



The Effect of Cognitive Behavioral Therapy on Postpartum Depression: a Review and Meta-Analysis Study

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Abstract

Background: Mother's health and breastfeeding efficacy are affected by depression during pregnancy. The aim of study was to determine the effects of cognitive-behavioral therapy on the treatment of postpartum depression in mothers after childbirth.

Methods: In this systematic review, the Web of sciences, PubMed, Scopus, Google Scholar, Iran Medex, Magiran & SID databases were used to access relevant documentation. To search for articles in the resource, the keywords depression and cognitive-behavior therapy and "perinatal or antepartum or childbirth" is used with all possible combinations of these words. Without time limitation, all related articles have been retrieved. Search was restricted to articles published in Persian and English. The quality of papers was examined using the Cochran risk of bias tool. Meta-analysis was performed using Rev 5.3.

Results: We retrieved 621 titles, of which 12 were qualified after the qualitative synthesis. Meta-analysis revealed a statistically significant beneficial effect of CBT sessions as compared to routine postpartum care on long term management of postpartum depression. (Mean difference: -4.02 [-5.58, -2.47]). A pooled effect size with BID instrument was observed -6.32 [-8.54, -4.11] at 3 months, with EPDS were observed -2.83 [-6.56, 0.90] and -2.81 [-4.21, -1.41] at 3 and 6 months respectively.

Conclusions: CBT was shown to be effective however the evidence available is limited. It can be used as an effective psychological treatment without the side effect of drugs in PPD.

Keywords: Postpartum depression, Cognitive behavioral therapy, Psychological disorder, Review, Meta-analysis.

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Introduction

Depression is a mental disorder characterized by the loss of interest and pleasure, reduced energy, guilt or feelings of worthlessness, impaired sleep or appetite, and poor concentration.¹ It's a significant source of the burden of diseases in women and its peak is in reproductive age.² Postpartum depression (PPD) describes a lot of symptoms of depression and anxiety.³ A clinical diagnosis is based on the diagnostic and statistical manual of mental disorders, which includes sadness, feelings of emptiness, fatigue, weight loss, and a feeling of inability to care for the child.⁴ Postpartum depression usually develops in the first three months after delivery.⁵ But in 50% of people, it may take more than three months and in some cases, it may last up to 4 years.⁶ A recent meta-analysis of 41 studies showed that the prevalence of PPD in Iran was 25.3%, with the highest prevalence in women with a history of depression 45.2% and in women with unwanted pregnancy 43.4%.⁷

There are a lot of factors that lead to PPD such as the past history of depression, anxiety or stress, poor social support and social relationships, low self-esteem, marital conflicts, physical abuse and postpartum physical complications.⁸⁻¹¹ For PPD treatment, pharmacological and non-pharmacological therapies are available. While antidepressants are generally recognized as an effective treatment, breastfeeding mothers are often reluctant to take the drug because of the potential adverse effects of breastfeeding.¹² Non-pharmacological therapies in PPD are preferred due to adverse drug reactions during lactation.^{13,14} Among non-pharmacological options, cognitive-behavioral therapy (CBT) is one of the treatments for PPD.¹⁵ Effective treatment to prevent the end of postpartum depression is an urgent need.¹⁶ It is important to evaluate a potentially useful treatment in this case.¹² Given the importance of this issue and the need for effective PPD treatment and the fact that many preliminary studies have been conducted on the impact of cognitive-behavioral therapies on postpartum depression, the research team decided to review the study of treatment studies.

Materials and Methods

This systematic review was carried out by following the preferred reporting items for Systematic reviews and Meta-Analysis guidelines.¹⁷

Databases including Web of Sciences, PubMed, Scopus, Google Scholar, Iran Medex, Magiran & SID were retrieved from inception to June 2019 for papers only published in English and Iranian databases. The search items were as follows: "depression or depressive disorder or bipolar disorder or adjustment disorder* or affective disorders" AND "cognitive-behavior therapy or cognitive psychotherapy* or behavior therapy or cognitive therapy or cognition therapy or psychiatry and psychology category disorder or behavioral disciplines or psychotherapy" AND "parturition or delivery or birth or childbirth or postnatal or postpartum or antenatal". The reference lists of the articles included in this review were manually screened for other possibly eligible studies.

