Review Article

Effectiveness of the third wave cognitive behavior therapy for peripartum depression treatment–A systematic review

M.F. Rodriguez-Muñoz [a],[*], S. Nakić Radoš [b], A. Uka [c],[l], M. Marques [d],[e],[k], B.R. Maia [f], M. Matos [e],
M. Branquinho [e], R. Aydın [g], V. Mahmoodi [h], Magdalena Chrzan-Dętkoś [i],
Tamara Walczak-Kozłowska [i], I. Liakea [j]

[a] Faculty of Psychology, Universidad Nacional de Educación a Distancia, Madrid, Spain
[b] Department of Psychology, Catholic University of Croatia, Zagreb, Croatia
[c] Research Center for Sustainable Development and Innovation, University College "Beder", Tirana, Albania
[d] Coimbra Hospital and Universitary Centre (CHUC), Portugal
[e] Center for Research in Neuropsychology and Cognitive Behavioral Intervention (CINEICC), University of Coimbra, Coimbra, Portugal
[f] Faculty of Philosophy and Social Sciences, Centre for Philosophical and Humanistic Studies, Universidade Católica Portuguesa, Braga, Portugal
[g] Faculty of Health Sciences, Department of Nursing, Karadeniz Technical University, Trabzon, Turkey
[h] Department of Psychiatry, Columbia University Irving Medical Center, New York, NY, United States
[i] Institute of Psychology, University of Gdansk, Gdansk, Poland
[j] Behavioral Science Institute, Radboud University, Nijmegen, Netherlands
[k] Institute of Psychological Medicine (IPM), Coimbra, Portugal
[l] Department of Nursing and Physiotherapy, Western Balkans University, Tirana, Albania

ARTICLE INFO

ABSTRACT

Introduction: To investigate the effectiveness of third-wave cognitive behavior therapies in the treatment of peripartum depression.
Method: A systematic review of the effectiveness of psychological interventions in treating peripartum depression focus on the Third Wave has been conducted. The electronic databases MEDLINE, PsycINFO, Web of Science and Clinical Trials were searched, using a combination of different search terms. Data were independently extracted by two authors and a synthesis of the results was offered. Methodological quality was assessed by three authors, using ROBE-2 and MINORS. Search date was conducted in February 2022 and the search was re-run in November 2022 for new entries.
Findings: Six papers were included and reported, focused on, the effectiveness of Third Wave approach interventions in reducing depressive symptoms. Papers included the following intervention approaches: Behavioral intervention ($n = 2$), Mindfulness ($n = 2$), Dialectical Behavior Therapy ($n = 1$) and Acceptance and Commitment Therapy ($n = 1$). All six papers were consistent in that interventions lead to a decrease in depression symptoms. However, risk of bias evaluation showed that all were critical low, but one paper was high quality.
Conclusion and implications for practice and research: Systematic review showed that third-wave approaches are promising in effectiveness to reduce depression symptoms in peripartum women. However, more high-quality studies with follow-up are needed.

Introduction

The peripartum period extends from the full duration of pregnancy to the first twelve months postpartum (Fonseca et al.,2020). It is a period of major adjustments, with many women presenting an increased risk of mental health problems, (Gaynes et al., 2005; Langan & Goodbred, 2016, Soto et al., 2021), highlighting depression as the most prevalent disorder in this period (Rodríguez-Muñoz et al., 2023).

The negative impact of peripartum depression problems on women, children, and families are well documented and, for that reason, these problems are seen as a major public health problem requiring intervention or treatment (Howard et al., 2014). In fact, women experiencing

depression present with decreased ability to care for themselves, as well as on the physical health of the foetus (Accortt et al., 2015; Barker et al., 2013; Field, 2015; Slomian et al., 2019). Also, they present a higher risk of relational problems with their partners and their infants (de Magistris et al., 2013). Effects of the impaired mother and infant interaction include physical, physiological,and behavioral problems (Goodman et al., 2011; Slomian et al., 2019). Peripartum mental health problems have also been associated with substantial financial costs (Bauer et al., 2014; Marcos-Nájera et al., 2020).

In a systematic review and meta-regression of the prevalence and incidence of peripartum depression, an estimated overall adjusted pooled prevalence of 11.9 % was found (Woody et al., 2017). Shorey et al. (2018), in a systematic review of 58 studies, involving more than 37.000 previously healthy women, reported a postpartum depression prevalence of 17 %.

Cases of peripartum depression presenting higher severity are usually treated with antidepressants, commonly selective serotonin reuptake inhibitors (SSRIs), with a preference for sertraline (Molenaar et al., 2018). Overall, the literature has suggested that, when possible and available, women tend to prefer psychotherapeutic options, instead of medication, since they fear the possible negative consequences for the infant, as well as the risk of addiction (Goodman, 2009; Molenaar et al., 2018).

Due to consequences of peripartum depression, socioeconomic burden, and prevalence estimates, efforts have been made to develop psychological or psychotherapeutic interventions to treat it, targeting adult perinatal women (Chow et al., 2021; Dennis, 2014; Kimmel et al., 2018; Sockol et al., 2011), with these types of interventions being seen as the first-line treatment for peripartum women presenting a new episode of depression (O`Connor et al., 2016). However, even with evidence supporting the efficacy of some of these interventions, postpartum women and their families face barriers accessing face-to-face treatment or stigma (Goodman, 2009; McLoughlin, 2013; Megnin-Viggars et al., 2015).

According to Cuijpers et al. (2016) and Nillni et al. (2018), cognitive behavioral therapy (CBT), interpersonal therapy (IPT) and psychoeducation are typically considered when women present mild to moderate cases of peripartum depression. In the Nillni et al. (2018) systematic review, both CBT and IPT seem to be associated to better treatment outcomes than the control conditions, independently of the type of intervention (face-to-face or internet interventions), as well as the duration of treatments/number of sessions More recently, in Branquinho et al. (2021) systematic review of systematic reviews and meta-analysis, CBT showed to be the most evidence-based psychological intervention (both individually, in group, face-to-face or internet-based).

Recently, third-wave CBT or contextual-behavioural interventions are growing, encompassing a wide range of therapeutic approaches (Hayes et al., 2011) and considered the natural evolution of CBT, as they try to answer questions and limitations associated with the "classic" CBT model. According to these interventions, it is the function of the internal experience (thoughts, images, sensations, and emotions) and not its content that is essential to understanding psychological suffering (Barlow, 2002; Hoffman and Asmundson, 2008). For this reason, they involve different experiential methods/exercises, usually in a group format, with the potential of reducing costs (compared to one-to-one interventions). Moreover, they aim to develop an accepting and non-judging attitude towards one's internal experiences (e.g., bodily sensations, thoughts, emotions) in the "here and now", focusing on their context and function, instead of the veracity of their content.

Third-wave CBT approaches include Mindfulness Based Interventions (MBIs), Acceptance and Commitment Therapy (ACT) and Compassion Focused Interventions (CFIs). These encompass different mindfulness-based interventions, such as Mindfulness Based Stress Reduction (MBSR, Kabat Zinn, 1990), and Mindfulness Based Cognitive Therapy (MBCT; Segal et al., 2002), compassion-based interventions,

such as Compassion-Focused Therapy (CFT, Gilbert, 2010) or Mindful Self-Compassion (MSC, Neff and Germer, 2013), and ACT (Hayes et al., 2011). It is important to mention Dialectical Behavior Therapy (DBT, Linehan, 1993) and the expanded model of behavioural activation (BA, Martell and Kanter, 2011) as approaches that follow the principles of third-wave CBT.

Although some pilot studies (Dunn et al., 2012; Vieten and Astin, 2008), randomized controlled trials systematic reviews and meta-analyses (Hall et al., 2016; Mancinelli et al., 2022; Taylor et al., 2016; Yan et al., 2022) have been conducted to assess the effectiveness of contextual-behavioral interventions in peripartum depression (in adult women), they are scarce and mostly focused on MBIs. For example, a systematic review and meta-analysis examined the efficacy of third-generation CBTs vs. digital CBTs. for pregnant women in improving sub-clinical depression, and included seven randomized clinical triasl (RCT) (Mancinelli et al., 2022). This study found that these interventions were well accepted and showed efficacy in reducing depression symptoms at the endpoint, albeit it was not maintained during the postpartum period and had no effect on sleep quality. Two other systematic reviews and meta-analyses have focused on the effectiveness of MBIs on the mental health of peripartum women. Taylor et al. (2016) identified 17 controlled and uncontrolled studies of MBIs in the peripartum period, and found significant reductions in depression, as well as significant increases in mindfulness skills at post-intervention, with small to medium effect sizes. However, between-group analyses did not find any significant post-intervention benefits for depressionof MBIs compared to control conditions. In another recent systematic review including 21 RCTs with 1765 peripartum women, Yan et al. (2022) also found mixed results showing that MBIs were effective in reducing depression, as well as increasing mindfulness in peripartum women with current mental health issues. Nevertheless, in peripartum women without current mental health issues, MBIs were not superior to controls in reducing depression and stress and increasing mindfulness.

