An exploration of health professionals' knowledge and perspectives on supporting women with perinatal mental health difficulties

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Doctorate in Clinical Psychology

University of East Anglia

Medical School

Submission Year: 2023

Thesis Portfolio Word Count: 19,549

Abstract

Aims:

This thesis portfolio explores aspects of perinatal mental healthcare from a staff perspective. The systematic review aimed to explore the level of knowledge healthcare workers have of perinatal mental health conditions. The empirical research project aimed to explore staff views on supporting women with postpartum psychosis at different points of the perinatal clinical pathways.

Methods:

The systematic review utilised Thomas and Harden's (2005) framework for mixed methods narrative synthesis. The empirical research project utilised a mixed methods design. An online questionnaire was developed to capture staff views on supporting women and families who have experienced postpartum psychosis. Descriptive statistics alongside content analysis were used to report findings. A multiple regression analysis was conducted to explore factors which predict staff confidence when supporting women with postpartum psychosis.

Results:

Twenty-three studies (n = 3,329) were included in the systematic review. The evidence showed there are knowledge deficits around perinatal mental health. Knowledge of perinatal depression was greater than knowledge of other conditions. The empirical paper found that staff make adaptations to their usual way of working. All participants indicated that women may benefit from support beyond one year post birth, whilst 61% felt babies may need additional support. Staff working in specialist perinatal mental health services, had more frequent contact with women and those with greater years of experience reported the highest confidence when providing support.

Conclusions:

The systematic review concluded that workers have knowledge gaps around the range of perinatal mental health conditions, such as discussing mental health concerns. Workers should be supported to expand their knowledge and apply this in practice. The empirical paper highlights a research-practice gap around helpful interventions. There is a need for improved guidance around effective interventions with a perinatal focus. All workers in the perinatal care pathways should be supported to increase their confidence when working with women with postpartum psychosis.

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Acknowledgements

Thank you to my supervisors, Dr Jo Hodgekins and Dr Jo Peterkin for supporting me throughout this process and for sharing your expertise with me.

Thank you to all the participants who took part in the empirical study.

Finally, thank you to my partner George and to my pets Drago and Marnie.

CHAPTER ONE

Introduction

Word count: 1,196

Perinatal mental health refers to a mental health condition which occurs during pregnancy and up to one year after birth (O'Hara & McCabe, 2013). It is estimated that 10-20% of women develop a mental health problem during the perinatal period (Bauer et al, 2014). Midwives, health visitors and other primary care professionals often have a responsibility to identify or screen for mental health difficulties in the perinatal period. As such, these professionals are likely to provide initial support around assessment, signposting and referring on. Many women are referred onto specialist perinatal mental health services according to the severity of the condition.

Perinatal mental health is considered an important public health issue due to the potential long-term impact on women, babies, and the wider family system (Glover et al, 2010; O'Donnell et al, 2013). The potential negative impacts for women with perinatal mental health difficulties include increased risks of death by suicide, substance misuse and life-threatening physical complications being misattributed to mental health symptoms (Howard & Khalifeh, 2020). For the child, longer term difficulties relate to attachment difficulties, emotional and behavioural problems, issues with cognitive development, and poorer educational outcomes (Stein et al, 2014).

This creates a wider public health issue for society. A report by Bauer et al. (2014) commissioned by the Maternal Mental Health Alliance estimated the financial cost of perinatal mental health problems as £8.1 billion per year based on a literature review and economic modelling. They estimated that 72% of this cost was related to the child, and 28% to the mother. NHS England and NHS Improvement (2018) outline the care pathways for accessing perinatal mental health support. This includes preconception advice, specialist assessment, emergency assessment, psychological assessment, and urgent admission to a mother and baby unit.

In the UK, perinatal mental health services are commissioned to provide care for women with complex mental health problems from pregnancy to one-year post-birth, and in some services, this has recently been expanded to two years post-birth (NHS England and NHS Improvement, 2018; NHS, 2019). Perinatal mental health services have received additional investment in recent years in line with the Five Year Forward View (The Mental Health Taskforce, 2016). The aim of this was to improve recovery rates for women experiencing psychological difficulties, to reduce physical health risks for mother and baby and to reduce the risks of emotional and behavioural difficulties for the developing child. Additionally, it was acknowledged that this could reduce wider longer-term costs resulting from adverse experiences for the woman, child, and family.

For many years, postnatal depression has been the focus of screening and identification by healthcare practitioners within the perinatal period (The Royal College of Midwives, 2015). Although there has been recognition of the broader spectrum of mental health difficulties, it is not clear how this translates into current practice in perinatal services. The range of perinatal mental health difficulties includes postpartum psychosis, perinatal anxiety, personality disorders, obsessive compulsive behaviours, post-traumatic stress disorder and bipolar disorder. It is important that healthcare professionals feel appropriately equipped to recognise and respond to these concerns. World Health Organization (WHO) has highlighted the urgent need for "evidence based, cost effective, and human rights oriented mental health and social care services in community-based settings for early identification and management of maternal mental disorders" (WHO, 2022 para.2).

The current evidence base has informed treatments for perinatal mental health problems. Studies show that antidepressants can be effective in treating mental health problems in the postnatal period. However, there is less evidence around the effectiveness of antipsychotics (Taylor et al, 2019). In terms of psychological interventions, the evidence base suggests interventions such as cognitive behavioural therapy and interpersonal therapy can be effective in treating postnatal depression (Dennis & Hodnett, 2007). A systematic review found that psychological interventions are helpful when treating perinatal anxiety (Sockol, 2018). However, there is little known about what is helpful in treating the broader range of mental health problems that can be experienced in the perinatal period (Howard & Khalifeh, 2020).

In the UK, there has been recent research to explore the effectiveness and implementation of perinatal mental health services. This includes understanding the outcomes for women accessing specialist perinatal mental health services, compared to women who have accessed generic acute wards or crisis teams (Trevillion et al, 2019). Lever Taylor et al (2021) completed interviews with women who had either accessed specialist perinatal services, or generic mental health services as part of a qualitative study. Their findings were that women perceived services to be under-resourced in general, although described positive experiences from both types of services and valued continuity of care over a longer time period. However, the women who had accessed specialist perinatal services valued the expertise of the team. Similarly, Howard et al (2022) found that services which have been adapted to the perinatal period were considered valuable by women who accessed them. These studies are important as they provide an insight into the outcomes of perinatal services. This can inform ongoing development of the pathways within the UK, and for other healthcare organisations seeking to develop perinatal mental health provision.

Research around women's experiences of perinatal mental health care can provide further insight. One study which took place in Ireland, interviewed women about their experiences. They found that whilst women were open to discussing their mental health, healthcare practitioners did not always ask about the full range of mental health conditions. They also identified barriers to disclosing mental health difficulties. This included stigma and shame, lack of time and attitudes of healthcare workers (Nagle & Farrelly, 2018). Another study by Forde, Peters and Wittkowski (2019) explored the needs and preferences of women who had experienced postpartum psychosis. They found that women had additional needs beyond managing symptoms, including the need to process what had happened to them and find a way to adjust to their experiences.

This highlights the need for further exploration of perinatal services, around current practice and how any longer-term needs are being addressed. The workforce has a key role in facilitating care and identifying gaps in current service provision. However, there is little research around staff experiences of working within perinatal care. The research that does exist mainly appears to focus on staff experiences when working with women with specific disorders such as perinatal depression (Segre et al, 2010). There is limited research around the broader spectrum of perinatal mental health conditions from a staff perspective.

This portfolio contains two papers which aim to understand further aspects of perinatal mental health care from a staff perspective. First, a systematic review is presented which examines the level of knowledge healthcare workers have around perinatal mental health problems. Following this, the empirical paper is a study which aims to explore staff views around current care for women with postpartum psychosis. This includes the experience of delivering interventions, any adaptations in their way of working, their views on whether there are outstanding needs for mother and baby beyond the first-year post-birth, and their level of confidence when providing care. To conclude, a critical reflection chapter discusses the presented work as a whole, with consideration of the research process, strengths and weaknesses of the projects and clinical and research applications.

CHAPTER TWO

Systematic Review

Prepared for submission to Frontiers in Psychiatry Sec, Perinatal Psychiatry

(See Appendix for author guidelines)

Word count: 6,731

Healthcare Workers' Knowledge of Perinatal Mental Health: A Systematic Review

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This review did not receive a grant or funding and no conflicts of interest were reported.

Abstract

Introduction

There is increasing investment into the development of perinatal mental health care within many healthcare organisations. Healthcare worker knowledge is a key factor in delivering a high standard of care. This review aims to determine the level of knowledge healthcare workers have around perinatal mental health difficulties, whether there any factors influencing this, and outstanding training needs.

Methods

This review utilised Thomas and Harden's (2005) framework for mixed methods systematic reviews. Narrative synthesis was used to analyse quantitative data. Qualitative data was analysed using thematic analysis and informed quantitative findings.

Results

There were twenty-three peer-reviewed studies included in the review (n=3,329). Nine were quantitative, nine utilised mixed methods approaches and five were qualitative. Knowledge of perinatal depression was variable, but higher than for other perinatal mental health conditions. Knowledge deficits included initiating conversations around mental health. Levels of education and training influenced knowledge level. Identified training needs were knowledge of perinatal mental health conditions beyond perinatal depression and the practical application of knowledge.

Conclusions

Knowledge of perinatal depression, whilst still variable, is greater than that of other perinatal mental health conditions. The level of knowledge does not always equip workers to support women within their general practice. Future research should focus on a broader range of perinatal mental health difficulties beyond perinatal depression, and with greater representation from a range of professional groups. Greater consensus around the measurement of knowledge would be beneficial in supporting the development of competencies within the perinatal workforce.

Keywords: perinatal, mental health, healthcare workers, knowledge, understanding.

1. Introduction

1.1 Perinatal Mental Health

Perinatal mental health has received increasing attention and interest in recent years. There has been greater awareness of the potential negative impact of perinatal mental health difficulties on women, children, and families. Academic research on perinatal mental health has increased, and in the UK, there has been greater investment into the development of perinatal services. Although it could be argued that our understanding of perinatal mental health is still developing, this has allowed for greater knowledge and service provision for women and families experiencing perinatal mental health difficulties.

In 2016, the UK government made a commitment of over £290 million to provide new specialist perinatal mental health services. The Five Year Forward View (NHS England, 2016) outlined plans to support at least 30,000 additional women each year to access evidence-based specialist perinatal mental health treatment. Similar investments have been seen in other western healthcare systems. For instance, Australia released its first clinical guideline for perinatal mental health in 2011 (Austin et al., 2011). In 2015, the United States introduced grants with the aim that different states could develop their own perinatal mental health programs (Griffen et al., 2021). The Global Alliance for Maternal Mental Health also stated the objective to "advocate for all countries to develop national policies on maternal mental health" and have committed to increase research into evidence-based interventions (Global Alliance for Maternal Mental Health, 2022, para.2).

To operationalise recent guidance around treatment for perinatal mental health conditions, the needs of service providers must be considered and understood. Previous research has focused on developing effective interventions for women and families who experience perinatal mental health difficulties (Lavender et al, 2016; Rahman et al, 2013). Whilst this has been useful, the needs of the workforce are less understood. Women and families experiencing perinatal mental health difficulties will receive care from different parts of the wider health and social care systems, by professionals from a range of different disciplines and training routes. This could include physical health services, social care, mental health and third sector organisations. It is important to acknowledge the intersection between antenatal, maternity, postnatal, mental health, and social care services. An important aspect of perinatal mental health care is having a skilled and knowledgeable workforce to provide care within the boundaries of their role (Health Education England, 2018). However, it is not clear what skills, knowledge or occupational supports these workers require to provide effective and competent care.

1.2 The Role of Workers in Perinatal Mental Healthcare

The expectations placed on workers who care for women and families experiencing perinatal mental health difficulties are likely to be different depending on factors such as their professional role, setting and wider context. The key tasks of workers will vary according to the care pathways, and could include screening, assessment, signposting, onwards referral, intervention, safety planning, safeguarding, physical health care for mother and/or baby or care co-ordination, amongst many other aspects of care (Health Education England, 2018). As a result, it is difficult to gain a broad overview of what knowledge these professionals already have, and what their learning needs are.

Knowledge is considered an important factor to providing high quality care. Health Education England (2021) defines knowledge as “that which is explicit or documented – research, datasets, guidelines - and that which is tacit – the know-how and values held by individuals and within organisations based upon wisdom and experience” (para.4.). This recognises both the evidence base underpinning clinical practice, and learning gained from experience. Knowledge is important within perinatal care as it informs key service developments around workforce standards such as training. The Competency Framework for Perinatal Mental Health Professionals outlines competency standards that must be achieved by all professionals working across the perinatal care pathways (Health Education England, 2018). This includes knowledge of perinatal mental health presentations including postnatal psychosis, severe anxiety, severe depression, and thoughts around harm to self or the baby. This also recognises the responsibility of workers to challenge stigma by encouraging open conversations about mental health with the women they support.

1.3 Previous Research

Some studies have highlighted the experiences and potential barriers to accessing support for women with perinatal mental health difficulties (Ford et al, 2019; Sambrook Smith et al, 2019; Viveiros, & Darling, 2019). Barriers included a lack of clarity around service provision, difficulties in navigating conversations around mental health and a lack of continuity of care (Savory et al, 2022a; Nagle & Farrelly 2018). It is important for research to explore professionals' experiences of providing care. This could help inform policy makers, education providers, and key leaders within healthcare organisations around the learning needs of the workforce. Whilst there is limited research into staff experiences of working with women with perinatal mental health difficulties, findings suggest that improvements are needed. One study by Millett et al (2018) interviewed therapists from Improving Access to Psychological Therapies services (IAPT) and women with perinatal mental health difficulties who had accessed these services. This study found that workers in IAPT services need to tailor support for the perinatal context and should have access to perinatal specific training, supervision, and resources. Recent integrative and systematic review research has focused on the experiences of specific professional groups such as general practitioners and midwives (Ford et al, 2017; Noonan et al, 2017). These studies suggest that more training is needed around the awareness and management of perinatal mental health difficulties. However, conclusions cannot necessarily be applied beyond these professional groups and the context of within which they work.

This review aims to broaden the focus to all healthcare workers who have responsibility within their role to provide support for women and families who may be experiencing perinatal mental health difficulties. Additionally, it has a specific focus on the level of knowledge of healthcare workers rather than exploring staff experiences more generally when providing care. This review also aims to explore and discuss any underpinning factors that may influence the level of knowledge, and any outstanding training needs identified in the included studies.

1.4 Aims

The aim of this review is to consider the level of knowledge healthcare workers have around perinatal mental health difficulties.

Primary research question:

1. What level of knowledge do healthcare workers have around perinatal mental health difficulties?

Secondary research questions:

2. What factors influence the level of knowledge of healthcare workers have about perinatal mental health difficulties?
3. What are the outstanding training needs for healthcare workers in relation to perinatal mental health?

The main outcome of the review will be to summarise the level of knowledge of healthcare workers who work with women and families with perinatal mental health difficulties.

2. Method

This systematic review was registered on the International Register of Prospective Systematic Reviews (PROSPERO) (registration number: CRD42022328241, 17/08/2022) and followed the PRISMA reporting guidelines.

2.1 Eligibility

2.1.1 Inclusion Criteria

To be included, studies must have recruited participants who work in a clinical healthcare role and have regular contact with women and families with mental health conditions across the perinatal period. This was defined as workers who have either current registration or employment within a healthcare organisation, including but not limited to midwives, nurses, obstetricians, health visitors and support workers. Additionally, the studies must have specifically considered knowledge in relation to one or more perinatal mental health conditions and be outlined within the study aims or findings. Methods of defining and assessing knowledge include self-report measures, surveys, and experimental study designs. Qualitative studies must have explored healthcare worker knowledge within their study design, for instance, as part of focus groups and interviews. The role of the qualitative studies is to help understand the variation in knowledge level and the reasons for this.

The perinatal period was defined as between pregnancy and one year after birth. The studies included in the review must have been published after 2010. This was to ensure some consistency around practice given recent developments in perinatal mental health care. Moreover, to reflect recent broadening of remit of maternity and perinatal services to acknowledge the spectrum of mental health problems that can be experienced in perinatal period (WHO, 2022). Furthermore, for the review, only empirical studies were considered which had used a quantitative, qualitative, or mixed methods approach. Whilst there were no restrictions around the country where the study took place, only those published in English language journals, or where an English language translation was available were included.

2.1.2 Exclusion Criteria

The following study designs were excluded from this review: case studies, systematic reviews, book chapters, conference papers, opinion pieces and review articles.

Studies were excluded if participants did not work in a clinical role e.g., researchers, professors, commissioners, or other non-clinical roles or if participants were students rather than qualified practitioners. Additionally, if studies did not assess knowledge of any known perinatal mental health condition or assessed a mental health condition which occurred outside of the perinatal period. Studies were also excluded if they did not specifically assess or report any outcomes relating to the level of healthcare worker knowledge.

2.2 Search Strategy

The search strategy for this review consisted of running standardised search terms on four different research databases: PsycINFO, MEDLINE, PubMed, and OVID.

Search terms were (a) terms related to healthcare workers AND (b) terms related to knowledge AND (c) terms related to perinatal AND (d) terms related to mental health. Searches were conducted in July 2022 and re-run in December 2022.

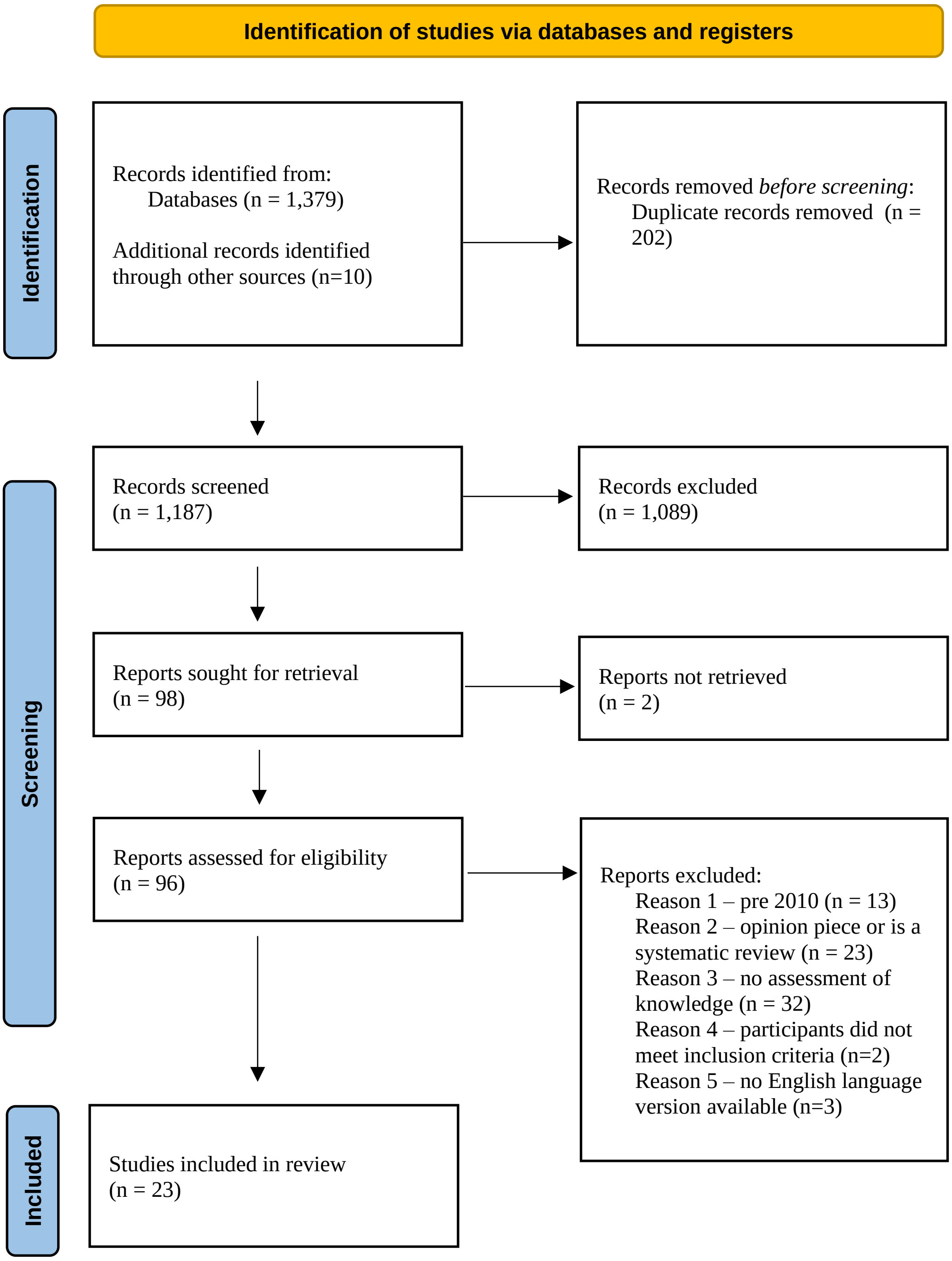
Table 1. Search terms

Healthcare workers	Knowledge	Perinatal	Mental health
Healthcare workers	Knowledge	Perinatal	Mental health
Worker	Understanding	Postpartum	Wellbeing
Care worker	Training	Postnatal	Psych*
Staff	Competency	Antenatal	
Clinicians	Expertise		
Practitioners	Experience		
Professionals			
Nurses			
Workforce			
Team			
Therapist			
Med*			
Psychiatr*			
Psych*			

Figure 1 presents a PRISMA flow chart which illustrates the process involved in identifying the studies included in this review. Initially 1,379 studies were identified from databases searches. A further ten studies were identified from scanning the references of included studies. Following removal of duplicates, 1,187 were title and abstract screened according to the inclusion criteria. Following this, a further 1,089 were excluded and 96 were retrieved and assessed for eligibility for the review. A second reviewer screened 20% of papers and this resulted in twenty-three studies meeting the criteria to be included in the review.

Figure 1.

PRISMA Study Selection Flow Chart



2.3 Data Extraction and Synthesis

The analysis has utilised the Popay et al. (2006) guidance which suggests identification of the review question, extraction of data, quality assessment and subsequent synthesis of the main outcomes. Included studies were initially grouped based on their methodology (qualitative, qualitative or mixed methods). A data extraction template was used to identify study characteristics including author, publication year, sample demographics, measures and key findings related to healthcare worker knowledge of perinatal mental health (see Table 3).

Narrative synthesis was used to analyse quantitative data due to the variability in study methodology. A thematic analysis was completed to analyse the qualitative data reflexively. This utilised predetermined and emerging codes according to Braun and Clarke's approach (2006). A second reviewer coded 20% of papers, with any disagreements resolved by discussion until a consensus was achieved. The codes corresponded to four key themes: recognition of symptoms of perinatal depression, not feeling comfortable to discuss mental health concerns, training as an important factor and the practical application of skills. To present both the quantitative and qualitative data for this review, the Thomas and Harden (2005) framework for mixed methods systematic reviews was followed. The qualitative and quantitative data were pooled together in a matrix to determine how the qualitative findings inform and clarify the quantitative results with consideration to similarities and differences (see supplementary material).

2.4 Methodological Quality Assessment

A quality assessment was completed by the primary reviewer using a formal risk of bias tool. The Mixed Methods Appraisal Tool (MMAT; Hong et al., 2018) was utilised. The MMAT is used for quantitative, qualitative and mixed-methods studies. It consists of initial screening questions around the clarity of the research questions whether the collected data is appropriate to answer these. No studies were excluded at this stage. Studies were assessed according to the criterion items for each research method, with quantitative studies being rated against the 'quantitative descriptive criterion'. The MMAT discourages against assigning overall quality scores, therefore, the quality ratings by each criterion are reported in table 2. ‘Can’t tell’ responses were calculated as ‘no’ responses to inform the quality rating. A second reviewer completed a quality assessment for 20% of articles to reduce the risk of bias. There was an 80% agreement rate with disagreements discussed and resolved between the primary and secondary reviewer.

Table 2. Summary of quality appraisals using the MMAT

			Qualitative criterion					*Quantitative criterion*					*Mixed Methods criterion*					
Study	**S1**	**S2**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	Quality percentage (%)
Hauck et al. (2015)	**Y**	**Y**	-	-	-	-	-	**Y**	**Y**	**Y**	**Y**	**Y**	-	-	-	-	-	100
Leddy et al. (2011)	**Y**	**Y**	-	-	-	-	-	**Y**	**Y**	**Y**	**Y**	**Y**	-	-	-	-	-	100
Higgins et al. (2018b)	**Y**	**Y**	-	-	-	-	-	**Y**	**Y**	**Y**	**Y**	**Y**	-	-	-	-	-	100
Jones et al. (2011)	**Y**	**Y**	-	-	-	-	-	**Y**	**Y**	**Y**	**Y**	**Y**	-	-	-	-	-	100
Sofronas et al. 2011)	**Y**	**Y**	-	-	-	-	-	**Y**	**Y**	**Y**	**Y**	**Y**	-	-	-	-	-	100
Kang et al. (2019)	**Y**	**Y**	-	-	-	-	-	**Y**	**Y**	**Y**	**Y**	**Y**	-	-	-	-	-	100
Elshatarat et al. (2018)	**Y**	**Y**	-	-	-	-	-	**CT**	**Y**	**Y**	**Y**	**Y**	-	-	-	-	-	80
Bina et al. (2019)	**Y**	**Y**	-	-	-	-	-	**Y**	**Y**	**Y**	**Y**	**Y**	-	-	-	-	-	100
Magdalena & Tamara (2020)	**Y**	**Y**	-	-	-	-	-	**CT**	**Y**	**Y**	**CT**	**Y**	-	-	-	-	-	60
Higgins et al. (2018a)	**Y**	**Y**	-	-	-	-	-	-	-	-	-	-	**Y**	**Y**	**Y**	**Y**	**Y**	80
Carroll et al. (2018)	**Y**	**Y**	-	-	-	-	-	-	-	-	-	-	**Y**	**Y**	**Y**	**Y**	**CT**	80
McCauley et al. (2011)	**Y**	**Y**	-	-	-	-	-	-	-	-	-	-	**Y**	**Y**	**Y**	**Y**	**Y**	100
Rothera & Oates (2011)	**Y**	**Y**	-	-	-	-	-	-	-	-	-	-	**Y**	**Y**	**Y**	**Y**	**Y**	100
Downes et al. (2017)	**Y**	**Y**	-	-	-	-	-	-	-	-	-	-	**Y**	**Y**	**Y**	**Y**	**CT**	80
Jones et al. (2015)	**Y**	**Y**	-	-	-	-	-	-	-	-	-	-	**Y**	**Y**	**Y**	**Y**	**CT**	80
Savory et al. (2022b)	**Y**	**Y**	-	-	-	-	-	-	-	-	-	-	**Y**	**Y**	**Y**	**Y**	**Y**	100
Noonan et al. (2018)	**Y**	**Y**	-	-	-	-	-	-	-	-	-	-	**Y**	**Y**	**Y**	**Y**	**Y**	100
Noonan et al. (2019)	**Y**	**Y**	-	-	-	-	-	-	-	-	-	-	**Y**	**Y**	**Y**	**Y**	**Y**	100
Jomeen et al. (2013)	**Y**	**Y**	**Y**	**Y**	**Y**	**CT**	**Y**	-	-	-	-	-	-	-	-	-	-	80
Pinar et al. (2022)	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	-	-	-	-	-	-	-	-	-	-	100
Alexandrou et al. (2018)	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	-	-	-	-	-	-	-	-	-	-	100
Ashford et al. (2017)	**Y**	**Y**	**Y**	**Y**	**Y**	**CT**	**Y**	-	-	-	-	-	-	-	-	-	-	80
Asare & Rodrigeuz-Muñoz. (2022)	**Y**	**Y**	**Y**	**Y**	**CT**	**CT**	**Y**	-	-	-	-	-	-	-	-	-	-	60

**CT denotes ‘can’t tell’*

3. Results

There were twenty-three included studies in the systematic review, the results of which are presented below.

