Psychosocial and psychological interventions for preventing postpartum depression (Review)

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ABSTRACT

Background
The cause of postpartum depression remains unclear, with extensive research suggesting a multi-factorial aetiology. However, epidemiological studies and meta-analyses of predictive studies have consistently demonstrated the importance of psychosocial and psychological variables. While interventions based on these variables may be effective treatment strategies, theoretically they may also be used in pregnancy and the early postpartum period to prevent postpartum depression.

Objectives
Primary: to assess the effect of diverse psychosocial and psychological interventions compared with usual antepartum, intrapartum, or postpartum care to reduce the risk of developing postpartum depression. Secondary: to examine (1) the effectiveness of specific types of psychosocial and psychological interventions, (2) the effectiveness of individual versus group-based interventions, (3) the effects of intervention onset and duration, and (4) whether interventions are more effective in women selected with specific risk factors.

Search strategy
We searched the Cochrane Pregnancy and Childbirth Group trials register (January 27 2004), the Cochrane Depression, Anxiety and Neurosis Group trials register (October 2003), the Cochrane Central Register of Controlled Trials (October 2003), MEDLINE (1966 to 2004), EMBASE (1980 to 2004) and CINAHL (1982 to 2004). We scanned secondary references and contacted experts in the field.

Selection criteria
All published and unpublished randomised controlled trials of acceptable quality comparing a psychosocial or psychological intervention with usual antenatal, intrapartum, or postpartum care.

Data collection and analysis
Both reviewers participated in the evaluation of methodological quality and data extraction. Additional information was sought from several trial researchers. Results are presented using relative risk for categorical data and weighted mean difference for continuous data.

Main results
Fifteen trials, involving over 7600 women, were included. Overall, women who received a psychosocial intervention were equally likely to develop postpartum depression as those receiving standard care (relative risk (RR) 0.81, 95% confidence interval (CI) 0.65 to 1.02). One promising intervention appears to be the provision of intensive postpartum support provided by public health nurses or midwives (RR 0.68, 95% CI 0.55 to 0.84). Identifying mothers 'at-risk' assisted the prevention of postpartum depression (RR 0.67, 95% CI 0.51 to 0.89). Interventions with only a postnatal component appeared to be more beneficial (RR 0.76, 95% CI 0.58 to 0.98) than interventions that also incorporated an antenatal component. While individually-based interventions may be more effective (RR 0.76, 95% CI 0.59 to 1.00) than those that are group-based, women who received multiple-contact intervention were just as likely to experience postpartum depression as those who received a single-contact intervention.

Authors' conclusions
Overall psychosocial interventions do not reduce the numbers of women who develop postpartum depression. However, a promising intervention is the provision of intensive, professionally-based postpartum support.

PLAIN LANGUAGE SUMMARY

Psychosocial and psychological interventions compared with usual care provided antenatally or postnatally do not reduce the risk of postpartum depression

Postpartum depression affects approximately 13% of all new mothers. While no clear beneficial effect in the prevention of postpartum depression from a range of psychosocial and psychological interventions was found, intensive professionally-based postpartum support may be helpful. Interventions that were individually based appear to be more beneficial than those that were group-based. There is also evidence supporting interventions that are initiated in the postnatal period that do not include an antenatal component. Finally, interventions targeting 'at-risk' mothers may be more beneficial than those including a general maternal population. Many questions remain unanswered and additional research is needed.

BACKGROUND

Postpartum mood disorders are a common form of maternal morbidity following delivery (Stocky 2000). These affective disorders range in severity from the mild and transient 'baby blues' experienced by 50% to 80% of women to postpartum psychosis, a serious condition which affects less than 1% of mothers and usually requires hospitalisation (Evins 1997). Among these disorders is postpartum depression, a condition often exhibiting the disabling symptoms of uneasiness, irritability, confusion and forgetfulness, anhedonia, fatigue, insomnia, anxiety, guilt, inability to cope, and thoughts of suicide. Frequently exacerbating these symptoms are low self-esteem, lack of confidence, and unrealistic expectations of motherhood. The development of postpartum depression is greatest in the first three months postpartum with duration frequently dependent on severity (Cox 1993). Some residual depressive symptoms are common up to a year after delivery (Cooper 1998).

Postpartum depression is a major health issue for many women from diverse cultures (Affonso 2000). Longitudinal and epidemiological studies have yielded varying prevalence rates, ranging from 3% to more than 25% of women in the first year following delivery; these rates fluctuate due to sampling, timing of assessment, differing diagnostic criteria (major or minor depression), and whether the studies were retrospective (low rates) or prospective (6- to 10-fold higher). Frequently cited estimates range between 10% to 15% and a meta-analysis of 58 studies reported the prevalence of postpartum depression to be 13% (O'Hara 1996). It is noteworthy that the absolute difference in estimates between self-report assessments of depressive symptoms, such as the commonly used Edinburgh Postnatal Depression Scale (which does not diagnose postpartum depression), and standardised diagnostic interviews (which do diagnose postpartum depression) was small.

This morbidity has well documented public health consequences for the mother, child, and family. While women who have suffered from postpartum depression are twice as likely to experience future episodes of depression over a five-year period (Cooper 1995), infants and children are particularly vulnerable. Postpartum depression can cause impaired maternal-infant interactions (Murray 1996) and negative perceptions of infant behaviour (Mayberry 1993), which have been linked to attachment insecurity (Hipwell 2000; Murray 1992), cognitive developmental delay (Cogill 1986; Hipwell 2000) and social/interaction difficulties (Cummings 1994; Murray 1999). Infants as young as three months of age have been shown to ably detect their mothers' mood and to modify their own responses accordingly (Cohn 1983). While cognitive skills (Whiffen 1989), expressive language development (Cox 1987), and attention (Breznitz 1988) have been negatively influenced by postpartum depression, it has also been reported that children of depressed mothers are two to five times more likely to develop long-term behavioural problems (Beck 1999; Orvaschel 1988). Child neglect/abuse (Buist 1998) and marital stress resulting in separation or divorce (Boyce 1994; Holden 1991) are other reported outcomes. Maternal and infant mortality are rare but real consequences of postpartum depression.

The aetiology of postpartum depression remains unclear and there is little evidence to support a biological basis (Beck 2001; O'Hara 1997). Despite considerable research, no single causative factor has been isolated. However, consistent findings suggest the importance of psychosocial variables (Cooper 1998; O'Hara 1997). In particular, stressful life events (Bernazzani 1997; O'Hara 1991), marital conflict (Bernazzani 1997; O'Hara 1991; O'Hara 1986), and the lack of social support (Bernazzani 1997; Brugha 1998; Cooper 1998; O'Hara 1986; Small 1994; Stein 1989; Stuchbery 1998) have been found to significantly increase the risk of postpartum depression. The saliency of social support was especially highlighted in a predictive study of several thousand women, in which mothers who lacked social support were approximately two times more likely to develop postpartum depression than mothers with sufficient support (Cooper 1996).

To address this issue, a variety of psychosocial and psychological interventions have been developed to treat postpartum depression. For example, randomised controlled trials evaluating cognitive-behavioural counselling with antidepressants (Appleby 1997), cognitive-behavioural therapy and non-directive counselling (Cooper 1997; Cooper 2003), health visitor-led non-directive counselling (Holden 1989; Wickberg 1996), peer support (Dennis 2003), and

interpersonal psychotherapy (O'Hara 2000) have all demonstrated the amenability of postpartum depression to treatment.

It is theoretically plausible that psychosocial and psychological interventions may prevent postpartum depression, as many of the known risk factors are present during pregnancy and the immediate postpartum period. Furthermore, a number of studies have suggested that there is an overlap between antenatal and postpartum depression, in that there are significant correlations among Edinburgh Postnatal Depression Scale scores at varying antenatal and immediate postnatal time periods (Appleby 1994; Dennis 2004b; Hannah 1992; Lane 1997; Yamashita 2000). While psychosocial and psychological interventions may be effective treatment strategies, they may also be used in pregnancy and the early postpartum period to prevent postpartum depression.

OBJECTIVES

The primary objective of this review was to assess the effects, on mothers and their families, of preventive psychosocial and psychological interventions compared with usual antepartum, intrapartum, or postpartum care to reduce the risk of postpartum depression.

Secondary objectives were to examine:
1. the effectiveness of specific types of psychosocial interventions;
2. the effectiveness of specific types of psychological interventions;
3. the effects of intervention mode (e.g. individual versus group-based interventions);
4. the effects of intervention onset (e.g. antenatal and postnatal interventions versus postnatal only interventions);
5. the effects of intervention duration (e.g. single-contact interventions versus multiple-contact interventions);
6. the effects of sample selection criteria (e.g. targeting women with specific risk factors versus the general population).

CRITERIA FOR CONSIDERING STUDIES FOR THIS REVIEW

Types of studies

All published, unpublished and ongoing randomised controlled trials of preventive psychosocial or psychological interventions in which the primary or secondary aim was reduction in risk to develop postpartum depression. Quasi-randomised trials (e.g., those randomised by delivery date, or odd versus even medical record numbers) were excluded from the analysis.

Types of participants

Pregnant women and new (less than six weeks postpartum) mothers, including those at no known risk and those identified as at-risk to develop postpartum depression.

Types of intervention

Any form of standard or usual care compared to a variety of non-pharmaceutical interventions - including psychoeducational strategies, cognitive behavioural therapy, interpersonal psychotherapy, non-directive counselling, psychological debriefing, various supportive interactions, and tangible assistance - delivered via telephone, home or clinic visits, or individual or group sessions antenatally and/or within the first month postpartum by a professional (nurse, midwife, childbirth educator, physician) or lay person (a specially trained woman from the community, a student).

Types of outcome measures

A. Maternal outcomes
1. Postpartum depression (as variously defined and measured by trialists)
2. Postpartum psychosis
3. Maternal mortality and serious morbidity including self-harm, suicide attempts
4. Health service utilisation including outpatient and inpatient use of psychiatric unit, other health services
5. Maternal-infant attachment
6. Maternal attitudes towards motherhood
7. Anxiety
8. Stress
9. Maternal confidence
10. Maternal competence
11. Self-esteem
12. General health
13. Maternal dissatisfaction with intervention
14. Maternal perceived social support

B. Infant outcomes
15. Breastfeeding duration (variously defined)
16. Breastfeeding level (exclusive, almost exclusive, high, partial, token, bottle-feeding)
17. Infant health parameters including immunisation, accidental injury, non accidental injury
18. Infant developmental assessments (variously defined)
19. Child abuse and/or neglect
20. Neonatal/infant mortality
21. Neonatal/infant morbidity
22. Quality of mothering (variously defined)

C. Family outcomes
23. Marital discord
24. Marital separation/divorce

SEARCH METHODS FOR IDENTIFICATION OF STUDIES

See: methods used in reviews.

We searched the Cochrane Pregnancy and Childbirth Group trials register by contacting the Trials Search Co-ordinator (January 27 2004).

The Cochrane Pregnancy and Childbirth Group's trials register is maintained by the Trials Search Co-ordinator and contains trials identified from:
1. quarterly searches of the Cochrane Central Register of Controlled Trials (CENTRAL);
2. monthly searches of MEDLINE;
3. hand searches of 30 journals and the proceedings of major conferences;
4. weekly current awareness search of a further 37 journals.

Details of the search strategies for CENTRAL and MEDLINE, the list of hand-searched journals and conference proceedings, and the list of journals reviewed via the current awareness service can be found in the 'Search strategies for identification of studies' section within the editorial information about the Cochrane Pregnancy and Childbirth Group.

Trials identified through the searching activities described above are given a code (or codes) depending on the topic. The codes are linked to review topics. The Trials Search Co-ordinator searches the register for each review using these codes rather than keywords.

In addition, we searched the Cochrane Depression, Anxiety and Neurosis trials register (October 2003), the Cochrane Central Register of Controlled Trials (October 2003), MEDLINE (1966 to 2004), EMBASE (1980 to 2004) and CINAHL (1982 to 2004) using various combinations of the terms postpartum/ postnatal depression. We scanned secondary references and obtained promising studies and made contacts with experts in the field to identify other published or unpublished trials.

METHODS OF THE REVIEW

Selection of trials

Titles and abstracts of the electronic searches were reviewed by the primary reviewer. We independently evaluated trials under consideration for methodological quality and appropriateness for inclusion, without consideration of their results. We resolved uncertainties regarding the appropriateness for inclusion through discussion and consensus.

Methodological quality assessment

We assessed the quality of the trials that met the eligibility criteria using the following criteria:
1. generation of random allocation sequence: adequate, inadequate, unclear;
2. allocation concealment: A = adequate, B = unclear, C = inadequate;
3. blinding of participants: yes, no, inadequate, no information;
4. blinding of caregivers: yes, no, inadequate, no information;
5. blinding of outcome assessment: yes, no, inadequate or no information;
6. completeness of follow-up data (including any differential loss of participants from each group): A = less than 3% of participants excluded, B = 3% to 9.9% of participants excluded, C = 10% to 19.9% excluded, D = 20% or more excluded, E = unclear;
7. analysis of participants in randomised groups.

We assigned a rating to each trial, compared results and discussed differences until we reached agreement. We have clearly described reasons for exclusion of any apparently eligible trial (*see* 'Characteristics of excluded studies' table).

Data extraction

We independently extracted data from trial reports using a pilot-tested data extraction form developed by the primary reviewer. Wherever necessary, we requested unpublished or missing data from the trial contact author. In addition, we sought data to allow an 'intention-to-treat' analysis. Data were entered into RevMan 2000 by one reviewer and double data entry was completed by the other reviewer or a research assistant.

Data synthesis

Trials using different preventive strategies were analysed separately and the results combined only if there was no reason to think that they differed in relevant ways. While the primary meta-analysis was based on the occurrence of postpartum depression or not (however measured by trialists), we incorporated several depression rating scales or cut-off points. To address the potential measurement differences, we used a fixed effect model to make direct comparisons between trials using the same rating scale and cut-off. If trials used different ways of measuring the same continuous outcome, we used standardised mean differences. We performed meta-analyses using relative risks as the measure of effect size for binary outcomes, and weighted mean differences for continuous outcome measures, both with 95% confidence intervals. We assessed the extent to which there were between-study differences including variations in the population or intervention.

We used fixed effect meta-analysis to combine study data. We investigated heterogeneity by calculating I^2statistics (Higgins 2002), and if this indicated a high level of heterogeneity among the trials included in an analysis (I^2 > 50%), we used random effects meta-analysis for an overall summary. Where we found high levels of heterogeneity, we explored these by sensitivity analyses excluding the trials most susceptible to bias based on the following quality assessment: (1) those with unclear allocation concealment (B); (2) high levels of postrandomisation losses or exclusions (D); or (3) unblinded outcome assessment or blinding of outcome assessment uncertain.

Subgroup analyses

We planned and completed the following six a priori subgroup analyses:
1. the effectiveness of specific types of psychosocial interventions;
2. the effectiveness of specific types of psychological interventions;
3. the effects of intervention mode (e.g. individual versus group-based interventions);
4. the effects of intervention onset (e.g. antenatal and postnatal interventions versus postnatal only interventions);
5. the effects of intervention duration (e.g. single-contact interventions versus multiple-contact interventions);
6. the effects of sample selection criteria (e.g. women with specific risk factors versus the general population).

DESCRIPTION OF STUDIES

Please see table of 'Characteristics of included studies'. Fifteen trials, reported between 1995 and 2003 and including 7697 women, were identified and met the inclusion criteria. The trials were primarily conducted in Australia and the UK; two trials were conducted in the USA (Gorman 2002; Zlotnick 2001) and one was conducted in China (Tam 2003). While all trials included the outcome postpartum depression, several studies provided data on other variables including: health service contact (Brugha 2000), maternal-infant attachment (Armstrong 1999), maternal attitudes towards motherhood (Armstrong 1999), anxiety (Lavender 1998), competence in mothering (Armstrong 1999), general physical and mental health (Gunn 1998; Morrell 2000; Reid 2002; Small 2000), perceived support (Morrell 2000; Reid 2002), breastfeeding duration (Armstrong 1999; Gunn 1998; Morrell 2000), infant immunisation (Armstrong 1999), infant injury (Armstrong 1999), and marital discord (Gorman 2002).

Definition of postpartum depression
In all trials but one (Zlotnick 2001), postpartum depressive symptomatology was defined as a score above a specified cut-off point on a self-report measure; for the majority of studies (10 out of 15) an Edinburgh Postnatal Depression Scale (EPDS) score greater than 12 (also reported as a 12/13 cut-off score) indicated postpartum depression. Several studies also reported mean EPDS scores (Armstrong 1999; Gorman 2002; Gunn 1998; MacArthur 2002; Morrell 2000; Reid 2002; Small 2000). Two additional trials used the EPDS to measure postpartum depression but incorporated a different cut-off score; Brugha 2000 used a 10/11 cut-off while Reid 2002 selected a 11/12 cut-off. It is important to note that the EPDS does not diagnose postpartum depression (as this can only be accomplished through a psychiatric clinical interview) but rather it is the most frequently used instrument to assess for postpartum depressive symptomatology. Created to counter the limitations of other well-established depression scales, the EPDS has been validated by standardised psychiatric interviews with large samples and has well-documented reliability and validity in over 11 languages. Two trials used a self-report measure other than the EPDS (Lavender 1998; Tam 2003); both used the Hospital Anxiety Depression Scale. Both Gorman 2002 and Zlotnick 2001 used a semi-structured diagnostic interview (Structured Clinical Interview for DSM-IV) to assess for depression.

The timing of the outcome assessment varied considerably between studies, ranging from 3 (Lavender 1998) to 24 (Gorman 2002; Gunn 1998; Morrell 2000; Priest 2003; Reid 2002; Small 2000; Stamp 1995) weeks postpartum; one trial also included a 52-week assessment (Priest 2003).

Types of psychosocial interventions
The studies were subgrouped into categories to examine specific types of psychosocial interventions such as antenatal and postnatal classes (Brugha 2000; Reid 2002; Stamp 1995), professional (Armstrong 1999; MacArthur 2002) and lay (Morrell 2000) home visits, continuity of care (Waldenstrom 2000), and early postpartum follow up (e.g. routine postpartum care initiated earlier than standard practice) (Gunn 1998). The interventions were provided by a variety of professionals including nurses (Armstrong 1999; Brugha 2000), physicians (Gunn 1998), midwives (MacArthur 2002; Reid 2002; Stamp 1995; Waldenstrom 2000), and allied healthcare providers (e.g. occupational therapist) (Brugha 2000). In one trial the intervention was provided by lay individuals (Morrell 2000). In the majority of studies, the control group was reported to have received usual antenatal/postnatal care, which varied both between and within countries. Wherever there were individual study details on care received by the control group, these are presented in the table of included studies.

Types of psychological interventions
The studies were subgrouped into categories to examine specific types of psychological interventions, such as debriefing (Gamble 2003; Lavender 1998; Priest 2003; Small 2000; Tam 2003) and interpersonal psychotherapy (Gorman 2002; Zlotnick 2001). The interventions were provided by diverse healthcare professionals including midwives (Gamble 2003; Lavender 1998; Priest 2003; Small 2000), nurses (Tam 2003), and mental health specialists (Gorman 2002).

Other health outcomes
Reporting of other maternal health outcomes was inconsistent across studies; the main exception was the use of the SF-36 by four trials to examine general physical and mental health (Gunn 1998; Morrell 2000; Reid 2002; Small 2000). One study reported infant health outcomes (Armstrong 1999) and another included the family outcome of 'marital discord' (Gorman 2002).

