Cost-effectiveness of a preventive counseling and support package for postnatal depression

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Record Status
This is a critical abstract of an economic evaluation that meets the criteria for inclusion on NHS EED. Each abstract contains a brief summary of the methods, the results and conclusions followed by a detailed critical assessment on the reliability of the study and the conclusions drawn.

Health technology
The use of a preventive intervention for postnatal depression. The intervention comprised counselling and specific support for the mother-infant relationship.

Type of intervention
Primary prevention.

Economic study type
Cost-effectiveness analysis.

Study population
The study population comprised primiparous women attending antenatal clinics at 26 to 28 weeks of gestation in Reading, England. A predictive index was used to identify those at high risk of developing postnatal depression, who were then approached about participation in the study.

Setting
The setting was the community. For the preventive group, research therapists, who were trained health visitors, visited the women in their own homes. The economic study was carried out in the UK.

Dates to which data relate
The dates to which the effectiveness evidence and resource use data referred were not reported. The price year was 2000.

Source of effectiveness data
The effectiveness data were derived from a single study.

Link between effectiveness and cost data
The costing was carried out prospectively on the same sample of patients as that used in the effectiveness analysis.

Study sample
Power calculations were not reported. Women were sampled from antenatal clinics within a small geographical area (the southern half of the town of Reading) and consent was sought from those displaying a high risk of developing postpartum depression. One hundred and fifty-one women were randomly allocated to either preventive intervention (n=74) or routine primary care (n=77). The numbers of women who refused to participate or were excluded for any reason from the initial sample were not reported.
Study design
This was a single-centre RCT. The unit and method of randomisation were not reported. Follow-up lasted from randomisation until 18 months postpartum. An independent researcher, blinded to intervention status, assessed the mental state of all women.

Analysis of effectiveness
The analysis of the clinical study was conducted on an intention to treat basis. The primary outcome was the duration of postnatal depression experienced by each woman. Assessment was performed at 8 and 18 weeks and 12 and 18 months postpartum, using the Structured Clinical Interview for DSM-III-R diagnoses (SCID-II). Information from the most recent SCID-II assessment was used to estimate periods of postnatal depression between visits.

There were no significant differences between the groups in terms of their maternal age, education, length of time with partner, satisfaction with area lived in, mean predictive score for postnatal depression and experience of pregnancy at randomisation. However, the groups differed in their treatment during pregnancy, with 5 women in the intervention group versus 13 women in the routine primary care group requiring hospitalisation, (p=0.03).

Effectiveness results
Women in the preventive intervention group were depressed for an average of 2.21 months (9.57 weeks), compared with 2.70 months (11.71 weeks) in the routine primary care group. The mean difference was 0.49 months (2.14 weeks), (p=0.41).

Clinical conclusions
The authors concluded that, for women screened antenatally and considered at high risk of postnatal depression, a package of counselling with specific support for the mother-infant relationship resulted in a non significant increase in the mean number of months free of postnatal depression.

Measure of benefits used in the economic analysis
The outcome measure used in the economic analysis was the months of postnatal depression avoided.

Direct costs
The costs and health effects accruing beyond the first year were reduced to present values using discount rates of 6% and 1.5%, respectively. The price year was reported as 2000. The quantities and the costs were reported separately and all health and social care costs incurred by the mother and child during the trial period were estimated, based on data collected during the trial. At each of three interviews with the women, the professional and agency providing any service, the location, frequency of use and duration of each contact were recorded. A detailed list of cost categories and cost components was provided in the paper. In addition, the research therapists were given diaries and asked to record prospectively all staff inputs, travel and training requirements, stationery and other consumables attributable to the delivery of the preventive intervention.

Statistical analysis of costs
The costs were treated stochastically. Censored data were estimated for ten mother-infant pairs by dividing the cost data into discrete time periods and using Kaplan-Meier methods to derive estimates from the uncensored data. The results were reported as mean values with standard deviations (SDs). Differences were tested using Student's t-test, with two-tailed p-values of 0.05 or less being considered significant. As the cost data were skewed, a non-parametric bootstrap estimation with 1,000 bias-corrected bootstrap replications was used to derive the 95% confidence intervals (CIs).

Indirect Costs
No indirect costs were included.
Currency
UK pounds sterling (€).

