PLEs, parenting and MH. It is also of interest to explore if there are differences between female and male parents in experiences of birth trauma, MH history and participants awaiting/receiving MH treatment. Chi-Square test results indicate no significant differences in female and male parents for birth trauma $\chi(4)= 5.05$, $p=.282$; MH history $\chi(4)= 5.26$, $p=.262$; or MH treatment $\chi(4)= 8.00$, $p=.091$.

CHAPTER SIX

Discussion and Critical Evaluation

Word Count: 3,610

This thesis aimed to explore perinatal mental health (PMH) in non-clinical and community samples of parents; specifically long-term PMH symptom change outcomes, and exploration of the severity and distress of postnatal ITs and PLEs and their associations with parenting experiences and mental health (MH). In this discussion and critical evaluation chapter, the findings of the systematic review and empirical paper will be considered in the context of wider perinatal psychology. A critical review will explore the methodological strengths and weaknesses of each paper, the application and implications of this work and suggest directions for future research. In addition, reflections from the researcher and an overall conclusion are presented.

Summary of Findings

Both papers within this thesis portfolio explore aspects of PMH, highlight gaps in the literature field and identify parents who may require additional support during this period.

The systematic review involved a search of four databases (Medline, PsychINFO, CINAHL Ultimate and Scopus), which resulted in 20 papers meeting the inclusion criteria. Studies were from a range of countries and utilised different analysis methods and varied in follow up assessment points. All studies explored depressive symptoms, two also explored anxiety, one explored OCD symptoms and one explored other MH symptoms (wellbeing, self-esteem). The findings of the review highlight that most mothers (72-85.2%) experience ‘no’ to ‘mild’ MH symptoms during the perinatal period. Of those who do experience symptoms, these are typically worst during pregnancy and improve postnatally, although can fluctuate over this time period. Three studies suggested PMH symptoms worsened, two of which identified symptoms to be worst at 4 years after birth. No studies explicitly

explored predictors of PMH symptom improvement (recovery); 11 studies explored predictors associated with symptom maintenance. Past MH difficulties, life stress, low income, marital status, and partner conflict were the main predictors of maintained PMH symptoms. Understanding long-term symptom outcomes and predictors of symptom improvement or maintenance is important in informing how best to identify mothers in greater need of support and to guide perinatal interventions.

The empirical paper focused on the postnatal period and explored ITs and PLEs experienced by parents. Results show 93% of parents experienced at least one IT, 88% experienced at least one PLE, and 30.4% of parents can be considered an 'at-risk' group for psychosis. Considering distress, 83% of parents experienced distress from ITs and 90% experienced distress from PLEs. Additionally, we found most parents (95.4%) actively engaged in daily behaviours/strategies to manage their ITs (i.e., reassurance seeking); these interfered with daily functioning and caused distress if not performed. Only 37% of parents would ask others if their ITs were normal and 52% sought social support. Instead, parents were more likely to engage in checking (86%), distraction (65%) or thought suppression (77%) behaviours.

ITs and PLEs were significantly associated with parenting experiences of self-efficacy, satisfaction and parenting stress, and MH symptoms of depression, anxiety, and stress. Additionally, ITs and PLEs significantly predicted lower parental competence and higher parental stress, although this relationship was indirectly mediated by depression and anxiety, suggesting these factors can influence the relationship. Differences in experiences were found between male and female parents, although a small sample of male parents (*n*=28) were recruited. This

indicates the PMH, and wellbeing of males should be considered by PMH services. Additionally we found parents who experienced a) birth trauma, b) a history of MH difficulties and c) were awaiting/receiving treatment for MH difficulties, experienced significantly more ITs and PLEs than parents without these experiences.

Ultimately, these findings highlight postnatal ITs and PLEs can be prevalent and distressing and negatively impact parenting experiences, which demonstrate a need for professionals to monitor for these difficulties. Greater work is needed to reduce the stigma associated with ITs and PLEs and encourage parents to seek support when distress negatively impacts their functioning.

Findings in Comparison to Existing Literature

It is interesting to consider the findings of this portfolio in comparison to existing research. Both papers aimed to investigate a range of subclinical PMH symptoms in community samples, without formal MH diagnoses. This is useful, given much of the perinatal literature explores participants with clinical diagnosis, and often focuses on depression only. Yet, evidence highlights how subclinical PMH symptoms can develop into symptoms that would meet clinical diagnostic thresholds (Dominguez et al., 2011; Karsten et al., 2011). This can be more likely if experiences are frequent, distressing and negatively appraised. In the systematic review, our finding that PMH symptoms (depression, anxiety, and OCD) are typically highest during pregnancy and improve postnatally, and that most women are considered ‘healthy’ and experience ‘no’ to ‘mild’ symptoms, in line with findings of other reviews (Baron et al., 2017; Vanwetswinkel et al., 2022; Woody et al., 2017). Similarly, the predictors of maintained PMH symptoms identified are consistent to those found in other studies (Biaggi et al., 2016; O'Hara & McCabe, 2013; O'Hara & Wisner, 2014; Parker et al., 2015).

Considering the empirical study, we found a higher proportion of ITs and PLEs than seen in existing research (Fairbrother & Woody, 2008; Mannion & Slade, 2014) and a higher proportion of our sample scoring in the clinical range for depression and anxiety (Miller et al., 2006); this was attributed to the high proportion of our sample with a history of MH difficulties. Our findings that ITs and PLEs were related to poorer parental competence and greater parenting stress, is also consistent with existing literature (Fairbrother & Woody, 2008; Thiséus et al., 2019). However, our finding that experiences of ITs were experienced differently between male and female parents, contrasts with other findings who found no gender differences (Fairbrother et al., 2019). We did not identify literature exploring PLEs in fathers for comparison.

Critical Review

It is important to consider the strengths and limitations of the evidence presented in this portfolio.

The systematic review utilised studies with quantitative methodologies and applied a narrative synthesis approach to synthesise study data. To ensure a range of possible papers were captured, search terms were intentionally broad. Existing reviews often focus on one MH difficulty, cross-sectional methodology or focus only on the antenatal or postnatal period. We therefore opted to explore studies covering a range of PMH symptoms, with longitudinal cohort methodologies, and across the entire perinatal period. For inclusion, we required studies to have three assessment points, two of which occurred postally, as this enabled an understanding about changes in PMH symptoms across the period. A further strength of the study is adherence to PRISMA reporting guidelines. Additionally, 20% of full text papers were screened by a second-rater and 100% agreement was achieved. Furthermore, 50%

of the 20 final texts were quality assessed by a second-rater using the CASP checklist, and any disagreements discussed and resolved.

It is also important to consider limitations of this review. Many papers were excluded at abstract and full text screening as they only had one postnatal assessment point, these papers may have provided further insight into longitudinal PMH recovery outcomes. Furthermore, inclusion criteria did not specify about methodology or analysis used, resulting in the final 20 papers utilising a range of methods, which made data synthesis challenging and meant a meta-analysis was not possible. Most studies utilised the EPDS yet applied different cut-offs, ranging from 10 to 13. Had the same cut-off been applied across studies, synthesis of symptom severity would be more accurate and allow for better interpretation of longitudinal change. The review only explored studies with a quantitative methodology, yet inclusion of mixed-methods or qualitative studies may have allowed for a deeper understanding of the data and provided more detail about longitudinal PMH recovery. It would have been of interest to include fathers as participants, however early screens indicated a small sample of papers exploring fathers experiences and is an area future research could develop. The review did not specify a time-point of paper publication and the included papers ranged over a 20-year time period, and many papers utilised data from decades prior, during which attitudes to PMH have arguably changed. Finally, the CASP checklist was utilised to review study quality, where items are rated ‘yes, can’t tell or no’; in the current study numbers were allocated to these ratings, to allow a comparison of scores between studies and identify those of ‘high-quality’. However, the CASP was not designed to be scored in this way, it instead may have been more helpful to include further details about the rationale for quality rating, as opposed to a total score. Additionally,

there was variability in scoring of papers considered ‘high-quality’; studies varied considerably in number of participants, methodology and analysis which may not have been reflected using the scoring allocated.

The empirical paper recruited a good number of participants (*n*=349) from a community sample, all of whom completed the full survey. The study utilised a quantitative design to explore postnatal ITs and PLEs in greater depth and allowed for statistical analysis and exploration of effect sizes. The study was anonymous, which may have enabled participants to feel safe to honestly disclose their experiences without judgement. To the authors knowledge, this is the first study exploring ITs and PLEs together during the postnatal period, and to explore associations with parenting experience and MH, and if experiences differed between male and female parents, as opposed to females only.

Considering limitations, the study recruited a community sample, with the intention this would represent a non-clinical population, yet a large proportion of the sample reported a history of MH difficulties, which literature highlights is a risk factor for later PMH difficulties (Witt et al., 2011); 25% were awaiting/receiving MH treatment, and 20% had both a history of MH and were awaiting/receiving treatment, all of which may have unknowingly skewed study results. Though, we are confident our participants are representative of a community population. Recruitment was completed online, via targeted social media advertising and parenting forums, participants were therefore self-selecting, it is possible those with interest or experience in the research area were more likely to participate, which may have unknowingly biased the sample or over-reporting of experiences, even more so given the anonymity of the study. A quantitative method allowed to robust analysis and tests of significance, but, a mixed method-design that also incorporated

qualitative methodology, may have allowed for a richer understanding of participants' experiences. Furthermore, only a small sample of male parents were recruited, therefore findings from the gender analysis, whilst important, should not be overstated. Project time constraints meant a cross-sectional design was applied, yet a longitudinal, cohort design across the perinatal period would further inform about ITs and PLEs and explore if symptoms change over the perinatal period. Finally, greater socio-demographic information could have been collected, to explore if ITs and PLEs were experienced differently in different demographic groups and understand how representative our sample is of wider perinatal populations.