Differences in groups studied
Seven trials targeted high-risk women based on various factors believed to put them at additional risk of postpartum depression (Armstrong 1999; Brugha 2000; Gamble 2003; Gorman 2002; Stamp 1995; Tam 2003; Zlotnick 2001), while the other eight trials enrolled women from the general population.

METHODOLOGICAL QUALITY

Randomisation was performed most frequently by consecutively numbered, sealed, opaque envelopes (Gamble 2003; Lavender 1998; Morrell 2000; Priest 2003; Stamp 1995; Tam 2003; Waldenstrom 2000). Various forms of computer-based randomisation was used by four trials (Armstrong 1999; Brugha 2000; MacArthur 2002; Reid 2002). Two trials incorporated a central, computerised randomisation service accessed by telephone (Gunn 1998; Small 2000) and one trial used a block randomisation procedure using a random numbers table (Gorman 2002). Allocation concealment was unclear in one trial (Zlotnick 2001). A power analysis was completed by all but two trials (Gorman 2002; Zlotnick 2001) and data were analysed using an intent-to-treat approach. Outcome data were collected by assessors blinded to group allocation (Armstrong 1999; Brugha 2000; Gorman 2002) or mailed questionnaires; for one study the identity of the outcome assessor (Zlotnick 2001). Five trials had a follow-up attrition rate greater than 20%: Gunn 1998 (34% at 24 weeks); MacArthur 2002 (27% at 16 weeks); Morrell 2000 (21% at 24 weeks); Reid 2002 (29% at 24 weeks); and Tam 2003 (21% at 6 weeks). It is noteworthy that follow up in all these trials included mailed questionnaires. Based on susceptibility to bias (e.g. unclear allocation concealment, high levels of postrandomisation losses or exclusions, or unblinded outcome assessment), the following trials were excluded as appropriate during the sensitivity analysis for outcomes with high levels of heterogeneity (I^2 > 50%): Gunn 1998; MacArthur 2002; Morrell 2000; Reid 2002; Tam 2003; Zlotnick 2001.

RESULTS

Fifteen trials, involving over 7600 women, were included. The results are presented in sequential order, starting with maternal outcomes followed by infant and family outcomes. Because of the large number of maternal outcomes in this Review, the following summary of results is restricted to data collected and reported in at least two trials. Please refer to the meta-analyses graphs for the full results. The meta-analyses for several outcomes had significant heterogeneity. However, the removal of trials at risk of bias resulted in no substantial changes to any of the conclusions. All sensitivity analyses are presented in the meta-analyses graphs. Outcomes that were assessed at 8, 16, and 24 weeks were categorised and presented in the results as follows:

1. 0 to 8 weeks - short-term effects;
2. 9 to 16 weeks - intermediate effects;
3. 17 to 24 weeks - longer-term effects.

Comparison one (main comparison): All psychosocial and psychological interventions versus usual care - all trials

A. Maternal outcomes

We considered 14 maternal outcomes. Data were not available for the following prespecified outcomes: postpartum psychosis, mortality, maternal stress, maternal confidence, self-esteem, and dissatisfaction with intervention.

Outcome: Depressive symptomatology at last assessment (variously defined)

The main outcome measure for this Review was postpartum depression at last study assessment. There was no beneficial effect on the prevention of postpartum depression in the meta-analysis of all types of interventions (15 trials, n = 7697; relative risk (RR) = 0.81, 95% confidence interval (CI) 0.65 to 1.02). There was significant heterogeneity among these trials (I^2 = 68.8%). A similar non-significant effect was found when weighted mean differences (WMD) were calculated among the trials that provided mean scores (8 trials, n = 4880; WMD = -0.36, 95% CI -1.21 to 0.48).

Outcome: Depressive symptomatology at last assessment (Edinburgh Postnatal Depression Scale (EPDS) greater than 12)

To address potential measurement differences, a direct comparison using a random effects model was made between trials that used the same rating scale. For this Review, the most commonly used measure to assess depressive symptoms was the Edinburgh Postnatal Depression Scale, employing the recommended 12/13 cut-off score. Similar to the meta-analysis incorporating all measures, no preventive effect was found when all psychosocial and psychological interventions were grouped together (10 trials, n = 6126; RR = 0.91, 95% CI 0.73 to 1.15).

Outcome: Depressive symptomatology at 8, 16, and 24 weeks (variously defined)

Results suggested a short-term reduction in depressive symptomatology (8 trials; n = 4091; RR = 0.65, 95% CI 0.43 to 1.00). However the effects appeared to weaken at the intermediate period (8 trials, n = 3326; RR = 0.80, 95% CI 0.56 to 1.12) and disappear when measured later (7 trials, n = 4314; RR = 1.02, 95% CI 0.87 to 1.19) in the postpartum period.

Outcome: Depressive symptomatology at 8, 16, and 24 weeks (defined as EPDS > 12)

When only trials that used the EPDS > 12 as the outcome measure were included, no apparent short-term benefits were found (6 trials, n = 3452; RR = 0.90, 95% CI 0.65 to 1.25). Similar results were found when depressive symptomatology was assessed at the intermediate (5 trials, n = 2369; RR = 0.72, 95% CI 0.49 to 1.06) and longer-term (6 trials, n = 3598; RR = 1.00, 95% CI 0.84 to 1.19) time periods.

Outcome: Maternal physical and mental health (SF-36) at last study assessment

We found no apparent effects among any of the scale subcategories: physical functioning (4 trials; n = 2589; WMD = -.29, 95% CI -0.91 to 1.49); physical role functioning (4 trials; n = 2588; WMD = -.90, 95% CI -3.33 to 1.52); bodily pain (4 trials; n = 2589; WMD = .25, 95% CI -1.41 to 1.92); mental health (4 trials; n = 2582; WMD = -.85, 95% CI -2.21 to 0.52); emotional role

functioning (4 trials; n = 2586; WMD = -.93, 95% CI -3.55 to 1.69); vitality (4 trials; n = 2581; WMD = .64, 95% CI -.99 to 2.28); social functioning (4 trials; n = 2591; WMD = -.59, 95% CI -2.29 to 1.10); and general health (4 trials; n = 2586; WMD = -.19, 95% CI -1.68 to 1.29).

Outcome: Perceived social support at 8, 16, and 24 weeks
Two trials measured maternal perceptions of support at 24 weeks using different measures; no beneficial effect was demonstrated (2 trials, n = 1174; standardised mean difference = 0.02, 95% CI -0.09 to 0.14).

B. Infant outcomes
Outcome: Breastfeeding duration
Three trials examined breastfeeding duration and found no short-term (n = 722; RR = 1.03, 95% CI 0.89 to 1.19) or longer-term (n = 968; RR = 0.90, 95% CI 0.74 to 1.10) effects.

Other outcomes
Only one trial reported on other infant outcomes. The mean number of immunisations infants received at three to four months was higher (n = 160; WMD = 0.42, 95% CI 0.11 to 0.73) and the likelihood of infant injuries was lower (n = 160; RR = 0.54, 95% CI 0.31 to 0.92) in the intervention group.

C. Family outcomes
Only one trial reported on family outcomes. There was no significant effect on marital discord scores at four weeks (n = 31; WMD = -3.20, 95% CI -16.93 to 10.53) and 24 weeks (n = 29; WMD = -7.90, 95% CI -21.52 to 5.72) postpartum.

Comparison two: Impact of various types of psychosocial interventions
We found no preventive effect when the interventions were antenatal and postnatal classes (2 trials, n = 311; RR = 1.02, 95% CI 0.61 to 1.72), lay home visits (1 trial, n = 481; RR = 0.89, 95% CI 0.62 to 1.27), early postpartum follow-up (1 trial, n = 475; RR = 0.91, 95% CI 0.56 to 1.48), or continuity of care (1 trial, n = 935; RR = 1.34, 95% CI 0.97 to 1.85). However, we found a beneficial effect when the intervention involved home visits by a health professional (2 trials, n = 1663; RR = 0.68, 95% CI 0.55 to 0.84).

Comparison three: Impact of various types of psychological interventions
We found no preventive effect when the intervention was psychological debriefing (5 trials, n = 3051; RR = 0.57, 95% CI 0.31 to 1.04) or interpersonal psychotherapy (2 trials, n = 72; RR = 0.31, 95% CI 0.04 to 2.52).

Comparison four: Influence of variations in mode of delivery
Outcome: Individually-based interventions
Analysis of 11 trials of interventions provided to individual women suggested a possible benefit in preventing the number of women with depressive symptomatology at the last study assessment (n = 6642; RR = 0.76, 95% CI 0.59 to 1.00). When trials susceptible to bias were removed, the direction of the effect remained the same but the 95% confidence interval widened (7 trials, n = 3667; RR = 0.68, 95% CI 0.43 to 1.09). A similar trend was found when depressive outcomes were assessed within 0 to 8 weeks postpartum (7 trials, n = 3963; RR = 0.64, 95% CI 0.40 to 1.01). However, no clear beneficial effect was found at 9 to 16 weeks postpartum (4 trials, n = 2241; RR = 0.71, 95% CI 0.45 to 1.12), and 17 to 24 weeks postpartum (5 trials, n = 3484; RR = 0.98, 95% CI 0.82 to 1.17).

Outcome: Group-based interventions
Of the four trials evaluating interventions delivered to groups of women, there was no apparent reduction in depressive symptomatology at last study assessment (n = 1055; RR = 1.03, 95% CI 0.65 to 1.63). Analyses according to timing of measurement indicate no apparent short-term (1 trial, n = 128; RR = 0.73, 95% CI 0.31 to 1.69), intermediate (4 trials, n = 1085; RR = 0.93, 95% CI 0.54 to 1.59), or longer-term (2 trials, n = 830; RR = 1.20, 95% CI 0.85 to 1.71) effects.

Comparison five: Influence of intervention onset
Studies in which the intervention began antenatally and continued postnatally failed to reduce the likelihood of postpartum depressive symptomatology (4 trials, n = 1283; RR = 1.21, 95% CI 0.93 to 1.59). However, a preventive effect was found for those trials evaluating a postnatal-only intervention (10 trials, n = 6379; RR = 0.76, 95% CI 0.58 to 0.98).

Comparison six: Influence of intervention duration
In the four trials that evaluated a single-contact intervention (e.g. psychological debriefing, early postpartum follow up) the relative risk was 0.70 (n = 2898; 95% CI 0.38 to 1.27). In the 11 trials in which the intervention involved multiple contacts the relative risk was 0.84 (n = 4790; 95% CI 0.66 to 1.08).

Comparison seven: Influence of sample selected
Trials selecting participants based on 'at-risk' criteria had more apparent success in preventing postpartum depression (7 trials, n = 1162; RR = 0.67, 95% CI 0.51 to 0.89) than the trials that enrolled women from the general population (8 trials, n = 6535; RR = 0.87, 95% CI 0.66 to 1.16).

DISCUSSION

This Review summarises the results of 15 trials involving 7697 women, that were conducted in four countries under a wide variety of circumstances. The methodological quality of the included trials was good. All but one trial (Morrell 2000) involved a psychosocial or psychological intervention provided by a health professional. However, the reporting of the trials was often not comprehensive, lacking in terms of details in the training and qualifications of the intervention providers and in the description of adherence to the intervention protocol. There was also a failure to present details of the informational element of the interventions

and on the background features of the care received by the control groups. While intent-to-treat data analyses were performed, trials involving group sessions had high levels of non-compliance with group attendance (Brugha 2000; Reid 2002; Stamp 1995). The removal of trials at risk of bias resulted in no substantial changes to any of the conclusions.

In the primary comparison, the diversity of preventive interventions and the widely differing study end-points should urge some caution in the interpretation of the pooled data. To partially address this issue, the meta-analyses included short-, intermediate-, and longer-term effects where appropriate. Despite this caution and the subgrouping of end-points, this Review consistently demonstrated that women who received a preventive intervention were overall just as likely to experience postpartum depression as those who received standard care. It is unknown to what extent some of the heterogeneity or insignificant results seen in this Review are related to the measure used to assess postpartum depression. However, a similar non-significant effect was found among those trials that incorporated the widely used Edinburgh Postnatal Depression Scale to measure depressive symptomatology.

In general, the effectiveness of psychosocial or psychological approaches has not been demonstrated. Antenatal classes focusing on postpartum depression have repeatedly been shown to have no preventive effect and cannot be recommended at this time. Similarly, the trials evaluating in-hospital psychological debriefing provide good evidence to suggest that this intervention should not be implemented into practice. The effectiveness of interpersonal psychotherapy and lay support remains uncertain. Morrell 2000 demonstrated that the addition of home visits by a community support worker had no protective effect on postpartum depression. However, a review of the intervention activities revealed that the lay women spent a significant amount of their time providing instrumental support, such as housework and infant care, and limited time providing emotional and appraisal (feedback) support to the mother. The potential to positively influence health outcomes depends on predicting which supportive functions will be the most effective for a particular type of stressor (Will 2000). In qualitative studies, women from diverse cultures who have suffered from postpartum depression consistently describe their feelings of loneliness, worries about maternal competence, role conflicts, and inability to cope (Chen 1999; Nahas 1999; Ritter 2000; Small 1994); apparently the presence or absence of instrumental support was not a factor.

Improving the quality of care provided to women has been another postpartum depression preventive approach. Two trials have evaluated the effect of early postpartum follow up. Although one quasi-experimental study was not included in this Review (Serwint 1991), another well-designed trial demonstrated no beneficial effect on maternal mental health outcomes (Gunn 1998). As such, there is preliminary evidence to suggest that early postpartum follow up has no preventive effect on postpartum depression and cannot be recommended for clinical practice. Similar results have been found with midwifery-based continuity of care models (Waldenstrom 2000).

However, there is beginning evidence to suggest the importance of additional professional support provided postnatally. While one well-designed trial (Armstrong 1999) suggested intensive nursing home visits with at-risk mothers was protective during the first six weeks postpartum, the beneficial effect was not maintained to 16 weeks. It is noteworthy that the 16-week assessment coincided with a decrease in intervention intensity from weekly to monthly nursing visits. Results from a cluster randomised controlled trial demonstrated that flexible, individualised midwifery-based postpartum care that incorporated postpartum depression screening tools also had a preventive effect (MacArthur 2002).

While there was diversity in the types of intervention provided, the trials included in this Review incorporated a primary preventive intervention; no trial selected participants based on evidence of depressive symptomatology. According to Shah 1998, preventive interventions incorporate any strategy that (1) reduces the likelihood of a disease/condition affecting an individual (*primary* prevention); (2) interrupts or slows the progress of a disease/condition through early detection and treatment (*secondary* prevention); or (3) slows the progress of a disease/condition and reduces resultant disability through treatment of established disease (*tertiary* prevention). These preventive interventions can be further classified into different categories depending on the target population: (1) *universal* interventions are designed to be offered to all women; (2) *selective* interventions are designed to be offered to women at increased risk of developing depression; and (3) *indicated* interventions are designed to be offered to women who have been identified as depressed or probably depressed (Mrazek 1994). To examine the effects of universal and selective interventions, subgroup analyses were conducted. The results suggest identifying mothers 'at-risk' assisted in the prevention of postpartum depression. However, currently there is no consistency in the identification of women 'at-risk' and a review of 16 antenatal screening tools suggests that there are no measures with acceptable predictive validity to accurately identify women who will later develop postpartum depression (Austin 2003). This may partially explain why interventions with only a postnatal component appear to be more beneficial than interventions that also incorporate an antenatal component. Other differences in intervention delivery were also examined. While individually based interventions may be more beneficial than those that are group-based, women who receive a multiple-contact intervention were just as likely to develop postpartum depression as those who received a single-contact intervention.

The preventive interventions had no apparent effect on other maternal outcomes, including health service contact, maternal-infant attachment, maternal attitudes towards motherhood, maternal competence, general physical and mental health, perceived

support, breastfeeding duration, and marital discord. However, one study (Armstrong 1999) reported improved mean number of completed infant immunisations and decreased rates of infant injury among mothers who received intensive nursing home visits.

The long-term consequences of postpartum depression suggest preventive approaches are warranted. Manipulation of a risk factor may improve the associated likelihood of developing postpartum depression through many different ways. The most obvious is to decrease the amount of exposure to a given risk factor or, alternatively, reduce the strength or mechanism of the relationship between the risk factor and postpartum depression (McLennan 2002). However, translating risk factor research into predictive screening protocols (Austin 2003)and preventive interventions has met with limited success, as complex interactions of biopsychosocial risk factors with individual variations need to be considered. Although theoretical justifications for many of these preventive approaches were presented by the individual researchers, limited evidence is available to strongly guide practice or policy recommendations Details of research currently in progress are provided in the 'Characteristics of ongoing studies' table.

AUTHORS' CONCLUSIONS

Implications for practice

Currently, there is no evidence to recommend the following interventions be implemented into practice: antenatal and postnatal classes, lay home visits, early postpartum follow up, continuity of care models, in-hospital psychological debriefing, and interpersonal psychotherapy. However, professionally based home visits, such as intensive nursing home visits and flexible postpartum care provided by midwives, appears to show promise in the prevention of postpartum depression. It is noteworthy that the latter intervention incorporated screening with a checklist and the Edinburgh Postnatal Depression Scale (EPDS) to individualise the provision of care. Interventions that are individually based may be more beneficial than those that are group-based. There also appears to be evidence supporting interventions that are initiated in the postnatal period that do not include an antenatal component. Finally, interventions targeting 'at-risk' mothers may be more beneficial than those including a general maternal population.

Implications for research

Despite the recent upsurge of interest in this area, many questions remain unanswered.

Specific research implications

- Currently, there is no evidence to support the use of antenatal group interventions in heterogeneous samples of women 'at-risk' to develop postpartum depression. This finding may be due to methodological limitations such as inadequate sample sizes, unrealistic effect sizes or no formal justification for sample size, large rates of participant decline and/or intervention attrition rates, or lack of adequate antenatal screening tools for identification of those 'at-risk' leading to the targeting of heterogeneous samples. If additional research is conducted, structured interventions with homogeneous, symptomatic women should be evaluated; this would incorporate using an 'indicated' approach. These studies must address previous methodological limitations, such as low participation rates, and should examine the efficacy for both antenatal symptoms as well as the prevention of postpartum depression.
- Further research is warranted to examine the effectiveness of nursing home visits with a specific focus on visit content and intervention intensity.
- Flexible, individualised postnatal care provided by a professional that incorporates postpartum depression screening tools appears to be promising. A well-designed trial conducted outside a UK-midwifery context is needed to replicate the results.
- Trials evaluating individually based lay interventions specifically targeting maternal mood are required. Characteristics of the lay individuals (peers versus general community-based workers) and the nature of the relationships developed should be explored.
- The importance of psychosocial interventions in preventing minor depression (for example, EPDS score greater than nine but less than 13) has not been explored. This is particularly important since research suggests that minor depressive symptomatology often precedes a major depressive episode.

General research implications

To be most efficient in conducting this research there continues to be a need for further interdisciplinary networking among investigators with complementary research interests. For example, psychosocial intervention researchers could collaborate with health services researchers to develop and test multi-level intervention approaches embedded in service systems. To further address postpartum depression as a public health problem, the inclusion of ethnically and socio-economically diverse women in these research efforts is critical to examining the differences in depression symptoms, response rate to interventions, and health service use. In addition, all trials should include an economic analysis of the relative costs and benefits.

