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Digital Mental Health Interventions in the Perinatal Period: A Qualitative Systematic Review of Women's Experiences and a Feasibility Study

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Submitted in partial fulfilment of the requirements for the degree of
Doctorate in Clinical Psychology

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Chapter 1 - Systematic Review

Women's Experiences of Engaging with Digital Mental Health Interventions in the Perinatal Period: A Qualitative Systematic Review

Prepared in accordance with the author requirements for the

Journal of Medical Internet Research

Author Guidelines

April 2026

Abstract

Background: The perinatal period is a time of significant biopsychosocial change for women, during which anxiety and depression are common. Digital mental health interventions (DMHIs) offer an accessible means of support and have demonstrated effectiveness in perinatal populations; however, engagement is often low, highlighting the need to understand women's experiences and factors shaping engagement.

Objective: This systematic review aims to synthesise qualitative literature on women's experiences with DMHIs during the perinatal period, examining barriers and facilitators of engagement, and perceived benefits.

Methods: A systematic search of PsycINFO, Medline, CINAHL, Web of Science, and Embase was conducted. Qualitative and mixed-methods studies were included. Studies were appraised using the CASP checklist and analysed using thematic synthesis.

Results: 15 studies (8 qualitative; 7 mixed methods) were included. Thematic synthesis generated four descriptive and three analytical themes. Women's experiences of DMHIs were shaped by an interplay of individual, contextual, and intervention design factors. Engagement was experienced as relational, with participants valuing human connection, guidance, and normalising content. DMHIs were associated with cognitive, behavioural, and relational changes; however, perceived benefits varied depending on individual needs.

Conclusion: DMHIs represent a promising form of support for perinatal mental health, with multiple factors shaping engagement. Optimising engagement requires interventions that are personalised, flexible, integrated into perinatal life, and provide opportunities for meaningful human connection.

Trial Registration: PROSPERO CRD420261291458

Key words: Perinatal mental health; Digital mental health interventions; Engagement; Qualitative systematic review

Introduction

The perinatal period, defined as the time from pregnancy to one year postnatal, is a time of significant biopsychosocial change for women (Biaggi et al., 2016; National Institute for Health and Care Excellence [NICE], 2020). Mental health difficulties, particularly anxiety and depression, are common during this time. Reported prevalence rates of self-reported anxiety range from 18% to 25% across pregnancy and 15% postnatally (Dennis et al., 2017) with perinatal depression reported at 26.3% (Al-Abri et al., 2023). Increasing attention is also being paid to women's broader wellbeing during this period, recognising the significant transition to motherhood and its impact on emotional wellbeing (Ekelöf et al., 2025). Untreated mental health difficulties may have negative impacts for mother and baby, including impact on early attachment (Erickson et al., 2019). As such, ensuring access to treatment is essential. Women face multiple barriers to accessing support however, including time constraints, childcare responsibilities, service accessibility, and stigma (Goodman, 2009). In addition, preferences for support vary. Goodman et al. (2009) found that 92% of women with antenatal depression preferred psychological therapy, and 66% would not take anti-depressant medication. In contrast, Ayers et al. (2025) found that many women with perinatal anxiety did not want professional input, with the authors suggesting this may reflect a preference for lower-intensity support.

Technology may play a role in widening access and choice for perinatal mental health support. A cross-national survey of 509 women found that 92% used the internet to search for perinatal health-related information (Osma et al., 2016). Digital mental health interventions (DMHIs) are technology-based interventions that aim to prevent, assess, or treat mental health conditions, and are delivered through platforms such as computers, tablets, and smartphones (Bradley et al., 2025). They may be self-guided or incorporate guidance, such as phone or email support, with some evidence suggesting that guided interventions are associated with greater engagement (Borghouts et al., 2021). DMHI's have been proposed as an accessible and potentially cost-effective way to expand access to psychological support (Rohrbach et al., 2023). There is growing research highlighting the effectiveness of DMHI's for the perinatal population. Ashford et al. (2016) reviewed 11 studies (2009–2014) examining computer and web-based perinatal mental health interventions, and found these were effective for depression and complicated grief. Stentzel et al. (2023) reviewed 44 studies (2009–2020) and found that perinatal telemedicine interventions were associated with

improved mental health outcomes, with the strongest evidence for Cognitive behavioural therapy (CBT) for depression. Stentzel et al. (2023) found both guided and self-guided online CBT were effective for depression. However, both reviews reported more limited improvements for anxiety.

Although DMHI's show promise in terms of effectiveness, dropout rates are often high, with substantial attrition reported in studies (Ashford et al., 2016). This raises important questions regarding participant engagement and how women experience these interventions. Perski et al. (2017) conceptualise engagement as comprising both behavioural interaction and user experience, highlighting that engagement is not only about how much an intervention is used, but also how it is experienced. To further understand factors influencing engagement, the COM-B model provides a useful theoretical framework for behaviour change (Michie et al., 2011). COM-B conceptualises that behaviour arises from interactions between an individual's capability to engage, their opportunity, and their motivation. This offers a structured approach to understanding and framing the factors that may facilitate or hinder engagement with DMHIs.

Qualitative methods are valuable for capturing and understanding participants' experiences that may not be represented in quantitative measures or randomised controlled trials. Patel et al. (2020) conducted a qualitative systematic review of 24 studies (2007-2018) exploring adults' experiences of DMHI's for depression, anxiety, and somatoform disorders. They found engagement was shaped by individual's initial expectations of the intervention, personalisation of the intervention, and the availability of human support. Participants valued the flexibility, privacy, and accessibility of a digital intervention, and reported support helped to sustain engagement. Lau et al. (2023) conducted a meta-ethnography exploring perinatal women's experiences and needs in digital healthcare across 27 qualitative studies (2008–2021). They also found that women valued digital platforms for their accessibility and convenience, as well as for facilitating peer connection, and supporting greater empowerment in decision-making around their health. However, they also highlighted the need for personalised content and additional human support.

Lau et al. (2023) provide valuable insights into perinatal women's experiences of digital healthcare; however, the review considered physical and mental health, and across a range of digital formats, including information-seeking and peer support forums, offering a general

overview of experiences and needs. To the author's knowledge, no systematic review to date has specifically examined perinatal women's experiences of engaging with DMHIs. This represents an important gap, as DMHIs constitute a distinct form of digital support designed to prevent, assess, or treat mental health difficulties. These interventions may require active engagement with psychological strategies and behaviour change processes, distinguishing them from other forms of digital engagement such as information-seeking or peer support. A systematic review of women's experiences of engaging with DMHIs can identify barriers and facilitators to engagement and inform the development of future support.

Review Aims

The present review aims to synthesise qualitative evidence on women's experiences engaging with DMHIs targeting common mental health difficulties and psychological wellbeing during the perinatal period.

Specifically, this review aims to:

1. Explore how women engage with DMHI's in the perinatal period.
2. Examine barriers, facilitators and contextual factors that shape women's experiences.
3. Explore women's perceived impacts of DMHI's.
4. Critically appraise the methodological quality and rigour of included studies.

Methods

Registration

The protocol for this systematic review was registered with the International Prospective Register of Systematic Reviews (PROSPERO) on 23rd of January 2026 (CRD420261291458) and is reported in line with PRISMA guidelines (Page et al., 2021; Appendix 1.1). The review also follows The Enhancing transparency in reporting the synthesis of qualitative research (ENTREQ) guidelines (Tong et al., 2012; Appendix 1.2).

Search strategy

Data sources

A pre-planned systematic search with no date restrictions was conducted between 4th-6th of February 2026. As preliminary scoping searches indicated the evidence base was relatively limited and recent, no date restrictions were therefore applied, to ensure all relevant studies were captured. The following databases were searched: PsycINFO, Medline, CINAHL, Web of Science Core Collection, and Embase. These databases provide interdisciplinary coverage of psychology, nursing, and health research relevant to perinatal DHMIs. Google scholar was used as an additional search method. The search strategy was adapted for each individual database to reflect differences in indexing systems, subject headings, and interfaces. Forwards and backward citation searching were carried out on included papers to search for additional papers.

Search terms & strategy

Initial scoping searches were conducted in Google scholar to identify key studies and to familiarise with relevant terminology. This informed the development of four core concepts:

Perinatal population,
Digital delivery,
Mental health & wellbeing,
Qualitative design

Relevant free text search terms for each concept were developed with support from the University librarian. The search terms reflect terminology most commonly used and indexed within the literature (e.g. women), as scoping searches indicated limited use of more inclusive terminology such as ‘birthing parent’, the author recognises however that this terminology does not capture all individuals. Boolean operators were used to combine free-text terms across the four concepts. Broad experiential terms were used for some searches and specific qualitative methodological terms were used in others where appropriate to enhance precision. Where available, database-specific subject headings were incorporated. Limits were added in terms of language (English) and publication type (peer reviewed). See appendix 1.3 for search strategy.

Inclusion and Exclusion criteria

Inclusion and exclusion criteria are outlined in Table 1. Guided interventions were defined as consistent with low-intensity CBT, involving less than 6 hours of human support, typically delivered in brief contacts (≤ 30 minutes), and focused on facilitating engagement (Shafran et al., 2021).

Table 1 *Inclusions and Exclusions Criteria*

Domain	Inclusion	Exclusion
Participants	Perinatal women using DMHIs to support mental health or wellbeing	Studies describing experiences of non-birthing parents, healthcare professionals only, non-perinatal populations, or severe mental illness
Intervention	Self-guided or guided DMHI's delivered online or digitally	Online live video therapy, Peer-support forums; non-mental health interventions; Parenting only interventions; non-digital interventions; Screening or assessment tools.
Study design	Qualitative or mixed methods with a clear qualitative component	Quantitative-only studies without clear qualitative analysis; Prototype/usability papers
Language	English	Non-English
Publication type	Published, peer-reviewed articles	Unpublished studies and grey literature

Review process

Study screening

The results of each database search were exported and stored on Endnote. Duplicates were removed electronically. Titles and abstracts were screened against the inclusion and exclusion criteria, and full texts were retrieved for any studies that appeared eligible and screened.

Screening reliability was supported by an independent reviewer (LS), who assessed a random sample of approximately 10% records at title and abstract stage, and 20% at full-text stage.

Data Extraction

The author created a data extraction tool in Excel and entered data from each paper to capture the key characteristics and results, including author, year, country, sample, population, mental health focus, intervention type, guidance, design, data collection, analysis approach, and key findings.

Quality Appraisal

Included studies were appraised using the Critical Appraisal Skills Programme (CASP) Qualitative Checklist (Appendix 1.5) The CASP is a 10-item tool designed to evaluate key aspects of qualitative research, including study design, reflexivity, and data analysis. It was selected due to the heterogeneity of included studies, as it emphasises the rigour of individual studies rather than comparability across studies. The primary reviewer conducted the appraisal and assigned an overall quality judgement, and 20% of studies were independently assessed by a second reviewer (LS). Discrepancies were resolved through discussion. No studies were excluded based on quality; instead, appraisal findings were used to inform the interpretation of findings.

Data Synthesis

This review aimed to understand perinatal women's experiences of DMHIs, by presenting the existing qualitative findings, without generating new theories. Therefore, a thematic synthesis approached was used to answer the research question (Thomas & Harden, 2008). Thematic synthesis integrates qualitative findings and supports the identification of patterns and themes across studies. All text in the "results" or "findings" sections of studies were extracted into an Excel spreadsheet by the lead researcher. Inductive, line by line coding was conducted across the entire text. This process generated a large number of initial codes, which were iteratively reviewed and refined, and grouped into descriptive themes. Themes remained closely grounded in participants' reports across studies. The synthesis then progressed to an interpretive stage, in which themes were revisited in relation to the review question to generate analytical themes. This involved identifying patterns and meanings extending beyond individual study findings. In some cases, descriptive themes already addressed key aspects of the research question, and analytical themes therefore served to further interpret and consolidate these findings.

Reflexivity

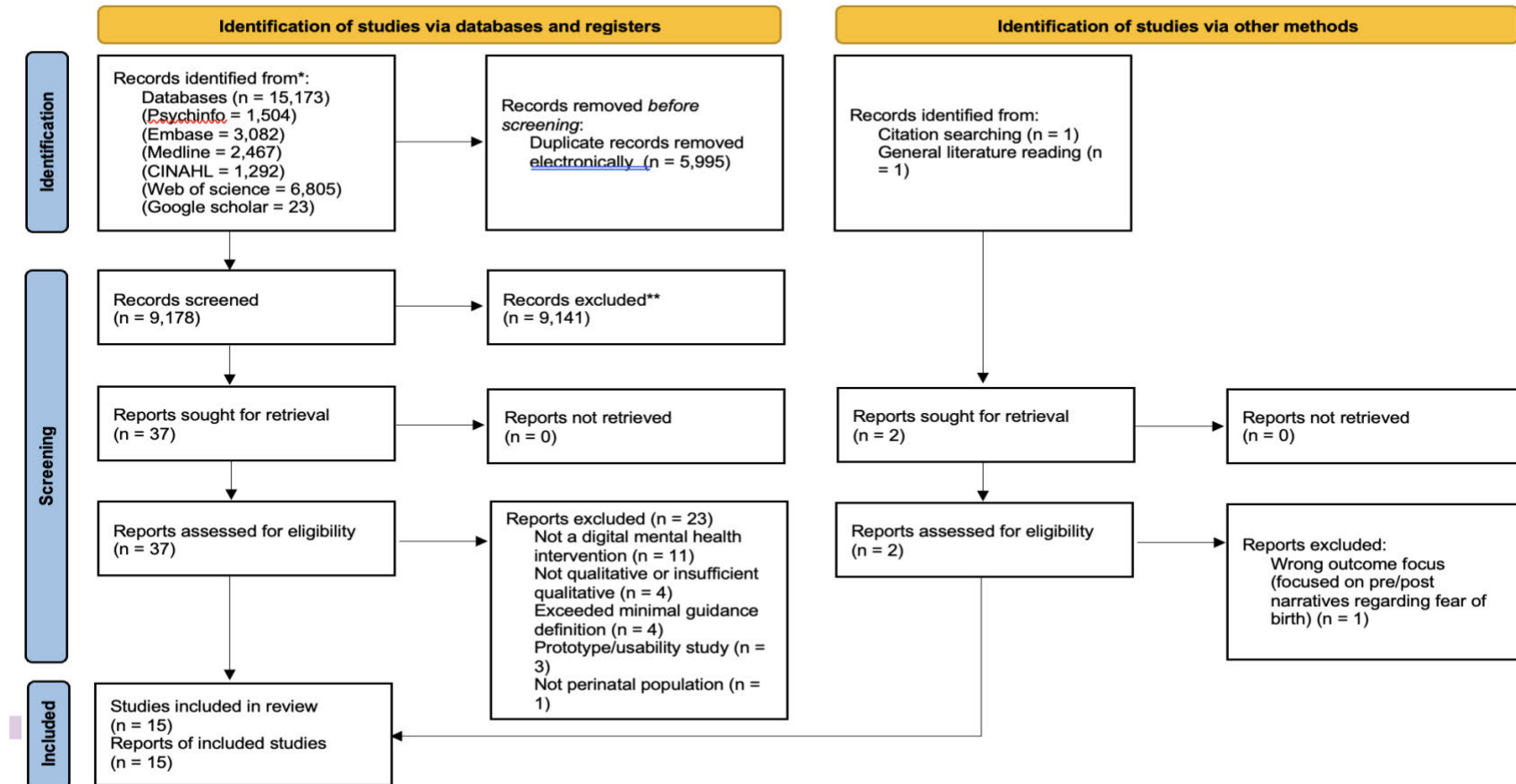
The lead researcher is a white female trainee Clinical Psychologist with personal experience of pregnancy and the postnatal period. She is completing her final-year placement within the Maternity and Neonatal Psychological Interventions (MNPI) team and the Perinatal Community Mental Health Team (PCMHT), and has clinical experience working with individuals experiencing perinatal mental health difficulties. These personal and professional experiences are recognised as potentially influencing how the researcher engaged with and interpreted the data, including during study selection and thematic synthesis. The researcher was particularly aware of the demands of the postnatal period and its impact on mental health and wellbeing. The researcher has also worked clinically with women who have utilised DMHIs and shared their experiences of these. To mitigate any potential bias, reflexivity was maintained throughout this review. Emphasis was placed on the participants own perspectives and staying close and grounded in the data, rather than shaped by prior experiences, to produce a balanced, transparent interpretation of the findings.