Implications

This portfolio explored PMH symptoms in community samples of parents. The findings are important in highlighting areas for future research and for ongoing perinatal service developments as part of the NHS long-term plan (NHS 2019).

The systematic review highlights how PMH is not a homogeneous experience, and symptoms can fluctuate across the perinatal period. Whilst depression is the most widely researched difficulty, this pattern of fluctuation is also seen across other PMH symptoms (anxiety, OCD, wellbeing), albeit in fewer studies. Many mothers experience mild symptoms, yet some experience consistently high symptoms, and others only report symptoms antenatally or postnatally. In perinatal services, a wider range of PMH symptoms (not just depression or anxiety) could be routinely screened for, in order to identify those experiencing greater PMH concerns who may benefit from additional support. Those who report consistently high symptoms may therefore be identified and could meet diagnostic threshold and require support from specialist perinatal services. If MH symptoms are not regularly screened for, changes and deteriorations risk going unnoticed and opportunities for early support interventions

could be missed, ultimately increasing the risk of adverse outcomes for mothers and babies. Healthcare professionals within the perinatal field such as GP's, health visitors and midwives, who have frequent contact with parents, are well placed to screen for such difficulties. Additionally, by understanding sociodemographic, psychological and birth factors that could predict symptom change, mothers identified to be at greater risk as a result of these factors, could be offered additional support. This could buffer against long-term negative outcomes for both mothers and babies. Findings also indicate that PMH difficulties can extend and impact outside of the perinatal period, however most perinatal services only offer support up to one year postpartum. This could mean parents experiencing PMH difficulties who fall outside of the perinatal period, risk going unnoticed, as they may no longer have frequent contact with perinatal healthcare professionals. This highlights the importance of education for a range of healthcare and other professionals (such as social workers, childcare providers, teachers, etc), to raise awareness of continued PMH difficulties. Other NHS services such as NHS Talking Therapies or community MH teams need to hold in mind the potential of continued and fluctuating PMH difficulties for mothers with young infants beyond the perinatal period.

The empirical project highlights how ITs and PLEs are distressing experiences and can be experienced in community populations. These experiences are not routinely screened for by perinatal professionals, yet we found they are widely experienced and distressing for parents. This finding is important, and services should consider screening for such symptoms as this could identify parents experiencing greater difficulties who may benefit from additional support. Parents may be less likely to disclose ITs and PLEs for feelings of shame or concerns they will be perceived as 'unfit' to parent. This is problematic, given the understanding

subclinical level symptoms can place parents at increased risk of developing clinical symptoms, if difficulties go untreated/unsupported. It is important to acknowledge that proportions of parents reporting PLEs more typically seen in psychosis was low, implying perhaps more severe psychotic symptoms are less prevalent in community samples. Services should aim to promote education to parents and professionals about the apparent high prevalence of ITs and PLEs and associated distress that can occur in non-clinical samples, in an attempt to normalise and reduce potential stigma. In addition, this knowledge can be used to identify parents who experience high levels of distress and indicate additional support may be needed. Public health campaigns could be helpful in spreading awareness about PMH difficulties and help reduce associated stigmas. ITs and PLEs are prevalent across the spectrum of MH difficulties, this is important to bear in mind and such difficulties need to be assessed and considered across all presentations of PMH difficulties, given the apparent overlap. This knowledge can be built into psychoeducation, for example in public health campaigns and support groups focused on preparing for parenthood. Also, within perinatal services, this knowledge and understanding can be better built into assessment, formulation, and interventions, for example where other PMH symptoms (like depression or anxiety) have been picked up – professionals could also ask about ITs and PLEs, something that is not currently routinely done. Services may have awareness of specific difficulties like OCD or psychosis, but less understanding of the spectrum of these conditions, and impact and distress of subclinical symptoms like ITs and PLEs.

Furthermore, services should offer support beyond mothers, given ITs and PLEs and MH difficulties are present in male parents too. Ultimately, increased awareness of the wide range PMH symptoms, associated distress, and links to

parenting experiences can guide professionals to offer additional support to parents most at risk and normalise experiences for parents and in the wider community.

Given funding for PMH services has expanded, this knowledge is useful in highlighting areas where additional support may be needed or where funding could be directed. In targeting resources and raising awareness of ITs and PLEs, this could lead to earlier identification and the long-term consequences, both financial and psychological, could be reduced. The perinatal period is unique and a time where parents experience increased responsibility, heightened stress and also vulnerability to MH difficulties.

Considering theoretical implications, our findings provide support that MH symptoms can exist on a spectrum and occur often at subclinical level within community samples. Specifically, the continuum models of psychosis and OCD; our findings highlight that symptoms like ITs and PLES (considered subclinical symptoms of OCD and Psychosis respectively), can occur in community, perinatal populations. Whilst appraisals of experiences were not explicitly explored, the fact high frequency and distress was reported regarding ITs and PLEs, suggests they were negatively appraised. In addition, the high frequency of IT-related coping behaviours indicates further that parents are distressed by experiences, and such behaviours could maintain IT distress and be considered a risk factor for OCD development. Similarly, 30.4% of parents endorsed 6+ PLEs and were identified to be ‘at-risk’ of developing psychosis, highlighting how experiences can exist on a spectrum and be prevalent in non-clinical, community samples.

Future Research

There is ample opportunity for future research to explore PMH in further detail, given gaps in the research literature. PMH is a clear focus and priority for the

WHO and NHS (NHS England 2023; WHO 2022). Longitudinal PMH research remains primarily focused on depression or restricted to the prenatal or postnatal period exclusively. It is important for future research to expand on current findings and explore a range of PMH symptoms, including ITs and PLEs within non-clinical and community samples. This will allow deeper understanding of how PMH is experienced across the perinatal period and inform about parents who may require further support. Furthermore, deeper understanding is needed to better understand the impact of PMH experiences on other aspects of functioning and psychological wellbeing. Additionally, there is a lack of literature exploring longitudinal PMH predictors of symptom change, highlighting this as a clear gap for future research. The current empirical project identified associations of ITs and PLEs to poorer parenting experiences, yet the causal mechanisms of this relationship remain unclear. The relationship between parenting stress and MH can be thought to be reciprocal; it is widely recognised that becoming a parent can be a stressful experience and likely to have an impact on MH, as well as MH impacting on parenting behaviour and experiences (both perceived and actual) like competence and satisfaction. Future research could explore this relationship further to better understand reciprocity and causality of these experiences. It would also be of interest to explore the potential impact this relationship has upon outcomes for infants and wider family systems.

Finally, findings from the empirical project highlight that male parents can also experience PMH difficulties that are comparable to female parents, yet there is much less research focus on this group and is an area for future research to consider exploring.

Recommendations

In brief, key recommendations from this portfolio for future research/clinical practice are as follows:

1) Explore a PMH across and beyond the perinatal period i.e., applying longitudinal designs; 2) define and explore recovery outcomes of PMH symptoms; 3) explore a wider range of PMH difficulties (i.e., not solely focusing on depression); 4) utilise/create appropriate MH measurement tools for use with perinatal populations and 5) promote awareness and early detection of PMH difficulties in community samples, both for parents and professionals.

Researcher Reflections

Prior to completing this thesis portfolio, I had psychological experience working with parents and children, within children's social care as part of a family safeguarding team and when working for a charity supporting young carers. These experiences were valuable, and I gained insight into the impact parental MH difficulties could have upon parents, children, and family systems. This deepened my interest in perinatal MH and led me to focus my thesis project in this area.

Overall, I have enjoyed the process of completing this thesis portfolio, albeit there were times where I felt challenged by the process. This included narrowing down my research aims for both projects when there was so many areas I was interested in exploring and given the relatively limited literature in perinatal mental health. I found the process of identifying a question for the systematic review a particular challenge and creating criteria that would result in a manageable number of studies to review within the project timeline. Understanding how best to synthesise the findings of studies which utilised a range of methodologies and analyses was also an important learning experience. Ultimately this project has enabled me to develop my skills, particularly in statistical analysis and data synthesis, and in

presenting information in a succinct, coherent way. I am proud of the work undertaken and this has informed my thinking of how best to disseminate the findings in a way that they can be well received and applied in NHS services and beyond.

Conclusions

This thesis portfolio explores PMH, specifically longitudinal symptom outcomes and experiences of ITs and PLEs. The systematic review found PMH symptoms can fluctuate across the perinatal period and highlights how symptoms generally improve from pregnancy and postpartum; although greater research is needed to explore predictors of PMH symptom change. The empirical project found that parents can experience high frequency of and levels of distress from postnatal ITs and PLEs, and that these experiences are significantly associated with increased parenting stress and MH symptoms and decreased parental competence. Additionally, male parents appear to have poorer experience than female parents. Overall, portfolio findings highlight the importance of understanding PMH experiences in parents and potential negative impact these can have. Greater awareness is needed in both the public and for professionals, to highlight the prevalence of PMH difficulties in attempt to improve detection and treatment. The findings highlight areas for further research within the perinatal field and the role services can play in supporting parents during this time, with the aim of improving outcomes for parents, infants, and surrounding systems.