It is also necessary to present a few general comments regarding the development of preventive programs. Similar to screening initiatives, preventive interventions should be relatively simple and inexpensive. This is critical if the intervention is to be applied to a relatively large population; unless a project is feasible on a large scale, there is little utility in pursuing smaller demonstration projects. Furthermore, the risk of negative outcomes from a prevention intervention is a frequently ignored possibility. Although

adverse effects are primarily thought of in treatment contexts, particularly pharmacological trials, preventive interventions also include the possibility of unfavourable events. For example, targeted prevention trials carry the risk of labelling and stigmatising participants. Although these risks might be tolerable for those who are accurately identified and who benefit from the intervention, it may not be for those who were included in the intervention as false positives or who do not benefit from the intervention (McLennan 2002). In addition, an increased rate of anxiety for mothers may be of real consequence, as a link between postpartum depression and child health outcomes has been demonstrated. While emphasising this may increase a mother's willingness to accept a preventive intervention, it might also augment her level of anxiety or guilt if she perceives personal responsibility for placing her child at risk for a poor outcome, particularly if she is suffering from the cognitive distortions of depression that foster excessive guilt feelings (McLennan 2002).

NOTES

The title of the previously published protocol was 'Psychosocial interventions for preventing postpartum depression'.

POTENTIAL CONFLICT OF INTEREST

Dr Dennis is a principal investigator for a multi-site trial, currently on-going, that is evaluating the effect of telephone-based peer (mother-to-mother) support in the prevention of postpartum depression among mothers identified as high-risk. Dr Creedy is a co-investigator on one trial included in this Review.

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TABLES

Characteristics of included studies

Study	Armstrong 1999
Methods	RCT - randomisation was performed using a computer generated random numbers table and completed by clerical staff not involved in the eligibility assessment. A power analysis was performed and the outcome assessor was blinded to group allocation. Nurses providing the intervention were also blinded to 6 weeks postpartum (within usual care parameters). The 16-week attrition rate was 12%.

Characteristics of included studies (*Continued*)

Participants	181 mothers (90 in the intervention group; 91 in the control group) who gave birth in one urban hospital in Queensland, Australia. Families were included where the child, for environmental reasons, was at increased risk for poor health and developmental outcomes. Exclusion criteria included poor English literacy skills.
Interventions	Intervention group: weekly nursing home visits for the first 6 weeks, fortnightly until 12 weeks, then monthly until 24 weeks. Mothers were also encouraged to access existing community services. Control group: standard care which included encouragement to access existing community services, an offer for home visits by a nurse (usually limited to 1 visit), and no limit on number of centre visits (by appointment only).
Outcomes	Outcomes included depression (EPDS > 12), parental stress (Parenting Stress Index), breastfeeding duration, infant immunisation and utilisation of medical services and, accidental injury at 6 and 16 weeks.
Notes	Only 63% of mothers completed the pre-trial screening questionnaire. The intervention group included significantly more primiparous and aboriginal mothers and fewer women (1) with a past history of depression, (2) with a partner who had a history of psychiatric illness, and (3) who reported physical forms of domestic violence.
Allocation concealment	A – Adequate

Study	**Brugha 2000**
Methods	RCT - randomisation was performed using a computer-based stratification process with minimisation on three prognostic factors (level of support, screening, and ethnic group). A power analysis was performed and outcome assessors were blinded to group allocation. The 12-week attrition rate was 9%.
Participants	209 pregnant women (103 in the intervention group; 106 in the control group) who attended antenatal clinics in a UK hospital between 12 and 20 weeks gestation are were identified, by screening, to be at an increased risk of postpartum depression. Inclusion criteria: 16 years old, primiparous, residence in reasonable driving distance to hospital, and sufficient English to complete questionnaires.
Interventions	Intervention group: 'Preparing for Parenthood' - 6 structured 2-hour weekly antenatal classes (preceded by an initial introductory meeting with the participant and her partner) and 1 'reunion' class at 8 weeks postpartum. Classes were provided by a trained nurse and occupational therapist and based on established psychological models for tackling depression together with emerging models for enhancing social support.
Outcomes	Outcomes included depression (EPDS > 10) and maternal health service contact since randomization at 12 weeks postpartum.
Notes	Women in the intervention group were more likely to adopt an avoidant problem-solving style than women in the control group; using logistic modelling to adjust for this covariate at baseline did not alter the trial results. Only 45% of participants in the intervention group attended sufficient sessions to 'likely receive benefit'.
Allocation concealment	A – Adequate

Study	**Gamble 2003**
Methods	RCT - randomisation was performed using consecutively numbered, sealed, opaque envelopes. A power analysis was conducted and the outcome assessor was blinded to group allocation. The 12-week attrition rate was 0%.
Participants	103 mothers (50 in the intervention group; 53 in the control group) who were assessed for labour trauma risk in the immediate postpartum period in a Brisbane, Australia hospital.
Interventions	Intervention group: 1 midwifery-led debriefing session before hospital discharge and another at 6 to 8 weeks postpartum. Control group: standard care with no midwifery-led debriefing session.
Outcomes	Outcomes included depression (EPDS > 12) at 12 weeks postpartum.
Notes	
Allocation concealment	A – Adequate

Characteristics of included studies (*Continued*)

Study	**Gorman 2002**
Methods	RCT - randomisation was performed using a random numbers table and a blocking strategy based on the presence or absence of current or past history of depression. Outcome data were collected via interview and mailed questionnaires. The 24-week attrition rate was 18%.
Participants	45 pregnant women (24 in the intervention group; 21 in the control group) at-risk for postpartum depression who attended various obstetric clinics in Iowa City and St. Louis, USA.
Interventions	Intervention group: 5 individual sessions based on interpersonal psychotherapy, beginning in late pregnancy and ending at approximately 4 weeks postpartum
Outcomes	Outcomes included depression (EPDS > 12 and SCID) at 4 and 24 weeks postpartum.
Notes	
Allocation concealment	A – Adequate

Study	**Gunn 1998**
Methods	RCT - randomisation was performed via telephone through a centrally controlled randomisation centre. A power analysis was conducted and outcome data were collected via mailed questionnaires. The 24-week attrition rate was 34%.
Participants	683 healthy mothers (number of women randomised to each group not stated) who gave birth in one rural and one metropolitan hospital in Victoria, Australia. Women were excluded if they were patients of general practitioners who were the trial reference group, attended the teenage clinic, or delivered by an emergency caesarean section.
Interventions	All participants received a letter and appointment date to see a general practitioner for a check-up: the intervention group for 1 week after hospital discharge and the control group for 6 weeks postpartum.
Outcomes	Outcomes included depression (EPDS > 12), maternal physical and mental well-being (SF-36), and breast-feeding duration at 12 and 24 weeks.
Notes	
Allocation concealment	A – Adequate

Study	**Lavender 1998**
Methods	RCT - randomisation was performed using computer-generated numbers and by opening consecutively numbered, sealed opaque envelopes. A power analysis was conducted and outcome data were collected via a mailed questionnaire. The 3-week attrition rate was 5%.
Participants	114 primiparous mothers (60 in the intervention group; 60 in the control group) in a UK teaching hospital. Inclusion criteria: singleton pregnancy, cephalic presentation, spontaneous labour at term, normal vaginal delivery.
Interventions	Intervention group: 1 debriefing session before hospital discharge, which lasted 30 to 120 minutes, provided by a midwife who received no formal training. Control group: standard care with no midwifery-led debriefing session.
Outcomes	Outcomes included depression and anxiety (Hospital Anxiety Depression Scale - HAD > 10) at 3 weeks postpartum.
Notes	Atypical population - 59.6% were single mothers.
Allocation concealment	A – Adequate

Study	**MacArthur 2002**
Methods	RCT with cluster design - randomisation was performed using a customised, computer program in an independent clinical trials unit. 17 practices were randomised to the intervention group and 19 practices

	were randomised to the control group. A power analysis was conducted and outcome data were collected via mailed questionnaires. The 16-week attrition rate was 27%.
Participants	2064 UK mothers (1087 in the intervention group; 977 in the control group). Only mothers expected to move out of the general practice area were excluded.
Interventions	Intervention group: flexible, individualised, extended home visits by a midwife to 28 days postpartum that included (1) screening with a symptoms checklist and the EPDS, (2) a referral to a general practitioner as necessary, and (3) a 10-12 week discharge visit. Control group: standard care that included 7 midwifery home visits to 10-14 days postpartum (may extend to 28 days) and care by health visitors thereafter. General practitioners completed routine home visits and a final check-up at 6 to 8 weeks postpartum.
Outcomes	Outcomes included depression (EPDS > 12) at 16 weeks postpartum.
Notes	
Allocation concealment	A – Adequate

Study	**Morrell 2000**
Methods	RCT - randomisation was performed using a random numbers table and by opening consecutively numbered, sealed opaque envelopes. A power analysis was conducted and outcome data were collected via mailed questionnaires. The 24-week attrition rate was 21%.
Participants	623 UK mothers (311 in the intervention group; 312 in the control group). Exclusion criteria: insufficient English to complete questionnaires and an infant in the special care unit for more than 48 hours.
Interventions	Intervention group: postnatal care at home by community midwives plus up to 10 home visits in the first month postpartum lasting up to 3 hours provided by a community postnatal support worker. Control group: postnatal care at home by community midwives.
Outcomes	Outcomes included depression (EPDS > 12), maternal physical and mental well-being (SF-36), social support (Duke Functional Social Support), and breastfeeding duration at 6 and 24 weeks postpartum.
Notes	
Allocation concealment	A – Adequate

Study	**Priest 2003**
Methods	RCT - randomisation was performed within the strata of parity and mode of delivery. Each woman selected an envelope from a group of at least six sealed, opaque envelopes containing random allocation. A power analysis was conducted and outcome data were collected via mailed questionnaires. The 52-week attrition rate was 19%.
Participants	1745 Australian mothers (875 in the intervention group; 870 in the control group). Exclusion criteria: insufficient English to complete questionnaires, being under psychological care at the time of delivery, maternal age < 18 years, and infant needing neonatal intensive care.
Interventions	Intervention group: a single, standardised debriefing session provided in-hospital immediately after randomisation or the next day; duration ranged from 15 minutes to 1 hour and all research midwives received training in critical incident stress debriefing. Control group: standard postpartum care.
Outcomes	Outcomes included depression (EPDS > 12) at 8, 24, and 52 weeks postpartum.
Notes	
Allocation concealment	A – Adequate

Study	**Reid 2002**
Methods	RCT with a 2 x 2 factorial design - randomisation was performed using a computer generated scheme with randomised permuted blocks, stratified by centre. A power analysis was conducted and outcome data were collected via mailed questionnaires. The 24-week attrition rate was 29%.

Characteristics of included studies (*Continued*)

Participants	1004 UK mothers (503 in the intervention group; 501 in the control group). Inclusion criteria: all primiparous women attending antenatal clinics in two participating hospitals. Exclusion criteria: women whose infant subsequently died or was admitted to the Special Care Unit for more than 2 weeks.
Interventions	Two postpartum interventions incorporating 4 groups: control, mailed self-help materials, invitation to support group, and self-help materials plus invitation to support group. Data was analysed by pooling the four groups as self-help vs no self-help and support group vs no support group. The support groups were run on a weekly basis for 2-hours facilitated by trained midwives.
Outcomes	Outcomes included depression (EPDS > 11), maternal physical and mental well-being (SF-36), and social support (SSQ6) at 12 and 24 weeks postpartum.
Notes	For this review, only the support group vs no support group comparisons were included. Only 18% of participants in the intervention group attended a support group session.
Allocation concealment	A – Adequate

Study	**Small 2000**
Methods	RCT - randomisation was performed via telephone using a computer generated randomisation schedule for each midwife. A power analysis was conducted and outcome data were collected via a mailed questionnaire. The 24-week attrition rate was 12%.
Participants	1041 mothers (520 in the intervention group; 521 in the control group) who had an operative delivery in a large maternity teaching hospital in Melbourne, Australia.
Interventions	Intervention group: a midwifery-led debriefing session before discharge to provide women with an opportunity to discuss their labour, birth, and postdelivery events and experiences. Control group: standard care which included a brief visit from a midwife on discharge to give a pamphlet on sources of assistance.
Outcomes	Outcomes included depression (EPDS > 12) and overall maternal health status (SF-36) at 24-weeks postpartum.
Notes	
Allocation concealment	A – Adequate

Study	**Stamp 1995**
Methods	RCT - randomisation was performed using consecutively numbered, sealed opaque envelopes with stratification by parity. A power analysis was conducted and outcome data were collected via a mailed questionnaire. The 24-week attrition rate was 13%.
Participants	144 pregnant women (73 in the intervention group; 71 in the control group) who screened at-risk for postpartum depression during antenatal clinic visits in Adelaide, Australia. Inclusion criteria: English-speaking, singleton fetus, and < 24 weeks gestation.
Interventions	Intervention group: routine antenatal care plus 2 antenatal and 1 postnatal midwifery-led group sessions. Control group: routine antenatal and postnatal care which included a class at 6 weeks postpartum that incorporated a video on postpartum depression.
Outcomes	Outcomes included depression (EPDS > 12) at 6, 12, and 24 weeks postpartum.
Notes	A high number of women screened 'vulnerable' and only 31% of participants in the intervention group attended all 3 sessions.
Allocation concealment	A – Adequate

Study	**Tam 2003**
Methods	RCT - randomisation was performed using a random numbers table and consecutively numbered, sealed, opaque envelopes. A power analysis was conducted and outcome data were collected via interview and mailed questionnaires.

Characteristics of included studies (*Continued*)

	The 6-week attrition rate was 21%.
Participants	560 in-hospital Chinese mothers (280 in each group) with at least one suboptimal outcome in the perinatal period ranging from antenatal complications requiring hospitalisation, elective caesarean section, labour induction, postpartum haemorrhage, infant admission to special care unit, etc.
Interventions	Intervention group: routine postpartum care plus 1 to 4 sessions of "educational counselling" by a research nurse before hospital discharge that included information related to the adverse event and counselling to assist the mother to "come to terms with her losses and find solutions to specific difficulties" (median total time of was 35 minutes). Twenty-four women also received one session by a physician.
Outcomes	Outcomes included depression (HADS > 4) at 6 weeks postpartum.
Notes	Health professionals were not blinded to group allocation.
Allocation concealment	A – Adequate

Study	**Waldenstrom 2000**
Methods	RCT - randomisation was performed via telephone using consecutively numbered, sealed, opaque envelopes. A power analysis was conducted and outcome data were collected via mailed questionnaires. The 8-week attrition rate was 7%.
Participants	1000 pregnant low-risk mothers (495 in the intervention group; 505 in the control group) attending an antenatal clinic in Melbourne, Australia. Inclusion criteria: > 25 weeks gestation, English-speaking, and low medical risk.
Interventions	Intervention group: team midwifery care provided antenatally and postnatally in hospital with a focus on continuity. Control group: standard antenatal and postnatal care by physicians and midwives with no focus on continuity.
Outcomes	Outcomes included depression (EPDS > 12) at 8 weeks postpartum.
Notes	The primary outcome of this study was satisfaction with care. 1000 women were randomised with 83 unavoidable exclusions (intervention group = 39; control group = 44). Demographic differences were found between questionnaire responders and non-responders.
Allocation concealment	A – Adequate

Study	**Zlotnick 2001**
Methods	RCT - unclear randomisation process. Outcome data were collected via interview. The 12-week attrition rate was 6%.
Participants	37 pregnant women (17 in the intervention group; 18 in the control group) on public assistance who had at least 1 risk factor for postpartum depression and were attending a prenatal clinic at a general hospital in the northeast USA.
Interventions	Intervention group: "Survival Skills for New Moms", which involved four 60-minute group sessions over a 4-week period based on the principles of interpersonal psychotherapy. Control group: standard antenatal care.
Outcomes	Outcomes included depression (SCID) at 12 weeks postpartum.
Notes	50% of eligible women declined trial participation. Atypical sample as 77% of participants were single women. It is unknown who collected follow-up data or provided the intervention.
Allocation concealment	B – Unclear

RCT: Randomised controlled trial
EPDS: Edinburgh Postnatal Depression Scale
vs: versus
SCID: Structured Clinical Interview for DSM-IV

Characteristics of excluded studies

Study	Reason for exclusion
Buist 1999	Pilot trial with unclear randomisation method. Significant group differences in baseline characteristics. No usable outcome data; published data were mean scores without standard deviations.
Chabrol 2002	Not an RCT. Odd versus even number group assignment was used. Data were not analysed using 'intent-to-treat'.
Cooper 2002	Not an RCT. Study examined the impact of a mother-infant intervention through the comparison between two matched groups.
D'Andrea 1994	Postpartum depression was not a study outcome.
Elliott 2000	Not an RCT. Group allocation based on delivery date. Potential selection bias with significant differences between participating and non-participating eligible women. Data were presented using median instead of mean results.
Gordon 1960	Not an RCT. Inexplicit non-random group allocation. Primary outcome was 'emotional upset' using a subjective measure. All participant characteristics were lacking and 46% of mothers were lost to follow up.
Gordon 1999	A poor measure of postpartum depression was used that included a single item question and subscore on the mental health index of the SF-36. In addition, 30% women were excluded postrandomisation.
Hayes 2001	Intervention was not psychosocial or psychological, but rather included a single educational session about postpartum depression, provided antenatally by a midwife.
Heh 2003	Intervention was not psychosocial or psychological but rather included only information related to postpartum depression.
Henderson 1998	Not an RCT but examines data that were part of the Priest 2003 trial.
Hodnett 2002	The intervention (continuous intrapartum support) was neither psychological nor psychosocial. Postpartum depression was not the primary or secondary outcome.
Kealy 2003	Not an RCT.
Lieu 2000	Premature assessment of postpartum depression (2 weeks after delivery), which was neither the primary nor secondary outcome.
Marks 2003	Approximately 25% of participants were currently suffering from depression at recruitment and 49% had a depressive episode sometime during the perinatal period.
Oakley 1991	Intervention was not targeting the prevention of postpartum depression but depression among mothers of young children.
Okano 1998	Not an RCT. Study examined an educational session retrospectively involving two non-randomised groups of women who sought psychiatric care postnatally.
Rees 1995	Intervention was not targeting the prevention of postpartum depression but rather the treatment of depression among pregnant women.
Saisto 2001	Postpartum depression was neither a primary or secondary outcome; statistical results related to postpartum depression were not reported.
Serwint 1991	Not an RCT. Group allocation was based on a 2-week period.
Shields 1997	Study reports on an element of a larger trial where the primary and secondary outcome was not postpartum depression. Furthermore, one EPDS item (self-harm) was excluded rendering the clinical interpretability of the outcome data questionable.
Spinelli 1997	Not an RCT. A single-group study evaluating an interpersonal psychotherapy intervention for the treatment of antepartum depression.
Spinelli 2003	Intervention was not targeting the prevention of postpartum depression but rather the treatment of antepartum depression.
Stamp 1996	Not an RCT.
Webster 2003	The intervention in this well-conducted trial was not psychosocial or psychological but rather included antenatal identification as high-risk, an educational booklet and discussion about the risk of developing postpartum depression,

Characteristics of excluded studies (*Continued*)

	and a letter to the woman's referring general practitioner and local Child Health Nurse alerting them of the woman's risk.
Wolman 1993	The researchers significantly changed the study protocol before trial completion. Inability to assess selection bias. Trial had a 21% loss to follow up and a poor measure of postpartum depression (Pitt Depression Inventory) was used for the main portion of the trial.
Zayas 2002	While the author identified the study as an RCT, no information was provided related to the randomisation process or the intervention. It is also unknown whether the outcome assessor was blinded or whether the data were analysed using 'intent-to-treat'.

