

Is collaborative care a key component for treating pregnant women with psychiatric and psychosocial symptoms?: A systematic review.

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April 16, 2024

Abstract

Background: Mental disorders during pregnancy are common, with long-lasting negative effects on mother and child. The combination with psychosocial symptoms, barriers on population and healthcare level and lack of long-term evidence make treatment challenging. To overcome this, there is raising awareness for collaborative care. **Objectives:** Review perinatal mental health interventions and analyse the impact of collaborative care. **Search strategy:** Two independent reviewers searched for RCT's in Pubmed, Embase and PsycINFO. **Selection criteria:** Trials studying the effect of psychological or pharmacological interventions on the mental health of pregnant women with psychiatric and/or psychosocial symptoms. **Data collection and analysis:** Two reviewers independently abstracted data and assessed study quality and risk of bias. Each study was scored on collaborative care criteria: multi-professional approach to patientcare, structured management plan, scheduled patient follow-ups, enhanced interprofessional communication. **Main results:** 35 studies were included. Most trials studied the effect of cognitive behavioural therapy and interpersonal psychotherapy on perinatal depression. Almost all interventions met at least one collaborative care criteria. Interventions were mostly provided by multiple professionals, but interprofessional communication rarely took place. Interventions that met more criteria did not more often show a positive effect on maternal mental health. **Conclusions:** There is lack of research on perinatal psychiatric disorders other than depressive and on long-term treatment outcomes. Collaborative care is partly implemented in most current interventions, but more trials (including interprofessional communication) are needed to be conclusive whether collaborative care is a key component in perinatal mental healthcare. **Funding:** None **Keywords:** pregnancy, mental disorders, psychosocial, collaborative care

Is collaborative care a key component for treating pregnant women with psychiatric and psychosocial symptoms?: A systematic review.

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Running title: Treatment of perinatal psychiatric and psychosocial symptoms

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Tweetable abstract: There is an important lack of evidence of the role of collaborative care in perinatal mental healthcare

Main text

Introduction

Globally, mental disorders during pregnancy are common, with prevalence rates of depressive and anxiety disorders around 12%^{1,2}. Women disadvantaged by psychosocial problems are even more likely to develop mental disorders^{3,4}, with prevalence rates of depressive disorders between 25% and 47%⁵. These mental disorders do not only affect pregnant women, but also have negative effects on the (unborn) child. Psychiatric symptoms are risk factors for postpartum depression, caesarean section, low birthweight and behavioural problems in late childhood^{6,7,8,9}. There is growing evidence showing that mental disorders during pregnancy are common and have long-lasting consequences.

Current treatment options are psychotherapy and pharmacotherapy¹⁰. Because perinatal use of antidepressants may have adverse effects on child development, clinicians and women prefer psychotherapy¹⁰. Studies show that cognitive behavioural therapy (CBT) and interpersonal psychotherapy (IPT) can be effective in reducing perinatal psychiatric symptoms^{11,12}. However, these therapies seem less effective for women with psychosocial problems¹³. Also, there is limited evidence of the long-lasting effects. Concerning the organisation of care, several barriers are identified on patient, provider and healthcare level¹⁴. Of all pregnant women

diagnosed with a mental disorder, less than 10% receive adequate treatment (antidepressants or psychotherapy for >6 weeks) and less than 5% achieve remission of psychiatric symptoms¹⁵. Women with psychosocial problems are even less likely to engage in treatment¹⁶. These components make treating pregnant women with mental disorders challenging.

To overcome these challenges, there is raising awareness for integrating mental health care into obstetric care. Collaborative care plays a central role in this multidisciplinary approach consisting of obstetricians, midwives, psychiatrists, psychologists and social workers. Research has shown that collaborative care in primary care is effective in improving psychiatric symptoms and adherence to treatment^{17,18}. A framework of collaborative care, derived from a systematic review of complex system interventions for treating depression in primary care, is designed by Gunn¹⁹ and used in different systematic reviews in order to identify key components of collaborative care in mental health care. We adapted the criteria to the obstetric care setting, in order to score interventions on the following collaborative care criteria:

1. A multi-professional approach to patient care
2. A structured management plan
3. Scheduled patient follow-ups
4. Enhanced interprofessional communication

Whether collaborative care interventions are (more) effective in treating perinatal mental disorders is unknown. The aim of this study is to review perinatal mental health interventions and describe the impact of the collaborative care criteria on maternal mental health outcomes.