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Appendices

List of Appendices

Appendix A: The Journal of Affective Disorders Author Guidelines

Description
The Journal of Affective Disorders publishes papers concerned with **affective disorders** in the widest sense: **depression, mania, anxiety, and panic**. It is interdisciplinary and aims to bring together different approaches for a diverse readership. High quality papers will be accepted dealing with any aspect of affective disorders, including biochemistry, pharmacology, endocrinology, genetics, statistics, epidemiology, psychodynamics, classification, clinical studies, and studies of all types of treatment.

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• Ensure all figure and table citations in the text match the files provided
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Immediately after the abstract, provide a maximum of 6 keywords, using American spelling and avoiding general and plural terms and multiple concepts (avoid, for example, 'and', 'of'). Be sparing with abbreviations: only abbreviations firmly established in the field may be eligible. These keywords will be used for indexing purposes.

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Define abbreviations that are not standard in this field in a footnote to be placed on the first page of the article. Such abbreviations that are unavoidable in the abstract must be defined at their first mention there, as well as in the footnote. Ensure consistency of abbreviations throughout the article.

Acknowledgements

Collate acknowledgements in a separate section at the end of the article before the references and do not, therefore, include them on the title page, as a footnote to the title or otherwise. List here those individuals who provided help during the research (e.g., providing language help, writing assistance or proof reading the article, etc.).

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List funding sources in this standard way to facilitate compliance to funder's requirements:

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It is not necessary to include detailed descriptions on the program or type of grants and awards. When funding is from a block grant or other resources available to a university, college, or other research institution, submit the name of the institute or organization that provided the funding.

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2. *Two authors:* both authors' names and the year of publication;
3. *Three or more authors:* first author's name followed by 'et al.' and the year of publication.

Citations may be made directly (or parenthetically). Groups of references can be listed either first alphabetically, then chronologically, or vice versa.

Examples: 'as demonstrated (Allan, 2000a, 2000b, 1999; Allan and Jones, 1999)…. Or, as demonstrated (Jones, 1999; Allan, 2000)… Kramer et al. (2010) have recently shown …'

List: References should be arranged first alphabetically and then further sorted chronologically if necessary. More than one reference from the same author(s) in the same year must be identified by the letters 'a', 'b', 'c', etc., placed after the year of publication.

Examples:

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Reference to a journal publication with an article number:

Van der Geer, J., Hanraads, J.A.J., Lupton, R.A., 2018. The art of writing a scientific article. Heliyon. 19, e00205. https://doi.org/10.1016/j.heliyon.2018.e00205.

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Strunk Jr., W., White, E.B., 2000. The Elements of Style, fourth ed. Longman, New York.

Reference to a chapter in an edited book:

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Cancer Research UK, 1975. Cancer statistics reports for the UK. http://www.cancerresearchuk.org/aboutcancer/statistics/cancerstatsreport/ (accessed 13 March 2003).

Reference to a dataset:

[dataset] Oguro, M., Imahiro, S., Saito, S., Nakashizuka, T., 2015. Mortality data for Japanese oak wilt disease and surrounding forest compositions. Mendeley Data, v1. https://doi.org/10.17632/xwj98nb39r.1.

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Coon, E., Berndt, M., Jan, A., Svyatsky, D., Atchley, A., Kikinzon, E., Harp, D., Manzini, G., Shelef, E., Lipnikov, K., Garimella, R., Xu, C., Moulton, D., Karra, S., Painter, S., Jafarov, E., & Molins, S., 2020. Advanced Terrestrial Simulator (ATS) v0.88 (Version 0.88). Zenodo. https://doi.org/10.5281/zenodo.3727209.

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Appendix B: Community Mental Health Journal Author Guidelines

Instructions for Authors

Types of Papers

The journal welcomes Articles with a length not exceeding 16 pages. This does not include references, tables, and figures.
The journal welcomes Brief Report articles with a length not exceeding 10 pages. Submissions of this type should not include any figures or tables.
Submissions should be double spaced and use a normal, plain font (i.e., 10 point Times New Roman) as further described in the "Text" section of these Guidelines.

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The Journal is dedicated to rapid dissemination of research on therapeutic treatments or preventive interventions. Supplements to the Journal can be used to publicize findings newly presented at conferences or symposia.
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Please follow the hyperlink “Submit manuscript” and upload all of your manuscript files following the instructions given on the screen.

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Please ensure you provide all relevant editable source files at every submission and revision. Failing to submit a complete set of editable source files will result in your article not being considered for review. For your manuscript text please always submit in common word processing formats such as .docx or LaTeX.

Title Page

Please make sure your title page contains the following information.

Title

The title should be concise and informative.

Author information

- The name(s) of the author(s)
- The affiliation(s) of the author(s), i.e. institution, (department), city, (state), country
- A clear indication and an active e-mail address of the corresponding author

- If available, the 16-digit ORCID of the author(s)

If address information is provided with the affiliation(s) it will also be published.
For authors that are (temporarily) unaffiliated we will only capture their city and country of residence, not their e-mail address unless specifically requested.
Large Language Models (LLMs), such as ChatGPT, do not currently satisfy our authorship criteria. Notably an attribution of authorship carries with it accountability for the work, which cannot be effectively applied to LLMs. Use of an LLM should be properly documented in the Methods section (and if a Methods section is not available, in a suitable alternative part) of the manuscript.

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Please provide an abstract of 150 to 250 words. The abstract should not contain any undefined abbreviations or unspecified references.
Please note: For some articles (particularly, systematic reviews and original research articles), 250 words may not be sufficient to provide all necessary information in the abstract. Therefore, the abstract length can be increased from the 250-word limit (to up to 450 words) if the topic dictates, and to allow full compliance with the relevant reporting guidelines.
For life science journals only (when applicable)

- Trial registration number and date of registration for prospectively registered trials
- Trial registration number and date of registration, followed by “retrospectively registered”, for retrospectively registered trials

Keywords
Please provide 4 to 6 keywords which can be used for indexing purposes.

Acknowledgements
An Acknowledgment section may be included to acknowledge, for example, people who have assisted with aspects of the work (but who do not qualify as authors), disclaimers, collaborations, etc.

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The following statements should be included under the heading "Statements and Declarations" for inclusion in the published paper. Please note that submissions that do not include relevant declarations will be returned as incomplete.
Competing Interests: Authors are required to disclose financial or non-financial interests that are directly or indirectly related to the work submitted for publication.
Please refer to “Competing Interests and Funding” below for more information on how to complete this section.

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Manuscripts should be submitted in Word.

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- Use italics for emphasis.
- Use the automatic page numbering function to number the pages.
- Do not use field functions.
- Use tab stops or other commands for indents, not the space bar.
- Use the table function, not spreadsheets, to make tables.
- Use the equation editor or MathType for equations.
- Save your file in docx format (Word 2007 or higher) or doc format (older Word versions).

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Please use no more than three levels of displayed headings.
Abbreviations
Abbreviations should be defined at first mention and used consistently thereafter.

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Footnotes can be used to give additional information, which may include the citation of a reference included in the reference list. They should not consist solely of a reference citation, and they should never include the bibliographic details of a reference. They should also not contain any figures or tables.
Footnotes to the text are numbered consecutively; those to tables should be indicated by superscript lower-case letters (or asterisks for significance values and other statistical data). Footnotes to the title or the authors of the article are not given reference symbols.
Always use footnotes instead of endnotes.

Acknowledgments
Acknowledgments of people, grants, funds, etc. should be placed in a separate section on the title page. The names of funding organizations should be written in full.

References
Citation
Cite references in the text by name and year in parentheses. Some examples:

- Negotiation research spans many disciplines (Thompson, 1990).
- This result was later contradicted by Becker and Seligman (1996).
- This effect has been widely studied (Abbott, 1991; Barakat et al., 1995; Kelso & Smith, 1998; Medvec et al., 1999).

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The list of references should only include works that are cited in the text and that have been published or accepted for publication. Personal communications and unpublished works should only be mentioned in the text.
Reference list entries should be alphabetized by the last names of the first author of each work.
Journal names and book titles should be *italicized*.
If available, please always include DOIs as full DOI links in your reference list (e.g. "https://doi.org/abc").

- Journal article Grady, J. S., Her, M., Moreno, G., Perez, C., & Yelinek, J. (2019). Emotions in storybooks: A comparison of storybooks that represent ethnic and racial groups in the United States. *Psychology of Popular Media Culture, 8*(3), 207–217. https://doi.org/10.1037/ppm0000185
- Article by DOI Hong, I., Knox, S., Pryor, L., Mroz, T. M., Graham, J., Shields, M. F., & Reistetter, T. A. (2020). Is referral to home health rehabilitation following inpatient rehabilitation facility associated with 90-day hospital readmission for adult patients with stroke? *American Journal of Physical Medicine & Rehabilitation*. Advance online publication. https://doi.org/10.1097/PHM.0000000000001435
- Book Sapolsky, R. M. (2017). *Behave: The biology of humans at our best and worst*. Penguin Books.