3.1 Study Characteristics

Population samples in the included studies varied, although the most represented profession was midwives (*n*=12). Other professions included in the studies were nurses (*n*=5), public health nurses (*n*=3), general practitioners (*n*=1), health visitors (*n*=6), obstetricians (*n*=2), obstetrician-gynaecologists (*n*=2), psychiatrists (*n*=1) and clinical support workers (*n*=1). The research studies took place in different locations, these included: UK (*n*=7), Republic of Ireland (*n*=6), Australia (*n*=3), United States (*n*=1), Poland (*n*=1), Cyprus (*n*=1), Israel (*n*=1), Canada (*n*=1), Malaysia (*n*=1), Ghana (n=1) and Saudi Arabia (*n*=1). Studies varied in terms of their methodology with some utilising a quantitative design (*n*=9), some using a qualitative design (*n*=5) and some using a mixed-methods approach (*n*=9). Studies using a quantitative design used surveys or vignettes to assess knowledge. In the qualitative studies data were gathered via focus groups or semi-structured interviews. The mixed-methods studies gathered data using either combination of these two approaches or through mixed-methods questionnaires. Some studies explored knowledge in relation to perinatal depression only (*n*=9), and one in relation to perinatal anxiety (*n*=1). There was a study which looked specifically at postpartum depression and postpartum psychosis (*n*=1), whilst the other studies explored the broader range of perinatal mental health difficulties or perinatal mental health more generally (*n*=12).

3.2 Participant Characteristics

The study sample sizes ranged from 5 to 837 (total *n*=3,329). Females appeared to be overrepresented within the review, although this may reflect wider demographics within the professions studied (see table 1). Twelve of the included studies did not report the gender split, but of the eleven studies that did all of them had more than 50% female participants, with five having 100%

female participants (Ashford et al, 2017; Sofronas et al, 2011; Kang et al, 2019; Alexandrou et al, 2018; Magdelena & Tamara, 2020). Where reported, the age range was 20-60+ years and the mean age ranged from 35.04 years to 49.95 years.

3.3 Quality Assessment

Although the MMAT discourages against overall quality rating scores, all included studies scored between 60-100% against the criteria for their respective study design. Of all the included studies, fourteen scored 100%, seven scored 80% and two studies scored 60%. The main reasons for lower quality studies were sampling methods and due to lack of steps taken to minimise risk of bias during the analysis stage of qualitative studies. Therefore, the included studies are of moderate to high quality overall. Table 2 depicts these quality ratings further against MMAT criteria.

3.4 How Knowledge was Assessed

All quantitative and mixed methods studies assessed knowledge through questionnaires and/or vignettes. There were eighteen studies that assessed knowledge via a questionnaire. Of these studies, fourteen asked participants to self-rate of their knowledge, whilst four asked participants to complete a general knowledge questionnaire. All questionnaires were either developed by the researchers themselves or adapted from questionnaires previously developed by other researchers. There were three studies which also assessed knowledge through asking participants about identification or management of a perinatal mental health problem according to a vignette or case study. There was one study which used a questionnaire based on vignettes alongside interviews. The rest of the studies used qualitative methods alone and were used within this review to provide an understanding around the variation in knowledge level. Good knowledge is defined within this review as scores above the median or mean score on quantitative outcome measures used within each study. Moderate knowledge level is defined as scores which fall on the midpoint of quantitative outcome measures and low knowledge relates to scores below the midpoint.

Table 3.

Overview of the Final Studies Selected for the Current Review.

Study ID	Authors of study	Sample size gender split and mean age (SD)	Participant type/job role	Study location	Research design & methodology	Perinatal MH condition studied	Research aims/questions	Summary of main findings regarding knowledge
1.	Hauck et al. (2015)	238 (total) Gender not reported 20-60+ yrs	Midwives	Australia	Quantitative: General knowledge questionnaire. Vignettes based on symptoms drawn from ICD-10	Perinatal mental health conditions	To explore midwives' knowledge of, and attitudes towards, perinatal mental health disorders. To explore their perceived mental health learning needs.	There was good recognition of depression and moderate rates of recognition on the anxiety, bipolar disorder, and schizophrenia vignettes.
2.	Leddy et al. (2011)	176 (total) 54% female 46% male 49.95 (9.56) yrs	Obstectrician-Gynecologists	United States	Quantitative: questionnaire and vignettes on postpartum depression and postpartum psychosis, based on DSM-V-TR criteria	Postpartum depression, postpartum psychosis	To investigate obstetrician–gynaecologists' knowledge, attitudes, and practice around postpartum mental health, namely Postpartum Depression and Postpartum Psychosis	There was good recognition of vignettes depicting postpartum depression and postpartum psychosis. Some participants over identified postpartum psychosis with the average false positive rate being significantly greater than the average miss rate.
3.	Higgins et al. (2018b)	837 (total) Gender not reported 20-50+ yrs	Midwives and Nurses	Ireland	Quantitative: questionnaire asking participants to rate barriers	Perinatal mental health conditions	To explore Midwives' and Primary Care Nurses' perceptions of barriers to addressing mental health issues and to identify factors they perceived as impacting most on practice	Over 50% of participants report a lack of knowledge around discussing mental health. Participants felt they did not have the adequate skill to respond to a disclosure of a mental health issue.
4.	Jones et al. (2011)	815 (total) 98.6% female 1.4% male	Midwives	Australia	Quantitative: questionnaire based on DSM-IV criteria and	Antenatal depression,	To differentiate midwives' knowledge of antenatal depression and PPD.	Participants had good knowledge of antenatal depression and postnatal depression. There were

		44.6 (8.82) years			beyondblue's National Baseline Survey	postnatal depression	Additionally, to assess their awareness of the co-morbidity of depression and other associated emotional difficulties	knowledge gaps related to onset, assessment, and treatment for depressive symptoms.
5.	Sofronas et al. 2011)	132 (total) 100% female Age not reported	Nurses from prenatal clinic or neonatal unit	Canada	Quantitative: questionnaire based on the Leiferman et al. (2008) questionnaire	Postnatal depression	To explore the attitudes, beliefs and practices around managing postnatal depression	Over half of nurses identified lack of knowledge as a barrier to providing care around symptoms of maternal depression.
6.	Kang et al. (2019)	108 (total) 100% female Mean age 35.04 years	Nurses	Malaysia	Quantitative: questionnaire based on Leiferman et al. (2008) questionnaire	Postnatal depression	To assess the knowledge, beliefs and practices of nurses around postnatal depression	Most participants had good knowledge of risk factors, symptoms, and complications of postnatal depression. There were knowledge gaps around treatment, and general knowledge around the condition.
7.	Elshatarat et al. (2018)	324 (total) 181 nurses 143 midwives 20-49+ years Gender not reported	Nurses and Midwives	Saudi Arabia	Quantitative: questionnaire based on the Skocir and Hundley (2006) questionnaire	Postpartum depression	To assess midwives and nurses' level of knowledge of postnatal depression	Participants had good knowledge of postpartum depression Knowledge gaps were around definitions, prevalence, symptoms, risk factors, screening tools, and treatment.
8.	Bina et al. (2019)	219 (total) Mean age 45.5 years Gender not reported	Public Health Nurses	Israel	Quantitative: questionnaire developed by researchers using Likert scale items	Postnatal depression	To explore public health nurses' perceived preparedness to screen, intervene and refer women with postnatal depression. To identify factors associated with perceived preparedness	There was average to good knowledge of postnatal depression. Perceived knowledge was associated with preparedness to screen, intervene and refer on.
9.	Magdalena & Tamara (2020)	111 (total) 100% female Mean age 39.57 years	Midwives	Poland	Quantitative: questionnaire based on Test of Antenatal and Postpartum Depression Knowledge (Jones et al, 2011) and a case study.	Perinatal depression	To assess midwives' knowledge about perinatal depression following the implementation of a new standard of perinatal care	There were knowledge gaps around antenatal depression and postnatal depression. Researchers concluded midwives do not have sufficient knowledge of assessment and treatments.

10.	Higgins et al. (2018a)	186 (total) Gender not reported 25-55+ yrs	Public Health Nurses	Ireland	Mixed methods: questionnaire developed by the researchers. Knowledge self-rating using a 1–5-point Likert scale	Perinatal mental health conditions	To identify Public Health Nurses' knowledge of Perinatal Mental Health issues, their perceived skill in providing care to women, their current practices and to establish their education needs	Participants had self-rated good knowledge on depression, anxiety, the impact on mother and baby, risk factors, support services available and screening tools. There were knowledge gaps around personality disorders, obsessive compulsive behaviour, eating disorders, self-injury/ suicide, bipolar affective disorder, drug use in pregnancy and legal aspects.
11.	Carroll et al. (2018)	438 (total) 99.98% female 0.02% male 20-50+ yrs	Midwives	Ireland	Mixed methods: questionnaire	Perinatal mental health conditions	To identify midwives' knowledge, confidence, skill, and educational priorities To explore their clinical practices in relation to assessment and management	There were knowledge gaps around the range of perinatal mental health conditions beyond depression and anxiety. This translated into practice including difficulties when approaching conversations around mental health.
12.	McCauley et al. (2011)	161 (total) 99.4% female 0.6% male Mean age 42 years	Midwives	Australia	Mixed methods: questionnaire	Perinatal mental health conditions	To explore midwives' attitudes, skills, knowledge, and experiences of working with women who have a mental health difficulty during the perinatal period	Participants had knowledge deficits around available resources and services which could provide support. They also reported feeling uncomfortable when providing care to women with perinatal mental health problems.
13.	Rothera & Oates (2011)	768 (total) Gender not reported Under 25-65+ years	Midwives, Health Visitors and Obstetricians	UK	Mixed methods: vignette-based questionnaire and interviews	Perinatal mental health conditions	To explore health professionals' views on identification, treatment, and management of PMH disorders	Participants has knowledge deficits relating to the identification and management of perinatal mental health difficulties.
14.	Downes et al. (2017)	185 (total) Gender not reported 25-55+ years	Practice Nurses	Ireland	Mixed methods: questionnaire	Perinatal mental health conditions	To explore the extent of practice nurses' involvement with women experiencing perinatal mental health problems and to explore their knowledge, confidence and skills in identifying and responding effectively	Participants had knowledge gaps around management of mental health concerns. Many participants reported not asking about sensitive topics such as serious mental health concerns including psychosis symptoms.

15.	Jones et al. (2015)	72 (total) 20-60 years Gender not reported	Health Visitors	UK	Mixed methods: questionnaire and focus groups	Perinatal mental health conditions	To examine the impact of a half day training session on perinatal mental health problems on Health Visitors' knowledge, confidence and empowerment in relation to managing perinatal mental health	Health Visitors have average knowledge around the management of perinatal mental health difficulties but report feeling hesitant in their approach. Training helped participants to feel more confident to apply learning.
16.	Savory et al. (2022b)	145 (total) Including 15 (focus groups) Gender not reported 39.8 (11.7) yrs	Midwives	Wales, UK	Mixed methods: questionnaire based on McCauley et al (2011) questionnaire, and focus groups	Perinatal mental health conditions	To explore Midwives' skills, knowledge and experiences and assess the barriers to providing mental health care during the perinatal period	Midwives reported a lack of knowledge of perinatal mental health conditions, and this could lead to a fear of working with women with perinatal mental health difficulties.
17.	Noonan et al. (2018)	157 (total) 99.4% female 0.6% male 20-55 yrs	Midwives	Ireland	Mixed methods: questionnaire including: The Perinatal Mental Health Questionnaire and the Professional Issues in Maternal Mental Health Scale	Perinatal mental health conditions	To determine Midwives' knowledge and confidence to identify and manage perinatal mental health problems, their attitudes towards women who experience severe mental illness, and to explore perceived training needs.	Midwives reported high knowledge levels of depression, anxiety, and stress. However, participants also reported not feeling confident in providing care to women with perinatal mental health difficulties.
18.	Noonan et al. (2019)	105 (total) Gender not reported 30-55 yrs	Public Health Nurses	Ireland	Mixed methods: questionnaire including: The Perinatal Mental Health Questionnaire and the Professional Issues in Maternal Mental Health Scale.	Perinatal mental health conditions	To examine Public Health Nurses' education, training, and professional support needs in perinatal mental health.	Public Health nurses reported high knowledge levels of depression, anxiety, and stress. However, just over half of participants expressed a lack of confidence to provide care for women with perinatal mental health difficulties.

19.	Jomeen et al. (2013)	5 (total) Gender not reported Age not reported	Health Visitors	UK	Qualitative: focus groups	Perinatal mental health conditions	To explore Health Visitors experiences of assessing women's psychological health across the perinatal period	Health Visitors had good knowledge around postnatal depression, but there were knowledge gaps around the range of mental health conditions. Participants reported feeling unsure in their approach to when supporting this group of women.
20.	Pinar et al. (2022)	19 (total HCPs) Age not reported Gender not reported	Health Visitors, Midwives, Obstetricians, GPs, Clinical Support Workers	UK	Qualitative: semi-structured interviews and focus groups	Perinatal depression, low mood	To explore both women's experiences of support for low mood or depression and Healthcare Practitioners experiences of caring for women with low mood or depression	Health Visitors had knowledge of practical recommendations for women with postpartum low mood. Midwives did not appear to hold the same level of knowledge of practical supports.
21.	Alexandrou et al. (2018)	10 (total) 100% female Mean age 43 years	Health Visitors	Cyprus	Qualitative: semi-structured interviews	Postnatal depression	To explore health visitors' perceptions on their role in assessment, management and support for women with postnatal depression	Health visitors demonstrated good knowledge of the emotions and behaviours expressed by women with postnatal depression but felt they lacked evidence-based interventions and screening tools.
22.	Ashford et al. (2017)	13 (total) 100% female 43.58 (14.46) yrs	Health Visitors	UK	Qualitative: semi-structured interviews	Postpartum anxiety	To explore Health Visitors' experience with supporting women with Postpartum Anxiety, and their views on currently available support	Health visitors had knowledge gaps around available screening tools for postpartum anxiety and require improved training on mental health.
23.	Asare & Rodrigeuz-Muñoz. (2022)	11 (total) 73% female, 27% male 29-51 years	Psychiatrists, Midwives & Gynaecologists	Ghana	Qualitative: Interviews	Perinatal depression	To explore the knowledge of healthcare professionals of perinatal depression.	Workers had good knowledge around the signs and symptoms of perinatal depression. However, lacked knowledge and skills around management of the condition.

3.5 Healthcare Workers' Level of Knowledge of Perinatal Mental Health Difficulties

The synthesis highlighted knowledge gaps around perinatal mental health. There appears to be some factors relating to this, including the perinatal mental health condition studied and study methodology. This is considered more fully below.

3.5.1 Variable Knowledge of Perinatal Depression

Fourteen studies quantitative or mixed methods approaches reported on knowledge of perinatal depression. Overall, these showed that knowledge of perinatal depression was variable. Thirteen studies gathered qualitative data around knowledge of perinatal depression which can help understand this variability.

Of the studies that reported good knowledge of perinatal depression, Hauck et al. (2015) gave midwives vignettes relating to different disorders which can occur in the perinatal period and were asked questions around this. Over 90% of participants correctly identified the depression-based vignette. In a study by Leddy et al (2011), over 80% of obstetrician- gynaecologists correctly identified a vignette depicting postpartum depression. Two studies found that midwives and public health nurses self-rated their knowledge on perinatal depression as above the mid-point of the scale (Higgins et al, 2018a; Carroll et al, 2018). Six studies also found that over half of midwife and public health nurse participants rated their knowledge as good (Downes et al, 2017; Carroll et al, 2018; Jones et al, 2015; Noonan et al, 2018; Noonan et al, 2019). In studies which utilised knowledge questionnaires, four studies found that participants correctly answered over half of items. However, researchers found that participants had the most knowledge around defining and identifying the presence of postnatal depression but had knowledge gaps around treatments (Elshatarat et al, 2018; Jones et al, 2011; Kang et al, 2019; Magdelena & Tamara, 2020).

Four studies reported average or low knowledge levels of perinatal depression. Bina et al (2019) found that over 65% of public health nurses self-rated their knowledge of postpartum depression as average. Other studies reported that midwives and nurses report their knowledge levels as being a barrier to caring for women with postnatal depression or perinatal mental health difficulties generally (Sofronas et al, 2011; Higgins et al, 2018b). Rothera & Oates (2011) found that midwives, health visitors and obstetricians lacked knowledge around treatment and management.

The qualitative studies can help to understand this finding. Some studies reported that participants were most knowledgeable around the symptoms of perinatal depression but were less knowledgeable about management (Alexandrou et al, 2018; Asare & Rodrigeuz-Muñoz, 2022). In the study by Alexandrou et al, (2018) it was found that whilst health visitors were able to identify the emotions and behaviours expressed by women postnatal depression, they lacked knowledge around evidence-based screening tools and interventions. Asare & Rodrigeuz-Muñoz (2022) also found a lack of knowledge of validated screening measures. In addition, Pinar et al. (2022) highlighted how midwives lacked knowledge around practical support for women with postpartum low mood.

Another reason for this variability could be the way studies assessed knowledge e.g., studies which report higher knowledge have assessed participants' ability to identity symptoms e.g., through vignettes, and the qualitative data supports the idea that workers have higher knowledge of signs and symptoms of perinatal depression. Furthermore, other studies ask for participants to self-rate knowledge, and this may not reflect elements or higher or lower knowledge, nor how this translates to practice. Two studies which reported lower knowledge asked participants to consider the extent to which knowledge was a barrier to their practice. Thus, participants may have focused more on gaps in their knowledge rather than strengths.

3.5.2 Knowledge Gaps Around the Broader Spectrum of Perinatal Mental Health Difficulties

Twelve studies reported on knowledge of perinatal mental health difficulties more generally. One study reported on postpartum psychosis and postpartum depression, and one on perinatal anxiety. These studies highlighted knowledge deficits around the range of perinatal mental health difficulties. Qualitative studies allow for further consideration of these knowledge gaps, such as a fear of approaching conversations around mental health and knowing how to support women following disclosure of a mental health problem.

There were two studies which asked participants to identify a perinatal mental health condition based on vignettes. Hauck et al (2015) found that 65.6% of midwives correctly identified a schizophrenia vignette, 74.8% correctly recognised the anxiety vignette, and 68.3% on the bipolar disorder vignette. Leddy et al (2011) reported that 81% of obstetrician-gynaecologists correctly identified a postpartum psychosis vignette. Although these two studies show professionals identified symptoms on vignettes, other studies found knowledge deficits.

There were six studies which asked participants to self-rate their knowledge. Although over 70% of midwives and public health nurses self-rated their knowledge of depression, anxiety, and stress as good on two separate studies (Noonan et al, 2018; Noonan et al, 2019), there were four studies where participants self-rated their knowledge of perinatal mental health conditions beyond perinatal depression as low (Carroll et al, 2018; Downes et al, 2017; Higgins et al, 2018a; Jones et al, 2015). Higgins et al (2018a) reported that public health nurses self-rated their knowledge as lowest in relation to personality disorders, obsessive compulsive behaviours, eating disorders and self-harm in the perinatal period. Carroll et al (2018) found that midwives self-rate their knowledge as lowest on obsessive compulsive behaviours and personality disorders.

The quantitative data provided an insight into the impact of low knowledge about the range of perinatal mental health difficulties. In the study by Carroll et al (2018) midwives felt the least skilled to open discussions about serious mental health problems and developing plans of care for women with serious mental health problems, whilst 48% reported never asking women about experiences of psychosis. The study by Downes et al (2017) asked practice nurses to indicate how often they complete different tasks in their day-to-day practice. They found participants would also be less likely to ask about psychosis symptoms. In a study by Higgins et al (2018b), midwives and public health nurses identified a fear that asking about mental health concerns may cause distress, offense, or a negative response as a barrier to providing care. Other studies with midwifery and nurse participants reflected this finding around not feeling comfortable to manage the broader spectrum of perinatal mental health conditions (Higgins et al, 2018a; Carroll et al, 2018). In a study by Noonan et al (2018) participants indicated that they would not know what to do in response to a disclosure of a mental health problem or know who to go to for advice. The quantitative studies highlighted the greatest knowledge deficits around providing support for women with perinatal mental health difficulties (Carroll et al, 2018; Downes et al, 2017; Noonan et al, 2019; Rothera & Oates, 2011; McCauley et al, 2011).

The qualitative data provides some understanding of these knowledge deficits. A key theme related to workers not feeling comfortable to discuss mental health concerns. Savory et al (2022b) reported that midwives found it difficult to distinguish between 'normal' levels of anxiety and stress and a more significant concern around mental health which this could lead to a fear of working with women with mental health difficulties. Three studies found that workers would be unsure of how to manage or support women and their families following a disclosure of a mental health concern (McCauley et al, 2011; Noonan et al, 2018; Rothera & Oates, 2011). Two studies highlighted how workers generally do not feel comfortable to raise these topics (Carroll et al, 2018; Savory et al, 2022b). Two studies highlighted a lack of knowledge around standardised screening tools to assess for perinatal mental health problems (Alexandrou et al, 2018; Asare & Rodrigeuz-Muñoz., 2022). This may further impact workers' discomfort in initiating conversations about mental health.

3.5.3 Knowledge and Cultural Considerations

Three studies explored knowledge of perinatal mental health difficulties with consideration to the cultural background of women and families (Higgins et al, 2018b; Noonan et al, 2018; Noonan et al, 2019). In the Noonan et al. (2018) study, only 3.9% of participants believe that their training equipped them to respond to the mental health needs of women from different cultures. Whilst over 60% of midwives and nurses reported they lack the knowledge to talk to women from different cultures about mental health. This indicates a knowledge deficit in applying skills to diverse populations. In the study carried out by Kang et al (2019) in Malaysia, it was found that nurses' cultural beliefs that women should not discuss their experience of depression was related to screening practices. Taken together, this indicates a potential knowledge gap around cultural considerations.

3.6 Factors that Influence Workers' Level of Knowledge of Perinatal Mental Health Difficulties

Many of the included studies considered factors that may impact on healthcare workers level of knowledge of perinatal mental health difficulties.

3.6.1 Education and Training

Nineteen studies asked participants if they had received mental health training (Hauck et al, 2015; Savory et al, 2022b; Ashford et al, 2017; Higgins et al, 2018a; Noonan et al, 2019; Leddy et al, 2011; Carroll et al, 2018; Noonan et al, 2018; Higgins et al, 2018b; McCauley et al, 2011; Jones et al, 2011; Bina et al, 2019; Elshatarat et al, 2018; Jones et al, 2015; Kang et al, 2019; Magdalena & Tamara, 2020; Rothera & Oates, 2011; Sofronas et al, 2011; Asare & Rodrigeuz-Muñoz., 2022). Of the studies that collected this information, one third to over half of participants had received some form of mental health training in the past, except for one study where participants had no mental health training (Asare & Rodrigeuz-Muñoz., 2022).

It appears there is a variable impact of education and training on level of knowledge. Many studies found that training can increase levels of knowledge, but that training does not always help to integrate theory to practice. There were six studies which performed statistical analysis which revealed that those with some perinatal mental health education had significantly higher levels of knowledge of perinatal mental health conditions (Higgins et al, 2018a; Carroll et al, 2018; Higgins et al, 2018b, Jones et al, 2011; Elshatarat et al, 2018; Magdelena & Tamara, 2020). Jones et al (2011) found that the level of qualification significantly predicted level of knowledge (with the higher the qualification the higher the knowledge) and there were similar findings where level of education was associated with level of knowledge of postnatal depression specifically (Elshatarat et al, 2018; Magdelena & Tamara, 2020). In the Bina et al, (2019) study, level of training was associated with nurses' perceived preparedness to screen for postnatal depression.

Nonetheless, five studies reported that training could have better equipped workers to support women with mental health difficulties. An example being the need for the practical application of skills such as initiating conversations around mental health. This suggests that training experiences would be improved by helping workers translate theoretical knowledge to practice (Hauck et al, 2015; McCauley et al, 2011; Higgins et al, 2018a; Noonan et al, 2019; Jones et al, 2011).

There were four studies which collected qualitative data which highlighted training as positively impacting on knowledge (Ashford et al, 2017; Downes et al, 2017; Jomeen et al, 2013; Jones et al, 2015). One qualitative study highlighted how training does not always positively impact on practice (Savory et al, 2022b).

3.6.2 Age and Years of Experience

Although twenty studies collected data around participants age, most studies did not directly explore the impact of age on the level of knowledge. A study by Jones et al. (2011), reported that the age of participants was a statistically significant predictor of knowledge, with younger participants scoring higher on questions around the assessment of specific perinatal mental health conditions. This may reflect increasing quality of professional training.

Although not directly related to age, Magdalena & Tamara (2020) found that years of experience was associated with level of knowledge of antenatal and postnatal depression, with participants who had worked a shorter number of years having greater knowledge. Given other studies did not directly examine this, this finding cannot be generalised more widely.

3.6.3 Profession

In the Leddy et al. (2011) study, Obstetrician-Gynaecologists were more likely to over identify the presence of postnatal depression and postpartum psychosis when given vignettes. In the Pinar et al. (2022) study, it was reported that health visitors had more knowledge of practical strategies to support women with perinatal mental health difficulties compared to midwives, whilst Elshatarat et al, (2018) found that nurses had higher knowledge of postnatal depression than midwives. However, given these studies examined knowledge in different ways and focused on different mental health difficulties, it is difficult to draw definitive conclusions around differences in professional groups' level of knowledge.

3.7 Training Needs of Healthcare Workers in Relation to Perinatal Mental Health

All included studies either recommended further training around perinatal mental health difficulties or reported that participants had expressed a need for further training.

Training needs were highlighted around several specific topics. Quantitative data indicated training needs around the broader range of mental health difficulties beyond perinatal depression (Hauck et al, 2015; Noonan et al, 2018; Rothera & Oates, 2011). Furthermore, the need for training to consider the practical application of what is learnt, such as how to ask questions and the use of screening tools (Bina et al, 2019; Jones et al, 2011; Sofronas et al, 2011; Hauck et al, 2015; Leddy et al, 2011; Magdelena & Tamara, 2020; Noonan et al, 2018; Rothera & Oates, 2011). Some studies highlighted the lack of confidence in working with women from different cultural backgrounds, for instance, the impact of cultural factors on bonding and attachment (Noonan et al, 2019; Carroll et al, 2018; Noonan et al, 2018; Higgins et al, 2018a). Whilst four studies reported a need for training around intervention and management (Bina et al, 2019; Jones et al, 2011; Noonan et al, 2018; Rothera & Oates, 2011).

The qualitative data supports this, with training needs highlighted around the broader spectrum of perinatal mental health difficulties (Carroll et al, 2018; Downes et al, 2017; Higgins et al, 2018a). Others highlighted training needs included the use of screening tools (Downes et al, 2017; Higgins et al, 2018a; Asare & Rodrigeuz-Muñoz, 2022), knowledge of attachment theory, communication, legal issues, documentation (Carroll et al, 2018), identifying risk factors for mental health conditions (Noonan et al, 2018; Carroll et al, 2018) and intervention and support (Higgins et al, 2018a; Pinar et al, 2022).

4. Discussion

4.1 Summary of findings

In summary, this review found that healthcare workers have the greatest knowledge of perinatal depression, although this was variable and knowledge gaps remain. There were knowledge gaps around the broader range of perinatal mental health conditions. Studies reported that this knowledge gap can translate into practice as a reluctance to initiate conversations around mental health, in particular opening discussions around serious mental health concerns such as psychosis symptoms. This supports research by Nagle & Farrelly (2018) which found that workers often do not ask about the full range of perinatal mental health difficulties. Another finding indicated that workers lack knowledge around management, screening tools and working with women and families from different cultural backgrounds. Some studies found that levels of education and training were related to healthcare worker knowledge, although some studies reported that training did not always equip workers effectively in their day-to-day roles.

There was variable knowledge of perinatal depression, which was broadly comparable between the professions studied. The variability may be explained by the different ways knowledge was assessed in each of the studies. For instance, some studies asked workers to self-rate their knowledge or to identity vignettes based on disorder specific classifications. These studies found higher knowledge levels compared to studies where workers were asked to rate their knowledge with respect to different areas of practice. The qualitative data highlighted a theme that knowledge around the signs of symptoms of perinatal depression was higher than other aspects of care e.g., management. Furthermore, there is a lack of consistency in how knowledge was assessed across studies as questionnaires were either developed by researchers themselves or adapted from previous studies. Another reason may be the variability in training pathways and standards for ongoing professional development within different countries globally, which is likely to impact on healthcare worker knowledge (Casanova Dias et al, 2022; Global Alliance for Maternal Mental Health, 2022).

All studies recommended further training around perinatal mental health or highlighted workers' self-reported needs for training. Workers reported a need for training that includes both theoretical and practical knowledge, role plays, consideration of 'on the job' experiences and involvement from mental health experts. This aligns with current guidance within the UK around workforce level ambitions around the development of knowledge, skills and competence in providing perinatal care (Howard & Khalifeh, 2020; Health Education England, 2018).