Results

Outcome of study selection

The search process initially identified 15,173 records. Duplicate records were removed ($n = 5,995$), and the titles and abstracts of 9,178 articles were screened for relevance. A further 9,141 records were excluded following title and abstract screening; 37 articles were retrieved for full text screening, and 14 of these studies were included in the review. One further study was obtained from backwards citation searching, bringing the total number of included studies to 15. Reviewers demonstrated approximately 90% initial agreement at the title and abstract screening stage and 90% at the full-text stage. Discrepancies were resolved through discussion, with full consensus achieved at each stage. Results of this process is outlined in a PRISMA (2020) diagram in Figure 1.

Figure 1: PRISMA Study Identification and Screening Process



Study characteristics

Table 2 summarises the study characteristics. Studies were published between 2015 – 2025, and conducted in Canada (3), United States (3), Norway (2), United Kingdom (2), Australia (2), Sweden (1), Chile (1), and India (1). They composed of pure qualitative studies (8) and mixed methods (7). Participants were drawn from parent intervention trials or were part of mixed-methods studies. Sample sizes ranged from 5 to 55, with approximately 324 participants overall. The mean age of participants ranged from 23 to 38 years. Two studies (Davis et al., 2024; Davis et al., 2023) were derived from the same trial, with the latter study exploring long-term follow up of a subset of participants. Three studies (Kinser et al., 2025; Olavesen et al., 2025; Valla et al., 2023) explored the same intervention, with Valla et al., (2023) and Olavensen et al., (2025) likely drawing on the same parent trial, although it is unclear whether the qualitative samples overlapped. Ethnicity was not reported for four studies and participant age was not reported in one study.

Of the 15 studies, six focused on experiences of DMHI in pregnancy, six on the postnatal period, and three spanned the perinatal period. The intervention approaches were CBT/CBT-informed (9); Interpersonal psychotherapy (IPT; 1); Emotional wellbeing skills (2); Behavioural Activation (2); Psychoeducation and coping strategies (1). Nine were self-guided interventions and six provided guided support. Ten studies targeted anxiety or depression symptoms, one study focused on fear of childbirth, and four were universal interventions open to all pregnant women. Ten studies used thematic analysis, with remaining studies using: Qualitative content analysis (2), Framework analysis (2) and Qualitative descriptive analysis (1). Data were primarily collected via semi-structured interviews, with one study using open-ended questionnaires only, and one study using a focus group. One study included both pregnant participants and their partners; however, only data from pregnant participants were included in analysis.

Table 2*Study Characteristics*

Author/s, Year, & Country	Sample Characteristics	Intervention	Design, Data collection, & analysis	Key Findings
Ashford et al. (2018) United Kingdom	n=5 (interviews). n=31 (free-text comments) Postnatal Anxiety ≥ 5 on the GAD-7 Mean age=32.02 Ethnicity= Predominantly white (94%)	Guided 8-week internet-delivered CBT and mindfulness Intervention Optional telephone support	Mixed methods Semi-structured interviews and free-text questionnaire comments Thematic Analysis	Valued accessibility, flexibility, anonymity. Challenges: poor mobile phone usability, irrelevant content, overemphasis on particular parenting style.
Baylis et al. (2020) Sweden	n=19 Antenatal Fear of birth Mean age= 25-38 years Ethnicity= Not reported	Guided 8-week Internet-delivered CBT for Fear of Birth. Therapist feedback on assignments, portal messages, mid-treatment telephone call	Qualitative (nested within RCT) Semi-structured telephone interviews Thematic Analysis	Treatment useful and helpful by some, not relevant enough for others; need for personalisation. Some participants valued flexibility, others reported feeling alone and wanted face-to-face intervention.
Bright et al. (2022) Canada	n=15 Antenatal Mild–moderate anxiety, stress or depression (cut-offs	Guided Internet-based Interpersonal Psychotherapy (6 modules) Coach phone calls	Qualitative (nested within RCT) Semi-structured telephone interviews Thematic analysis	Valued accessibility and flexibility, relevance of content. Coach support facilitated engagement. Mood impacted engagement. Missed face-to-face support; desire for personalised, app-based; support extending postpartum

	not reported; protocol: $\geq$ mild DASS-21) Age=28–38 Ethnicity=Not reported			
Canfield et al. (2023) United States	n=12 Antenatal Elevated anxiety/depression (PHQ-9 or GAD-7 ≥ 10). Mean age=31 Ethnicity=Majority white (73%)	Online 8-week CBT based course for pregnant women and partners Self-guided	Mixed methods Semi-structured interviews Thematic analysis	Valued flexibility, content helpful in re-framing thoughts; intervention encouraged support seeking; need for personalisation.
Davis et al. (2023) Australia	n=15 Antenatal Mean Age=32.7 Emotional wellbeing; no clinical cut off Ethnicity/ancestry reported predominantly Australian (30%) and British (31%)	Online 8-week online intervention; Mindfulness, Self-Compassion and Progressive muscle relaxation training Self-guided	Mixed methods Survey responses and Semi-structured interviews Thematic + content analysis	Tension between benefits and competing demands, engagement influenced by time & fit with perinatal life. Taking time for oneself and positive use of relaxation skills.
Davis et al. (2024) Australia	n=15 Antenatal intervention (postpartum follow up)	Online 8-week intervention; Mindfulness & Loving-kindness compassion	Mixed methods Semi-structured interviews	Long-term enactment of skills; improved coping and wellbeing, taking time for oneself; feeling calmer, less isolated. Barriers included time, and needing support.

	Emotional wellbeing; no clinical cut off Age=32–33 years Ethnicity= (Mixed ethnicities; majority Australian/British/European)	Self-guided	Qualitative content analysis	
Franco et al. (2024) Chile	n=6 Postnatal Depressive symptoms (PHQ-9 ≥ 5) and MINI diagnosis Age=32.53 Ethnicity=Not reported	Guided 8-week internet-delivered CBT Personalised e-coach feedback	Mixed methods Semi-structured interviews Thematic content analysis	Personalisation of content and support of coach created normalisation & validation. Feeling of being accompanied; reduced guilt and improved self-compassion.
Kinser et al. (2025) USA	n=55 Postnatal Universal programme; no clinical cut-off Mean age=30.09 Ethnicity=Predominantly White 58.2%	Internet delivered CBT informed strategies; parenting support; mindfulness; spanning pregnancy & postnatal Self-guided	Mixed methods Semi-structured interviews Qualitative descriptive approach	Strategies helpful; self-care emphasis valued; feeling less alone. Information trustworthy and reassuring. Barriers: usability and desire for more personalised content.

O'Mahen et al., (2015) UK	n=17 Postpartum (<12m) PND (EPDS >12) Mean age=31.3 Ethnicity=All White British	Internet-delivered Behavioural Activation (11 sessions) Self-guided	Qualitative study (nested in RCT) Semi-structured telephone interviews Thematic analysis	Sense of isolation and overwhelm postally; Unrealistic expectations of motherhood, stigma, hopelessness, negative prior treatment experiences, inadequate support. Need greater personalisation, interactivity, and telephone support
Olavesen et al. (2025) Norway	n=12 Antenatal and postnatal Elevated depressive symptoms (EPDS ≥ 10) Mean age=30.75 Ethnicity=11 (91.67%) Scandinavian, 1 (8.33%)	Internet delivered CBT informed strategies; parenting support; mindfulness Self-guided	Qualitative study (nested in an RCT) Semi-structured interviews Framework analysis	Valued usability and emotional reassurance, reported need for personalisation, flexibility more human support, and integration with healthcare services.
Pugh et al. (2015) Canada	n=24 Postpartum Subthreshold and full PPD (EPDS ≥ 10 ; MINI diagnostic interview) Age not reported Ethnicity=Predominantly Caucasian (92%)	Internet-delivered CBT; (7 modules) Weekly email from internet therapist	Qualitative study (nested in RCT) Responses to 10 open- ended online survey questions Thematic analysis	Flexibility, accessibility, convenience, anonymity & privacy valued, helpful module content and benefits to parenting. Challenges: fast pace of course, missing face to face contact.

Seshu et al. (2021) India	n=9 interviews; 1 focus group (8 participants) Mean age=23 PND (measure not reported). Perinatal mothers (postnatal depression) Ethnicity=Not reported	Mobile phone audio psychoeducation; relaxation exercises; stress management Optional counsellor support (frequency not reported)	Qualitative (nested within a larger intervention study) Interviews and focus group Thematic Analysis	Participants felt less alone, applied coping strategies, shared learning with peers brought sense of community. Structural barriers to access; intervention preference for face-to-face reported.
Uchechukwu et al. (2025) Canada	n=20 Interviews n=42–66 Open-ended survey responses Pregnant/postpartum (<12 months) Self-reported anxiety Mean age=33.55 (interviews); 32.40 (survey) Ethnicity=Majority European origin	Internet-delivered CBT programme for perinatal anxiety (6 modules) Self-guided	Qualitative study (nested within an RCT) Interviews and open-ended survey responses Reflexive Thematic Analysis (interviews) & Conventional Content Analysis (survey)	Tensions in self-directed engagement, finding the time, and pacing. Benefits: reduced isolation, improved anxiety management; perception of content as validating and emotionally heavy. Technical challenges and usability suggestions. Suggestion for peer support.

Valla et al. (2023) Norway	N=16 Antenatal (8) & Postnatal (8) Mean Age=31 (pregnant); 29 (post-partum) No clinical cut off Ethnicity=Mostly Norwegian	Internet delivered CBT informed strategies; parenting support; mindfulness. Self-guided	Qualitative study (nested within an RCT) Semi-structured interviews (SWOT format) Framework analysis	Increased awareness and learning, particularly postnatally, and course trustworthy. Barriers: technical issues, time, and difficulty maintaining engagement, greater personalisation needed.
Vanderkruik et al. (2024) United States	N=10 Antenatal Depressive symptoms (PHQ-9 ≥ 10). Mean age=34.3 Ethnicity= Majority White (67%)	Digital Behavioural activation app (10-weeks) Self-guided	Mixed methods study Qualitative semi-structured interviews Content Analysis	Valued activities, sense of routine, barriers included app complexity, fitting into busy lifestyle; suggestion to simplify design and add relevant pregnancy content.

Quality Appraisal results

Overall, studies demonstrated acceptable methodological quality, with most domains on CASP rated as ‘Yes’. Studies generally reported clear aims, used appropriate qualitative methods, and presented valuable findings. However, variability in the depth and transparency of reporting was noted across several domains.

Ethical approval was reported in all studies, however in several, this was limited to only naming the approving body. The remaining studies also reported obtaining informed consent, and one study (Olavesen et al., 2025) provided detailed information on ethical approval procedures and considerations. Participants were generally drawn from intervention arms of feasibility studies or RCTs. Recruitment to the parent or broader study was not reported clearly in five studies (Baylis et al., 2020; Bright et al., 2022; Davis et al., 2023; Davis et al., 2024; Olavesen et al., 2025). Where reported, recruitment was community-based, including online methods and routine maternity care settings. Most studies clearly described recruitment procedures for the qualitative component and were rated as “yes”; however, the quality of sampling varied. A small number used purposive sampling, selecting participants based on predefined characteristics such as level of engagement or symptom severity (Franco et al.; Olavesen et al., 2025). O'Mahen et al. (2015) demonstrated a clear and strong purposive sampling method. In contrast, remaining studies relied on pragmatic, convenience-based strategies including volunteering or sequential inclusion. One study was rated as “Can’t tell” (Pugh et al., 2015) due to insufficient reporting of number of participants initially recruited and those who completed the end-of-intervention questionnaires.

Data collection methods were largely appropriate, with most studies employing semi-structured interviews. Pugh et al., (2015) used open-ended questionnaires only, which limited depth and opportunities for probing. Analytic approaches were generally appropriate, and most studies provided sufficient detail of analysis. Seshu et al. (2021) and Ashford et al. (2018) were rated as ‘Can’t tell’, as their reporting on the development of codes and themes in thematic analysis was more limited.

Reflexivity was the weakest across studies, with only three studies adequately considering the researcher’s role or potential influence on data collection and analysis. Reflexivity was often rated as “No” or “Can’t tell”, particularly where dual therapist and researcher role were not

examined (Pugh et al., 2015). Several studies used mixed methods designs, where qualitative components were briefer and based on small samples, potentially limiting the breadth of perspectives captured. Overall, while studies were methodologically sound, limitations in reporting, reflexivity, and depth of qualitative analysis should be considered when interpreting findings.

Table 3

CASP Results

Study	Authors	1	2	3	4	5	6	7	8	9	10
S1	Ashford et al. (2018)	Green	Green	Green	Green	Green	Green	Green	Yellow	Green	Green
S2	Baylis et al. (2020)	Green	Green	Green	Green	Green	Red	Green	Green	Green	Green
S3	Bright et al. (2022)	Green	Green	Green	Green	Green	Yellow	Green	Green	Green	Green
S4	Canfield et al. (2023) *	Green	Green	Green	Green	Green	Red	Green	Green	Green	Green
S5	Davis et al. (2023)	Green	Green	Green	Green	Green	Red	Green	Green	Green	Green
S6	Davis et al. (2024)	Green	Green	Green	Green	Green	Red	Green	Green	Green	Green
S7	Franco et al. (2024)	Green	Green	Green	Green	Green	Red	Green	Green	Green	Green
S8	Kinser et al. (2025)	Green	Green	Green	Green	Green	Yellow	Green	Green	Green	Green
S9	O'Mahen et al. (2015) *	Green	Green	Green	Green	Green	Yellow	Green	Green	Green	Green
S10	Olavesen et al. (2025)	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green
S11	Pugh et al. (2015)	Green	Green	Green	Yellow	Green	Red	Green	Green	Green	Green
S12	Seshu et al. (2021)	Green	Green	Green	Green	Green	Red	Green	Yellow	Green	Green
S13	Uchechukwu et al. (2025) *	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green
S14	Valla et al. (2023)	Green	Green	Green	Green	Green	Yellow	Green	Green	Green	Green
S15	Vanderkruik et al. (2024)	Green	Green	Green	Green	Green	Red	Green	Green	Green	Green

Green='Yes', Red='No', Yellow='Can't tell'

Domains: 1= Clear statement of aims; 2= Suitable qualitative methodology; 3= Appropriateness of research design; 4= Appropriateness of recruitment strategy; 5= Adequacy of data collection; 6= Relationship between researcher and participant; 7= Ethical consideration; 8= Rigor of data analysis; 9= Clear statement of findings; 10= Value of research.

* Study assessed by second reviewer (LS)

Thematic synthesis

Thematic synthesis generated 47 codes, which were developed into four descriptive themes and six subthemes. Three analytical themes were developed. Table 2 presents the descriptive and analytical themes alongside a sample of representative codes most relevant to the final themes.

Table 4

Analytical Themes, Descriptive Themes and Supporting Codes

Analytical theme	Descriptive theme	Codes
Engagement emerges as a dynamic process shaped by the interplay of individual, contextual, and intervention design factors	1. Engagement is shaped by individual, intervention, and contextual factors 1.1 Practical and psychological barriers to engagement 1.2 Programme design, usability, and flexibility 1.3 Wider help-seeking context, stigma, and access	Time constraints; Competing demands; Caregiving responsibilities; Intervention burden; pace; Navigation difficulties; Technical barriers; Integration into daily life; Audio/visual support; Reminders support; Reminders create pressure; Flexibility supports engagement; Flexibility hinders engagement; Low motivation; Challenges of perinatal period; Beliefs about mental health
Support was experienced as fundamentally relational, with engagement shaped by how interventions could provide or facilitate human connection	2. Human connection remains important within digital support	Need for guidance and support; Peer support; Social connection; Content relatability and normalisation; Content quality and relevance; Need for personalised content
	3. Relatable and validating content helps women feel seen, understood, and less alone	
Digital interventions can support interconnected cognitive, behavioural, and relational change, although this varies across individual and contextual factors	4. DMHIs support interconnected cognitive, behavioural, and relational change 4.1 Cognitive and emotional change 4.2 Behavioural enactment of coping strategies 4.3 Impact on relationships with self, others and parenting	Increased self-awareness and insight; Psychological change; Behavioural change; Coping strategies; Challenges implementing strategies; self-care prioritising wellbeing; Improved communication; Impact on parenting

Descriptive themes

1. Engagement is shaped by individual, intervention, and contextual factors

Across studies, engagement was shaped by individual, intervention, and contextual factors, reflected in three subthemes: (1) Practical and psychological barriers to engagement (2) Programme design, usability, and flexibility (3) Wider help-seeking context, stigma, and access.