- Book chapter Dillard, J. P. (2020). Currents in the study of persuasion. In M. B. Oliver, A. A. Raney, & J. Bryant (Eds.), *Media effects: Advances in theory and research* (4th ed., pp. 115–129). Routledge.
- Online document Fagan, J. (2019, March 25). *Nursing clinical brain*. OER Commons. Retrieved January 7, 2020, from https://www.oercommons.org/authoring/53029-nursing-clinical-brain/view

Tables

- All tables are to be numbered using Arabic numerals.
- Tables should always be cited in text in consecutive numerical order.
- For each table, please supply a table caption (title) explaining the components of the table.
- Identify any previously published material by giving the original source in the form of a reference at the end of the table caption.
- Footnotes to tables should be indicated by superscript lower-case letters (or asterisks for significance values and other statistical data) and included beneath the table body.

Artwork and Illustrations Guidelines

Electronic Figure Submission

- Supply all figures electronically.
- Indicate what graphics program was used to create the artwork.
- For vector graphics, the preferred format is EPS; for halftones, please use TIFF format. MSOffice files are also acceptable.
- Vector graphics containing fonts must have the fonts embedded in the files.
- Name your figure files with "Fig" and the figure number, e.g., Fig1.eps.

Line Art

- Definition: Black and white graphic with no shading.
- Do not use faint lines and/or lettering and check that all lines and lettering within the figures are legible at final size.
- All lines should be at least 0.1 mm (0.3 pt) wide.
- Scanned line drawings and line drawings in bitmap format should have a minimum resolution of 1200 dpi.
- Vector graphics containing fonts must have the fonts embedded in the files.

Halftone Art

- Definition: Photographs, drawings, or paintings with fine shading, etc.
- If any magnification is used in the photographs, indicate this by using scale bars within the figures themselves.
- Halftones should have a minimum resolution of 300 dpi.

Combination Art

- Definition: a combination of halftone and line art, e.g., halftones containing line drawing, extensive lettering, color diagrams, etc.
- Combination artwork should have a minimum resolution of 600 dpi.

Color Art

- Color art is free of charge for online publication.
- If black and white will be shown in the print version, make sure that the main information will still be visible. Many colors are not distinguishable from one another when converted to black and white. A simple way to check this is to make a xerographic copy to see if the necessary distinctions between the different colors are still apparent.
- If the figures will be printed in black and white, do not refer to color in the captions.
- Color illustrations should be submitted as RGB (8 bits per channel).

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- To add lettering, it is best to use Helvetica or Arial (sans serif fonts).
- Keep lettering consistently sized throughout your final-sized artwork, usually about 2–3 mm (8–12 pt).
- Variance of type size within an illustration should be minimal, e.g., do not use 8-pt type on an axis and 20-pt type for the axis label.
- Avoid effects such as shading, outline letters, etc.
- Do not include titles or captions within your illustrations.

Figure Numbering

- All figures are to be numbered using Arabic numerals.
- Figures should always be cited in text in consecutive numerical order.
- Figure parts should be denoted by lowercase letters (a, b, c, etc.).
- If an appendix appears in your article and it contains one or more figures, continue the consecutive numbering of the main text. Do not number the appendix figures,"A1, A2, A3, etc." Figures in online appendices [Supplementary Information (SI)] should, however, be numbered separately.

Figure Captions

- Each figure should have a concise caption describing accurately what the figure depicts. Include the captions in the text file of the manuscript, not in the figure file.
- Figure captions begin with the term Fig. in bold type, followed by the figure number, also in bold type.
- No punctuation is to be included after the number, nor is any punctuation to be placed at the end of the caption.
- Identify all elements found in the figure in the figure caption; and use boxes, circles, etc., as coordinate points in graphs.
- Identify previously published material by giving the original source in the form of a reference citation at the end of the figure caption.

Figure Placement and Size

- Figures should be submitted within the body of the text. Only if the file size of the manuscript causes problems in uploading it, the large figures should be submitted separately from the text.
- When preparing your figures, size figures to fit in the column width.
- For large-sized journals the figures should be 84 mm (for double-column text areas), or 174 mm (for single-column text areas) wide and not higher than 234 mm.
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Authors are responsible for correctness of the statements provided in the manuscript. See also Authorship Principles. The Editor-in-Chief reserves the right to reject submissions that do not meet the guidelines described in this section.

Informed consent

All individuals have individual rights that are not to be infringed. Individual participants in studies have, for example, the right to decide what happens to the (identifiable) personal data gathered, to what they have said during a study or an interview, as well as to any photograph that was taken. This is especially true concerning images of vulnerable people (e.g. minors, patients, refugees, etc) or the use of images in sensitive contexts. In many instances authors will need to secure written consent before including images. Identifying details (names, dates of birth, identity numbers, biometrical characteristics (such as facial features, fingerprint, writing style, voice pattern, DNA or other distinguishing characteristic) and other information) of the participants that were studied should not be published in written descriptions, photographs, and genetic profiles unless

the information is essential for scholarly purposes and the participant (or parent/guardian if the participant is a minor or incapable or legal representative) gave written informed consent for publication. Complete anonymity is difficult to achieve in some cases. Detailed descriptions of individual participants, whether of their whole bodies or of body sections, may lead to disclosure of their identity. Under certain circumstances consent is not required as long as information is anonymized and the submission does not include images that may identify the person.
Informed consent for publication should be obtained if there is any doubt. For example, masking the eye region in photographs of participants is inadequate protection of anonymity. If identifying characteristics are altered to protect anonymity, such as in genetic profiles, authors should provide assurance that alterations do not distort meaning.
Exceptions where it is not necessary to obtain consent:
• Images such as x rays, laparoscopic images, ultrasound images, brain scans, pathology slides unless there is a concern about identifying information in which case, authors should ensure that consent is obtained.
• Reuse of images: If images are being reused from prior publications, the Publisher will assume that the prior publication obtained the relevant information regarding consent. Authors should provide the appropriate attribution for republished images.

Consent and already available data and/or biologic material
Regardless of whether material is collected from living or dead patients, they (family or guardian if the deceased has not made a pre-mortem decision) must have given prior written consent. The aspect of confidentiality as well as any wishes from the deceased should be respected.

Data protection, confidentiality and privacy
When biological material is donated for or data is generated as part of a research project authors should ensure, as part of the informed consent procedure, that the participants are made aware what kind of (personal) data will be processed, how it will be used and for what purpose. In case of data acquired via a biobank/biorepository, it is possible they apply a broad consent which allows research participants to consent to a broad range of uses of their data and samples which is regarded by research ethics committees as specific enough to be considered “informed”. However, authors should always check the specific biobank/biorepository policies or any other type of data provider policies (in case of non-bio research) to be sure that this is the case.

Consent to Participate
For all research involving human subjects, freely-given, informed consent to participate in the study must be obtained from participants (or their parent or legal guardian in the case of children under 16) and a statement to this effect should appear in the manuscript. In the case of articles describing human transplantation studies, authors must include a statement declaring that no organs/tissues were obtained from prisoners and must also name the institution(s)/clinic(s)/department(s) via which organs/tissues were obtained. For manuscripts reporting studies involving vulnerable groups where there is the potential for coercion or where consent may not have been fully informed, extra care will be taken by the editor and may be referred to the Springer Nature Research Integrity Group.

Consent to Publish
Individuals may consent to participate in a study, but object to having their data published in a journal article. Authors should make sure to also seek consent from

individuals to publish their data prior to submitting their paper to a journal. This is in particular applicable to case studies. A consent to publish form can be found here. (Download docx, 36 kB)

Summary of requirements

The above should be summarized in a statement and placed in a 'Declarations' section before the reference list under a heading of 'Consent to participate' and/or 'Consent to publish'. Other declarations include Funding, Competing interests, Ethics approval, Consent, Data and/or Code availability and Authors' contribution statements.

Please see the various examples of wording below and revise/customize the sample statements according to your own needs.

Sample statements for **"Consent to participate"**:

Informed consent was obtained from all individual participants included in the study.

Informed consent was obtained from legal guardians.

Written informed consent was obtained from the parents.

Verbal informed consent was obtained prior to the interview.

Sample statements for **"Consent to publish"**:

The authors affirm that human research participants provided informed consent for publication of the images in Figure(s) 1a, 1b and 1c.

The participant has consented to the submission of the case report to the journal.

Patients signed informed consent regarding publishing their data and photographs.

Sample statements if identifying information about participants is available in the article:

Additional informed consent was obtained from all individual participants for whom identifying information is included in this article.

Authors are responsible for correctness of the statements provided in the manuscript. See also Authorship Principles. The Editor-in-Chief reserves the right to reject submissions that do not meet the guidelines described in this section.

Images will be removed from publication if authors have not obtained informed consent or the paper may be removed and replaced with a notice explaining the reason for removal.

Appendix C: UEA Ethical Approval Letter

University of East Anglia
Norwich Research Park
Norwich. NR4 7TJ

Email: ethicsapproval@uea.ac.uk
Web: www.uea.ac.uk

Study title: Intrusive Thoughts and Psychotic-Like Experiences in the Postnatal Period.

Application ID: ETH2223-0119

Dear Ilana,

Your application was considered on 16th December 2022 by the FMH S-REC (Faculty of Medicine and Health Sciences Research Ethics Subcommittee).

The decision is: **approved**.

You are therefore able to start your project subject to any other necessary approvals being given.