EPDS: Edinburgh Postnatal Depression Scale
RCT: Randomised controlled trial

Characteristics of ongoing studies

Study	**Dennis 2004a**
Trial name or title	A randomised controlled trial to evaluate the effect of peer (mother-to-mother) support for the prevention of postpartum depression among high-risk mothers.
Participants	700 Canadian mothers who had an EPDS score > 9 within 24-48 hours following hospital discharge. No previous history of psychosis and currently not taking anti-depressant medications.
Interventions	Telephone-based peer support provided by an experienced mother who previously suffered and recovered from postpartum depression and participated in a 4-hour training session.
Outcomes	Postpartum depression at 12 and 24 weeks postpartum as measured by a clinical interview (SCID) and EPDS.
Starting date	Funding started April 2004.
Contact information	Dr. Cindy-Lee Dennis Assistant Professor Faculty of Nursing University of Toronto Email: cindylee.dennis@utoronto.ca
Notes	

Study	**Mann 2001**
Trial name or title	A randomised controlled trial of a psychological intervention given in pregnancy to reduce the risk of postnatal depression in a sample of high risk women in India.
Participants	423 pregnant Indian women identified as high-risk based on a researcher developed risk score.
Interventions	Home-based 'listening visits' provided from 30 weeks gestation to 10 weeks postpartum.
Outcomes	Postpartum depression at 6, 12, and 24 weeks as measured using the EPDS and a revised clinical interview schedule providing a diagnosis according to ICD-10 criteria.
Starting date	Data collection to end June 2004.
Contact information	Dr. Anthony Mann Institute of Psychiatry De Crespigny Park Denmark Hill London, UK Email: spjuahm@iop.kcl.ac.uk
Notes	Trial information was provided by : Dr. Marcus Hughes

Characteristics of ongoing studies (*Continued*)

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EPDS: Edinburgh Postnatal Depression Scale
ICD: International Classification of Diseases
SCID: Structured clinical interview for the diagnostic and statistical manual of mental disorders

ANALYSES

Comparison 01. All interventions versus usual care - various study outcomes

Outcome title	No. of studies	No. of participants	Statistical method	Effect size
01 Depressive symptomatology at final study assessment (variously defined)			Relative Risk (Random) 95% CI	Subtotals only
02 Depressive symptomatology at final study assessment (EPDS > 12)			Relative Risk (Random) 95% CI	Subtotals only
03 Mean depression scores at final study assessment			Weighted Mean Difference (Random) 95% CI	Subtotals only
04 Depressive symptomatology at 8, 16, 24 weeks postpartum (variously defined)			Relative Risk (Random) 95% CI	Subtotals only
05 Depressive symptomatology at 8, 16, 24 weeks postpartum (EPDS > 12)			Relative Risk (Random) 95% CI	Subtotals only
06 Maternal health service contact at final study assessment	1	190	Relative Risk (Fixed) 95% CI	1.21 [0.57, 2.56]
07 Maternal-infant attachment at 8, 16, 24 weeks postpartum			Weighted Mean Difference (Fixed) 95% CI	Subtotals only
08 Maternal attitudes toward motherhood at 8, 16, 24 weeks postpartum			Weighted Mean Difference (Fixed) 95% CI	Subtotals only
09 Maternal anxiety at 8, 16, 24 weeks postpartum			Relative Risk (Fixed) 95% CI	Subtotals only
10 Competence in mothering at 8 and 16 weeks postpartum			Weighted Mean Difference (Fixed) 95% CI	Subtotals only
11 General physical and mental health (SF-36) at final study assessment			Weighted Mean Difference (Fixed) 95% CI	Subtotals only
12 Perceived social support at 8, 16, 24 weeks postpartum			Standardised Mean Difference (Fixed) 95% CI	Subtotals only
13 Breastfeeding duration at 8, 16, 24 weeks postpartum			Relative Risk (Fixed) 95% CI	Subtotals only
14 Infant immunisations	1	160	Weighted Mean Difference (Fixed) 95% CI	0.42 [0.11, 0.73]
15 Infant injuries	1	160	Relative Risk (Fixed) 95% CI	0.54 [0.31, 0.92]

16 Marital discord at 4 and 24 weeks postpartum		Weighted Mean Difference (Fixed) 95% CI	Subtotals only

Comparison 02. Psychosocial interventions versus usual care - variations in intervention type

Outcome title	No. of studies	No. of participants	Statistical method	Effect size
01 Antenatal and postnatal classes	2	311	Relative Risk (Fixed) 95% CI	1.02 [0.61, 1.72]
02 Postpartum professional-based home visits	2	1663	Relative Risk (Fixed) 95% CI	0.68 [0.55, 0.84]
03 Postpartum lay-based home visits	1	481	Relative Risk (Fixed) 95% CI	0.89 [0.62, 1.27]
04 Early postpartum follow up	1	475	Relative Risk (Fixed) 95% CI	0.91 [0.56, 1.48]
05 Continuity of care	1	935	Relative Risk (Fixed) 95% CI	1.34 [0.97, 1.85]

Comparison 03. Psychological Interventions versus usual care - variations in intervention type

Outcome title	No. of studies	No. of participants	Statistical method	Effect size
01 Psychological debriefing			Relative Risk (Random) 95% CI	Subtotals only
02 Interpersonal psychotherapy	2	72	Relative Risk (Random) 95% CI	0.31 [0.04, 2.52]

Comparison 04. All interventions versus usual care - variations in intervention mode

Outcome title	No. of studies	No. of participants	Statistical method	Effect size
01 Individually based interventions			Relative Risk (Random) 95% CI	Subtotals only
02 Group-based interventions			Relative Risk (Random) 95% CI	Subtotals only

Comparison 05. All interventions versus usual care - variations in intervention onset

Outcome title	No. of studies	No. of participants	Statistical method	Effect size
01 Interventions with antenatal and postnatal components	4	1283	Relative Risk (Fixed) 95% CI	1.21 [0.93, 1.59]
02 Interventions with postnatal only component			Relative Risk (Random) 95% CI	Subtotals only

Comparison 06. All interventions versus usual care - variations in intervention duration

Outcome title	No. of studies	No. of participants	Statistical method	Effect size
01 Single-contact interventions			Relative Risk (Random) 95% CI	Subtotals only
02 Multiple-contact interventions			Relative Risk (Random) 95% CI	Subtotals only

Comparison 07. All interventions versus usual care - variations in risk status

Outcome title	No. of studies	No. of participants	Statistical method	Effect size
01 Interventions for at-risk women	7	1162	Relative Risk (Fixed) 95% CI	0.67 [0.51, 0.89]
02 Interventions for general population			Relative Risk (Random) 95% CI	Subtotals only

INDEX TERMS

Medical Subject Headings (MeSH)

Depression, Postpartum [*prevention & control]; Family Health; Psychotherapy; Randomized Controlled Trials; Social Support

MeSH check words

Female; Humans

COVER SHEET

Title	Psychosocial and psychological interventions for preventing postpartum depression
Authors	Dennis C-L, Creedy D
Contribution of author(s)	Cindy-Lee Dennis updated the previously published protocol and searched for relevant studies with input from Josephine Kavanagh. She also independently evaluated the trials for quality, extracted and entered data, completed the meta-analysis, and wrote the text of the Review and the conclusion. Debra Creedy independently evaluated the trials for quality and extracted and entered data.
Issue protocol first published	2001/1
Review first published	2004/4
Date of most recent amendment	23 August 2004
Date of most recent SUBSTANTIVE amendment	16 August 2004
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Date new studies sought but none found	Information not supplied by author
Date new studies found but not yet included/excluded	Information not supplied by author
Date new studies found and included/excluded	27 January 2004
Date authors' conclusions section amended	Information not supplied by author
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GRAPHS AND OTHER TABLES

Analysis 01.01. Comparison 01 All interventions versus usual care - various study outcomes, Outcome 01 Depressive symptomatology at final study assessment (variously defined)

Review: Psychosocial and psychological interventions for preventing postpartum depression

Comparison: 01 All interventions versus usual care - various study outcomes

Outcome: 01 Depressive symptomatology at final study assessment (variously defined)

Study	Treatment n/N	Control n/N	Relative Risk (Random) 95% CI	Weight (%)	Relative Risk (Random) 95% CI
01 Depressive symptomatology - all trials					
Armstrong 1999	13/80	18/80		6.2	0.72 [0.38, 1.37]
Brugha 2000	15/94	18/96		6.4	0.85 [0.46, 1.59]
Gamble 2003	4/50	17/53		3.6	0.25 [0.09, 0.69]
Gorman 2002	3/20	4/17		2.3	0.64 [0.17, 2.46]
Gunn 1998	27/232	31/243		7.8	0.91 [0.56, 1.48]
Lavender 1998	5/58	31/56		4.4	0.16 [0.07, 0.37]
MacArthur 2002	115/801	149/702		10.7	0.68 [0.54, 0.84]
Morrell 2000	48/252	49/229		9.3	0.89 [0.62, 1.27]
Priest 2003	37/696	42/705		8.4	0.89 [0.58, 1.37]
Reid 2002	49/339	46/370		9.0	1.16 [0.80, 1.69]
Small 2000	81/467	65/450		9.9	1.20 [0.89, 1.62]
Stamp 1995	9/60	6/61		3.8	1.53 [0.58, 4.02]
Tam 2003	26/261	35/255		7.9	0.73 [0.45, 1.17]
Waldenstrom 2000	74/464	56/471		9.6	1.34 [0.97, 1.85]
Zlotnick 2001	0/17	6/18		0.6	0.08 [0.00, 1.34]
Subtotal (95% CI)	3891	3806		100.0	0.81 [0.65, 1.02]
Total events: 506 (Treatment), 573 (Control)					
Test for heterogeneity chi-square=44.81 df=14 p=<0.0001 I^2 =68.8%					
Test for overall effect z=1.76 p=0.08					
02 Sensitivity analysis					
Armstrong 1999	13/80	18/80		11.7	0.72 [0.38, 1.37]
Brugha 2000	15/94	18/96		11.9	0.85 [0.46, 1.59]
Gamble 2003	4/50	17/53		7.9	0.25 [0.09, 0.69]

(*Continued . . .*)

(. . . *Continued*)

Study	Treatment n/N	Control n/N	Relative Risk (Random) 95% CI	Weight (%)	Relative Risk (Random) 95% CI
Gorman 2002	3/20	4/17		5.6	0.64 [0.17, 2.46]
Lavender 1998	5/58	31/56		9.3	0.16 [0.07, 0.37]
Priest 2003	37/696	42/705		14.2	0.89 [0.58, 1.37]
Small 2000	81/467	65/450		15.6	1.20 [0.89, 1.62]
Stamp 1995	9/60	6/61		8.3	1.53 [0.58, 4.02]
Waldenstrom 2000	74/464	56/471		15.4	1.34 [0.97, 1.85]
Subtotal (95% CI)	1989	1989		100.0	0.76 [0.52, 1.12]
Total events: 241 (Treatment), 257 (Control)					
Test for heterogeneity chi-square=32.33 df=8 p=<0.0001 I^2 =75.3%					
Test for overall effect z=1.37 p=0.2					

Analysis 01.02. Comparison 01 All interventions versus usual care - various study outcomes, Outcome 02 Depressive symptomatology at final study assessment (EPDS > 12)

Review: Psychosocial and psychological interventions for preventing postpartum depression

Comparison: 01 All interventions versus usual care - various study outcomes

Outcome: 02 Depressive symptomatology at final study assessment (EPDS > 12)

Study	Treatment n/N	Control n/N	Relative Risk (Random) 95% CI	Weight (%)	Relative Risk (Random) 95% CI
01 Depressive symptomatology - all trials					
Armstrong 1999	13/80	18/80		7.7	0.72 [0.38, 1.37]
Gamble 2003	4/50	15/53		3.9	0.28 [0.10, 0.79]
Gorman 2002	3/15	3/15		2.2	1.00 [0.24, 4.18]
Gunn 1998	27/232	31/243		10.5	0.91 [0.56, 1.48]
MacArthur 2002	115/801	149/702		16.9	0.68 [0.54, 0.84]
Morrell 2000	48/252	49/229		13.5	0.89 [0.62, 1.27]
Priest 2003	37/696	42/705		11.7	0.89 [0.58, 1.37]
Small 2000	81/467	65/450		14.9	1.20 [0.89, 1.62]
Stamp 1995	9/60	6/61		4.3	1.53 [0.58, 4.02]
Waldenstrom 2000	74/464	56/471		14.3	1.34 [0.97, 1.85]
Subtotal (95% CI)	3117	3009		100.0	0.91 [0.73, 1.15]

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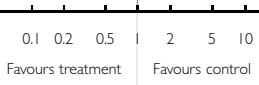
Study	Treatment n/N	Control n/N	Relative Risk (Random) 95% CI	Weight (%)	Relative Risk (Random) 95% CI
Total events: 411 (Treatment), 434 (Control)					
Test for heterogeneity chi-square=22.28 df=9 p=0.008 I^2 =59.6%					
Test for overall effect z=0.79 p=0.4					
02 Sensitivity analysis					
Armstrong 1999	13/80	18/80		12.9	0.72 [0.38, 1.37]
Gamble 2003	4/50	15/53		6.4	0.28 [0.10, 0.79]
Gorman 2002	3/15	3/15		3.7	1.00 [0.24, 4.18]
Priest 2003	37/696	42/705		19.8	0.89 [0.58, 1.37]
Small 2000	81/467	65/450		25.6	1.20 [0.89, 1.62]
Stamp 1995	9/60	6/61		7.1	1.53 [0.58, 4.02]
Waldenstrom 2000	74/464	56/471		24.5	1.34 [0.97, 1.85]
Subtotal (95% CI)	1832	1835		100.0	1.00 [0.75, 1.34]
Total events: 221 (Treatment), 205 (Control)					
Test for heterogeneity chi-square=11.46 df=6 p=0.08 I^2 =47.6%					
Test for overall effect z=0.02 p=1					



Analysis 01.03. Comparison 01 All interventions versus usual care - various study outcomes, Outcome 03 Mean depression scores at final study assessment

Review: Psychosocial and psychological interventions for preventing postpartum depression

Comparison: 01 All interventions versus usual care - various study outcomes

Outcome: 03 Mean depression scores at final study assessment

Study	Treatment N	Treatment Mean(SD)	Control N	Control Mean(SD)	Weighted Mean Difference (Random) 95% CI	Weight (%)	Weighted Mean Difference (Random) 95% CI
01 Mean depression scores - all trials							
Armstrong 1999	80	5.75 (5.51)	80	6.64 (5.58)		9.7	-0.89 [-2.61, 0.83]
Gorman 2002	15	7.90 (5.20)	15	8.00 (5.60)		3.7	-0.10 [-3.97, 3.77]
Gunn 1998	232	5.87 (5.37)	243	6.08 (5.14)		13.4	-0.21 [-1.16, 0.74]
MacArthur 2002	837	6.40 (0.98)	743	8.06 (1.41)		16.0	-1.66 [-1.78, -1.54]
Morrell 2000	260	6.60 (5.10)	233	6.70 (5.60)		13.4	-0.10 [-1.05, 0.85]
Reid 2002	339	5.30 (5.40)	370	5.30 (4.84)		14.2	0.00 [-0.76, 0.76]
Small 2000	467	7.16 (5.68)	450	6.72 (5.50)		14.4	0.44 [-0.28, 1.16]
Tam 2003	261	3.30 (2.90)	255	3.50 (3.00)		15.2	-0.20 [-0.71, 0.31]
Subtotal (95% CI)	2491		2389			100.0	-0.36 [-1.21, 0.48]
Test for heterogeneity chi-square=90.20 df=7 p=<0.0001 I^2 =92.2%							
Test for overall effect z=0.84 p=0.4							
02 Sensitivity analysis							
Armstrong 1999	80	5.75 (5.51)	80	6.64 (5.58)		14.6	-0.89 [-2.61, 0.83]
Gorman 2002	15	7.90 (5.20)	15	8.00 (5.60)		2.9	-0.10 [-3.97, 3.77]
Small 2000	467	7.16 (5.68)	450	6.72 (5.50)		82.5	0.44 [-0.28, 1.16]
Subtotal (95% CI)	562		545			100.0	0.23 [-0.43, 0.89]
Test for heterogeneity chi-square=1.98 df=2 p=0.37 I^2 =0.0%							
Test for overall effect z=0.69 p=0.5							

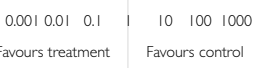
Analysis 01.04. Comparison 01 All interventions versus usual care - various study outcomes, Outcome 04 Depressive symptomatology at 8, 16, 24 weeks postpartum (variously defined)

Review: Psychosocial and psychological interventions for preventing postpartum depression

Comparison: 01 All interventions versus usual care - various study outcomes

Outcome: 04 Depressive symptomatology at 8, 16, 24 weeks postpartum (variously defined)

Study	Treatment n/N	Control n/N	Relative Risk (Random) 95% CI	Weight (%)	Relative Risk (Random) 95% CI
01 Depressive symptomatology at 0 to 8 weeks - all trials					
Armstrong 1999	5/86	18/88		9.8	0.28 [0.11, 0.73]
Gorman 2002	0/20	5/20		2.0	0.09 [0.01, 1.54]
Lavender 1998	5/58	31/56		10.6	0.16 [0.07, 0.37]
Morrell 2000	49/276	48/266		16.9	0.98 [0.69, 1.41]
Priest 2003	54/809	63/833		17.0	0.88 [0.62, 1.25]
Stamp 1995	8/64	11/64		10.9	0.73 [0.31, 1.69]
Tam 2003	26/261	35/255		15.5	0.73 [0.45, 1.17]
Waldenstrom 2000	74/464	56/471		17.3	1.34 [0.97, 1.85]
Subtotal (95% CI)	2038	2053		100.0	0.65 [0.43, 1.00]
Total events: 221 (Treatment), 267 (Control)					
Test for heterogeneity chi-square=31.40 df=7 p=<0.0001 I^2 =77.7%					
Test for overall effect z=1.98 p=0.05					
02 Depressive symptomatology at 0 to 8 weeks - sensitivity analysis					
Armstrong 1999	5/86	18/88		12.1	0.28 [0.11, 0.73]
Gorman 2002	0/20	5/20		2.7	0.09 [0.01, 1.54]
Lavender 1998	5/58	31/56		13.0	0.16 [0.07, 0.37]
Morrell 2000	49/276	48/266		19.4	0.98 [0.69, 1.41]
Priest 2003	54/809	63/833		19.6	0.88 [0.62, 1.25]
Stamp 1995	8/64	11/64		13.3	0.73 [0.31, 1.69]
Waldenstrom 2000	74/464	56/471		19.9	1.34 [0.97, 1.85]
Subtotal (95% CI)	1777	1798		100.0	0.62 [0.38, 1.03]
Total events: 195 (Treatment), 232 (Control)					
Test for heterogeneity chi-square=30.78 df=6 p=<0.0001 I^2 =80.5%					
Test for overall effect z=1.86 p=0.06					
03 Depressive symptomatology at 9 to 16 weeks - all trials					
Armstrong 1999	13/80	18/80		12.8	0.72 [0.38, 1.37]
Brugha 2000	15/94	18/96		13.1	0.85 [0.46, 1.59]
Gamble 2003	4/50	17/53		7.6	0.25 [0.09, 0.69]



