Papers

Psychosocial and psychological interventions for prevention of postnatal depression: systematic review

Cindy-Lee Dennis

Abstract

Objective To assess the effects of psychosocial and psychological interventions compared with usual antepartum, intrapartum, or postpartum care on the risk of postnatal depression.

Data sources Medline, Embase, CINAHL, Cochrane central register of controlled trials, Cochrane pregnancy and childbirth group trials register, Cochrane depression, anxiety, and neurosis trials register, secondary references and review articles, and experts in the field.

Study selection All published and unpublished randomised controlled trials of preventive psychosocial or psychological interventions in which the primary or secondary aim was a reduction in the risk of postnatal depression. All trials recruited pregnant women or new mothers less than six weeks postpartum. Eligible studies were abstracted, assessed for methodological quality, and pooled with relative risk for categorical data and weighted mean difference for continuous data.

Results Fifteen trials with 7697 women were included. Although there was no overall statistically significant effect on the prevention of postnatal depression in the meta-analysis of all types of interventions (15 trials, n = 7697; relative risk 0.81, 95% confidence interval 0.65 to 1.02), these results suggest a potential reduction in postnatal depression. The only intervention to have a clear preventive effect was intensive postpartum support provided by a health professional (0.68, 0.55 to 0.84). Identifying women "at risk" assisted in the prevention of postnatal depression (0.67, 0.51 to 0.89). Interventions with only a postnatal component were more beneficial (0.76, 0.58 to 0.98) than interventions that incorporated an antenatal component. In addition, individually based interventions were more effective (0.76, 0.59 to 1.00) than group based interventions (1.03, 0.65 to 1.63).

Conclusions Diverse psychosocial or psychological interventions do not significantly reduce the number of women who develop postnatal depression. The most promising intervention is the provision of intensive, professionally based postpartum support.

Introduction

The cause of postnatal depression remains unclear.[1] Epidemiological studies and meta-analyses of predictive studies have consistently identified the importance of psychosocial and psychological risk factors[1-3]—such as life stress, marital conflict, maternal self esteem, and lack of social support. A comprehensive review suggested that in women with postnatal depression, psychosocial and psychological treatment may be suitable.[4] As such, it is theoretically possible that these interventions may also prevent postnatal depression, as many of the known risk factors are present during pregnancy and the immediate postpartum period. There have been two critical reviews of preventive trials[5 6] and one systematic review that examined diverse interventions to reduce "probable depression" in the postnatal period.[7] However, no systematic review has examined the overall preventive effect of psychosocial and psychological interventions or determined which characteristics are most beneficial.

I assessed the effects of such interventions compared with usual antepartum, intrapartum, or postpartum care on the risk of postnatal depression. A full review is published in the Cochrane Library.[8]

Methods

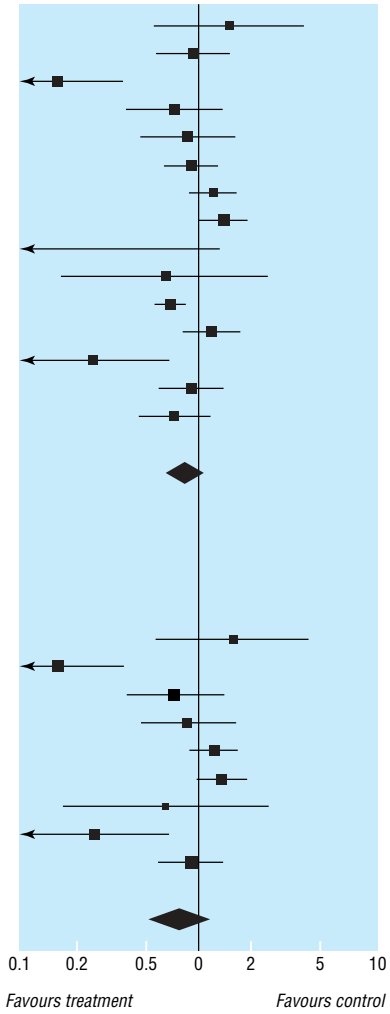
Searches—I searched the Cochrane pregnancy and childbirth group trials register database and the Cochrane depression, anxiety, and neurosis trials register, Medline (1966-2004), Embase (1980-2004), and CINAHL (1982-2004). Secondary references and review articles were scanned and experts in the field contacted.