If your study involves NHS staff and facilities, you will require Health Research Authority (HRA) governance approval before you can start this project (even though you did not require NHS-REC ethics approval). Please consult the HRA webpage about the application required, which is submitted through the IRAS system.

This approval will expire on **27th September 2024**.

Please note that your project is granted ethics approval only for the length of time identified above. Any extension to a project must obtain ethics approval by the FMH S-REC (Faculty of Medicine and Health Sciences Research Ethics Subcommittee) before continuing.

It is a requirement of this ethics approval that you should report any adverse events which occur during your project to the FMH S-REC (Faculty of Medicine and Health Sciences Research Ethics Subcommittee) as soon as possible. An adverse event is one which was not anticipated in the research design, and which could potentially cause risk or harm to the participants or the researcher, or which reveals potential risks in the treatment under evaluation. For research involving animals, it may be the unintended death of an animal after trapping or carrying out a procedure.

Any amendments to your submitted project in terms of design, sample, data collection, focus etc. should be notified to the FMH S-REC (Faculty of Medicine and Health Sciences Research Ethics Subcommittee) in advance to ensure ethical compliance. If the amendments are substantial a new application may be required.

Approval by the FMH S-REC (Faculty of Medicine and Health Sciences Research Ethics Subcommittee) should not be taken as evidence that your study is compliant with the UK General Data Protection Regulation (UK GDPR) and the Data Protection Act 2018. If you need guidance on how to make your study UK GDPR compliant, please contact the UEA Data Protection Officer (dataprotection@uea.ac.uk).

Please can you send your report once your project is completed to the FMH S-REC (fmh.ethics@uea.ac.uk).

I would like to wish you every success with your project.

On behalf of the FMH S-REC (Faculty of Medicine and Health Sciences Research Ethics Subcommittee)

Yours sincerely,

Paul Linsley

Appendix D: Demographic Questions

1. What is your age?	16-19 20-24 25-29 30-34 35-39 40-44 45+
2. What gender do you identify as?	Female Male Transgender Non-Binary Other Prefer not to say
3. What is your current relationship status?	Single In a relationship, not cohabiting In a relationship, cohabiting Married Divorced/separated Civil Partnership Widowed
4. Did you give birth to your child?	Yes/No
5. How many conceptions and births have you had? If you are the father/non-birthing parent, how many conceptions/births has your partner had?	Conceptions: Births:
6. Do you have a history of mental health difficulties?	Yes/No
7. Are you currently receiving treatment for a perinatal mental health difficulty?	Yes/No
8. Did you find the birth of your child (or a previous birth) to be traumatic?	Yes/No

Appendix E: Parental Thoughts and Behaviours Checklist (PTBC)

Instructions
We are interested in your experiences of unpleasant, unrealistic, disturbing, or unwanted thoughts, images, or impulses about your new baby that pop into your mind when you least want them there. Nearly everyone has such experiences, but people vary in how frequently these kinds of thoughts occur and how distressing they are. Some examples of negative baby-related thoughts that other people have reported are:

- An unwanted thought about intentionally hurting the baby even though you would never actually do it
- The idea that you could drop the baby from a high place
- An unwanted urge to touch the baby's genitals
- Repeated thoughts about the baby choking or dying tragically

Remember that we are NOT asking about general worries about the baby's general health or other family matters. Rather, we ARE interested in senseless thoughts, mental images or impulses that pass through your mind.

We realise that you might feel uncomfortable describing these kinds of thoughts. For example, you may be concerned that you are a bad parent if you have some of these thoughts. It is important for you to realise that most people have these kinds of experiences from time to time and they are quite common among new parents.

Please indicate whether or not you have experienced each kind of thought listed below by selecting YES or NO. If you have had the thoughts in the past (since birth), but not anymore, please select the 'PAST' option. Even if you have only briefly had these thoughts it is important for you to let us know.

	Yes	No	Past
1. Thoughts that he/she might stop breathing			
2. Thought about the baby being smothered			
3. Thought that the baby could suffocate while sleeping			
4. Thought that the baby could die of SIDS			
5. Thought of hitting the baby too hard when burping him/her			
6. Unwanted thoughts of screaming at, shaking, or slapping the baby			
7. Thoughts of purposely drowning the baby			
8. Thoughts of stabbing the baby			
9. Thoughts of burning the baby with hot water			
10. Thoughts about mistakenly puncturing the baby’s soft spot			
11. Thoughts about the baby dying because of an accident			
12. Fears of dropping the baby while holding him/her			
13. Thoughts of dropping the baby from a high place			
14. Fears that the baby will be injured if picked up wrong			
15. Fears that the baby will chock on something (e.g., toy, food)			
16. Thoughts that an animal (i.e., dog) might attack the baby			

17. Thoughts about the baby drowning during a bath			
18. Thoughts about a car accident involving the baby			
19. Thoughts of something happening to you (or spouse/partner) and you can't care for the baby			
20. Fear that you will forget the baby in the car seat			
21. Unwanted thoughts that you could give the baby away			
22. Fear that someone might take the baby			
23. Unwanted thoughts about leaving the baby somewhere when he/she is crying			
24. Thought about the baby getting sick from the floor or unclean surfaces			
25. Thoughts about the baby getting sick from bodily waste			
26. Concerns about household items (cleansers/solvents/bleaches)			
27. Concerns about animals or insects coming into contact with the baby			
28. Concerns that you or someone else will somehow contaminate the baby			
29. Unacceptable thoughts about the baby's genitals			
30. Thoughts about the baby's sexuality or future sexual orientation			
31. Unacceptable sexual thoughts during breastfeeding			
32. Other senseless and unwanted sexual thoughts about the baby			
33. Unrealistic fears that the baby has a serious medical illness or disease (cerebral palsy, MS, developmental disability)			

Look through the above questions for which you answered YES and then continue. The answers to the following questions should be based on the unreasonable/unwanted thoughts you indicated you had. Keep in mind the LAST WEEK when you answer the questions.

1. How much of your time is occupied by the senseless, unwanted thoughts about your new baby? How frequently do these thoughts or ideas occur? (Consider both the number of times and the duration of the thoughts)
    - (0) None
    - (1) Less than 1 hour per day, or occasional thoughts
    - (2) 1 to 3 hours per day, or frequent thoughts
    - (3) 3 to 8 hours per day, or very frequent thoughts
    - (4) More than 8 hours per day, or near constant thoughts

2. How much do these thoughts interfere with your family, social, work (or other role) functioning? Are there things you can't do because of the thoughts
    - (0) None
    - (1) Slight interference, but overall performance not impaired
    - (2) Definite interference, but still manageable
    - (3) Causes substantial impairment in performance

- (4) Incapacitating

3. How much distress do these senseless and unwanted thoughts cause you?
   - (0) None
   - (1) Not too disturbing
   - (2) Disturbing, but still manageable
   - (3) Very disturbing
   - (4) Near constant disabling distress

4. How much of an effort do you make to resist these thoughts? How often do you try to turn your attention away, or disregard them? (Rate only your effort to resist, not success or failure).
   - (0) I always make an effort to resist, or I do not need to make an effort
   - (1) I try to resist most of the time
   - (2) I make some effort to resist
   - (3) I yield to the thoughts without attempting to resist, but with reluctance
   - (4) I completely and willingly yield to all of the thoughts

5. How much control do you have over the thoughts? How successful are you at stopping or diverting them when they occur? Can you dismiss them?
   - (0) I have complete control over the thoughts
   - (1) Much control, I am usually able to stop or divert thoughts
   - (2) Moderate control, I am sometimes able to stop or divert the thoughts
   - (3) Little control, I'm rarely successful in stopping or dismissing thoughts
   - (4) No control, I am unable to even temporarily alter them

Again, consider the senseless, unwanted thoughts that you indicated previously. Please indicate whether any of these thoughts lead you to engage in the following strategies or activities:

	Yes	No	Past
1. Give yourself reassurance that things are okay			
2. Spend time trying to rationalise or make sense of the thought			
3. Check on the baby more frequently			
4. Distract yourself with other activities			
5. Distract yourself with other thoughts			
6. Try to suppress or stop the unwanted intrusive thoughts as quickly as possible			
7. Avoid situations in which the thought comes up			
8. Avoid your baby			
9. Get social support (such as by talking to your spouse or parent)			
10. Ask other people if the thoughts are 'ok' or 'normal'			
11. Confess to others that you've had the thoughts			
12. Pray about the thoughts			
13. Other strategies used to respond to the thoughts			

Now you will be asked several questions about the strategies and activities that you marked as 'YES', above.

Please answer the following questions based on the strategies you indicated using above. Please consider the PAST WEEK when choosing your answer.