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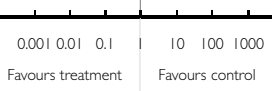
Study	Treatment n/N	Control n/N	Relative Risk (Random) 95% CI	Weight (%)	Relative Risk (Random) 95% CI
Gunn 1998	38/232	33/243		16.9	1.21 [0.78, 1.85]
MacArthur 2002	115/801	149/702		21.0	0.68 [0.54, 0.84]
Reid 2002	55/344	46/388		18.3	1.35 [0.94, 1.94]
Stamp 1995	7/63	10/65		8.9	0.72 [0.29, 1.78]
Zlotnick 2001	0/17	6/18		1.4	0.08 [0.00, 1.34]
Subtotal (95% CI)	1681	1645		100.0	0.80 [0.56, 1.12]
Total events: 247 (Treatment), 297 (Control)					
Test for heterogeneity chi-square=21.34 df=7 p=0.003 I^2 =67.2%					
Test for overall effect z=1.30 p=0.2					
04 Depressive symptomatology at 9 to 16 weeks - sensitivity analysis					
Armstrong 1999	13/80	18/80		16.4	0.72 [0.38, 1.37]
Brugha 2000	15/94	18/96		16.8	0.85 [0.46, 1.59]
Gamble 2003	4/50	17/53		9.6	0.25 [0.09, 0.69]
Gunn 1998	38/232	33/243		22.0	1.21 [0.78, 1.85]
Reid 2002	55/344	46/388		23.9	1.35 [0.94, 1.94]
Stamp 1995	7/63	10/65		11.3	0.72 [0.29, 1.78]
Subtotal (95% CI)	863	925		100.0	0.87 [0.59, 1.28]
Total events: 132 (Treatment), 142 (Control)					
Test for heterogeneity chi-square=12.24 df=5 p=0.03 I^2 =59.1%					
Test for overall effect z=0.71 p=0.5					
05 Depressive symptomatology at 17 to 24 weeks					
Gorman 2002	3/20	4/17		1.4	0.64 [0.17, 2.46]
Gunn 1998	27/232	31/243		10.6	0.91 [0.56, 1.48]
Morrell 2000	48/252	49/229		19.6	0.89 [0.62, 1.27]
Priest 2003	55/777	65/797		20.7	0.87 [0.61, 1.23]
Reid 2002	49/339	46/370		17.6	1.16 [0.80, 1.69]
Small 2000	81/467	65/450		27.5	1.20 [0.89, 1.62]
Stamp 1995	9/60	6/61		2.6	1.53 [0.58, 4.02]
Subtotal (95% CI)	2147	2167		100.0	1.02 [0.87, 1.19]
Total events: 272 (Treatment), 266 (Control)					
Test for heterogeneity chi-square=4.34 df=6 p=0.63 I^2 =0.0%					
Test for overall effect z=0.25 p=0.8					

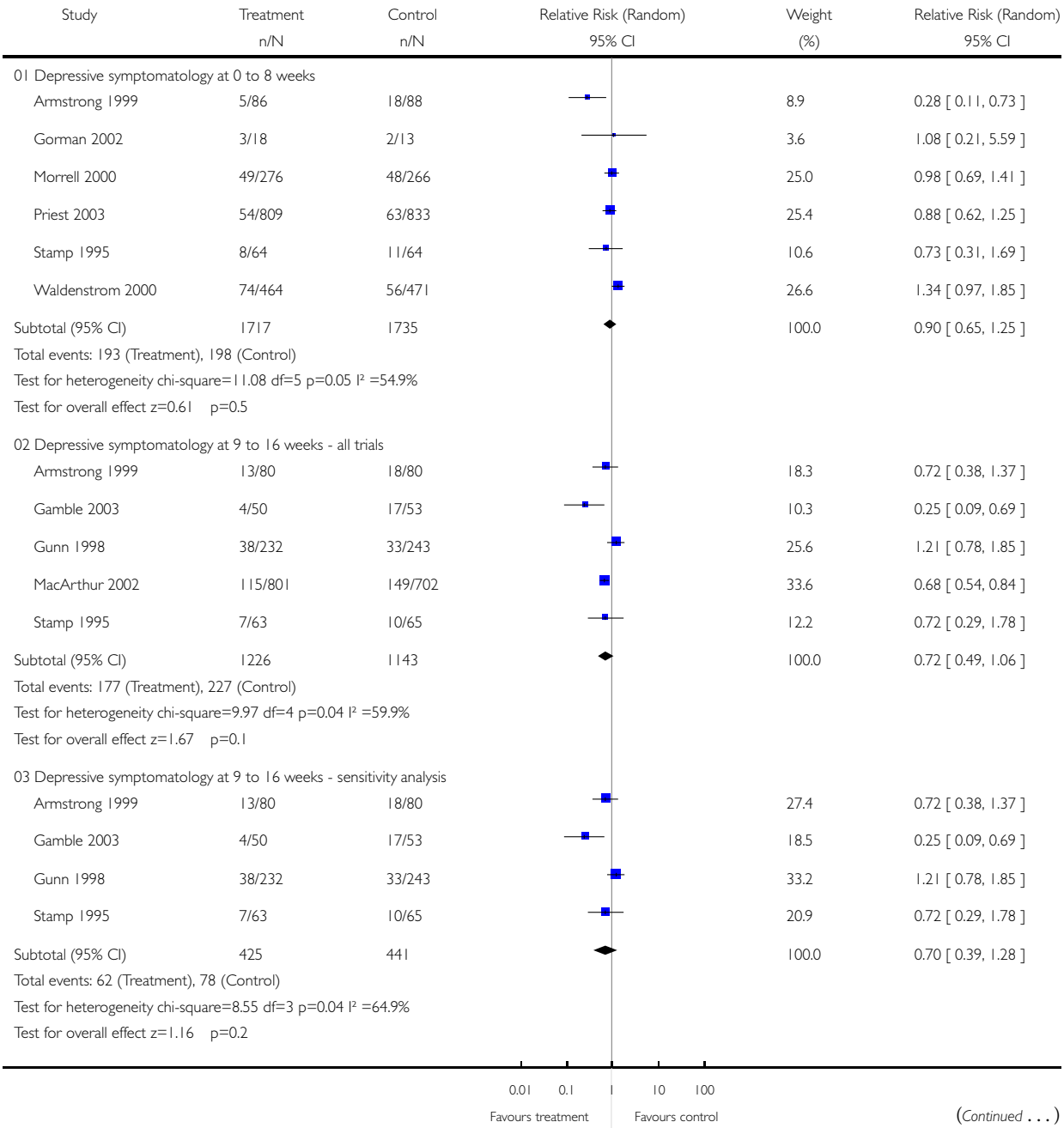


Analysis 01.05. Comparison 01 All interventions versus usual care - various study outcomes, Outcome 05 Depressive symptomatology at 8, 16, 24 weeks postpartum (EPDS > 12)

Review: Psychosocial and psychological interventions for preventing postpartum depression

Comparison: 01 All interventions versus usual care - various study outcomes

Outcome: 05 Depressive symptomatology at 8, 16, 24 weeks postpartum (EPDS > 12)



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Study	Treatment n/N	Control n/N	Relative Risk (Random) 95% CI	Weight (%)	Relative Risk (Random) 95% CI
04 Depressive symptomatology at 17 to 24 weeks					
Gorman 2002	3/15	3/15		1.5	1.00 [0.24, 4.18]
Gunn 1998	27/232	31/243		12.9	0.91 [0.56, 1.48]
Morrell 2000	48/252	49/229		23.8	0.89 [0.62, 1.27]
Priest 2003	55/777	65/797		25.2	0.87 [0.61, 1.23]
Small 2000	81/467	65/450		33.5	1.20 [0.89, 1.62]
Stamp 1995	9/60	6/61		3.2	1.53 [0.58, 4.02]
Subtotal (95% CI)	1803	1795		100.0	1.00 [0.84, 1.19]
Total events: 223 (Treatment), 219 (Control)					
Test for heterogeneity chi-square=3.36 df=5 p=0.65 I^2 =0.0%					
Test for overall effect z=0.00 p=1					

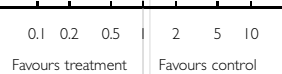
Analysis 01.06. Comparison 01 All interventions versus usual care - various study outcomes, Outcome 06 Maternal health service contact at final study assessment

Review: Psychosocial and psychological interventions for preventing postpartum depression

Comparison: 01 All interventions versus usual care - various study outcomes

Outcome: 06 Maternal health service contact at final study assessment

Study	Treatment n/N	Control n/N	Relative Risk (Fixed) 95% CI	Weight (%)	Relative Risk (Fixed) 95% CI
01 Maternal health service contact					
Brugha 2000	13/94	11/96		100.0	1.21 [0.57, 2.56]
Total (95% CI)	94	96		100.0	1.21 [0.57, 2.56]
Total events: 13 (Treatment), 11 (Control)					
Test for heterogeneity: not applicable					
Test for overall effect z=0.49 p=0.6					

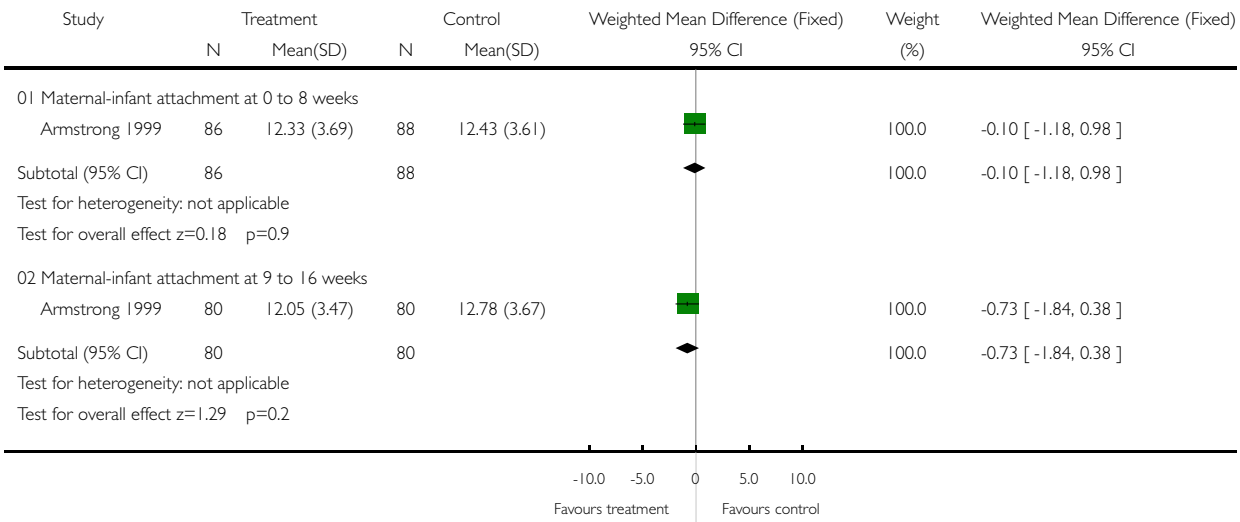


Analysis 01.07. Comparison 01 All interventions versus usual care - various study outcomes, Outcome 07 Maternal-infant attachment at 8, 16, 24 weeks postpartum

Review: Psychosocial and psychological interventions for preventing postpartum depression

Comparison: 01 All interventions versus usual care - various study outcomes

Outcome: 07 Maternal-infant attachment at 8, 16, 24 weeks postpartum

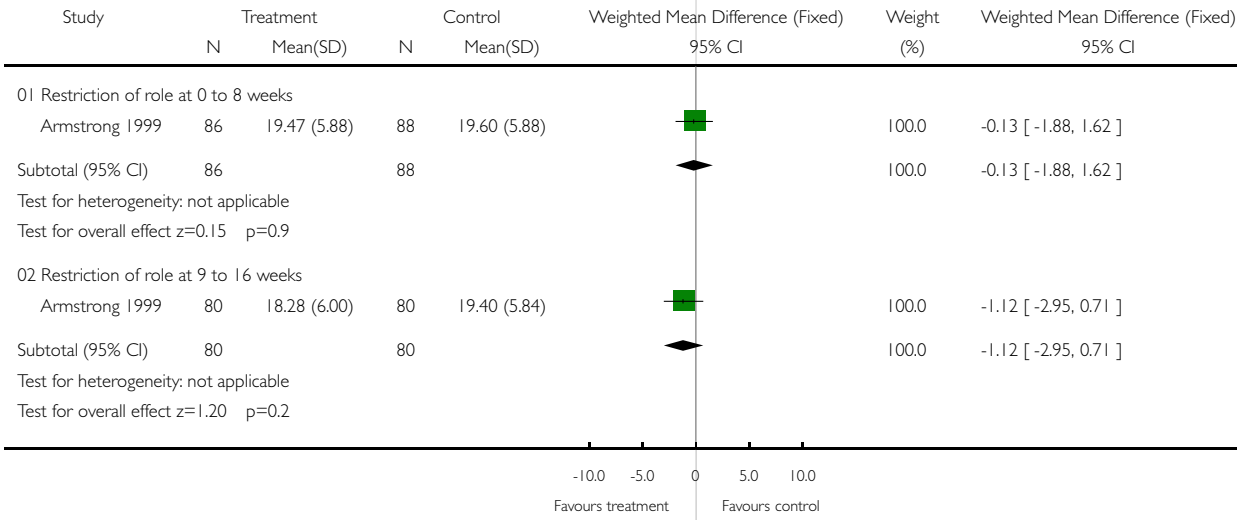


Analysis 01.08. Comparison 01 All interventions versus usual care - various study outcomes, Outcome 08 Maternal attitudes toward motherhood at 8, 16, 24 weeks postpartum

Review: Psychosocial and psychological interventions for preventing postpartum depression

Comparison: 01 All interventions versus usual care - various study outcomes

Outcome: 08 Maternal attitudes toward motherhood at 8, 16, 24 weeks postpartum



Analysis 01.09. Comparison 01 All interventions versus usual care - various study outcomes, Outcome 09 Maternal anxiety at 8, 16, 24 weeks postpartum

Review: Psychosocial and psychological interventions for preventing postpartum depression

Comparison: 01 All interventions versus usual care - various study outcomes

Outcome: 09 Maternal anxiety at 8, 16, 24 weeks postpartum

Study	Treatment n/N	Control n/N	Relative Risk (Fixed) 95% CI	Weight (%)	Relative Risk (Fixed) 95% CI
01 Maternal anxiety at 0 to 8 weeks					
Lavender 1998	4/58	28/56		100.0	0.14 [0.05, 0.37]
Subtotal (95% CI)	58	56		100.0	0.14 [0.05, 0.37]
Total events: 4 (Treatment), 28 (Control)					
Test for heterogeneity: not applicable					
Test for overall effect z=3.96 p=0.00008					

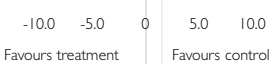
Analysis 01.10. Comparison 01 All interventions versus usual care - various study outcomes, Outcome 10 Competence in mothering at 8 and 16 weeks postpartum

Review: Psychosocial and psychological interventions for preventing postpartum depression

Comparison: 01 All interventions versus usual care - various study outcomes

Outcome: 10 Competence in mothering at 8 and 16 weeks postpartum

Study	Treatment N	Mean(SD)	Control N	Mean(SD)	Weighted Mean Difference (Fixed) 95% CI	Weight (%)	Weighted Mean Difference (Fixed) 95% CI
01 Maternal competence at 0 to 8 weeks							
Armstrong 1999	86	28.37 (7.10)	88	28.03 (6.46)		100.0	0.34 [-1.68, 2.36]
Subtotal (95% CI)	86		88			100.0	0.34 [-1.68, 2.36]
Test for heterogeneity: not applicable							
Test for overall effect z=0.33 p=0.7							
02 Maternal competence at 9 to 16 weeks							
Armstrong 1999	80	27.74 (6.90)	80	29.20 (8.40)		100.0	-1.46 [-3.84, 0.92]
Subtotal (95% CI)	80		80			100.0	-1.46 [-3.84, 0.92]
Test for heterogeneity: not applicable							
Test for overall effect z=1.20 p=0.2							



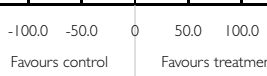
Analysis 01.11. Comparison 01 All interventions versus usual care - various study outcomes, Outcome 11 General physical and mental health (SF-36) at final study assessment

Review: Psychosocial and psychological interventions for preventing postpartum depression

Comparison: 01 All interventions versus usual care - various study outcomes

Outcome: 11 General physical and mental health (SF-36) at final study assessment

Study	Treatment N	Treatment Mean(SD)	Control N	Control Mean(SD)	Weighted Mean Difference (Fixed) 95% CI	Weight (%)	Weighted Mean Difference (Fixed) 95% CI
01 Physical functioning							
Gunn 1998	232	86.80 (17.80)	243	86.50 (16.30)		15.2	0.30 [-2.77, 3.37]
Morrell 2000	258	89.80 (16.80)	230	91.20 (15.10)		18.0	-1.40 [-4.23, 1.43]
Reid 2002	339	93.70 (11.69)	370	92.70 (14.04)		40.1	1.00 [-0.90, 2.90]
Small 2000	467	86.10 (17.40)	450	85.73 (18.44)		26.7	0.37 [-1.95, 2.69]
Subtotal (95% CI)	1296		1293			100.0	0.29 [-0.91, 1.49]
Test for heterogeneity chi-square=1.91 df=3 p=0.59 I² =0.0%							
Test for overall effect z=0.48 p=0.6							
02 Role functioning (physical)							
Gunn 1998	232	73.70 (35.70)	242	72.10 (36.10)		14.1	1.60 [-4.86, 8.06]
Morrell 2000	259	80.20 (32.50)	229	82.10 (32.60)		17.6	-1.90 [-7.69, 3.89]
Reid 2002	339	87.60 (26.00)	370	87.90 (26.21)		39.9	-0.30 [-4.15, 3.55]
Small 2000	467	73.86 (35.10)	450	76.24 (35.29)		28.4	-2.38 [-6.94, 2.18]
Subtotal (95% CI)	1297		1291			100.0	-0.90 [-3.33, 1.52]
Test for heterogeneity chi-square=1.19 df=3 p=0.76 I² =0.0%							
Test for overall effect z=0.73 p=0.5							
03 Bodily pain							
Gunn 1998	232	77.80 (22.90)	243	75.90 (23.10)		16.2	1.90 [-2.24, 6.04]
Morrell 2000	256	81.00 (22.70)	232	82.80 (23.20)		16.7	-1.80 [-5.88, 2.28]
Reid 2002	339	87.30 (17.90)	370	85.90 (19.32)		36.9	1.40 [-1.34, 4.14]
Small 2000	467	77.70 (23.22)	450	78.60 (23.55)		30.2	-0.90 [-3.93, 2.13]
Subtotal (95% CI)	1294		1295			100.0	0.25 [-1.41, 1.92]
Test for heterogeneity chi-square=2.81 df=3 p=0.42 I² =0.0%							
Test for overall effect z=0.30 p=0.8							
04 Mental health							
Gunn 1998	232	70.30 (19.70)	243	72.10 (18.10)		16.0	-1.80 [-5.21, 1.61]
Morrell 2000	254	72.80 (17.30)	227	74.00 (17.50)		19.2	-1.20 [-4.32, 1.92]
Reid 2002	339	76.50 (16.96)	370	76.00 (15.53)		32.3	0.50 [-1.90, 2.90]
Small 2000	467	69.69 (18.79)	450	71.20 (18.14)		32.6	-1.51 [-3.90, 0.88]