Selection—Published and unpublished studies were eligible if they were randomised controlled trials; were methodologically strong, based on a validity assessment; evaluated a psychosocial or psychological intervention in which the primary or secondary aim was a reduced risk of postnatal depression; and included pregnant women and new mothers less than six weeks postpartum. I excluded studies if they incorporated a quasi-randomised design; recruited women identified with symptoms of depression, or solely evaluated an educational intervention. A psychosocial or psychological intervention incorporated various non-pharmaceutical strategies that were delivered

University of Toronto, Faculty of Nursing, 50 St George Street, Toronto, ON, Canada M5S 3H4
Cindy-Lee Dennis *assistant professor*
Correspondence to: C-L Dennis cindylee.dennis@utoronto.ca

BMJ 2005;331:15–8

ELPS *This is the abridged version; the full version is on bmj.com*



Study or subcategory	Treatment n/N	Control n/N	Relative risk (random) 95% CI	Weight (%)	Relative risk (random) 95% CI
Postnatal depression – all trials					
Stamp 1995	9/60	6/61		4.05	1.53 (0.58 to 4.02)
Gunn 1998	27/232	31/243		7.82	0.91 (0.56 to 1.48)
Lavender 1998	5/58	31/56		4.63	0.16 (0.07 to 0.37)
Armstrong 1999	13/80	18/80		6.33	0.72 (0.38 to 1.37)
Brugha 2000	15/94	18/96		6.49	0.85 (0.46 to 1.59)
Morrell 2000	48/252	49/229		9.10	0.89 (0.62 to 1.27)
Small 2000	81/467	65/450		9.64	1.20 (0.89 to 1.62)
Waldenstrom 2000	74/464	56/471		9.42	1.34 (0.97 to 1.85)
Zlotnick 2001	0/17	6/18		0.71	0.08 (0.00 to 1.34)
Gorman 2002	3/20	4/17		2.53	0.64 (0.17 to 2.46)
MacArthur 2002	115/801	149/702		10.32	0.68 (0.54 to 0.84)
Reid 2002	49/339	46/370		8.91	1.16 (0.80 to 1.69)
Gamble 2005	4/50	17/53		3.80	0.25 (0.09 to 0.69)
Priest 2003	37/696	42/705		8.36	0.89 (0.58 to 1.37)
Tam 2003	26/261	35/255		7.88	0.73 (0.45 to 1.17)
Subtotal (95% CI)	3891	3806		100.00	0.81 (0.65 to 1.02)
Total events: 506 (treatment), 573 (control)					
Test for heterogeneity: χ^2=44.81, df=14, P<0.0001, I^2=68.8%					
Test for overall effect: z=1.76, P=0.08					
Sensitivity analysis					
Stamp 1995	9/60	6/61		7.34	1.53 (0.58 to 4.02)
Lavender 1998	5/58	31/56		8.38	0.16 (0.07 to 0.37)
Armstrong 1999	13/80	18/80		11.45	0.72 (0.38 to 1.37)
Brugha 2000	15/94	18/96		11.75	0.85 (0.46 to 1.59)
Small 2000	81/467	65/450		17.44	1.20 (0.89 to 1.62)
Waldenstrom 2000	74/464	56/471		17.05	1.34 (0.97 to 1.85)
Gorman 2002	3/20	4/17		4.58	0.64 (0.17 to 2.46)
Gamble 2005	4/50	17/53		6.88	0.25 (0.09 to 0.69)
Priest 2003	37/696	42/705		15.13	0.89 (0.58 to 1.37)
Subtotal (95% CI)	1989	1989		100.00	0.76 (0.52 to 1.12)
Total events: 241 (treatment), 257 (control)					
Test for heterogeneity: χ^2=32.33, df=8, P<0.0001, I^2=75.3%					
Test for overall effect: z=1.37, P=0.17					

Fig 1 Postnatal depression at final assessment (variously defined) among studies evaluating interventions versus normal care in the prevention of postnatal depression

antenatally or within the first month postpartum, or both, by a health professional or layperson.