In the present study, we considered all articles that have been evaluated impact of CBT in PPD. Thus, the eligible studies had to meet the following criteria: (i) having an experimental or randomized study design, addressing the impact of CBT on PPD; (ii) depression has begun at most 4 weeks after delivery according to DSM-4; (iii) depression diagnosis based on Beck's or Edinburgh instruments; (iv) PPD not accompanied by other mental disorders; (v) being reported in English or Persian; (vi) and being complete manuscript (not abstracts only). Conference abstracts, case reports, reviews, and editorials were excluded.

Two independent reviewers extracted data and assessed article quality. They (A.H. and S.M.) screened the titles and abstracts of all retrieved records, and, then, the full-texts independently. Cohen’s kappa index was calculated. The following variables were then extracted from the studies included in the systematic review by two authors (A.H. and S.M.): author’s name, year of publication, participants, study design, tool to assess PPD and results (table 1).

All 12 included articles were assessed using the risk of bias tool (Cochrane collaboration). Two reviewers will independently assess six domains of bias for each outcome. These six domains are biasing due to Random sequence generation (selection bias), allocation concealment (selection bias), blinding of participants and personnel (performance bias), blinding of outcome assessment (detection bias), incomplete outcome data (attrition bias), and Selective

reporting (reporting bias). Answers to these questions and supporting information will collectively lead to a domain-level judgment in the form of “low risk,” “some concerns”, or “high risk” of bias. These domain-level judgments will inform an overall risk of bias judgment for the outcome.

We analyzed the impact of CBT in PPD data using random fixed model by Rev-Man 5.3 software. To examine the heterogeneity of effect sizes across studies, we assessed the I² statistic that had high heterogeneity (79%). With excluding outlier studies, there is heterogeneity, yet. Furthermore, the data were analyzed using random effects model. Mean deference of all studies were included in the primary analyses, and between-group differences for sub analyses are also reported based on instrument type, including Edinburgh postpartum depression scale (EPDS) and Beck depression inventory (BDI).

Table 1. Characteristics of included studies

Author, year	Participants	Design	Method	Scale	Result (scale- follow up; Mean Difference)
Ammerman, 2013 ¹⁸	I: 47 C: 46	RCT	15 sessions 60 min Home CBT /routine care	BDI EPDS	BDI - 3 months; -9.43 [-15.25, -3.61] EPDS - 3 months; -4.65 [-7.79, -1.51]
Clark, 2003 ¹⁹	I: 9 C: 11	non-RCT	12 sessions 90 min CBT/ waiting list	BDI CESD	BDI - 3 months; -4.70 [-12.47, 3.07]
Clark, 2008 ²⁰	I: 18 C: 14	non-RCT	12 sessions 120 min CBT/ waiting list	BDI	BDI - 3 months; -8.08 [-13.38, -2.78]
Tandon, 2014 ²¹	I: 41 C: 37	RCT	6 sessions 120 min CBT/routine care	CESD EPDS	BDI - 3 months; -3.10 [-7.70, 1.50]
Meager, 1996 ²²	I: 6 C: 6	non-RCT	12 sessions 120 min CBT/ waiting list	BDI EPDS	BDI - 3 months; -12.34 [-23.66, -1.02] EPDS - 6 months; -12.20 [-20.80, -3.60]
Milgrom, 2005 ²³	I: 31 C: 18	RCT	9 sessions 90 min CBT/routine care	BDI	BDI - 3 months; -4.30 [-9.30, 0.70]
Milgrom, 2016 ²⁴	I: 21 C: 22	RCT	8 sessions 120 min CBT/routine care	BDI	BDI - 3 months; -8.50 [-14.59, -2.41]
Austin, 2008 ²⁵	I: 191 C: 86	RCT	9 sessions 100 min CBT/routine care	EPDS	EPDS - 3 months; 1.28 [0.15, 2.41]
Honey, 2002 ²⁶	I: 101 C: 108	RCT	8 sessions 120 min CBT/routine care	EPDS	EPDS - 3 months; -4.30 [-6.11, -2.49] EPDS - 6 months; -3.08 [-6.66, 0.50]
Rojas, 2007 ²⁷	I: 23 C: 22	RCT	8 sessions 50 min CBT/routine care	EPDS	EPDS - 3 months; -4.30 [-8.20, -0.40] EPDS - 6 months; -1.60 [-3.45, 0.25]
Hou, 2014 ⁹	I: 104 C: 109	RCT	13 sessions 60 min CBT & SFT (systemic family therapy)/routine care	EPDS	EPDS - 6 months; -2.30 [-3.16, -1.44]
Pugh, 2016 ²⁸	I: 19 C: 21	non-RCT	11 sessions 120 min CBT/ waiting list	EPDS	EPDS - 6 months; -4.03 [-6.36, -1.70]