1. How much time do you spend engaged in the strategies? How often do you use them in response to unwanted thoughts? (Consider both the number of times and how much time you spend).
    - (0) None
    - (1) Less than 1 hour per day, or occasional performance
    - (2) 1 to 3 hours per day, or frequent performance
    - (3) 3 to 8 hours per day, or very frequent performance
    - (4) More than 8 hours per day, or near constant performance

2. How much do these strategies interfere with your family, social or work (or other role) functioning? Are there things you can't do because of these strategies?
    - (0) None
    - (1) Slight interference, but overall performance not impaired
    - (2) Definite interference, but still manageable
    - (3) Causes substantial impairment in performance
    - (4) Incapacitating

3. How would you feel if you were prevented from performing these strategies when you felt as if you needed to perform them? That is, how anxious/worried would you become?
    - (0) None
    - (1) Not too disturbing
    - (2) Disturbing, but still manageable
    - (3) Very disturbing
    - (4) Near constant disabling distress

4. How much of an effort do you make to resist performing these strategies?
    - (0) Always make an effort to resist
    - (1) Try to resist most of the time
    - (2) Make some effort to resist
    - (3) Yield to fears without attempting to resist, but with reluctance
    - (4) Completely and willing yield to all fears

5. How strong is the drive to perform these strategies when an unwanted thought comes to mind?
    - (0) Complete control
    - (1) Much control, usually able to stop or divert behaviours
    - (2) Moderate control, sometimes able to stop or diver behaviours
    - (3) Little control, rarely successful in stopping or diverting behaviours
    - (4) No control, drive to preform behaviours is overpowering, rarely able to even delay performance

Appendix F: Prodromal Questionnaire 16-items (PQ-16)

Please complete this questionnaire based upon the time since you became a parent. Please rate whether each statement is true or false.

	True	False
1. I feel uninterested in the things I used to enjoy		
2. I often seem to live though events exactly as they happened before (deja vu)		
3. I sometimes smell or tase things that other people can't smell or taste		
4. I often hear unusual sounds like banging, clicking, hissing, clapping, or ringing in my ears		
5. I have been confused at times whether something I experienced was real or imaginary		
6. When I look at a person, or look at myself in a mirror, I have seen the face change right before my eyes		
7. I get extremely anxious when meeting people for the first time		
8. I have seen things that other people apparently can't see		
9. My thoughts are sometimes so strong that I can almost hear them		
10. I sometimes see special meanings in advertisements, shop windows, or in the way things are arranged around me		
11. Sometimes I have felt that I'm not in control of my own ideas or thoughts		
12. Sometimes I feel suddenly distracted by distant sounds that I am not normally aware of		
13. I have heard things other people can't hear like voices of people whispering or talking		
14. I often feel that others have it in for me		
15. I have had the sense that some person or force is around me, even though I could not see anyone		
16. I feel that parts of my body have changed in some way, or that parts of my body are working differently than before		

If TRUE, how much distress did you experience?

None	Mild	Moderate	Severe

Participants who answer 'True' to any item will also be asked about the frequency of the experience:

How frequently do these thoughts, ideas or experiences occur?

- (0) Never
- (1) Less than 1 hour per day, or occasionally
- (2) 1 to 3 hours per day or frequently
- (3) 3 to 8 hours per day or very frequently
- (4) More than 8 hours per day or near constantly

Appendix G: Parenting Sense of Competence Scale (PSOC)

Please rate the extent to which you agree or disagree with each of the following statements.

Strongly Disagree 1	Disagree 2	Somewhat Disagree 3	Somewhat Agree 4	Agree 5	Strongly Agree 6

1. The problems of taking care of a child are easy to solve once you know how your actions affect your child, an understanding I have acquired	1, 2, 3, 4, 5, 6
2. Even though being a parent could be rewarding, I am frustrated now while my child is at his/her present age	1, 2, 3, 4, 5, 6
3. I go to bed the same way I wake up in the morning, feeling that I have not accomplished a whole lot	1, 2, 3, 4, 5, 6
4. I do not know why it is, but sometimes when I'm supposed to be in control, I feel more like the one being manipulated	1, 2, 3, 4, 5, 6
5. My mother/father was better prepared to be a good mother/father than I am	1, 2, 3, 4, 5, 6
6. I would make a fine role model for a new mother/father to follow in order to learn what they would need to know in order to be a good parent	1, 2, 3, 4, 5, 6
7. Being a parent is manageable, and any problems are easily solved	1, 2, 3, 4, 5, 6
8. A difficult problem in being a parent is not knowing whether you're doing a good job or a bad one	1, 2, 3, 4, 5, 6
9. Sometimes I feel like I'm not getting anything done	1, 2, 3, 4, 5, 6
10. I meet my own personal expectations for expertise in caring for my child	1, 2, 3, 4, 5, 6
11. If anyone can find the answer to what is troubling my child, I am the one	1, 2, 3, 4, 5, 6
12. My talents and interests are in other areas, not being a parent	1, 2, 3, 4, 5, 6
13. Considering how long I've been a parent; I feel thoroughly familiar with this role	1, 2, 3, 4, 5, 6
14. If being a parent of a child were only more interesting, I would be motivated to do a better job as a parent	1, 2, 3, 4, 5, 6
15. I honestly believe I have all the skills necessary to be a good parent to my child	1, 2, 3, 4, 5, 6
16. Being a parent makes me tense and anxious	1, 2, 3, 4, 5, 6
17. Being a good parent is a reward in itself	1, 2, 3, 4, 5, 6

Appendix H: Parental Stress Scale (PSS)

The following statements describe feelings and perceptions about the experience of being a parent. Think of each of the items in terms of how your relationship with your child(ren) typically is. Please indicate the degree to which you agree or disagree with the following items.

Strongly Disagree 1	Disagree 2	Undecided 3	Agree 4	Strongly Agree 5

1. I am happy in my role as a parent	1, 2, 3, 4, 5
2. There is little or nothing I wouldn't do for my child(ren) if it was necessary	1, 2, 3, 4, 5
3. Caring for my child(ren) sometimes takes more time and energy than I have to give	1, 2, 3, 4, 5
4. I sometimes worry whether I am doing enough for my child(ren)	1, 2, 3, 4, 5
5. I feel close to my child(ren)	1, 2, 3, 4, 5
6. I enjoy spending time with my child(ren)	1, 2, 3, 4, 5
7. My child(ren) are an important source of affection for me	1, 2, 3, 4, 5
8. Having child(ren) gives me a more certain and optimistic view for the future	1, 2, 3, 4, 5
9. The major source of stress in my life is my child(ren)	1, 2, 3, 4, 5
10. Having child(ren) leaves little time and flexibility in my life	1, 2, 3, 4, 5
11. Having child(ren) has been a financial burden	1, 2, 3, 4, 5
12. It is difficult to balance different responsibilities because of my child(ren)	1, 2, 3, 4, 5
13. The behaviour of my child(ren) is often embarrassing or stressful to me	1, 2, 3, 4, 5
14. If I had to do it over again, I might decide not to have child(ren)	1, 2, 3, 4, 5
15. I feel overwhelmed by the responsibility of being a parent	1, 2, 3, 4, 5
16. Having child(ren) has meant having too few choices and too little control over my life	1, 2, 3, 4, 5
17. I am satisfied as a parent	1, 2, 3, 4, 5
18. I find my child(ren) enjoyable	1, 2, 3, 4, 5

Appendix I: Depression Anxiety Stress Scale (DASS-21)

Please read each statement and select which number (0, 1, 2, 3) which indicates how much the statement applied to you over the past week. There are no right or wrong answers. Do not spend too much time on any statement.

0 Never: Does not apply to me at all	1 Sometimes: Applied to me to some degree, or some of the time	2 Often: Applied to me a considerable degree, or a good part of the time	3 Almost Always: Applied to me very much, or most of the time

1. I found it hard to wind down	0, 1, 2, 3
2. I was aware of dryness of my mouth	0, 1, 2, 3
3. I couldn't seem to experience any positive feeling at all	0, 1, 2, 3
4. I experienced breathing difficulty (e.g., excessively rapid breathing, breathlessness in the absence of physical exertion)	0, 1, 2, 3
5. I found it difficult to work up the initiative to do things	0, 1, 2, 3
6. I tended to over-react to situations	0, 1, 2, 3
7. I experienced trembling (e.g., in the hands)	0, 1, 2, 3
8. I felt that I was using a lot of nervous energy	0, 1, 2, 3
9. I was worried about situations in which I might panic and make a fool of myself	0, 1, 2, 3
10. I felt that I had nothing to look forward to	0, 1, 2, 3
11. I found myself getting agitated	0, 1, 2, 3
12. I found it difficult to relax	0, 1, 2, 3
13. I felt down-hearted and blue	0, 1, 2, 3
14. I was intolerant of anything that kept me from getting on with what I was doing	0, 1, 2, 3
15. I felt that I was close to panic	0, 1, 2, 3
16. I was unable to become enthusiastic about anything	0, 1, 2, 3
17. I felt that I wasn't worth much as a person	0, 1, 2, 3
18. I felt that I was rather touchy	0, 1, 2, 3
19. I was aware of the action of my heart in the absence of physical exertion (e.g., sense of heart rate increase, missing a beat)	0, 1, 2, 3
20. I felt scared without any good reason	0, 1, 2, 3
21. I felt that life was meaningless	0, 1, 2, 3

Appendix J: Study advertisements

Study Advertisements
Version 2, 06.12.22

*Images used on adverts have been taken from Microsoft Office Stock images.

Social Media:

Twitter (240 characters max)

Text:
Are you a parent to a child under the age of 1? Would you like to complete an anonymous online survey about your experiences, to help develop our understanding of parents' postnatal mental health?

To find out more & take part click this link:

Instagram (2200 characters max) & **Facebook** posts:

Placements: Instagram: Instagram Feed, Stories, and Explore. Facebook: Automatic placements – Facebook's delivery system allocates the budget for the ad across multiple placements based on where they're likely to perform best. This can be across the Facebook, Messenger, and Instagram platforms.