Assessment of validity—The methodological quality of each trial was assessed according to the recommendations of the Cochrane Collaboration. Two reviewers independently assigned a quality rating to each trial; results were compared and differences discussed until agreement was obtained.

Abstraction of data—Two reviewers independently extracted data and included study design; participants; intervention type, mode, onset, duration, and provider; outcomes measured; and results. Wherever necessary, unpublished or missing data were requested from the author.

Quantitative data synthesis—While the primary meta-analysis was based on the occurrence of postnatal depression (however measured), several depression rating scales or cut-off points were incorporated. I made direct comparisons, using a fixed effect model, between trials using the same rating scale and cut off. Meta-analyses were performed using relative risks as the measure of effect size for binary outcomes and weighted mean differences for continuous outcome measures. Heterogeneity was investigated by calculating I^2 statistics, and if high ($I^2 > 50\%$) a random effects meta-analysis was used. Sensitivity analyses, where I excluded trials most susceptible to bias, were also completed for high levels of heterogeneity. A priori subgroup analyses estimated the effect of intervention type, intervention mode, intervention onset, and sample selection criteria.

Results

The search identified 155 studies. After exclusions, I included 15 trials, incorporating 7697 women and published between 1995 and 2003, in the analysis (see bmj.com). Most trials were conducted in Australia and the United Kingdom; two trials were conducted in the United States and one in China. Seven trials targeted women believed to be at additional risk of postnatal depression. The eight others enrolled women from the general population.

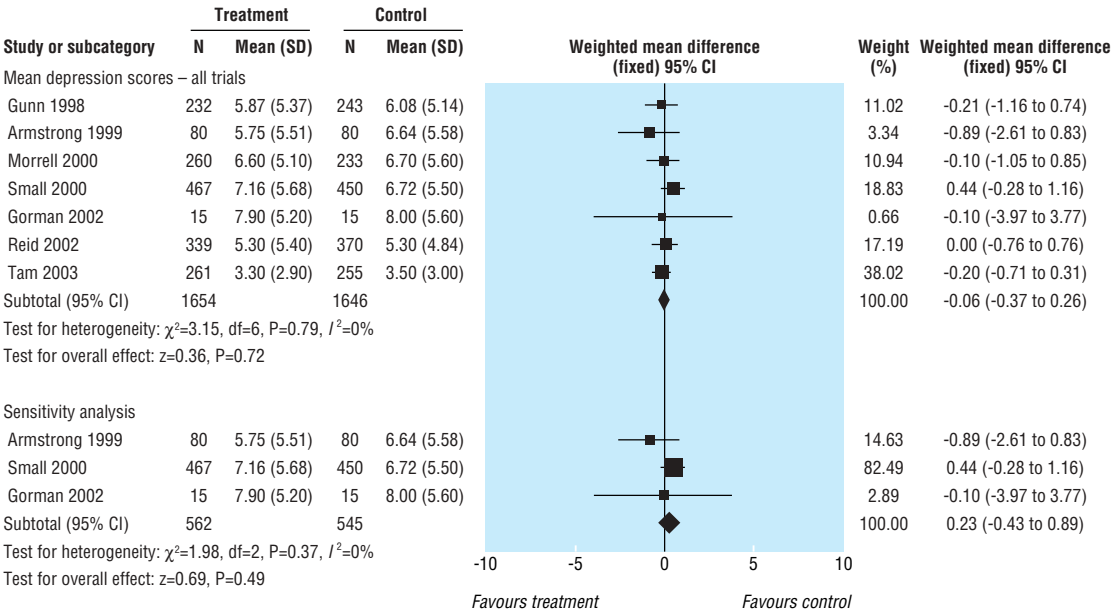


Fig 2 Mean depression scores at final assessment among studies evaluating interventions versus normal care in the prevention of postnatal depression

Types of interventions

Categories of psychosocial interventions included antenatal and postnatal classes, professional and lay home visits, continuity of care, and early postpartum follow-up and psychological interventions included debriefing and interpersonal psychotherapy. The interventions were provided by various professionals, including physicians, nurses, midwives, and, in one trial, lay women recruited from the community. In most studies, the control group received usual antenatal/postnatal care, which varied both between and within countries.