Results

Flowchart of the study search and progress is presented in figure 1. A total of 621 studies were retrieved from PubMed, Scopus, Web of Science, and PsychoInfo databases and other sources. After removing 148 duplicates, 473 reports were screened for the titles and abstracts. Thus, 452 citations irrelevant to the research topic were excluded. Based on full-text reviews of 21 remaining studies, 9 articles were excluded because, 3 studies have been Phone or Internet CBT, 1 article has conducted in twin pregnancy women after childbirth, 1 study has been CBT with drug treatment, and 3 studies have conducted CBT with other counseling methods that were not a representative sample. Subsequently, 12 remaining studies were included in this systematic review. It's important to mention that studies have been used several tools, we only extracted relevant data.

Cohen’s kappa index was 0.787, indicating substantial agreement between two raters.²⁹ Figure 2 below summarized

the methodological quality of included trials. Study power calculation was provided in only two trials.^{27,28}

The articles reviewed, which were published between 1979 and 2018, are presented in table 1. Five studies reported depression scores using the EPDS,^{9,25-28} five reported BDI scores,^{19-21,23,24} and two studies reporting scores for both scales.^{18,22} Means and standard deviations (SDs) were obtained directly from the papers were reported. Meager²² did not report SD, but these could be estimated from means and the p-value for their comparison. Eight studies, all RCTs, compared group CBT to routine care. Rojas²⁷ and Honey²⁶ assessed depression using the EPDS at 3 and 6 months' post-randomization. Four non-randomized studies compared group CBT versus waiting list. These studies enabled meta-analyses to be performed among three subgroups: i) using BDI at 3 months; ii) using EPDS at 3 months; and iii) using EPDS at 6 months. The results are displayed graphically in figure 3.

The I^2 was zero in BDI at 3 months' subgroups. But it was 92% and 48% in EPDS at 3 and 6 months' subgroups, respectively. Total I^2 was 79% that indicated high heterogeneity in studies, thus it be done random effect analysis. Effectiveness of CBT sessions was shown by statistically significant differences between the intervention and control groups in term of proportion of participants with postpartum depression at postpartum in all three subgroups. Quantitative data was pooled from all included studies. Meta-analysis

revealed a statistically significant beneficial effect of CBT sessions as compared to routine postpartum care on long term management of postpartum depression. (Mean difference: -4.02 [-5.58, -2.47]). Findings suggested 4.02 reduction in score of depression among women at postpartum period in intervention group as compared to control. A pooled effect size with BID instrument was observed -6.32 [-8.54, -4.11] at 3 months, with EPDS were observed -2.83 [-6.56, 0.90] and -2.81 [-4.21, -1.41] at 3 and 6 months, respectively.