Similar to other third-wave CBTs, ACT is an effective treatment for depression as determined by several RCTs (Hayes et al., 2013). ACT focuses on the acceptance of internal events (i.e., thoughts, emotions, and somatic sensations), rather than trying to change them. Through consciously experiencing thoughts and experiences, patient's values and goals are used to support psychological flexibility, a core component of ACT. Unfortunately, only a handful of studies have looked at the effectiveness of ACT in treating peripartum depression and no RCTs currently exist. One study of 74 women found a reduction in depressive symptoms and an increase in psychological flexibility (Waters, 2020). Another study on a small sample of 16 women in Iran found similar results, with decreased depression rates and increased psychological flexibility (Kazemeyni, 2018). Given the limited data available, there is no conclusive evidence that ACT is effective for peripartum depression.

In addition to revealing the efficacy third-wave CBT approaches in the treatment of peripartum depression is unclear, the evaluation of the available literature highlights that studies investigating third-wave CBTs have mostly focused on MBIs and examined their effects on a broader range of peripartum mental health difficulties. Furthermore, to the best of our knowledge, there is no systematic review about the effectiveness of third-wave CBT interventions in the treatment of peripartum depression and hence there is a need to include a broader scope of these approaches, namely MBIs, CFIs, ACT, DBT and BA. Moreover, given the methodological variations in the existing studies, it is important to synthesize the evidence about the available interventions.

Therefore, the current systematic review sought to address these gaps in the literature and aimed to investigate the effectiveness of third-wave CBTs in the treatment of peripartum depression (i.e., depression during pregnancy and the first 12 months postpartum). In particular, the aims of the paper were twofold: (1) to examine whether third-wave CBTs interventions are effective either for treating depression during pregnancy and for treating depression in the postpartum period; and (2) to identify the common characteristics of these psychological interventions

that improve depression outcomes. (b) provide a better use of existent evidence; (c) help to inform future research in the area by identifying knowledge gaps in the current literature; and (d) offer guidance for clinicians and researchers.

Methods

Search procedures and eligibly criteria

This systematic review was directed by following the Preferred Reporting Items for Systematic reviews and Meta-Analysis (PRISMA) statement (Cajal et al., 2020; Moher et al., 2009). A protocol was developed to lead different steps underlying this systematic review and was registered on PROSPERO, the International Prospective Register of Systematic Reviews (ID: CRD42022394675).

A systematic review of papers published between from 2000 to November 2022 (written in English), was conducted assessing psychological interventions for the treatment of peripartum depression focused on Third Wave Approach. Database search was conducted independently in February 2022 by two authors (MFR and SNR), and the search was re-run in November 2022 for new entries.

A total of 4 electronic databases were searched: MEDLINE (PubMed), PsycINFO, Web of Science (WOS) and Clinical Trials. The following search terms were combined: [("major depression*") OR (depress*) OR ("mood disorder*") OR ("affective disorder*") AND ("perinatal") OR ("perinatal period") OR ("pregnancy") OR ("pregnancy outcomes") OR ("primipara") OR (peripartum) OR (postnatal) OR (postpartum) OR ("postpartum depression") OR (puerperal) OR (prenatal) OR (antenatal) OR (antepartum) OR ("antepartum period") AND ("psychotherapy") OR ("counsel*ing") OR ("psycho* treatment*") OR ("psycho*treatment*") OR ("psycho* intervention*") OR ("psycho*intervention*") OR ("psycho* therap*") OR ("psycho*therap*") OR ("supportive therap*") OR ("supportive treatment*") AND ("behavioral activation") OR ("behavioural activation") OR ("behavior activation") OR ("behaviour activation") OR ("compassion focused therapy") OR ("compassionate mind training") OR ("dialectical behavioral therapy") OR ("dialectical behavioural therapy") OR ("dialectical behavior therapy") OR ("dialectical behaviour therapy") OR ("mindfulness-based stress reduction") OR ("MBSR") OR ("mindfulness-based cognitive therapy") OR ("MBCT") OR ("acceptance and commitment therapy") OR ("ACT") OR ("metacognitive therapy") OR ("mindfulness-based relapse prevention") OR ("MBRP") OR ("functional analytic psychotherapy") OR ("integrative behavioral couple therapy") OR (" IBCT") OR ("cognitive behavioral analysis system of psychotherapy") OR ("mindfulness") OR ("acceptance-based") OR ("meditation") OR ("schema therapy")]

Inclusion and exclusion criteria

Analysis of the articles followed previously established inclusion and exclusion criteria. To be included, articles had to meet the following criteria:

(1) Population: Women with depression symptoms during pregnancy or in the first 12 months postpartum
(2) Intervention: Psychological interventions aiming to treat peripartum depression (depression during pregnancy and the first 12 months postpartum) focused on the Third Wave Approach.
(3) Outcomes: depression symptoms measured with structured clinical interviews or validated screening self-report questionnaires (e.g., Edinburgh Postnatal Depression Scale);
(4) Study design: RCT and non-RCT (including both quantitative and qualitative studies) about the effectiveness (e.g., reduction of symptoms) of psychological interventions related to the Third Wave Approach.

The RCT and Non RCT interventions were excluded if they did not assess the effectiveness of a third-wave CBT intervention to treat peripartum depression or did not include an intervention.

Quality assessment

Search results were exported to an Excel file and duplicates were removed. Two authors (MFR and SNR) independently screened titles and abstracts for eligibility. Potentially eligible papers were, then, extracted, and the two authors individually screened the full text of the articles. Any disagreement was resolved by discussion and, if necessary, by consultation of a third author (BR).

Data extraction

A data group form was settled to extract relevant information from the included papers. Extracted data included the following topics

(a) First authors and year of publication;
(b) Study aims;
(c) Type of study and setting;
(d) Participants' characteristics (including the total number of participants, mean age)
(e) Participants' diagnosis;
(f) Interventions' characteristics – type of the third wave approach (e.g., Mindfulness); delivery format (face-to-face, individual, group, online); duration of intervention (range); number of sessions (range); time of intervention (pregnancy, postpartum or both); follow-up duration
(g) Interventions' providers;
(h) Control group;
(i) Outcome measures.
(j) Main findings.

Two authors (MFR and SN) extracted the data from the included papers. Any doubts or disagreements were resolute through discussion between the authors. Summary tables were made to synthesize the extracted information in a structured format.

Quality assessment

Methodological quality of the included studies was independently assessed by two reviewers (MFR and MC or MFR and N) using MINOR or ROBE-2 (Slim et al., 2003; Sterne et al., 2019), a tool developed for assessing the quality of paper that includes randomized or non-randomized studies. Any divergences on quality ratings were deliberated and a consensus was reached. When disagreements were not resolved by discussion, one author (SNR) was consulted, who also reviewed the quality ratings.

Results

Identification of articles

Search results are summarized in the PRISMA flowchart (Fig. 1). The primary search identified a total of 564 citations, and 7 additional records were collected following reference checking. After duplicates were removed, a total of 520 records were screened based on title and abstract (first step of screening). A total of 487 studies were excluded, and the remaining 33 citations were found for full-text review (second step of screening). After the eligibility assessment, 27 records were excluded (reasons for exclusion are presented in Appendix 1), and 6 articles were included in the systematic review.