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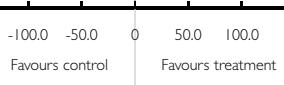
Study	Treatment N	Treatment Mean(SD)	Control N	Control Mean(SD)	Weighted Mean Difference (Fixed) 95% CI	Weight (%)	Weighted Mean Difference (Fixed) 95% CI
Subtotal (95% CI)	1292		1290			100.0	-0.85 [-2.21, 0.52]
Test for heterogeneity chi-square=1.85 df=3 p=0.60 I² =0.0%							
Test for overall effect z=1.22 p=0.2							
05 Role functioning (emotional)							
Gunn 1998	232	76.20 (36.10)	243	74.30 (38.50)		15.2	1.90 [-4.81, 8.61]
Morrell 2000	257	82.40 (31.70)	228	79.50 (35.50)		18.9	2.90 [-3.12, 8.92]
Reid 2002	339	86.10 (29.52)	370	86.30 (29.82)		35.9	-0.20 [-4.57, 4.17]
Small 2000	467	73.32 (38.12)	450	78.98 (35.73)		30.0	-5.66 [-10.44, -0.88]
Subtotal (95% CI)	1295		1291			100.0	-0.93 [-3.55, 1.69]
Test for heterogeneity chi-square=6.11 df=3 p=0.11 I² =50.9%							
Test for overall effect z=0.70 p=0.5							
06 Vitality							
Gunn 1998	232	53.50 (20.10)	243	53.10 (22.30)		18.3	0.40 [-3.41, 4.21]
Morrell 2000	252	56.10 (21.10)	228	54.70 (21.30)		18.5	1.40 [-2.40, 5.20]
Reid 2002	339	60.90 (19.84)	370	58.60 (20.20)		30.6	2.30 [-0.65, 5.25]
Small 2000	467	50.08 (22.37)	450	51.28 (21.79)		32.6	-1.20 [-4.06, 1.66]
Subtotal (95% CI)	1290		1291			100.0	0.64 [-0.99, 2.28]
Test for heterogeneity chi-square=2.98 df=3 p=0.40 I² =0.0%							
Test for overall effect z=0.77 p=0.4							
07 Social functioning							
Gunn 1998	232	78.30 (24.00)	243	79.40 (21.90)		16.7	-1.10 [-5.24, 3.04]
Morrell 2000	257	83.60 (22.00)	233	84.10 (23.60)		17.5	-0.50 [-4.55, 3.55]
Reid 2002	339	88.40 (19.45)	370	87.90 (18.76)		36.1	0.50 [-2.32, 3.32]
Small 2000	467	78.78 (24.28)	450	80.47 (23.69)		29.7	-1.69 [-4.79, 1.41]
Subtotal (95% CI)	1295		1296			100.0	-0.59 [-2.29, 1.10]
Test for heterogeneity chi-square=1.12 df=3 p=0.77 I² =0.0%							
Test for overall effect z=0.69 p=0.5							
08 General health							
Gunn 1998	232	74.40 (19.70)	243	74.60 (19.00)		18.2	-0.20 [-3.68, 3.28]
Morrell 2000	255	76.00 (19.40)	230	76.90 (20.40)		17.5	-0.90 [-4.45, 2.65]
Reid 2002	339	80.40 (17.42)	370	79.50 (17.02)		34.3	0.90 [-1.64, 3.44]
Small 2000	467	72.20 (20.91)	450	73.22 (21.00)		30.0	-1.02 [-3.73, 1.69]
Subtotal (95% CI)	1293		1293			100.0	-0.19 [-1.68, 1.29]
Test for heterogeneity chi-square=1.22 df=3 p=0.75 I² =0.0%							
Test for overall effect z=0.25 p=0.8							



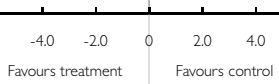
Analysis 01.12. Comparison 01 All interventions versus usual care - various study outcomes, Outcome 12 Perceived social support at 8, 16, 24 weeks postpartum

Review: Psychosocial and psychological interventions for preventing postpartum depression

Comparison: 01 All interventions versus usual care - various study outcomes

Outcome: 12 Perceived social support at 8, 16, 24 weeks postpartum

Study	Treatment N	Treatment Mean(SD)	Control N	Control Mean(SD)	Standardised Mean Difference (Fixed) 95% CI	Weight (%)	Standardised Mean Difference (Fixed) 95% CI
01 Perceived social support at 0 to 8 weeks							
Morrell 2000	260	16.70 (6.70)	253	16.60 (7.40)		100.0	0.01 [-0.16, 0.19]
Subtotal (95% CI)	260		253			100.0	0.01 [-0.16, 0.19]
Test for heterogeneity: not applicable							
Test for overall effect z=0.16 p=0.9							
02 Perceived social support at 9 to 16 weeks							
Reid 2002	344	5.30 (0.76)	388	5.30 (0.82)		100.0	0.00 [-0.15, 0.15]
Subtotal (95% CI)	344		388			100.0	0.00 [-0.15, 0.15]
Test for heterogeneity: not applicable							
Test for overall effect z=0.00 p=1							
03 Perceived social support at 17 to 24 weeks							
Morrell 2000	240	17.10 (6.80)	225	16.70 (7.30)		39.6	0.06 [-0.13, 0.24]
Reid 2002	339	5.30 (0.66)	370	5.30 (0.71)		60.4	0.00 [-0.15, 0.15]
Subtotal (95% CI)	579		595			100.0	0.02 [-0.09, 0.14]
Test for heterogeneity chi-square=0.23 df=1 p=0.64 I^2 =0.0%							
Test for overall effect z=0.38 p=0.7							



Analysis 01.13. Comparison 01 All interventions versus usual care - various study outcomes, Outcome 13 Breastfeeding duration at 8, 16, 24 weeks postpartum

Review: Psychosocial and psychological interventions for preventing postpartum depression

Comparison: 01 All interventions versus usual care - various study outcomes

Outcome: 13 Breastfeeding duration at 8, 16, 24 weeks postpartum

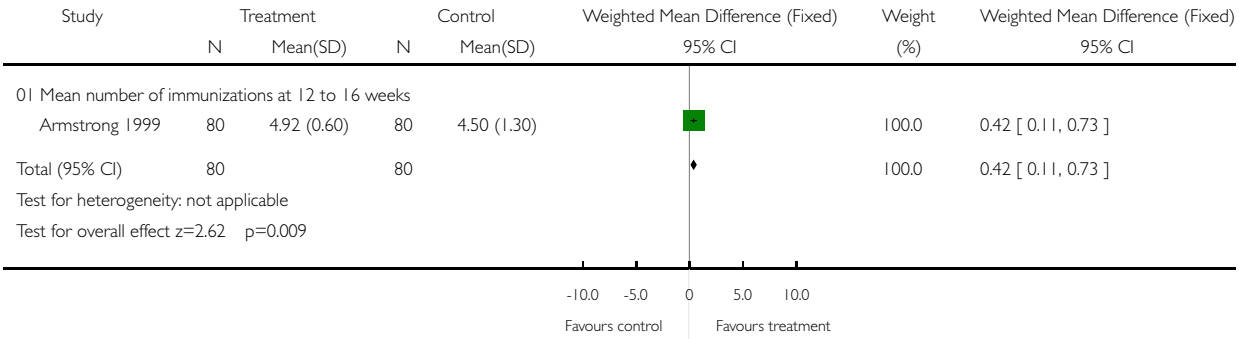
Study	Treatment n/N	Control n/N	Relative Risk (Fixed) 95% CI	Weight (%)	Relative Risk (Fixed) 95% CI
01 Breastfeeding at 0 to 8 weeks					
Armstrong 1999	55/86	59/88		33.6	0.95 [0.77, 1.18]
Morrell 2000	126/280	113/268		66.4	1.07 [0.88, 1.29]
Subtotal (95% CI)	366	356		100.0	1.03 [0.89, 1.19]
Total events: 181 (Treatment), 172 (Control)					
Test for heterogeneity chi-square=0.61 df=1 p=0.43 I^2 =0.0%					
Test for overall effect z=0.38 p=0.7					
02 Breastfeeding at 9 to 16 weeks					
Armstrong 1999	31/80	42/80		24.9	0.74 [0.52, 1.04]
Gunn 1998	117/232	130/243		75.1	0.94 [0.79, 1.12]
Subtotal (95% CI)	312	323		100.0	0.89 [0.76, 1.04]
Total events: 148 (Treatment), 172 (Control)					
Test for heterogeneity chi-square=1.55 df=1 p=0.21 I^2 =35.3%					
Test for overall effect z=1.45 p=0.1					
03 Breastfeeding at 17 to 24 weeks					
Gunn 1998	81/232	98/243		65.4	0.87 [0.69, 1.09]
Morrell 2000	52/260	48/233		34.6	0.97 [0.68, 1.38]
Subtotal (95% CI)	492	476		100.0	0.90 [0.74, 1.10]
Total events: 133 (Treatment), 146 (Control)					
Test for heterogeneity chi-square=0.29 df=1 p=0.59 I^2 =0.0%					
Test for overall effect z=1.04 p=0.3					

Analysis 01.14. Comparison 01 All interventions versus usual care - various study outcomes, Outcome 14 Infant immunisations

Review: Psychosocial and psychological interventions for preventing postpartum depression

Comparison: 01 All interventions versus usual care - various study outcomes

Outcome: 14 Infant immunisations

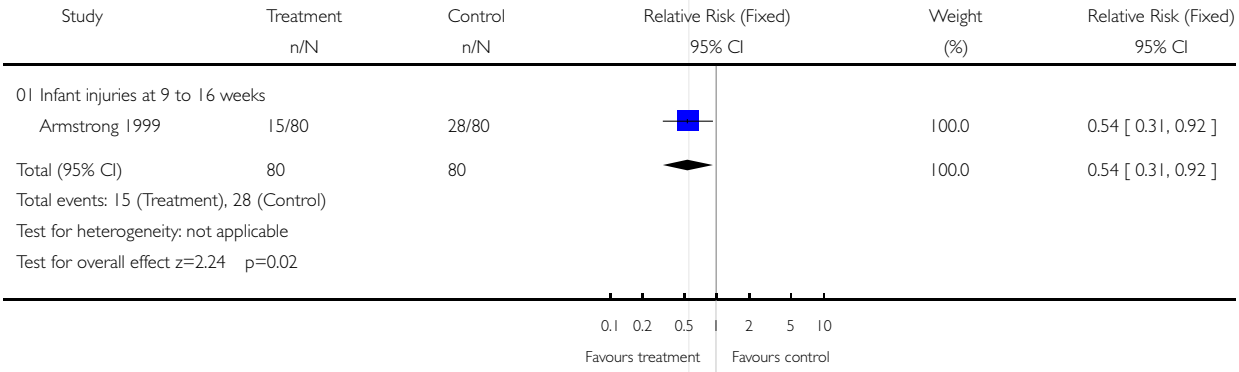


Analysis 01.15. Comparison 01 All interventions versus usual care - various study outcomes, Outcome 15 Infant injuries

Review: Psychosocial and psychological interventions for preventing postpartum depression

Comparison: 01 All interventions versus usual care - various study outcomes

Outcome: 15 Infant injuries

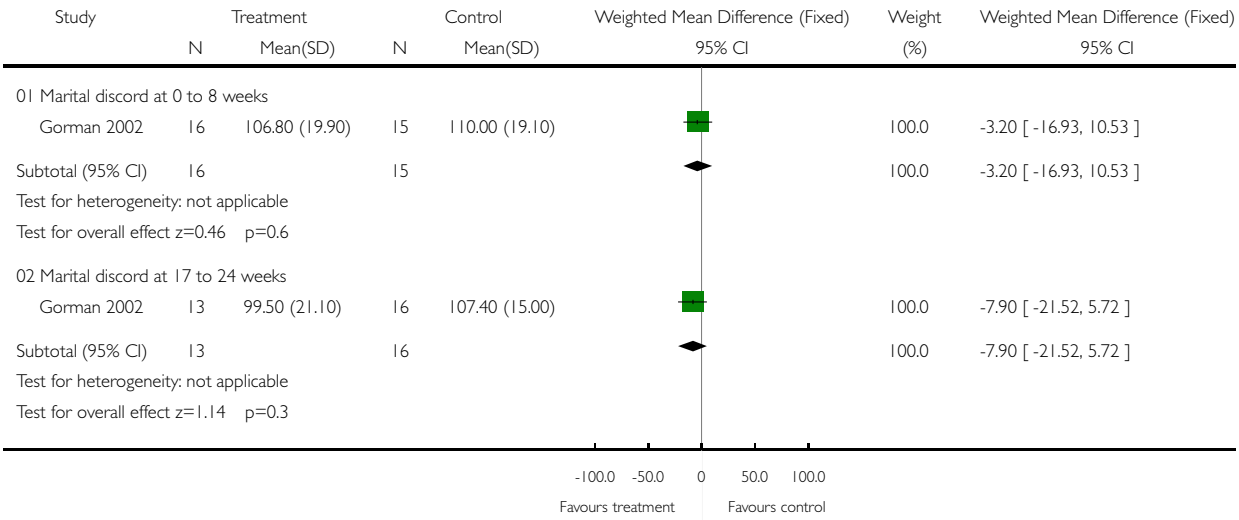


Analysis 01.16. Comparison 01 All interventions versus usual care - various study outcomes, Outcome 16 Marital discord at 4 and 24 weeks postpartum

Review: Psychosocial and psychological interventions for preventing postpartum depression

Comparison: 01 All interventions versus usual care - various study outcomes

Outcome: 16 Marital discord at 4 and 24 weeks postpartum

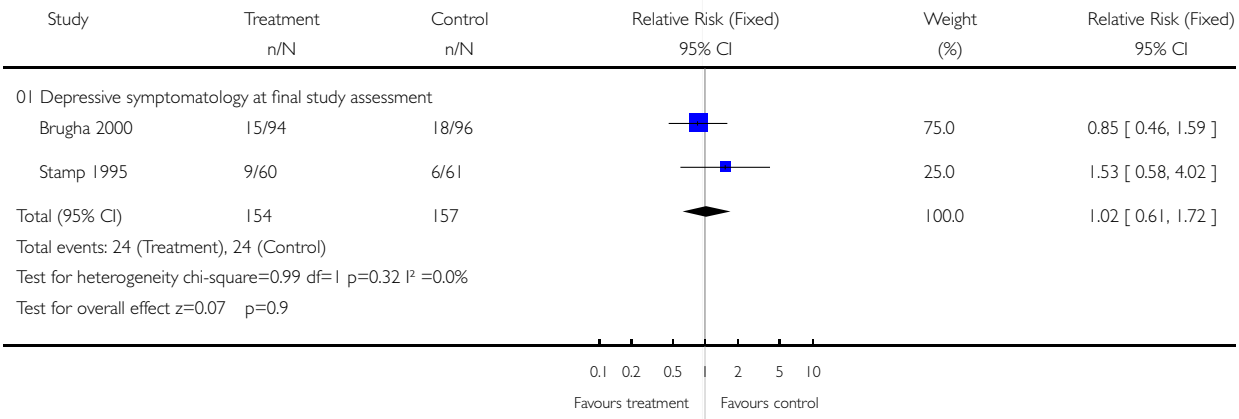


Analysis 02.01. Comparison 02 Psychosocial interventions versus usual care - variations in intervention type, Outcome 01 Antenatal and postnatal classes

Review: Psychosocial and psychological interventions for preventing postpartum depression

Comparison: 02 Psychosocial interventions versus usual care - variations in intervention type

Outcome: 01 Antenatal and postnatal classes

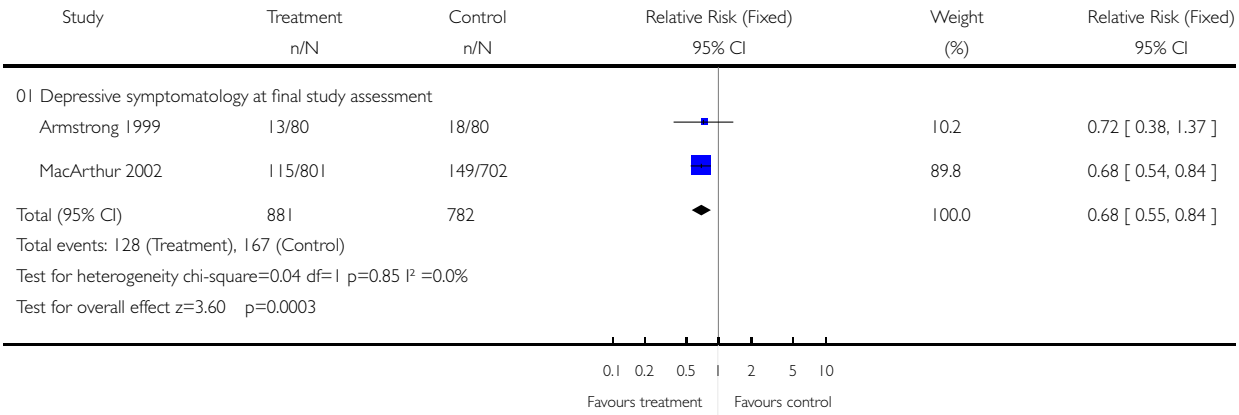


Analysis 02.02. Comparison 02 Psychosocial interventions versus usual care - variations in intervention type, Outcome 02 Postpartum professional-based home visits

Review: Psychosocial and psychological interventions for preventing postpartum depression

Comparison: 02 Psychosocial interventions versus usual care - variations in intervention type

Outcome: 02 Postpartum professional-based home visits

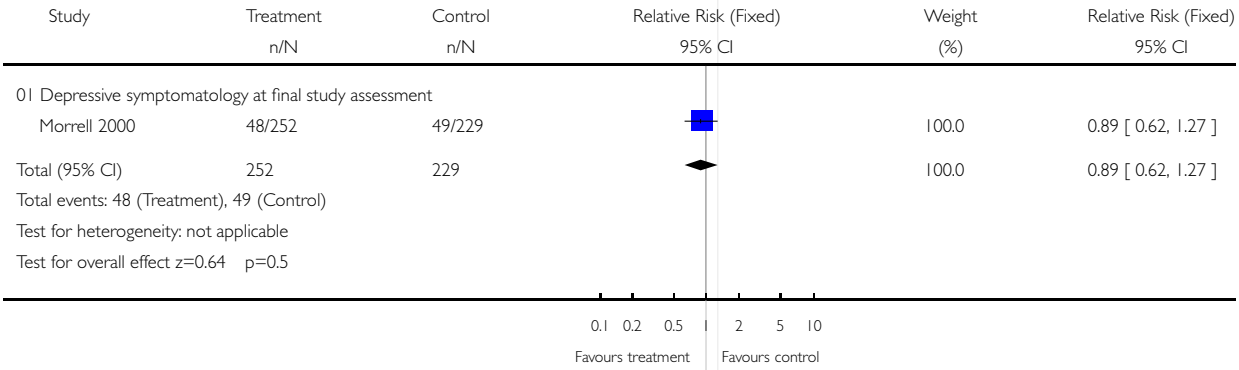


Analysis 02.03. Comparison 02 Psychosocial interventions versus usual care - variations in intervention type, Outcome 03 Postpartum lay-based home visits

Review: Psychosocial and psychological interventions for preventing postpartum depression

Comparison: 02 Psychosocial interventions versus usual care - variations in intervention type

Outcome: 03 Postpartum lay-based home visits



Analysis 02.04. Comparison 02 Psychosocial interventions versus usual care - variations in intervention type, Outcome 04 Early postpartum follow up

Review: Psychosocial and psychological interventions for preventing postpartum depression

Comparison: 02 Psychosocial interventions versus usual care - variations in intervention type

Outcome: 04 Early postpartum follow up

Study	Treatment n/N	Control n/N	Relative Risk (Fixed) 95% CI	Weight (%)	Relative Risk (Fixed) 95% CI
01 Depressive symptomatology at final study assessment					
Gunn 1998	27/232	31/243		100.0	0.91 [0.56, 1.48]
Total (95% CI)	232	243		100.0	0.91 [0.56, 1.48]
Total events: 27 (Treatment), 31 (Control)					
Test for heterogeneity: not applicable					
Test for overall effect z=0.37 p=0.7					