1.1 Practical and psychological barriers to engagement

Participants described practical barriers including time and the competing demands of pregnancy and new motherhood: “*Hard with a baby... to do all the modules within a week*” (Uchechukwu et al., 2025; p8). These challenges occurred during pregnancy but were more intensified in the postpartum period, with new caregiving responsibilities (Ashford et al., 2018; Bright et al., 2022; Franco et al., 2024), “*...Before I had the baby, it was nice to get an email...But after having the baby, I simply did not have the time*” (Valla et al., 2023; p4). Further, tiredness and cognitive load of new motherhood led to difficulties for some (Franco et al., 2024). Psychological barriers included feelings of hopelessness, and fluctuations in mental health that impacted engagement for a smaller number (Bright et al., 2022; O’Mahen et al., 2015; Pugh et al., 2015). A minority of participants identified practical facilitators of engagement, including establishing a routine with the intervention, with subsequent perceived benefits of this reinforcing intervention use (Franco et al., 2024; Pugh et al., 2015).

1.2 Programme design, usability, and flexibility

Programme design, including usability, interactivity, pacing and flexibility influenced engagement. Participants valued formats that supported integration and multi-tasking into daily life, particularly audio and video content (Bright et al., 2022; Uchechukwu et al., 2025). However, usability issues were common, particularly on mobile devices (Davis et al., 2023; Olavesen et al., 2025). Participants also preferred greater interactivity with programmes, whereby they could take an active approach (Bright et al., 2022; Canfield et al., 2023). Unclear instructions or cognitively demanding tasks reduced engagement for some (Vanderkruik et al., 2024).

The pace of programmes contributed to a sense of burden for some participants, with difficulty keeping up experienced as stressful and, in some cases, distressing (Valla et al., 2023), “... *I felt like I was lagging behind ... That was a truly bad feeling.*” (Olavesen et al., 2025; p6). Furthermore, while many reported email reminders as helpful (Ashford et al., 2018; Bright et al., 2022), others experienced them as pressurising and reducing feelings of autonomy, “...*I felt rushed... it didn't feel...self-directed, like on my own time*”. (Uchechukwu et al., 2025; p9). Flexibility was a key facilitator, enabling participants to access interventions and around childcare demands (Kinser et al., 2025; Pugh et al., 2015; Uchechukwu et al., 2025), and also enabled in the moment access to support during periods of distress “...*I'd be feeding my baby trying to stay awake and thinking, oh, no, and all the worries would roll in... I could pull out my phone and go through the module... and quiet down the thoughts.*” (Uchechukwu et al., 2025; p10). For others however, too much flexibility created a lack of structure and led to engagement challenges, particularly in unguided interventions (Baylis et al., 2020; O'Mahen et al., 2015; Uchechukwu et al., 2025).

1.3 Wider help-seeking context, stigma, and access

For some, engagement was shaped by the wider health and social care context, including prior help-seeking experiences, access, and stigma. Negative prior experiences of perceived impersonalised care contributed to some participants feeling disillusioned with interventions (O'Mahen et al., 2015), with related accounts of feeling unsupported postnatally also reported (Davis et al., 2024). In one case, DMHI was not the preferred option but was accessed due to lack of face-to-face support, suggesting a potential mismatch between treatment preferences and available care (O'Mahen et al., 2015; Baylis et al., 2020). Limited awareness of DMHIs within healthcare systems was also reported in one study (Olavesen et al., 2025), suggesting a potential barrier to uptake at a systemic level. Stigma surrounding perinatal mental health influenced engagement (Ashford et al., 2018; O'Mahen et al., 2015; Pugh et al., 2015). For some, shame remained a barrier even within digital formats, contributing to social withdrawal and reduced engagement with behavioural interventions (O'Mahen et al., 2015). Conversely, the anonymity of DMHI's facilitated initial help-seeking for others, “*When my maternal depression was really bad, there was no way I would have left my house ...The online program was a perfect program for me... the sort of anonymous nature of this program was a Godsend*” (Pugh et al., 2015, p214). DMHIs were also experienced as more acceptable by some individuals who did not identify with a mental health label (Ashford et al., 2018).

Structural barriers were additionally reported in one study, including limited access to mobile devices and financial constraints such as insufficient phone credit (Seshu et al., 2021). These findings, although sometimes reported in single studies, collectively point to the influence of wider systemic and service-level factors on engagement in DMHIs.

2. Human connection remains important within digital support

Across studies, guidance and feedback was a key facilitator of engagement and contributed to participants feeling less alone, leading to increased motivation for many (Baylis et al., 2020; Bright et al., 2022; Pugh et al., 2015), “*When I realized there was a response and that it was guided by what you had answered... you feel more accompanied, you feel like reading more or doing more exercises*” (Franco et al., 2024; p7). In contrast, the absence of support in self-guided interventions was experienced as a barrier particularly when motivation was low (O’Mahen et al., 2015; Olavesen et al., 2025). A minority preferred independent engagement, with guidance experienced as unnecessary or intrusive (Ashford et al., 2018; Uchechukwu et al., 2025), highlighting the need for personalised support options. Further, although guidance was experienced as helpful, many continued to perceive DMHIs as insufficient, preferring face-to-face support (Baylis et al., 2020; O’Mahen et al., 2015; Seshu et al., 2021).

Throughout, a desire for human connection was evident, with participants frequently suggesting the inclusion of peer support forums (O’Mahen et al., 2015; Pugh et al., 2015; Uchechukwu et al., 2025). Interventions also appeared to facilitate connection within existing social networks, with participants using content to share experiences and communicate their needs (Olavesen et al., 2025). In some cases, this extended to sharing the intervention with others, bringing women together: “... *every time I got a call, I would put it on speaker for the others to listen*” (Seshu et al., 2021, p469). These findings suggest that support is valued in DMHIs, and DMHIs can also facilitate support and connection.

3. Relatable and validating content helps women feel seen, understood, and less alone

Participants discussed content in terms of helpfulness, relatability, trustworthiness, and personalisation. A consistent finding was the importance of perinatal relevance, with tailored perinatal content viewed as particularly valuable, while a lack of relevant content reduced engagement (Pugh et al., 2015; Vanderkruik et al., 2024): “...*it was a resource specifically targeted to exactly where I was... in the middle of my pregnancy... It was just clearly targeted for where I was at*”. (Bright et al., 2022, p4). Beyond providing information, intervention

content functioned as a source of validation and normalisation for many (Franco et al., 2024; Kinser et al., 2025). Participants described recognising their own experiences in the content and example mothers, which reduced feelings of isolation and reinforced a sense of not being alone, “...*I’m not alone in these thoughts*” (Uchechukwu et al., 2025, p11). Some developed a sense of connection with the example women in the programme, reflecting a relational engagement with the content: “...*at first it was kind of funny, seeing the different women’s faces... but then by the end, I’m like, these are my friends now*” (Kinser et al., 2025, p11). In another study, the tone of the programme was experienced as affirming (Olavesen et al., 2025). However, limitations were also identified. Content was sometimes perceived as too basic or not aligned with parenting approaches (Ashford et al., 2018; Baylis et al., 2020; Bright et al., 2022). Participants consistently highlighted the need for greater personalisation, including more choice over modules (O’Mahen et al., 2015; Valla et al., 2023). Overall, findings suggest that content can foster validation and relatability, although the degree of personalisation and relevance to individual experiences remains important.

4. DMHIs support interconnected cognitive, behavioural, and relational change

Participants described interconnected cognitive, behavioural, and relational changes. Three subthemes were identified: (1) Cognitive and emotional change, (2) Behavioural enactment of coping strategies, and (3) Impacts on relationships with self, others, and parenting.

4.1 Cognitive and emotional change

Interventions supported participants with improved understanding of their thoughts and feelings (Franco et al., 2024; Uchechukwu et al., 2025; Valla et al., 2023). Cognitive components, such as identifying and reframing negative thoughts were reported by many: “...*how to respond to those thoughts in a helpful way... We had a bad experience with our first pregnancy, but there’s hope for this one.*” (Canfield et al., 2023, p10). Participants also described changes in how they related to themselves, including reduced self-criticism and greater self-compassion (Davis et al., 2023; Pugh et al., 2015). However, outcomes were not uniform. While many participants reported meaningful cognitive and emotional change, others described more limited impact (Baylis et al., 2020; Vanderkruik et al., 2024), particularly for fear of childbirth, where more personalised support was indicated, suggesting such changes were common but not universal.

4.2 Behavioural enactment of coping strategies

Participants described applying intervention strategies into daily life, such as breathing, mindfulness, and journalling, to regulate distress and respond more adaptively to their feelings (Kinser et al., 2025; Pugh et al., 2015; Valla et al., 2023). Breathing techniques were frequently used to manage acute stress (Ashford et al., 2018), with participants applying them in real-world situations, such as before appointments (Kinser et al., 2025) “... *I actually think I'm capitulating... then that email came in yesterday and the session with the relaxation and breathing exercise ...I kind of felt 'Okay, now I can handle it, it is okay somehow'.*” (Olavesen et al., 2025; p6). Some participants described regularly engaging in exercises or mindfulness practices, with repetition supporting habit formation (Davis et al., 2023; Davis et al., 2024). However, others found strategies difficult to implement or hard to integrate into daily routines (Vanderkruik et al., 2024).

4.3 Impact on relationships with self, others and parenting

Changes extended beyond individual coping to improved self-care, relationships, and parenting. Interventions supported participants to prioritise their wellbeing, and re-frame self-care as necessary (Kinser et al., 2025; Davis et al., 2023; Franco et al., 2024). Some participants reported including seeking therapy and modifying health behaviours (Olavesen et al., 2025): “*I'm now in therapy because of some of the questions that were asked....*” (Kinser et al., 2025, p11). Interventions supported improved understanding of relationship challenges and improved communication (Valla et al., 2023; Kinser et al., 2025), “...*the most important parts of the modules was communication skills... as we are navigating some of the postpartum issues.*” (Bright et al., 2022; p5). Changes were also evident in parenting and the mother–infant relationship. Participants described feeling more patient and confident in their parenting and improved bond (Valla et al., 2023; Kinser et al., 2025), “...*I can also take more joy in my children, do more activities with them because I feel more empowered and confident*”. (Pugh et al., 2015, p215). Beyond coping strategies, some participants described the benefit of having a space to pause, enjoy and connect with their experience of pregnancy (Bright et al., 2022; Olavesen et al., 2025). Overall, these findings suggest that DMHIs influenced not only how women acquired coping strategies, but how they cared for themselves, related to others, and experienced parenting.

Analytical themes

Engagement emerges through the interaction of individual, contextual, and intervention design factors

Engagement presented as a dynamic interaction between individual factors, intervention design, and context. The demands of the perinatal period, particularly the postnatal period, shaped engagement for women. However, intervention design features, such as flexibility, usability and guidance, could either mitigate or exacerbate these challenges. Although less consistently reported, for some, wider systemic influences, including prior healthcare experiences, and stigma, provided further context for women's perceptions and experiences of DMHIs. Together, these findings highlight that engagement is multifaceted and context-dependent, underscoring the importance of designing interventions that are personalised and integrated into the realities of perinatal women's lives.

Support was experienced as fundamentally relational, with engagement shaped by how interventions could provide or facilitate human connection

Engagement emerged as a relational process, with participants consistently seeking connection, support, and validation. While DMHIs did not replace the need for human contact, they could facilitate it, through means such as shared use, supporting communication within existing relationships, and encouraging further help-seeking behaviours. For some, interventions provided a relational experience through identification with the programme content, examples, and tone, and the realisation that others were experiencing similar thoughts and feelings. However, interventions varied in their ability to meet these relational needs, and for some participants, the absence of face-to-face human contact was still present. A minority preferred independent engagement, with guided support experienced as unnecessary.

DMHIs can support interconnected cognitive, behavioural, and relational change, although this varies across individual and contextual factors

DMHIs were associated with cognitive, behavioural, and relational change for many. Participants described increased self-awareness, improved coping, and more self-compassionate thinking, alongside the application of strategies in daily life. These changes

extended beyond individual symptom management to influence improved communication and improved enjoyment from parenting, highlighting the real-world enactment of these skills. However, these benefits were not universal, with some participants reporting that interventions were not tailored enough to meet their specific needs.

Discussion

Summary of findings

The review provides the first qualitative systematic review of women's experiences engaging with DMHIs in the perinatal period. Three analytical and four descriptive themes emerged, suggesting that engagement with interventions is shaped by multiple factors, including interaction between individual, intervention design, and perinatal demands. Engagement with DMHIs was experienced as relational, with DMHIs supporting, but not replacing, human connection. DMHIs facilitated cognitive, behavioural, and relational changes; however, benefits varied depending on individual needs and contextual factors.

Interpretation of findings

The findings are broadly consistent with previous qualitative reviews of DMHI's in adult populations, which have highlighted the importance of personalisation, usability, flexibility, and human support (Patel et al., 2020). The current review extends Patel et al. (2020), by illustrating how these factors are experienced within the context of the perinatal period, and by highlighting the interconnected cognitive, behavioural, and relational changes associated with DMHIs. Further, DMHIs also appeared to have indirect benefits on parenting for some women. Beyond personalisation, the findings highlighted the importance of relatable and normalising content in reducing feelings of isolation, which may be particularly salient during the perinatal period, a time of significant biopsychosocial and developmental change for women, often referred to as 'matrescence' (Ekelöf et al., 2025). This aligns with Lau et al. (2023), who identified normalisation and peer connection as central to women's engagement with digital healthcare more broadly. The current review further suggests that DMHIs may act as a vehicle for facilitating support beyond the intervention itself, through encouraging and improving communication within relationships and additional help-seeking.

These findings emphasise the importance of relational processes which occur both within and beyond DMHIs, and may form a key underlying mechanism in both engagement and benefit. Indeed, the therapeutic alliance is a well-known predictor of outcomes in face-to-face settings (Flückiger et al., 2018), and emerging research suggests that a form of therapeutic alliance may also develop within DMHIs, including both guided and unguided formats (Tremain et al., 2020). In the digital context, the therapeutic alliance may emerge through accessibility and interactivity of the intervention, with responsive features helping users to feel understood and engaged. This aligns with the findings in this review, where participants called for greater interactivity and personalisation of interventions.

In line with COM-B theory of behaviour change, across the perinatal period, engagement appeared to reflect the interaction of capability, opportunity, and motivation. Capability was constrained by tiredness, emotional distress, and cognitive load, whereas opportunity was influenced by caregiving demands, time constraints, and intervention design elements such as flexibility, usability and integration to daily life. Motivation was influenced by mental health difficulties, particularly depression, and perceived relevance of the intervention, and in some cases contextual factors such as stigma and prior healthcare experiences. This highlights the importance of designing interventions that are personalised, adaptable, and user-friendly, in order to enhance opportunity for women to engage, and to align with fluctuating motivation.

Although DMHIs were generally perceived as supporting cognitive and behavioural change, their effectiveness appeared to vary according to the nature of presenting difficulties. For fear of childbirth, and for some depression presentations, engagement and perceived benefit were more limited and DMHIs did not appear sufficient (Baylis et al., 2020; O'Mahen et al., 2015). This was particularly evident in self-guided interventions, suggesting that the absence of support may reduce effectiveness for more specific or complex needs. This highlights the limitations of universal or transdiagnostic interventions and re-emphasises the importance of tailored and personalised support.

Strengths and Limitations

This review provides insight into perinatal women's experiences of using DMHIs, addressing an important gap in the literature. It highlights the role of relational processes in facilitating engagement and subsequently offers implications for intervention design. A key strength is the comprehensive and systematic search strategy, which enabled the inclusion of a broad

range of studies. However, several limitations should be considered. There was substantial heterogeneity across studies in intervention type, approach, and perinatal stage, with samples ranging from universal populations to women with depression and anxiety symptoms. While this may reflect populations most likely to engage with DMHIs, it also limits generalisability. Many studies were mixed methods with small samples, and qualitative components were sometimes limited in depth. There was limited reporting of researcher reflexivity which may have impacted how interpretations were shaped in the primary studies. Community-based recruitment and convenience sampling strategies were employed in most studies, which may have resulted in samples with lower levels of distress and greater motivation, potentially biasing findings towards more positive experiences and underrepresenting those with poorer engagement and greater need. The restriction to English-language studies may have excluded relevant international evidence. Additionally, as with all qualitative syntheses, findings are influenced by interpretive judgement and subjectivity.

Implications for future research and practice

These findings suggest DMHIs should be personalised, relevant, and adaptable to the perinatal period. Given the central role of relational processes and normalisation, interventions should also incorporate validating content and continue to deliver opportunities for human connection, such as guided support or peer forums. Interventions that enable women to engage with content that feels relevant are important for supporting personalised engagement. As needs for flexibility, structure, and guidance vary across individuals, there is no 'one size fits all'. Future research should explore the experiences of those who disengage from interventions to gain better understanding of what hinders engagement. Research should also explore the experiences of women in clinical populations, including those accessing mental health services or experiencing more severe difficulties. Further, one study identified structural barriers to accessing DMHIs. Although only reported in one study, this suggests that DMHIs are not universally accessible, and highlights the need to address digital inequalities to improve access and engagement.