Study characteristics

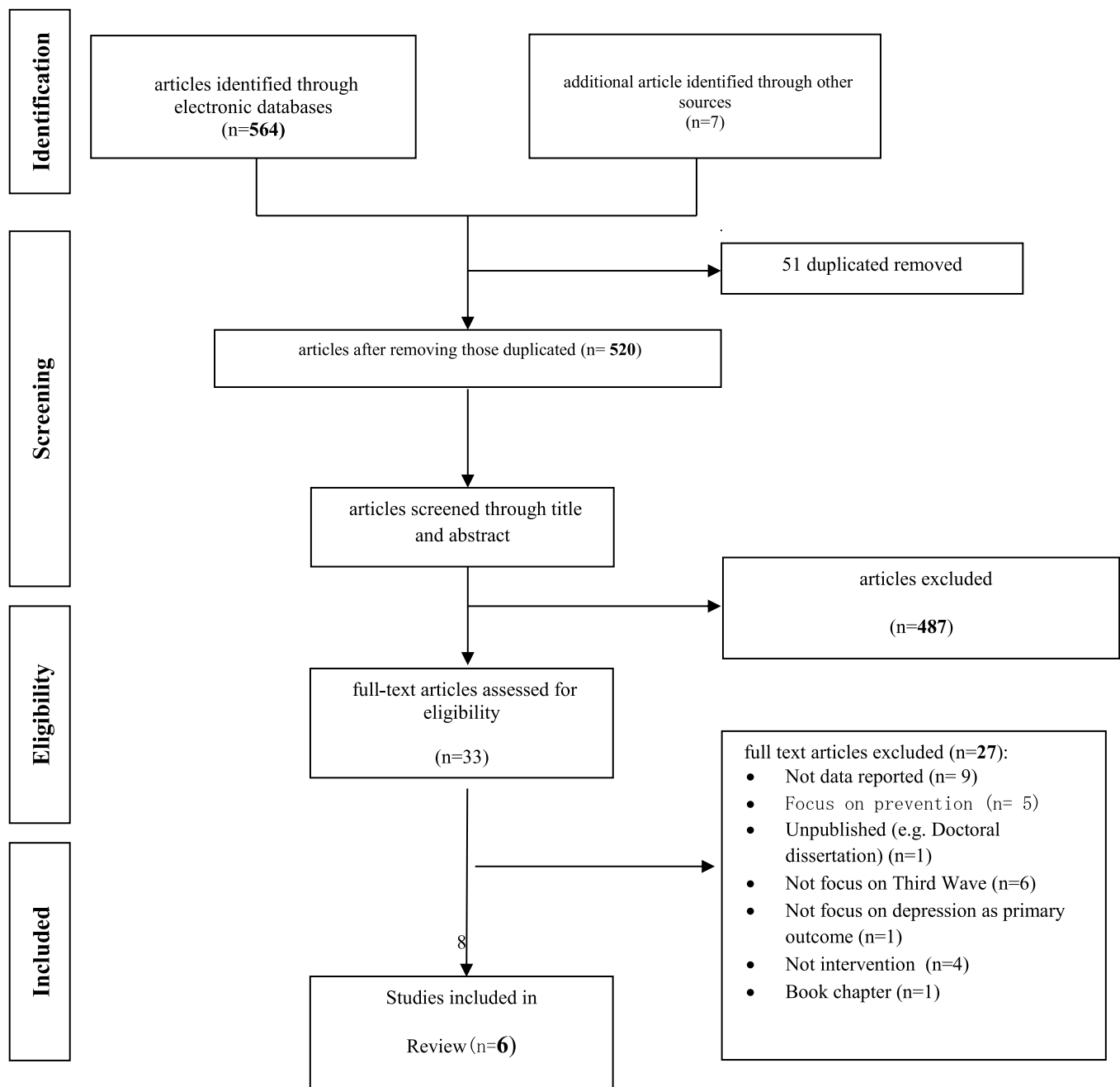Characteristics of the included papers are presented in Table 1. The

Fig. 1. Flow-chart of excluded and included systematic reviews and meta-analyzes.

six studies were published between 2014 and 2022 with a total number of 272 participants. Although one of the papers did not report the average age (O'Mahen et al., 2014), the average age in other papers ranged from 19.24 to 33.5 years.

All six studies evaluated the effectiveness of Third Wave approach in the reduction of depressive symptoms during the peripartum period (including 1 RCT, Woolhouse et al. (2014). Two studies included Behavioral Activation (O'Mahen et al., 2014; Singla et al., 2022), two included Mindfulness (Latendresse et al., 2021; Woolhouse et al., 2014), and one study was on Dialectical Behavior Therapy (Kleiber et al., 2017) and ACT (Waters et al., 2020).

Among the six studies reporting the number of sessions, it ranged from 1 to 12 sessions. Only two of them reported the average number of sessions, ranging from 5.36 to 6.20 sessions. One study was focused on pregnancy only (Woolhouse et al., 2014), one on postpartum period only (O'Mahen et al., 2014), and four of them on the peripartum period (Kleiber et al., 2017; Latendresse et al., 2021; Singla et al., 2022; Waters et al., 2020). Just two papers reported information about the follow up sessions (Latendresse et al., 2021; O'Mahen et al., 2014).

Interventions were generally provided by psychology students or researchers or other health professionals, including nurses, psychologists, psychiatrics and physicians, community health workers or health visitors (Kleiber et al., 2017; Latendresse et al., 2021; O'Mahen et al., 2014; Waters et al., 2020; Woolhouse et al., 2014), and non-specialist providers, such as nurses and midwives with no formal experience delivering mental healthcare (Singla et al., 2022).

The delivery format was online for three studies (O'Mahen et al., 2014; Latendresse et al., 2021; Singla et al., 2022. Two of the interventions were individual (O'Mahen et al., 2014; Singla et al., 2022) and four were delivered in group format (Kleiber et al., 2017;

Table 1
Characteristics of included studies.

First author (year of publication)	Aims	Type of study Setting	Participants' characteristics: Number of participants Mean Age Postpartum or pregnancy	Participants' diagnosis	Type of Third Wave Approach	Intervention's characteristics: a) delivery format (e.g., individual, group, online); b) range of number of sessions (mean); c) range of duration of treatments (mean); d) time of intervention (pregnancy, postpartum or both) e) follow up	Intervention providers	Control group	Outcomes
O'Mahen et al. (2014)	The aims of the study were: (1) to establish recruitment and trial adherence rates; (2) to determine treatment adherence and predictors of modules and telephone sessions; (3) to assess the preliminary effectiveness of NetmumsHWD on depressive and anxious symptoms, and other outcomes; and (4) to gather data on health care utilization in preparation for a health economic assessment	Type of study: Randomized controlled trial Intervention: 12-session treatment course consisting of a core behavioral activation module (five sessions), a relapse prevention session and two optional modules from a list of a possible six. Women had access to a chat room that was moderated by peer supporters. Setting: NR	N = 83 (IG: n = 41; TAU: n = 42) Most participants were homemaker/maternity leave/disability (IG: n = 32, 80.5 %; TAU: n = 32, 80.5 %), married/cohabiting (IG: n = 38, 92.6 %; TAU: n = 38, 90.5 %), had 1 child (IG: n = 19, 46.3 %; TAU: n = 16, 38.1 %) and had an undergraduate degree (IG: n = 13, 31.7 %; TAU: n = 12, 28.6 %). EPDS mean for IG was 20.24 (SD = 3.28) and 21.07 (SD = 4.0) for TAU. Mean age: Not reported, women of age 18 and up Period: postpartum	Major depressive disorder, according to the International Classification of Diseases, 10th Revision (ICD-10)	Behavioral activation	a) online, with weekly phone support b) The number of telephone sessions and computer modules ranged between 0 and 12. Women viewed a mean of 6.74 (SD = 4.53) computer sessions and completed 5.36 (S.D. = 4.62). The mean number of completed telephone support sessions was eight (SD = 4.5, mode = 12). c) 0 to 12 weeks d) Postpartum period e) 6-month post-treatment follow-up	Women received weekly phone call support from mental health workers with undergraduate degrees and 1 year of further clinical qualification in psychological therapies under the UK Improving Access to Psychological Therapies training scheme	TAU, with access to Netmums' general depression chat room	Depressive symptoms; Anxiety; Work and social impairment; Social support; Postnatal bonding; Health service utilization
Latendresse et al. (2021)	The aim of the study was to evaluate the feasibility and preliminary trajectory of a group mindfulness-based cognitive behavioral therapy on symptoms of perinatal depression for 2 groups of women: those with current mild to moderate symptoms of perinatal depression and those at high risk for developing perinatal depression.	Type of study: pilot study Intervention: 8-week synchronous videoconference group intervention (weekly one-hour sessions) Setting: The study sites included one urban clinic associated with an academic health sciences center and one rural clinic associated with a public health clinic serving rural communities	N = 47 (symptomatic: n = 24; asymptomatic high risk: n = 23) 39 participants were pregnant (average gestational age = 24.4 weeks; SD = 8.8; range, 7-40 weeks) and 8 were postpartum. Participants were married or living with a partner (91.4 %) and had a bachelor's or greater education level (78.7 %). EPDS mean was 14.25	(1) Women experiencing mild to moderate symptoms of perinatal depression (scores of 10-20 on the EPDS), and (2) women with no current symptoms of depression (EPDS scores <10) but having high-risk factors for developing perinatal depression	Mindfulness-based cognitive behavioral therapy	a) videoconference group intervention b) 0 to 8 sessions (average number of sessions not provided) c) 0 to 8 weeks (average duration not provided) d) pregnancy and postpartum e) 2-months postintervention and 4-months postintervention	Psychiatric-mental health nurse practitioner	NR	Depressive symptoms