The findings fit within the wider context of perinatal mental health being prioritised within service development and commissioning in many countries (Global Alliance for Maternal Mental Health, 2022; Howard et al, 2014; WHO, 2022). There is increasing recognition that perinatal mental health problems are a significant public health issue, and further work needs to be done to provide effective care for families (McNab et al, 2022). Postnatal depression is the most common perinatal mental health condition and appears to be the predominant focus within education and training (Legere et al, 2017). Thus, it is not surprising that this is strongest area of knowledge for workers within this review.

4.1.1 Factors that Influence Workers' Level of Knowledge of Perinatal Mental Health Difficulties

As well as reporting on levels of knowledge, this review also highlighted some of the factors which were associated with knowledge level. Some studies found that the more education and training workers had around perinatal mental health conditions, the more knowledgeable they were. This appears to support a competency-based training approach, which many healthcare systems utilise to ensure standards of care (Gruppen et al, 2012). However, other research acknowledges that training needs to be delivered in a format which can be translated into real-life work settings (Clouder et al, 2022). This was a theme that was echoed in several of the included studies, whereby participants expressed mixed views about how well their training had prepared them to manage the care of women with perinatal mental health difficulties. An outcome of many studies was the need for further training. It appears that overall, there is an acknowledgement that the level of knowledge could be better, supporting the ambition for an improved quality of perinatal care (Global Alliance for Maternal Mental Health, 2022; WHO, 2022).

4.1.2 Training needs of healthcare workers

There were several specific training needs discussed within the studies. These included perinatal mental health conditions beyond perinatal depression, and how to manage these within perinatal care. There was also a need for practical skills such as opening conversations around mental health, identifying risk factors and the presence of a mental health difficulty, communication, documentation, legal issues and consideration of different cultural backgrounds. There was recognition that training should have a practical focus to enable these skills to be carried over into practice. Whilst these training needs were largely self-reported, they are generally supported by the main findings of the review around knowledge deficits.

Overall, these findings appear to support the current evidence base. For instance, previous research which concluded that additional training around awareness and management of perinatal mental health difficulties is needed (Ford et al, 2017; Noonan et al, 2017). This review also supports the previous finding by Savory et al (2022a) that professionals experience difficulties when navigating conversations around mental health. The findings related to knowledge gaps around the range of perinatal mental health conditions give further weight to the need for training and development of perinatal services, aligning with current efforts within UK based healthcare services (Health Education England, 2018).

4.2 Implications

This review informs the current understanding of knowledge gaps for healthcare workers that provide perinatal mental healthcare. The findings indicate that training can help increase knowledge, but also highlight that training needs be delivered with consideration to the practical application of skills. Further training should be provided around the range of perinatal mental health conditions, including how to approach conversations around mental health and management disclosures of mental health concerns. These implications fit with the Competency Framework for Perinatal Mental Health Professionals, which recognises the importance of training for all professionals involved in providing perinatal mental healthcare in the UK (Health Education England, 2018). Training should be delivered in a way that supports the translation of knowledge to practice, for instance, by including practical examples, follow up sessions or supervision. Further research could focus on how best to embed knowledge into practice to inform the implementation of training initiatives.

4.3 Strengths and Limitations

A key strength of this review is that it is the first systematic review that the authors are aware of, to look specifically at healthcare worker knowledge across both a range of health professionals and a range of perinatal mental health difficulties. This coincides with the move towards viewing perinatal mental health as on a spectrum rather than focusing on specific disorders (WHO, 2022). This review provides an insight into the current evidence base around the level of knowledge healthcare workers have around perinatal mental health. In particular, the need for greater knowledge around the range of problems that can present in the perinatal period. This can inform education and service level providers about the development needs of the workforce in being able to deliver perinatal care in line with current guidance.

There are some limitations of this review. There was a lot of variability in how the construct of knowledge was assessed. Many studies relied on self-report measures and there is a lack of validated measures to assess perinatal mental health knowledge. In terms of the qualitative studies, these utilised interviews and focus groups. It is also not possible to conclude that a low or high level of knowledge on a self-report measure is reflective of actual practice. Therefore, it cannot be assumed that perceived level of knowledge is necessarily reflective of day-to-day practice.

It is worth noting that most participants in the review were female, which may reflect the gender split in the professions studied. Many studies relied on opportunistic sampling methods, therefore, workers with greater perinatal mental health awareness or interest may have participated. Moreover, the range of countries included makes it difficult to know to what extent participants reflect the different training standards and/or different stages of development of perinatal services. This could have resulted in some bias within the overall sample.

4.4 Future Research

Future research could focus on several areas. First, midwives and other workers in physical healthcare roles are overly represented in this sample. This means it is not possible to draw conclusions around the level of knowledge of healthcare workers in other organisations such as mental health services or third sector organisations, which often also provide care to this population. Future research should focus on assessing knowledge of a broader range of professionals across the perinatal pathways. Future studies should also consider the range of mental health conditions that can be experienced in the perinatal period beyond perinatal depression. Furthermore, there is a need for the development of standardised measures that assess healthcare knowledge in a consistent way which would increase the reliability of findings. Finally, future studies could explore how to best transfer knowledge gained from training into day-to-day practice.

4.5 Conclusions and Recommendations

This systematic review concludes that healthcare workers have knowledge gaps around perinatal mental health difficulties, with the greatest knowledge gaps related to the broader range of perinatal mental health conditions. In addition, the review suggests a knowledge-practice gap such as approaching conversations with women about their mental health or knowing the next steps to take to manage these concerns. The level of education and training that workers have received around mental health appears to be a factor in determining the level of knowledge workers have. Despite this, workers express a need for further training, with particular focus around the wide range of mental health difficulties that can be experienced in the perinatal period and on how to apply knowledge to practice.

Future research should aim to increase representation of a broader range of professional groups and should focus on the broader range of perinatal mental health knowledge rather than focusing solely on perinatal depression. Moreover, there is a lack of standardised methods for assessing level of knowledge, and this could be further developed within the evidence base. This would help stakeholders within perinatal services to better understand and have greater confidence in research findings, and how they apply more widely within perinatal care.

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CHAPTER THREE

Bridging Chapter

Word count: 680

The systematic review highlighted knowledge deficits for healthcare workers around perinatal mental health. Whilst workers have some knowledge around the signs and symptoms of perinatal depression, they were less knowledgeable around intervention and management. Healthcare workers had the biggest knowledge gaps around the range of perinatal mental health conditions. This included bipolar disorder, obsessive compulsive disorders, personality disorders and psychosis. Workers reported feeling reluctant to initiate conversations around mental health generally and knowing how to support women following a disclosure of a mental health issue. The empirical paper presented in this portfolio has a specific focus on postpartum psychosis. This explores staff views on supporting women, and their views on any outstanding needs for women and babies beyond the first 12 months following birth.

Postpartum psychosis is a serious mental health condition which occurs in 1 to 2 out of every 1,000 births (Postpartum Support International, 2022). Symptoms can include hallucinations, delusions, and rapidly changing mood (NHS, 2020). Recent statistics from 2021 showed there were approximately 624,828 live births in the UK (Office of National Statistics, 2022). This equates to between approximately 624-1,248 cases of Postpartum Psychosis per year. Symptoms usually develop suddenly within two weeks of giving birth, although symptoms sometimes develop several weeks after the baby is born. These usually remit after a few weeks or months following intervention (NHS UK, 2020). In the UK, treatment usually happens in a specialist hospital called a Mother and Baby Unit (MBU). Treatment should adhere to NICE Guidelines, which state that interventions offered should focus on the mental health of the woman, the emotional and cognitive development of the baby and the quality of the interaction (NICE Guidance, 2020). Psychological treatments are recommended, however there has been no research into the efficacy of psychological interventions for this group of women. Research has found that CBT and family interventions can be helpful for people with first episode psychosis, but it is not clear if these interventions also work for women with postpartum psychosis (McDonagh et al., 2022).

Women who are cared for within the community are generally supported by the Perinatal Mental Health Team until 12 months post-birth. New guidance in the NHS Long Term Plan and the NHS

Mental Health Implementation Plan (NHS England, 2022; NHS, 2019) outlines an ambition for services to extend their provision to 24 months following birth. This guidance also advised that women who have experienced postpartum psychosis may need additional support beyond perinatal services. As such, there should be liaison between perinatal teams and specialist teams such as Early Intervention services. Given this is recent guidance, it is not clear how this is currently being implemented and what interventions are being received or adapted for this client group.

All staff working in perinatal services should have supervision and training, covering mental health problems, assessment methods and referral routes, to allow them to follow the care pathways (NICE, 2007). Some research has explored women’s experiences of accessing perinatal mental health services. In a qualitative study by Roxburgh et al. (2022), women felt professionals lacked knowledge of postpartum psychosis which could affect how quickly they received support. In another study, Forde, Peters and Wittkowski., (2020) interviewed women who had experienced postpartum psychosis. They found that women felt their initial needs were to feel safe and contained by the staff supporting them. However, the authors also advised that staff may have unmet training and development needs for providing this care.

The empirical paper aimed to explore staff views and experiences of supporting women with postpartum psychosis within the current care pathways in the UK. In particular, the study focused on building an understanding of who provides care for these women and at what time point. Additionally, the study aimed to explore staff views on presenting problems, adaptations to interventions, outstanding needs of women and babies beyond 12 months post-birth and how confident they feel in supporting these women and families. It is hoped that this study will add to the existing knowledge around the care for women with postpartum psychosis to inform ongoing service development work within perinatal care.

CHAPTER FOUR

Empirical Study

Prepared for submission to Community Mental Health Journal

(See appendix for author guidelines)

Word count: 5,901

Exploring the Views and Experiences of Staff Supporting Women and Families with Postpartum Psychosis

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This review did not receive a grant or funding and no conflicts of interest were reported. A data availability link is not provided as ethical permission was not requested to share data beyond the original study.

Abstract

Introduction: Research has recognised that women who have experienced Postpartum Psychosis may have longer-term psychological needs. In the UK, new guidance has seen some Perinatal Mental Health teams extend support for women to 24 months following birth (NHS England, 2022). There is a lack of understanding around what current support looks like and what interventions are effective.

Methods: This study utilised a cross-sectional mixed-methods design to explore staff views of supporting women with postpartum psychosis. In total 100 participants completed an online questionnaire around their views on support offered to women, adaptations made to treatment, any outstanding needs for women and babies, and their perceived level of confidence. Findings are reported descriptively including content analysis of qualitative data. A multiple regression analysis is reported to explore any factors predicting confidence level.

Results: Professionals reported delivering a variety of interventions to women with postpartum psychosis across the perinatal period, with most making adaptations to their usual way of working. Only 15.7% reported making referrals to specialist Early Intervention for Psychosis teams. Out of 33 participants offering psychological interventions, 10 reported offering CBT for psychosis. All participants felt women would benefit from support beyond one-year post-birth, and 61% felt the baby may have additional needs beyond this time point. Staff confidence was variable, with a mean rating of 5.94 on a 10-point scale. Qualitative data highlighted issues associated with low confidence, including a need to learn more and systemic barriers. Staff working in specialist perinatal mental health services, work more frequently with postpartum psychosis presentations, and those with greater years of experience had the highest confidence.

Conclusions: There is variation in what support is offered to women with postpartum psychosis and most professionals make adaptations to their usual way of working. This highlights a research-practice gap around effective interventions that are adapted to have a perinatal focus. Further research could help services to target support for this population to provide greater quality care.

Keywords: perinatal, mental health, postpartum, psychosis, staff, professionals.

Introduction

Perinatal Mental Health Services

NHS England recognises perinatal mental health as a significant public health concern. Plans to transform perinatal mental health services were outlined in the Five Year Forward View 2016-2021 (The Mental Health Taskforce, 2016; NHS England, 2016). NHS England invested £365 million to provide four more Mother and Baby Units in England. Another objective was to provide evidence-based specialist perinatal mental health treatment to at least 30,000 additional women each year. As part of the transformation of perinatal services, the National Collaborating Centre for Mental Health collaborated with NICE to develop perinatal mental healthcare pathways (NHS England, NHS Improvement & National Collaborating Centre for Mental Health, 2018). This document outlined the evidence base and proposed how pathways to care would be implemented. Furthermore, NHS England committed to rolling out specialist perinatal community services across the whole of England to coincide with transformation of services according to the NHS Mental Health Implementation Plan (NHS, 2019).

The pathways outlined by NHS England meant that specialist perinatal mental health teams were only commissioned to offer support for women from pregnancy up until the first year after birth. There is a growing recognition in the literature that women who have experienced Postpartum Psychosis may have longer term psychological needs. In a study by Burgerhout et al. (2016) 25% of women who experienced Postpartum Psychosis, experienced ongoing difficulties with functioning at nine months post-episode. Another study highlighted how over 50% of women will experience further mental health difficulties over the following 10 years, irrespective of whether they have a further pregnancy (Gilden et al., 2020). Based on estimated statistics, this means that between 320 and 640 of the women who are diagnosed with postpartum psychosis each year will continue to experience ongoing mental health difficulties. This highlights a significant public health issue and ongoing unmet needs for women, children, and their families, and significant cost implications for society.

The Impact of Perinatal Mental Health Difficulties on the Baby

Research has highlighted the importance of commissioning specialist perinatal mental health services both to meet the needs of mothers but also to reduce or prevent any impact to the child's development. Leadsom, Field, Burstow and Lucas (2013) outlined in 'The 1,001 Critical Days' cross-party manifesto the impact exposure to toxic stress can have on the developing baby's brain development. However, one protective factor against this is having a safe and responsive attachment with a caregiver, which can promote social and emotional development of the baby. The 1,001 Critical Days highlights the time from pregnancy through to 24 months where support may be most effective and defines this as the early intervention stage. The ‘First 1001 Days Movement’ aims to increase awareness of this critical period of development and campaign for policy changes to improve outcomes (Parent Infant Foundation, 2020). Recently, the NHS Mental Health Implementation plan outlined plans for perinatal services to extend support up to 24 months following birth (NHS Mental Health Implementation Plan, 2019). This aligns with the current understanding around the impact of perinatal mental health on the mother, baby, and wider family. However, this highlights the importance of developing effective interventions that can be delivered during this critical period, and the need to gain a greater understanding of longer-term needs.

Previous Research on Postpartum Psychosis

The evidence base around effective interventions for women with postpartum psychosis is limited. The only systematic review looking at prevention and treatments was focused on pharmacological treatments such as mood stabilizers, antipsychotics, hormone therapy, antipsychotics, and beta blockers, as well as electroconvulsive therapy (Doucet, Jones, Letourneau, Dennis & Blackmore, 2010). Psychological treatments are little studied, with one article reporting “there is remarkably little known about how best to deliver this care” (Howard & Khalifeh, 2020, p.323). NICE guidelines do not provide specific recommendations for psychological interventions for postpartum psychosis but do refer to psychological interventions recommended by NICE guidance for psychosis and bipolar disorder such as family interventions and CBT, with a focus on functional outcomes (NICE Guidance, 2014; NICE Guidance, 2020). In addition, specialist Early Intervention service provision is recommended for first episodes of psychosis. However, in practice it is unclear how frequently such interventions are offered or how they may be adapted to meet the needs of this population. Moreover, existing interventions for psychosis have not currently been adapted in an evidence-based way to incorporate a perinatal frame of mind.

Some studies have attempted to explore the psychological needs for women who have experienced postpartum psychosis. This could help to understand what interventions are needed. A study by Hornstein et al. (2006), highlighted that women who have experienced postpartum psychosis may experience decreased self-esteem and may have difficulties bonding with their baby. However, Gilden et al. (2020) found only 5.9% of women with postpartum psychosis experienced impaired bonding with their baby at discharge from a Mother and Baby Unit, as assessed by the Postpartum Bonding Questionnaire.

Women's Experiences of Support

A number of qualitative studies have aimed to explore women's experiences of postpartum psychosis to gain insight into what support may be needed over time. A study by Forde, Peters and Wittkowski (2019) found that women's psychological needs and preferences changed as time went on. Women expressed a need for safety and containment initially, however, in the longer-term they placed emphasis on needing to connect with others, process what had happened to them and find a way to adjust to their experiences. Additional needs were also raised by women and their families around planning for their future, particularly around fears of relapse and making decisions around future pregnancies. Furthermore, a recent qualitative synthesis found that 69% of women who had experienced postpartum psychosis accessed psychological interventions including CBT, counselling, psychotherapy and EMDR. Women reported mixed views on how useful they had found this support. The authors highlighted that "…recovery does not follow a linear path. To improve clinical outcomes, a more integrative and individualised approach is needed which incorporates long-term psychological and psychosocial support and considers the needs of the family" (Forde, Peters & Wittkowski, 2020, p.597). This highlights the need to better understand what support services provide at this time point and how effective they are.

The Current Study

The current evidence base indicated that many women have longer-term psychological needs following an episode of postpartum psychosis. However, the current perinatal mental health pathways do not clearly outline what interventions are effective at this point. Currently, there is little insight into staff perspectives on providing this care and their views around what might be helpful. This needs to be further understood on a larger scale to progress current understandings around postpartum psychosis. Additionally, to increase the accessibility of support for these longer-term needs in line with the recent transformation plans and investment around perinatal mental health services.

Wider Context of Healthcare Intervention Development

This study fits within the context of healthcare intervention development. Specifically, preparatory pre-trial work needed for the development of new interventions within perinatal mental health services. The Medical Research Council (MRC) (2019) outlined guidance for development of complex interventions. This draws upon a development-evaluation-implementation process, where the intervention development stage involves further understanding the problem, exploring the existing evidence base and then identifying and developing theory to inform an intervention. This should be undertaken before piloting an intervention and assessing its feasibility. This study fits within the development section of the framework, with the aim to further understand the problem and develop knowledge about what interventions may be required to meet the longer-term psychological needs of women.

This study aims to achieve this by gaining the views and experiences of professionals who provide care for women with postpartum psychosis. This aligns with published guidance on developing complex interventions which highlights the need to involve relevant stakeholders, such as healthcare professionals, throughout the development process (O'Cathain et al., 2019). Frontline workers have a unique position when understanding how services work, what is helpful and what the challenges are. Specifically, this study explores professionals' experiences of delivering interventions, adaptations made and their views on any outstanding needs for women and families when most specialist perinatal mental health support ends and confidence when providing care. The analysis will also explore whether there are any factors which predict level of confidence. Staff working in perinatal, maternity, and other relevant services (e.g., Early Intervention for Psychosis Services) were recruited, with the aim that this will provide insight into what the current provision of support looks like across the range of services that women with postpartum psychosis may come into contact with.

Aims

The aims of this study can be broadly split into descriptive research questions and exploratory research questions. These are listed below.

Descriptive Research Questions

1. What are the main presenting difficulties of women who have experienced postpartum psychosis as reported by clinicians?
2. What interventions are routinely offered to women who have experienced postpartum psychosis?
3. What is the experience of delivering these interventions? Are any adaptations required?
4. How confident do clinicians feel in offering interventions to women with postpartum psychosis?
5. What additional support might be needed for women who have experienced postpartum psychosis?

Exploratory Research Questions

6. What factors predict how confident clinicians feel when supporting women with postpartum psychosis?

Methods

This study utilises a mixed methods design. A survey was developed in collaboration with clinicians with expertise in perinatal mental health. The rationale for using a survey design is to expand on the existing qualitative research around what support may be needed for women with postpartum psychosis and to gain perspectives of clinicians. A survey design allows for a greater number of participants and the ability to gather quantitative data around the frequency of certain interventions being offered, or unmet needs of women who have experienced postpartum psychosis (Krosnick & Presser, 2010).

Participants

Participants who work with women with postpartum psychosis in UK based serviced such as the NHS, social care or third sector were invited to take part in an online survey. This is in line with the Medical Research Council (MRC) (2019), framework for complex interventions which advises that diverse stakeholder perspectives should be included within research. Professional bodies and charitable organisations acted as gatekeepers for recruitment and shared an advert about the study with their members via newsletters and on social media platforms. Gatekeepers included the British Psychological Society (BPS) Faculty of Perinatal Psychology, the Institute of Health Visiting (IHV), the Early Intervention in Psychosis Network and the charity Action on Postpartum Psychosis (APP). The study was also circulated on special interest groups on social media. It was specified that participants should be based in the UK to ensure consistent responses in line with healthcare provision and commissioning.

Procedure

The survey was distributed via the Jisc Online Surveys platform. A prize draw for vouchers was offered as renumeration for participants' time. Supporting materials such as the participant information sheet, consent form and debrief sheet can be found in the appendix.

Materials and Measures

The survey was developed solely for use in this study, in consultation with a reference group consisting of professionals working in Perinatal Mental Health services and Early Intervention in Psychosis services. This group was recruited through existing connections between the research team with local services in the East Anglian region. Jones, Baxter and Khanduja (2013) highlighted the importance of the planning stages in survey development, such as seeking input from a reference group in advance of survey distribution. Some advantages to this include developing the quality of the questions for the sample group, increasing external validity, and increasing the response rate.

The survey consisted of several areas, and took the form of open questions, rating scales and produced both qualitative data and quantitative data. This included demographic questions such as professional background, type of service worked in, age and years of experience. Other questions asked participants to select from a list their views on the main presenting difficulties for women with postpartum psychosis, what support they provide, what interventions may help, adaptations to usual ways of working, any barriers to providing support and any additional needs for the women and babies they support beyond 12 months post-birth. This gathered descriptive data, whilst open-ended questions asking them to explain the adaptations they make and their views on outstanding needs for women and babies produced qualitative data. Participants were asked how confident they feel when providing care, with 1 indicating extremely unconfident, and 10 indicating extremely high confidence. This provided data for the exploratory analysis.

Another section of the survey asked whether participants deliver psychological interventions. For participants who do provide psychological interventions, subsequent questions about what interventions they offer and their views on the effectiveness of these were asked. This provided descriptive data. There was an open question asking participants to explain the effectiveness rating they had selected which provided qualitative data.

Ethical Considerations

The study was reviewed and approved by the UEA Faculty of Medicine and Health Sciences Ethics Committee (ref: ETH2122-0493) for approval letter see (Appendix C). The survey did not ask for any identifying information to ensure anonymity.

Data Analysis

Data analysis consisted of both descriptive statistics and exploratory analysis. Participant demographic information was collected to help consider how representative the sample is. This included information around job role, type of service they work in, years of experience and previous training. Descriptive statistics are reported using frequency data and measures of central tendency.

Descriptive Research Questions

Numerical data pertaining to the descriptive research questions is presented in the form of frequency data and measures of central tendency. Alongside this, data from open-ended questions is presented. Qualitive data was pooled and analysed using summative content analysis (Hsieh & Shannon, 2005). This involved identifying content categories based upon the identification of keywords or ideas in the data and the frequency with which these appeared. Following this, the data was reviewed again allowing for interpretation of the underlying meaning of the data. This drew out different themes according to each research question. A validity and reliability check were completed as part of the analysis, adhering to guidelines (Erlingsson & Brysiewicz, 2017).

Exploratory Research Question

For statistical analysis, alpha level was fixed at .05. Initial analysis included assumption testing to check for normality, outliers and multicollinearity, with no serious violations found. A sample size calculation was conducted using G*Power statistical analysis tool (Faul, Erdfelder, Lang, & Buchner, 2007) based on a multiple regression analysis with up to nine predictors. This suggested a sample of 89 participants would have 95% power to detect a medium effect size of .15 at the 0.05 level. Therefore, this study was powered for detecting a medium effect size. Categories pertaining to years of experience of working with women with postpartum psychosis were collapsed to 0-2 years, 2-5 years, 5-10 year and 10+ years. The type of service participants worked in were also collapsed into three categories: specialist perinatal mental health services (mother and baby unit and perinatal mental health services), specialist non-perinatal mental health services (early intervention in psychosis, IAPT, secondary mental health care) and perinatal non-mental health service (primary care, obstetrics/midwifery, health visiting, neonatal, social care, GP and charitable organisations).

A multiple regression aimed to explore factors associated with level of confidence. The following predictor variables were included: type of service (specialist perinatal mental health service vs specialist non-perinatal mental health service vs perinatal non-mental health service), years of experience, frequency of working with women with postpartum psychosis, training received and frequency of supervision.

Results

Participant Demographics

There were 100 people who participated in the study. Participants were mostly female and most worked with women with postpartum psychosis within the first-year post-birth. 33.3% delivered some form of psychological intervention to women with postpartum psychosis. A range of different services were reflected in the survey, with 38% working in specialist perinatal mental health services, 24% working in specialist non-perinatal mental health services (e.g., Early Intervention, IAPT, secondary mental health service), and 38% working in non-mental health perinatal services (e.g., primary care, obstetrics/midwifery, health visiting service, neonatal unit, social care or charitable organisations).

Table 1 outlines participant demographic information, and descriptive statistics related to profession, experience, training, and supervision.

Table 1.

Participant demographic information and descriptive statistics of the sample.

Participant characteristic	N (100 total)	%
Gender		
Male	8	8
Female	92	92
Age		
18-25	7	7
26-35	32	32
36-45	38	38
46-55	20	20
56-65	3	3
Professional background		
Clinical Psychologist	16	16
Psychiatrist	6	6
Parent Infant Psychotherapist	2	2
Nurse	13	13
Mental Health Practitioner	12	12
Midwife	13	13
Health Visitor	10	10
Nursery Nurse	4	4
Occupational Therapist	5	5
Social Worker	3	3
Family Support Practitioner	1	1
Psychotherapist	4	4
Peer Support Worker	1	1
Support Worker	8	8
Consultant Obstetrician	1	1
Academic Researcher	1	1
Service		

Perinatal Mental Health Service	28	28
Mother and Baby Unit	10	10
IAPT/Psychological Wellbeing Services	1	1
Early Intervention for Psychosis Service	14	14
Secondary Mental Health Care	9	9
Primary Care	6	6
Obstetrics/Midwifery	9	9
Health Visiting Service	10	10
Neonatal Unit	3	3
Social Care	6	6
Charitable Organisation	4	4
Frequency of working with women with postpartum psychosis		
Daily	13	13
Weekly	22	22
Monthly	21	21
Occasionally	29	29
Rarely	15	15
Years of experience		
0-2	14	14
2-5	37	37
5-10	36	36
10-15	4	4
15+ years	9	9
Time point of providing care (multiple answers could be selected)		
Post-birth	29	15
Within the first 12 weeks	59	31.21
Within the first year	66	34.92
Beyond the first year after birth	30	15.87
Other	5	2.65
Training received		
Postpartum Psychosis	21	21
Psychosis	30	30
Both	30	30
Neither	19	19
Frequency of clinical supervision for working with women who have experienced postpartum psychosis		
Weekly	10	10
Monthly	47	47
Less than monthly	25	25
None	18	18

Content of Training Received by Participants

There were 81 participants who reported they had received some level of training around postpartum psychosis or psychosis. Participants were asked to give more detail about the training they had received. Participants reported accessing training through professional bodies, NHS services, online webinars and through third sector organisations such as Action on Postpartum Psychosis.

Presenting Difficulties and Interventions Offered to Women

Participants were asked about what they perceive to be the main presenting difficulties for women, the types of interventions they offer and any barriers to providing care. Participants were asked to select responses from a pre-populated list (see supplementary materials). The responses indicated that they perceive the main presenting difficulties to be managing the role of parent, coping with psychosis symptoms, and exploring their role and identify following the episode of postpartum psychosis. The least selected answers were planning future pregnancies and wider family/support network difficulties.

Responses suggested that a range of interventions are offered to women. The most selected answers were practical family support, general mental health support, followed by advice and signposting. The least selected answers were peer support, counselling, and medication support.

Participants were asked about any barriers to providing care for this cohort of women. Participants were asked to select answers from a pre-populated list. Responses indicated that the greatest barriers to supporting women were limited time and resources, followed by a lack of knowledge and skills followed by service remit constraints.

How Interventions are Delivered and Adapted

Participants were asked about their experience of delivering care and any adaptations they make. Of the total sample, 59% indicated they make adaptations in their work with women with postpartum psychosis. Participants were asked to explain what adaptations they make to the support they provide. A content analysis of qualitative responses revealed seven themes, with the frequency of responses included in brackets. These were: involving the baby (20), relationship building and continuity of care (16), a wider family approach (14), allowing extra time and space (8), consideration of future (7), joint working with other professionals (6), and the need for individualised care (6). Quotes are included in the supplementary material.

Psychological Interventions

Participants who stated they offer psychological interventions were asked to select what type of psychologically informed interventions they provide.

Table 2.

Psychologically informed interventions offered to women who have experienced postpartum psychosis.