Conclusion

This review highlights the potential of DMHIs to support perinatal mental health and synthesises women's experiences of engagement, including the perceived benefits and factors influencing use. Optimising DMHIs effectiveness will require interventions that are

personalised, flexible, adaptable to women's needs, and that incorporate opportunities for meaningful connection. Future research should explore the experiences of those who disengage from interventions, as well as more clinically diverse populations, to better understand barriers to engagement and improve accessibility.

Declarations

Competing interests: The lead author declares no competing interests. CW is shareholder and director of Five Areas Ltd which delivers Mental health resources for perinatal women.

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Chapter 2 - Major Research Project

“Enjoy Your Pregnancy-CBT”: A feasibility study of an online CBT-informed intervention to support mental health and wellbeing in pregnancy

Prepared in accordance with the author requirements for the

Journal of Medical Internet Research

[Author Guidelines](#)

A note on terminology

In this study the term *women* is used when referring to individuals who are pregnant or have given birth, for the purposes of readability and consistency and in line with the literature.

However, the author recognises that not all people who experience pregnancy or birth identify as women, and terms such as *birthing parent* may be more inclusive. Inclusive language was used in study materials and recruitment processes where possible.

Plain Language Summary

Title: “Enjoy Your Pregnancy-CBT” (EYP-CBT): A feasibility study of an online CBT-informed intervention to support mental health and wellbeing in pregnancy.

Background: Women are more likely to experience mental health difficulties such as stress, anxiety and low mood during pregnancy. However, many women find it difficult to access support due to barriers including long waiting lists, stigma, and may also present with different preferences support. Digital mental health interventions (DMHIs) which can be accessed online, may offer a more accessible way to receive support. However, dropout from these programmes is often high. It is important therefore to understand whether women will engage with these programmes and find them helpful. EYP-CBT is a newly developed, self-guided online programme designed to support mental health and wellbeing during pregnancy.

Aim: This study aimed to find out whether EYP-CBT could be successfully delivered to pregnant women in the community. This included whether women would sign up, stay involved, use the programme, and find it acceptable. It also explored who took part and whether there were any potential changes in mental health and wellbeing following use of EYP-CBT.

Research Question: Can the EYP-CBT programme be successfully delivered to pregnant women in the community, and do women sign up, stay involved, engage, and find it acceptable?

Methods: 49 pregnant women were recruited from community and online settings. Participants were given access to EYP-CBT and completed questionnaires about mood, anxiety, and wellbeing at the start of the study, after 6 weeks, and after 10 weeks, along with a feedback survey. The data was used to examine sign-up, retention, engagement, and acceptability. Changes in mental health and wellbeing were also explored, and written feedback was analysed to identify participants’ experiences with the intervention.

Main findings and conclusion: While recruitment was successful, many participants did not complete the study, and engagement varied. Women generally found the programme acceptable and helpful, but barriers such as lack of time, competing responsibilities, and usability issues affected use. Small improvements in mood, anxiety, and wellbeing were observed, but these were not strong enough to show evidence of change. Overall, the

programme shows promise as an accessible form of support; however, improvements, such as offering additional guidance, and making the programme easier to use should be considered before testing it in a larger study.

Abstract

Background: The antenatal period is associated with increased vulnerability to common mental health difficulties. Digital mental health interventions (DMHIs) offer an accessible approach to support, though challenges with engagement remain. ‘Enjoy Your Pregnancy–Cognitive Behavioural Therapy’ (EYP-CBT) is a newly developed, self-guided online programme designed to support mental health and wellbeing during pregnancy.

Objective: This study aimed to assess the feasibility of delivering EYP-CBT in the community, including recruitment, retention, engagement, and acceptability. It aimed to describe the characteristics of participants who engaged with EYP-CBT and explore preliminary changes in mental health and wellbeing outcomes.

Methods: A single-arm pre-post feasibility design was employed. Participants were recruited from community and online settings. Self-report measures were completed at baseline, 6-weeks, and 10-week follow-up, using the Edinburgh Postnatal Depression Scale (EPDS), Generalised Anxiety Disorder-7 (GAD-7), the Wellbeing in Pregnancy (WiP) questionnaire, and a feedback survey. Descriptive statistics summarised feasibility indicators and acceptability. Exploratory paired-samples *t*-tests were conducted to explore changes between baseline and 6-week follow-up among completers, with 10-week data summarised descriptively. Qualitative responses to the feedback survey were analysed using an inductive content analysis approach.

Results: 49 participants enrolled in the study. Attrition was high with 69.4% at week 6, and 77.1% at week 10. The sample was predominantly socioeconomically advantaged, but showed variability in mental health presentations. Feedback indicated that the programme was generally acceptable; however, barriers to engagement emerged. Descriptive analyses suggested small improvements in depression, anxiety, and wellbeing at six weeks, although no statistically significant changes were observed.

Conclusion: EYP-CBT showed mixed feasibility, with acceptable recruitment but high attrition and variable engagement. Further refinement, including offering guided support and enhancing programme usability should be considered before progression to a larger trial.

Keywords: Perinatal mental health; Digital mental health interventions (DMHI); Cognitive behavioural therapy (CBT); Feasibility study; Pregnancy wellbeing

Introduction

The perinatal period, defined as pregnancy through to one year postpartum, is a time of increased vulnerability to common mental health difficulties, including anxiety, stress and depression (NICE, 2020; Dennis et al., 2017; Al-Abri et al., 2023). Untreated antenatal depression has been associated with adverse mother and infant outcomes, and potential impact on mother and infant bond (Jarde et al., 2016; Erickson et al., 2019), highlighting the importance of accessible treatment options in this period. Historically, postnatal mental health received greater research attention than antenatal mental health (Biaggi et al., 2016), however, antenatal anxiety and depression are risk factors for postnatal depression, with evidence suggesting that postnatal difficulties often begin during pregnancy (Heron et al., 2004; Howard & Khalifeh, 2020). Despite this, women are less likely to receive treatment in pregnancy compared to the postnatal period, reflecting a possible under-detection of difficulties, barriers to care, or stigma (Howard & Khalifeh, 2020). Kingston et al., (2015) found that many women struggle to disclose emotional difficulties in pregnancy, due to a range of barriers including an uncertainty about what constitutes “normal” emotions or mental health difficulties, and a belief they should be able to manage problems independently. These barriers were particularly evident among first-time mothers and those without prior experience of mental health treatment. Notably, women presenting with mild-moderate mental health difficulties often do not meet the threshold for specialist perinatal mental health services, and therefore may struggle to access support, relying on self-help (Savory et al., 2022). Subclinical emotional difficulties, including stress, low mood, and anxiety (Howard & Khalifeh, 2020), as well as pregnancy-specific worries about pregnancy and childbirth (Dennis et al., 2017), are also common in pregnancy, further highlighting the need for accessible and early support.

NICE (2020) recommends perinatal mental health care is delivered within a stepped-care model, with high-intensity psychological therapies offered for moderate to severe depression, and facilitated self-help interventions, based on CBT principles, for mild to moderate difficulties and subthreshold anxiety symptoms. Digital mental health interventions (DMHIs) are technology-based approaches to the prevention, assessment, and treatment of mental health conditions (Bradley et al., 2025), and have been proposed as an accessible route to support. They may also appeal to individuals who prefer self-guided strategies to manage their mental health and wellbeing (Ayers et al., 2024). There is growing evidence supporting

the effectiveness of DMHI's for perinatal mental health outcomes (Ashford et al., 2018; Stentzel et al., 2023). A recent systematic review and meta-analysis of 19 studies (2016–2025) found that DMHIs were associated with moderate reductions in stress during pregnancy (Kim et al., 2026). However, existing research suggests that DMHIs have more frequently targeted the postnatal rather than the antenatal period, highlighting a potential gap in pregnancy (Ashford et al., 2018; Stentzel et al., 2023).

The 'Enjoy Your Pregnancy–Cognitive behavioural therapy' (EYP-CBT) course has been developed as a self-guided, web-based intervention designed to support mental health and wellbeing across the antenatal and early postnatal period. EYP-CBT is an adaptation of the 'Enjoy Your Pregnancy' course within the 'Living Life to the Full' (LLTTF) range of programmes, which takes a holistic biopsychosocial approach to supporting women through the changes of pregnancy and preparation for birth (Williams, 2026). Additional CBT modules have been integrated into the programme in line with evidence supporting the effectiveness of guided and self-guided online CBT interventions for depression (Stentzel et al., 2023), and with the aim of enhancing access to mental health support for women in community settings.

CBT is a structured, evidence-based psychological intervention that targets maladaptive cognitive and behavioural patterns and addresses transdiagnostic processes such as worry, rumination and avoidance, which may be commonly implicated in perinatal distress (Hofmann et al., 2012). As a universal intervention, EYP-CBT is open to all pregnant women. Although guided digital interventions are associated with higher engagement, self-guided formats may offer accessibility and choice for women, and have shown similar effectiveness in some studies, therefore EYP-CBT takes a self-guided approach for women in the community (Borghouts et al., 2021; Stentzel et al., 2023). Further, evidence suggests that universal self-guided CBT-informed DMHI's can produce small reductions in depressive symptoms in the perinatal period (Haga et al., 2019), and that CBT-based interventions may be effective as a preventive approach (Li et al., 2022). Notably, individuals with elevated symptoms may be more likely to engage with and benefit from such interventions (Haga et al., 2019; Davis et al., 2024), further highlighting their potential reach.

EYP-CBT is a newly developed programme that has not yet undergone empirical evaluation. Given evidence supporting CBT-informed DMHI's alongside known engagement challenges (Ashford et al., 2018), a feasibility study of EYP-CBT is warranted to assess key indicators,

including recruitment, retention, engagement, and acceptability (Teresi et al., 2021). Engagement with digital interventions is influenced by a range of factors, including motivation, fit with life, digital literacy, support, and also recruitment approach (O'Connor et al., 2016). The COM-B model provides a useful framework for understanding engagement, proposing that behaviour is shaped by individuals' capability, opportunity, and motivation (Michie et al., 2011). In the context of pregnancy, this is often viewed as a period characterised by increased motivation for change, however engagement may still be constrained by changes in capability, and opportunity to engage, such as tiredness and competing demands (Olander et al., 2016). As such, even where motivation is high, engagement with digital interventions may be limited. This highlights the importance of examining recruitment, engagement, and retention within this population.

Research Aims

The present study aims to evaluate the feasibility and acceptability of EYP-CBT as a universal DMHI for use during pregnancy within the community. Specifically, the study seeks to examine recruitment, retention, and engagement, and to explore participants' experiences of the programme. It will also describe the characteristics of participants who engage and examine preliminary changes in depression, anxiety, and pregnancy-related wellbeing outcomes.

Method

Ethics

This study was granted ethics approval by University of Glasgow Medical, Veterinary and Life Sciences Ethical Committee (Reference 200240501; Appendix 2.1). Minor amendments to the original application were approved by the committee chair via email correspondence (Appendix 2.2). A data sharing agreement between the University of Glasgow and Five Areas Ltd (the company owner of LLTTF) was developed (Appendix 2.3).

Design

This study employed a single-arm pre–post feasibility design to evaluate the feasibility and acceptability of EYP-CBT. A predominantly quantitative approach was used, with a smaller qualitative questionnaire component capturing participant feedback. A control group was not

included, as the study aimed to assess feasibility rather than effectiveness. The study is reported in line with the CONSORT extension for pilot and feasibility trials, with adaptation for the non-randomised design where appropriate and items marked accordingly (Appendix 2.4).

Participants

Participants were pregnant women living in the community. The following eligibility criteria applied:

Inclusion criteria:

- Aged 16 or over
- Between 12-32 weeks' gestation
- Living in the United Kingdom and registered to a UK GP

Exclusion criteria:

- Not meeting inclusion criteria or inability to access or understand the course materials.

The 12–32 weeks' gestation window was selected in line with previous research (e.g., Forsell et al. 2017), acknowledging greater uncertainty and variability in early pregnancy and the need to allow sufficient time for participants to complete the intervention prior to birth. This timeframe also aimed to optimise engagement by balancing participants' capability and opportunity to engage, given competing demands later in pregnancy (Michie et al., 2011).

Recruitment

Participants were recruited from community settings and online sources within the United Kingdom. There was no NHS recruitment. Recruitment opened on the 19th of September 2025 and remained open until the 16th of January 2026. 61 third sector organisations were contacted and invited to share the recruitment poster with their networks (Appendix 2.6) Recruitment strategies aimed to maximise accessibility and the poster was shared with organisations supporting underrepresented groups, including young parents, LGBTQ+ families, Black women during pregnancy, and women with mental health needs. See Appendix 2.7 for list of contacted third sector organisations. Where no response was

received, one follow-up email was sent, and participating organisations were contacted again one week prior to recruitment closure to encourage final dissemination. Additional recruitment methods included printed posters displayed by the researcher in local community venues (e.g., libraries, play cafés, community groups, and nurseries), social media dissemination (Facebook, Instagram, X, LinkedIn), outreach to private organisations offering pregnancy-related activities (e.g., yoga and exercise classes), and sharing through academic networks and the LLTTF newsletter.

Sample size

As this was a feasibility study, a formal power calculation was not conducted. A target sample size of approximately 50 participants was selected to account for attrition and to enable estimation of feasibility parameters, in line with recommendations that feasibility studies typically include around 24 or more participants (Julious, 2005; Teresi et al., 2022).

Intervention

EYP-CBT is a self-guided web-based psychoeducational programme based on principles of CBT. The course consists of 11 modules including: 1. Introduction 2. Building a relationship with baby, 3. Staying healthy and active during pregnancy, 4. Preparing for the birth, 5. Managing after the birth, 6. Understanding feelings, 7. Making effective plans, 8. Problem-solving, 9. Noticing unhelpful thoughts, 10. Changing unhelpful thoughts and 11. Doing things that make you feel better. The 11 modules take approximately 15-20 minutes to complete and have accompanying worksheets and online books. Participants are encouraged to work through the materials at their own pace and for the purposes of this study to complete the course within six weeks. Participants were informed they would retain access to the materials for 12 months following sign-up. Weekly reminder emails were developed by the researcher with support in supervision and sent automatically by EYP-CBT to participants, which provided a summary of the previous module, an overview of the next module, and tips to enhance engagement. No guidance or clinical support was provided.

Measures

At sign-up, participants completed self-confirmed screening questions, registration and demographic characteristic questions (Appendix 2.8), and the following self-report mental health measures:

Edinburgh post-natal depression scale (EPDS; Cox et al., 1987):

EPDS is the most widely used scale in perinatal mental health research. Levis et al. (2020) identified ≥ 11 as optimal sensitivity cut-off and ≥ 13 as optimal specificity cut-off for depressive symptoms in perinatal women.

Generalised anxiety disorder assessment (GAD-7; Spitzer et al., 2006):

The GAD-7 is a validated and reliable measure of generalised anxiety disorder and used within the perinatal literature. A score of 5 indicates mild anxiety.

The Wellbeing in Pregnancy Questionnaire (WiP; Alderdice et al., 2017).

The WiP assesses pregnancy-specific wellbeing across three subscales: ‘Positive pregnancy’, ‘Concerns about support’, and ‘Confidence about motherhood’. Subscale scores are transformed to a 0–100 metric, with higher scores indicating greater wellbeing (Oxford University Innovation, 2023). It is used as a descriptive tool and cut off scores are not established.

These measures were used to describe symptom severity and explore change, rather than to establish clinical diagnoses or define eligibility.

Feedback Questionnaire (Appendix 2.8)

Participants completed a 13-item feedback questionnaire developed by the researcher to assess experience and acceptability of EYP-CBT and the study. The survey included two open-ended questions, with the remaining items comprising closed-response questions with optional free-text comments.

Pre-test of Questionnaires

The EPDS, GAD-7 and WiP questionnaires were piloted by two colleagues who had experienced pregnancy in the past two years. Feedback indicated the questionnaires took a maximum of eight minutes to complete and were appropriate in content and length.

Research procedures

Interested participants accessed the study via Qualtrics where they reviewed the participant information sheet, privacy notice, (Appendix 2.6) and completed the self-confirmed

eligibility screen. Ineligible participants received an automated message in Qualtrics, written by the researcher, which directed them to alternative mental health resources, including pregnancy-specific services and emergency support contacts. Eligible participants were prompted to complete the consent form (Appendix 2.6), followed by demographic details including their email address and the baseline self-report questionnaires (EPDS, GAD-7, WiP). The researcher emailed participants a link and a code to access EYP-CBT, via LLTTF website, along with a list of Mental health resources and emergency contact details (Appendix 2.6). The EPDS contains one question about risk of harm to self, if participants clicked 'Yes', or 'Quite often', they received an automated message on Qualtrics written by the researcher acknowledging this and encouraging them to contact their GP and emergency support if needed. They were not excluded from the study. At week six, participants were emailed and invited to complete the six-week follow up questionnaires (EPDS, GAD-7, WiP) and feedback survey. Participants were encouraged to complete feedback even if they had only engaged minimally or not at all with the course. Participants were sent one follow-up reminder email to request completion of measures. At week ten, participants were sent the ten-week follow up questionnaires. Timepoints of six and ten-weeks were selected in line with previous research (Forsell et al., 2017) along with the need to balance the practical constraints of the study timeframe.