Table 1 (*continued*)

First author (year of publication)	Aims	Type of study Setting	Participants' characteristics: Number of participants Mean Age Postpartum or pregnancy	Participants' diagnosis	Type of Third Wave Approach	Intervention's characteristics: a) delivery format (e.g., individual, group, online); b) range of number of sessions (mean); c) range of duration of treatments (mean); d) time of intervention (pregnancy, postpartum or both) e) follow up	Intervention providers	Control group	Outcomes
			(SD = 4.06) for symptomatic and 5.14 (SD = 2.73) for asymptomatic group. Mean age: 30.63 (SD = 4.31) Period: pregnancy and postpartum						
Kleiber et al. (2017)	This study aimed to evaluate the credibility, feasibility, acceptability, and preliminary outcomes of a DBT group intervention for depressed adolescent perinatal women	Type of study: Feasibility study Intervention: 13-week DBT skills group (weekly two-hour sessions) including a focus on regulating emotions, tolerating challenges and crises, engaging effectively with others, and using mindfulness skills to support all other coping skills. Setting: Two area organizations: a suburban public health program and an urban hospital-based comprehensive, multidisciplinary, prenatal, delivery, and postnatal care program.	N = 25 Most participants had one child (n = 17, 68 %), reported never being married (n = 12, 48 %) and had high school diploma (n = 8, 32 %) Mean age: 19.24 (SD = 1.30) Period: pregnancy and postpartum	Major Depressive Episode, scores of 10 or higher on the EPDS and/or a score of 5 or higher on the depression subscale of the My Mood Monitor	Dialectica behavior therapy	a) group intervention b) of 1 to 12 sessions (M = 6.20, SD = 4.10). c) 1 to 12 weeks (average duration not provided) d) pregnancy and postpartum e) NA	Four advanced clinical psychology graduate students provided the DBT skills intervention, and there were two leaders per group	NR	Depressive symptoms; Treatment Credibility, Feasibility, and Acceptability
Singla et al. (2022)	This study aims to identify relevant barriers and facilitators from the perspectives of participants receiving, and treatment providers delivering, BA for perinatal women with depression and anxiety, and to describe two case studies where BA was used.	Type of study: qualitative study Setting: academic hospitals in Toronto, Chapel Hill, and Chicago.	N = 23 Most participants were married (82.6 %) and were either on maternity leave (34.8 %) or at full-time employment (26.1 %). Mean age: 32 (range from 20 to 40) Period: pregnancy (up to 36 weeks) and postpartum (4–30 weeks postpartum)	Scores of 10 or higher on the EPDS	Behavioral activation	a) Individual, using telemedicine platforms b) 8 weekly sessions c) 8 weeks d) pregnancy and postpartum period e) NR	Mental health specialists (psychiatrists, psychologists or social workers) or trained non-mental health specialist providers (e. g., registered nurses, midwives, with experience in perinatal care but not perinatal mental health care)	NR	Case studies descriptions; Barriers and facilitators of BA in the context of COVID

Table 1 (*continued*)

First author (year of publication)	Aims	Type of study Setting	Participants' characteristics: Number of participants Mean Age Postpartum or pregnancy	Participants' diagnosis	Type of Third Wave Approach	Intervention's characteristics: a) delivery format (e.g., individual, group, online); b) range of number of sessions (mean); c) range of duration of treatments (mean); d) time of intervention (pregnancy, postpartum or both) e) follow up	Intervention providers	Control group	Outcomes
Waters et al. (2020)	The aim of the current study was to assess the feasibility, safety, and effectiveness of a newly developed ACT intervention developed specifically to the context of pregnancy and parenthood.	Type of study: pilot study ACT intervention delivered over eight consecutive weeks (2-hour duration) to groups of 6–10 women Setting: Perinatal Community Mental Health Service	N = 74 Most participants were married (65 %) or cohabitating (25 %), 58 % were primiparous EPDS mean at pre-intervention was 16.69 (SD = 4.71) Mean age: 33.5 (SD = 3.87, range from 23 to 41) Period: pregnancy (61 %) and postpartum (39 %)	Moderate-to-severe mood and/or anxiety disorders (ICD-10 criteria) 42 from the 74 participants met criteria for a depressive disorder. From the women with a depressive disorder, 11 also had a comorbid anxiety disorder.	ACT	a) group-delivered intervention t b) Mean number of sessions (for treatment completers) was 6.5 (SD = 1.1), median = 7 c) 8 weeks d) pregnancy and postpartum e) NR	Two therapists, drawn from a team of five trained staff (two Community Psychiatric Nurses with undergraduate degrees in Mental Health Nursing, one assistant psychologist with a BSc/MSc in Psychology and two final year Doctoral students in Clinical Psychology)	NR	Depressive symptoms; Feasibility, safety, and helpfulness; psychological flexibility; global distress; qualitative data
Woolhouse et al. (2014)	This study aimed to explore the feasibility of a randomised controlled trial of a mindfulness intervention to reduce antenatal depression, anxiety and stress	Type of study: pilot study Royal Women's Hospital in Melbourne, Australia.	N = 20 Most participants were married (80 %) and had a university degree (50 %) or higher (25 %). 50 % had no prior births CES-D mean score at baseline = 23.18 (SD = 8.04) Mean age: 33.70 (SD = 1.29, range from 19 to 45) Period: pregnancy	. A score of ≥16 is used to indicate clinical levels of depression (DASS) scores ≥14 indicating moderate depression.	Mindfulness group therapy	a) Face to face group therapy b) 6 sessions (2-hour duration) c) 6 weeks d) pregnancy e) NR	A female mental health professional (psychiatrist/ psychologist) with specific training in the facilitation of mindfulness groups	TAU (regular appointments with midwives in the antenatal clinic)	Depression anxiety; stress; Mindfulness; Feasibility, including engagement with mindfulness practices;

Note. ACT: Acceptance and Commitment Therapy; CES-D: Centre for Epidemiologic Studies Depression Scale Revised; EPDS: Edinburgh Postnatal Depression Scale; The Depression, Anxiety and Stress Scale-21 (DASS) NR: Not reported; IG: Intervention group; RCT: Randomised Controlled Trial; SD: Standard Deviation; TAU: Treatment as usual.

Latendresse et al., 2021; Waters et al., 2020; Woolhouse et al., 2014).

The measures reported in the studies to assess depressive symptoms were the Edinburgh Postnatal Depression Scale (EPDS; Cox et al., 1987)) (Kleiber et al., 2017; Latendresse et al., 2021; Singla et al., 2022), and clinical interviews such as ICD-10 criteria (O'Mahen et al., 2014; Waters et al., 2020). One study was based on the identification from Centre for Epidemiologic Studies Depression Scale Revised (CES-D) (Radolff, 1977) and The Depression, Anxiety and Stress Scale-21 (DASS) (Lovibond, Lovibond, 1996); (Woolhouse et al., 2014). An other paper used two assessment types, the EPDS and My Mood Monitor (Kleiber et al., 2017).

Regarding secondary outcomes, four papers (O'Mahen et al., 2014; Singla et al., 2022; Waters et al., 2020; Woolhouse et al., 2014) reported that psychological interventions targeting depression can also decrease symptoms of anxiety. Others secondary outcomes reported were focused on improvements of interpersonal relationships (Kleiber et al., 2017; Woolhouse et al., 2014), and the perception of reliability and feasibility of the interventions (O'Mahen et al. 2014; Waters et al., 2020)

Acceptability of the third-way CBT approaches

In terms of acceptability, some studies did not report on it explicitly (e.g., Latendresse et al., 2021). However, in other studies, women reported high satisfaction with the interventions or found interventions to be helpful (Kleiber et al., 2017; Singla et al., 2022; Water et al., 2020). One study found conflicting experiences of some mindfulness practices, with some women reporting an exercise as helpful, and the other as not (Woolhouse et al., 2014). Also, women with impaired functioning at the baseline and those of a lower socioeconomic status (SES) participated in fewer sessions than women with higher functioning or SES level (O'Mahen et al., 2014)

Effectiveness of the third-way CBT approaches

Summary of results are presented in Table 2. The research reported effectiveness of the Third wave approach of psychological interventions in decreasing depressive symptoms for women during the peripartum period (Kleiber et al., 2017; Latendresse et al., 2021; O'Mahen et al., 2014; Singla et al., 2022; Waters et al., 2020; Woolhouse et al., 2014). Three papers (O'Mahen et al., 2014; Waters et al., 2020; Woolhouse et al., 2014) reported the effect size [EPDS (-0.87,95 % CI-0.42 to -1.32); DASS-21 depression scale (Cohen's $d = 0.6$) and CES-D (Cohen's $d = 0.7$)].