Sensitivity analysis
A series of multi-way sensitivity analyses was undertaken. Changes in three key parameters were considered:

- Community service use by the mother-infant pairs was increased by 10, 20 and 30%, in response to a presumed tendency of participants in health economic studies to under-report community service contacts;

- The per diem costs of each level of inpatient care were reduced and increased by 20%, to reflect variations in the price structures of resource inputs across hospital settings; and

- The discount rate applied to both costs and effects was varied to 0, 1.5, 3, 6 and 10%, to reflect differing views in the health economic literature.

Estimated benefits used in the economic analysis
As already reported, there was a non-significant difference (mean 0.49 months) in the time without postnatal depression, in favour of the preventive intervention group.

Cost results
The mean total intervention cost over 18 months, discounted at 6%, was 2,396.90 (SD=2,004.60).

The mean total comparator cost over 18 months was 2,277.50 (SD=2,018.10).

The mean cost-difference was 119.50, (p=0.72).

The bootstrap mean difference was 119.00 (95% CI: -535.40 to 784.90).

Synthesis of costs and benefits
The estimated benefits and costs were combined in an incremental cost-effectiveness ratio (ICER).

The mean incremental cost per month of postnatal depression avoided was 43.10.

Mean net benefits were estimated for ten alternative willingness-to-pay thresholds.

The sensitivity analyses showed that:

- Increasing the community service use by 10, 20 and 30% increased the ICER by 31.60, 63.20 and 94.80, respectively;

- A reduction/increase in the per diem cost resulted in a reduction/increase of the ICER by 35.60; and

- Discount rate variations had minimal impact, the greatest being a 19.10 increase in the ICER when both the costs and outcomes were undiscounted.

Authors’ conclusions
The authors acknowledged the difficulty in interpreting point estimates of cost-effectiveness when both cost and outcome differences were not statistically significant, but concluded that the preventive intervention is likely to be cost-effective. The probability that the preventive intervention is cost-effective exceeds 0.7 when decision-makers express a willingness-to-pay of 1,000 to prevent each month of postnatal depression, and does not exceed 0.8 even at much higher thresholds. Therefore, decision-makers are required to judge whether the cost-effectiveness evidence is sufficiently
compelling for them to invest in the intervention.

**CRD COMMENTARY - Selection of comparators**
Although the comparator was not explicitly justified, it appears to have represented current practice in the authors’ setting. You should decide whether it is relevant in your own setting.

**Validity of estimate of measure of effectiveness**
The analysis was based on an RCT, which was appropriate for the study question. It was unclear whether the study sample was representative of the study population, given that the sampling frame covered a small urban area and recruited women only from those willingly attending antenatal clinics. The patient groups were shown to be comparable at analysis. The outcomes were analysed on an intention to treat basis and were handled credibly.

**Validity of estimate of measure of benefit**
The estimation of benefits was obtained directly from the effectiveness analysis. This choice of estimate was not explicitly justified.

**Validity of estimate of costs**
All the categories of cost relevant to the perspective adopted were included in the analysis. For each category, all the relevant costs appear to have been included. The costs and the quantities were reported separately, thus enhancing the reproducibility of the study. The resource use quantities were not subjected to statistical analysis. The sources and methods used to derive the cost data were adequately reported. A sensitivity analysis of some prices was performed and reported. The price year was reported, thereby aiding future reflation of the results. The authors acknowledged that short-run current average revenue costs plus revenue and capital overhead costs were used to approximate long-run marginal opportunity costs, according to usual convention.

**Other issues**
The authors did not compare their findings with those from other studies. The issue of generalisability to other settings was not addressed. However, the transparency of the analysis implies that it could be adapted for other settings. The authors did not present their results selectively, their conclusions were appropriate, and they advised appropriate caution in interpreting the results. Three further limitations of the study were discussed. First, the study did not incorporate indirect non-medical costs and a societal perspective might have improved the relative cost-effectiveness of the preventive intervention. Second, the short time horizon of the analysis might have led to an underestimation of the long-term cost-effectiveness of the intervention by not taking longer term consequences, in terms of the health status and health service utilisation, into account. Finally, the effectiveness of the intervention had not been measured using a preference-based outcome such as the quality-adjusted life-year, which would have facilitated comparisons across health technologies.

**Implications of the study**
The authors acknowledged that the prevention of mental health problems in the perinatal period is considered a political and professional priority. The authors believe that the present study may constitute sufficient evidence to support the adoption of a preventive strategy but that, if evidence of cost-effectiveness within the conventional bounds of statistical significance is required, larger studies may be needed.

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