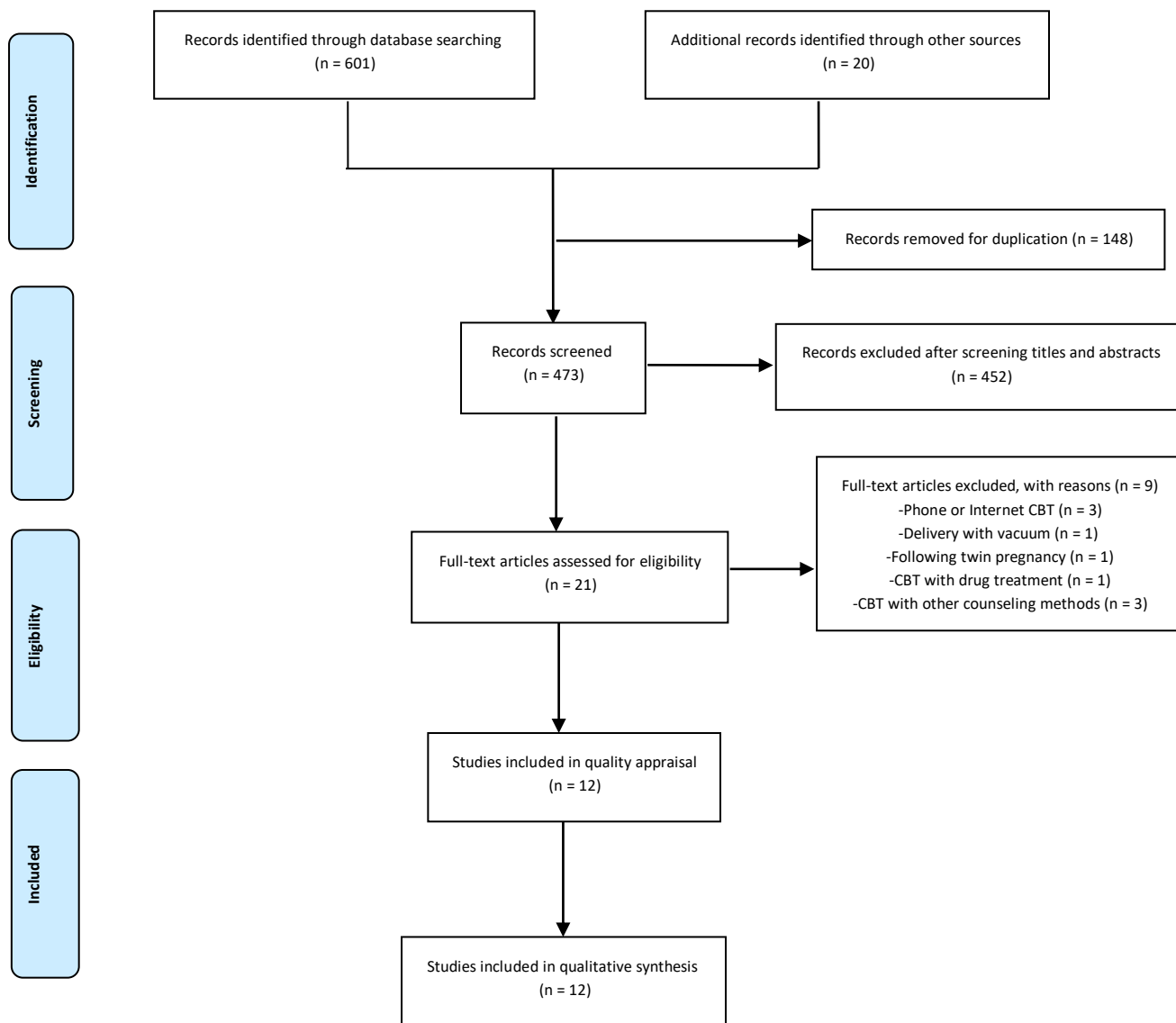


Figure 1. Flowchart of study selection

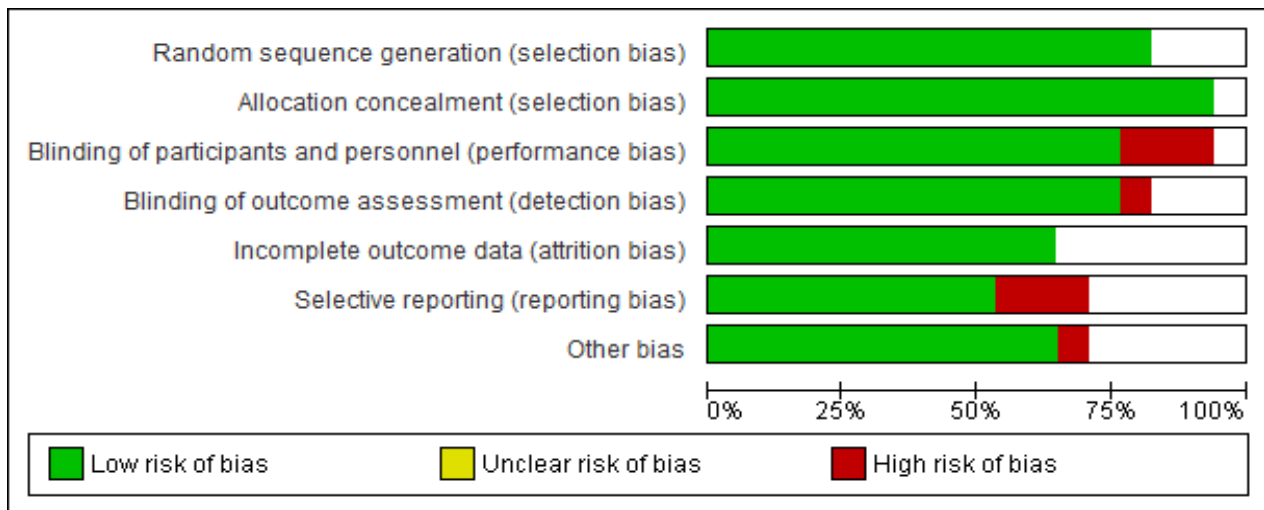


Figure 2. The methodological quality of included trials by Risk of Bias

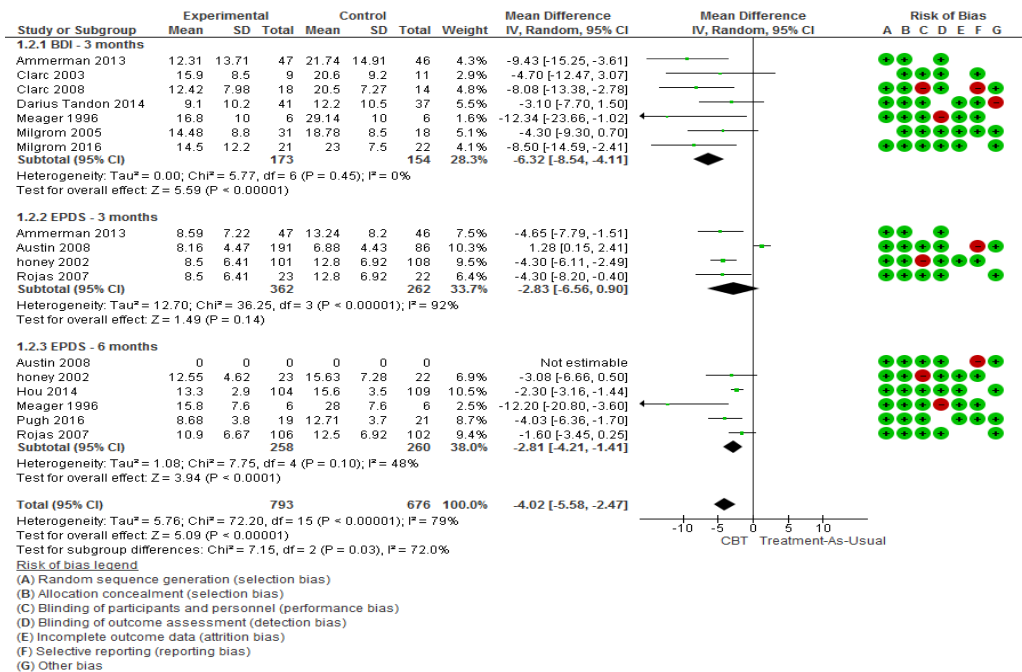


Figure 3. Forest plot to show meta-analyses for three subgroups

Discussion

Twelve comparative studies were distinguished in this review. Meta-analyses show that CBT seemed to be effective when compared to routine primary care, usual care or a waiting list group, despite the fact that the decrease in depression scores was not consistent across time. The results of a meta-analysis study (2013) showed the effect of CBT on postpartum depression and the rate of relapse was reduced after 24 weeks after childbirth.³⁰ These results should be interpreted with caution due to the limited number and quality of the studies. Various tools were used to assess depression, including BDI,

EPDS, Center for Epidemiological Studies DSM4, DSM5. There is also a small sample size in some of the primary studies, variation in the number of sessions, duration of each session, and follow-up time to evaluate the outcome of the research.

There was uncertainty regarding how some of the described treatments accurately reflect CBT and whether speculations can be made due to participants being at different times postpartum in some studies. There is enough doubt in the quality and the plane of CBT implemented in the patient programs. Also, CBT is conducted by telephone, online, at home, in various ways.

The limitations of RCT evidence on psychological therapies in making treatment decisions have been widely discussed.^{31,32} These incorporate the exclusion of patients with co-morbid diagnoses, complexed diagnoses, multifold or diagnoses that are not distinctly characterized and patients who drop-out of treatments. Most studies have not assessed the factors that are effective in PPD and can alter its symptoms. These factors including; the previous history of depression, anxiety or stress, poor social support, low self-esteem, marital conflict, physical abuse, postpartum physical complications, and poor quality of life.³³

The review highlights an effective method of PPD treatment. But it is expected that further research is designed to compare CBT with other psychological therapy or alternative approaches. CBT may be especially relevant for women with PPD. It can be accessed in an adaptable way that may better fit a woman's own time-management needs in caring for her newborn.