In terms of long-term effects, results from two papers (Latendresse et al., 2021; O'Mahen et al., 2014) also provided evidence that improvements in depressive symptoms are maintained at two and six months.

With respect to implementation adherence, four papers reported (Kleiber et al., 2017; Latendresse et al., 2021; O'Mahen et al., 2014; Waters et al., 2020) the number of women who completed the whole treatment, with the adherence ranging between 52 % to 88 %.

Risk of bias

The methodological quality and risk of bias of included studies are presented in Table 3. All non RCT (Kleiber et al., 2017; Latendresse et al., 2021; Singla et al., 2022; Waters et al., 2020; Woolhouse et al., 2014) papers were classified as critically low-quality using MINORS mainly due to the inexistence of a follow-up period or a prospective calculation of the sample. However, the RCT paper (O'Mahen et al., 2014) was evaluated with a high quality by ROBE-2 criteria

Discussion

Given the prevalence and incidence of peripartum depression among women and the detrimental effect on maternal and child well-being, it is essential to identify the most effective third-wave CBTs for the treatment

Table 2
Main findings.

Authors (year of publication)	Main findings
O'Mahen et al. (2014)	*Recruitment and attrition:* Of the 249 women who expressed initial interest in the trial, 83 women were randomized (33 %). Post-treatment EPDS was completed by 37/41 (90 %) women in the NetmumsHWD condition and by 34/42 (81 %) women in the TAU group (χ2 = 1.45, p= 0.23). A 6-month follow-up EPDS was completed by 31/41 (76 %) women in the NetmumsHWD group and 28/41 (68 %) women in the TAU group (χ2 = 0.37, p= 0.47). *Treatment adherence:* The most frequently chosen module was 'Being a good enough mother' (22 %, $n = $ 18/82). A total of 11 women (5 %) completed eight or more computer sessions. Of these, five (1.9 %) women completed 12 computer sessions. The average total time of telephone sessions per participant was 253 min. Women with lower perceived support and who were working or studying for a degree completed fewer modules. Lastly, women with poorer work and social functioning examined with Work and Social Adjustment Scale (WASAS) baseline functioning and who were of a lower socioeconomic status (SES) opened fewer sessions than women with higher functioning or SES level. *Symptoms of depression, anxiety and social adjustment:* There was a between-group difference in EPDS and GAD-7 scores for the observed data analysis at post-treatment favouring the NetmumsHWD group. These differences in the observed results correspond to large Cohen's d effect sizes of EPDS (−0.87, 95 % CI −0.42 to −1.32) and GAD-7 (−0.59, 95 % CI −1.11 to −0.07). There was also a between-group difference in the observed WASAS scores favoring the NetmumsHWD group corresponding to a moderate effect size (−0.57, 95 % CI −0.07 to 1.11). There were no between-group differences in postnatal self-reported bonding or perceived support scores between women in the NetmumsHWD group and those in the TAU group, reflecting a small (0.29, 95 % CI −0.80 to −0.22) and medium (0.50, 95 % CI 1.02 to −0.02) effect size, respectively. In the multiple imputation sensitivity analyses, EPDS, GAD-7 and WASAS scores at 17 weeks post-randomization remained in favor of NetmumsHWD. At 6 months post-treatment follow.up, there was a trend favouring NetmumsHWD (mean = 8.26, S.D. = 5.50) over TAU (mean = 11.14, S.D. = 6.35; mean difference −2.69, 95 % CI −5.80 to −0.42), corresponding to a large effect size (−0.78, 95 % CI −1.82 to 0.10). This was replicated in the multiple imputation sensitivity analysis (mean difference −2.28, 95 % CI −5.41 to 0.84), corresponding to a large effect size (−0.678, 95 % CI −1.121 to −0.236). Reliable and clinically significant improvement: A reliable and clinically significant improvement in depression scores was seen in 62.2 % ($n = $ 23/37) of those in the NetmumsHWD group at post-treatment compared with 29.4 % ($n = $ 10/34) of those in the TAU group. After adjustment for baseline EPDS the odds ratio for a reliable and clinically significant improvement in the treatment group compared with control was 0.26 (95 % CI 0.10–0.71)
Latendresse et al. (2021)	*Recruitment and attrition:* Of women (N = 296) who were screened for perinatal depression and were either symptomatic or asymptomatic with high-risk factors for developing perinatal depression, 77 were contacted about the study. During this contact, 7 were determined not to be eligible and 16 declined to participate. Of the 54 participants who consented, 7 did not complete the enrollment visit. *Treatment adherence:* Of the 47 women enrolled, 73 % of asymptomatic and 68 % of symptomatic women at least 5 out of the 8 sessions. *Symptoms of depression:* For the symptomatic group, there was a significant decrease in EPDS score from time of screening (median = 13.5) to postintervention (median = 11; nonparametric Wilcoxon sign test, Z = −2.11; $P =$ .035). Similarly, there was a significant decrease in EPDS from screening to 2-month follow-up (median = 13.5 to median = 10.3, respectively; Wilcoxon sign test, Z = −2.42;

Table 2 (*continued*)

Authors (year of publication)	Main findings
	$P = .016$). Of the 23 participants who were symptomatic at time of screening, 15 (65.2 %) were symptomatic at postintervention. For the asymptomatic group, there was no significant change in EPDS score from screening to postintervention (median = 5 to median = 6; Wilcoxon sign test, Z = −1.51; $P = .13$). Similarly, among those with a 2-month follow-up measure, there was no significant change in EPDS score from screening to 2-month follow-up (median = 4.7 to median = 5.7; Wilcoxon sign test Z = −0.29; $P = .78$). Of the 20 individuals who completed the EPDS at postintervention and were asymptomatic at the time of initial screening, 4 (20 %) were symptomatic postintervention.
Kleiber et al. (2017)	*Recruitment and attrition:* Of 63 individuals who were referred to the study, 30 (48 %) attended the eligibility assessment, and 25 enrolled (40 % of those referred and 83 % of those assessed for eligibility). Thirteen participants (52 %) completed treatment (i.e., attended ≥ 6 sessions). *Treatment Credibility and acceptability:* On average, participants found the group to be credible and reported positive expectancies. Specifically, participants reported that the intervention was logical (M = 7.78, SD = 1.28), likely to be successful in reducing sadness (M = 7.22, SD = 1.65), and associated with high confidence such that they would recommend it to a friend with similar experiences (M = 7.83, SD = 1.53). Participants also reported positive expectancies in feeling that the class would help reduce sadness (M = 7.04, SD = 1.85) and thinking and feeling that the class would improve symptoms 67 % and 68 %, respectively, by the end of the treatment period. At post-intervention, participants reported high treatment satisfaction on the CSQ-8 (M = 27.88, SD = 3.20). Participants completed approximately one-third of homework assignments (M = 4.38, SD = 3.58), and, on average, reported significant increases in DBT skills use over time from baseline (M = 1.73, SD = 0.39) to post-intervention (M = 1.99, SD = 0.44), t(16)=-3.28, $p = .005$, $d = 0.79$. *Symptoms of depression:* No participants met criteria for a unipolar depressive disorder at post-intervention compared to approximately a quarter of participants at baseline ($n = 6$; 24 %); this difference was statistically significant (exact $p = .031$). Participants reported a decrease in depression symptom severity on the EPDS over the course of the intervention ($γ01 = -.19$, $t = -2.07$, $p = .052$), though this difference did not cross a priori established significance level.
Singla et al. (2022)	*Symptoms of depression and anxiety:* Over 90 % of participants reported BA as helpful (21 out of 23). One in five participants (21.7 %) thought that BA helped them cope with depression and anxiety symptoms when asked about what they found helpful (not an explicit question about depression). Concerning the case studies, depressive and anxiety symptoms remitted or diminished. Participants reported the following facilitators of BA: providing support and social connection (73.9 %), learning creative problem solving (26.1 %) and attending to pandemic-related symptoms (21.7 %). Barriers to BA during the pandemic included lack of privacy and limited activities due to pandemic restrictions.
Waters et al. (2020)	*Treatment adherence:* Seventy-four women were referred to the intervention with 65 (88 %) completing treatment. *Treatment acceptability:* All women reported the intervention as helpful. The implementation of ACT in daily life, therapist support, and group processes were cited as helpful aspects of the intervention. *Symptoms of depression, global distress and psychological flexibility:* At post-treatment, there was a significant reduction in global distress ($d = 0.99$) and depressive symptoms ($d = 1.05$), and an increase in psychological flexibility ($d = 0.93$). On the secondary outcome of global distress, 38 % of women were classified as recovered, 31 % had reliably improved, 27 % remained the same, and 4 % had reliably deteriorated.