Psychologically Informed Interventions Offered (multiple answers could be selected)	**n (33 total)**	**%**
Trauma therapy	15	12.61
Compassion focused therapy	13	10.92
Psychotherapy	12	10.08
Family intervention	11	9.24
CBT for other mental health difficulty	11	9.24
Attachment intervention	10	8.4
EMDR	8	6.72
Video Interaction Guidance	7	5.88
Parenting support	4	3.36
Interpersonal psychotherapy	4	3.36
Circle of Security	4	3.36
Parent-infant psychotherapy	3	2.52
Wellbeing groups	3	2.52
Infant massage	3	2.52
Other	1	0.84

These participants were then asked to rate on a 1–10-point Likert scale how effective they believe psychological interventions to be. The mean effectiveness rating was 6.48 (SD=1.42, range=4-9). Participants were asked to provide an explanation of their rating. Content analysis of qualitative responses produced three themes, with the frequency of these included in brackets: having witnessed positive outcomes (14), the timing of interventions (6), and acknowledgment of the variation in outcomes and barriers to effective working (6) (see supplementary material for quotes).

Participants who provide psychological interventions were asked about adaptions they make in their psychological work. Two themes emerged from content analysis of responses, with frequency of responses in brackets. Firstly, consideration of the baby (8), and secondly, flexibility regarding the timing and location of sessions (6).

All participants were asked whether they feel psychological therapies could be helpful for women who have experienced postpartum psychosis, irrespective of whether they had a role in delivering them. 82% of participants selected ‘yes’, whilst 17% selected ‘unsure’ and 1% selected ‘no.’ Participants were asked to explain their reasoning, and content analysis of qualitative responses corresponded to four themes, with frequency of responses indicated in brackets. These were: a belief that psychological interventions are useful (34), having a space to talk and process experiences (24), considering interventions on an individual basis (9), and not knowing enough about psychological interventions to be sure (9) (see supplementary material for supporting quotes).

Staff Views on any Additional Support Needs for Mother and Baby

Outstanding Needs of Women

Participants who deliver psychological therapies were asked for their views on whether they feel women have outstanding needs once support from their service ends. Out of 33 participants, 23 selected ‘yes.’ Participants were asked what they thought women needed at this point. Content analysis of qualitative responses produced two themes, with frequency of responses in brackets. These were: longer-term support is needed but often exceeds resources of services (12), and a need to make sense of experiences and build self-esteem (8) (see supplementary material for quotes).

All participants were asked whether they refer women on to other services when they have finished working with them, and if applicable, where they refer on to. Participants were asked what interventions they feel might be useful for women and their families one-year post-birth. They were also asked whether they think the baby has additional needs that extend beyond the first year after birth. Table 3 shows an overview of participant responses.

Table 3.

Staff Views on what Interventions Might be Needed.

Outstanding needs	n	% of total responses for each item
When you have finished working with women with Postpartum Psychosis, do you refer them on to other services?	**n (100)**	
Yes	53	53
No	25	25
Not applicable to my role	22	22
Where do you refer on to? (Multiple answers could be selected)	**n (53)**	
Primary Mental Health Service	6	10.53
Secondary Mental Health Service	13	22.81
Third Sector Organisation	9	15.7
Social Care	10	17.54
Family Support	9	15.7
Early Intervention for Psychosis Service	9	15.7
Mother and Baby Unit	1	1.75
Perinatal mental health services usually work with women and their families for the first 12 months after birth. What interventions do you think would be helpful after this point? (Multiple answers could be selected)	**n (100)**	
CBT for Psychosis	26	8.7
Trauma interventions	57	19.1
Family intervention	41	13.71
Attachment intervention	45	15.1
Primary Care Service	27	9.03
Care Co-ordination	62	20.74
Medication support	36	12.04
No further support	0	0
Community support groups	5	1.67
Do you think the baby may have additional needs at the end of the first year after birth?		
Yes	61	61
No	39	39

<u>*Outstanding Needs of the Baby*</u>

Participants were asked for their views on additional support needs for the baby beyond the first-year post-birth, with 61% reporting that they did feel there were outstanding needs for the baby. Content analysis of qualitative responses produced two themes, with frequency of response in brackets: developmental needs (physical, social, or emotional) (35), and additional needs to be considered on an individual basis (23) (see supplementary material).

Exploratory Analysis: Factors that Predict Confidence

Participants were asked to rate their confidence around working with women with postpartum psychosis on a 1–10-point Likert scale. The mean scores with standard deviation, confidence intervals, and initial statistical analysis for main between-group effects are reported below according to participant characteristics.

Table 4.

Mean confidence scores (with 95% confidence intervals) for working with women with postpartum psychosis, by sample characteristics (possible range 1-10).

	Confidence rating									
Variable	**N**	**Mean**	**SD**	**Range**	**95% CI**	***dfNum***	***dfDen***	***T***	***F***	***P***
Whole sample	100	5.94	1.91	1-10	5.56-5.94					
Service type										
Specialist Perinatal Mental Health service	38	6.71	1.74	1-10	6.14-7.28					
Specialist Non-Perinatal Mental Health service	24	5.79	1.32	3-8	5.24-6.35					
Non-Mental Health Perinatal service	28	5.26	2.13	2-10	4.56-5.96					
One-way ANOVA: Effect of type of service						2	97	6.15		<0.05**
Frequency of working with women										
Daily	13	7.23	2.28	1-10	5.85-8.61					
Weekly	22	6.27	1.45	3-8	5.63-6.92					
Monthly	21	6.62	1.72	4-10	5.84-7.4					
Occasionally	29	4.97	1.52	2-8	4.39-5.54					
Rarely	15	5.27	2.1	2-8	4.11-6.42					
One-way ANOVA: Effect of frequency of working with women with postpartum psychosis						4	95		5.55	<0.01**
Years of Experience										
0-2	14	5.21	1.97	1-8	4.08-6.35					
2-5	37	5.95	1.43	3-9	5.47-6.42					
5-10	36	5.58	1.75	2-9	4.99-6.17					
10+ years	13	7.69	2.53	2-10	6.16-9.22					
One way ANOVA: Effect of years of experience						3	96		5.39	<0.05**
Training received										
Both	30	7	2.12	1-10	6.19-7.81					
Postpartum Psychosis	21	5.95	1.72	2-9	5.17-6.73					

Psychosis	30	5.95	1.72	2-8	5.17-6.16					
None	19	4.68	1.64	2-8	3.90-5.47					
One way ANOVA: Effect of training received						3	96		7.18	<0.01**
Frequency of supervision around working with women with postpartum psychosis										
Weekly	10	6.4	1.27	4-8	5.50-7.3					
Monthly	49	6.49	1.83	1-10	5.95-7.03					
Less than monthly	25	5.4	1.76	2-9	4.68-6.12					
None	18	5	2.14	2-9	3.93-6.07					
One way ANOVA: Effect of frequency of supervision						3	96		3.95	<0.05**

** indicates statistically significant effect

Staff Confidence and a Regression Analysis

A multiple linear regression model was performed to predict confidence rating in working with women with postpartum psychosis including the factors: type of service, frequency of working with women with postpartum psychosis, years of experience, training, and supervision. The model significantly predicted confidence rating ($F[5,94] = 7.48$, $p < .01$; model R2 = 28.4%). Three variables accounted for unique variance in confidence rating: type of service, years of experience and frequency of working with women with postpartum psychosis. These variables predicted higher confidence when supporting women with postpartum psychosis.

Participants were asked to explain the reasons for their confidence rating around working with women with postpartum psychosis. A content analysis of qualitative responses produced five themes, with frequency of responses in brackets. These were: an area of speciality (40), having a skilled and supportive team (18), lack of experience and more to learn (42), systemic barriers (13), and lastly, a recognition of individual differences (8) (see supplementary material for supporting quotes).

Discussion

The findings provide a range of stakeholder perspectives on providing perinatal mental health care to those experiencing postpartum psychosis. It is important to consider how these findings inform what does and doesn't work when providing support to women with postpartum psychosis. This sits within a wider context of understanding the problem and developing the theory around what interventions are effective, according to the framework for the development of complex interventions (Medical Research Council, 2019).

The key findings shed light on the current challenges of supporting women with postpartum psychosis. Namely, that participants report delivering a wide range of interventions, and frequently make adaptations to their usual way of working. Despite these varied interventions, 69.7% of participants providing psychological interventions felt women have outstanding needs beyond what their service offers, and 61% of all participants felt the baby may have additional needs beyond the first-year post-birth. Participants reported referring women on to a range of different services, due to the range of needs women may have. This may also reflect a lack of clear pathway for women with longer-term needs. Staff working in specialist perinatal mental health services report the greatest confidence when supporting these women, therefore, it not clear whether other services have the necessary skills and confidence to adapt support for these women to the perinatal context.

Participants responses provide an insight into what interventions are provided and perceived as effective. Reported adaptations include allowing extra time for interventions, holding the baby in mind, and providing continuity of care. Participants indicated that women’s longer-term needs may be around processing experiences and building self-esteem and confidence. Responses indicated these needs may be met by continued care co-ordination, trauma interventions or support around confidence and self-esteem. Alongside this, participants felt that babies may need additional monitoring around developmental milestones. These care needs may exceed the time period currently offered by perinatal services yet are likely to require specialist perinatal skills.

Psychological Interventions

Participants who deliver psychological interventions described using approaches flexibly according to need and over half reported adapting their approach for this population. Participants view psychological therapies as somewhat effective, with talking therapies providing a space to make sense of experiences. It may be that interventions are offered on the basis of formulation rather than a diagnosis-driven decision, given the theme around timing being a consideration for psychological interventions. This highlights the breadth of need of women who have experienced postpartum psychosis. Likewise, over 90% reported they consider the baby within the support they provide, suggesting a therapeutic need for interventions to consider the parent-infant dyad. Traditional interventions for psychosis such as CBTp are not developed with this in mind, therefore research which explores how to adapt interventions to have a perinatal focus would be helpful.

Staff Confidence

It was found that staff who work in a specialist perinatal mental health service and have a greater number of years of experience, and frequency of contact predicted confidence level. It is likely that staff with greater experience have come across a wider variety of presentations, and this may enable them to draw on these experiences when faced with complex clinical situations. It is worth noting that even then, staff only reported moderately high confidence levels. This may not seem surprising given perinatal mental health services are still developing (NHS Mental Health Implementation Plan, 2019). This is important given the wider context of the development of services, with The Department of Health (2008) guidance describing a need to draw on the expertise of frontline healthcare workers within clinical practice and local decision making. Additionally, confident practice is valued by many professional bodies, and it is important to understand the practical application of this (Nursing and Midwifery Council, 2018). For instance, how professionals with greater experience, or with a specialism can share their expertise with other parts of the system. All women are likely to be cared for by midwives and health visitors before coming into contact with specialist perinatal teams and such health professionals will be key in ensuring that women get the specialist care they need.

How these Findings Fit with Existing Research

In this study, professionals indicated that longer-term support is needed for women with postpartum psychosis. This aligns with the findings of other research studies. Forde, Peters and Wittkowski (2019) identified longer term needs for women around processing and adjusting to experiences. In the current study participants reported that trauma interventions, care co-ordination, attachment-focused, and family-based interventions may be most helpful. There was an emphasis on person-centered care, such as considering the wider context of the individual, their family and the timing of interventions. This appears to support previous findings that individualized care is essential when supporting recovery from postpartum psychosis (Forde, Peters & Wittkowski, 2020).

Participants in this study perceived the main presenting difficulties of women to be around managing the role of parent, coping with psychosis symptoms, and processing their experiences. Several of these needs were highlighted within existing literature (Forde, Peters & Wittowski, 2019). However, other needs highlighted by women in previous studies, e.g., planning for future births and social support were not rated as highly in the current study. This may reflect the fact that most participants worked with women within the first 12 months.

Clinical Implications

This study acts as part of the preparatory work needed within the wider context of developing perinatal healthcare interventions, in accordance with guidance around development of complex interventions (The Medical Research Council, 2019). Therefore, the findings can inform an understanding of current challenges when working with women and families who have experienced postpartum psychosis, and how these can be addressed through ongoing service development.

A key finding was that staff make adaptations to usual ways of working and for the perinatal context. it is important to consider how this fits within current service provision. Currently, consideration of the parent-infant dyad sits beyond the scope of recommendations and evidence base for non-perinatal services such as Early Interventions for Psychosis services and community mental health services. Although many women with postpartum psychosis would be eligible for referral to Early Intervention for Psychosis services, which provide a three-year service, only 15.7% of participants in this study reported making such referrals. It is important to be curious about the reasons for this. For instance, does this reflect a skill or resource deficit of non-perinatal services to meet the needs of this cohort of women? Participants identified a lack of experience and recognition that there is more to learn about postpartum psychosis as reasons for lower confidence when working with women. As such, it feels important that examples of good practice are shared as opportunities for learning. This could involve establishing greater links between teams and clarifying pathways for stepping up or stepping down care. This could help reduce some of the systemic barriers to providing effective interventions within a wider context of financial pressures on the NHS and Social Care sectors.

More broadly, there is a risk that skills and knowledge could become concentrated within specialist perinatal services. The Perinatal Competency Framework highlights how all professionals that provide perinatal mental health care need to be sufficiently skilled to provide support to women experiencing perinatal mental health difficulties (Health Education England, 2018). It is important that knowledge and skills can be disseminated across the perinatal pathways at all levels and for services to consider the value of staff retention within specialist services. Participants perceived the greatest barriers to providing care for women with postpartum psychosis as limited time and resources, followed by lack of knowledge and skills. This appears to support the idea that system thresholds may be a barrier to effective support. This supports the recent changes in policy around perinatal services providing support up to 24 months post birth, but also the need for upskilling other services which provide care to women and families (NHS England, 2022).

A diverse range of participants from different professional backgrounds and care settings took part in this study. The majority had received some training on psychosis or postpartum psychosis and most receive some clinical supervision around working with women with postpartum psychosis. This suggests there are some service level supports which aligns with the recent efforts to provide greater training (Health Education England, 2018). Nonetheless, this study highlights some outstanding needs for professionals, with over half of participants reporting a need for training on supportive interventions, considered as evidence-based interventions. Only a small proportion (14%) of participants worked in Early Intervention for Psychosis services, despite targeted recruitment via Early Intervention networks. It is possible that this reflects a lack of referrals to these services.

Strengths and Limitations

Given there is little research around postpartum psychosis, specifically what interventions besides pharmacological treatments may be helpful, this study helps provide an understanding around current needs within perinatal care (Howard and Khalifeh, 2020). This is the first study the authors are aware of which has explored staff views from multiple disciplines and multiple parts of the perinatal care pathways. The workforce is uniquely positioned to provide a meaningful insight into what works and what does not work when delivering frontline care. This allows for greater understanding of current care and their views of what might be helpful for women and babies.

A mixed methods approach has provided information of greater depth from which to draw conclusions, whilst also seeking a high number of responses. Mixed methods approaches are valuable in studies of this kind where there is little current evidence and can enhance the depth and breadth of information, improving completeness of data. This can positively impact the research and clinical application of the findings (Wasti et al., 2022). One such example is a greater awareness of the adaptations workers make when providing care, alongside their views of any outstanding needs women, babies and their families have when support from services ends.

There are limitations to this study. For instance, participants are not a homogenous staff group, and vary in terms of their experience, job role, the service they work in, their training background and type of support they offer. This means it is not possible to generalize the experiences and views of participants to all staff groups and services. Moreover, it is possible that participants who have a particular interest in postpartum psychosis completed the questionnaire which could have resulted in some response bias.

One of the findings was that workers from specialist services, work with this group of women more frequently, and with greater years of experience, rate their confidence as highest. It is important to remain critical about the reasons underpinning this, and how this translates into practice. For instance, do these staff members do anything differently when caring for women with postpartum psychosis because of increased confidence, and how is this experienced by those they support? Previous research around healthcare worker confidence has shown that higher ratings of confidence is linked to higher ratings of patient experience (Owens & Keller, 2018). However, it should be noted that asking for staff views are inherently subject to bias. It is not possible to conclude that certain interventions or adaptations are helpful just because professionals report this view. Whilst many services utilise stakeholder views as part of quality improvement projects, often with positive outcomes (The Health Foundation, 2021), it is important to acknowledge the inherent limitations of gathering this view alone. It would be useful for research to further explore what this means for quality of care within a perinatal context.

Future Research

Given the context of complex intervention development, future research should draw upon current understandings of what interventions could be helpful and seek to develop these further (The Medical Research Council, 2019). A specific focus should be placed on developing interventions which have a perinatal focus, such as considering the parent-infant dyad. It should be considered what services are best placed to provide support, and at what time point, given the recent guidance around extending perinatal services to 24 months (NHS England, 2022). Research could establish how confidence and knowledge can be shared with other parts of the perinatal pathways, rather than being concentrated within specialist perinatal mental health services.

Conclusion

A wide range of professionals who support women with postpartum psychosis have provided an insight into what care they provide, their views on outstanding needs and their confidence in delivering this care. This provides greater understanding of the gaps around effective interventions, and service level needs within the perinatal pathways. Future research should continue work around developing complex interventions by progressing and evaluating interventions for this cohort of women. Additionally, consideration is needed around how services might work together, sharing knowledge and experience to best support women and families (e.g., specialist perinatal services and specialist Early Intervention services). Additional investment in perinatal mental health should focus on improving the understanding and guidance around training and pathways to care for women and families who have experienced postpartum psychosis.

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CHAPTER FIVE

DISCUSSION AND CRITICAL EVALUATION

Word count: 2,529

In this chapter, the findings of the systematic review and the empirical paper will be considered within the wider context of ongoing research within clinical psychology and the evidence base around perinatal mental health care. This chapter will discuss the strengths and weakness of the papers and consider the clinical and research applications of this piece of work as a whole. Alongside this, reflections from the researcher are presented.

Combined Discussion

Both papers in the thesis portfolio highlight gaps that need to be considered when supporting the perinatal mental health workforce. The systematic review found that overall, there are gaps in healthcare worker knowledge of perinatal mental health conditions. Workers have the greatest knowledge of perinatal depression, although this is variable, whilst there was a lack of knowledge around the broader range of perinatal mental health conditions and the practical application of knowledge. In practice, workers reported not feeling comfortable to have conversations around mental health with the women they support. Other knowledge deficits related to assessment, screening tools, management and working with women and families from different cultural backgrounds. There was some support that education and training could positively impact healthcare worker knowledge, although some studies acknowledged that training needed to consider how learning can be translated to practice.

The empirical study had a specific focus on postpartum psychosis, rather than the range of mental health conditions that can be experienced in the perinatal period. Similar to the systematic review, this aimed to gain an insight around the workforce providing care. This study found that a variety of interventions are offered to women with postpartum psychosis. Many professionals reported that they use interventions flexibly and make adaptations. Many workers believe women have outstanding needs beyond one-year post-birth and indicated that a space for processing experiences and building self-esteem as some of the main presenting needs of this population. Average confidence of workers was moderate, and those who deliver psychological interventions rated their effectiveness as just above the midpoint on a Likert-scale. These findings highlight a gap around interventions adapted for the perinatal context.

Both papers explore factors from a workforce perspective which are likely to impact on perinatal mental health care to a greater or lesser extent. In the empirical paper, pparticipants were asked to rate their confidence when supporting women with postpartum psychosis. Overall confidence scores were moderate, although participants working in a specialist perinatal mental health service, have greater frequency of working, and greater years of experience had higher confidence. Participants were asked to explain the reasons for their confidence ratings. This was analysed using content analysis and produced themes around perinatal mental health being a specialist area, participants having an awareness of effective interventions and having access to a supportive team as positively impacting on confidence. Other themes related to confidence level included not having enough experience in the field, recognising individual differences in women who experience postpartum psychosis and the systemic barriers to providing effective support, such as communication between services. These themes further highlight the need for clear guidance around providing support for women with postpartum psychosis within the perinatal care pathways.

It is interesting to consider the findings of this portfolio alongside previous research. A key finding from Nagle and Farrelly's (2018) qualitative study was that women perceived there to be barriers to disclosing mental health difficulties. These included a lack of opportunities to talk to healthcare workers about mental health alongside issues around continuity of care. Another finding was that healthcare workers tended to ask about depression and anxiety, and less so about other mental health problems which can be experienced during this period. Furthermore, the study also found that the attitudes of healthcare workers could positively or negatively affect how able women felt to obtain help, whilst perceived stigma and shame was a barrier to disclosing difficulties. One finding from the systematic review that supports this idea was there were clear knowledge gaps around the range of perinatal mental health difficulties. A key finding was that workers reported not feeling comfortable to initiate conversations around mental health. On a similar note, participants in the empirical study described adaptations to their usual working such as providing continuity of care. Participants also reported a need for women to have a space to process their experiences. The findings of this portfolio appear to support previous research which has concluded that the workforce need greater awareness of the perinatal context (Millet et al, 2018; Noonan et al, 2017).

Systematic Review Critical Review

The systematic review utilised mixed methods methodology, including quantitative, qualitative, and mixed methods literature. The Thomas & Harden (2005) framework was used to synthesise the data, and this allowed for a comprehensive overview. Qualitative data was used to inform and provide more depth to the quantitative findings. For instance, quantitative findings suggested that knowledge of postnatal depression was higher than that of the broader spectrum of perinatal mental health conditions. However, the qualitative data was able to clarify and expand on this further, by highlighting how workers often had difficulty distinguishing between general anxieties and a more serious mental health problem. In addition, reporting that they feel unsure of how to initiate conversations around mental health and often feel uncomfortable working with women with serious mental health problems. Thus, providing a greater understanding of the specific difficulties healthcare workers have regarding their knowledge base, and why this might be the case. Therefore, the mixed methods approach provided a more coherent and detailed narrative around what knowledge means for healthcare workers and what influences their own perceived levels of knowledge. This sheds greater light on workers' knowledge-related needs, maximising the clinical application of these findings.

Given this review utilised qualitative findings, there are some inherent limitations with regards to researcher bias whereby researcher views, beliefs and experiences are likely to influence the research process. To mitigate the risk of bias, a second researcher analysed 20% of papers, with any disagreements discussed. This could have been further expanded upon to improve the reliability of the review by completing a further risk of bias check to enhance the quality and rigour of this review.

Another consideration when critiquing this review, is the process of clarifying the inclusion and exclusion criteria. When the researchers considered the inclusion criteria, it was decided that included papers would be published from 2010 onwards, this was to keep in line with more recent developments in perinatal mental health care, and professional training standards. However, given the range of healthcare workers and included countries, it is likely that perinatal services are at different stages of development. Therefore, it is not possible to ensure complete consistency of these factors. The inclusion criteria could have been narrowed to countries with similar healthcare models, however, this may have limited the synthesis as there would have been fewer studies to report on. Nonetheless, this could be considered in future reviews as the evidence base around healthcare worker knowledge is further expanded.

Empirical Paper Critical Review

The empirical paper provided a way to combine views of professionals from NHS services, social care and third sector to get a ‘snapshot’ of the care currently provided to women with postpartum psychosis. This allowed for a greater understanding of the type of support provided to women, views on how helpful psychological interventions are, views on outstanding needs and staff confidence. Additionally, this allowed for an insight into adaptations made and what works for this population. This followed on from previous literature which outlined unmet needs from women who had experienced postpartum psychosis (Forde, Peters & Wittowski, 2020). No other papers the researchers are aware of have provided an overview of perspectives in this way across the clinical pathways within perinatal care.

The study used a mixed methods design which allowed for gathering quantitative data which gave an overview such as frequencies pertaining to the sample. Furthermore, a regression model identified factors from the sample characteristics which predicted confidence level. The qualitative data, when considered alongside the descriptive data, provided in-depth information around topics such as adaptations made and barriers to working with this population from a professional lens. This makes findings more transferrable to clinical settings in which stakeholders must make decisions regarding service development and delivery.

A limitation of the study is the small sample size. Given the likely large number of professionals who have responsibility for caring for women with postpartum psychosis within their role, it is important to acknowledge that this is only a small proportion of professionals involved in supporting these women and families, and therefore, the findings should not be overstated. In addition, recruitment took approximately six months. This may reflect the fact that perinatal care is inherently multi-agency, as such, it was not possible to target one specific service or profession. Given participants were self-selecting, it is possible that participants were people with greater skill or interest in this area which may have biased the sample.

Future research with less time-limited restrictions could aim to recruit a larger sample of professionals through contacting NHS trusts and other organisations which provide services to women with perinatal mental health conditions. This would help capture a more comprehensive view, given some professional groups and service backgrounds are underrepresented within this research study. Alternatively, qualitative interviews with staff who provide perinatal mental health care could provide greater depth of information beyond what could be ascertained in this study.

Clinical Implications

This portfolio highlights practice gaps of the workforce that provide perinatal mental healthcare. This is important for researchers and service providers to consider as part of ongoing development to perinatal services.

First, when considering the knowledge of the workforce, the systematic review highlights the need for greater knowledge around the range of mental health conditions that can occur in the perinatal period. Although training could help target this, it is important that staff feel able to practically apply their skills. The empirical paper highlights the range of interventions offered women and the need for adaptations to usual ways of working. There has been much greater investment in perinatal services, including the development of a competency framework for professionals who provide care in the perinatal period (Health Education England, 2018). Services should consider how to address training gaps and consider how best to adapt interventions. Given the key tasks of services within the care pathways are varied, considering ways in which different care services work together (e.g., Early Intervention for Psychosis and specialist perinatal services) is also likely to be useful.

In the empirical paper, it was found that staff in specialist perinatal mental health services, those with greater years of experience, and with a greater frequency of contact with women had higher confidence when supporting women with postpartum psychosis. This raises the question of how best to share the expertise of these workers with the wider perinatal pathway. Services could consider supports such as peer supervision, joint working and shadowing opportunities in order for knowledge and skills to be learnt and consolidated throughout the care pathways.

Directions for Future Research

Taken together, the papers highlight that improvement is needed to perinatal mental health care provision. In the systematic review, it was found that workers have knowledge gaps around perinatal mental health. The existing literature appears to focus on knowledge of workers within primary care or obstetric/midwifery services e.g., midwives, health visitors. Future research should aim to establish the level of knowledge workers hold more broadly throughout the perinatal pathways. Additionally, research should consider how best to deliver training that considers the range of mental health problems that can be experienced in the perinatal period. It is important that training interventions enable workers to translate their knowledge into practice.

The empirical paper found that staff perceive women to have longer term needs. Another key finding from empirical paper suggested that most people were adapting their current ways of working with this group. This highlights a need to update the evidence base to provide guidance on how best to adapt practice to best fit the needs of this group. Research efforts could build on current evidence into the effectiveness of the implementation of perinatal services in the UK (Trevillion et al, 2019; Lever Taylor et al, 2021). It would be useful for research to explore the efficacy of psychological interventions for women with postpartum psychosis.

Researcher Reflections

Prior to beginning this research project, I had experience of working in both a neonatal and paediatric setting, followed by two years working in children's social care. During these experiences, I gained an insight into perinatal mental healthcare, in particular, the multi-agency approach to many perinatal mental health difficulties. I noticed how professionals from different training backgrounds would become involved in providing care for women, babies and wider family members, and how the focus of care may differ. This sparked my interest in perinatal mental health, and naturally informed my research interests. When I learnt that there was little research exploring professionals' views of working with women with perinatal mental health difficulties, it seemed right for me to focus my research project here.

Although I had some experience which grounded my thinking around the clinical relevance of this project and gave me the motivation to follow the process through, there have been challenges along the way. For instance, working out how to operationalise the insights my experience had given me into a research protocol required me to think in a different way. This involved narrowing down my research aims when the possibilities seemed so vast, particularly given the relatively limited research in this area. For my empirical paper, it felt important to find a way to collect data which could add to the knowledge base in a meaningful way but also worked within the scope of my project. This seemed like a difficult task when the range of professionals involved in perinatal care is diverse, and there appears to be so much that is unknown about what works for women with perinatal mental health difficulties, and the workforce delivering this support.

This project has helped me to develop my skills with using mixed methods approaches, both in the systematic review and the empirical paper. By using this approach, I have learnt how to synthesise quantitative and qualitative data in a cohesive way that creates a more in-depth narrative around what the data is telling. This has informed my thinking about how to disseminate findings, holding a critical lens whilst considering how findings can be most usefully applied.

Conclusion

This portfolio addresses important topics around perinatal mental health care from a staff lens. The workforce is uniquely positioned to offer an insight into current practice. The findings from the two papers underscore the importance of workers' knowledge levels and views of current care within perinatal mental health care. This helps to understand gaps in provision such as knowledge gaps around the range of perinatal mental health problems, and a lack of guidance around interventions for women with postpartum psychosis. This sits within a context of ongoing investment and development of perinatal services within the UK. These findings support the need for further workforce development, and for further research into interventions with a perinatal focus, given the expanded remit of perinatal mental health services.