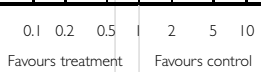
Analysis 02.05. Comparison 02 Psychosocial interventions versus usual care - variations in intervention type, Outcome 05 Continuity of care

Review: Psychosocial and psychological interventions for preventing postpartum depression

Comparison: 02 Psychosocial interventions versus usual care - variations in intervention type

Outcome: 05 Continuity of care

Study	Treatment n/N	Control n/N	Relative Risk (Fixed) 95% CI	Weight (%)	Relative Risk (Fixed) 95% CI
01 Depressive symptomatology at final study assessment					
Waldenstrom 2000	74/464	56/471		100.0	1.34 [0.97, 1.85]
Total (95% CI)	464	471		100.0	1.34 [0.97, 1.85]
Total events: 74 (Treatment), 56 (Control)					
Test for heterogeneity: not applicable					
Test for overall effect z=1.78 p=0.07					



Analysis 03.01. Comparison 03 Psychological Interventions versus usual care - variations in intervention type, Outcome 01 Psychological debriefing

Review: Psychosocial and psychological interventions for preventing postpartum depression

Comparison: 03 Psychological Interventions versus usual care - variations in intervention type

Outcome: 01 Psychological debriefing

Study	Treatment n/N	Control n/N	Relative Risk (Random) 95% CI	Weight (%)	Relative Risk (Random) 95% CI
01 Depressive symptomatology at final study assessment - all trials					
Gamble 2003	4/50	17/53		14.7	0.25 [0.09, 0.69]
Lavender 1998	5/58	31/56		16.6	0.16 [0.07, 0.37]
Priest 2003	37/696	42/705		22.6	0.89 [0.58, 1.37]
Small 2000	81/467	65/450		24.0	1.20 [0.89, 1.62]
Tam 2003	26/261	35/255		22.0	0.73 [0.45, 1.17]
Subtotal (95% CI)	1532	1519		100.0	0.57 [0.31, 1.04]
Total events: 153 (Treatment), 190 (Control)					
Test for heterogeneity chi-square=26.21 df=4 p=<0.0001 I² =84.7%					
Test for overall effect z=1.85 p=0.06					
02 Depressive symptomatology at final study assessment - sensitivity analysis					
Gamble 2003	4/50	17/53		20.5	0.25 [0.09, 0.69]
Lavender 1998	5/58	31/56		22.5	0.16 [0.07, 0.37]
Priest 2003	37/696	42/705		27.9	0.89 [0.58, 1.37]
Small 2000	81/467	65/450		29.1	1.20 [0.89, 1.62]
Subtotal (95% CI)	1271	1264		100.0	0.51 [0.23, 1.14]
Total events: 127 (Treatment), 155 (Control)					
Test for heterogeneity chi-square=25.82 df=3 p=<0.0001 I² =88.4%					
Test for overall effect z=1.65 p=0.1					

Analysis 03.02. Comparison 03 Psychological Interventions versus usual care - variations in intervention type, Outcome 02 Interpersonal psychotherapy

Review: Psychosocial and psychological interventions for preventing postpartum depression

Comparison: 03 Psychological Interventions versus usual care - variations in intervention type

Outcome: 02 Interpersonal psychotherapy

Study	Treatment n/N	Control n/N	Relative Risk (Random) 95% CI	Weight (%)	Relative Risk (Random) 95% CI
01 Depressive symptomatology at final study assessment					
Gorman 2002	3/20	4/17		65.7	0.64 [0.17, 2.46]
Zlotnick 2001	0/17	6/18		34.3	0.08 [0.00, 1.34]
Total (95% CI)	37	35		100.0	0.31 [0.04, 2.52]
Total events: 3 (Treatment), 10 (Control)					
Test for heterogeneity chi-square=1.99 df=1 p=0.16 I^2 =49.7%					
Test for overall effect z=1.09 p=0.3					

Analysis 04.01. Comparison 04 All interventions versus usual care - variations in intervention mode, Outcome 01 Individually based interventions

Review: Psychosocial and psychological interventions for preventing postpartum depression

Comparison: 04 All interventions versus usual care - variations in intervention mode

Outcome: 01 Individually based interventions

Study	Treatment n/N	Control n/N	Relative Risk (Random) 95% CI	Weight (%)	Relative Risk (Random) 95% CI
01 Depressive symptomatology at 0 to 8 weeks - all trials					
Armstrong 1999	5/86	18/88		11.3	0.28 [0.11, 0.73]
Gorman 2002	0/20	5/20		2.4	0.09 [0.01, 1.54]
Lavender 1998	5/58	31/56		12.1	0.16 [0.07, 0.37]
Morrell 2000	49/276	48/266		18.8	0.98 [0.69, 1.41]
Priest 2003	54/809	63/833		18.9	0.88 [0.62, 1.25]
Tam 2003	26/261	35/255		17.3	0.73 [0.45, 1.17]
Waldenstrom 2000	74/464	56/471		19.2	1.34 [0.97, 1.85]
Subtotal (95% CI)	1974	1989		100.0	0.64 [0.40, 1.01]
Total events: 213 (Treatment), 256 (Control)					
Test for heterogeneity chi-square=31.23 df=6 p=<0.0001 I^2 =80.8%					
Test for overall effect z=1.90 p=0.06					
02 Depressive symptomatology at 0 to 8 weeks - sensitivity analysis					

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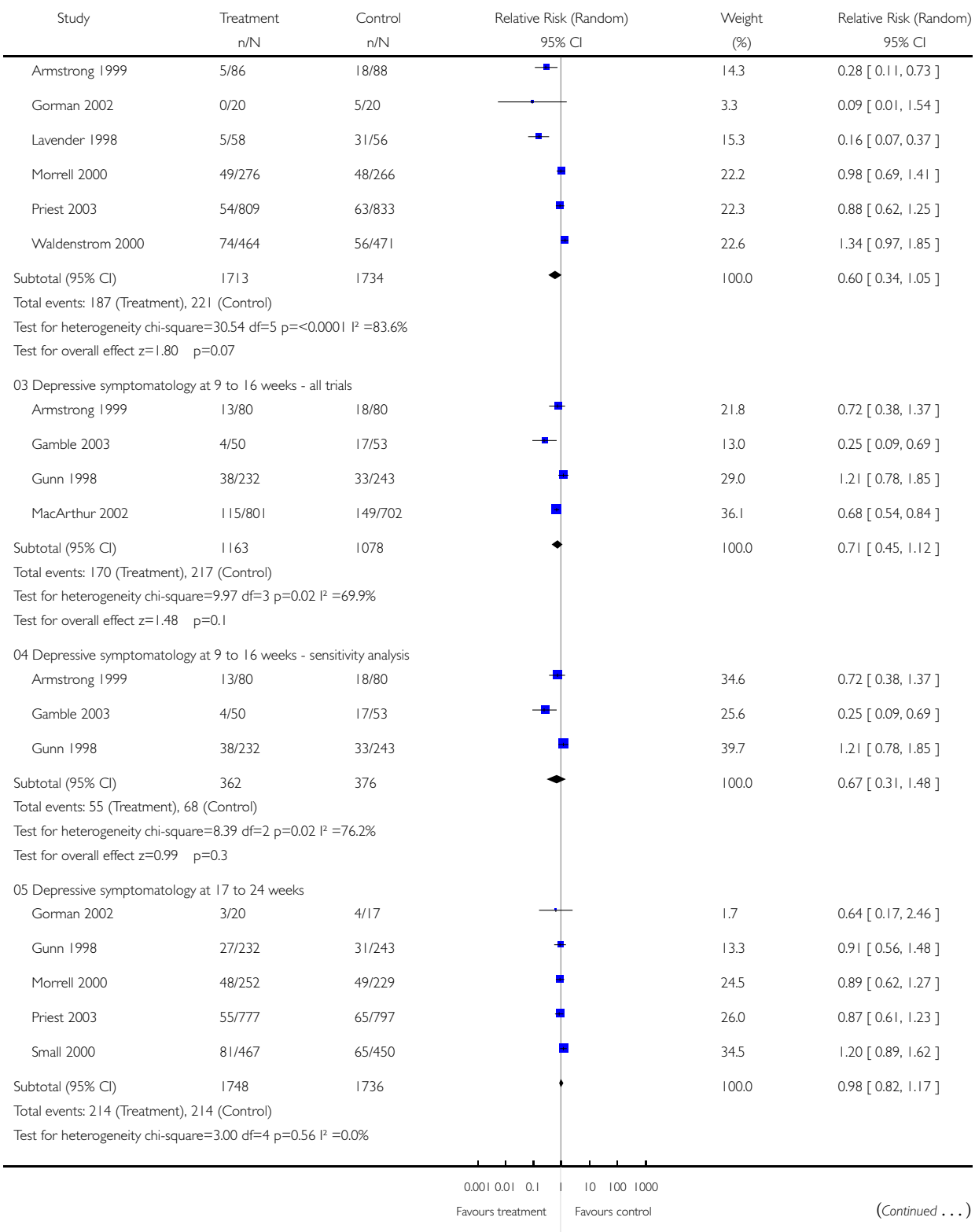

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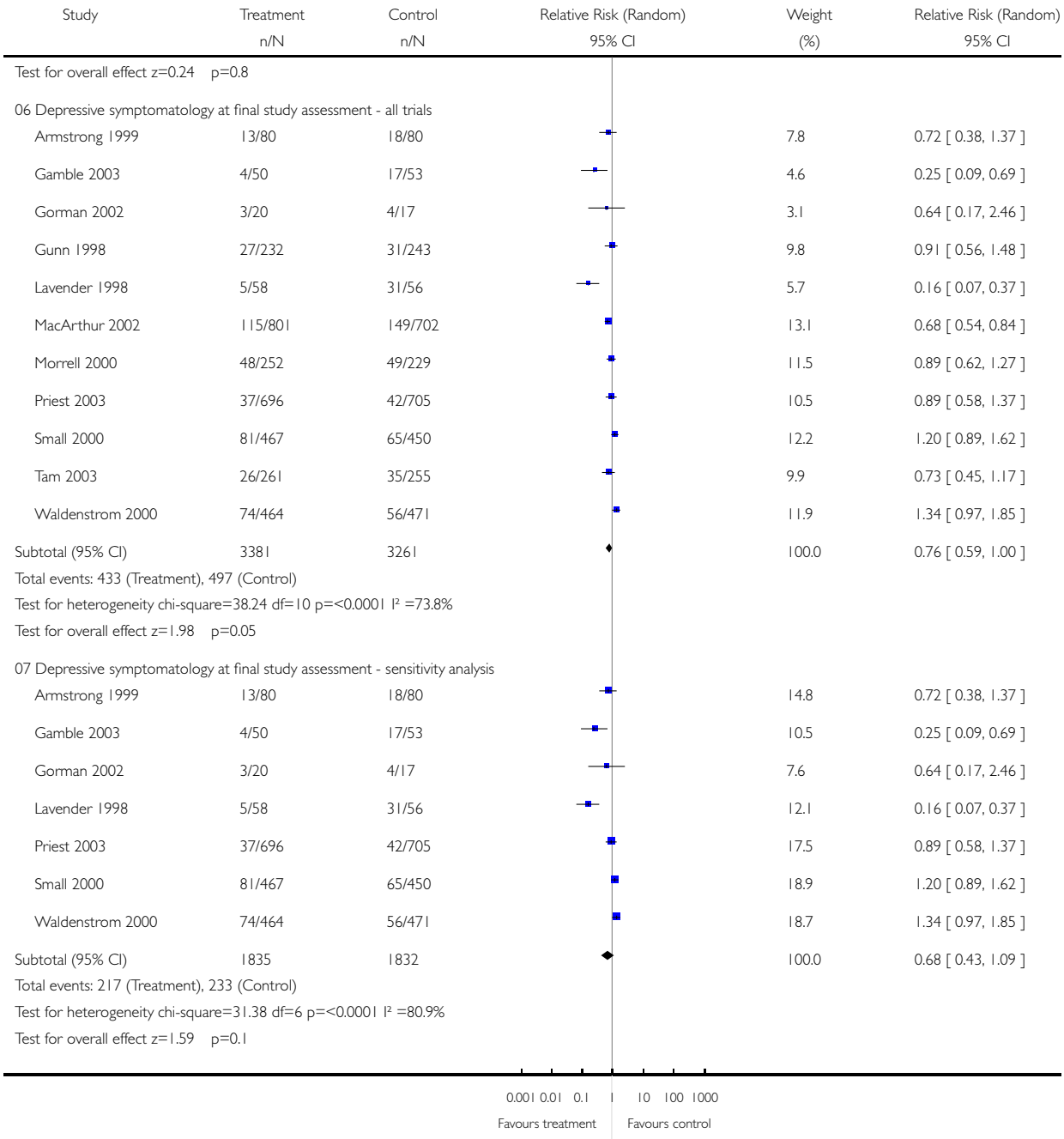


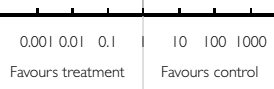
Analysis 04.02. Comparison 04 All interventions versus usual care - variations in intervention mode, Outcome 02 Group-based interventions

Review: Psychosocial and psychological interventions for preventing postpartum depression

Comparison: 04 All interventions versus usual care - variations in intervention mode

Outcome: 02 Group-based interventions

Study	Treatment n/N	Control n/N	Relative Risk (Random) 95% CI	Weight (%)	Relative Risk (Random) 95% CI
01 Depressive symptomatology at 0 to 8 weeks					
Stamp 1995	8/64	11/64		100.0	0.73 [0.31, 1.69]
Subtotal (95% CI)	64	64		100.0	0.73 [0.31, 1.69]
Total events: 8 (Treatment), 11 (Control)					
Test for heterogeneity: not applicable					
Test for overall effect z=0.74 p=0.5					
02 Depressive symptomatology at 9 to 16 weeks - all trials					
Brugha 2000	15/94	18/96		31.5	0.85 [0.46, 1.59]
Reid 2002	55/344	46/388		43.5	1.35 [0.94, 1.94]
Stamp 1995	7/63	10/65		21.6	0.72 [0.29, 1.78]
Zlotnick 2001	0/17	6/18		3.5	0.08 [0.00, 1.34]
Subtotal (95% CI)	518	567		100.0	0.93 [0.54, 1.59]
Total events: 77 (Treatment), 80 (Control)					
Test for heterogeneity chi-square=6.12 df=3 p=0.11 I^2 =51.0%					
Test for overall effect z=0.28 p=0.8					
03 Depressive symptomatology at 9 to 16 weeks - sensitivity analysis					
Brugha 2000	15/94	18/96		27.9	0.85 [0.46, 1.59]
Reid 2002	55/344	46/388		56.9	1.35 [0.94, 1.94]
Stamp 1995	7/63	10/65		15.2	0.72 [0.29, 1.78]
Subtotal (95% CI)	501	549		100.0	1.08 [0.74, 1.57]
Total events: 77 (Treatment), 74 (Control)					
Test for heterogeneity chi-square=2.65 df=2 p=0.27 I^2 =24.5%					
Test for overall effect z=0.39 p=0.7					
04 Depressive symptomatology at 17 to 24 weeks					
Reid 2002	49/339	46/370		87.0	1.16 [0.80, 1.69]
Stamp 1995	9/60	6/61		13.0	1.53 [0.58, 4.02]
Subtotal (95% CI)	399	431		100.0	1.20 [0.85, 1.71]
Total events: 58 (Treatment), 52 (Control)					
Test for heterogeneity chi-square=0.26 df=1 p=0.61 I^2 =0.0%					
Test for overall effect z=1.04 p=0.3					
05 Depressive symptomatology at final study assessment					



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Study	Treatment n/N	Control n/N	Relative Risk (Random) 95% CI	Weight (%)	Relative Risk (Random) 95% CI
Brugha 2000	15/94	18/96		31.1	0.85 [0.46, 1.59]
Reid 2002	49/339	46/370		49.3	1.16 [0.80, 1.69]
Stamp 1995	9/60	6/61		17.1	1.53 [0.58, 4.02]
Zlotnick 2001	0/17	6/18		2.6	0.08 [0.00, 1.34]
Subtotal (95% CI)	510	545		100.0	1.03 [0.65, 1.63]
Total events: 73 (Treatment), 76 (Control)					
Test for heterogeneity chi-square=4.57 df=3 p=0.21 I^2 =34.3%					
Test for overall effect z=0.14 p=0.9					

Analysis 05.01. Comparison 05 All interventions versus usual care - variations in intervention onset, Outcome 01 Interventions with antenatal and postnatal components

Review: Psychosocial and psychological interventions for preventing postpartum depression

Comparison: 05 All interventions versus usual care - variations in intervention onset

Outcome: 01 Interventions with antenatal and postnatal components

Study	Treatment n/N	Control n/N	Relative Risk (Fixed) 95% CI	Weight (%)	Relative Risk (Fixed) 95% CI
01 Depressive symptomatology at final study assessment					
Brugha 2000	15/94	18/96		21.3	0.85 [0.46, 1.59]
Gorman 2002	3/20	4/17		5.2	0.64 [0.17, 2.46]
Stamp 1995	9/60	6/61		7.1	1.53 [0.58, 4.02]
Waldenstrom 2000	74/464	56/471		66.4	1.34 [0.97, 1.85]
Total (95% CI)	638	645		100.0	1.21 [0.93, 1.59]
Total events: 101 (Treatment), 84 (Control)					
Test for heterogeneity chi-square=2.70 df=3 p=0.44 I^2 =0.0%					
Test for overall effect z=1.42 p=0.2					

Analysis 05.02. Comparison 05 All interventions versus usual care - variations in intervention onset, Outcome 02 Interventions with postnatal only component

Review: Psychosocial and psychological interventions for preventing postpartum depression

Comparison: 05 All interventions versus usual care - variations in intervention onset