Text:

Recruiting parents for an online survey!

Are you a parent to a child under the age of 1? Are you aged 16+? Are you based in the UK and able to understand English?

If yes – would you like to participate in an anonymous online survey about your experiences? It will take 20 - 30 minutes!

Our names are Ilana Foreman and Tammy Hunt. We are postgraduate researchers completing the Professional Doctorate in Clinical Psychology (ClinPsyD) at the University of East Anglia (UEA).

We are interested in learning more about parents' postnatal experiences of unwanted thoughts and unusual experiences.
By participating you can contribute to our understanding of mental health difficulties after pregnancy and can enter a prize draw to win one of ten £20 Amazon vouchers.

To find out more and take part, simply scan the QR code or click this link:

Any questions? Please contact us: Ilana Foreman & Tammy Hunt (Principal Researchers) at i.foreman@uea.ac.uk & t.hunt@uea.ac.uk

This study has received approval from the University of East Anglia Research Ethics Committee.

Mumsnet and Netmums invitation post:

Text:
Recruiting parents for an online survey!

Are you a parent to a child under 1? Are you aged 16+? Are you based in the UK and able to understand English?

If yes – would you like to participate in an online survey about your experiences? This will be anonymous and will take 20 - 30 minutes to complete!

Our names are Ilana Foreman and Tammy Hunt. We are postgraduate researchers completing the Professional Doctorate in Clinical Psychology (ClinPsyD) at the University of East Anglia (UEA).
As part of our thesis project, we are exploring parents' experiences of unwanted thoughts and unusual experiences in the post-natal period, specifically in the 12 months following birth.

By participating you can contribute to our understanding of mental health difficulties after pregnancy and can enter a prize draw to win one of ten £20 Amazon vouchers.

To find out more and take part, simply scan the QR code or click this link:

Any questions? Please contact us: Ilana Foreman & Tammy Hunt (Principal Researchers) at i.foreman@uea.ac.uk & t.hunt@uea.ac.uk

This study has received approval from the University of East Anglia Research Ethics Committee.

The following study advertisement image(s) accompanied the relevant text above.


Recruiting parents for online research!
We are interested in learning more about parents' experiences of postnatal unwanted thoughts and unusual experiences
Take part in an **anonymous** online survey (only 20 - 30 minutes!)
By participating you can **contribute to our understanding** of mental health difficulties after pregnancy.
You could **win** a £20 Amazon voucher!
Please scan the QR code/click the link to find out more & take part in this research.
You can take part if:
✓ You identify as a **parent** to a child under the age of 1
✓ You're aged 16+
✓ You can understand English
✓ You're based in the UK
University of East Anglia
Questions? Please contact us: Ilana Foreman & Tammy Hunt (Principal Researchers) at i.foreman@uea.ac.uk & t.hunt@uea.ac.uk


Recruiting parents for online research!
We are interested in learning more about parents' experiences of postnatal unwanted thoughts and unusual experiences
Take part in an **anonymous** online survey (only 20 - 30 minutes!)
By participating you can **contribute to our understanding** of mental health difficulties after pregnancy.
You could **win** a £20 Amazon voucher!
Please scan the QR code/click the link to find out more & take part in this research.
You can take part if:
✓ You identify as a **parent** to a child under the age of 1
✓ You're aged 16+
✓ You can understand English
✓ You're based in the UK
University of East Anglia
Questions? Please contact us: Ilana Foreman & Tammy Hunt (Principal Researchers) at i.foreman@uea.ac.uk & t.hunt@uea.ac.uk

Appendix K: Participant information sheet

Participant Information Sheet

Version 2, 06.12.22

Intrusive Thoughts and Psychotic-Like Experiences in the Postnatal Period

(1) What are the aims of the study and why is it important?

The time after having a baby is sometimes a joyous experience for parents. For others, it is a time of significant challenge. This is a time when many parents experience changes in their routine, lifestyle, mental health, and wellbeing.

Some unexpected changes may include experiencing unwanted, unwelcome thoughts that pop into your head without warning, at any time; these can be repetitive and distressing and can also be known as an 'intrusive' thought. Some people may hear/see things that others do not, often referred to as an 'unusual' or 'psychotic-like experience'.

Whilst these can sometimes be frightening, research indicates these experiences are normal and more common than once thought. Research also tells us that having unwanted thoughts or unusual experiences does not mean that people will act upon them.

We are interested in exploring these experiences in parents (both mums and dads/partners) who have had a baby in the last 12 months, this time is referred to as the 'postnatal period'. We hope to understand more about who has these experiences and whether parents find them distressing. We are also interested in exploring experiences of parenting and mental health during this time.

The aim of this study is to explore parents' experiences of unwanted thoughts and unusual experiences in the 12 months after having a baby. This study will be helpful in better understanding these experiences, their impact, and the support that parents may need during this time.

This Participant Information Sheet contains information about the research study that we hope will help you decide whether you want to take part. Please read this sheet carefully and contact us about anything that you don't understand or want to know more about.

Participation in this research study is voluntary. By giving consent to take part in this study you confirm that you:

- ✓ Understand what you have read.
- ✓ Agree to take part in the research study as outlined below.
- ✓ Agree to the use of your personal information as described.

(2) Who are we and why are we contacting you?

Our names are Ilana Foreman and Tammy Hunt. We are postgraduate researchers completing the Professional Doctorate in Clinical Psychology (ClinPsyD) at the University of East Anglia (UEA), currently in our second year of training.

As part of our thesis project, we are exploring parents' experiences of unwanted thoughts and unusual experiences in the postnatal period, specifically in the 12 months following birth.

We are looking to recruit parents who have a child under 1 year, to participate in an anonymous online questionnaire.

You are eligible to participate in this study if:

- You have a child aged under 1 year old and you identify as a parent
- You are aged 16 and above
- You can read and understand English (the questions are written in English)
- You reside in the United Kingdom

(3) What will participation involve for me?

You will be asked to complete an online questionnaire and your responses will be completely anonymous. This questionnaire will consist of some questions asking about your age, gender, ethnicity, relationship status, and brief questions about your birth experience. There will then be questions exploring your experience of unwanted thoughts, unusual experiences, mental health, and parenting experiences.

Possible worries: You may find some of the questions mildly upsetting and may worry about what may happen if you answer honestly. Please be reassured your responses are completely anonymous and as no personal information is collected, we have no way to identify you or link you to your responses. There will be no repercussions to your responses, so please answer honestly.

You may worry that reading questions about unwanted thoughts and unusual experiences could trigger you to experience these, however research has not shown this to be the case. Some parents may worry the presence of these experiences could affect their parenting ability or may worry about what will happen if they share their experiences. Research has found it is not uncommon for parents to experience unwanted, intrusive thoughts or unusual (psychotic-like) experiences after having a baby and is more common than once thought, which is why this is an important area to research. Research has also shown that the presence of unwanted thoughts and unusual experiences does not mean people are likely to act upon these.

We recognise that participating in this study may increase your awareness of your own experience of unwanted thoughts and unusual experiences, and that you may be concerned about these experiences and wonder what support is available to you. We have provided a list of relevant support resources which is available for you to view and download here:

(4) How much of my time will the study take?

The study should take between 20-30 minutes to complete.

(5) Do I have to be in the study? Can I withdraw from the study once I have started?

Taking part in this study is completely voluntary and you do not have to participate. Your decision on whether to participate will not affect your current or future relationship with the researchers or anyone else at the University of East Anglia now or in the future. If you have accessed this study following advertisement via an online parenting forum/website or social media site, please be reassured your decision to participate will not affect your current or future relationship with these websites, now or in the future. This study is completely separate from any parenting groups, websites, or social media sites you may be subscribed to.

If you would no longer like to take part in the study, you are free to exit the survey at any point by selecting the ‘withdraw’ button. You will not need to provide any reason

for this, and your data will not be stored if you withdraw from the survey. If you close your browser window before selecting 'withdraw' your responses will not be recorded, however, you will also not see the debrief form.

(6) What are the consequences if I withdraw from the study?
If you decide to take part in the study and then change your mind, you are free to withdraw until you submit your responses. Any responses that are not submitted will not be included in the analysis or any publications. There will be no consequences if you chose to withdraw from the study.

(7) Are there any risks or benefits to engaging in this study?
There is little risk involved in participating in this study, beyond that experienced in day-to-day life. There are no special precautions that you need to take before, during or after taking part in the study.
Potential risks could include you feeling some discomfort or distress about some of the questions asked. Please be reassured your responses are anonymous and there will be no repercussions for your answers. Research has highlighted that the presence of postnatal unwanted thoughts and unusual experiences is common, and the presence of these experiences does not mean people will act on them. We have provided a list of support resources which is available for you to download here: https://static.onlinesurveys.ac.uk/media/account/112/survey/976395/question/participant_support_informatio.docx

The benefits of engaging in this study include directly contributing to our understanding of parents' experience of unwanted thoughts and unusual experiences, the frequency and distress of these experiences and the impact these can have upon mental health and parenting experiences.
Following completion of the study you can opt-in to a prize draw, where you can win one of ten £20 Amazon vouchers. You can also opt-in to be contacted about future research participation opportunities and to receive a summary of this research. Via a separate survey link you can provide a contact email address should you want to opt-in to any of the above. This email address will not be linked to your questionnaire responses in any way.