Definition of postnatal depression

In all trials but one, postnatal depression was defined as a score above a specified cut-off point on a self reported measure. The Edinburgh postnatal depression scale is the most commonly used instrument to assess postpartum depressive symptoms, and in this systematic review most studies (10 out of 15) used a score >12 on this measure to indicate postnatal depression; one study used a 10/11 cut off while another selected a 11/12 cut off. Several studies also reported mean scores. Two trials used the self reported hospital anxiety depression scale, and two used a semistructured diagnostic interview. The timing of the outcome assessment varied considerably between studies, ranging from three to 24 weeks postpartum; one trial included a 52 week assessment.

Quantitative data synthesis

Postnatal depression at last assessment

Variously defined—Although there was no statistically significant beneficial effect on the prevention of postnatal depression in the meta-analysis of all types of interventions (15 trials, n=7697; relative risk 0.81, 95% confidence interval 0.65 to 1.02) (fig 1), these results suggest a potential 19% reduction in postnatal depression. There was significant heterogeneity among these trials (I^2=68.8%). The removal of trials at risk of bias resulted in no substantial change to the conclusion. I found a similar non-significant effect when I calculated a weighted mean difference (WMD) among the trials that provided a mean score on the Edinburgh postnatal depression scale (seven trials, n=3300; WMD −0.06, −0.37 to 0.26) (fig 2).

Edinburgh postnatal depression scale score >12—I directly compared trials that used the Edinburgh postnatal depression scale with the recommended 12/13 cut-off score[9] and found no preventive effect (10 trials, n=6126; 0.91, 0.73 to 1.15).

Postnatal depression at 8, 16, and 24 weeks

Variously defined—I categorised assessments of postnatal depression at 0-8 weeks postpartum (short term effect); 9-16 weeks (intermediate effect); and 17-24 weeks (longer term effect). Results showed a short term reduction in the development of postnatal depression (eight trials, n=4091; 0.65, 0.43 to 1.00). The effect weakened at the intermediate period (eight trials, n=3326; 0.80, 0.56 to 1.12) and disappeared after 16 weeks (seven trials, n=4314; 1.02, 0.87 to 1.19).

Edinburgh postnatal depression scale score >12—When I included only those trials that used an Edinburgh postnatal depression scale score >12 as the outcome measure, there were no statistically significant short term (six trials, n=3452; 0.90, 0.65 to 1.25), intermediate (five trials, n=2369; 0.72, 0.49 to 1.06), or longer term (six trials, n=3598; 1.00, 0.84 to 1.19) effects.

Subgroup analyses

Type of intervention—I found no preventive effect with antenatal and postnatal classes (two trials, n=311; 1.02, 0.61 to 1.72), lay home visits (one trial, n=481; 0.89, 0.62 to 1.27), and early postpartum follow-up (one trial, n=475; 0.91, 0.56 to 1.48). I did find a positive trend related to continuity of care (one trial, n=935; 1.34, 0.97 to 1.85) and a clear beneficial effect with home visits provided by a health professional (two trials, n=1663; 0.68, 0.55 to 0.84). Among psychologi-

cal interventions, there was no preventive effect in relation to interpersonal psychotherapy (two trials, n = 72; 0.31, 0.04 to 2.52) but a positive trend in relation to debriefing in hospital (five trials, n = 3051; 0.57, 0.31 to 1.04).

Mode of intervention—Analysis of 11 trials evaluating individually based interventions showed a benefit in preventing postnatal depression at the last study assessment (n = 6642; 0.76, 0.59 to 1.00). Of the four trials that evaluated group based interventions, there was no apparent reduction in depressive symptoms at last study assessment (n = 1055; 1.03, 0.65 to 1.63).

Onset of intervention—Studies in which the intervention began antenatally and continued postnatally failed to reduce the likelihood of women developing postnatal depression (four trials, n = 1283; 1.21, 0.93 to 1.59). However, there was a preventive effect in those trials evaluating a postnatal only intervention (10 trials, n = 6379; 0.76, 0.58 to 0.98).