Data Analysis

Quantitative data

Quantitative data were analysed using Excel and IBM SPSS Statistics. Descriptive statistics were used to summarise recruitment, retention, attrition, and participant characteristics, and questionnaire scores. Engagement and acceptability were examined descriptively, including indicators such as course registration, logins, modules completed. Responses to the feedback questionnaire were also examined descriptively using frequencies and percentages. Where multiple responses were selected for single-choice items, responses were interpreted using accompanying free-text. Continuous variables were summarised using means and standard deviations, and categorical data were reported as frequencies and percentages. Questionnaire outcomes were summarised using means and standard deviations at baseline, six-week, and ten-week follow-up. For the EPDS and GAD-7 where one item was missing ($n = 2$; baseline), total scores were prorated by calculating the mean of completed items and multiplying by the total number of items (Graham, 2009; NHS Digital., 2013). Baseline characteristics were

compared descriptively between completers and non-completers. Paired-samples *t*-tests were conducted to explore changes between baseline and six-week follow-up among completers, with ten-week data summarised descriptively due to small sample size. Given the feasibility design and small sample size, inferential analyses were considered exploratory.

Qualitative data

An inductive qualitative content analysis approach was used to analyse participants' responses to open-ended questions in the feedback survey (Elo & Kyngas, 2008). Given the relatively small volume of free-text responses, a primarily descriptive approach was used. Responses were read and re-read, coded, and grouped into descriptive categories to provide an overview of participants feedback. Reflexivity was considered throughout the process. Further detail regarding the researcher's positionality and reflexive approach is provided in 2.9.

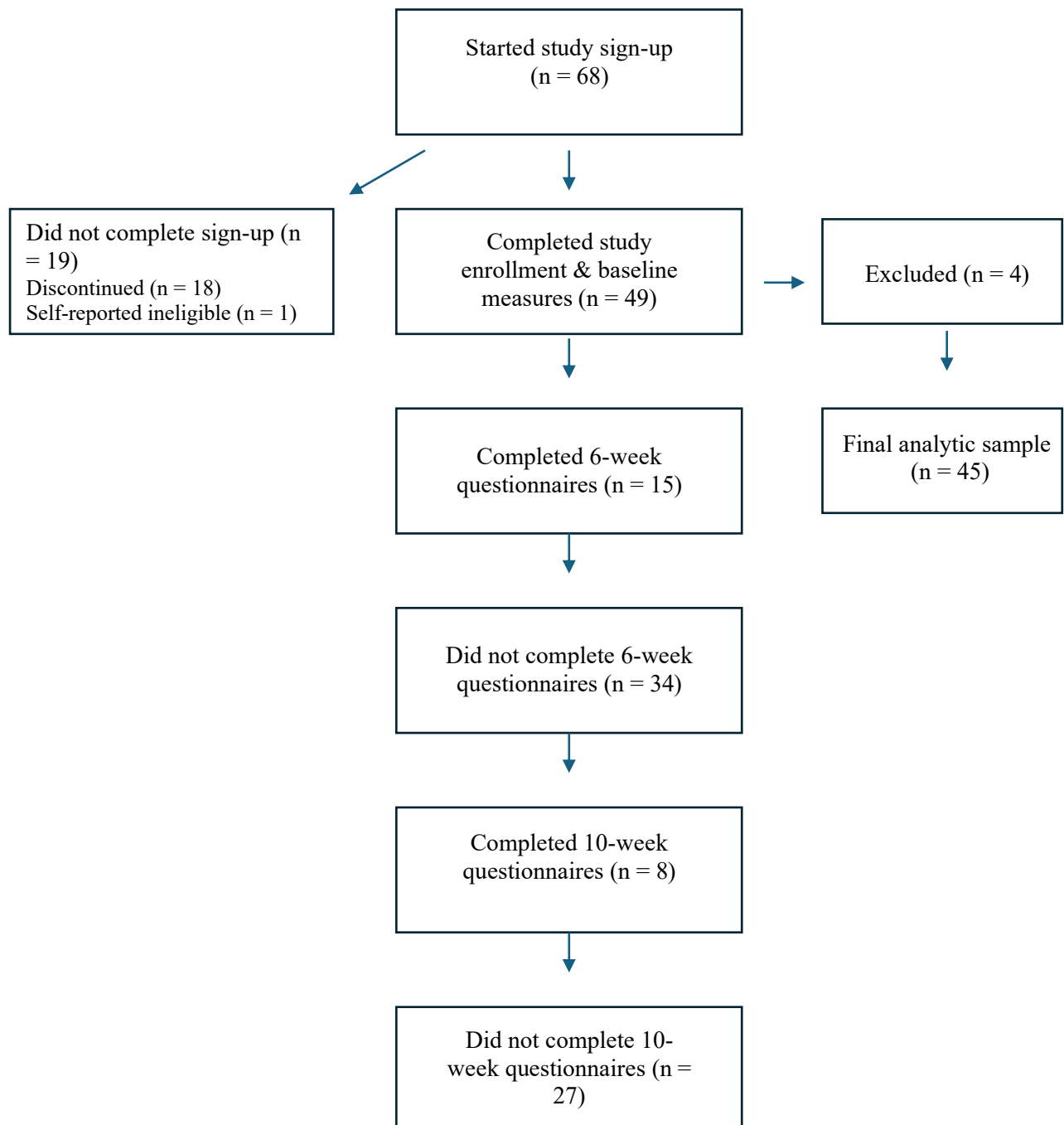
Results

Recruitment and Retention

Of the 61 third-sector organisations contacted, 19 expressed interest and shared the recruitment poster. The NSPCC requested a meeting with the researcher and subsequently shared the study within their networks, and the Perinatal Mental Health Network invited the researcher to present at a community forum. The researcher received expressions of interest from two staff members within NHS mental health services; however, no recruitment was conducted through NHS services. The final participant signed up on the 14th of January 2026. A total of 68 participants initiated sign-up, and 49 completed the process, yielding a recruitment rate of 71%. One participant self-reported ineligible due to not being registered with a UK GP. Data collection closed on 27 February 2026 in line with the project deadline. At this point, all participants had the opportunity to complete the six-week follow-up measures, however, 14/49 participants had not yet reached the ten-week point; analyses were therefore conducted on the available data. Participant retention at six-weeks was 30.6% (15/49). Of the 35 participants who reached ten weeks, 22.9% (8/35) were retained. Study attrition was therefore 69.4% at six weeks and 77.1% at ten weeks. Four participants were identified as not meeting gestational age eligibility criteria following data collection (three <12 weeks, one >32 weeks), despite self-confirming eligibility. These participants were

excluded from further analyses, resulting in a final analytic sample of 45. Three of the four excluded participants had reached the ten-week follow-up; however, none were retained at either time point. Please see Figure 2 illustrating the flow of participants through the study.

Figure 2 *Participant flow through the study*



Participant Demographics

The demographics and characteristics of the analytic sample (N= 45) are presented in Table 5.

Table 5

Sample characteristics

Sample characteristics	N (%)
Age	
25-29	5 (11.1%)
30-34	14 (31.1%)
35-39	23 (51.1%)
40 or over	3 (6.7%)
Gestational stage (weeks)	
12-19.9	20 (44.4%)
20-27.9	16 (35.6%)
28-32	9 (20%)
First pregnancy	
Yes	21 (46.6%)
No	24 (53.3%)
Relationship status	
Single	1 (2.2%)
Living with a partner	12 (26.6%)
Married or civil partnership	32 (71.1%)
Employment status	
Employed	41 (91.1%)
Not in paid employment	1 (2.2%)
Other	3 (6.6%)
Ethnicity	
White	39 (86.6%)
Mixed or multiple ethnic groups	3 (6.6%)
Asian, Scottish Asian, or British Asian	2 (4.4%)
Another ethnic group	1 (2.2%)
Current mental health difficulties	
Yes	12 (26.6%)
No	30 (66.6%)
Prefer not to say	3(6.6%)
Previous mental health difficulties	
Yes	24 (53.3%)
No	19 (42.2%)
Prefer not to say	2 (4.4%)
Currently in psychological therapy	
Yes	7 (15.5%)
No	37 (82.2%)
Prefer not to say	1 (2.2%)
Currently taking medication	

Yes	4 (8.8%)
No	41 (91.9%)
Recruitment source	
Social media	23 (51.1%)
Through a friend	14 (31.1%)
Third sector organisation	5 (11.1%)
Poster at a community venue	2 (4.4%)
Unknown	1 (2.2%)

Note. Mean gestational age = 21.7 weeks (SD = 6.4). Percentages may not total 100 due to rounding.

Free-text responses relating to current and previous mental health difficulties were provided by some participants. Co-morbid anxiety and depression were the most commonly reported current mental health difficulties ($n = 5$), with a smaller number reporting depression alone ($n = 3$). Participants also reported Complex post-traumatic stress disorder (PTSD; $n = 2$); stress ($n = 1$), obsessive compulsive disorder (OCD; $n = 1$), and borderline personality disorder (BPD; $n = 1$). One participant reported previous experience of baby loss in late gestation. In terms of previous mental health difficulties, similar presentations were reported, although these were more frequent. Participants reported previous postnatal depression ($n = 3$), anxiety in a previous pregnancy ($n = 2$), and one participant reported attention deficit hyperactivity disorder (ADHD).

Baseline questionnaire scores

The baseline mean questionnaire scores for the analytic sample ($N = 45$) are presented in Table 6.

Table 6 *Baseline questionnaire scores ($n = 45$)*

Measure	Range	Mean (SD)
EPDS	0-30	10.1 (5.1)
GAD-7	0-12	6.1 (4.9)
WiP Positive pregnancy	0-100	49 (23.2)
WiP Concerns about support	0-100	68.5 (18.4)
WiP Confidence about motherhood	0-100	64 (16.8)

The mean EPDS score was 10.1 (SD = 5.1) suggesting mean scores were near the thresholds for depressive symptoms. Two participants clicked ‘Yes’, or ‘Quite often’ on the EPDS self-

harm question, and therefore received the automated support message on Qualtrics advising them of mental health resources and emergency contact numbers. The mean GAD-7 score was 6.1 (SD = 4.9), indicating mild anxiety symptoms on average. 42.2% of participants scored ≥ 11 on the EPDS, indicating possible presence of depressive symptoms. Within this group, 15.6% scored ≥ 13 , meeting the threshold for probable depression. The remaining 57.8% scored below the ≥ 11 threshold. A total of 46.6% presented with GAD-7 score ≥ 5 indicating mild anxiety symptoms. The Wellbeing in Pregnancy subscales are scored from 0–100, with higher scores indicating greater wellbeing. Mean scores ranged from 49 to 68.5 across subscales.

Engagement and Acceptability

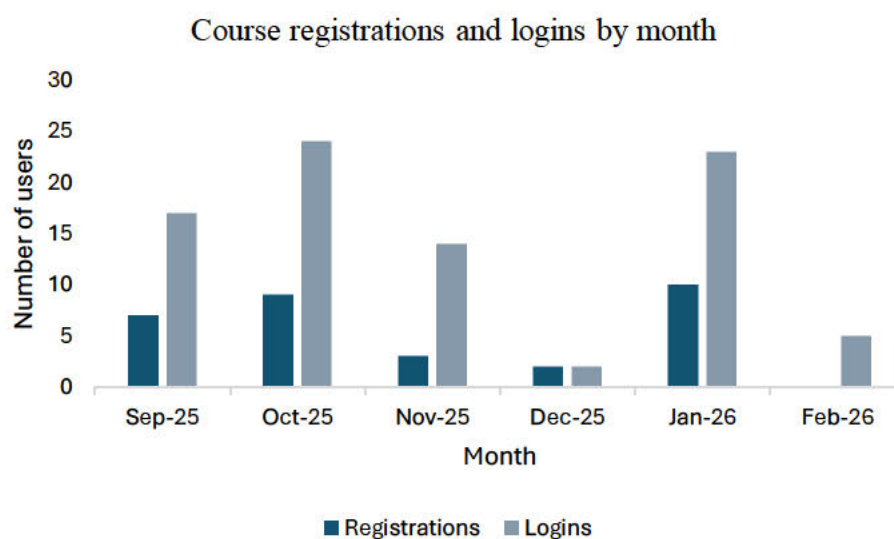
Engagement and acceptability were assessed through participants' interaction with the course and responses to the feedback questionnaire.

Course Engagement

Between September 2025 and February 2026, 31 of 49 participants registered for the course, with a total of 85 logins to the platform (Figure 3).

Figure 3

Course registrations and logins by month.



Descriptive statistics highlighting logins and use of course materials are presented in Table 7.

Table 7 *Participant Engagement with Course Materials*

	Mean	Range	Total
Logins per participant	2.74	1-9	85
Modules opened	5	0-44	155
Books opened	0.65	0-3	20
Worksheets opened	0.68	0-9	21

Note. Engagement data are reported for all participants who were given access to the intervention (N=49)

Participants logged into the programme an average of 2.74 times (range = 1–9). On average, participants opened five modules, alongside lower engagement with additional materials, including books (M = 0.65, range = 0–3) and worksheets (M = 0.68, range = 0–9).

Engagement appeared modest and varied across participants. Approximately 19.4% of participants did not open any modules, 19.4% opened 1–2 modules, 38.7% opened 3–5 modules, and 22.6% opened more than five modules, out of the 11 modules.

Feedback Questionnaire

Feedback was provided by 14/15 participants who completed the six-week follow-up. The responses are presented in Table 8.

Table 8 *Quantitative Feedback questionnaire results*

Question / response option	N (%)
Study participation experience	
1. Ease of sign up to study	
Easy	12 (85.7%)
Difficult	0 (0%)
Ok	2 (14%)
2. Amount of time to complete the study	
About right	10 (76.9%)
Too little time	3 (23.07%)
Too much time	0 (0%)
3. Length of the research questionnaires	
About right	13 (92.8%)
Too long	0 (0%)
Too short	1 (7.1%)

Course experience	
1. Ease of registering and starting the course Easy Ok Difficult	11 (78.5%) 2 (14.2%) 1 (7.1%)
2. Reasons for taking part in the course To learn more about pregnancy To prepare for arrival of baby To manage or improve my mental health and wellbeing	5 (35.7%) 6 (42.9%) 10 (71.4%)
3. Did the course meet your expectations? Yes No Somewhat	9 (64.2%) 0 (0%) 5 (35.7%)
4. Any changes in knowledge, skills, attitudes, or how you approach things in daily life? Yes No Somewhat	4 (28.5%) 6 (42.8%) 4 (28.5%)
5. Which elements of the course did you find most helpful? Pregnancy & birth-specific modules CBT-specific modules	9 (64.2%) 6 (42.9%)
6. Did you involve or talk about the course with anyone else? Completed by myself Spouse or partner Friend or family member Healthcare professional No one	6 (46.1%) 7 (53.8%) 0 (0%) 0 (0%) 0 (0%)
7. What types of support would have helped you apply your learning from the course? Email Telephone Video Face to face No other support needed	1 (7.1%) 1 (7.1%) 0 (0%) 3 (21.4%) 9 (64.2%)
8. Is there anything you found unhelpful in the course? Yes No Somewhat	1 (7.6%) 12 (92.3%) 0 (0%)

Note. One participant did not complete all items; therefore, the number of responses varies across some items. Some items allowed multiple responses; therefore, percentages may not sum to 100%.

Responses indicated generally positive experiences of study participation and course engagement. Most participants reported the sign-up process and timescale were appropriate, and the course met their expectations. However, some variability was observed, with a proportion of participants describing limited impact. Reasons for taking part in the course varied, although improving mental health and wellbeing was the most commonly reported motivation. One participant feedback that they signed up for the study but then sought face to face support elsewhere and therefore did not engage.

Qualitative Analysis

Twenty-four free-text comments were provided across the two open-ended questions and optional comment boxes. The descriptive categories are presented below.

Experience of study participation

Participants generally reported the study timeframe as appropriate, though many responses indicated that competing demands and time constraints limited ability to actively engage with the course: *“Probably the appropriate amount of time but the exhaustion of this pregnancy paired with managing a toddler and household tasks has left me struggling to find time to complete the course, especially when time is available that could be spent on the course has had to be dedicated to attempting to keep on top of household tasks to stop them building up even more and in turn having more negative impact on my [mental] health.”* (P003).