Outcome: 02 Interventions with postnatal only component

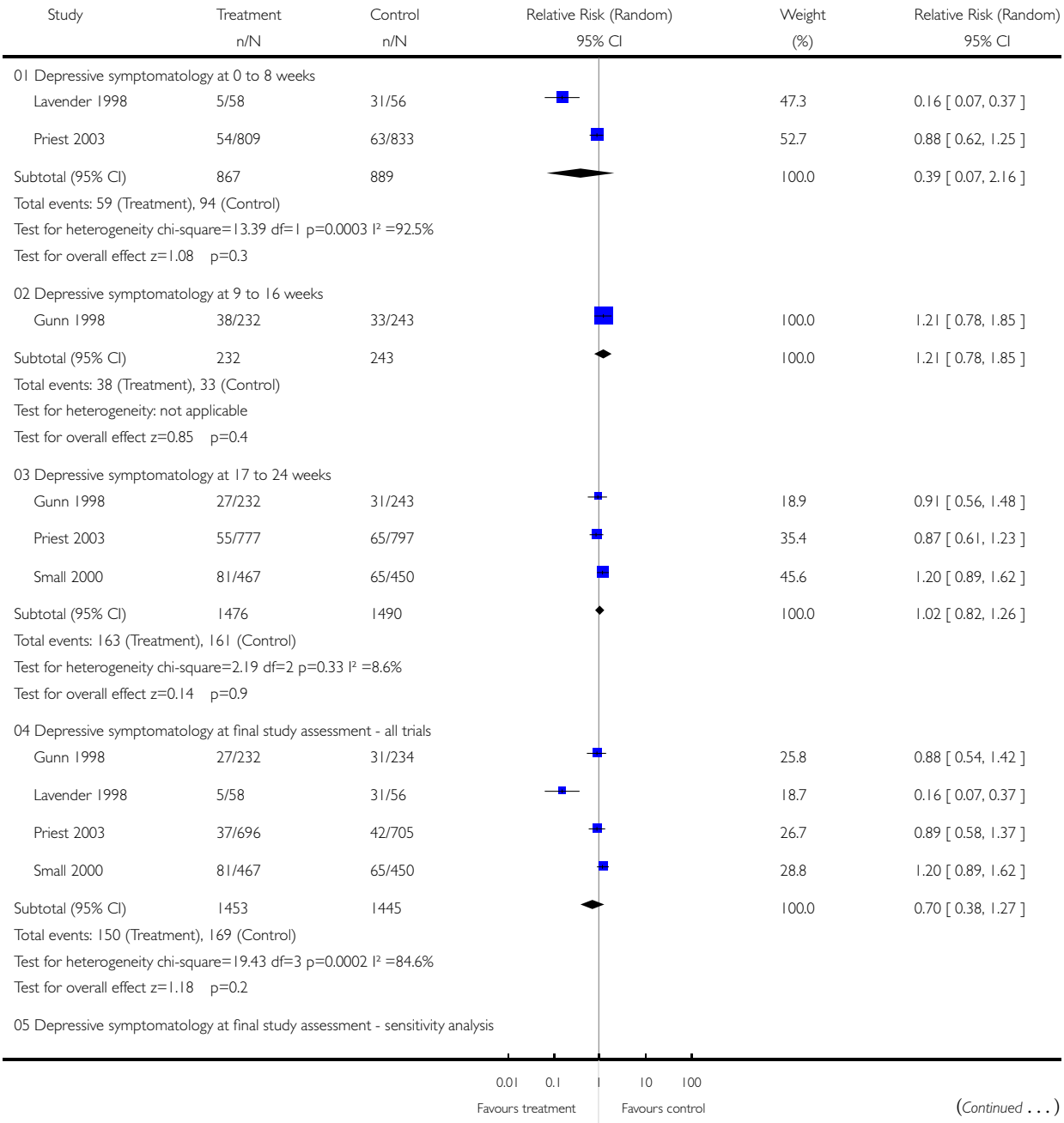
Study	Treatment n/N	Control n/N	Relative Risk (Random) 95% CI	Weight (%)	Relative Risk (Random) 95% CI
01 Depressive symptomatology at final study assessment - all trials					
Armstrong 1999	13/80	18/80		8.0	0.72 [0.38, 1.37]
Gamble 2003	4/50	17/53		4.6	0.25 [0.09, 0.69]
Gunn 1998	27/232	31/243		10.1	0.91 [0.56, 1.48]
Lavender 1998	5/58	31/56		5.7	0.16 [0.07, 0.37]
MacArthur 2002	115/801	149/702		13.9	0.68 [0.54, 0.84]
Morrell 2000	48/252	49/229		12.0	0.89 [0.62, 1.27]
Priest 2003	37/696	42/705		10.9	0.89 [0.58, 1.37]
Reid 2002	49/339	46/370		11.7	1.16 [0.80, 1.69]
Small 2000	81/467	65/450		12.9	1.20 [0.89, 1.62]
Tam 2003	26/261	35/255		10.2	0.73 [0.45, 1.17]
Subtotal (95% CI)	3236	3143		100.0	0.76 [0.58, 0.98]
Total events: 405 (Treatment), 483 (Control)					
Test for heterogeneity chi-square=32.81 df=9 p=0.0001 I^2 =72.6%					
Test for overall effect z=2.08 p=0.04					
02 Depressive symptomatology at final study assessment - sensitivity analysis					
Armstrong 1999	13/80	18/80		20.3	0.72 [0.38, 1.37]
Gamble 2003	4/50	17/53		15.5	0.25 [0.09, 0.69]
Lavender 1998	5/58	31/56		17.3	0.16 [0.07, 0.37]
Priest 2003	37/696	42/705		22.8	0.89 [0.58, 1.37]
Small 2000	81/467	65/450		24.1	1.20 [0.89, 1.62]
Subtotal (95% CI)	1351	1344		100.0	0.56 [0.29, 1.06]
Total events: 140 (Treatment), 173 (Control)					
Test for heterogeneity chi-square=26.06 df=4 p=<0.0001 I^2 =84.6%					
Test for overall effect z=1.79 p=0.07					

Analysis 06.01. Comparison 06 All interventions versus usual care - variations in intervention duration, Outcome 01 Single-contact interventions

Review: Psychosocial and psychological interventions for preventing postpartum depression

Comparison: 06 All interventions versus usual care - variations in intervention duration

Outcome: 01 Single-contact interventions



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Study	Treatment n/N	Control n/N	Relative Risk (Random) 95% CI	Weight (%)	Relative Risk (Random) 95% CI
Lavender 1998	5/58	31/56		27.7	0.16 [0.07, 0.37]
Priest 2003	37/696	42/705		35.3	0.89 [0.58, 1.37]
Small 2000	81/467	65/450		37.0	1.20 [0.89, 1.62]
Subtotal (95% CI)	1221	1211		100.0	0.61 [0.26, 1.45]
Total events: 123 (Treatment), 138 (Control)					
Test for heterogeneity chi-square=19.44 df=2 p=<0.0001 I^2 =89.7%					
Test for overall effect z=1.11 p=0.3					

Analysis 06.02. Comparison 06 All interventions versus usual care - variations in intervention duration, Outcome 02 Multiple-contact interventions

Review: Psychosocial and psychological interventions for preventing postpartum depression

Comparison: 06 All interventions versus usual care - variations in intervention duration

Outcome: 02 Multiple-contact interventions

Study	Treatment n/N	Control n/N	Relative Risk (Random) 95% CI	Weight (%)	Relative Risk (Random) 95% CI
01 Depressive symptomatology at 0 to 8 weeks - all trials					
Armstrong 1999	5/86	18/88		12.0	0.28 [0.11, 0.73]
Gorman 2002	0/20	5/20		2.1	0.09 [0.01, 1.54]
Morrell 2000	48/252	49/229		24.9	0.89 [0.62, 1.27]
Stamp 1995	8/64	11/64		13.7	0.73 [0.31, 1.69]
Tam 2003	26/261	35/255		21.8	0.73 [0.45, 1.17]
Waldenstrom 2000	74/464	56/471		25.7	1.34 [0.97, 1.85]
Subtotal (95% CI)	1147	1127		100.0	0.77 [0.50, 1.17]
Total events: 161 (Treatment), 174 (Control)					
Test for heterogeneity chi-square=15.12 df=5 p=0.010 I^2 =66.9%					
Test for overall effect z=1.24 p=0.2					
02 Depressive symptomatology at 0 to 8 weeks - sensitivity analysis					
Armstrong 1999	5/86	18/88		16.6	0.28 [0.11, 0.73]
Gorman 2002	0/20	5/20		3.2	0.09 [0.01, 1.54]
Morrell 2000	48/252	49/229		30.4	0.89 [0.62, 1.27]
Stamp 1995	8/64	11/64		18.6	0.73 [0.31, 1.69]

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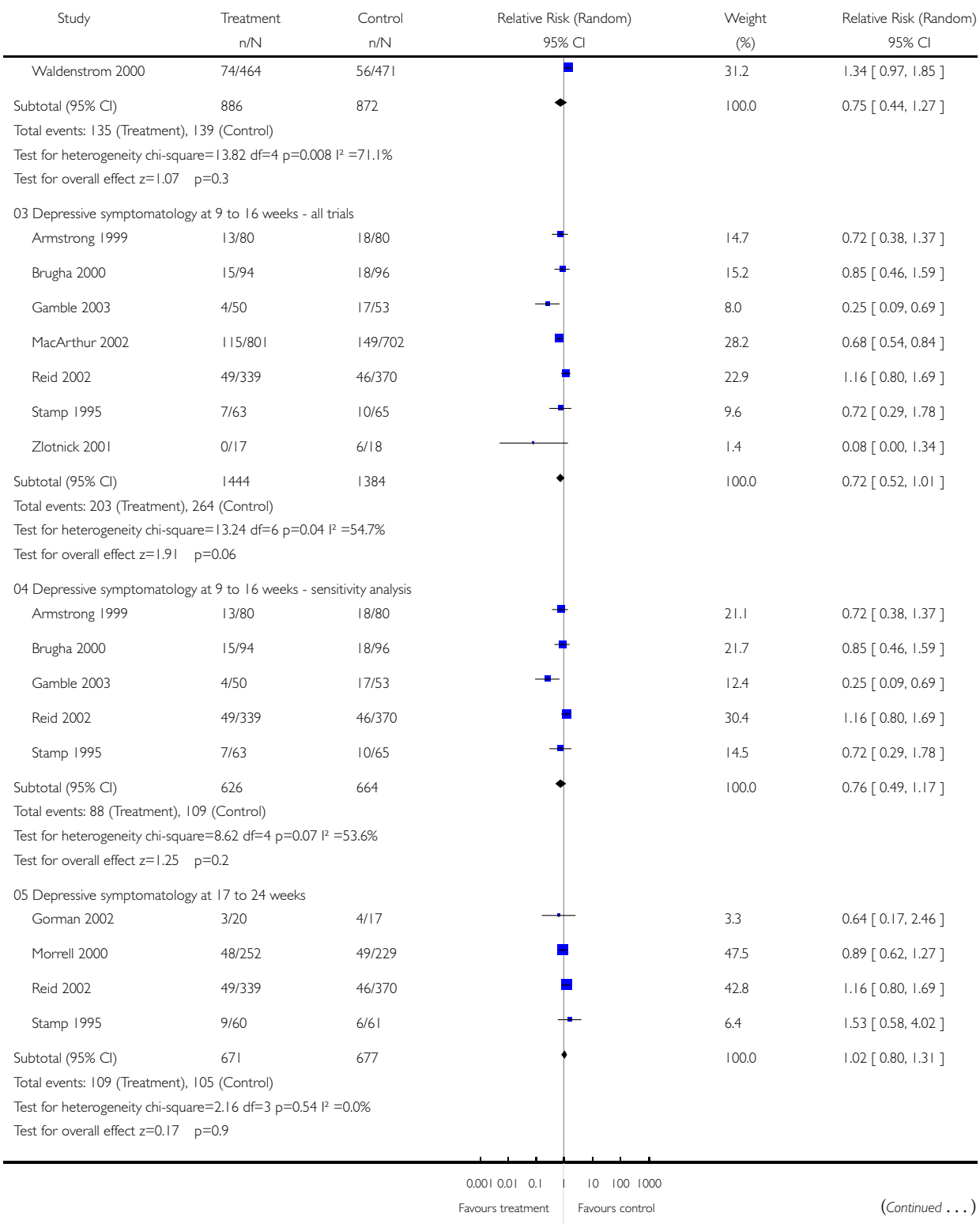

Study	Treatment n/N	Control n/N	Relative Risk (Random) 95% CI	Weight (%)	Relative Risk (Random) 95% CI
Waldenstrom 2000	74/464	56/471		31.2	1.34 [0.97, 1.85]
Subtotal (95% CI)	886	872		100.0	0.75 [0.44, 1.27]
Total events: 135 (Treatment), 139 (Control)					
Test for heterogeneity chi-square=13.82 df=4 p=0.008 I^2 =71.1%					
Test for overall effect z=1.07 p=0.3					
03 Depressive symptomatology at 9 to 16 weeks - all trials					
Armstrong 1999	13/80	18/80		14.7	0.72 [0.38, 1.37]
Brugha 2000	15/94	18/96		15.2	0.85 [0.46, 1.59]
Gamble 2003	4/50	17/53		8.0	0.25 [0.09, 0.69]
MacArthur 2002	115/801	149/702		28.2	0.68 [0.54, 0.84]
Reid 2002	49/339	46/370		22.9	1.16 [0.80, 1.69]
Stamp 1995	7/63	10/65		9.6	0.72 [0.29, 1.78]
Zlotnick 2001	0/17	6/18		1.4	0.08 [0.00, 1.34]
Subtotal (95% CI)	1444	1384		100.0	0.72 [0.52, 1.01]
Total events: 203 (Treatment), 264 (Control)					
Test for heterogeneity chi-square=13.24 df=6 p=0.04 I^2 =54.7%					
Test for overall effect z=1.91 p=0.06					
04 Depressive symptomatology at 9 to 16 weeks - sensitivity analysis					
Armstrong 1999	13/80	18/80		21.1	0.72 [0.38, 1.37]
Brugha 2000	15/94	18/96		21.7	0.85 [0.46, 1.59]
Gamble 2003	4/50	17/53		12.4	0.25 [0.09, 0.69]
Reid 2002	49/339	46/370		30.4	1.16 [0.80, 1.69]
Stamp 1995	7/63	10/65		14.5	0.72 [0.29, 1.78]
Subtotal (95% CI)	626	664		100.0	0.76 [0.49, 1.17]
Total events: 88 (Treatment), 109 (Control)					
Test for heterogeneity chi-square=8.62 df=4 p=0.07 I^2 =53.6%					
Test for overall effect z=1.25 p=0.2					
05 Depressive symptomatology at 17 to 24 weeks					
Gorman 2002	3/20	4/17		3.3	0.64 [0.17, 2.46]
Morrell 2000	48/252	49/229		47.5	0.89 [0.62, 1.27]
Reid 2002	49/339	46/370		42.8	1.16 [0.80, 1.69]
Stamp 1995	9/60	6/61		6.4	1.53 [0.58, 4.02]
Subtotal (95% CI)	671	677		100.0	1.02 [0.80, 1.31]
Total events: 109 (Treatment), 105 (Control)					
Test for heterogeneity chi-square=2.16 df=3 p=0.54 I^2 =0.0%					
Test for overall effect z=0.17 p=0.9					

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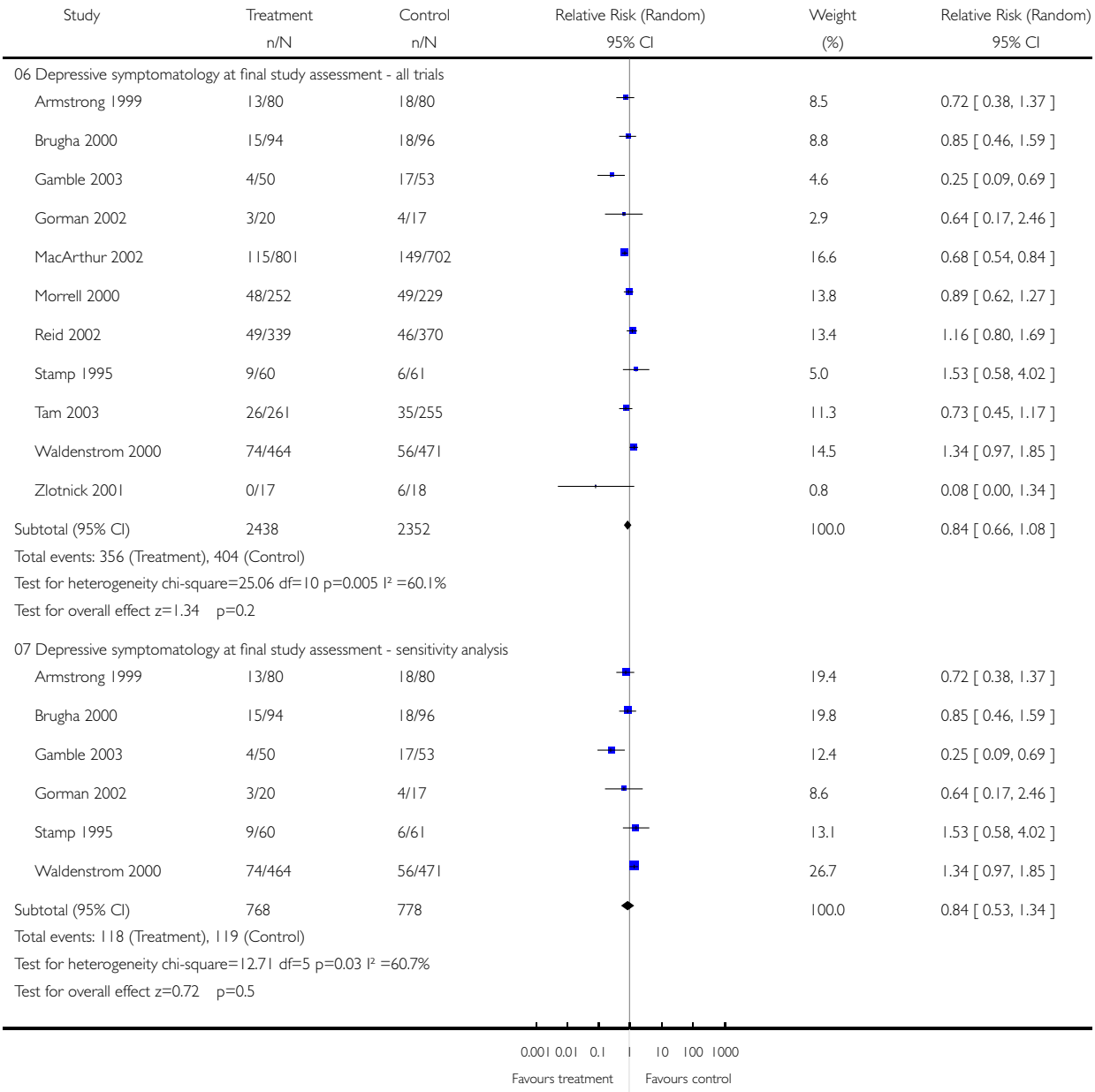


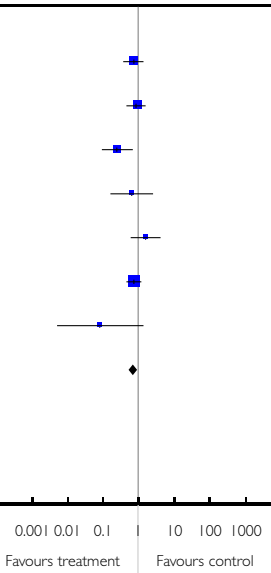
Analysis 07.01. Comparison 07 All interventions versus usual care - variations in risk status, Outcome 01 Interventions for at-risk women

Review: Psychosocial and psychological interventions for preventing postpartum depression

Comparison: 07 All interventions versus usual care - variations in risk status

Outcome: 01 Interventions for at-risk women

Study	Treatment n/N	Control n/N	Relative Risk (Fixed) 95% CI	Weight (%)	Relative Risk (Fixed) 95% CI
01 Depressive symptomatology at final study assessment					
Armstrong 1999	13/80	18/80		17.3	0.72 [0.38, 1.37]
Brugha 2000	15/94	18/96		17.1	0.85 [0.46, 1.59]
Gamble 2003	4/50	17/53		15.8	0.25 [0.09, 0.69]
Gorman 2002	3/20	4/17		4.1	0.64 [0.17, 2.46]
Stamp 1995	9/60	6/61		5.7	1.53 [0.58, 4.02]
Tam 2003	26/261	35/255		33.9	0.73 [0.45, 1.17]
Zlotnick 2001	0/17	6/18		6.1	0.08 [0.00, 1.34]
Total (95% CI)	582	580		100.0	0.67 [0.51, 0.89]
Total events: 70 (Treatment), 104 (Control)					
Test for heterogeneity chi-square=9.26 df=6 p=0.16 I^2 =35.2%					
Test for overall effect z=2.76 p=0.006					



Analysis 07.02. Comparison 07 All interventions versus usual care - variations in risk status, Outcome 02 Interventions for general population

Review: Psychosocial and psychological interventions for preventing postpartum depression

Comparison: 07 All interventions versus usual care - variations in risk status

Outcome: 02 Interventions for general population