(8) What will happen to the results of the study?
Everything you tell us will be kept confidential. This means that only the research team will have access to anonymised survey responses. We will not be asking for your name or other personal or identifiable details. We will, however, have access to your email address if you enter the prize draw, wish to receive the study summary, or be contacted about future research participation opportunities. Your email address will be collected and stored separately from your questionnaire responses. You will be contacted by your email address once the study has finished if you have won the prize draw.

Your personal data and information will only be used as outlined in this Participant Information Sheet, unless you consent otherwise. Your data will be handled in accordance with the Data Protection Act 2018 (DPA 2018) and UK General Data Protection Regulation (UK GDPR), and the University of East Anglia's Research Data Management Policy.

The information you provide will be stored securely and your identity will be kept strictly confidential, except as required by law. Study findings may be published, but you will not be identified in these publications if you decide to participate in this study.
Study data may also be deposited with a repository to allow it to be made available for scholarly and educational purposes. The data will be kept for at least 10 years beyond the last date the data were accessed. The deposited data will not include any identifiable information about you.

(9) Will I find out the results of the study?
You have a right to receive feedback about the overall results of this study. You can tell us that you wish to receive feedback by providing a contact email address (this will not be linked to your survey responses).
This feedback will be in the form of a one-page lay summary and will be available at the end of the study, in approximately August 2024.

(10) What if I have questions or concerns about the study?
If you have any questions or concerns about the study, you can contact us on the following details:

Ilana Foreman and Tammy Hunt
Norwich Medical School, Faculty of Medicine and Health Sciences, University of East Anglia (UEA), Norwich, NR4 7TJ.
i.foreman@uea.ac.uk and t.hunt@uea.ac.uk

This project is supervised by Dr Joanne Hodgekins and Dr Joanne Peterkin at the University of East Anglia.
If you would like to speak to somebody independent of the study, such as to discuss concerns or make a complaint, you can contact the UEA Acting Programme Director, Dr Sian Coker at S.Coker@uea.ac.uk.

(11) How do I know that this study has been approved to take place?
To protect your safety, rights, wellbeing and dignity, all research in the University of East Anglia is reviewed by a Research Ethics Body. This research was approved by the FMH S-REC (Faculty of Medicine and Health Sciences Research Ethics Subcommittee).

Thank you for taking the time to read this information and considering taking part in this research. You will now be directed to the consent form where you can then complete the survey.

Ilana Foreman and Tammy Hunt, Trainee Clinical Psychologists, UEA.

Should you want to download a copy of this information sheet for your records, you can do so
here: https://static.onlinesurveys.ac.uk/media/account/112/survey/976395/question/participant_information_sheet_.docx

Appendix L: Participant Consent Form

Participant Consent Form
Version 2, 06.12.22

Intrusive Thoughts and Psychotic-Like Experiences in the Postnatal Period.

I am willing to participate in this research study.

In giving my consent I state that:

- I understand the purpose of the study, what I will be asked to do, and any risks/benefits involved.
- I have read the Participant Information Sheet, which I can download and keep, for my records, and have been able to discuss my involvement in the study with the researchers if I wished to do so.
- The researchers have answered any questions that I had about the study, and I am happy with the answers.
- I understand that being in this study is completely voluntary and I do not have to take part. My decision whether to be in the study will not affect my relationship with the researchers or anyone else at the University of East Anglia now or in the future.
- I understand that I am free to withdraw at any time during the online survey without giving any reason, and without being penalised or disadvantaged.
- I understand that once my data has been submitted, I will be unable able to withdraw my data as it will not be identifiable.
- I understand that the results of this study may be published but that any publications will not contain my name or any identifiable information about me.
- I understand that personal information about me that is collected over the course of this project will be stored securely and will only be used for purposes that I have agreed to. I understand that information about me will only be told to others with my permission, except as required by law.

If you would like a copy of this form, it is available to download for your records here:

I consent to:

Completing this survey YES o NO o

Appendix M: Participant Debrief Form

Participant Debrief Sheet

Version 2, 06.12.22

Intrusive Thoughts and Psychotic-Like Experiences in the Postnatal Period

Thank you for participating in the study titled “Intrusive Thoughts and Psychotic-Like Experiences in the Postnatal Period”. We appreciate the time you have taken and value your contribution!

The aim of this study is to explore parents' experiences of unwanted ‘intrusive’ thoughts and unusual (psychotic-like) experiences in the 12 months after having a baby. This study included questionnaires that asked about your experience of unwanted thoughts, unusual experiences, mental health, perceived parenting ability and stress. We are interested to see how these experiences may be linked to each other and what this might mean.
Lots of research so far has focused on the experience of the birth mother; we are also interested in this and are also interested in the experience of the father/partner (non-birthing parent).

Your participation in this study will be helpful in better understanding these experiences, how distressing they are and can aid understanding about what support parents may be need during this time.

We appreciate some of the items in this questionnaire may have been uncomfortable or caused some distress. Research has shown that unwanted ‘intrusive’ thoughts and unusual (psychotic-like) experiences are common in the postnatal period. Research also tells us that the presence of these thoughts and experiences does not mean a person will act upon them.

Support information and resources

If you have experienced any distress as a result of your participation in this study, or have any questions concerning your general health and wellbeing, a list of support services available are available here:

- Samaritans, a national charity offering free and confidential emotional support 24 hours a day: www.samaritans.org/. They can be contacted on 116 123 (lines open 24 hours and number does not appear on phone bills), or at jo@samaritans.org.

- This website contains a comprehensive list of online support options for parents. The list includes resources for new parents, dads, LGBTQ+ parents, pregnancy and post-birth, miscarriage and baby loss, single parents, young parents, and older children. It also includes specific resources for perinatal OCD: https://www.talkingchange.nhs.uk/perinatal-resources

- The Mind website has a range of accessible perinatal resources: https://www.mind.org.uk/information-support/types-of-mental-health-problems/postnatal-depression-and-perinatal-mental-health/about-maternal-mental-health-problems/

- 'Best Beginnings' is a free NHS app for parents offering evidence-based information and self-care tools to help parents during pregnancy and early stages of parenting. App users also have access to a confidential, text-based crisis messenger which provides 24/7 support: https://www.bestbeginnings.org.uk/

- NHS mental health support resources and information is available here: https://www.nhs.uk/mental-health/

- This website provides national support resources and self-help guides for parents, you can also search for resources local to you: https://maternalmentalhealthalliance.org/resources/mums-and-families/

- You can also contact your healthcare professional, such as your GP, midwife, or health visitor.

- In an emergency please contact 999 or attend your nearest A&E.

*Please note, these resources are based in the UK.

Confidentiality
Please note, your responses have been collected for analysis purposes only. As your responses are anonymous and no personal identifiable information has been collected, we have no way to link your responses back to you. This means that after you exit this page, you will no longer be able to withdraw your responses.

Your anonymous responses will be securely stored in a password protected file in the UEA system. They will only be accessed by the research team. The data set can be securely held for a period of up to 10 years, after which point it will be destroyed.

Prize Draw
If you would like to enter a prize draw, where you could win one of ten £20 Amazon vouchers, please click the below link. This will open a new page where you can provide a contact email address. This email will not be linked to your survey responses and will be deleted after the prize draw results. The prize draw results will be held once data collection is complete, in approximately July 2023.

Further Research
This research project focused on experiences during the post-natal period (the 12 months following birth). The research team is looking to explore these experiences across the entire perinatal period (from conception until 12+ months after birth). If you would like to participate in future research in this area, please click the below link. This will open a new page where you can provide a contact email address. This email will not be linked to your survey responses.

Research Results
If you would like to find out the results from this research study, we can provide a summary once the research is complete. We also hope to publish our research in a Psychology research journal. If this is something you are interested in please click the below link. This will open a new page where you can provide a contact email address. We will then contact you with a summary of this research once it is complete (approximately summer 2024). This email will not be linked to your survey responses.

Link: https://uea.onlinesurveys.ac.uk/participant-prize-draw

Contact Details
Please contact us if you have any further questions or concerns about this research.

Our emails are: i.foreman@uea.ac.uk and t.hunt@uea.ac.uk

Our supervisors email addresses are: j.hodgekins@uea.ac.uk or j.peterkin@uea.ac.uk

Thank you very much for your time in completing this study!

Appendix N: Study Advertisement Reach and Interaction Data

	Dates	Overall Reach	Overall Clicks	Women / Men / Other Reach	Women / Men / Other Clicks	Facebook / Instagram / AN Reach	Facebook / Instagram / AN Clicks
Advert 1: All parents	4 Feb – 28 Feb 2023	23 458	909	23 042 / 296 / 120	898 / 2 / 9	23 354 / 160 / 0	903 / 6 / 0
Advert 2: Dads only	30 May – 5 June 2023	12 316	93	0 / 12 316 / 0	0 / 93 / 0	10 416 / 632 / 1256	73 / 2 / 18
Advert 3: All parents	5 June – 16 June 2023	21 057	769	20 589 / 312 / 156	759 / 2 / 8	20 429 / 856 / 17	741 / 28 / 0
		56831	1771				

Note. 'Other' = individuals who do not list their gender as male/female; 'Reach' = views of advertisement; 'Clicks' = interaction with the advertisement by clicking it; 'AN' = audience network.