Although the study sign-up instructions were described as clear, one participant noted that the amount of information presented upfront could feel off-putting. Feedback on study participation overall suggests that while the study procedures were generally reported as acceptable by participants, time-related demands may have influenced participants’ ability to engage in the programme.

Usability of course platform

Several participants reported difficulties accessing the course on their mobile phones, including either being unable to access it completely or videos did not function properly, which emerged as an engagement barrier for some. One participant reported finding the course difficult to navigate. A small number of participants made suggestions for improving the format of the course materials, including allowing the slides to progress automatically and

providing a transcript for the videos, or the option to increase speed of videos. *“Mobile app. I find it difficult to set aside time to do it as I can’t get access on my phone”* (P049). Usability appeared closely linked to challenge of time constraints, with difficulties in usability (e.g. mobile usability) limiting participants’ ability to fit the course into daily life.

Perceptions of the course content

Participants generally reported positive experiences of the content. A number of participants described the CBT skills as useful and the pregnancy-related content as reassuring. The course was also experienced as enjoyable and informative, with participants reporting increased awareness of their own wellbeing, *“Overall, the course has been very helpful and reassuring, easy to access and understand”*. (P048). Participants commented that the materials were clear and easy to access, and information was appropriate, with varying perceptions on the length of videos being too long or too short. However, there was some variance in perceived relevance, with one participant noting that they found the pregnancy modules to be too basic.

Support preferences

Several participants suggested that additional support alongside the course would be beneficial, including emails of key points to remember, or a telephone helpline. One participant noted that the perinatal period can be a particularly vulnerable time and suggested that the programme may benefit from additional face-to-face support. *“I think the course is a very valuable resource, but I feel that such is the emotional vulnerability experienced around pregnancy and the postpartum period that the materials would benefit from being supported by face-to-face contact with someone you can speak to about how you’re feeling and coping with all the changes that go on during this time”* (P011). Similarly, another participant reported that they had initially started the course but later sought in-person support, which they found more helpful.

Suggestions for implementation

One participant suggested that wider dissemination of the course in future could be achieved through signposting by midwives during NHS appointments. Another participant suggested

that the course may be particularly beneficial if completed earlier in pregnancy. “*Perhaps it could be introduced to more women through the NHS midwife appointments*”. (P018).

Exploratory Pre–Post Outcome Analyses

Comparisons of Completers vs non-completers

Sample characteristics of study completers and non-completers are presented in Table 9.

Table 9

Sample characteristics of completers and non-completers

Characteristics	Non-completers (N = 31)	Completers (N = 14)
Age, n (%)		
25-29	3 (9.7%)	1 (7.1%)
30-34	9 (29.0%)	5 (35.7%)
35-39	15 (45.4%)	8 (57.1%)
40 or over	3 (9.7%)	0 (0%)
First pregnancy, n (%)		
Yes	16 (51.6%)	5 (35.7%)
No	15 (48.4%)	9 (64.3%)
Current MH, n (%)		
Yes	12 (38.7%)	1 (7.1%),
No	18 (58.1%)	11 (78.6%)
Prefer not to say	1 (3.2%)	2 (14.3%)
EPDS baseline, Mean (SD)	10.9 (5.05)	8.21 (5.06)
GAD-7 baseline, Mean (SD)	6.84 (5.18)	4.43 (3.98)
Wip Positive pregnancy, Mean (SD)	47.33 (22.69)	52.82 (24.9)
Wip Concerns support, Mean (SD)	69.34 (19.15)	66.67 (17.30)
Wip Confidence motherhood, Mean (SD)	63.44 (19.01)	65.1 (10.56)

One participant did not provide an identifying email address at six-week follow-up and could not be linked to baseline data; therefore, their data were included in the non-completers group. There were no clear differences in demographic characteristics between groups, although a slightly higher proportion of first pregnancies was observed in the non-completers group. Completers appeared to report lower baseline symptoms of depression and anxiety and were less likely to report current mental health difficulties. Given the unequal group sizes, no formal statistical comparisons were conducted, and findings should be interpreted cautiously.

Changes in Outcomes from Baseline to six-Week Follow-Up

Exploratory inferential statistics to examine changes from baseline to post-intervention are presented in Table 10. One participant could not be matched to baseline data and was excluded, resulting in a final sample of 14.

Table 10

Changes from Baseline to Six-Week Follow-Up (n = 14)

Measure	Baseline Mean (SD)	6-week Mean (SD)	<i>T</i> (df)	<i>P</i>	Cohen's <i>D</i>	95% CI
EPDS	8.21 (5.06)	7.14 (3.99)	1.26 (13)	0.239	0.33	[-0.80, 2.95]
GAD-7	4.43 (3.98)	4.43 (3.57)	0.00 (13)	1.00	0.00	[-2.17, 2.17]
WiP Positive pregnancy	52.82 (24.91)	55.24 (25.28)	-0.73 (13)	0.481	-0.19	[-9.60, 4.77]
WiP Concerns about support	64.76 (18.71)	71.43 (20.33)	-1.60 (13)	0.133	-0.43	[-15.64, 2.31]
WiP Confidence about motherhood	65.10 (10.56)	70.65 (20.26)	-1.20 (13)	0.251	-0.32	[-15.53, 4.43]

Paired samples *t*-tests were conducted to assess changes in depression, anxiety and pregnancy wellbeing between baseline and six-week follow up ($n = 14$). The normality of difference scores was assessed using the Shapiro-Wilk test and examination of the histograms and Q-Q plots, which indicated that the assumption of normality was met for all variables ($p > 0.05$). As shown in the table, mean EPDS scores decreased slightly from baseline to six weeks however this was not statistically significant $t(13) = 1.26, p = .239, d = 0.33$. GAD-7 scores remained unchanged from baseline to six-weeks, $t(13) = 0.00, p = 1.00, d = 0.00$. Mean scores on the pregnancy wellbeing scales showed small improvements at six weeks, although none of these reached statistical significance: positive pregnancy wellbeing, $t(13) = -0.73, p = .481, d = -0.19$; support wellbeing, $t(13) = -1.60, p = .133, d = -0.43$; and confidence wellbeing, $t(13) = -1.20, p = .251, d = -0.32$. These analyses were exploratory and no correction for multiple comparisons was applied. Overall, four out of the five outcomes showed changes in a direction suggestive of improvement, however these were not

statistically significant, and the wide confidence intervals crossing zero indicate uncertainty regarding true effect.

Descriptive Outcomes at Follow-Up

Descriptive statistics for follow-up outcomes are presented in Table 11 for the six-week sample ($N = 15$), including participants not included in the paired analyses, and in Table 12 for the ten-week sample ($n = 8$).

Table 11

Six-Week Follow-Up Scores ($N = 15$)

Measure	Range	Mean (SD)
EPDS	0-30	6.8 (4.1)
GAD-7	0-21	4.2 (3.5)
WiP Positive pregnancy	0-100	56.4 (24.8)
WiP Concerns about support	0-100	72.8 (20.3)
WiP Confidence about motherhood	0-100	71.8 (19.6)

Mean EPDS and GAD-7 scores appeared lower, and WiP scores appeared higher at follow-up from baseline; however, these observations are descriptive and based on a different and unequal sample ($n = 15$) than the baseline and paired analyses samples.

Table 12

10-week follow-up scores ($n = 8$)

Measure	Range	Mean (SD)
EPDS	0-30	9.2 (5.12)
GAD-7	0-21	3.38 (2.97)
WiP Positive pregnancy	0-100	57.5 (20.46)
WiP Concerns about support	0-100	73.95 (24.59)
WiP Confidence about motherhood	0-100	72.24 (16.80)

Outcome scores at the 10-week follow-up ($n = 8$) are presented in Table 12 and showed a similar pattern to six-week scores ($N = 15$), with only small fluctuations across measures, with GAD-7 scores slightly lower and EPDS scores slightly higher than baseline.

Discussion

Summary of Findings

This study aimed to evaluate the feasibility and acceptability of an online, self-guided CBT-informed programme (EYP-CBT) for pregnant women in the community. Specifically, it examined recruitment, retention, engagement and acceptability, described the characteristics of participants who engaged with the intervention, explored participants' experiences, and investigated exploratory changes in self-reported mood, anxiety, and wellbeing.

Findings indicated that recruitment for this sample was feasible, although attrition was high. Engagement with the programme was modest-variable. The study procedures and EYP-CBT appeared acceptable overall to those who completed the feedback questionnaire, and barriers and facilitators to engagement were identified. The sample was relatively homogeneous in demographic characteristics, with some variation in participants' mental health presentation and histories. No significant changes were observed in mental health or wellbeing outcomes from pre- to post-intervention, which is not unexpected given the exploratory nature of the study and small sample size. These findings are explored in more detail, alongside implications for future research.

Recruitment and retention

The study recruited 49 participants in just under a four-month time period, which was close to the study target of 50 participants. This suggests there was interest in this programme and supports the feasibility of community recruitment. There was notable stakeholder interest, with enquiries received from third sector organisations and NHS mental health services, although recruitment was conducted within the community. 68 participants commenced the study sign-up process, and 49 completed it, showing some attrition early in recruitment. This may reflect common barriers such as motivation, time or ambivalence about the intervention (Borghouts et al., 2021; O'Connor et al., 2016). Indeed, although most participants rated the study as 'easy' to sign up, one participant described the amount of information up front as potentially burdensome in terms of time. Social media was the primary recruitment source, followed by hearing about the study through a friend. Recruitment through social media is increasingly common in mental health research and has been identified as an efficient and cost-effective way of reaching participants (Sanchez et al., 2020). Recruitment has also

shown to be effective when promoted through trusted sources (e.g., family, friends, or health professionals), therefore these findings align with current research in the field.

Study attrition was high, with 69.4% participant attrition at week six, and 77.1% attrition at week ten. This presents as slightly higher than attrition rates reported in a recent systematic review by Li et al. (2022), who found attrition ranging between 2.6%– 60.8% in 13 studies (2013 – 2021) evaluating internet-based psychological interventions for perinatal depression. The studies in Li et al. (2022) review assessed both self-guided (n = 4) and clinician guided (n = 9) interventions, and found that self-guided interventions had higher drop out than guided interventions. Mahoney et al. (2023) reported completion rates of 35% and 41.6% in antenatal and postnatal online CBT interventions for anxiety and depression, respectively, and found no significant differences in completion rates across self-guided and clinician-guided formats, suggesting guided support did not substantially improve retention. These findings suggest that attrition may remain a challenge in digital interventions regardless of delivery format, but may be amplified in self-guided studies, potentially contributing to the high attrition noted in the current study.

Participant characteristics

The sample predominantly composed of women in their thirties who were partnered, white, and employed, suggesting a relatively socioeconomically advantaged group. This is consistent with findings by Bright et al. (2021), whose sample similarly comprised partnered, highly educated women in their early thirties. These characteristics may reflect those more likely to engage with online mental health and wellbeing interventions, but limit the generalisability of findings to more diverse or disadvantaged populations. This may also reflect barriers to accessing DMHIs among disadvantaged groups, including digital access or language barriers. A notable sample feature was that just over half of participants were not experiencing their first pregnancy, and a number of these reported previous perinatal anxiety or depression. This may suggest that some women were actively seeking support or early intervention following previous perinatal mental health difficulties, and, in line with Savoy et al. (2022), may be utilising self-care strategies and low-intensity support. The programme may therefore offer a useful resource for this group by providing psychoeducation and supporting understanding of mental health during pregnancy.

Baseline findings indicate that the sample included women experiencing a range of symptom severity, from low to mild-to-moderate psychological distress, consistent with the intended universal nature of the intervention. This aligns with previous research suggesting that individuals engaging with universal perinatal interventions may nonetheless present with elevated symptoms, indicating that such programmes may serve as an accessible entry point for those experiencing psychological distress (Davis et al., 2024).

Engagement

Overall, engagement was variable, with some participants demonstrating low logins and partial completion. Of those who enrolled in the study, 63% registered for EYP-CBT. Qualitative responses identified several barriers to engagement, including time constraints, competing demands (e.g., childcare and household responsibilities), and usability issues such as limited mobile access and problems with video functionality. These findings highlight the importance of ensuring that digital interventions are accessible and user-friendly.

These barriers can be understood within the COM-B model (Michie et al., 2011), where engagement appeared to be influenced primarily by opportunity-related factors, including time demands, competing responsibilities, and usability issues. There was limited evidence of motivational barriers, suggesting that challenges were less related to willingness to engage and more to practical constraints. Reduced capability (e.g. fatigue and stress) may also have played a role. This pattern may reflect the demands of the perinatal period, where time and competing responsibilities are particularly salient; however, this interpretation should be considered cautiously given the small number of qualitative responses. Descriptive comparisons between completers and non-completers suggested that completers reported lower baseline symptoms and fewer current mental health difficulties. This may indicate that individuals experiencing higher levels of distress were less likely to remain engaged, potentially reflecting reduced capability within the COM-B framework. Alternatively, those with higher levels of distress may have sought more intensive support. However, these interpretations remain tentative given the small and unequal group sizes. Registrations and logins were lowest in December and highest in January, suggesting the possibility that engagement may also have been influenced by increased demands generally experienced in December, and increased motivation in January.

Although most participants (64.2%) reported that no additional support was required, some indicated that optional support (e.g., telephone or face-to-face contact) may have improved engagement, suggesting that while self-guided formats are acceptable for many, additional support may benefit some individuals. Finally, although engagement was variable, this does not necessarily indicate a lack of benefit. Engagement with DMHI's may not depend solely on frequency of use; benefits may instead depend on which components are accessed and how meaningful these are to participants rather than how often users have engaged (Perski et al., 2017). This is supported by qualitative findings suggesting that some women who discontinue perinatal digital interventions still report benefits, including increased self-awareness and the acquisition of useful knowledge or strategies (Valla et al., 2023).

Acceptability

Participant feedback suggested that the course was generally acceptable and aligned with participants' expectations, with the pregnancy and CBT modules both perceived as helpful and reassuring. However, perceived changes in knowledge, attitudes, or behaviour were more variable, with only a small number of participants reporting benefits, while others described limited or no impact. Additionally, the extent to which the CBT components contributed to these changes was unclear, or how the content or strategies were enacted in participants' daily lives. Suggestions for improvement related to usability issues and the provision of optional support. A small number of participants also found the content too basic. One participant suggested that the course may be more beneficial if offered earlier in pregnancy. This was also suggested by a third sector organisation who shared the study resource, and reported on the high levels of anxiety women often experience in the first 12 weeks of pregnancy.

Overall, although feedback was largely positive, these findings highlight areas for refinement to improve acceptability.

Preliminary outcomes

Exploratory analyses indicated small, non-significant changes in depression and wellbeing outcomes from baseline to six weeks. These findings should be interpreted cautiously, as the analyses were underpowered and based on a small sample of completers. Descriptive scores in the follow-up sample showed improvements across measures compared to the baseline sample, however these observations are based on a smaller, non-equivalent sample and cannot be interpreted as changes over time, as differences may reflect characteristics of those

who remained in the study. Overall, while there is some indication of potential benefit, the findings are preliminary and insufficient to draw conclusions regarding effectiveness. These findings are consistent with feasibility study guidance, which emphasises that outcome analyses are exploratory and not intended to determine effectiveness (e.g., Teresi et al., 2021).

Strengths and Limitations

This study evaluated a new CBT-informed DMHI targeting the antenatal period, contributing to the growing need for accessible mental health and wellbeing support during pregnancy. Community-based recruitment enhances the real-world relevance of the findings, and a mixed-methods approach enabled a comprehensive assessment of feasibility, engagement, and participant experience. Efforts were also made to enhance inclusivity through outreach to a large number of third-sector organisations. However, several limitations should be considered. Attrition was high, raising the possibility of attrition bias. Although efforts were made to capture feedback from all participants, including non-engagers, only one such participant provided feedback. As a result, the findings likely overrepresent individuals who were better able to engage with EYP-CBT. The sample was relatively homogeneous, comprising predominantly socioeconomically advantaged participants, which may limit generalisability. Despite attempts to recruit more diverse participants, this proved challenging. Self-selection bias may have influenced the sample, as recruitment was primarily conducted via social media; however, this approach is consistent with community-based recruitment and supports aims of the study. The gestational eligibility criteria (12–32 weeks) may have been restrictive, with both participant and stakeholder feedback suggesting value in offering support earlier in pregnancy.