Effect of sample selected—Trials that selected participants considered to be "at risk" had more success in preventing postnatal depression (seven trials, n = 1162; 0.67, 0.51 to 0.89) than those that enrolled women from the general population (eight trials, n = 6535; 0.87, 0.66 to 1.16).

What is already known on this topic

Postnatal depression is a major health issue affecting about 13% of all new mothers

Epidemiological studies and meta-analyses of predictive studies have consistently found that several psychosocial and psychological variables contribute to increased risk

No systematic review has examined the preventive effect of psychosocial and psychological strategies or specific intervention characteristics

What this study adds

There is insufficient evidence that diverse psychosocial or psychological interventions reduce the number of women who develop postnatal depression

Interventions that target at risk women, are individually based, or initiated postnatally are more likely to be beneficial

Discussion

This systematic review shows that there is no clear evidence to recommend the implementation of antenatal and postnatal classes, early postpartum follow-up, continuity of care models, psychological debriefing in hospital, and interpersonal psychotherapy. There is emerging evidence to support the importance of additional professional support provided postnatally. Although one trial suggested that intensive home visits by nurses with at risk mothers was protective during the first six weeks postpartum, the benefit was not maintained to 16 weeks when the visits decreased from weekly to monthly. One trial showed that flexible, individualised postpartum care by midwives that incorporated assessment tools also had a preventive effect. Due to the cluster randomisation process, however, this trial may have been overweighted in the meta-analyses.

Subgroup analysis showed that identifying mothers with risk factors assisted in the prevention of postnatal depression. A review of 16 antenatal screening tools, however, suggests that there is no measure with acceptable predictive validity to accurately identify women who will later develop postnatal depression.[10] This may partially explain why interventions with only a postnatal component seem to be more beneficial than interventions that also incorporate an antenatal component.

The included trials were of good methodological quality, but the reporting of the trials was often not comprehensive. 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 intention to treat analyses were performed, in trials with group sessions compliance was poor.

Interpretation of results

The diversity of preventive interventions and the widely differing study end points should urge some caution in the interpretation of the pooled data. This review consistently showed that women who received a preventive intervention were statistically overall just as likely to experience postnatal depression as those who received standard care, even among those trials that incorporated the Edinburgh postnatal depression scale. On the basis of the several promising results found in this study and the potential long term consequences of postnatal depression, future research examining the prevention of postpartum depression is warranted. These studies should include ethnically and socioeconomically diverse women and economic analyses.

I thank L Gorman, R Hagan, and C MacArthur for responding to queries.

Contributions: See bmj.com

Funding: None.

Competing interests: None declared.

Ethical approval: Not required.

1 Cooper P, Murray L. Prediction, detection, and treatment of postnatal depression. *Arch Dis Child* 1997;77:97-9.
2 O'Hara M, Swain A. Rates and risk of postpartum depression—a meta-analysis. *Int Rev Psychiatry* 1996;8:37-54.
3 Beck CT. Predictors of postpartum depression: an update. *Nursing Res* 2001;50:275-85.
4 Dennis CL. Treatment of postpartum depression. 2: a critical review of nonbiological interventions. *J Clin Psychiatry* 2004;65:1252-65.
5 Dennis CL. Preventing postpartum depression. I: a review of biological interventions. *Can J Psychiatry* 2004;49:467-75.
6 Dennis CL. Preventing postpartum depression. II: A critical review of nonbiological interventions. *Can J Psychiatry* 2004;49:526-38.
7 Lumley J, Austin MP, Mitchell C. Intervening to reduce depression after birth: a systematic review of the randomized trials. *Int J Technol Assess Health Care* 2004;20:128-44.
8 Dennis CL, Creedy D. Psychosocial and psychological interventions for preventing postpartum depression. *Cochrane Database Syst Rev* 2004;(4):CD001134.
9 Cox JL, Holden JM, Sagovsky R. Detection of postnatal depression. Development of the 10-item Edinburgh postnatal depression scale. *Br J Psychiatry* 1987;150:782-6.
10 Austin M, Lumley J. Antenatal screening for postnatal depression: a systematic review. *Acta Psychiatr Scand* 2003;107:10-7.

(Accepted 1 February 2005)