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Supplementary Material

Systematic Review

Analysis Matrix

	Narrative synthesis	**Thematic analysis** ***Qualitative themes and key quotes***
Healthcare worker level of knowledge about perinatal mental health difficulties	**Perinatal depression** Knowledge was generally found to be moderate to good (Bina et al, 2019; Hauck et al, 2015; Jones et al, 2011; Kang et al, 2019; Magdelena & Tomara, 2020). Whilst knowledge of symptoms was moderate to good, there was evidence that workers lacked knowledge about treatment approaches (Elshatarat et al, 2018; Kang et al, 2019). **Range of perinatal mental health difficulties** Noonan et al (2018) found that over 70% of midwives had self-rated high knowledge of depression, anxiety, and stress. Studies that looked at knowledge about a range of mental health conditions found that knowledge of depression and anxiety was higher than for other conditions, where knowledge was found to be low (Carroll et al, 2018; Downes et al, 2017; Higgins et al, 2018a; Jones et al, 2015). Greatest knowledge deficits were identified around providing support for women with perinatal mental health difficulties (Carroll et al, 2018; Downes et al, 2017; Noonan et al, 2019; Rothera & Oates, 2011; McCauley et al, 2011). Hauck et al (2015) found that 93.9% of midwives correctly identified a depression vignette, whilst 65.6% correctly identified the schizophrenia vignette. Leddy et al (2011) found obstetrician-gynaecologists over identified symptomology on vignettes of postpartum depression and postpartum psychosis. Higgins et al (2018b) found that low knowledge was a barrier to workers discussing mental health.	**Recognition of symptoms of Perinatal depression:** Alexandrou et al (2018) found that Health Visitors recognised the emotions and behaviours of women with postpartum depression. Asare & Rodrigeuz-Muñoz. (2022) found that psychiatrists, midwives and gynaecologists had knowledge of symptoms of perinatal depression but not around management. **Not feeling comfortable to discuss mental health concerns:** Fears of getting it wrong or causing a negative reaction (McCauley et al, 2011; Savory et al, 2022b) Downes et al (2017, p. 547) – *"unless I am already aware of previous mental health issues, I rarely, if ever, bring the subject up. This is due both to my awareness of my own lack of knowledge and the reluctance to potentially upset a woman who I will see throughout her pregnancies and baby years if she felt I was obliquely criticising her mothering skills."*
Factors that influence the level of knowledge	There was evidence that training and education was associated with higher knowledge (Carroll et al, 2018; Downes et al, 2017; Eshatarat et al, 2018; Higgins et al, 2018a; Jones et al 2011; Magdelena & Tamara, 2020) Higgins et al (2018b) found midwives and nurses without any perinatal mental health training saw knowledge as a bigger barrier to discussing mental health. Leddy et al (2011) found that low training was a barrier to screening for postpartum depression and postpartum psychosis. There were differences in this finding. Hauck (2015) found no significant differences in knowledge between midwives with recent perinatal mental health training and those without. Elshatarat et al, (2018) found that nurses had higher knowledge of postnatal depression than midwives. Magdelena & Tamara (2020) found workers with a shorter number of years of experience had greater knowledge of perinatal depression. Jones et al (2011) found that younger age was associated with higher knowledge. There was an association between low knowledge and low confidence (Elshatarat et al, 2018; Noonan et al, 2018)	**Training as an important factor:** Training highlighted as positively impacting knowledge (Ashford et al, 2017; Downes et al, 2017; Jomeen et al, 2013; Jones et al, 2015). Pinar et al (2022) midwives did not have the same knowledge of practical support options as health visitors.

Training needs for healthcare workers in relation to perinatal mental health	Training needs were raised including: Screening and assessment (Bina et al, 2019; Hauck et al, 2015; Leddy et al, 2011; Magdelena & Tamara, 2020; Noonan et al, 2018; Rothera & Oates, 2011; Sofronas et al, 2011) Intervention and management (Bina et al, 2019; Jones et al, 2011; Noonan et al, 2018; Rothera & Oates, 2011) The range of perinatal mental health difficulties (Hauck et al, 2015; Noonan et al, 2018; Rothera & Oates, 2011) Cultural considerations (Noonan et al, 2018) There was a recognition that training should consider the practical application of skills (Bina et al, 2019; Jones et al, 2011; Sofronas et al, 2011)	Training needs included: The range of perinatal mental health difficulties (Carroll et al, 2018; Downes et al, 2017; Higgins et al, 2018a) Screening tools and assessment (Downes et al, 2017; Higgins et al, 2018a; Asare & Rodrigeuz-Muñoz, 2022) Risk factors (Carroll et al, 2018; Higgins et al, 2018a) Communication (Alexandrou et al, 2018; Higgins et al 2018a). Bonding and attachment (Carroll et al, 2018; Higgins et al, 2018a) Cultural considerations (Carroll et al, 2018; Higgins et al, 2018a) Legal issues (Carroll et al, 2018) Intervention and support (Higgins et al, 2018a; Pinar et al, 2022). **The practical application of knowledge:** Studies raised the importance of applying training to 'on the job' (Carroll et al, 2018; Higgins et al, 2018a; Jomeen et al, 2013; Savory et al, 2022b). Savory et al (2022b, p.5) - *"It felt like loads of theory, facts and but I don't think it really helps you, it doesn't really help you when I'm in that situation where I am with somebody who's…mentally just struggling a little bit…"*

Empirical Paper – Additional Tables and Content Analyses

Staff Views on Main Presenting Difficulties for Women with Postpartum Psychosis

Participants selected what they perceive the main presenting difficulties are for women with postpartum psychosis from a list of options. These are detailed in table 1.

Table 1.

Staff views around the main presenting difficulties for women with postpartum psychosis

Main Presenting Difficulties (multiple answers could be selected)	n (100 total)	% of sample who selected this answer
Managing the role of parent	55	11.1
Coping with psychosis symptoms	50	10.5
Exploring their role and identity following the episode of psychosis	50	10.5
Confidence and self-esteem	47	9.87
Attachment/bonding with baby	45	9.45
Returning to usual activities and routines	45	9.45
Anxiety	44	9.24
Trauma and processing their experiences	39	7.85
Managing mood	39	7.85
Sleep difficulties	26	5.23
Planning future pregnancies	18	3.62
Wider family/support network difficulties	18	3.62

Interventions Offered to Women who have Experienced Postpartum Psychosis

Participants selected what type of support they offer to women with postpartum psychosis from a list of options. These are detailed in table 2.

Table 2.

Type of support offered to women who have experienced postpartum psychosis.

Type of Support Offered (multiple answers could be selected)	n (100 total)	%
Mental Health Support		
Diagnostic support	10	2.49
Psychosocial support	34	8.46
Psychologically informed interventions	20	4.98
Psychological therapy	25	6.22
Counselling	5	1.24
General mental health support	47	11.69
Peer support	1	.25
Co-ordinating Care		
Care co-ordination	26	6.47
Advice and signposting	41	10.2
Assessment/screening and referring on	36	8.96
Care for Baby/Family		
Practical family support	49	12.19
Safeguarding support	20	4.98
Providing care for baby	30	7.46
Physical Healthcare Services		
Physical healthcare	19	4.73
Prescribing medication	5	1.24
Pre-conception counselling	12	2.99
Immediate post-birth support	22	5.47

Staff Views on Barriers to Supporting Women with Postpartum Psychosis

Participants were asked to indicate their views on possible barriers to supporting women from a pre-populated list. Responses are presented below.

Table 3.

Staff views of barriers to supporting women with postpartum psychosis

Staff Views on Barriers	n	%
What barriers do you experience when supporting women with Postpartum Psychosis? (Multiple answers could be selected)		
Limited time/resources	57	29.84
Lack of knowledge or skills	49	25.65
Lack of clinical support and supervision	28	14.66
Service remit constraints	39	20.42
Difficulties with engagement	18	9.42

Staff Views on Factors that would Increase Confidence when Working with Women with Postpartum Psychosis

Participants were asked to indicate their views on factors that may increase their confidence to work with women from a pre-populated list. Responses are presented below.

Table 4.

Staff perceptions of factors that would increase their confidence.

Staff Views on Increasing Confidence	n	%
What would make you feel more confident when supporting women with Postpartum Psychosis? (Multiple answers could be selected)		
Training in supportive interventions	57	28.79
Training to support understanding of the condition	44	22.22
Additional time/resources	44	22.22
Clinical supervision or guidance	31	15.66
Greater opportunities for peer support	22	11.11

Content Analyses of Qualitative Responses to Open Questions

Participants were asked to provide qualitative responses to several questions on the survey. These were analysed using content analysis. The questions, themes, frequency of responses and supporting quotes are presented in the table below.

Questions with a * next to them were asked only to participants who selected that they deliver psychological interventions.

Table 5.

Content analyses by question and supporting quotes.

Question	Theme	Frequency	Quote 1	Quote 2
Can you please briefly provide some details around the adaptations you make to your way of working	Involving the baby	20	*I focus on the baby more*	*I tailor my approach according to the needs of mum and baby*
	Relationship building and continuity of care	16	*Allow more time within sessions, emphasis on building a relationship with the mum and her family*	*I would expect to work with a mother in the longer term, and so recognising that this relationship developing over time is a tool for assisting recovery*
	A wider family approach	14	*involving families far more than usual*	*Taking on the views of the whole family*
	Allowing extra time and space	8	*If a woman I'm caring for has postpartum psychosis I know that it will be essential to set aside more time to care for her and her family*	*Provide more frequent visits*
	Consideration of the future	7	*Greater support and/or information regarding subsequent pregnancies*	*Consider recovery goals at different time points*
	Joint working with other professionals	6	*increased consultation with medication management providers*	*I would work more with other supporting professionals*
	The need for individualised care	6	*I also know that postpartum psychosis can present in a variety of ways and so therefore I know that I will have to tailor the advice and support I give to the individual*	*Support women to create a collaborative care plan*
Could you tell us more about how you rated the helpfulness of psychological interventions	A belief that psychological interventions are useful	34	*Psychological interventions have good results*	*We offer this on our unit, and it is essential*
	Having a space to talk and process experiences	24	*They often feel anxious about speaking out and hold a lot of shame so talking could really help to break the stigma, particularly in groups after trust and rapport built*	*Women often need a safe space to talk about the impact this has had on their identity, parenting and generally making sense of the situation*
	Considering interventions on an individual basis	9	*We usually try to help with routines, sleep, adjusting back to normal before assessing suitability for therapy*	*Not all women want psychological therapy so being guided by the patient is really important*
	Not knowing enough about psychological interventions to be sure	9	*I don't know enough to comment on therapies*	*I have less experience in this field, so I can't make a decision.*
Staff views on outstanding needs for babies	Developmental needs (physical, social, or emotional)	35	*Babies may need support if they have been separated from their mothers, they may need monitoring of their social and physical development*	*Addressing attachment issues, ensuring developmental milestones are met*
	Additional needs to be considered on an individual basis	23	*Very individual to the family's circumstances*	*I selected yes as I think baby should always be held centrally in mind when working in this field. However, I don't think all babies should be automatically assumed to need additional support if the family is managing well*

Could you tell us more about the reasons for your confidence rating	Area of speciality	40	*I have worked in perinatal teams for many years so feel very familiar with approaches to treatment*	*I have many years of experience in working with women experiencing postpartum psychosis and have learned how to support them through formal training and 'on the job'*
	Having a skilled and supportive team	18	*I have a great team and we have lots of opportunities for discussion and CPD*	*Lots of team support*
	Lack of experience and more to learn	42	*I have supported women with postpartum psychosis before, but if I worked with them more frequently then I may be able to score my confidence higher*	*There is always more to learn*
	Systemic barriers	13	*I feel confident I know when a woman has symptoms and when it needs escalating to mental health team. But the latter is the hard part - often having to convince them it's not just sleep deprivation*	*Not enough support outside specialist services*
	A recognition of individual differences	8	*The variation in presentation also makes postpartum psychosis a challenging mental health condition to support*	*Every woman is different and requires different support based on clinical judgement*
*Could you tell us about why you rated the effectiveness of psychological interventions this way**	Witnessed positive outcomes	14	*I have seen psychological therapies really help women within our service*	*Generally, works well and helps mothers towards recovery*
	The timing of interventions	6	*Once the psychotic episode reduces it seems the difficulty for a lot of the mums and their families is coming to terms with what has happened, forgiving themselves and learning how to carry on with life and learn to live with their experiences. Medication can't achieve this*	*Depends on when offered, women frequently have a period of deep depression following recovery from psychosis and its during or preferably before this that I offer therapy to try to mitigate this*
	Acknowledgement of the variation in outcomes and barriers to effective working	6	*I think psychological therapies are helpful, but service remit constraints mean we cannot provide the long term support many need*	*Much variation across patients for numerous reasons bespoke to the individual and their context*
*Could you briefly provide some details about the adaptations you make to psychological interventions**	Consideration of the baby	8	*Baby can be in room often, so have to work around this, holding baby in mind*	*Allowance for presence of baby*
	Flexibility regarding the timing and location of sessions	6	*Completing sessions at patient's home, sometimes involving the baby. Considering the patients personal goals/needs*	*Lots of flexibility regarding location of appointments*
*What additional support do you think might be needed by the baby at the end of the first year?**	Longer-term support is needed but often exceeds resources of services	12	*Needed longer term psychology work that I couldn't provide due to service remit*	*Sometimes, mainly ongoing needs that unfortunately our service isn't commissioned to provide*
	A need to make sense of experiences and build self-esteem	8	*Sometimes feel women would benefit from being held within the service for longer to help build their confidence*	*Need for specialist ongoing support and recovery time for the whole family as they make sense of what has happened*

Appendices

Appendix A – Frontiers of Psychiatry Sec, Perinatal Psychiatry Author Guidelines

Author guidelines

General standards

Article type

Frontiers requires authors to select the appropriate article type for their manuscript and to comply with the article type descriptions defined in the journal's 'Article types' page, which can be found under the 'About journal' menu in 'For authors' on every Frontiers journal page. Please pay close attention to the word count limits.

Systematic Review

Systematic Review articles present a synthesis of previous research, and use clearly defined methods to identify, categorize, analyze and report aggregated evidence on a specific topic. Included in this article type are meta-syntheses, meta-analyses, mapping reviews, scoping reviews, systematic reviews, and systematic reviews with a meta-analysis. Systematic Review articles are peer-reviewed, have a maximum word count of 12,000 and may contain no more than 15 Figures/Tables. Authors are required to pay a fee (A-type article) to publish a Systematic Review article. Systematic Reviews should: clearly define the research question in terms of population, interventions, comparators, outcomes and study designs (PICOS), and state which reporting guidelines were used in the study. For design and reporting, systematic reviews must conform to the reporting guidelines (e.g., PRISMA, Cochrane, Campbell), and include the PRISMA flow diagram http://prisma-statement.org/prismastatement/flowdiagram.aspx (if applicable), as well as funding information (if no specific funding to carry out the research, please state so). Systematic Reviews should have the following format: 1) Abstract, 2) Introduction, 3) Methods (including study design; participants; interventions; comparators; systematic review protocol; search strategy; data sources; study sections and data extraction; data analysis), 4) Results (including a flow diagram of the studies retrieved for the review; study selection and characteristics; synthesized findings; assessment of risk of bias), 5) Discussion (including summary of main findings; limitations; conclusions). Systematic Reviews must not include unpublished material (unpublished/original data, submitted manuscripts, or personal communications) and may be rejected in review or reclassified, at a significant delay, if found to include such content.

Templates

If working with Word please use our Word templates. If you wish to submit your article as LaTeX, we recommend our LaTeX templates.

For LaTeX files, please ensure all relevant manuscript files are uploaded: .tex file, PDF, and .bib file (if the bibliography is not already included in the .tex file).

During the interactive review, authors are encouraged to upload versions using track changes. Editors and reviewers can only download the PDF file of the submitted manuscript.

Manuscript length

Frontiers encourages the authors to closely follow the article word count lengths given in the 'Article types' page of the journals. The manuscript length includes only the main body of the text, footnotes, and all citations within it, and excludes the abstract, section titles, figure and table captions, funding statement, acknowledgments, and references in the bibliography. Please indicate the number of words and the number of figures and tables included in your manuscript on the first page.

Language editing

Frontiers requires manuscripts submitted to meet international English language standards to be considered for publication.

For authors who would like their manuscript to receive language editing or proofreading to improve the clarity of the manuscript and help highlight their research, Frontiers recommends the language-editing services provided by the following external partners.

Note that sending your manuscript for language editing does not imply or guarantee that it will be accepted for publication by a Frontiers journal. Editorial decisions on the scientific content of a manuscript are independent of whether it has received language editing or proofreading by these partner services or other services.

Editage

Frontiers recommends the language-editing service provided by our external partner Editage. These services may be particularly useful for researchers for whom English is not the primary language. They can help to improve the grammar, syntax, and flow of your manuscript prior to submission. Frontiers authors will receive a 10% discount by visiting the following link: editage.com/frontiers.

The Charlesworth Group

Frontiers recommends the Charlesworth Group's author services, who has a long-standing track record in language editing and proofreading. This is a third-party service for which Frontiers authors will receive a 10% discount by visiting the following link: www.cwauthors.com/frontiers.

Frontiers推荐您使用在英语语言编辑和校对领域具有悠久历史和良好口碑的查尔斯沃思作者服务。此项服务由第三方为您提供，Frontiers中国作者通过此链接提交稿件时可获得10%的特别优惠: www.cwauthors.com.cn/frontiers.

Language style

The default language style at Frontiers is American English. If you prefer your article to be formatted in British English, please specify this on the first page of your manuscript. For any questions regarding style, Frontiers recommends authors to consult the Chicago Manual of Style.

Search engine optimization (SEO)

There are a few simple ways to maximize your article's discoverability and search results.

- Include a few of your article's keywords in the title of the article
- Do not use long article titles
- Pick 5-8 keywords using a mix of generic and more specific terms on the article subject(s)
- Use the maximum amount of keywords in the first two sentences of the abstract
- Use some of the keywords in level 1 headings

CrossMark policy

CrossMark is a multi-publisher initiative to provide a standard way for readers to locate the current version of a piece of content. By applying the CrossMark logo Frontiers is committed to maintaining the content it publishes and to alerting readers to changes if and when they occur.

Clicking on the CrossMark logo will tell you the current status of a document and may also give you additional publication record information about the document.

Title

The title should be concise, omitting terms that are implicit and, where possible, be a statement of the main result or conclusion presented in the manuscript. Abbreviations should be avoided within the title.

Witty or creative titles are welcome, but only if relevant and within measure. Consider if a title meant to be thought-provoking might be misinterpreted as offensive or alarming. In extreme cases, the editorial office may veto a title and propose an alternative.

Authors should avoid:

- titles that are a mere question without giving the answer
- unambitious titles, for example starting with 'Towards,' 'A description of,' 'A characterization of' or 'Preliminary study on'
- vague titles, for example starting with 'Role of', 'Link between', or 'Effect of' that do not specify the role, link, or effect
- including terms that are out of place, for example the taxonomic affiliation apart from species name.

For Corrigenda, General Commentaries, and Editorials, the title of your manuscript should have the following format.

- 'Corrigendum: [Title of original article]'
- General Commentaries:

'Commentary: [Title of original article]'

'Response: Commentary: [Title of original article]'

- 'Editorial: [Title of Research Topic]'

The running title should be a maximum of five words in length.

Authors and affiliations

All names are listed together and separated by commas. Provide exact and correct author names as these will be indexed in official archives. Affiliations should be keyed to the author's name with superscript numbers and be listed as follows:

- Laboratory, Institute, Department, Organization, City, State abbreviation (only for United States, Canada, and Australia), and Country (without detailed address information such as city zip codes or street names).

Example: Max Maximus1

1 Department of Excellence, International University of Science, New York, NY, United States.

Correspondence

The corresponding author(s) should be marked with an asterisk in the author list. Provide the exact contact email address of the corresponding author(s) in a separate section.

Example: Max Maximus*

maximus@iuscience.edu

If any authors wish to include a change of address, list the present address(es) below the correspondence details using a unique superscript symbol keyed to the author(s) in the author list.

Equal contributions

The authors who have contributed equally should be marked with a symbol (†) in the author list of the doc/latex and pdf files of the manuscript uploaded at submission.

Please use the appropriate standard statement(s) to indicate equal contributions:

- Equal contribution: These authors contributed equally to this work
- First authorship: These authors share first authorship
- Senior authorship: These authors share senior authorship
- Last authorship: These authors share last authorship
- Equal contribution and first authorship: These authors contributed equally to this work and share first authorship
- Equal contribution and senior authorship: These authors contributed equally to this work and share senior authorship
- Equal contribution and last authorship: These authors contributed equally to this work and share last authorship

Example: Max Maximus 1†, John Smith2† and Barbara Smith1

†These authors contributed equally to this work and share first authorship

Consortium/group and collaborative authors

Consortium/group authorship should be listed in the manuscript with the other author(s).

In cases where authorship is retained by the consortium/group, the consortium/group should be listed as an author separated by a comma or 'and'. The consortium/group name will appear in the author list, in the citation, and in the copyright. If provided, the consortium/group members will be listed in a separate section at the end of the article.

For the collaborators of the consortium/group to be indexed in PubMed, they do not have to be inserted in the Frontiers submission system individually. However, in the manuscript itself, provide a section with the name of the consortium/group as the heading followed by the list of collaborators, so they can be tagged accordingly and indexed properly.

Example: John Smith, Barbara Smith and The Collaborative Working Group.

In cases where work is presented by the author(s) on behalf of a consortium/group, it should be included in the author list separated with the wording 'for' or 'on behalf of.' The consortium/group will not retain authorship and will only appear in the author list.

Example: John Smith and Barbara Smith on behalf of The Collaborative Working Group.

Abstract

As a primary goal, the abstract should make the general significance and conceptual advance of the work clearly accessible to a broad readership. The abstract should be no longer than a single paragraph and should be structured, for example, according to the IMRAD format. For the specific structure of the abstract, authors should follow the requirements of the article type or journal to which they're submitting. Minimize the use of abbreviations and do not cite references, figures or tables.

For clinical trial articles, please include the unique identifier and the URL of the publicly-accessible website on which the trial is registered.

Keywords

All article types require a minimum of five and a maximum of eight keywords.

Text

The entire document should be single-spaced and must contain page and line numbers in order to facilitate the review process. The manuscript should be written using either Word or LaTeX. See above for templates.

Nomenclature

The use of abbreviations should be kept to a minimum. Non-standard abbreviations should be avoided unless they appear at least four times, and must be defined upon first use in the main text. Consider also giving a list of non-standard abbreviations at the end, immediately before the acknowledgments.

Equations should be inserted in editable format from the equation editor.

Italicize gene symbols and use the approved gene nomenclature where it is available. For human genes, please refer to the HUGO Gene Nomenclature Committee (HGNC). New symbols for human genes should be submitted to the HGNC here. Common alternative gene aliases may also be reported, but should not be used alone in place of the HGNC symbol. Nomenclature committees for other species are listed here. Protein products are not italicized.

We encourage the use of Standard International Units in all manuscripts.

Chemical compounds and biomolecules should be referred to using systematic nomenclature, preferably using the recommendations by the International Union of Pure and Applied Chemistry (IUPAC).

Astronomical objects should be referred to using the nomenclature given by the International Astronomical Union (IAU) provided here.

Life Science Identifiers (LSIDs) for ZOOBANK registered names or nomenclatural acts should be listed in the manuscript before the keywords. An LSID is represented as a uniform resource name (URN) with the following format: urn:lsid:<Authority>:<Namespace>:<ObjectID>[:<Version>]

For more information on LSIDs please see the 'Code' section of our policies and publication ethics.

Sections

The manuscript is organized by headings and subheadings. The section headings should be those appropriate for your field and the research itself. You may insert up to 5 heading levels into your manuscript (i.e.,: 3.2.2.1.2 Heading Title).

For Original Research articles, it is recommended to organize your manuscript in the following sections or their equivalents for your field.

Introduction

Succinct, with no subheadings.

Materials and methods

This section may be divided by subheadings and should contain sufficient detail so that when read in conjunction with cited references, all procedures can be repeated. For experiments reporting results on animal or human subject research, an ethics approval statement should be included in this section (for further information, see the 'Bioethics' section of our policies and publication ethics.)

Results

This section may be divided by subheadings. Footnotes should not be used and must be transferred to the main text.

Discussion

This section may be divided by subheadings. Discussions should cover the key findings of the study: discuss any prior research related to the subject to place the novelty of the discovery in the appropriate context, discuss the potential shortcomings and limitations on their interpretations, discuss their integration into the current understanding of the problem and how this advances the current views, speculate on the future direction of the research, and freely postulate theories that could be tested in the future.

For further information, please check the descriptions defined in the journal's 'Article types' page, in the 'For authors' menu on every journal page.

Acknowledgements

This is a short text to acknowledge the contributions of specific colleagues, institutions, or agencies that aided the efforts of the authors. Should the content of the manuscript have previously appeared online, such as in a thesis or preprint, this should be mentioned here, in addition to listing the source within the reference list.

Contribution to the field statement

When you submit your manuscript, you will be required to briefly summarize in 200 words your manuscript's contribution to, and position in, the existing literature in your field. This should be written avoiding any technical language or non-standard acronyms. The aim should be to convey the meaning and importance of this research to a non-expert.

While Frontiers evaluates articles using objective criteria, rather than impact or novelty, your statement should frame the question(s) you have addressed in your work in the context of the current body of knowledge, providing evidence that the findings – whether positive or negative – contribute to progress in your research discipline. This will help the chief editors to determine whether your manuscript fits within the scope of a specialty as defined in its mission statement; a detailed statement will also facilitate the identification of the editors and reviewers most appropriate to evaluate your work, ultimately expediting your manuscript's initial consideration.

Example statement on: Markram K and Markram H (2010) The Intense World Theory – a unifying theory of the neurobiology of autism. Front. Hum. Neurosci. 4:224. doi: 10.3389/fnhum.2010.00224

Autism spectrum disorders are a group of neurodevelopmental disorders that affect up to 1 in 100 individuals. People with autism display an array of symptoms encompassing emotional processing, sociability, perception and memory, and present as uniquely as the individual. No theory has suggested a single underlying neuropathology to account for these diverse symptoms. The Intense World Theory, proposed here, describes a unifying pathology producing the wide spectrum of manifestations observed in autists. This theory focuses on the neocortex, fundamental for higher cognitive functions, and the limbic system, key for processing emotions and social signals. Drawing on discoveries in animal models and neuroimaging studies in individuals with autism, we propose how a combination of genetics, toxin exposure and/or environmental stress could produce hyper-reactivity and hyper-plasticity in the microcircuits involved with perception, attention, memory and emotionality. These hyper-functioning circuits will eventually come to dominate their neighbors, leading to hyper-sensitivity to incoming stimuli, over-specialization in tasks and a hyper-preference syndrome. We make the case that this theory of enhanced brain function in autism explains many of the varied past results and resolves conflicting findings and views and makes some testable experimental predictions.

Figure and table guidelines

CC-BY license

All figures, tables, and images will be published under a Creative Commons CC-BY license, and permission must be obtained for use of copyrighted material from other sources (including re-published/adapted/modified/partial figures and images from the internet). It is the responsibility of the authors to acquire the licenses, follow any citation instructions requested by third-party rights holders, and cover any supplementary charges.

For additional information, please see the 'Image manipulation' section of our policies and publication ethics.

Figure requirements and style guidelines

Frontiers requires figures to be submitted individually, in the same order as they are referred to in the manuscript; the figures will then be automatically embedded at the end of the submitted manuscript. Kindly ensure that each figure is mentioned in the text and in numerical order.

For figures with more than one panel, panels should be clearly indicated using labels (A), (B), (C), (D), etc. However, do not embed the part labels over any part of the image, these labels will be replaced during typesetting according to Frontiers' journal style. For graphs, there must be a self-explanatory label (including units) along each axis.

For LaTeX files, figures should be included in the provided PDF. In case of acceptance, our production office might require high-resolution files of the figures included in the manuscript in EPS, JPEG or TIF/TIFF format.

To upload more than one figure at a time, save the figures (labeled in order of appearance in the manuscript) in a zip file and upload them as 'Supplementary Material Presentation.'

Please note that figures not in accordance with the guidelines will cause substantial delay during the production process.

Captions

Captions should be preceded by the appropriate label, for example 'Figure 1.' Figure captions should be placed at the end of the manuscript. Figure panels are referred to by bold capital letters in brackets: (A), (B), (C), (D), etc.