Although outcome analyses were exploratory and no statistically significant changes were observed, the single-arm design and small sample size limits the ability to attribute any observed trends to the intervention, as changes over time may reflect natural variation. The study relied on self-report measures, which may be subject to response bias. In addition, the Wellbeing in Pregnancy Questionnaire does not include established clinical cut-offs, limiting interpretability. Furthermore, CBT-specific mechanisms of change were not directly assessed, and there was limited feedback on use of skills, limiting insight into how the intervention may have produced change. Indeed, behavioural enactment has been identified as underreported in studies of engagement of DMHIs, and future research should aim to capture

this more effectively (Davis et al., 2022). Finally, as a universal intervention, the programme was accessed by participants with a range of mental health difficulties (e.g., OCD), reflecting its broad appeal; however, this also raises questions about whether a universal approach can meet the needs of individuals with more specific or complex presentations.

Implications for clinical practice and future research

EYP-CBT may be particularly suited as a low-intensity programme offering support for women with mild or emerging difficulties who may not meet thresholds for specialist services. Disseminating interventions such as this within community settings is important to ensure awareness and access, particularly for women who are not connected with mental health services or who prefer more anonymous forms of support. Findings suggest that EYP-CBT is acceptable; however, a larger trial is required to determine its effectiveness. Consistent with existing evidence, future research should consider incorporating guided support to enhance engagement and reduce attrition. In line with the COM-B framework, opportunity-related barriers, such as time demands, were particularly salient; therefore, improving mobile accessibility and overall usability may further support engagement.

Future studies should also seek to better understand mechanisms of change of EYP-CBT, by incorporating methods that more directly assess cognitive and behavioural change processes, and enactment of acquired skills or learning into daily life. Efforts to improve engagement among underrepresented populations are also needed. This may include strengthening partnerships with third-sector organisations or embedding digital interventions within routine care pathways to support uptake and sustained use. In the perinatal context, this could involve signposting through midwives during routine antenatal care. Indeed, although participants for this study were not recruited through NHS services, there was interest from NHS settings, suggesting potential for integration within routine care pathways. Expanding the gestational eligibility window may also improve reach and relevance. Finally, future research should more clearly differentiate recruitment sources, as overlap between categories (e.g., social media and third-sector dissemination on social media) may limit the precision of the recruitment data in this study.

Conclusion

This study highlights both the potential and the challenges of implementing a self-guided, CBT-informed DMHI for wellbeing in pregnancy. Although formal progression criteria were not specified a priori, feasibility outcomes relating to recruitment, retention, engagement, and acceptability inform interpretation of overall feasibility. Findings indicated mixed feasibility: while recruitment was achievable and the intervention acceptable, high attrition suggests that further refinement is required prior to progression to a larger trial. Such refinements may include incorporating guided support, improving usability and accessibility, strengthening integration with routine care and third-sector organisations, and expanding the gestational window. Enhancing engagement through these approaches may improve reach and potential effectiveness, particularly among more diverse populations.

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Declarations

Competing interests: The primary researcher declares no competing interests. The original 'Enjoy your Pregnancy' course is marketed commercially by Five Areas Ltd, of which Professor Chris Williams, supervisor of this project is shareholder and director.

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Chapter 3 - Appendices

Appendix 1.1 Prisma Checklist

Section and Topic	Item #	Checklist item	Location where item is reported
TITLE			
Title	1	Identify the report as a systematic review.	Pg.7
ABSTRACT			
Abstract	2	See the PRISMA 2020 for Abstracts checklist.	Pg.8
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of existing knowledge.	Pg,10
Objectives	4	Provide an explicit statement of the objective(s) or question(s) the review addresses.	Pg.11
METHODS			
Eligibility criteria	5	Specify the inclusion and exclusion criteria for the review and how studies were grouped for the syntheses.	Pg.13
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.	Pg.12
Search strategy	7	Present the full search strategies for all databases, registers and websites, including any filters and limits used.	Pg. 82-86
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.	Pg13
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.	Pg13-14
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.	Pg14
	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.	Pg14
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.	Pg14
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	13a	Describe the processes used to decide which studies were eligible for each synthesis (e.g. tabulating the study intervention characteristics and	N/A

Section and Topic	Item #	Checklist item	Location where item is reported
methods		comparing against the planned groups for each synthesis (item #5)).	
	13b	Describe any methods required to prepare the data for presentation or synthesis, such as handling of missing summary statistics, or data conversions.	Pg14
	13c	Describe any methods used to tabulate or visually display results of individual studies and syntheses.	Pg14
	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.	Pg14
	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).	N/A
Certainty assessment	15	Describe any methods used to assess certainty (or confidence) in the body of evidence for an outcome.	N/A
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.	Pg16
	16b	Cite studies that might appear to meet the inclusion criteria, but which were excluded, and explain why they were excluded.	Pg16
Study characteristics	17	Cite each included study and present its characteristics.	Pg 17-23
Risk of bias in studies	18	Present assessments of risk of bias for each included study.	Pg24-25
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.	Pg17-25
	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.	N/A
Certainty of evidence	22	Present assessments of certainty (or confidence) in the body of evidence for each outcome assessed.	N/A
DISCUSSION			

Section and Topic	Item #	Checklist item	Location where item is reported
Discussion	23a	Provide a general interpretation of the results in the context of other evidence.	Pg33-4
	23b	Discuss any limitations of the evidence included in the review.	Pg34
	23c	Discuss any limitations of the review processes used.	Pg34
	23d	Discuss implications of the results for practice, policy, and future research.	Pg35
OTHER INFORMATION			
Registration and protocol	24a	Provide registration information for the review, including register name and registration number, or state that the review was not registered.	Pg11
	24b	Indicate where the review protocol can be accessed, or state that a protocol was not prepared.	Pg11
	24c	Describe and explain any amendments to information provided at registration or in the protocol.	Pg11
Support	25	Describe sources of financial or non-financial support for the review, and the role of the funders or sponsors in the review.	Pg36
Competing interests	26	Declare any competing interests of review authors.	Pg36
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.	N/A

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. This work is licensed under CC BY 4.0. To view a copy of this license, visit <https://creativecommons.org/licenses/by/4.0/>.

Appendix 1.2 – ENTREQ Checklist

Item No.	Guide and Description	Location page#
1. Aim	State the research question the synthesis addresses	Pg11
2. Synthesis methodology	Identify the synthesis methodology or theoretical framework which underpins the synthesis, and describe the rationale for choice of methodology (e.g. meta-ethnography, thematic synthesis, critical interpretive synthesis, grounded theory synthesis, realist synthesis, meta-aggregation, meta-study, framework synthesis)	Pg14
3. Approach to searching	Indicate whether the search was pre-planned (comprehensive search strategies to seek all available studies) or iterative (to seek all available concepts until they theoretical saturation is achieved)	Pg12
4. Inclusion criteria	Specify the inclusion/exclusion criteria (e.g. in terms of population, language, year limits, type of publication, study type)	Pg13
5. Data sources	Describe the information sources used (e.g. electronic databases (MEDLINE, EMBASE, CINAHL, psycINFO), grey literature databases (digital thesis, policy reports), relevant organisational websites, experts, information specialists, generic web searches (Google Scholar) hand searching, reference lists) and when the searches conducted; provide the rationale for using the data sources	Pg12
6. Electronic Search strategy	Describe the literature search (e.g. provide electronic search strategies with population terms, clinical or health topic terms, experiential or social phenomena related terms, filters for qualitative research, and search limits)	Pg82-86
7. Study screening methods	Describe the process of study screening and sifting (e.g. title, abstract and full text review, number of independent reviewers who screened studies)	Pg13
8. Study characteristics	Present the characteristics of the included studies (e.g. year of publication, country, population, number of participants, data collection, methodology, analysis, research questions)	Pg17-23
9. Study selection results	Identify the number of studies screened and provide reasons for study exclusion (e.g. for comprehensive searching, provide numbers of studies screened and reasons for exclusion indicated in a figure/flowchart; for iterative searching describe reasons for study exclusion and inclusion based on modifications to the research question and/or contribution to theory development)	Pg15
10. Rationale for appraisal	Describe the rationale and approach used to appraise the included studies or selected findings (e.g. assessment of conduct (validity and robustness), assessment of reporting (transparency), assessment of content and utility of the findings)	Pg14

11. Appraisal items	State the tools, frameworks and criteria used to appraise the studies or selected findings (e.g. Existing tools: CASP, QARI, COREQ, Mays and Pope [25]; reviewer developed tools; describe the domains assessed: research team, study design, data analysis and interpretations, reporting)	Pg14
12. Appraisal process	Indicate whether the appraisal was conducted independently by more than one reviewer and if consensus was required	Pg14
13. Appraisal results	Present results of the quality assessment and indicate which articles, if any, were weighted/excluded based on the assessment and give the rationale	Pg24
14. Data extraction	Indicate which sections of the primary studies were analysed and how were the data extracted from the primary studies? (e.g. all text under the headings “results /conclusions” were extracted electronically and entered into a computer software)	Pg14
15. Software	State the computer software used, if any	Microsoft Excel
16. Number of reviewers	Identify who was involved in coding and analysis	Pg14
17. Coding	Describe the process for coding of data (e.g. line by line coding to search for concepts)	Pg14
18. Study comparison	Describe how were comparisons made within and across studies (e.g. subsequent studies were coded into pre-existing concepts, and new concepts were created when deemed necessary)	Pg14
19. Derivation of themes	Explain whether the process of deriving the themes or constructs was inductive or deductive	Pg14
20. Quotations	Provide quotations from the primary studies to illustrate themes/constructs, and identify whether the quotations were participant quotations of the author’s interpretation	Pg26-33
21. Synthesis output	Present rich, compelling and useful results that go beyond a summary of the primary studies (e.g. new interpretation, models of evidence, conceptual models, analytical framework, development of a new theory or construct)	Pg26-33

Appendix 1.3 – Search history

Web of Science – Conducted on 5/2/2026

(perinatal OR pregnancy OR pregnant OR prenatal OR antenatal OR postnatal OR postpartum OR post-partum OR maternal OR mothers OR women)

AND

((digital OR online OR "web-based" OR "internet-based" OR "internet delivered" OR eHealth OR mHealth OR app*) NEAR/3 (intervention* OR program* OR programme* OR treatment* OR therap* OR support))

AND

("mental health" OR psychological OR "emotional wellbeing" OR wellbeing OR well-being OR distress OR stress OR anxiety OR depression OR "depressive symptoms" OR "anxiety symptoms" OR "postnatal depression" OR "postpartum depression" OR "postpartum anxiety")

AND

(qualitative OR "mixed-methods" OR interview* OR "focus group*" OR "thematic analysis" OR "qualitative analysis" OR experience* OR acceptability OR engagement OR usability)

PSYCHInfo – Conducted on 6/2/2026

XB Title or Abstract (perinatal OR pregnancy OR pregnant OR prenatal OR antenatal OR postnatal OR postpartum OR post-partum OR maternal OR mothers OR women)

AND

XB Title or Abstract (digital OR online OR "web-based" OR "internet-based" OR "internet delivered" OR app OR application OR eHealth OR mHealth OR "digital platform" OR "online programme" OR "web-based intervention")

AND

XB Title or Abstract ("mental health" OR psychological OR "emotional wellbeing" OR wellbeing OR well-being OR distress OR stress OR anxiety OR depression OR "depressive symptoms" OR "anxiety symptoms" OR "postnatal depression" OR "postpartum depression" OR "postpartum anxiety")

AND

XB Title or Abstract (qualitative OR "mixed-methods" OR interview OR interviews OR "focus group" OR "focus groups" OR "thematic analysis" OR "qualitative analysis" OR acceptability OR engagement OR usability)

Embase – Conducted on 6/2/2026

#	Query	Results from 6 Feb 2026
1	(perinatal or pregnancy or pregnant or prenatal or antenatal or postnatal or postpartum or post-partum or maternal or mothers or women).ti,ab.	2,455,833
2	exp pregnancy/ or exp postpartum period/ or exp perinatal period/	716,556
3	1 or 2	2,600,035
4	((digital or online or web-based or webbased or internet-based or internetbased or "internet delivered" or eHealth or mHealth or app* or "mobile application*") adj3 (intervention* or program* or programme* or treatment* or therap* or self-help or selfhelp or guided or unguided or support)).ti,ab.	894,098
5	exp internet/ or exp telemedicine/ or exp mobile application/	256,755
6	4 or 5	1,125,345
7	("mental health" or psychological or "emotional wellbeing" or wellbeing or well-being or distress or stress or anxiety or depression or "depressive symptoms" or "anxiety symptoms" or "postnatal depression" or "postpartum depression" or "postpartum anxiety").ti,ab.	2,704,369
8	exp mental health/ or exp postpartum depression/ or exp anxiety disorder/	648,902
9	7 or 8	2,881,779
10	(qualitative or interview* or "focus group*" or "thematic analysis" or "qualitative analysis").ti,ab.	959,519
11	exp qualitative research/	162,510
12	10 or 11	973,425
13	3 and 6 and 9 and 12	3,140
14	limit 13 to english language	3,082

CINAHL – Conducted on 5/2/2026

S14	S5	Expanders - Apply equivalent subjects
	AND	Narrow by Language: - english
	S6	
	AND	
	S11	
	AND	
	S12	
S13	S5 AND S6 AND S11 AND S12	
S12	XB ((qualitative OR "mixed-methods" OR interview* OR "focus group*" OR "thematic analysis" OR "qualitative analysis"))	
S11	S7 OR S8 OR S9 OR S10	
S10	XB (("mental health" OR psychological OR "emotional wellbeing" OR wellbeing OR well-being OR distress OR stress OR anxiety OR depression OR "depressive symptoms" OR "anxiety symptoms" OR "postnatal depression" OR "postpartum depression" OR "postpartum anxiety"))	
S9	(MH "Depression, Postpartum")	
S8	(MH "Anxiety Disorders+")	
S7	(MH "Mental Health")	
S6	XB ((digital OR online OR "web-based" OR "internet-based" OR "internet delivered" OR app OR application OR eHealth OR mHealth OR "digital platform" OR "online programme" OR "web-based intervention"))	
S5	S1 OR S4	
S4	S2 OR S3	
S3	(MH "Postnatal Period+")	
S2	(MH "Pregnancy+")	
S1	XB ((perinatal OR pregnancy OR pregnant OR prenatal OR antenatal OR postnatal OR postpartum OR post-partum OR maternal OR mothers OR women))	

Medline – Conducted on 4/2/2026

1 (perinatal or pregnancy or pregnant or prenatal or antenatal or postnatal or postpartum or post-partum or maternal or mothers or women).ti,ab.
2 (digital or online or web-based or internet-based or "internet delivered" or app or application or eHealth or mHealth or "digital platform" or "online programme" or "web-based intervention").ti,ab.
3 ("mental health" or psychological or "emotional wellbeing" or wellbeing or well-being or distress or stress or anxiety or depression or "depressive symptoms" or "anxiety symptoms" or "postnatal depression" or "postpartum depression" or "postpartum anxiety").ti,ab.
4 (qualitative or "mixed-methods" or interview* or "focus group*" or "thematic analysis" or "qualitative analysis").ti,ab.
5 Pregnancy/
6 Postpartum Period/
7 1 or 5 or 6
8 Mental Health/
9 Depression, Postpartum/
10 Anxiety/
11 3 or 8 or 9 or 10
12 7 and 2 and 11 and 4
13 limit 12 to English language

Appendix 2.1 – Ethics Approvals letter



Miriam Boyd

MVLS College Ethics Committee

Project Title: Feasibility study of 'Enjoy your Pregnancy-Cognitive behavioural therapy (EYP-CBT)' course

Application No: 200240501

The College Ethics Committee has reviewed your application and has agreed that there is no objection on ethical grounds to the study.

We are happy therefore to approve the project, subject to the following conditions:

- Finalisation of the data sharing agreement is a condition for MVLS ethics approval to remain valid. Ethics approval is therefore subject to completion of this task before the project commences. Once finalised, please forward the agreement to the MVLS Ethics Administrator for filing.
- Project end date as stipulated in original application.
- The data should be held securely for a period of ten years after the completion of the research project, or for longer if specified by the research funder or sponsor, in accordance with the [University's Code of Good Practice in Research](#).
- The research should be carried out only on the sites, and/or groups or datasets as defined in the application.
- Any proposed changes in the protocol should be submitted for reassessment, except when it is necessary to change the protocol to eliminate hazard to the subjects or where the change involves only the administrative aspects of the project. The Ethics Committee should be informed of any such changes.
- You should submit a short end of study report within 3 months of completion.

Yours sincerely,

Senior Lecturer in Anatomy
MVLS College Ethics Committee Vice-Chair

School of Medicine, Dentistry and Nursing
College of Medical, Veterinary and Life Sciences
University of Glasgow
Anatomy Facility | Thomson Building |
University Avenue | Glasgow G12 8QQ
Tel: +44 (0)141 330 7726
Email: [REDACTED]

Appendix 2.2 – Email correspondence confirming minor amendments

Minor amendments were made to the original ethics application including change of image on recruitment poster and change of wording on one feedback question: approved by ethics chair via email correspondence.