Table 2 (*continued*)

Authors (year of publication)	Main findings
	Qualitive findings: Findings report that the group environment helped normalizing perinatal mental health difficulties, providing emotional support, and decreasing stigma. Participants reported perceived changes in their cognitive, behavioral, emotional, and relational functioning. They reported that increased awareness and acceptance, reductions in experiential avoidance, mindfulness practice, cultivating self-compassion, and prioritization of values were vital to promote change. Also, participants recognized the benefits of regular attendance and applying ACT skills in daily life.
Woolhouse et al. (2014)	*Recruitment and attrition:* 20 participants were recruited to the non-randomised trial. The rate of loss to follow-up was 45 % (9/20). A total of 11 participants completed program and follow-up measures. *Symptoms of depression and anxiety:* In the non-randomized study, significant within group improvements to depression and anxiety were observed. All outcomes improved, with changes on the DASS-21 depression scale (Cohen's $d = 0.6$), the CES-D (Cohen's $d = 0.7$), and the STAI state scale (Cohen's $d = 0.8$). Stress scores were reduced at post-intervention, but the difference was not statistically significant. Mindfulness scores increased significantly on two of the five Five-Factor Mindfulness Questionnaire (FFMQ) subscales: acting with awareness (Cohen's $d = 0.9$) and describing (Cohen's $d = 0.8$). *Qualitive findings:* Four participants were interviewed and reported their expectations and motivations, experiences in the group, engagement with mindfulness practices and changes attributed to mindfulness practice. Changes attributed to mindfulness practice included a reigning in of destructive patterns (cognitive, emotional or behavioural) which stopped challenging situations escalating. Flowing on from this, participants reported improvements to interpersonal relationships, sleeping patterns, and to mood and quality of life.

of peripartum depression. To the best of our knowledge, this is the first systematic review to comprehensively collect evidence and determine the effectiveness of third-wave CBTs in the treatment of peripartum depression. More specifically, the aims of this review were two fold: firstly, it allowed to summarize the evidence regarding the effectiveness of a wide range of third-wave CBTs interventions for peripartum depression; and secondly, it provided a possibility to identify common characteristics of the interventions.

This systematic review included six studies that evaluated the effectiveness of interventions based on third-wave approaches in the reduction of depressive symptoms during the peripartum period. Findings indicated that third-wave CBTs are effective psychological interventions in decreasing depressive symptoms for women during the peripartum period. However, there is limited evidence from the studies included in this systematic review that third-wave CBT interventions lead to long-term improvements in depressive symptoms especially in the postpartum period at 2-6 months. In terms of primary outcomes, treatment studies showed that such psychological interventions targeting depression may also decrease symptoms of anxiety among women in the peripartum period. This might be especially important given that there is a high comorbidity between depression and anxiety symptoms in peripartum period (Nakić Radoš et al., 2018; Putnam et al., 2015). Furthermore, as for secondary outcomes, third-wave CBTs interventions resulted in improvements of interpersonal relationships, perception of reliability and feasibility. Also is important to notice that the most representative CBT approaches were Behavioral Activation and Mindfulness with two papers each.

Preliminary evidence about the feasibility and effectiveness of third-wave CBT treatment programs is of low quality as the majority of the studies did not include an RCT. The interventions were implemented for

Table 3

- Risk of bias of RCT and non-RCT studies included in the systematic review.

Study	Type of study	Domain 1		Domain 2			Domain 3		Domain 4		Domain 5			Quality
OMahen et al. (2014)	RTC	Low		Some concerns			Low		Low		Low			High [a]
		Item 1	Item 2	Item 3	Item 4	Item 5	Item 6	Item 7	Item 8	Item 9	Item 10	Item 11	Item 12	
Kleiber et al. (2017)	Non-RCT	2	2	0	2	0	1	0	0	NA	NA	NA	1	Critically low [b]
Singla et al. (2022)	Non-RCT	2	2	2	2	0	1	0	0	NA	NA	NA	2	Critically low [b]
Waters et al. (2020)	Non-RCT	2	2	0	2	0	1	2	0	NA	NA	NA	2	Critically low [b]
Latendresse et al. (2021)	Non-RCT	2	2	0	2	0	2	2	0	NA	NA	NA	2	Critically low [b]
Woolhouse et al. (2014)	Non-RCT	2	2	1	1	0	2	2	0	NA	NA	NA	2	Critically low [b]

Note. 0 - not reported; 1 - reported but inadequate; 2 - reported and adequate; NA - Not applicable. [a] – quality assessment by RoB2 (Sterne et al., 2019) [b] – quality assessment by MINORS tool (Slim et al., 2003).

a period ranging from 6 to 13 weeks on a targeted population of pregnant or up to 1-year postpartum women. Most of the studies included adult women with symptoms of depression, anxiety and stress, whereas only one study study included adolescents (aged over 15 years). Findings of this systematic review suggest that the third-wave CBT approaches, implemented in these studies, provide high levels of trial and clinical adherence, thus offering promise in improving and reducing symptoms of peripartum depression and anxiety with effect sizes ranging from moderate to high in size. However, such evidence is low in quality due to the small number of studies evaluating the effectiveness of these interventions.

Referring to the findings of this systematic review, it is important that some limitations be acknowledged. Firstly, the studies are heterogeneous in terms of the setting (clinical or community settings), mode of the intervention delivery (in-person or online), way of administration (individually-administered or in group), and time period (during the prenatal or postnatal period). Studies are heterogeneous even in relation to the symptoms they address, whether they are related to peripartum depression or other mental health problems such as peripartum mood and anxiety disorders or psychological distress. Previous literature (Mancinelli et al., 2022; Yan et al., 2022) has pointed out that more studies need to be conducted especially including randomized controlled trials and systematic reviews and meta-analyses to provide more evidence about the effectiveness of third-wave CBT interventions on peripartum depression (mainly in adult women) Also, low evidence exists in terms of the report of effect sizes of Cohen's d Therefore, future studies focused on third-wave CBT approaches are highly recommended to report the effect sizes to ensure the effectiveness and enhance the quality of such interventions. Furthermore, studies mainly lack the follow up sessions, so it is recommended that future studies add them in order to investigate the long-term effects of the interventions.

Finally, more studies are needed to be conducted on online treatment of peripartum depression that might be an option responding to these challenges and obstacles disadvantaged groups. Le et al. (2009) reported that online screening for postpartum depression allowed women to being more capable of reporting difficult or sensitive information. If we consider and remember the financial costs involved in treating peripartum depression, internet interventions might also help to reduce these costs (Andrews et al., 2010). Due to the small number of studies, it has not been possible to establish differences between prenatal and postnatal interventions. More studies are needed in this area to create interventions adapted to each perinatal period.

Conclusion

In summary, the systematic review of the included studies examining the effectiveness of the third-wave CBT approaches on peripartum women, showed that these interventions offer promise in reducing depression symptoms. However, despite the appealing nature of the third-wave approach to both mental health providers and end-users, studies focused on this topic are very limited. Therefore, this study concludes that there is a need to conduct more studies that examine the effectiveness and cost-effectiveness, especially with a high-quality methodological design.

Compliance with ethical standards and disclosure of potential conflicts of interest

Ethical approval: Not applicable
Funding: Not applicable
Research involving Human Participants and/or Animals
Informed Consent: Not applicable

Role of the funding source

CRediT authorship contribution statement

M.F. Rodriguez-Muñoz: Conceptualization, Methodology, Writing – original draft. **S. Nakić Radoš:** Conceptualization, Methodology. **A. Uka:** Writing – original draft. **M. Marques:** Writing – original draft. **B.R. Maia:** Writing – original draft. **M. Matos:** Writing – original draft. **M. Branquinho:** Writing – original draft. **R. Aydın:** Writing – original draft. **V. Mahmoodi:** Writing – original draft. **Magdalena Chrzan-Dętkoś:** Methodology. **Tamara Walczak-Kozłowska:** Methodology. **I. Liakea:** Writing – review & editing.

Declaration of Competing Interest

The authors have no conflict of interest.

Supplementary materials

Supplementary material associated with this article can be found, in the online version, at doi:10.1016/j.midw.2023.103865.

References

Accortt, E.E., Cheadle, A.C., Schetter, C.D., 2015. Prenatal depression and adverse birth outcomes: an updated systematic review. Matern. Child Health 19, 1306–1337. https://doi.org/10.1007/s10995-014-1637-2.