Image size and resolution requirements

Figures should be prepared with the PDF layout in mind. Individual figures should not be longer than one page and with a width that corresponds to 1 column (85 mm) or 2 columns (180 mm).

All images must have a resolution of 300 dpi at final size. Check the resolution of your figure by enlarging it to 150%. If the image appears blurry, jagged, or has a stair-stepped effect, the resolution is too low.

The text should be legible and of high quality. The smallest visible text should be no less than eight points in height when viewed at actual size.

Solid lines should not be broken up. Any lines in the graphic should be no smaller than two points wide.

Please note that saving a figure directly as an image file (JPEG, TIF) can greatly affect the resolution of your image. To avoid this, one option is to export the file as PDF, then convert into TIFF or EPS using a graphics software.

Format and color image mode

The following formats are accepted: TIF/TIFF (.tif/.tiff), JPEG (.jpg), and EPS (.eps) (upon acceptance). Images must be submitted in the color mode RGB.

Chemical structures

Chemical structures should be prepared using ChemDraw or a similar program. If working with ChemDraw please use our ChemDraw template. If working with another program please follow the guidelines below.

- Drawing settings: chain angle, 120° bond spacing, 18% width; fixed length, 14.4 pt; bold width, 2.0 pt; line width, 0.6 pt; margin width, 1.6 pt; hash spacing, 2.5 pt. Scale 100% Atom Label settings: font, Arial; size, 8 pt

- Assign all chemical compounds a bold, Arabic numeral in the order in which the compounds are presented in the manuscript text.

Table requirements and style guidelines

Tables should be inserted at the end of the manuscript in an editable format. If you use a word processor, build your table in Word. If you use a LaTeX processor, build your table in LaTeX. An empty line should be left before and after the table.

Table captions must be placed immediately before the table. Captions should be preceded by the appropriate label, for example 'Table 1.' Please use only a single paragraph for the caption.

Ensure that each table is mentioned in the text and in numerical order.

Large tables covering several pages cannot be included in the final PDF for formatting reasons. These tables will be published as supplementary material.

Tables which are not according to the above guidelines will cause substantial delay during the production process.

Accessibility

We encourage authors to make the figures and visual elements of their articles accessible for the visually impaired. An effective use of color can help people with low visual acuity, or color blindness, understand all the content of an article.

These guidelines are easy to implement and are in accordance with the W3C Web Content Accessibility Guidelines (WCAG 2.1), the standard for web accessibility best practices.

Ensure sufficient contrast between text and its background

People who have low visual acuity or color blindness could find it difficult to read text with low contrast background color. Try using colors that provide maximum contrast.

WC3 recommends the following contrast ratio levels:

- Level AA, contrast ratio of at least 4.5:1
- Level AAA, contrast ratio of at least 7:1

You can verify the contrast ratio of your palette with these online ratio checkers:

- WebAIM
- Color Safe

Avoid using red or green indicators

More than 99% of color-blind people have a red-green color vision deficiency.

Avoid using only color to communicate information

Elements with complex information like charts and graphs can be hard to read when only color is used to distinguish the data. Try to use other visual aspects to communicate information, such as shape, labels, and size. Incorporating patterns into the shape fills also make differences clearer; for an example please see below:

Supplementary material

Data that are not of primary importance to the text, or which cannot be included in the article because they are too large or the current format does not permit it (such as videos, raw data traces, and PowerPoint presentations), can be uploaded as supplementary material during the submission procedure and will be displayed along with the published article. All supplementary files are deposited to figshare for permanent storage and receive a DOI.

Supplementary material is not typeset, so please ensure that all information is clearly presented without tracked changes/highlighted text/line numbers, and the appropriate caption is included in the file. To avoid discrepancies between the published article and the supplementary material, please do not add the title, author list, affiliations or correspondence in the supplementary files.

The supplementary material can be uploaded as:

- data sheet (Word, Excel, CSV, CDX, FASTA, PDF or Zip files)
- presentation (PowerPoint, PDF or Zip files)

- image (CDX, EPS, JPEG, PDF, PNG or TIF/TIFF),
- table (Word, Excel, CSV or PDF)
- audio (MP3, WAV or WMA)
- video (AVI, DIVX, FLV, MOV, MP4, MPEG, MPG or WMV).

Technical requirements for supplementary images:

- 300 DPIs
- RGB color mode.

For supplementary material templates (LaTeX and Word), see our supplementary material templates.

References

Frontiers' journals use one of two reference styles, either Harvard (author-date) or Vancouver (numbered). Please check our help center to find the correct style for the journal to which you are submitting.

- All citations in the text, figures, or tables must be in the reference list and vice-versa
- The names of the first six authors followed by et al. and the DOI (when available) should be provided
- Given names of authors should be abbreviated to initials (e.g., Smith, J., Lewis, C.S., etc.)
- The reference list should only include articles that are published or accepted
- Unpublished data, submitted manuscripts, or personal communications should be cited within the text only, for article types that allow such inclusions
- For accepted but unpublished works use 'in press' instead of page numbers
- Data sets that have been deposited to an online repository should be included in the reference list. Include the version and unique identifier when available
- Personal communications should be documented by a letter of permission
- Website URLs should be included as footnotes
- Any inclusion of verbatim text must be contained in quotation marks and clearly reference the original source
- Preprints can be cited as long as a DOI or archive URL is available, and the citation clearly mentions that the contribution is a preprint. If a peer-reviewed journal publication for the same preprint exists, the official journal publication is the preferred source. See the preprints section for each reference style below for more information.

Harvard reference style (author-date)

Many Frontiers journals use the Harvard referencing system; to find the correct reference style and resources for the journal you are submitting to, please visit our help center. Reference examples are found below, for more examples of citing other documents and general questions regarding the Harvard reference style, please refer to the Chicago Manual of Style.

In-text citations

- For works by a single author, include the surname, followed by the year

- For works by two authors, include both surnames, followed by the year

- For works by more than two authors, include only the surname of the first author followed by et al., followed by the year

- For humanities and social sciences articles, include the page numbers.

Reference list examples

Article in a print journal

Sondheimer, N., and Lindquist, S. (2000). Rnq1: an epigenetic modifier of protein function in yeast. Mol. Cell. 5, 163-172.

Article in an online journal

Tahimic, C.G.T., Wang, Y., Bikle, D.D. (2013). Anabolic effects of IGF-1 signaling on the skeleton. Front. Endocrinol. 4:6. doi: 10.3389/fendo.2013.00006

Article or chapter in a book

Sorenson, P. W., and Caprio, J. C. (1998). "Chemoreception," in The Physiology of Fishes, ed. D. H. Evans (Boca Raton, FL: CRC Press), 375-405.

Book

Cowan, W. M., Jessell, T. M., and Zipursky, S. L. (1997). Molecular and Cellular Approaches to Neural Development. New York: Oxford University Press.

Abstract

Hendricks, J., Applebaum, R., and Kunkel, S. (2010). A world apart? Bridging the gap between theory and applied social gerontology. Gerontologist 50, 284-293. Abstract retrieved from Abstracts in Social Gerontology database. (Accession No. 50360869)

Website

World Health Organization. (2018). E. coli. https://www.who.int/news-room/fact-sheets/detail/e-coli [Accessed March 15, 2018].

Patent

Marshall, S. P. (2000). Method and apparatus for eye tracking and monitoring pupil dilation to evaluate cognitive activity. U.S. Patent No 6,090,051. Washington, DC: U.S. Patent and Trademark Office.

Data

Perdiguero P, Venturas M, Cervera MT, Gil L, Collada C. Data from: Massive sequencing of Ulms minor's transcriptome provides new molecular tools for a genus under the constant threat of Dutch elm disease. Dryad Digital Repository. (2015) http://dx.doi.org/10.5061/dryad.ps837

Theses and dissertations

Smith, J. (2008) Post-structuralist discourse relative to phenomological pursuits in the deconstructivist arena. [dissertation/master's thesis]. [Chicago (IL)]: University of Chicago

Preprint

Smith, J. (2008). Title of the document. Preprint repository name [Preprint]. Available at: https://persistent-url (Accessed March 15, 2018).

Vancouver reference style (numbered)

Many Frontiers journals use the numbered referencing system; to find the correct reference style and resources for the journal you are submitting to, please visit our help center.

Reference examples are found below, for more examples of citing other documents and general questions regarding the Vancouver reference style, please refer to Citing Medicine.

In-text citations

- Please apply the Vancouver system for in-text citations

- In-text citations should be numbered consecutively in order of appearance in the text – identified by Arabic numerals in the parenthesis (use square brackets for physics and mathematics articles).

Reference list examples

Article in a print journal

Sondheimer N, Lindquist S. Rnq1: an epigenetic modifier of protein function in yeast. Mol Cell (2000) 5:163-72.

Article in an online journal

Tahimic CGT, Wang Y, Bikle DD. Anabolic effects of IGF-1 signaling on the skeleton. Front Endocrinol (2013) 4:6. doi: 10.3389/fendo.2013.00006

Article or chapter in a book

Sorenson PW, Caprio JC. "Chemoreception". In: Evans DH, editor. The Physiology of Fishes. Boca Raton, FL: CRC Press (1998). p. 375-405.

Book

Cowan WM, Jessell TM, Zipursky SL. Molecular and Cellular Approaches to Neural Development. New York: Oxford University Press (1997). 345 p.

Abstract

Christensen S, Oppacher F. An analysis of Koza's computational effort statistic for genetic programming. In: Foster JA, editor. Genetic Programming. EuroGP 2002: Proceedings of the 5th European Conference on Genetic Programming; 2002 Apr 3–5; Kinsdale, Ireland. Berlin: Springer (2002). p. 182–91.

Website

World Health Organization. E. coli (2018). https://www.who.int/news-room/fact-sheets/detail/e-coli [Accessed March 15, 2018].

Patent

Pagedas AC, inventor; Ancel Surgical R&D Inc., assignee. Flexible Endoscopic Grasping and Cutting Device and Positioning Tool Assembly. United States patent US 20020103498 (2002).

Data

Perdiguero P, Venturas M, Cervera MT, Gil L, Collada C. Data from: Massive sequencing of Ulms minor's transcriptome provides new molecular tools for a genus under the constant threat of Dutch elm disease. Dryad Digital Repository. (2015) http://dx.doi.org/10.5061/dryad.ps837

Theses and dissertations

Smith, J. (2008) Post-structuralist discourse relative to phenomological pursuits in the deconstructivist arena. [dissertation/master’s thesis]. [Chicago (IL)]: University of Chicago

Preprint

Smith, J. Title of the document. Preprint repository name [Preprint] (2008). Available at: https://persistent-url (Accessed March 15, 2018).

Appendix B – Community Mental Health Journal Author Guidelines

Instructions for Authors

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It is difficult to specify a threshold at which a financial interest becomes significant, any such figure is necessarily arbitrary, so one possible practical guideline is the following: "Any undeclared financial interest that could embarrass the author were it to become publicly known after the work was published."

Non-financial interests: In addition, authors are requested to disclose interests that go beyond financial interests that could impart bias on the work submitted for publication such as professional interests, personal relationships or personal beliefs (amongst others). Examples include, but are not limited to: position on editorial board, advisory board or board of directors or other type of management relationships; writing and/or consulting for educational purposes; expert witness; mentoring relations; and so forth.

Primary research articles require a disclosure statement. Review articles present an expert synthesis of evidence and may be treated as an authoritative work on a subject. Review articles therefore require a disclosure statement. Other article types such as editorials, book reviews, comments (amongst others) may, dependent on their content, require a disclosure statement. If you are unclear whether your article type requires a disclosure statement, please contact the Editor-in-Chief.

Please note that, in addition to the above requirements, funding information (given that funding is a potential competing interest (as mentioned above)) needs to be disclosed upon submission of the manuscript in the peer review system. This information will automatically be added to the Record of CrossMark, however it is not added to the manuscript itself. Under ‘summary of requirements’ (see below) funding information should be included in the ‘Declarations’ section.

Summary of requirements

The above should be summarized in a statement and included on a title page that is separate from the manuscript with a section entitled “Declarations” when submitting a paper. Having all statements in one place allows for a consistent and unified review of the information by the Editor-in-Chief and/or peer reviewers and may speed up the handling of the paper. Declarations include Funding, Competing interests, Ethics approval, Consent, Data, Materials and/or Code availability and Authors’ contribution statements. Please use the title page for providing the statements.

Once and if the paper is accepted for publication, the production department will put the respective statements in a distinctly identified section clearly visible for readers.

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

When all authors have the same (or no) competing interests and/or funding it is sufficient to use one blanket statement.

Examples of statements to be used when funding has been received:

Partial financial support was received from [...]

The research leading to these results received funding from […] under Grant Agreement No[…].

This study was funded by […]

This work was supported by […] (Grant numbers […] and […]

Examples of statements to be used when there is no funding:

The authors did not receive support from any organization for the submitted work.

No funding was received to assist with the preparation of this manuscript.

No funding was received for conducting this study.

No funds, grants, or other support was received.

Examples of statements to be used when there are interests to declare:

Financial interests: Author A has received research support from Company A. Author B has received a speaker honorarium from Company Wand owns stock in Company X. Author C is consultant to company Y.

Non-financial interests: Author C is an unpaid member of committee Z.

Financial interests: The authors declare they have no financial interests.

Non-financial interests: Author A is on the board of directors of Y and receives no compensation as member of the board of directors.

Financial interests: Author A received a speaking fee from Y for Z. Author B receives a salary from association X. X where s/he is the Executive Director.

Non-financial interests: none.

Financial interests: Author A and B declare they have no financial interests. Author C has received speaker and consultant honoraria from Company M and Company N. Dr. C has received speaker honorarium and research funding from Company M and Company O. Author D has received travel support from Company O.

Non-financial interests: Author D has served on advisory boards for Company M, Company N and Company O.

Examples of statements to be used when authors have nothing to declare:

The authors have no relevant financial or non-financial interests to disclose.

The authors have no competing interests to declare that are relevant to the content of this article.

All authors certify that they have no affiliations with or involvement in any organization or entity with any financial interest or non-financial interest in the subject matter or materials discussed in this manuscript.

The authors have no financial or proprietary interests in any material discussed 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.

Research involving human participants, their data or biological material

Ethics approval

When reporting a study that involved human participants, their data or biological material, authors should include a statement that confirms that the study was approved (or granted exemption) by the appropriate institutional and/or national research ethics committee (including the name of the ethics committee) and certify that the study was performed in accordance with the ethical standards as laid down in the 1964 Declaration of Helsinki and its later amendments or comparable ethical standards. If doubt exists whether the research was conducted in accordance with the 1964 Helsinki Declaration or comparable standards, the authors must explain the reasons for their approach, and demonstrate that an independent ethics committee or institutional review board explicitly approved the doubtful aspects of the study. If a study was granted exemption from requiring ethics approval, this should also be detailed in the manuscript (including the reasons for the exemption).

Retrospective ethics approval

If a study has not been granted ethics committee approval prior to commencing, retrospective ethics approval usually cannot be obtained and it may not be possible to consider the manuscript for peer review. The decision on whether to proceed to peer review in such cases is at the Editor's discretion.

Ethics approval for retrospective studies

Although retrospective studies are conducted on already available data or biological material (for which formal consent may not be needed or is difficult to obtain) ethics approval may be required dependent on the law and the national ethical guidelines of a country. Authors should check with their institution to make sure they are complying with the specific requirements of their country.

Ethics approval for case studies

Case reports require ethics approval. Most institutions will have specific policies on this subject. Authors should check with their institution to make sure they are complying with the specific requirements of their institution and seek ethics approval where needed. Authors should be aware to secure informed consent from the individual (or parent or guardian if the participant is a minor or incapable) See also section on Informed Consent.

Cell lines

If human cells are used, authors must declare in the manuscript: what cell lines were used by describing the source of the cell line, including when and from where it was obtained, whether the cell line has recently been authenticated and by what method. If cells were bought from a life science company the following need to be given in the manuscript: name of company (that provided the cells), cell type, number of cell line, and batch of cells.

It is recommended that authors check the NCBI database for misidentification and contamination of human cell lines. This step will alert authors to possible problems with the cell line and may save considerable time and effort.

Further information is available from the International Cell Line Authentication Committee (ICLAC).

Authors should include a statement that confirms that an institutional or independent ethics committee (including the name of the ethics committee) approved the study and that informed consent was obtained from the donor or next of kin.

Research Resource Identifiers (RRID)

Research Resource Identifiers (RRID) are persistent unique identifiers (effectively similar to a DOI) for research resources. This journal encourages authors to adopt RRIDs when reporting key biological resources (antibodies, cell lines, model organisms and tools) in their manuscripts.

Examples:

Organism: Filip1tm1a(KOMP)Wtsi RRID:MMRRC_055641-UCD

Cell Line: RST307 cell line RRID:CVCL_C321

Antibody: Luciferase antibody DSHB Cat# LUC-3, RRID:AB_2722109

Plasmid: mRuby3 plasmid RRID:Addgene_104005

Software: ImageJ Version 1.2.4 RRID:SCR_003070

RRIDs are provided by the Resource Identification Portal. Many commonly used research resources already have designated RRIDs. The portal also provides authors links so that they can quickly register a new resource and obtain an RRID.

Clinical Trial Registration

The World Health Organization (WHO) definition of a clinical trial is "any research study that prospectively assigns human participants or groups of humans to one or more health-related interventions to evaluate the effects on health outcomes". The WHO defines health interventions as “A health intervention is an act performed for, with or on behalf of a person or population whose purpose is to assess, improve, maintain, promote or modify health, functioning or health conditions” and a health-related outcome is generally defined as a change in the health of a person or population as a result of an intervention

To ensure the integrity of the reporting of patient-centered trials, authors must register prospective clinical trials (phase II to IV trials) in suitable publicly available repositories. For example www.clinicaltrials.gov or any of the primary registries that participate in the WHO International Clinical Trials Registry Platform.

The trial registration number (TRN) and date of registration should be included as the last line of the manuscript abstract.

For clinical trials that have not been registered prospectively, authors are encouraged to register retrospectively to ensure the complete publication of all results. The trial registration number (TRN), date of registration and the words 'retrospectively registered’ should be included as the last line of the manuscript abstract.

Standards of reporting

Springer Nature advocates complete and transparent reporting of biomedical and biological research and research with biological applications. Authors are recommended to adhere to the minimum reporting guidelines hosted by the EQUATOR Network when preparing their manuscript.

Exact requirements may vary depending on the journal; please refer to the journal’s Instructions for Authors.

Checklists are available for a number of study designs, including:

Randomised trials (CONSORT) and Study protocols (SPIRIT)

Observational studies (STROBE)

Systematic reviews and meta-analyses (PRISMA) and protocols (Prisma-P)

Diagnostic/prognostic studies (STARD) and (TRIPOD)

Case reports (CARE)

Clinical practice guidelines (AGREE) and (RIGHT)

Qualitative research (SRQR) and (COREQ)

Animal pre-clinical studies (ARRIVE)

Quality improvement studies (SQUIRE)

Economic evaluations (CHEERS)

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 ‘Ethics approval’.

Examples of statements to be used when ethics approval has been obtained:

- All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards. The study was approved by the Bioethics Committee of the Medical University of A (No. ...).

- This study was performed in line with the principles of the Declaration of Helsinki. Approval was granted by the Ethics Committee of University B (Date.../No. ...).

- Approval was obtained from the ethics committee of University C. The procedures used in this study adhere to the tenets of the Declaration of Helsinki.

- The questionnaire and methodology for this study was approved by the Human Research Ethics committee of the University of D (Ethics approval number: ...).

Examples of statements to be used for a retrospective study:

- Ethical approval was waived by the local Ethics Committee of University A in view of the retrospective nature of the study and all the procedures being performed were part of the routine care.

- This research study was conducted retrospectively from data obtained for clinical purposes. We consulted extensively with the IRB of XYZ who determined that our study did not need ethical approval. An IRB official waiver of ethical approval was granted from the IRB of XYZ.

- This retrospective chart review study involving human participants was in accordance with the ethical standards of the institutional and national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards. The Human Investigation Committee (IRB) of University B approved this study.

Examples of statements to be used when no ethical approval is required/exemption granted:

- This is an observational study. The XYZ Research Ethics Committee has confirmed that no ethical approval is required.

- The data reproduced from Article X utilized human tissue that was procured via our Biobank AB, which provides de-identified samples. This study was reviewed and deemed exempt by our XYZ Institutional Review Board. The BioBank protocols are in accordance with the ethical standards of our institution and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

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.

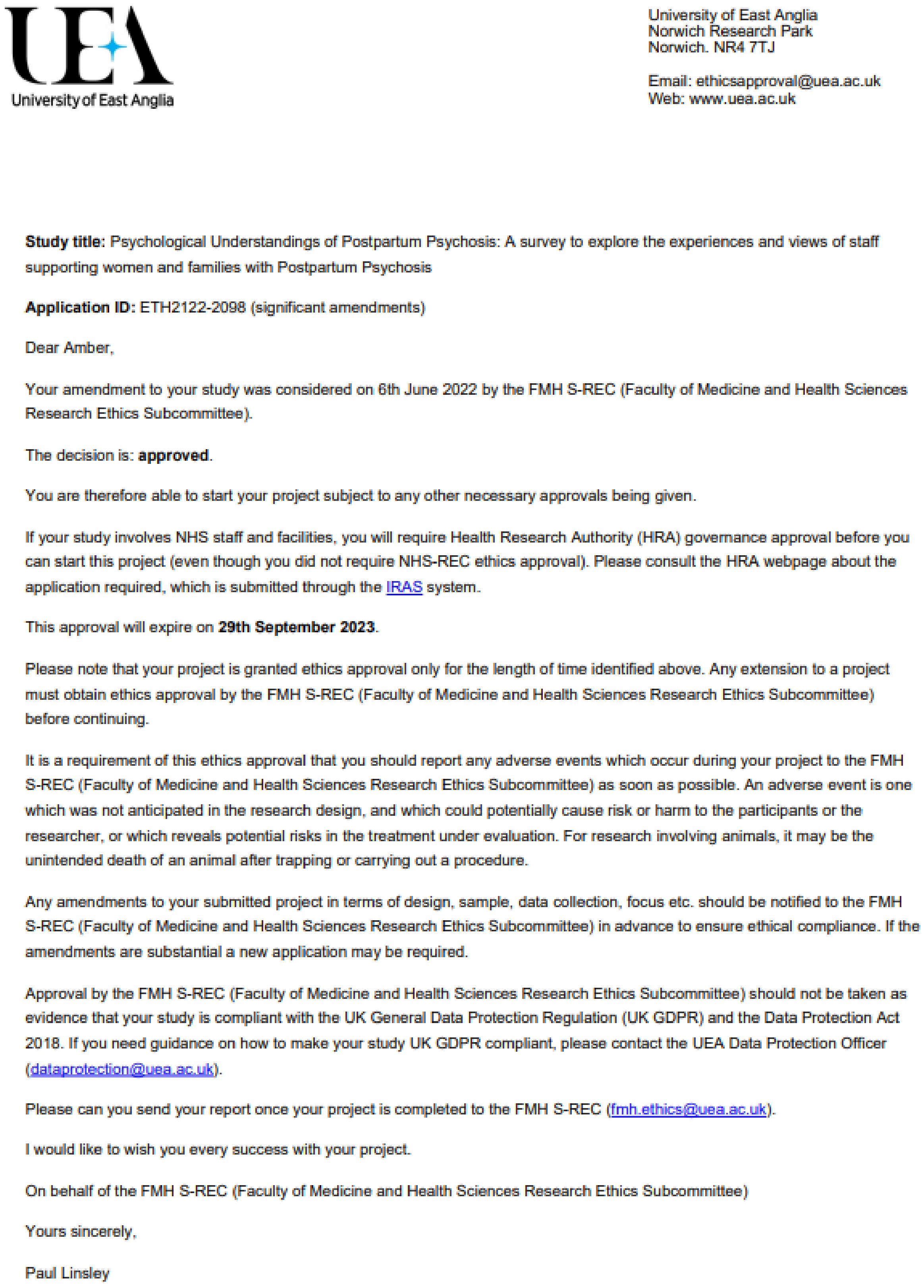
Sample statements if identifying information about participants is available in the article:

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 FMH Approval Letter



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

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

Study title: Psychological Understandings of Postpartum Psychosis: A survey to explore the experiences and views of staff supporting women and families with Postpartum Psychosis

Application ID: ETH2122-2098 (significant amendments)

Dear Amber,

Your amendment to your study was considered on 6th June 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 **29th September 2023**.

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).

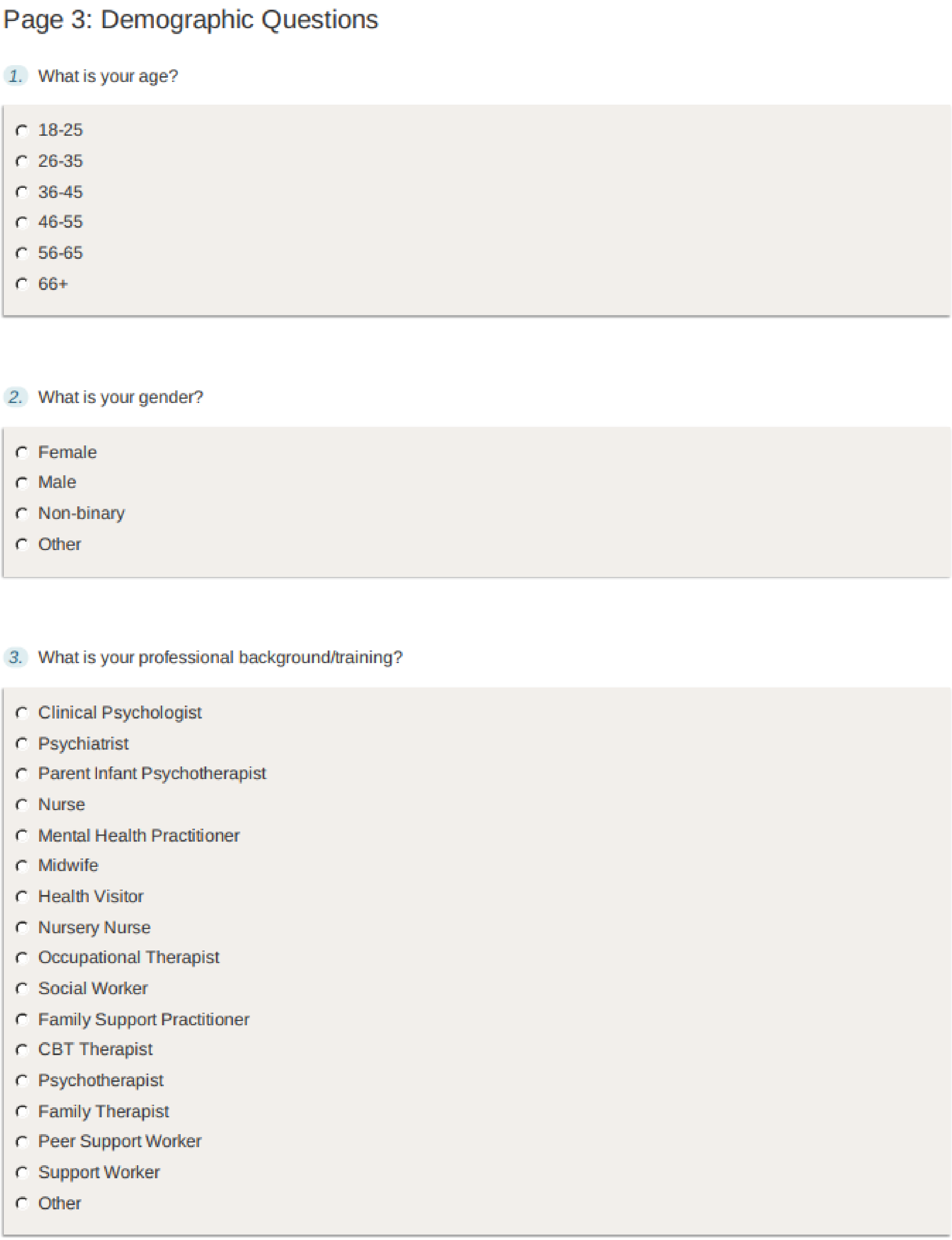
I would like to wish you every success with your project.