Method

Search strategy and study selection

We searched for randomised controlled trials, published in peer-reviewed journals, in the databases Pubmed, Embase and PsychINFO. The following search terms were used to identify eligible articles: (1) pregnancy, (2) mental disorders, (3) psychosocial problems, (4) treatment and (5) randomised controlled trials. We used subject headings and free text terms to likely retrieve all relevant articles. The search was conducted on 31 January 2020 and updated on 20 December 2021.

The results of the search strategy were exported to EndNote, after which duplicates were removed. Two authors (CK, LvR) reviewed the results on title and abstract. In case of disagreement or doubt a third reviewer was consulted (JS). Based on the criteria described below, full text articles were assessed on eligibility. When there were multiple articles from the same trial, the article with the most complete or relevant outcomes was included.

Selection criteria

We included randomised controlled trials from inception till December 2021 if they

(a) examined pregnant women diagnosed with a mental disorder according to a standardized diagnostic interview based on the DSM or ICD criteria, with clinical psychiatric symptoms according to validated mental health questionnaires (e.g. EPDS > 10) or with two or more psychosocial symptoms (low-income, minority status, unsafe (home) situation, living place in a deprived area, substance abuse); (b) evaluated a psychological or pharmacological perinatal treatment, provided face-to-face or over the telephone by professional health workers, with the aim to treat or prevent mental disorders; (c) reported any of the following maternal mental health outcomes: psychiatric symptoms (validated questionnaires, e.g. EPDS, STAI), incidence rates, recovery rates or risk reduction of psychiatric disorders. Secondary outcomes are any birth, neonatal, infant or biomarker outcome. A core outcome set does not exist in this field. We excluded non-English studies, abstracts, case reports and studies including postpartum women. Also, studies on solely transcranial stimulation, food supplements, eHealth, physical treatment and interventions provided by informal health workers were excluded.

Data extraction and analysis

The following details of each study were extracted and described in the summary table (table S2): first author, country, setting, (number of) participants, (duration of the) intervention, control condition, maternal mental health outcome and retention and compliance rates. The retention rate is calculated as the percentage of women who remained till the latest follow-up and the compliance rate as the percentage of women who attended all sessions of all women allocated to the intervention group. Birth, neonatal and infant outcomes are described in another table (table S3).

The collaborative care criteria (CCC) and the collaborative care score (CCS) of each study are summarized in table 1. The CCC are defined as follows¹⁹:

1. **A multi-professional approach to patientcare:** Care provided by a midwife or gynaecologist and at least one other health care professional (e.g., psychiatrist, psychologist, social worker, psychiatric nurse)
2. **Structured management plan:** Evidence based management plan according to the NICE or Marcé guideline or national guideline derived from these^{20,21}
3. **Scheduled patient follow-ups:** One or more telephone or in-person follow-up appointments are scheduled during or after treatment to provide specific interventions, facilitate treatment adherence, or monitor symptoms or adverse effects (e.g., calls between sessions, evaluation of treatment goals, follow-up or booster sessions). Monitoring symptoms for research purposes was insufficient to meet this criterion. Also, active outreach for women who missed sessions and providing telephone sessions for women who missed a session was insufficient
4. **Enhanced interprofessional communication:** Team meetings, case-conferences, individual consultation/supervision, shared medical records, patient-specific written or verbal feedback between caregivers. Communication to check whether all involved therapists work according to the same instructions was not scored

We contacted authors for additional information on CCC, when certain information was missing or unclear (n=13, 3 replies). The CCS is the total number of criteria met by an intervention. In table 2 we described the relation between the CCS and the effect of the intervention on maternal mental health. The effect of the intervention was cited as positive (+) when maternal mental health was significantly better in (a part of) the intervention group compared to the control group at > 1 follow-up moment. The score was +/- when there was not a significant difference between both groups and negative (-) when the maternal mental health was significantly worse in the intervention group compared to the control group.

Quality assessment

To assess the methodological quality of the included studies we used the Cochrane risk-of-bias tool for randomized trials²². The quality of all studies was assessed on the following domains: random sequence generation, allocation concealment, blinding of participants and personnel, blinding of outcome assessment, incomplete outcome data, selective reporting and other sources of bias. Each item was rated as low, unclear or high risk of bias, based on the information reported (table S4). Studies were classified as high quality (not fulfilling 0-1 criterion), moderate (not fulfilling 2-3 criteria), and low quality (not fulfilling >3 criteria).