Andrews, G., Cuijpers, P., Craske, M.G., McEvoy, P., Titov, N., 2010. Computer therapy for the anxiety and depressive disorders is effective, acceptable and practical health

care: a meta-analysis. PLoS One 5, e13196. https://doi.org/10.1371/journal.pone.0013196.

Barker, E.D., Kirkham, N., Ng, J., Jensen, S.K.G., 2013. Prenatal maternal depression symptoms and nutrition, and child cognitive function. Br. J. Psychiatry 203, 417–421. https://doi.org/10.1192/bjp.bp.113.129486.

Barlow, D.H., 2002. Anxiety and Its Disorders: The Nature And Treatment of Anxiety And Panic, 2nd ed. Guilford Press.

Bauer, A., Parsonage, M., Knapp, M., Iemmi, V., & Adelaja, B. (2014). The costs of perinatal mental health. *LSE & Centre for Mental Health*. doi:10.13140/2.1.4731.6169.

Branquinho, M., Rodriguez, M.F., Maia, B.R., Marques, M., Matos, M., Osma, J., Moreno-Peral, P., Cornejo-Ceron, S., Fonseca, A., Vousoura, E., 2021. Effectiveness of psychological interventions in the treatment of perinatal depression: a systematic review of systematic reviews and meta-analyses. J. Affect. Disord. 291 (1), 294–306. https://doi.org/10.1016/j.jad.2021.05.010.

Cajal, B., Jiménez, R., Gervilla, E., Montaño, J.J., 2020. Doing a systematic review in health sciences. Clin. Health 31 (2), 77–83. https://doi.org/10.5093/clysa2020a15.

Chow, R., Huang, E., Li, A., Li, S., Fu, S.Y., Son, J.S., Foster, W.G., 2021. Appraisal of systematic reviews on interventions for postpartum depression: systematic review. BMC Pregnancy Childbirth 21 (1), 1–11. https://doi.org/10.1186/s12884-020-03496-5.

Cox, J.L., Holden, J.M., Sagovsky, R., 1987. Detection of postnatal depression. Development of the 10-item Edinburgh postnatal depression scale. Br. J. Psychiatry 150, 782–786. https://doi.org/10.1192/bjp.150.6.782.

Cuijpers, P., Cristea, I.A., Karyotaki, E., Reijnders, M., Huibers, M.J.H., 2016. How effective are cognitive behavior therapies for major depression and anxiety disorders? A meta-analytic update of the evidence. World Psychiatry 15 (3), 245–258. https://doi.org/10.1002/wps.20346.

de Magistris, A., Carta, M., Fanos, V., 2013. Postpartum depression and the male partner. J. Pediatr. Neonatal Individ. Med. 2 (1), 15–27. https://doi.org/10.7363/020106.

Dennis, C.L., 2014. Psychosocial interventions for the treatment of perinatal depression. Best Pract. Res. Clin. Obst. Gynaecol. 28, 97–111. https://doi.org/10.1016/j.bpobgyn.2013.08.008.

Dunn, C., Hanieh, E., Robets, R., Powrie, R., 2012. Mindful pregnancy and childbirth: effects of a mindfulness-based intervention on women's psychological distress and well-being in the perinatal period. Arch. Womens Ment. Health 15 (2), 139–143. https://doi.org/10.1007/s00737-012-0264-4.

Field, T., 2015. Prenatal depression risk factors, developmental effects and interventions: a review. J. Pregnancy Child Health 4 (1), 301. https://doi.org/10.4172/2376-127X.1000301.

Fonseca, A., Ganho-Ávila, A., Lambregtse-van den Berg, M., Lupattelli, A., Rodriguez-Muñoz, M.F., Ferreira, P., Radoš, S.N., Bina, R, 2020. Emerging issues and questions on peripartum depression prevention, diagnosis and treatment: a consensus report from the cost action riseup-PPD. J. Affect. Disord. 274, 167–173. https://doi.org/10.1016/j.jad.2020.05.112.

Gaynes, B.N., Gavin, N., Meltzer-Brody, S., Lohr, K.N., Swinson, T., Gartlehner, G., Brody, S., & Miller, W.C. (2005). *Perinatal depression: prevalence, screening accuracy, and screening outcomes: summary.* In: *AHRQ Evidence Report Summaries.* Rockville, MD: Agency for Healthcare Research and Quality.

Gilbert, P., 2010. Compassion Focused Therapy: The CBT Distinctive Features Series. Routledge.

Goodman, J.H., 2009. Women's attitudes, preferences, and perceived barriers to treatment for perinatal depression. Birth 36 (1), 60–69. https://doi.org/10.1111/j.1523-536X.2008.00296.x.

Goodman, S.H., Rouse, M.H., Connell, A.M., Broth, M.R., Hall, C.M., Heyward, D., 2011. Maternal depression and child psychopathology: a meta-analytic review. Clin. Child Fam. Psychol. Rev. 14, 1–27. https://doi.org/10.1007/s10567-010-0080-1.

Hall, H.G., Beattie, J., Lau, R., East, C., Biro, M.A., 2016. Mindfulness and perinatal mental health: a systematic review. Women Birth 29 (1), 62–71. https://doi.org/10.1016/j.wombi.2015.08.006.

Hayes, S.C., Strosahl, K.D., Wilson, K.G., 2011. Acceptance and Commitment Therapy: The Process and Practice of Mindful Change. Guilford Press.

Hayes, S.C., Levin, M.E., Plumb-Vilardaga, J, Villatte, J.L., Pistorello, J., 2013. Acceptance and commitment therapy and contextual behavioral science: examining the progress of a distinctive model of behavioral and cognitive therapy. Behav. Therapy 44 (2), 180–198. https://doi.org/10.1016/j.beth.2009.08.002.

Hoffmann, S.G., Asmundson, G.J.G., 2008. Acceptance and mindfulness-based therapy: new wave or old hat? Clin. Psychol. Rev. 28 (1), 1–16. https://doi.org/10.1016/j.cpr.2007.09.003.

Howard, L.M., Molyneaux, E., Dennis, C.L., Rochat, T., Stein, A., Milgrom, J., 2014. Non-psychotic mental disorders in the perinatal period. Lancet 384 (9956), 1775–1788. https://doi.org/10.1016/S0140-6736(14)61276-9.

Kabat-Zinn, J., 1990. Full Catastrophe Living: Using The Wisdom of Your Body And Mind To Face Stress, Pain And Illness. Delacorte.

Kazemeyni, M., Bakhtiari, M., Nouri, M., 2018. Effectiveness of acceptance and commitment group therapy on postpartum depression and psychological flexibility. J. Clin. Nurs. Midwifer 4 (3).

Kimmel, M.C., Cox, E., Schiller, C., Gettes, E., Meltzer-Brody, S., 2018. Pharmacologic treatment of perinatal depression. Obstet. Gynecol. Clin. N. Am. 45 (3), 419–440. https://doi.org/10.1016/j.ogc.2018.04.007.

Kleiber, B.V., Felder, J.N., Ashby, B., Scott, S., Dean, J., Dimidjian, S., 2017. Treating depression among adolescent perinatal women with a dialectical behavior therapy–informed skills group. Cognit. Behav. Pract. 24 (4), 416–427. https://doi.org/10.1016/j.cbpra.2016.12.002.

Langan, R., Goodbred, A.J., 2016. Identification and management of peripartum depression. Am. Fam. Physician 93, 852–858.

Latendresse, G., Bailey, E., Iacob, E., Murphy, H., Pentecost, R., Thompson, N., Hogue, C., 2021. A group videoconference intervention for reducing perinatal depressive symptoms: a telehealth pilot study. J. Midwifery Women's Health 66 (1), 70–77. https://doi.org/10.1111/jmwh.13209.

Le, H.N., Perry, D.F., Sheng, X., 2009. Using the internet to screen for postpartum depression. Matern. Child Health J. 13, 213–221. https://doi.org/10.1007/s10995-008-0322-8.

Linehan, M.M., 1993. Diagnosis and Treatment of Mental Disorders. Cognitive-Behavioral Treatment of Borderline Personality Disorder. Guilford Press.

Lovibond, S., Lovibond, P.F, 1996. Manual for the Depression Anxiety Stress Scales. Psychology Foundation of Australia.

Mancinelli, E., Bassi, G., Gabrielli, S., Salcuni, S., 2022. The efficacy of digital cognitive–behavioral interventions in supporting the psychological adjustment and sleep quality of pregnant women with sub-clinical symptoms: a systematic review and meta-analysis. Int. J. Environ. Res. Public Health 19, 9549. https://doi.org/10.3390/ijerph19159549.