It can be conveyed with more noteworthy security, which may help to address the hesitance of numerous women to seek traditional types of treatment due to perceived stigma.³⁴ In addition, specific aspects of CBT treatment require assessment such as the effect of the duration of the sessions, the size of patients, the setting, the course and degree of the health providers, the capability and optimal level of involvement of the facilitator. CBT was shown to be effective however the evidence available is limited. It can be used as an effective psychological treatment without the side effect of drugs in PPD. We argue, therefore, that there is enough evidence to performance CBT, conditional upon it be done by the professional health providers with regular sessions.

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Conflict of Interest

The authors declare that they have no conflict of interest.

References

- Ngasa SN, Sama CB, Dzekem BS, Nforchu KN, Tindong M, Aroke D, et al. Prevalence and factors associated with depression among medical students in Cameroon: a cross-sectional study. *BMC Psychiatry* 2017;17:216. doi:10.1186/s12888-017-1382-3
- Eastwood J, Ogbo FA, Hendry A, Noble J, Page A, Early Years Research Group (EYRG). The impact of antenatal depression on perinatal outcomes in Australian women. *PloS one* 2017;12:e0169907. doi:10.1371/journal.pone.0169907
- Milgrom J, Martin PR, Negri LM. Treating postnatal depression: a psychological approach for health care practitioners. John Wiley;1999, p. 385-97. doi:10.1017/S135246580128312X
- Edition F, Association AP. Diagnostic and statistical manual of mental disorders. Washington, American Psychological Association: Naklada Slap, Jastrebarsko, Croatia; 1994; p. 936.
- Cooper PJ, Campbell EA, Day A, Kennerley H, Bond A. Non-psychotic psychiatric disorder after childbirth. A prospective study of prevalence, incidence, course and nature. *Br J Psychiatry* 1988;152:799-806. doi:10.1192/bjp.152.6.799
- Kumar R, Robson KM. A prospective study of emotional disorders in childbearing women. *Br J Psychiatry* 1984;144:35-47. doi:10.1192/bjp.144.1.35
- Weisani Y, Delpisheh A, Sayehmiri K, Rezaeian S. Trends of postpartum depression in iran: a systematic review and meta-analysis. *Depress Res Treat* 2013;2013:291029. doi:10.1155/2013/291029
- Gaillard A, Le Strat Y, Mandelbrot L, Keïta H, Dubertret C. Predictors of postpartum depression: prospective study of 264 women followed during pregnancy and postpartum. *Psychiatry Res* 2014;215:341-6. doi:10.1016/j.psychres.2013.10.003
- Hou Y, Hu P, Zhang Y, Lu Q, Wang D, Yin L, et al. Cognitive behavioral therapy in combination with systemic family therapy improves mild to moderate postpartum depression. *Braz J Psychiatry* 2014;36:47-52. doi:10.1590/1516-4446-2013-1170
- Jones E, Coast E. Social relationships and postpartum depression in South Asia: a systematic review. *Int J Soc Psychiatry* 2013;59:690-700. doi:10.1177/0020764012453675
- Sadat Z, Abedzadeh-Kalahroudi M, Kafaei Atrian M, Karimian Z, Sooki Z. The impact of postpartum depression on quality of life in women after child's birth. *Iran Red Crescent Med J* 2014;16:e14995. doi:10.5812/ircmj.14995
- Boath E, Bradley E, Henshaw C. Women's views of antidepressants in the treatment of postnatal depression. *J Psychosom Obstet Gynaecol* 2004;25:221-33. doi:10.1080/01674820400017889
- Dennis CL. Peer support within a health care context: a concept analysis. *Int J Nurs Stud* 2003;40:321-32. doi:10.1016/s0020-7489(02)00092-5
- Pearlstein T. Perinatal depression: treatment options and dilemmas. *J Psychiatry Neurosci* 2008;33:302-18.
- Kiosses DN, Alexopoulos GS. The prognostic significance of subsyndromal symptoms emerging after remission of late-life depression. *Psychol Med* 2013;43:341-50. doi:10.1017/S0033291712000967
- Dennis CL, Chung-Lee L. Postpartum depression help-seeking barriers and maternal treatment preferences: a qualitative systematic review. *Birth* 2006;33:323-31. doi:10.1111/j.1523-536X.2006.00130.x
- Liberati A, Altman DG, Tetzlaff J, Mulrow C, Gøtzsche PC, Ioannidis JP, et al. The PRISMA statement for reporting systematic reviews and meta-analyses of studies that evaluate health care interventions: explanation and elaboration. *PLoS Medicine* 2009;6:e1000100. doi:10.1371/journal.pmed.1000100
- Ammerman RT, Putnam FW, Altaye M, Stevens J, Teeters AR, Van Ginkel JB. A clinical trial of in-home CBT for depressed mothers in home visitation. *Behav Ther* 2013;44:359-72. doi:10.1016/j.beth.2013.01.002
- Clark R, Tluczek A, Wenzel A. Psychotherapy for postpartum depression: a preliminary report. *Am J Orthopsychiatry* 2003;73:441-54. doi:10.1037/0002-9432.73.4.441
- Clark R, Tluczek A, Brown R. A mother-infant therapy group model for postpartum depression. *Infant Ment Health J* 2008;29:514-36. doi:10.1002/imhj.20189
- Tandon SD, Leis JA, Mendelson T, Perry DF, Kemp K. Six-month outcomes from a randomized controlled trial to prevent perinatal depression in low-income home visiting clients. *Matern Child Health J* 2014;18:873-81. doi:10.1007/s10995-013-1313-y
- Meager I, Milgrom J. Group treatment for postpartum depression: a pilot study. *Aust N Z J Psychiatry* 1996;30:852-60. doi:10.3109/00048679609065055
- Milgrom J, Negri LM, Gemmill AW, McNeil M, Martin PR. A randomized controlled trial of psychological interventions for postnatal depression. *Br J Clin Psychol* 2005;44:529-42. doi:10.1348/014466505X34200
- Milgrom J, Danaher BG, Gemmill AW, Holt C, Holt CJ, Seeley JR, et al. Internet cognitive behavioral therapy for women with postnatal depression: a randomized controlled trial of MumMoodBooster. *J Med Internet Res* 2016;18:e54. doi:10.2196/jmir.4993
- Austin MP, Frilingos M, Lumley J, Hadzi-Pavlovic D, Roncolato W, Acland S, et al. Brief antenatal cognitive behaviour therapy group intervention for the prevention of postnatal depression and anxiety: a randomised controlled trial. *J Affect Disord* 2008;105:35-44. doi:10.1016/j.jad.2007.04.001
- Honey KL, Bennett P, Morgan M. A brief psycho-educational group intervention for postnatal depression. *BR J Clin Psychol* 2002;41:405-9. doi:10.1348/014466502760387515
- Rojas G, Fritsch R, Solis J, Jadresic E, Castillo C, González M, et al. Treatment of postnatal depression in low-income mothers in primary-care clinics in Santiago, Chile: a randomised controlled trial. *Lancet* 2007;370:1629-37. doi:10.1016/S0140-6736(07)61685-7