Patient involvement

Not applicable

Results

Study characteristics

2746 records were identified, of which 171 were assessed for eligibility based on title and abstract; 47 articles met the inclusion criteria (see figure 1 flow diagram and table S1 excluded studies). These articles describe 35 different trials, published between 2000 and 2021. Depression was the most common studied mental disorder (k = 23), followed by a combination of depression and anxiety (k = 5), insomnia (k = 3) and tocophobia (k = 3). One study (k = 1) focused on a variety of psychiatric and personality disorders. Of

all studies, 16 included women with a combination of psychiatric symptoms and psychosocial risk factors (e.g., low socio-economic status, deprived area). CBT ($k = 15$) and IPT ($k = 6$) were the most studied interventions. Other interventions studied more than once were psychoeducation ($k = 4$), mindfulness-based therapy ($k = 4$) and multicomponent therapy ($k = 2$). There were no studies on pharmacotherapy only. A considerable part of the interventions ($k = 15$) was provided to groups of women. The number of sessions varied between 2 to 16 sessions, which were mostly provided once a week.

Depression and anxiety

Cognitive behavioural therapy (CBT)

Most included RCT's ($k=12$) investigated the effect of CBT on antenatal depression. Part of the studies ($k=6$) examined individual CBT (6-14 sessions) modified to pregnant women, focusing on the specific problems these women were facing. Three pilot studies^{23,24,25} found significantly lower levels of depressive or anxiety symptoms in the CBT group compared to the care as usual group. Of the 3 larger trials, one study²⁶ found an intervention effect for women with high depressive symptoms, one study²⁷ described no significant effect, and one study²⁸ showed a negative effect of CBT compared to usual care. The other 6 studies examined CBT modified to women with additional psychosocial symptoms (e.g. low-income, minority group). Four studies^{29,30,31,32}, including two pilot studies^{29,30}, reported (significantly) lower depressive symptoms in the CBT group compared to the care as usual group. However, one of these study³² found a treatment effect for high-risk African American women only and one study was not powered to test for statistical significance. The other 2 studies^{33,34} did not find a significant difference between both groups.

Interpersonal therapy (IPT)

Overall, 4 studies^{35,36,37,38} concluded that IPT (4-16 sessions) was more effective than usual care or a parenting education programme. The other 2 studies^{39,40} did not report a significant effect of IPT. All interventions were provided to women with both psychiatric and psychosocial symptoms. A recently published pilot study compared IPT with CBT, which both showed a positive effect on depressive symptoms.⁴¹

Psychoeducation

Both studies on psycho-education^{42,43} (6-8 sessions) showed a significantly positive effect on depression rates or symptoms compared to care as usual and the self-help book only group.

Mindfulness-based therapy

Three articles^{44,45,46} described mindfulness-based interventions (e.g. CBT, mindfulness-based childbirth and parenting group), which all showed positive findings concerning depressive and/or anxiety symptoms compared to usual care.

Multicomponent therapy

Two RCT's^{47,48} examined the effect of a multicomponent treatment provided by a multi-disciplinary team. An intervention⁴⁷ providing the choice of brief IPT and/or pharmacotherapy revealed a significantly positive effect. A combination of weekly CBT, psychoeducation, body-oriented and relaxation therapy⁴⁸ was not more effective than individual counselling sessions.

Other psychological therapies

Both problem-solving skills training⁴⁹ (5 sessions) and behavioural activation⁵⁰ (10 sessions) were reported as effective in reducing depressive (and anxiety) symptoms. A group preventive risk-reducing treatment to prevent postpartum depression⁵¹ and psychosomatic programming⁵² did not reveal a significant effect of the intervention compared to usual care.

Insomnia

Three studies^{53,54,55} showed that treating insomnia might lead to reduction of depressive symptoms too. Both, 5 individual sessions of CBT and 4 sessions of group behavioural sleep education, significantly reduced

depressive symptoms during pregnancy.

Tocophobia

Two sessions of telephone psychoeducation by a midwife⁵⁶ as well as cognitive therapy for tocophobia⁵⁷ significantly reduced the level of fear of childbirth or birth-related concerns compared to written information about childbirth. Also, mindfulness-based childbirth and parenting group sessions⁵⁸ led to significantly lower levels of fear of childbirth compared to enhanced care as usual.