Re: Admin updates and data sharing agreement

MB

Miriam Boyd (PGR)

To: ○ MVLS Ethics Admin

Mon 9/1/2025 4:44 PM

Thank you [REDACTED]

Kind regards,
Miriam

From: MVLS Ethics Admin <mvls-ethics-admin@glasgow.ac.uk>

Sent: Monday, September 1, 2025 2:14 PM

To: Miriam Boyd (PGR) <[REDACTED]@student.gla.ac.uk>

Subject: RE: Admin updates and data sharing agreement

Thanks Miriam, I've stored these in the file for reference.

Regards

MVLS Ethics Committee Administrator

Research Ethics System for applications
<https://frontdoor.spa.gla.ac.uk/researchethics/Home.aspx>

MVLS Ethics Committee webpages
<https://www.gla.ac.uk/colleges/mvls/researchinnovationengagementsupport/collegeethicscommittee/>

Ethics system knowledge base
<https://glasgow.saasiteu.com/Modules/SelfService/#knowledgeBase>

From: Miriam Boyd (PGR) <[REDACTED]@student.gla.ac.uk>

Sent: 29 August 2025 10:46

To: MVLS Ethics Admin <mvls-ethics-admin@glasgow.ac.uk>

Subject: Admin updates and data sharing agreement

Hello,

I hope you are well. I am getting into touch regarding my approved project 'Feasibility study of 'Enjoy your Pregnancy-Cognitive behavioural therapy (EYP-CBT)' (Application No: 200240501).

I have attached the data sharing agreement for filing, as stipulated in the approval letter.

about:blank

1/1

Appendix 2.2 – Email correspondence confirming minor amendments

Further minor amendments made including change of timeline of course from 8 to 6 weeks and clarifying correct number of modules (11 not 10); approved by the ethics committee via email correspondence.

That's great, thanks so much for letting me know.

Best wishes,
Miriam

From: MVLS Ethics Admin <mvl-ethics-admin@glasgow.ac.uk>
Sent: Wednesday, September 17, 2025 3:45 PM
To: Miriam Boyd (PGR) <[REDACTED]@student.gla.ac.uk>
Cc: MVLS Ethics Admin <mvl-ethics-admin@glasgow.ac.uk>
Subject: RE: Minor Amendment to Research Project – Timeline and Module Clarification

Hi Miriam

Thanks for waiting. The Chair says this amendment is fine to approve. I've stored everything in the file for reference.

MVLS Ethics Committee Administrator

Research Ethics System for applications
<https://frontdoor.spa.gla.ac.uk/researchethics/Home.aspx>

MVLS Ethics Committee webpages
<https://www.gla.ac.uk/colleges/mvls/researchinnovationengagementsupport/collegeethicscommittee/>

Ethics system knowledge base
<https://glasgow.saasiteu.com/Modules/SelfService/#knowledgeBase>

From: Miriam Boyd (PGR) <[REDACTED]@student.gla.ac.uk>
Sent: 12 September 2025 15:27
To: MVLS Ethics Admin <mvl-ethics-admin@glasgow.ac.uk>
Subject: Re: Minor Amendment to Research Project – Timeline and Module Clarification

Mail

about:blank

1/1

Appendix 2.3 – Data sharing agreement

Docusign Envelope ID: 7C9D62CD-2443-4375-8888-B081A7E4FCC3

From [REDACTED]
Deputy Head of Legal
Legal & Contracts
Room 241 Isabella Elder Building
University of Glasgow
Glasgow G12 8QQ
Direct Line 0141 330 7725
E-Mail [REDACTED]



Five Areas Ltd,
Titan Enterprise Business Centre,
1 Aurora Avenue, Clydebank,
G81 1B

By email to [REDACTED]

Our Ref: U24601
21st August 2025

Dear Sirs

Re: Miriam Boyd Student Project Data – D Clin Psy project entitled Feasibility study of ‘Enjoy your Pregnancy-CBT’ course” (the “Project”)

This letter sets out the terms under which Five Areas Ltd (the “Company”) shall transfer to the University Court of the University of Glasgow of University Avenue, Glasgow G12 8QQ (the “University”) certain data related to participant registration, logins and content use of the *Enjoy your Pregnancy-CBT* course (the “Data”) for use in the Project by both Miriam Boyd (the “Student”) and the University (“Users”).

1. The Company shall permit the Users to use the Data for the Project and generally for non-commercial academic research purposes, without limit of time and for no cost.
2. The Company shall procure that it only provides to the Users Data that it has lawfully the right to transfer and is fully anonymised and does not constitute personal data which is controlled or subject to the laws of any privacy regime which applies to it; or applies to any onward transfer of the data to or any use by the Users.
3. The Company shall ensure that it shall not upload any confidential information or proprietary intellectual property belonging to them or any third party.
4. The Company confirms that all data has been collected lawfully and it has the necessary rights to provide it to the to be used by the Users for the Project.

Please sign below to confirm the Company's acceptance of the above terms.

The University of Glasgow
Charity Number SC004401

Appendix 2.3 – Data sharing agreement

Docusign Envelope ID: 7C9D62CD-2443-4375-8888-B081A7E4FCC3

2

Yours sincerely,

22 August 2025

Deputy Head of Legal
For and on behalf of the University Court of the University of Glasgow

Accepted for and on behalf of Five Areas Ltd

Name: [REDACTED]

Position: Director

Signature:

Date: 21/8/25

Appendix 2.4 – CONSORT Guidelines for Feasibility studies



CONSORT 2010 checklist of information to include when reporting a pilot or feasibility trial*

Section/Topic	Item No	Checklist item	Reported on page No
Title and abstract			
	1a	Identification as a pilot or feasibility randomised trial in the title	Pg41
	1b	Structured summary of pilot trial design, methods, results, and conclusions (for specific guidance see CONSORT abstract extension for pilot trials)	Pg45
Introduction			
Background and objectives	2a	Scientific background and explanation of rationale for future definitive trial, and reasons for randomised pilot trial	Pg47-48
	2b	Specific objectives or research questions for pilot trial	Pg48
Methods			
Trial design	3a	Description of pilot trial design (such as parallel, factorial) including allocation ratio	Pg48
	3b	Important changes to methods after pilot trial commencement (such as eligibility criteria), with reasons	N/A
Participants	4a	Eligibility criteria for participants	Pg49
	4b	Settings and locations where the data were collected	Pg49
	4c	How participants were identified and consented	Pg49-50
Interventions	5	The interventions for each group with sufficient details to allow replication, including how and when they were actually administered	Pg51-52
Outcomes	6a	Completely defined prespecified assessments or measurements to address each pilot trial objective specified in 2b, including how and when they were assessed	Pg51
	6b	Any changes to pilot trial assessments or measurements after the pilot trial commenced, with reasons	N/A
	6c	If applicable, prespecified criteria used to judge whether, or how, to proceed with future definitive trial	N/A
Sample size	7a	Rationale for numbers in the pilot trial	Pg47
	7b	When applicable, explanation of any interim analyses and stopping guidelines	N/A

Randomisation:			
Sequence generation	8a	Method used to generate the random allocation sequence	N/A
	8b	Type of randomisation(s); details of any restriction (such as blocking and block size)	N/A
Allocation concealment mechanism	9	Mechanism used to implement the random allocation sequence (such as sequentially numbered containers), describing any steps taken to conceal the sequence until interventions were assigned	N/A
Implementation	10	Who generated the random allocation sequence, who enrolled participants, and who assigned participants to interventions	N/A
Blinding	11a	If done, who was blinded after assignment to interventions (for example, participants, care providers, those assessing outcomes) and how	N/A
	11b	If relevant, description of the similarity of interventions	N/A
Statistical methods	12	Methods used to address each pilot trial objective whether qualitative or quantitative	
Results			
Participant flow (a diagram is strongly recommended)	13a	For each group, the numbers of participants who were approached and/or assessed for eligibility, randomly assigned, received intended treatment, and were assessed for each objective	Pg54
	13b	For each group, losses and exclusions after randomisation, together with reasons	Pg53-54
Recruitment	14a	Dates defining the periods of recruitment and follow-up	Pg49
	14b	Why the pilot trial ended or was stopped	N/A
Baseline data	15	A table showing baseline demographic and clinical characteristics for each group	Pg55
Numbers analysed	16	For each objective, number of participants (denominator) included in each analysis. If relevant, these numbers should be by randomised group	N/A
Outcomes and estimation	17	For each objective, results including expressions of uncertainty (such as 95% confidence interval) for any estimates. If relevant, these results should be by randomised group	Pg63
Ancillary analyses	18	Results of any other analyses performed that could be used to inform the future definitive trial	N/A
Harms	19	All important harms or unintended effects in each group (for specific guidance see CONSORT for harms)	N/A
	19a	If relevant, other important unintended consequences	N/A
Discussion			
Limitations	20	Pilot trial limitations, addressing sources of potential bias and remaining uncertainty about feasibility	Pg69
Generalisability	21	Generalisability (applicability) of pilot trial methods and findings to future definitive trial and other studies	Pg69
Interpretation	22	Interpretation consistent with pilot trial objectives and findings, balancing potential benefits and harms, and considering other relevant evidence	Pg65-69
	22a	Implications for progression from pilot to future definitive trial, including any proposed amendments	Pg71
Other information			

Registration	23	Registration number for pilot trial and name of trial registry	N/A
Protocol	24	Where the pilot trial protocol can be accessed, if available	N/A
Funding	25	Sources of funding and other support (such as supply of drugs), role of funders	N/A
	26	Ethical approval or approval by research review committee, confirmed with reference number	Pg48

Citation: Eldridge SM, Chan CL, Campbell MJ, Bond CM, Hopewell S, Thabane L, et al. CONSORT 2010 statement: extension to randomised pilot and feasibility trials. BMJ. 2016;355. This is an Open Access article distributed in accordance with the terms of the Creative Commons Attribution (CC BY 3.0) license (<http://creativecommons.org/licenses/by/3.0/>), which permits others to distribute, remix, adapt and build upon this work, for commercial use, provided the original work is properly cited.

*We strongly recommend reading this statement in conjunction with the CONSORT 2010, extension to randomised pilot and feasibility trials, Explanation and Elaboration for important clarifications on all the items. If relevant, we also recommend reading CONSORT extensions for cluster randomised trials, non-inferiority and equivalence trials, non-pharmacological treatments, herbal interventions, and pragmatic trials. Additional extensions are forthcoming: for those and for up-to-date references relevant to this checklist, see www.consort-statement.org.

Appendix 2.5 – MRP Proposal

<https://osf.io/z7u2a/files/j9h8x>

Appendix 2.6 – Participant Study Documentation

Study Recruitment poster - <https://osf.io/z7u2a/files/6bkwv>

Participant Information sheet – <https://osf.io/z7u2a/files/njsdb>

Privacy Notice – <https://osf.io/z7u2a/files/kep62>

Consent form - <https://osf.io/z7u2a/files/uftkb>

Participant Mental health Resources - <https://osf.io/z7u2a/files/b7dg8>

Appendix 2.7 – List of contacted Third sector organisations & responses

Organisation	Type	Outcome
Kin Collective	Third sector	No response
Dr Bell Family centre	Third sector	Agreed to share study
Pregnancy Counselling & Care Scotland	Third sector	Agreed to share study
Stepping Stones North Edinburgh	Third sector	Agreed to share study
Aberlour Whole Family Wellbeing support	Third sector	Agreed to share study
Home-Start Edinburgh	Third sector	Agreed to share study
Pregnancy sickness support	Third sector	No response
PANDAS Foundation	Third sector	Only share studies from partner organisations
Home Start Orkney	Third sector	No response
Outside the Box	Third sector	No response
Sure Start Midlothian	Third sector	Agreed to share study
Multi-Cultural Family Base – Edinburgh	Third sector	No response
Crossreach	Third sector	Agreed to share study
Positive Birth	Third sector	No response
Social Enterprise Scotland	Third sector	No response
Juno perinatal Mental health	Third sector	No response
Home link family support	Third sector	No response
PEEK	Third sector	Agreed to share study
Healthy Valleys	Third sector	No response
Merry go round	Third sector	No response
Biggar playgroup	Third sector	No response
Amma birth companions Glasgow	Third sector	No response
Fife Gingerbread	Third sector	No response
Playworks Dumfries	Third sector	No response
PMH Borders	Third sector	No response
Bluebell Crossreach	Third sector	No response
Swaddle Lanarkshire	Third sector	No response
LGBT Rainbow Family community	Third sector	No response
Saheliya's Edinburgh	Third sector	No response
Mum's Aid	Third sector	No response
Home Start UK wide	Third sector	No response
Happy Baby community	Third sector	Did not have the resources to implement with clients (language barriers)
Maternity Action	Third sector	No response
Parents in Mind NCT	Third sector	No response

Maternal Mental health alliance	Third sector	Agreed to share study
Family Action	Third sector	No response
NSPCC	Third sector	Agreed to share study
Black mothers matter	Third sector	No response
Tommy's pregnancy charity	Third sector	No response
LGBT mummies	Third sector	No response
Birthrights	Third sector	Agreed to share study
Pregnant then screwed	Third sector	Agreed to share study
Glasgow University counselling service	Third sector	No response
Daisy First Aid central Scotland	Third sector	Agreed to share study
Dundee Pap charity	Third sector	No response
Latnem charity	Third sector	No response
Black blossom alliance	Third sector	No response
Active pregnancy foundation	Third sector	No response
Baby Lifeline	Third sector	Agreed to share study
Peanut app	Third sector	No response
Light peer support	Third sector	No response
Parents First UK	Third sector	No response
Families and babies UK	Third sector	No response
The motherhood group	Third sector	Agreed to share study
The White ribbon alliance	Third sector	No response
Circle	Third sector	No response
Life charity	Third sector	Agreed to share study
Birth companions	Third sector	No response
Young parents support base	Third sector	Agreed to share study
Life care centre	Third sector	Agreed to share study
Perinatal Mental health network	Third sector	Agreed to share study

Appendix 2.8- Participant Questionnaires

Eligibility screen - <https://osf.io/z7u2a/files/zevfu>

Registration & Demographics - <https://osf.io/z7u2a/files/cz2pk>

Participant Feedback questionnaire - <https://osf.io/z7u2a/files/sgmey>

Appendix 2.9 – Reflexivity Statement

I am a white female Trainee Clinical psychologist with personal experience of pregnancy and the postnatal period. I have been completing my clinical placement with the Maternity and Neonatal Psychological Interventions (MNPI) team and the Community Perinatal Mental health (PCMHT) team. Through both personal and professional experience, I have developed an understanding of the changes that can occur pregnancy, the impact of this on women's mental health and wellbeing, and the challenges women can face in accessing appropriate support. These experiences informed my interest in evaluating a self-guided digital intervention and may have shaped aspects of the study design, including the focus on community-based recruitment.

I was responsible for recruitment and dissemination, which involved contacting a range of community and third-sector organisations. While I aimed to maximise inclusivity in this study, my prior knowledge of perinatal services and organisations, alongside personal familiarity of some, may have influenced which groups were approached and engaged with, and therefore the characteristics of the sample. I recognise that this may have shaped the reach of the study and the perspectives represented. In selecting outcome measures and conducting the analysis, I drew on my clinical training and existing knowledge of established questionnaires. Although this supported the feasibility and relevance of the study, it may also have introduced assumptions about what constitutes meaningful change or engagement.

Reflexivity was maintained throughout the research process. I was mindful of my own experiences of wellbeing during pregnancy, as well as the perspectives of women I have worked with clinically. In the qualitative analysis of open-ended responses, I aimed to remain grounded in participants' accounts, and stay close to the data, rather than be guided by prior assumptions or experiences. Ongoing reflection, alongside regular supervision, supported consideration of potential biases and helped ensure that interpretations remained closely aligned with the data.

Appendix 2.10 – Data Availability Statement

Participants provided informed consent for the collection, anonymisation, and storage of their data. Identifiable data will be securely deleted following study completion, and anonymised data will be retained for a minimum of 10 years in accordance with University of Glasgow policy. Due to ethical and confidentiality considerations, the data are not publicly available, but may be shared in anonymised form on reasonable request, in line with participant consent and data protection regulations.

Appendix 2.11 – Detailed Data Analysis Plan

Detailed Data Analysis plan - <https://osf.io/z7u2a/files/8dcmb>

Appendix 2.12 – Detailed Record of Analysis

Detailed Record of Analysis - <https://osf.io/z7u2a/files/n93k4>

SPSS Syntax with comments - <https://osf.io/z7u2a/files/3gc46>