28. Pugh NE, Hadjistavropoulos HD, Dirkse D. A randomised controlled trial of therapist-assisted, internet-delivered cognitive behavior therapy for women with maternal depression. *PLoS One* 2016;11:e0149186. doi:10.1371/journal.pone.0149186
29. Wan T, Jun HU, Hui Z, PanWU, Hua HE. Kappa coefficient: a popular measure of rater agreement. *Shanghai Arch Psychiatry* 2015;27:62-7. doi:10.11919/j.jissn.1002-0829.215010
30. Scope A, Leaviss J, Kaltenthaler E, Parry G, Sutcliffe P, Bradburn M, et al. Is group cognitive behaviour therapy for postnatal depression evidence-based practice? A systematic review. *BMC Psychiatry* 2013;13:321. doi:10.1186/1471-244X-13-321
31. Green LW, Glasgow RE. Evaluating the relevance, generalization and applicability of research: issues in external validation and translation methodology. *Eval Health Prof* 2006;29:126-53. doi:10.1177/0163278705284445
32. Williams DD, Garner J. The case against 'the evidence': a different perspective on evidence-based medicine. *Br J Psychiatry* 2002;180:8-12. doi:10.1192/bjp.180.1.8
33. Sharp DM, Power KG, Swanson V. A comparison of the efficacy and acceptability of group versus individual cognitive behaviour therapy in the treatment of panic disorder and agoraphobia in primary care. *Clinical Psychology and Psychotherapy* 2004;11:73-82. doi:10.1002/cpp.393
34. Bilszta J, Ericksen J, Buist A, Milgrom J. Women's experience of postnatal depression-beliefs and attitudes as barriers to care. *Aust J Adv Nurs* 2010;27:44-54.