Secondary outcomes

Retention and compliance rates

Retention rates differed between 31% and 100%. Compliance rates differed between 23% and 100%. The lowest retention rate of 31%⁴² and the lowest compliance rate of 23%²⁹ concerned studies focusing on women with low-income or women stemming from a minority group.

Birth, neonatal and infant outcomes

Positive effects of perinatal interventions on birth, neonatal and infant outcomes are described (e.g., reduction of preterm birth rate, lower caesarean rate, higher scores on self-regulation and stress-reactivity at 9-months)^{25,28,40,43,52,58,59-64}.

Collaborative care score

Table 1 shows an overview of the CCC of all studies. Of the 35 studies, 33 interventions met at least 1 criterion and most studies met 2 criteria. A multi-professional approach to patientcare was the most scored and interprofessional communication was the least scored criterion. Of the 35 studies, 6 studies met all CCC. The studies with high CCS scores of 3 or 4 (n=13) were all evidence-based interventions (CBT, IPT, multicomponent, psychoeducation) provided by multiple professionals to depressive women. All interventions with a score of 4 were provided to women with additional psychosocial risk factors. Whereas the CCS 3 studies provided follow-up sessions after treatment only, the CCS 4 studies provided more often follow-up sessions during treatment. Also, more professionals were involved in the CCS 4 studies and interprofessional communication took place. Of the 29 multi-professional interventions, 25 interventions were provided by a gynaecologist/midwife and a mental health therapist. The other 4 interventions were provided by a team of 3 to 6 different professionals.

Impact collaborative care score

Studies with a CCS of 2 showed in relation to the other scores the most interventions (k=14) with a positive effect on maternal mental health (see table 2). Interventions with higher scores did not show more often a positive effect than interventions with lower scores. Of the 24 interventions with a positive effect, 20 studies met the criterion of a multi-professional approach to patient care. The ranges of retention and compliance rates are also described in table 2. These do not show a clear pattern. However, all studies with the highest retention rates of > 90% (k=7) and studies with the highest compliance rates of > 60% (k=6) met the criterion of a multi-professional approach to patientcare. The few studies that scored on interprofessional communication had predominantly high retention and compliance rates. Altogether, although a higher CCS did not always show a positive effect or higher retention and compliance rates, almost all interventions with a positive effect on maternal mental health and with high retention and compliance rates met the criterion of a multi-professional approach to patient care.

Study quality

Most studies had a medium risk of bias, due to insufficiently describing one or more criteria, leading to an unclear risk of bias. Blinding of participants and personnel to the given intervention was most times impossible, which could have led to a high risk of performance bias. Additionally, most outcomes were self-reported measures, which could have attributed to the risk of bias when participants were not blinded for the intervention.

Discussion

Main findings

The aim of this study was to give a systematic overview of all current perinatal mental health interventions and to describe the role of collaborative care. The current available interventions are almost all either evidence-based or multidisciplinary, which means almost all studies met at least one collaborative care criterion. Interventions with a higher collaborative care score did not more often show a positive effect on maternal mental health.

Almost all included trials (n=28) focused on treating women at risk of a depressive disorder. CBT and IPT were the most studied interventions. Both therapies were predominantly effective in reducing psychiatric symptoms. The effects of other interventions are each based on a few trials with small numbers of participants. Potentially beneficial interventions are mindfulness-based therapy (3 trials), multicomponent treatment (2 trials), psychoeducation (2 trials) and behavioural activation (1 trial). The results of the few studies on tocophobia and insomnia showed promising findings in reducing depressive symptoms and symptoms of fear.

Although we could not find a clear effect of the CCS on maternal mental health, we did find that a multi-professional approach to patient care could be essential in the treatment of pregnant women with psychiatric and psychosocial symptoms. Almost all interventions with a positive effect on maternal mental health and all studies with high retention (> 90%) and compliance (> 60%) rates met this criterion. Interventions provided by a multi-professional team consisting of more than 2 different professionals (> gynaecologist/midwife and a mental health therapist) were rare, as well as interprofessional communication which was the least scored criterion.