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

Yours sincerely,

Paul Linsley

Appendix D - Empirical Paper Questionnaire



Page 3: Demographic Questions

1. What is your age?

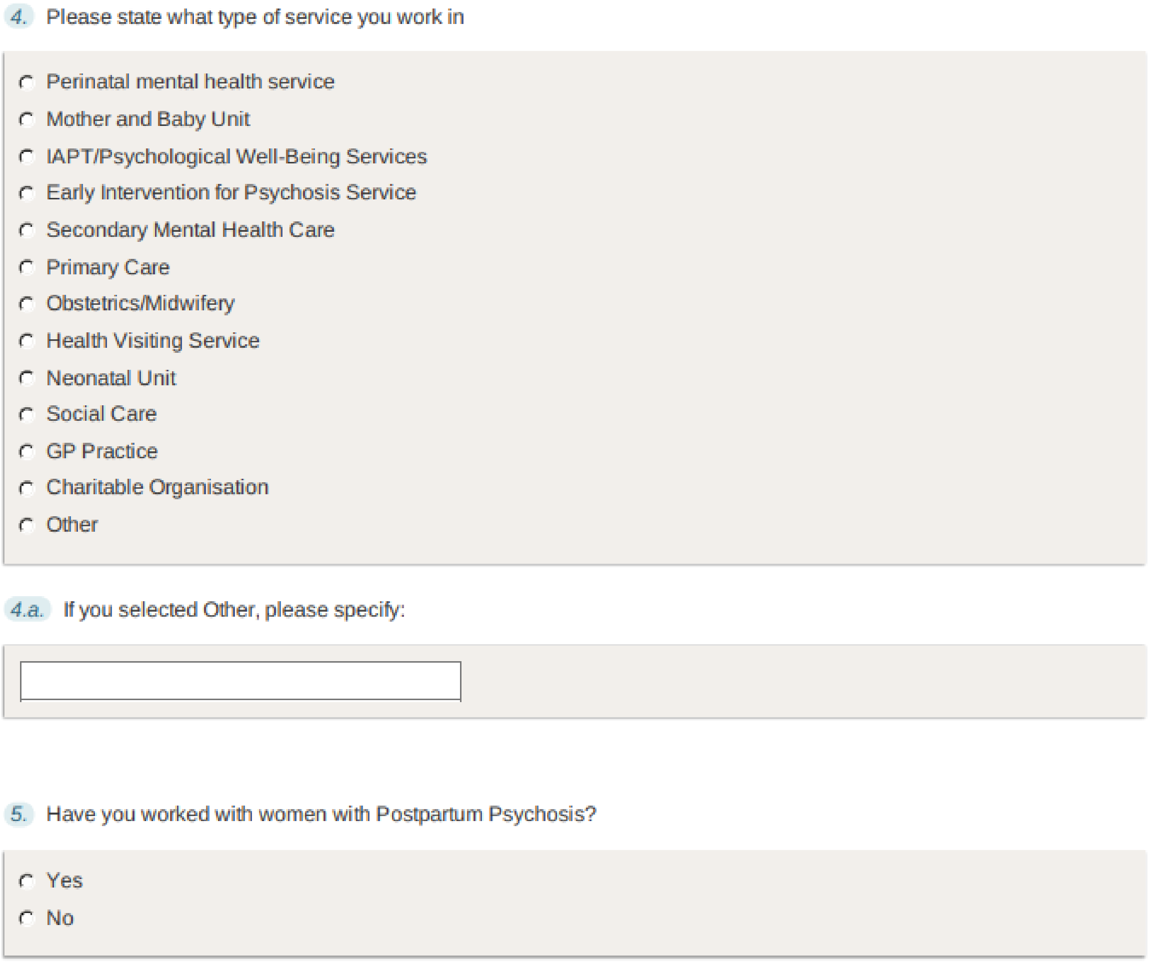
○ 18-25
○ 26-35
○ 36-45
○ 46-55
○ 56-65
○ 66+

2. What is your gender?

○ Female
○ Male
○ Non-binary
○ Other

3. What is your professional background/training?

○ Clinical Psychologist
○ Psychiatrist
○ Parent Infant Psychotherapist
○ Nurse
○ Mental Health Practitioner
○ Midwife
○ Health Visitor
○ Nursery Nurse
○ Occupational Therapist
○ Social Worker
○ Family Support Practitioner
○ CBT Therapist
○ Psychotherapist
○ Family Therapist
○ Peer Support Worker
○ Support Worker
○ Other



4. Please state what type of service you work in

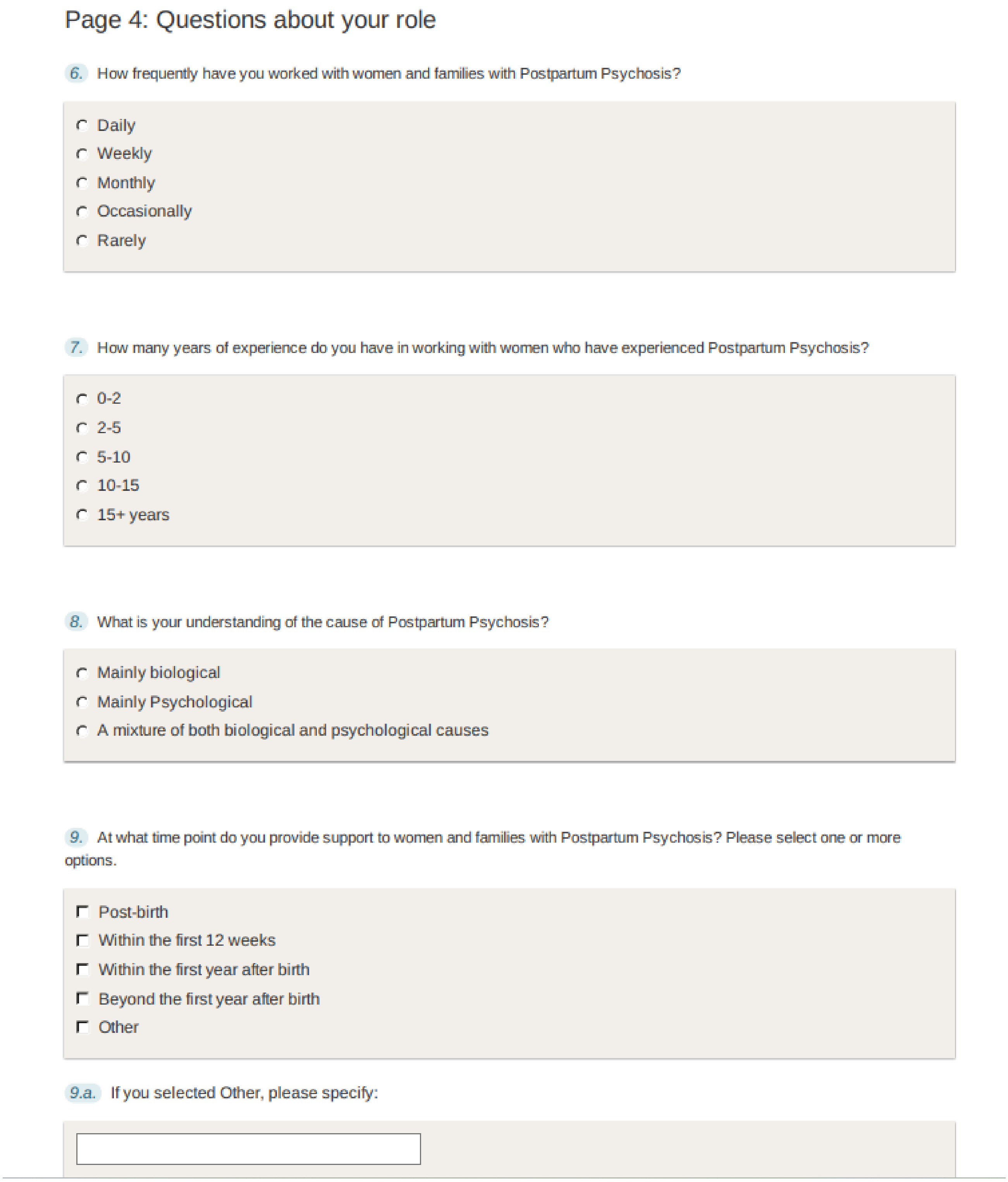
- ○ Perinatal mental health service
- ○ Mother and Baby Unit
- ○ IAPT/Psychological Well-Being Services
- ○ Early Intervention for Psychosis Service
- ○ Secondary Mental Health Care
- ○ Primary Care
- ○ Obstetrics/Midwifery
- ○ Health Visiting Service
- ○ Neonatal Unit
- ○ Social Care
- ○ GP Practice
- ○ Charitable Organisation
- ○ Other

4.a. If you selected Other, please specify:

5. Have you worked with women with Postpartum Psychosis?

- ○ Yes
- ○ No

If participants answer 'no' they will be redirected to 'page 8: thank you' page for ineligible participants.



Page 4: Questions about your role

6. How frequently have you worked with women and families with Postpartum Psychosis?

○ Daily
○ Weekly
○ Monthly
○ Occasionally
○ Rarely

7. How many years of experience do you have in working with women who have experienced Postpartum Psychosis?

○ 0-2
○ 2-5
○ 5-10
○ 10-15
○ 15+ years

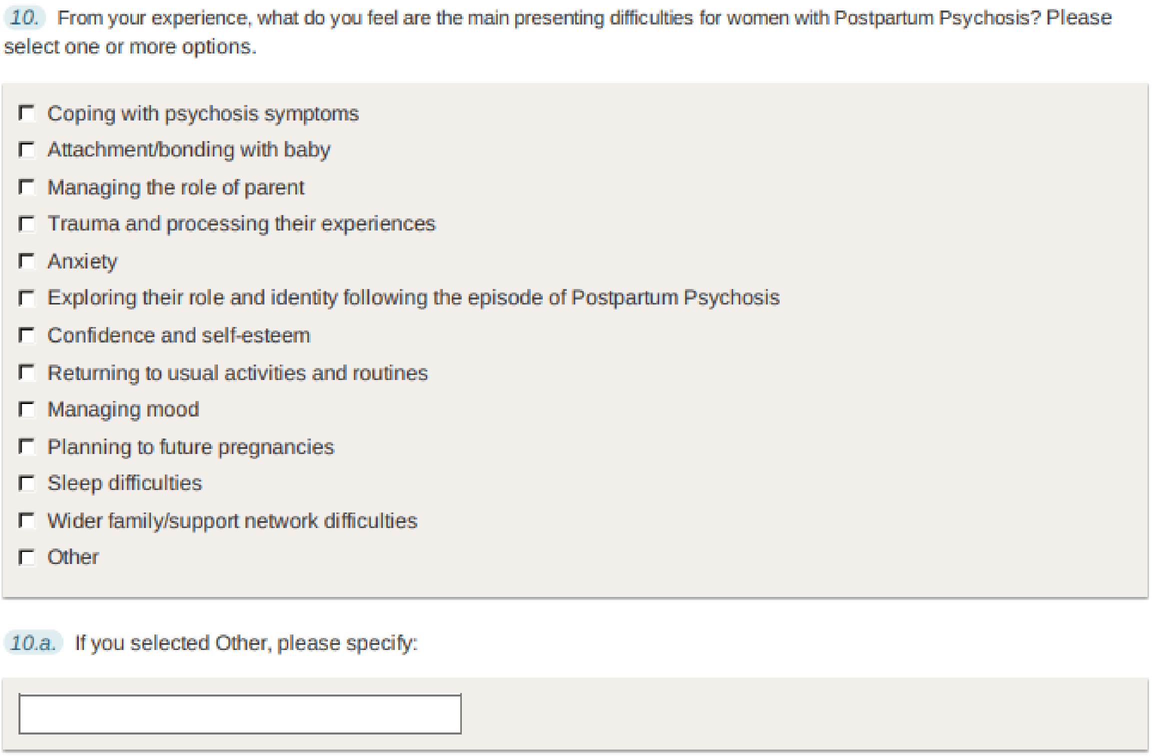
8. What is your understanding of the cause of Postpartum Psychosis?

○ Mainly biological
○ Mainly Psychological
○ A mixture of both biological and psychological causes

9. At what time point do you provide support to women and families with Postpartum Psychosis? Please select one or more options.

☐ Post-birth
☐ Within the first 12 weeks
☐ Within the first year after birth
☐ Beyond the first year after birth
☐ Other

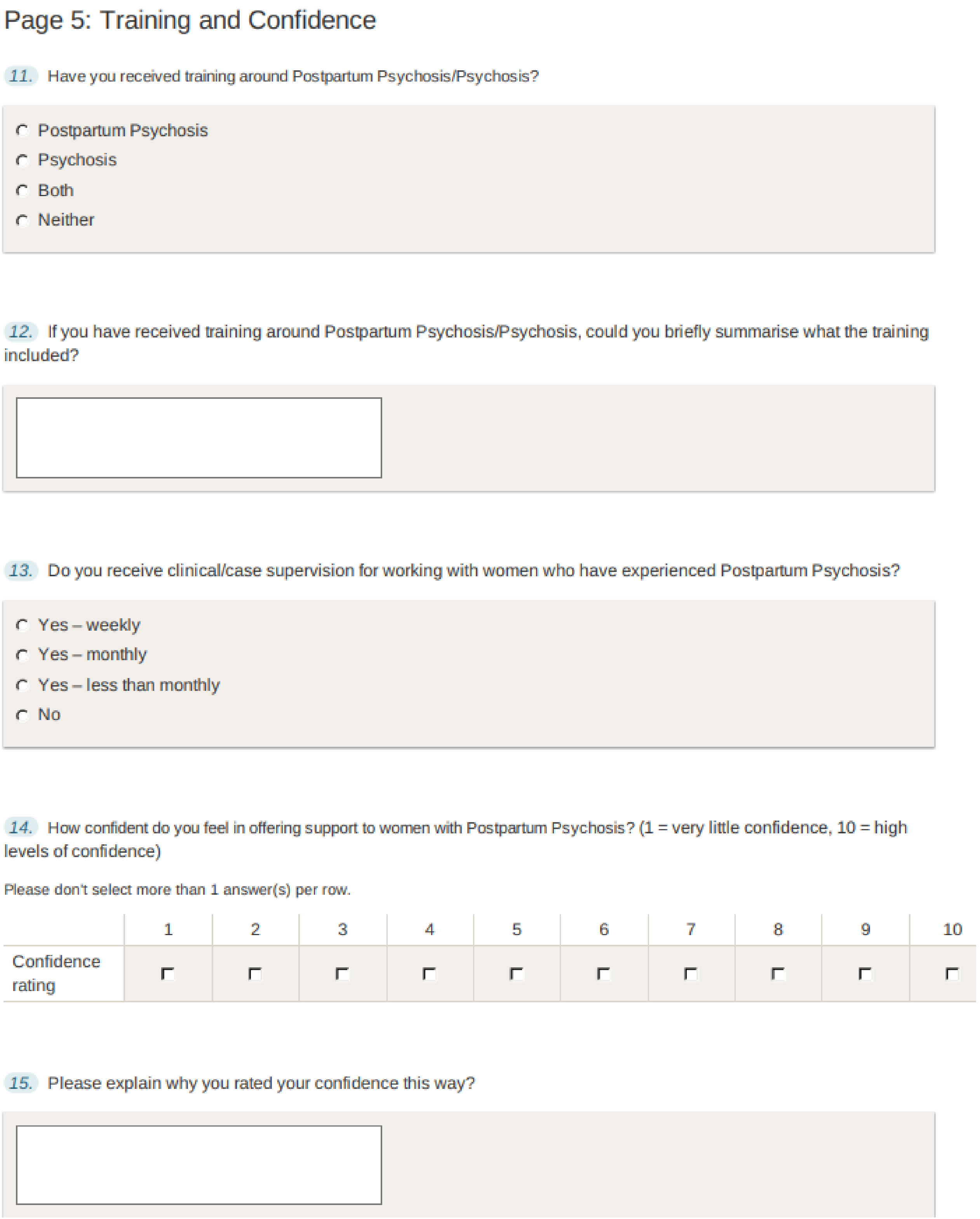
9.a. If you selected Other, please specify:



10. From your experience, what do you feel are the main presenting difficulties for women with Postpartum Psychosis? Please select one or more options.

☐ Coping with psychosis symptoms
☐ Attachment/bonding with baby
☐ Managing the role of parent
☐ Trauma and processing their experiences
☐ Anxiety
☐ Exploring their role and identity following the episode of Postpartum Psychosis
☐ Confidence and self-esteem
☐ Returning to usual activities and routines
☐ Managing mood
☐ Planning to future pregnancies
☐ Sleep difficulties
☐ Wider family/support network difficulties
☐ Other

10.a. If you selected Other, please specify:



Page 5: Training and Confidence

11. Have you received training around Postpartum Psychosis/Psychosis?

○ Postpartum Psychosis
○ Psychosis
○ Both
○ Neither

12. If you have received training around Postpartum Psychosis/Psychosis, could you briefly summarise what the training included?

13. Do you receive clinical/case supervision for working with women who have experienced Postpartum Psychosis?

○ Yes – weekly
○ Yes – monthly
○ Yes – less than monthly
○ No

14. How confident do you feel in offering support to women with Postpartum Psychosis? (1 = very little confidence, 10 = high levels of confidence)

Please don't select more than 1 answer(s) per row.

	1	2	3	4	5	6	7	8	9	10
Confidence rating	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

15. Please explain why you rated your confidence this way?

16. What would make you feel more confident in supporting women with Postpartum Psychosis?

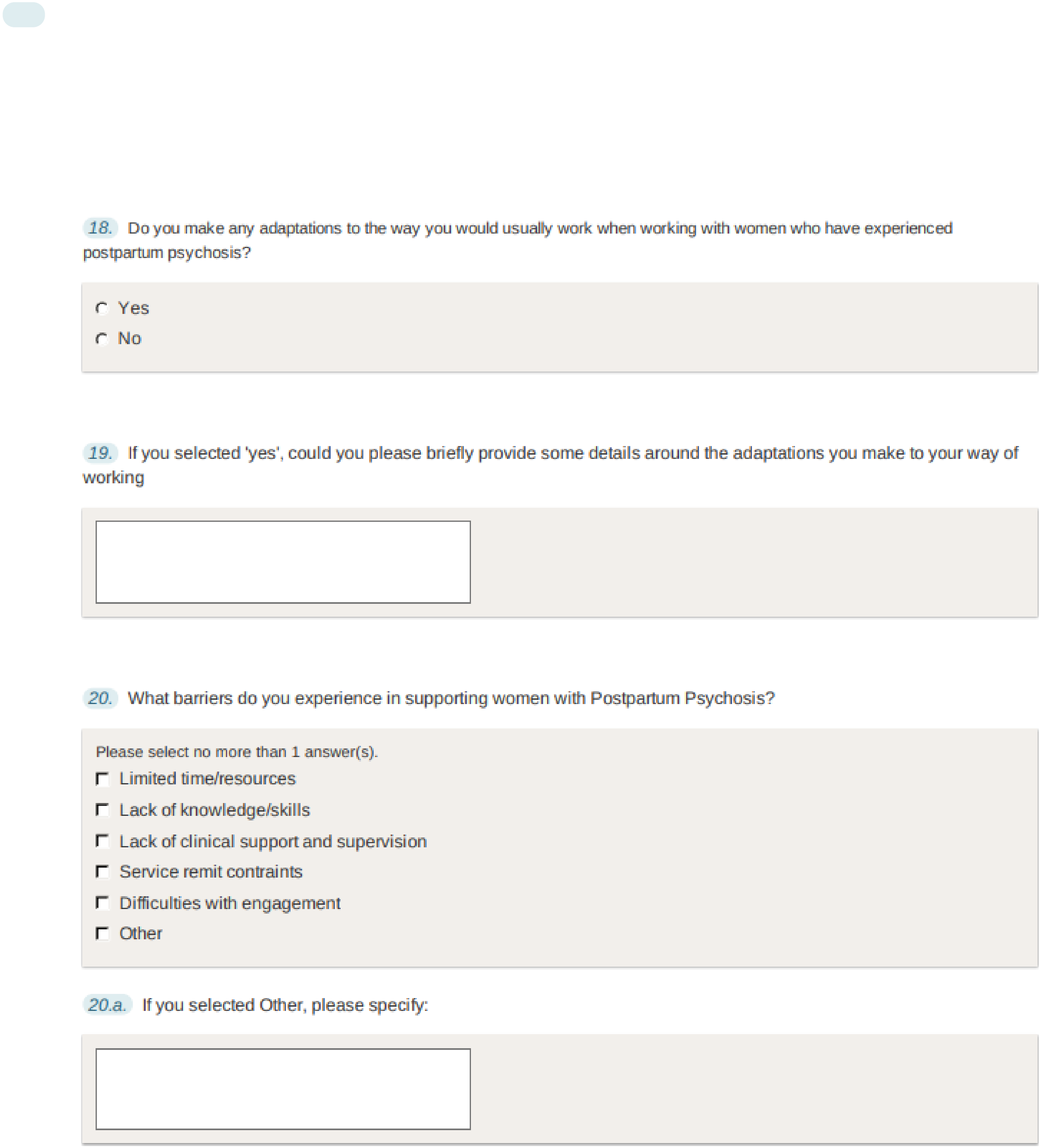
- ☐ Training to support understanding of the illness
- ☐ Clinical supervision or guidance
- ☐ Training in supportive interventions
- ☐ Additional time/resources
- ☐ Greater opportunities for peer support
- ☐ Other

16.a. If you selected Other, please specify:

17. In your role, what support do you provide to women and families with Postpartum Psychosis?

- ☐ Immediate post-birth support
- ☐ Psychological therapy
- ☐ Pre-conception counselling
- ☐ Care co-ordination
- ☐ Practical and family support
- ☐ Advise and signposting
- ☐ Psychosocial support
- ☐ Assessment/screening and referring on
- ☐ Physical health care
- ☐ Prescribing medication
- ☐ Diagnostic support
- ☐ Providing care for baby
- ☐ Counselling
- ☐ General mental health support
- ☐ Safeguarding support
- ☐ Psychologically informed interventions
- ☐ Other

17.a. If you selected Other, please specify:



18. Do you make any adaptations to the way you would usually work when working with women who have experienced postpartum psychosis?

○ Yes
○ No

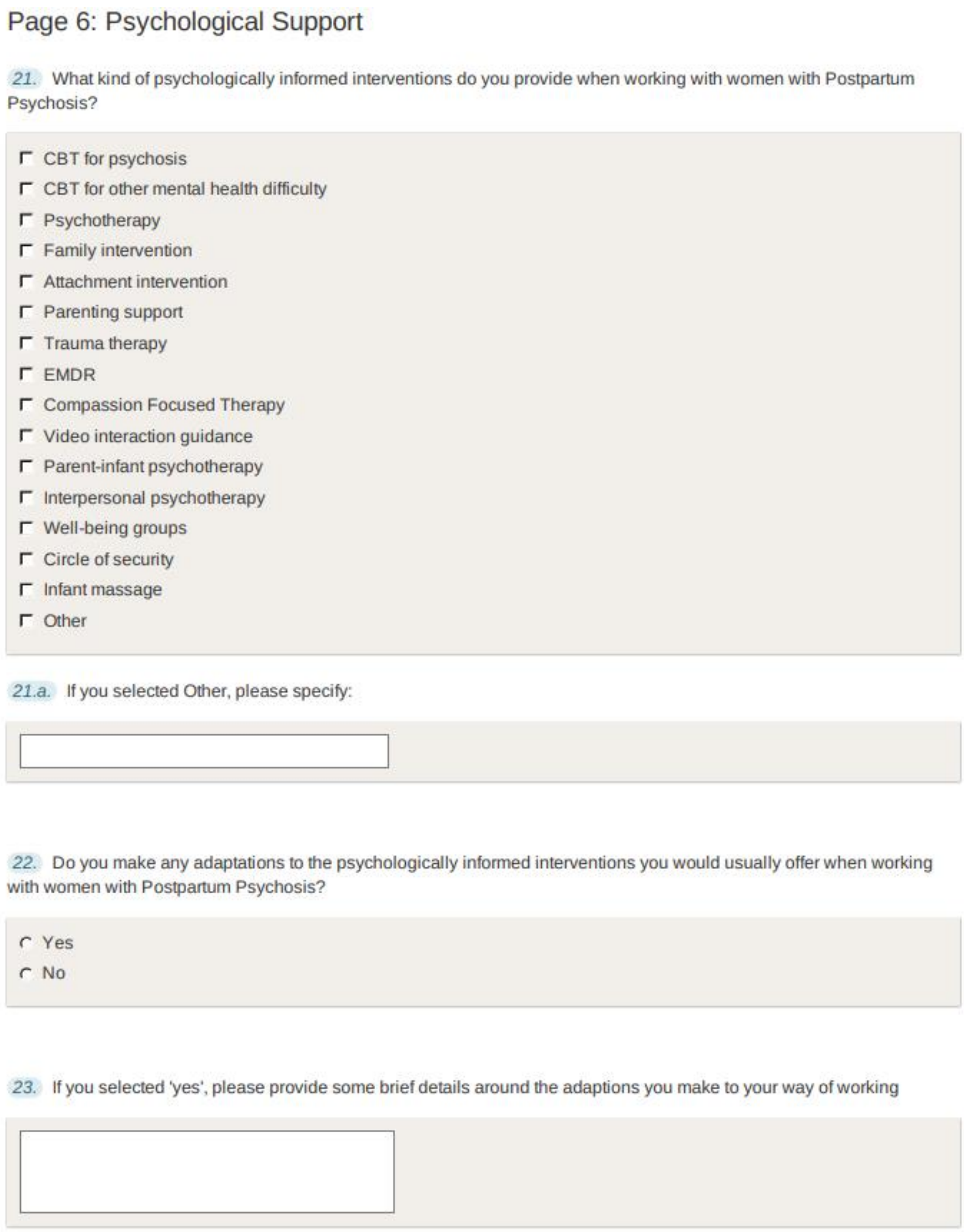
19. If you selected 'yes', could you please briefly provide some details around the adaptations you make to your way of working

20. What barriers do you experience in supporting women with Postpartum Psychosis?

Please select no more than 1 answer(s).
☐ Limited time/resources
☐ Lack of knowledge/skills
☐ Lack of clinical support and supervision
☐ Service remit contraints
☐ Difficulties with engagement
☐ Other

20.a. If you selected Other, please specify:

If participants answer question 17 with 'psychological therapy and/or psychologically informed interventions, they will be taken to page 6: Psychological Support below. If they do not select either of these options, they will be taken to page 7: Your thoughts and experiences



Page 6: Psychological Support

21. What kind of psychologically informed interventions do you provide when working with women with Postpartum Psychosis?

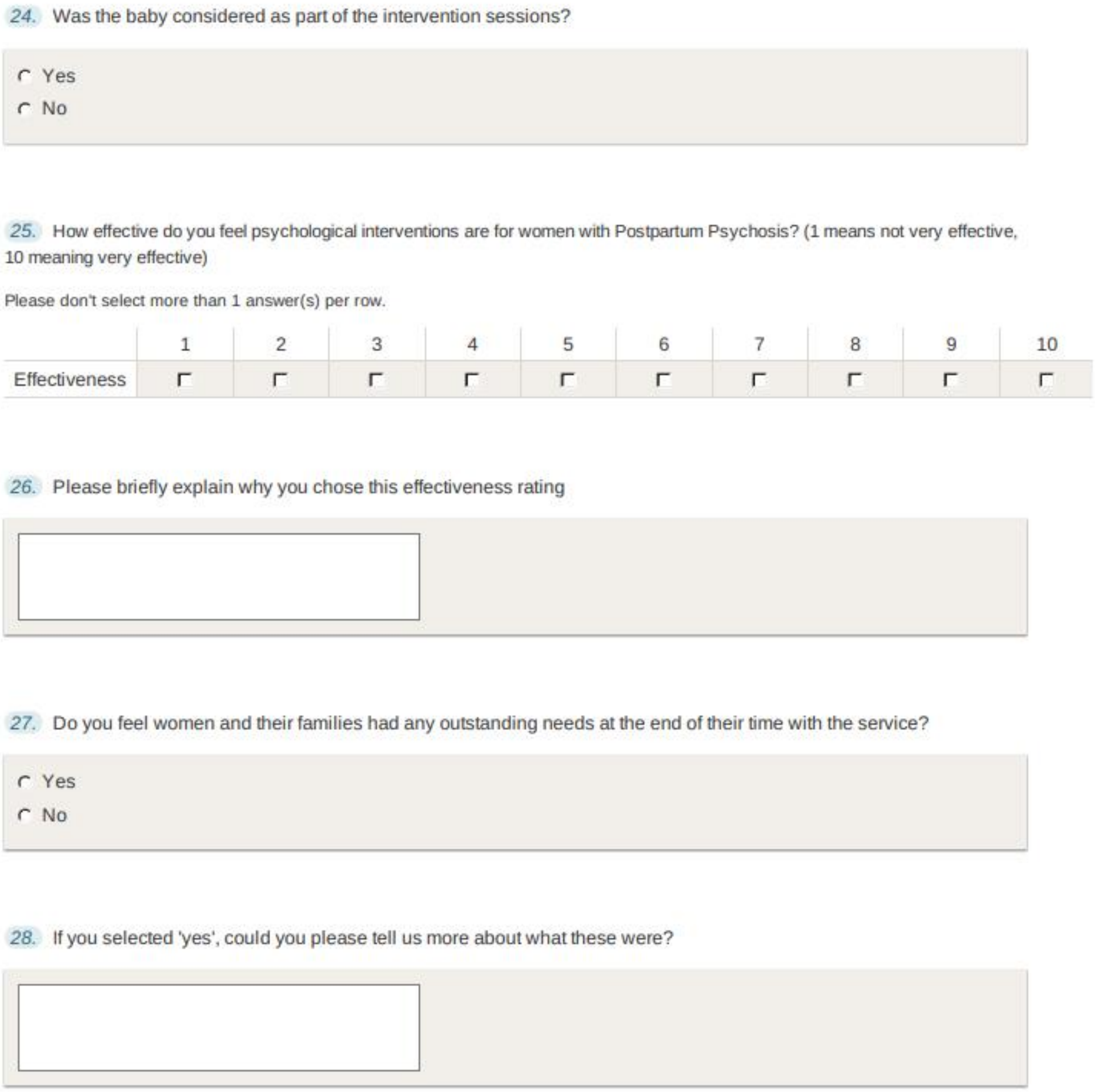
☐ CBT for psychosis
☐ CBT for other mental health difficulty
☐ Psychotherapy
☐ Family intervention
☐ Attachment intervention
☐ Parenting support
☐ Trauma therapy
☐ EMDR
☐ Compassion Focused Therapy
☐ Video interaction guidance
☐ Parent-infant psychotherapy
☐ Interpersonal psychotherapy
☐ Well-being groups
☐ Circle of security
☐ Infant massage
☐ Other

21.a. If you selected Other, please specify:

22. Do you make any adaptations to the psychologically informed interventions you would usually offer when working with women with Postpartum Psychosis?