Marcos-Nájera, R., Rodríguez-Muñoz, M.F., Soto Balbuena, C., Olivares Crespo, M.E., Izquierdo Méndez, N., Le, H.N., Escudero Gomis, A., 2020. The prevalence and risk factors for antenatal depression among pregnant immigrant and native women in Spain. J. Transcult. Nurs. 31 (6), 564–575. https://doi.org/10.1177/1043659619891234.

Martell, C.R., Kanter, J, 2011. Behavioral activation in the context of "third wave" therapies. In: Herbert, J.D., Forman, E.M. (Eds.), Acceptance and Mindfulness in Cognitive Behavior Therapy Understanding and Applying the New Therapies. John Wiley and Sons.

McLoughlin, J., 2013. Stigma associated with postnatal depression: a literature review. Br. J. Midwifery 21 (11), 784–791. https://doi.org/10.12968/bjom.2013.21.11.784.

Megnin-Viggars, O., Symington, I., Howard, L., Pilling, S., 2015. Experience of care for mental health problems in the antenatal or postnatal period for women in the UK: a systematic review and meta-synthesis of qualitative research. Arch. Women's Ment.l Health 18 (6), 745–759. https://doi.org/10.1007/s00737-015-0548-6.

Moher, D., Liberati, A., Tetzlaff, J., Altman, D.G., PRISMA Group, 2009. Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement. PLoS Med. 6 (7), e1000097 https://doi.org/10.1371/journal.pmed.1000097.

Molenaar, N.M., Kamperman, A.M., Boyce, P., Bergink, V., 2018. Guidelines on treatment of perinatal depression with antidepressants: an international review. Aust. N. Z. J. Psychiatry 52, 320–327. https://doi.org/10.1177/0004867418762057.

Nakić Radoš, S., Tadinac, M., Herman, R., 2018. Anxiety during pregnancy and postpartum: course, predictors and comorbidity with postpartum depression. Acta Clin. Croat. 57, 39–51. https://doi.org/10.20471/acc.2018.57.01.05.

Neff, K.D., Germer, C.K., 2013. A pilot study and randomized controlled trial of the mindful self-compassion program. J. Clin. Psychol. 69, 28–44. https://doi.org/10.1002/jclp.21923.

Nillni, Y.I., Mehralizade, A., Mayer, L., Milanovic, S., 2018. Treatment of depression, anxiety, and trauma-related disorders during the perinatal period: a systematic review. Clin. Psychol. Rev. 66, 136–148. https://doi.org/10.1016/j.cpr.2018.06.004.

O'Connor, E., Rossom, R.C., Henninger, M., Groom, H.C., Burda, B.U., 2016. Primary care screening for and treatment of depression in pregnant and postpartum women evidence report and systematic review for the US preventive services task force. JAMA 315 (4), 388–406. https://doi.org/10.1001/jama.2015.18948.

O'Mahen, H., Richards, D., Woodford, J., Wilkinson, E., McGinley, J., Taylor, R., Warren, F., 2014. Netmums: a phase II randomized controlled trial of a guided internet behavioural activation treatment for postpartum depression. Psychol. Med. 44 (8), 1675–1689. https://doi.org/10.1017/S0033291713002092.

Putnam, K., Robertson-Blackmore, E., Sharkey, K., Payne, J., Bergink, V., Munk-Olsen, T., Deligiannidis, K., Meltzer-Brody, S., 2015. Heterogeneity of postpartum depression: a latent class analysis. Lancet Psychiatry 2, 59–67. https://doi.org/10.1016/S2215-0366(14)00055-8.

Radloff, L.S., 1977. The CES-D scale: a self-report depression scale for research in the general population. Appl. Psychol. Meas. 1 (3), 385–401. https://doi.org/10.1177/014662167700100306.

Rodríguez-Muñoz, M.F., Motrico, E., Miguez, C., Chaves, C., Suso-Ribera, C., Duque, A., Salinas, M.G., Caparrós-González, R.A., Martin-Agudiez, N., Kovacheva, K., García-López, H.S., Vazquez-Batan, P., Peñacoba, C., Osma, J., 2023. Perinatal depression in the Spanish context: consensus report from the general council of psychology of Spain. Clínica y Salud 34 (2), 51–63. https://doi.org/10.5093/clysa2023a15.

Segal, Z.V., Williams, J.M.G., Teasdale, J.D., 2002. Mindfulness-Based Cognitive Therapy for Depression: A New Approach to Preventing Relapse. Guilford Press.

Shorey, S., Chee, C.Y.I., Ng, E.D., Chan, Y.H., Tam, W.W.S., Chong, Y.S., 2018. Prevalence and incidence of postpartum depression among healthy mothers: a systematic review and meta-analysis. J. Psychiatr. Res. 104, 235–248. https://doi.org/10.1016/j.jpsychires.2018.08.001.

Singla, D.R., Hossain, S., Ravitz, P., Schiller, C.E., Andrejek, N., Kim, J., La Porte, L., Meltzer-Brody, S.E., Silver, R., Vigod, S.N., Jung, J.W., Dimidjian, S., 2022. Adapting behavioral activation for perinatal depression and anxiety in response to the COVID-19 pandemic and racial injustice. J. Affect. Disord. 299, 180–187. https://doi.org/10.1016/j.jad.2021.12.006.

Slim, K., Nini, E., Forestier, D., Kwiatkowski, F., Panis, Y., Chipponi, J., 2003. Methodological index for non-randomized studies (minors): development and validation of a new instrument. ANZ J. Surg. 73 (9), 712–716. https://doi.org/10.1046/j.1445-2197.2003.02748.x.

Slomian, J., Honvo, G., Emonts, P., Reginster, J.Y., Bruyere, O., 2019. Consequences of maternal postpartum depression: a systematic review of maternal and infant outcomes. Women's Health 15. https://doi.org/10.1177/1745506519844044.

Sockol, L.E., Epperson, C.N., Barber, J.P., 2011. A meta-analysis of treatments for perinatal depression. Clin. Psychol. Rev. 31 (5), 839–849. https://doi.org/10.1016/j.cpr.2011.03.009.

Soto-Balbuena, C., Rodríguez-Muñoz, M.F., Le, H.N., 2021. The psychometric properties and factor structure of generalized anxiety disorder- 7 among Spanish pregnant women. Psicothema 33 (1), 164–170. https://doi.org/10.7334/psicothema2020.167.

Sterne, J.A.C., Savović, J., Page, M.J., Elbers, R.G., Blencowe, N.S., Boutron, I., Cates, C. J., Cheng, H.Y., Corbett, M.S., Eldridge, S.M., Emberson, J.R., Hernán, M.A., Hopewell, S., Hróbjartsson, A., Junqueira, D.R., Jüni, P., Kirkham, J.J., Lasserson, T., Li, T., Higgins, J.P.T., 2019. RoB 2: a revised tool for assessing risk of bias in randomised trials. BMJ 366, l4898. https://doi.org/10.1136/bmj.l4898.

Taylor, B.L., Cavanagh, K., Strauss, C., 2016. The effectiveness of mindfulness-based interventions in the perinatal period: a systematic review and meta-analysis. PLoS One 11 (5), e0155720. https://doi.org/10.1371/journal.pone.0155720.

Vieten, C., Astin, J., 2008. Effects of a mindfulness-based intervention during pregnancy on prenatal stress and mood: results of a pilot study. Arch. Women Ment. Health 11 (1), 67–74. https://doi.org/10.1007/s00737-008-0214-3.

Waters, C.S., Annear, B., Flockhart, G., Jones, I., Simmonds, J.R., Smith, S., Williams, J. F., 2020. Acceptance and commitment therapy for perinatal mood and anxiety disorders: a feasibility and proof of concept study. Br. J. Clin. Psychol. 59 (4), 461–479.

Woolhouse, H., Mercuri, K., Judd, F., Brown, S.J., 2014. Antenatal mindfulness intervention to reduce depression, anxiety and stress: a pilot randomised controlled trial of the MindBabyBody program in an Australian tertiary maternity hospital. BMC Pregnancy Childbirth 14, 369. https://doi.org/10.1186/s12884-014-0369-z.

Woody, C.A., Ferrari, A.J., Siskind, D.J., Whiteford, H.A., Harris, M.G., 2017. A systematic review and meta-regression of the prevalence and incidence of perinatal depression. J. Affect. Disord. 219, 86–92. https://doi.org/10.1016/j.jad.2017.05.003.

Yan, H., Wu, Y., Li, H., 2022. Effect of mindfulness-based interventions on mental health of perinatal women with or without current mental health issues: a systematic review and meta-analysis of randomized controlled trials. J. Affect. Disord. 305, 102–114. https://doi.org/10.1016/j.jad.2022.03.002.