Strength and limitations

This review extends the literature about the challenges in perinatal mental health care^{13,65,66} by giving a new broad overview of all current available therapies in this field and describing the role of collaborative care in this treatment. We limited our study to RCT's only, which means we could have missed other potentially contributing studies. CBT and IPT were the most studied interventions, but we found a high heterogeneity within these interventions (e.g. content and number of sessions). Other interventions were studied by just a few trials. Also, retention and compliance rates were difficult to compare, because of the variation in the number of provided sessions and the time of follow-up. Another limitation is the lack of received additional information on CCC of the contacted authors, which could have led to an underestimation of the CCS's. In short, this review gives a broad overview of studies, although there is high degree of heterogeneity on population, interventions and outcome measurements, which makes interpretation of findings difficult and decreases generalizability.

Interpretation

To our knowledge this is the first review about collaborative care in the setting of perinatal mental health care, which makes it difficult to compare these results with previous findings. Research in perinatal mental health care did mainly focus on the effect of psychotherapy on depressive symptoms. The predominantly positive findings of CBT and IPT are in line with previous research that showed that CBT and IPT - interventions advised by the NICE guideline - are effective in treating perinatal depression^{11,12,13,20,21}. The treatment of women with additional psychosocial symptoms, resembling clinical practice, is less studied. A systematic review of Nillni¹³, et al. about the perinatal treatment of depression and anxiety disorders also included women with psychosocial problems (low-income and/or a minority status). However, this review showed, unlike our review, mixed findings of both CBT and IPT in this population. Especially the interventions with a high CCS focused on this population. This could mean that a high CCS can have a positive effect in populations with additional psychosocial symptoms.

As already noticed, collaborative care in primary care setting is effective in improving psychiatric symptoms and adherence to treatment.^{17,18,19} In obstetrics setting, Melville, et al. conducted an RCT, in which a multidisciplinary care intervention adapted to obstetrics and gynaecology clinics was compared with usual

care. The study reported a greater improvement in psychiatric symptoms, better adherence to treatment and a greater satisfaction with care in the intervention group.⁶⁷ Although there is no evidence about the role of collaborative care in the perinatal mental health care setting, this review showed the developments in the field, because almost all interventions were provided by multiple professionals. However, interventions provided by multidisciplinary teams of more than 2 different professionals (e.g., social worker) are rare. Also, remarkable is that just a few studies met the criterion of interprofessional communication. That means that obstetric care and mental health care professionals were most times both involved, but that communication, in a structured way, between them often did not take place or was not reported. Further research should focus on the effect of communication and collaboration between the different professionals, which will enable personalized medicine, including shared decision making between the patient and the different involved caregivers. Both are important in (mental) health care and will eventually lead to improved treatment adherence and more meaningful outcomes for the patient.⁶⁸ Because of the low number of trials that met all collaborative care criteria, more trials are needed, to make a clear conclusion about the impact of collaborative care on maternal mental health and treatment adherence.

Last, this review shows which evidence is missing in the field of perinatal mental health care. Almost all studies were about interventions provided to women with depressive symptoms. Despite the high incidence of anxiety symptoms during pregnancy², just 5 trials focused on women at risk of depression and anxiety. Only 3 trials were about women with tocophobia or insomnia. This shows there is a clear need for more trials on psychiatric disorders other than depression. Additionally, more research to interventions except from CBT and IPT could lead to positive consequences in the field. For example, promising results of mindfulness-based therapy were found in this review. Although there is raising awareness for child outcomes, almost all current outcomes are short-term mother or birth outcomes. Because of the negative long-term effects of perinatal mental health disorders, for future research it is recommended to examine long-term outcomes of mother and child.

Conclusion

In conclusion, there is an important lack of evidence in the field of perinatal mental health care. Available evidence now focusses on studies evaluating CBT and IPT for treating perinatal depression. More research is recommended on other psychiatric disorders, interventions and long-term follow-up outcomes. Additionally, collaborative care and especially a multi-professional approach to patient care is already implemented in most available interventions. However, interprofessional communication and multidisciplinary teams of more than two different professionals are rare. More trials are needed (on the impact of interprofessional communication) to be more conclusive whether collaborative care is a key component in perinatal mental health care.

Acknowledgements

None

Disclosure of interests

None

Contribution to authorship

CK Klatter: data collection (screening abstracts and selecting eligible trials), data extraction and analysis, methodological assessment, manuscript writing

LM van Ravesteyn: data collection, data extraction, methodological assessment, manuscript editing

J Stekelenburg: supervision data collection and analysis, manuscript editing

Details of ethical approval

Not applicable

Funding

None

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