○ Yes
○ No

23. If you selected 'yes', please provide some brief details around the adaptions you make to your way of working



24. Was the baby considered as part of the intervention sessions?

○ Yes
○ No

25. How effective do you feel psychological interventions are for women with Postpartum Psychosis? (1 means not very effective, 10 meaning very effective)

Please don't select more than 1 answer(s) per row.

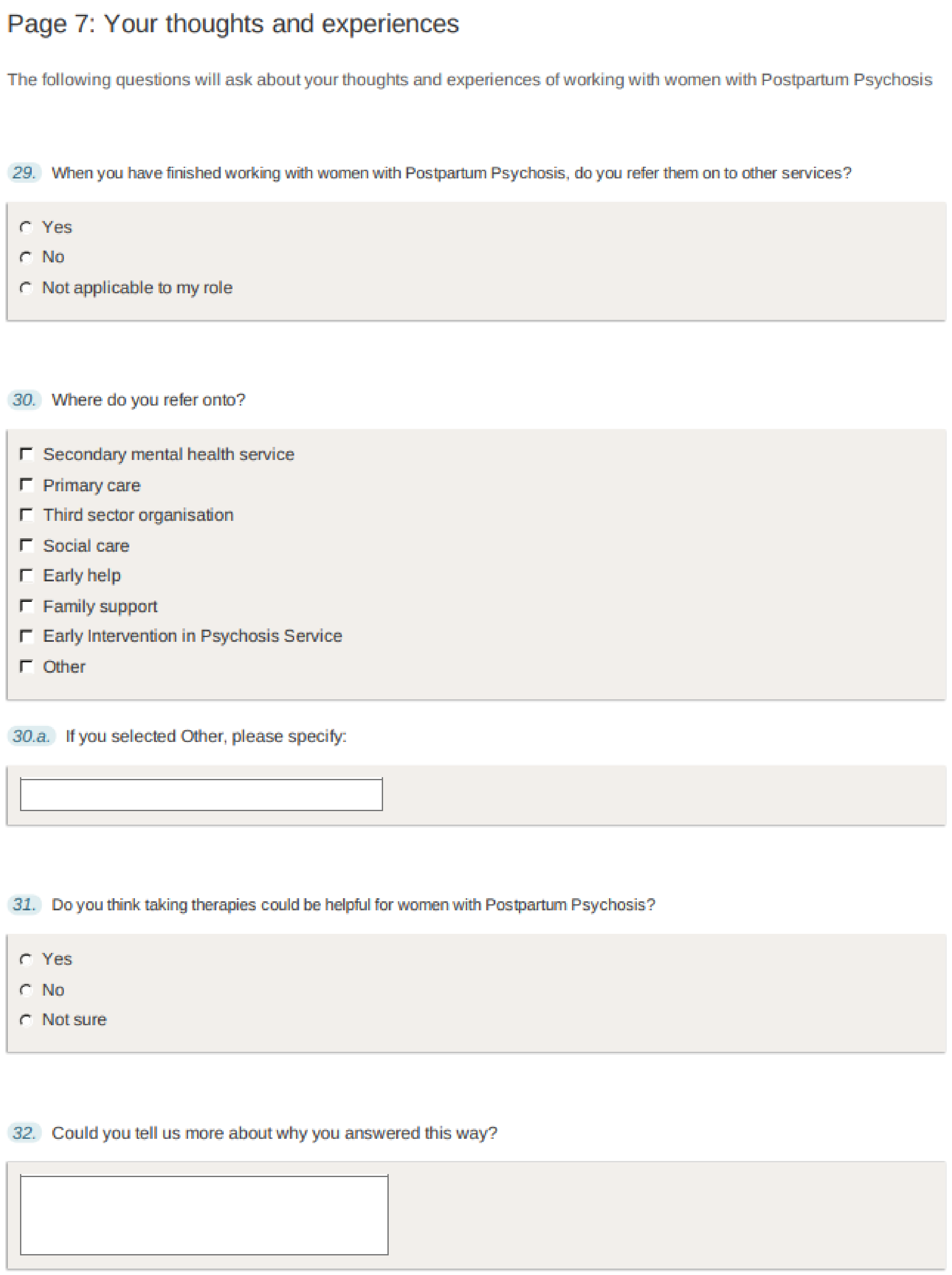
	1	2	3	4	5	6	7	8	9	10
Effectiveness	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

26. Please briefly explain why you chose this effectiveness rating

27. Do you feel women and their families had any outstanding needs at the end of their time with the service?

○ Yes
○ No

28. If you selected 'yes', could you please tell us more about what these were?



Page 7: Your thoughts and experiences

The following questions will ask about your thoughts and experiences of working with women with Postpartum Psychosis

29. When you have finished working with women with Postpartum Psychosis, do you refer them on to other services?

○ Yes
○ No
○ Not applicable to my role

30. Where do you refer onto?

☐ Secondary mental health service
☐ Primary care
☐ Third sector organisation
☐ Social care
☐ Early help
☐ Family support
☐ Early Intervention in Psychosis Service
☐ Other

30.a. If you selected Other, please specify:

31. Do you think taking therapies could be helpful for women with Postpartum Psychosis?

○ Yes
○ No
○ Not sure

32. Could you tell us more about why you answered this way?

33. Perinatal mental health services usually work with women and their families for the first 12 months after birth. From your experience, what interventions do you think would be helpful after this point?

☐ CBT for psychosis
☐ Trauma interventions
☐ Family intervention
☐ Attachment intervention
☐ Primary care service
☐ Care co-ordination
☐ Medication support
☐ No further support
☐ Other

33.a. If you selected Other, please specify:

34. Do you think additional support might be needed for the baby after the end of the first year?

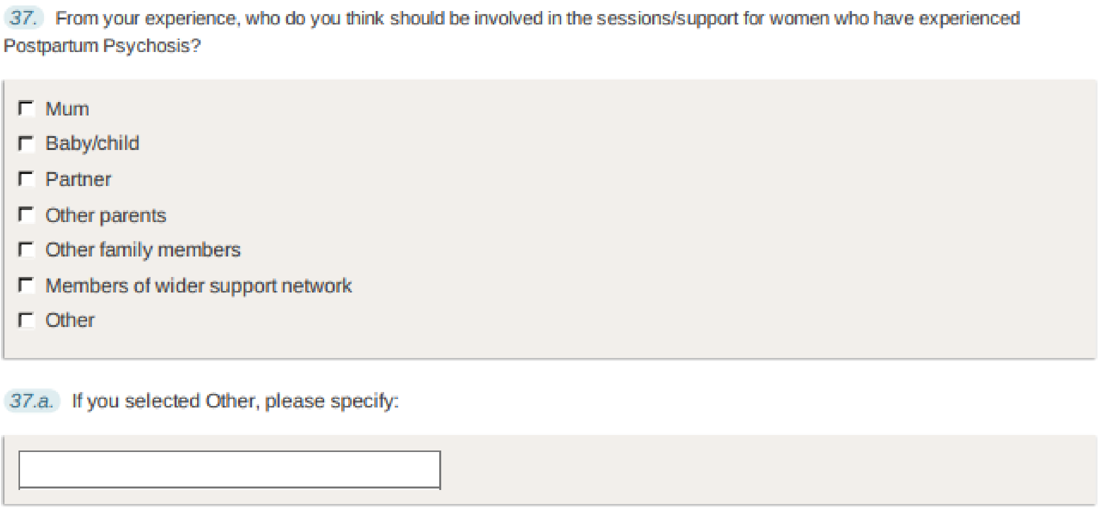
○ Yes
○ No

35. If yes, what additional support might be needed by the baby at this stage?

36. Where do you think appointments should best take place for women who have experienced Postpartum Psychosis?

☐ Home
☐ Clinic/hospital setting
☐ Community setting
☐ Other

36.a. If you selected Other, please specify:



37. From your experience, who do you think should be involved in the sessions/support for women who have experienced Postpartum Psychosis?

☐ Mum
☐ Baby/child
☐ Partner
☐ Other parents
☐ Other family members
☐ Members of wider support network
☐ Other

37.a. If you selected Other, please specify:

Appendix E - Debrief Form

Debrief

Version 2 17.02.22

Amber Snell

DclinPsy Researcher

17.02.22

Faculty of Medicine & Health Sciences

Norwich Medical School

University of East Anglia

Norwich Research Park

Norwich NR4 7TJ

United Kingdom

Psychological Understandings of Postpartum Psychosis

DEBRIEF

Thank you for taking part in this study aiming to understand support currently offered to and needed by women who have experienced Postpartum Psychosis.

If you experience please seek support through your GP. Alternatively, support can be found through the following charities:

Mind:

www.mind.org.uk

Infoline: 0300 123 3393

Samaritans Helpline: 116 123

You can also contact me to request a lay summary of our findings via the University at the following address:

Amber Snell

a.snell@uea.ac.uk

If you are concerned about the way this study is being conducted or you wish to make a complaint to someone independent from the study, please contact the Head of Department Niall Broomfield at n.broomfield@uea.ac.uk

Kind regards,

Amber Snell

Appendix F - Participant Information Sheet

Participant Information Sheet

Version 2 17.02.22

Amber Snell
ClinPsyD Researcher
17.02.22

Faculty of Medicine & Health Sciences
Norwich Medical School

University of East Anglia
Norwich Research Park
Norwich NR4 7TJ
United Kingdom

Psychological Understandings of Postpartum Psychosis

PARTICIPANT INFORMATION STATEMENT

(1) What is this study about?

You are invited to take part in this study aiming to understand what support is currently offered to and needed by women and families who have experienced Postpartum Psychosis within the first year after birth and beyond this point when specialist perinatal support ends. We are recruiting staff working in Perinatal, Maternity, and other services who support women with Postpartum Psychosis. This is to help us understand what psychological support women currently receive, and what they may need in the longer-term in recovery from Postpartum Psychosis.

This Participant Information Sheet tells you about the research study. Knowing what is involved will help you decide if you want to take part in the study. Please read this sheet carefully and ask questions 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 are telling us 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.
- ✓ You have received a copy of this Participant Information Sheet to keep.

(2) Who is running the study?

This study is being conducted by: Amber Snell, ClinPsyD Researcher, Norwich Medical School, University of East Anglia.

(3) What will the study involve for me?

If you agree to participate in this study, you will be asked to complete an online survey. The questions will ask you about your views and experiences working with women and families experiencing Postpartum Psychosis. Additionally, what support you feel would be helpful during the first year after birth and what may be helpful beyond this time point.

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

The survey will take up to 30 minutes to complete.

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

Participation is voluntary. You can withdraw from the study before completing the survey and your data will not be saved. Once you have completed the survey, your data will be anonymous and therefore it will not be possible to withdraw at this point. Your decision about whether to partake in the study will not affect current or future relationships with anyone associated with the University of East Anglia.

(6) Are there any risks or costs associated with being in the study?

This study will ask you about your experiences of supporting women and families who have experienced Postpartum Psychosis. You are advised to stop the survey at any time should you feel distressed. If you complete the survey and then experience distress, several charities offer support such as Samaritans who offer a 24/7 listening service and can be contacted on: 116 123. Alternatively, contact your GP if you feel you need further mental health support.

(7) Are there any benefits associated with being in the study?

This study aims to further understand what psychological needs women who have experienced Postpartum Psychosis have, and what support is currently being offered. Additionally, we hope to learn more about any unmet needs and pull together views from staff members working in different professions and services. The findings from this study will be used to inform what support should be available for women and families with Postpartum Psychosis.

(8) What will happen to information about me that is collected during the study?

Everything you tell us will be kept confidential. This means that no one else but us will know what you have told us. We will not be asking for your name or other personal details. We will, however, ask for you to provide an email address should you wish to be entered into an optional prize draw. We will use this to contact you if you win the prize draw. Your email address will be stored separately to your questionnaire responses and it will not be possible to match your email address to your survey responses. Your personal data and information will only be used as outlined in this Participant Information Sheet, unless you consent otherwise. 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 your name or any identifiable information about you.

(10) What if I would like further information about the study?

Following reading this information, should you have any further questions you would like to discuss, you can contact me at: a.snell@uea.ac.uk

(11) Will I be told the results of the study?

You have a right to receive feedback about the overall results of this study. You can request this by contacting me at: a.snell@uea.ac.uk. Overall results will be provided in the form of a one page lay summary which you will receive after the study is finished.

(12) What if I have a complaint or any concerns about the study?

The ethical aspects of this study have been approved under the regulations of the University of East Anglia's Faculty of Medicine and Health Sciences Ethics Committee.

If you have any other concerns not specified here, please let me know. You can contact me via the University at the following email address:

a.snell@uea.ac.uk

If you are concerned about the way this study is being conducted or you wish to make a complaint to someone independent from the study, please contact Professor Niall Broomfield, Head of Department of Clinical Psychology and Psychological Therapies at: N.Broomfield@uea.ac.uk

(13) OK, I want to take part – what do I do next?

You will need to read the consent form below. You will then need to click the button labelled 'continue' and you will be directed to the webpages containing the questionnaire.

Appendix G - Consent Form

Consent Form

Version 2 17.02.22

PARTICIPANT CONSENT FORM

By acknowledging that I have read this consent form and clicking to proceed with the online survey, I agree to take part 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 Statement and have been able to discuss my involvement in the study with the researchers if I wished to do so.

✓ I understand that being in this study is completely voluntary and I do not have to take part.

✓ I understand that I may stop the survey at any time if I do not wish to continue. I also understand that I may refuse to answer any questions I don’t wish to answer.

✓ I understand that once I have completed the survey my responses are anonymous and therefore it will not be to withdraw at this point.

✓ 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.

✓ I understand that the results of this study may be published, but these publications will not contain my name or any identifiable information about me.

Appendix H - Study Advert

Version 1. 17.02.2022

Psychological Understandings of Postpartum Psychosis: A survey to explore the experiences and views of staff supporting women and families within the first year after birth

University of East Anglia

NORWICH MEDICAL SCHOOL

What is this study about?

This study aims to explore staff experiences about what support is currently offered to women who have experienced Postpartum Psychosis. It also seeks to explore whether there are any unmet needs after specialist perinatal support ends, and what support is accessed at this point.

We also hope to identify factors related to staff confidence when delivering interventions and providing support within their roles.

Why participate?

You may help others who are struggling with Postpartum Psychosis in the future

You may contribute valuable information that may be of use to the researchers

There is an option to be entered into a prize draw for Amazon vouchers to compensate you for taking part in this study.

Who can participate?

Staff members from any discipline who currently support women with Postpartum Psychosis within their role, e.g., signposting, screening, referral, psychological interventions, family support etc.

Be willing to take part in a approx. 20-minute online survey at the following link: https://uea.onlinesurveys.ac.uk/psychological-understandings-of-postpartum-psychosis-a-su-2

Appendix I - PRISMA Checklist

Section and Topic	Item #	Checklist item	Location where item is reported
TITLE			
Title	1	Identify the report as a systematic review.	Page 10
ABSTRACT			
Abstract	2	See the PRISMA 2020 for Abstracts checklist.	Page 12
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of existing knowledge.	Page 13, 14
Objectives	4	Provide an explicit statement of the objective(s) or question(s) the review addresses.	Page 14
METHODS			
Eligibility criteria	5	Specify the inclusion and exclusion criteria for the review and how studies were grouped for the syntheses.	Page 15, 17, 18
Information sources	6	Specify all databases, registers, websites, organisations, reference lists and other sources searched or consulted to identify studies. Specify the date when each source was last searched or consulted.	Page 15
Search strategy	7	Present the full search strategies for all databases, registers and websites, including any filters and limits used.	Page 15, 16
Selection process	8	Specify the methods used to decide whether a study met the inclusion criteria of the review, including how many reviewers screened each record and each report retrieved, whether they worked independently, and if applicable, details of automation tools used in the process.	Page 16
Data collection process	9	Specify the methods used to collect data from reports, including how many reviewers collected data from each report, whether they worked independently, any processes for obtaining or confirming data from study investigators, and if applicable, details of automation tools used in the process.	Page 16
Data items	10a	List and define all outcomes for which data were sought. Specify whether all results that were compatible with each outcome domain in each study were sought (e.g. for all measures, time points, analyses), and if not, the methods used to decide which results to collect.	Page 14
	10b	List and define all other variables for which data were sought (e.g. participant and intervention characteristics, funding sources). Describe any assumptions made about any missing or unclear information.	-
Study risk of bias assessment	11	Specify the methods used to assess risk of bias in the included studies, including details of the tool(s) used, how many reviewers assessed each study and whether they worked independently, and if applicable, details of automation tools used in the process.	Page 18, 19
Effect measures	12	Specify for each outcome the effect measure(s) (e.g. risk ratio, mean difference) used in the synthesis or presentation of results.	N/A
Synthesis methods	13a	Describe the processes used to decide which studies were eligible for each synthesis (e.g. tabulating the study intervention characteristics and comparing against the planned groups for each synthesis (item #5)).	Page 15
	13b	Describe any methods required to prepare the data for presentation or synthesis, such as handling of missing summary statistics, or data conversions.	-
	13c	Describe any methods used to tabulate or visually display results of individual studies and syntheses.	Pages 22-26

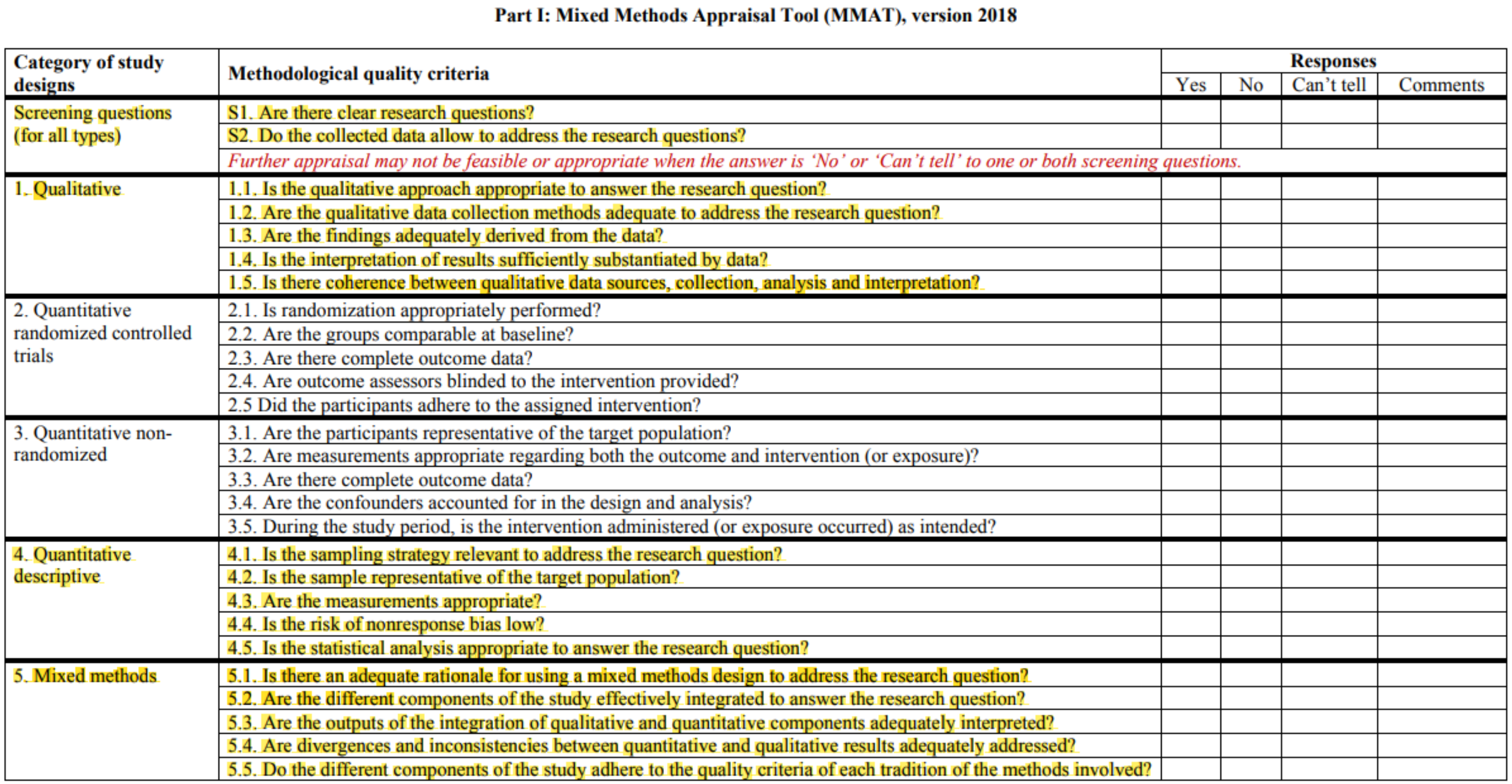
Section and Topic	Item #	Checklist item	Location where item is reported
	13d	Describe any methods used to synthesize results and provide a rationale for the choice(s). If meta-analysis was performed, describe the model(s), method(s) to identify the presence and extent of statistical heterogeneity, and software package(s) used.	Page 17, 18
	13e	Describe any methods used to explore possible causes of heterogeneity among study results (e.g. subgroup analysis, meta-regression).	N/A
	13f	Describe any sensitivity analyses conducted to assess robustness of the synthesized results.	N/A
Reporting bias assessment	14	Describe any methods used to assess risk of bias due to missing results in a synthesis (arising from reporting biases).	-
Certainty assessment	15	Describe any methods used to assess certainty (or confidence) in the body of evidence for an outcome.	Page 17,18
RESULTS			
Study selection	16a	Describe the results of the search and selection process, from the number of records identified in the search to the number of studies included in the review, ideally using a flow diagram.	Page 17
	16b	Cite studies that might appear to meet the inclusion criteria, but which were excluded, and explain why they were excluded.	Page 17
Study characteristics	17	Cite each included study and present its characteristics.	Pages 22-25
Risk of bias in studies	18	Present assessments of risk of bias for each included study.	Page 19
Results of individual studies	19	For all outcomes, present, for each study: (a) summary statistics for each group (where appropriate) and (b) an effect estimate and its precision (e.g. confidence/credible interval), ideally using structured tables or plots.	N/A
Results of syntheses	20a	For each synthesis, briefly summarise the characteristics and risk of bias among contributing studies.	Page 17, 18
	20b	Present results of all statistical syntheses conducted. If meta-analysis was done, present for each the summary estimate and its precision (e.g. confidence/credible interval) and measures of statistical heterogeneity. If comparing groups, describe the direction of the effect.	N/A
	20c	Present results of all investigations of possible causes of heterogeneity among study results.	N/A
	20d	Present results of all sensitivity analyses conducted to assess the robustness of the synthesized results.	N/A
Reporting biases	21	Present assessments of risk of bias due to missing results (arising from reporting biases) for each synthesis assessed.	-
Certainty of evidence	22	Present assessments of certainty (or confidence) in the body of evidence for each outcome assessed.	Page 17
DISCUSSION			
Discussion	23a	Provide a general interpretation of the results in the context of other evidence.	Pages 32-34
	23b	Discuss any limitations of the evidence included in the review.	Page 33, 34
	23c	Discuss any limitations of the review processes used.	Page 33, 34
	23d	Discuss implications of the results for practice, policy, and future research.	Page 34
OTHER INFORMATION			

Section and Topic	**Item #**	**Checklist item**	**Location where item is reported**
Registration and protocol	24a	Provide registration information for the review, including register name and registration number, or state that the review was not registered.	Page 14
	24b	Indicate where the review protocol can be accessed, or state that a protocol was not prepared.	Page 14
	24c	Describe and explain any amendments to information provided at registration or in the protocol.	N/A
Support	25	Describe sources of financial or non-financial support for the review, and the role of the funders or sponsors in the review.	Page 11
Competing interests	26	Declare any competing interests of review authors.	Page 11
Availability of data, code and other materials	27	Report which of the following are publicly available and where they can be found: template data collection forms; data extracted from included studies; data used for all analyses; analytic code; any other materials used in the review.	-

From: Page MJ, McKenzie JE, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. BMJ 2021;372:n71. doi: 10.1136/bmj.n71

For more information, visit: http://www.prisma-statement.org/

Appendix J - Appendix J: MMAT



Part I: Mixed Methods Appraisal Tool (MMAT), version 2018

Category of study designs	**Methodological quality criteria**	**Responses**			
		Yes	No	Can't tell	Comments
Screening questions (for all types)	S1. Are there clear research questions?				
	S2. Do the collected data allow to address the research questions?				
	Further appraisal may not be feasible or appropriate when the answer is 'No' or 'Can't tell' to one or both screening questions.				
1. Qualitative	1.1. Is the qualitative approach appropriate to answer the research question?				
	1.2. Are the qualitative data collection methods adequate to address the research question?				
	1.3. Are the findings adequately derived from the data?				
	1.4. Is the interpretation of results sufficiently substantiated by data?				
	1.5. Is there coherence between qualitative data sources, collection, analysis and interpretation?				
2. Quantitative randomized controlled trials	2.1. Is randomization appropriately performed?				
	2.2. Are the groups comparable at baseline?				
	2.3. Are there complete outcome data?				
	2.4. Are outcome assessors blinded to the intervention provided?				
	2.5 Did the participants adhere to the assigned intervention?				
3. Quantitative non-randomized	3.1. Are the participants representative of the target population?				
	3.2. Are measurements appropriate regarding both the outcome and intervention (or exposure)?				
	3.3. Are there complete outcome data?				
	3.4. Are the confounders accounted for in the design and analysis?				
	3.5. During the study period, is the intervention administered (or exposure occurred) as intended?				
4. Quantitative descriptive	4.1. Is the sampling strategy relevant to address the research question?				
	4.2. Is the sample representative of the target population?				
	4.3. Are the measurements appropriate?				
	4.4. Is the risk of nonresponse bias low?				
	4.5. Is the statistical analysis appropriate to answer the research question?				
5. Mixed methods	5.1. Is there an adequate rationale for using a mixed methods design to address the research question?				
	5.2. Are the different components of the study effectively integrated to answer the research question?				
	5.3. Are the outputs of the integration of qualitative and quantitative components adequately interpreted?				
	5.4. Are divergences and inconsistencies between quantitative and qualitative results adequately addressed?				
	5.5. Do the different components of the study adhere to the quality criteria of each tradition of the methods involved?				

Highlighted areas show the quality criteria used for the systematic review. Qualitative criteria are numbered 1-5, quantitative criteria are numbered 6-10, and mixed methods criteria are numbered 11-15 in table 2.