Role of home visiting in improving parenting and health in families at risk of abuse and neglect: results of a multicentre randomised controlled trial and economic evaluation

Barlow J, Davis H, McIntosh E, Jarrett P, Mockford C, Stewart-Brown S

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 study examined the use of weekly visits from a health visitor trained in understanding the process of helping, skills of relating to parents effectively, and methods of promoting parent-infant interaction using the Family Partnership Model, for families at risk of abuse and neglect. The comparator was standard care, which was help currently available to such families.

Type of intervention
Primary prevention.

Economic study type
Cost-effectiveness analysis.

Study population
The study population comprised women identified by community midwives, using demographic and socioeconomic criteria, as being at risk of poor parenting. Women not wishing to be randomised were excluded. Those without a working understanding of English were also excluded.

Setting
The setting was the community. The economic study was carried out in the UK.

Dates to which data relate
The dates during which the effectiveness and resource data were collected were not reported. The price year was 2003/04.

Link between effectiveness and cost data
The costing was undertaken prospectively on the same patient sample that provided the effectiveness data.

Study sample
The authors reported that the study was powered to detect a change of 0.5 standard deviations on one measure of mother-child interaction (the CARE Index), and one measure of maternal mental health (the General Health Questionnaire), allowing for a 25% loss of follow-up and using 80% power. Of the 433 women referred by midwives using demographic and socioeconomic criteria, 120 declined to be visited by a researcher and 151 were excluded by the researcher. Of the 162 women eligible to take part in the study, 31 refused to take part and 131 consented to enter the study. Sixty-eight women were randomised to the intervention group and 63 to the control group. Two of the intervention group did not complete the programme, although both provided 2-, 6- and 12-month postnatal follow-up data. Among the 66 programme completers, 64 provided 2-month follow-up data, 58 provided 6-month data and 62
provided 12-mnth data. Of the 63 women in the control group, 60 provided 2-month data, 59 provided 6-month data and 58 provided 12-month follow-up data.

**Study design**
The study was a multi-centre randomised controlled trial. Forty general practices in 2 counties participated. Randomisation was undertaken using sequentially numbered sealed opaque envelopes. Researchers who had not been involved in recruitment, and who were therefore blind to the intervention group, collected, coded and analysed the data. The intervention was started 6 months antenatally and follow-up was carried out up to 12 months postnatally. The dropout rate from the intervention was 3% and attrition was less than 10%.

**Analysis of effectiveness**
The analysis of effectiveness was based on several measures of outcome:

- the mother-infant interaction was assessed at 12 months, coded for maternal sensitivity and infant cooperativeness using the CARE Index;
- maternal psychopathology was assessed at 6 and 12 months using the General Health Questionnaire;
- postnatal depression was assessed at 8 weeks using the Edinburgh Postnatal Depression Scale;
- parental attitudes and competence was assessed at 6 and 12 months using the Adult Adolescent Parenting Inventory; and
- parental competence/confidence and experience was assessed using the Parenting Sense of Competence scale, and "What Being a Parent of a Baby is Like".

Other outcome measures were:

- social support, marital/partner discord, self-esteem, perceived self-efficacy and parenting stress, assessed at 6 and 12 months using the Social Support Scale, Rosenberg Self-Esteem Inventory, Generalised Self-Efficacy Scale and the Parenting Stress Inventory;
- the quality of the infant's home environment, assessed at 12 months using HOME Inventory;
- infant-toddler social and emotional adjustment, assessed using the Brief Infant-Toddler Social and Emotional Assessment;
- infant development, assessed independently at 12 months using the Bayley Scale of Infant Development;
- maternal assessment of the infant's temperament measured using the Infant Temperament Scale;
- the parents’ report of infant well-being at 6 months; and
- health visitor data related to cases conferences, children on the protection register, children removed from home and child deaths.

**Effectiveness results**
At 2 months, there were no statistically significant differences between the two groups in scores on the Edinburgh Postnatal Depression Scale.

At 6 months, 55% of the home visit group were breastfeeding compared with 45% in the control group, and minor disabilities were seen in 9.7% compared with 1.7% in controls.

Fewer home-visited infants were admitted to hospital compared with controls (8.5% versus 14.5%).
None of these differences reached statistical significance. There was also no difference between the groups in the numbers fed solids before 12 weeks, or in any of the standardised parent-report outcomes.

At 12 months, results for the CARE Index suggested that women in the intervention arm were significantly more sensitive to their babies (9.27 compared with 8.2; \( p=0.004 \)) and their children were significantly more cooperative (9.35 compared with 7.92; \( p=0.02 \)).

No significant differences were found on the HOME inventory or Bayley Scales.

Similar numbers of child protection issues were identified in the two groups between 6 and 12 months of age.

**Clinical conclusions**
Early home visiting based on the Family Partnership Model can improve sensitivity and adjustment of high-risk mothers to their infants and infant cooperativeness. However, because there were no significant differences between the two groups for most of the large number of outcome measured, it is possible that this one positive finding occurred by chance.

**Measure of benefits used in the economic analysis**
The authors did not derive a summary measure of benefit. In effect, a cost-consequences analysis was performed. See 'Analysis of Effectiveness' for the clinical outcomes measured.

**Direct costs**
Health service costs, social services costs, and legal and housing costs were included. The costs and benefits were discounted at a rate of 3.5% where applicable. Women maintained a diary of service use. The price year was 2003/04. The quantities of resources used were not reported. Neither the source of the unit costs nor their values were reported. The costs were reported as the mean cost per infant in the intervention group and the control arms.

**Statistical analysis of costs**
Bootstrapping was carried out to determine the 95% confidence interval (CI) for the difference between the intervention and control arms, and this was reported.

**Indirect Costs**
Productivity costs were not considered.

**Currency**
UK pounds sterling (€).

**Sensitivity analysis**
The examination of uncertainty was restricted to bootstrapping of the costs in the two groups (see 'Statistical Analysis of Quantities/Costs').

**Estimated benefits used in the economic analysis**
See the 'Effectiveness Results' section.

**Cost results**
The mean cost per infant was 7,120 in the intervention arm and 3,874 in the control arm.
The difference of 3,246 was statistically different (bootstrapped 95% CI for the difference: 1,645 to 4,803).

The incremental cost per child "identified" as being ill-treated on the basis of child protection proceedings between 6 and 12 months was 54,370.

**Synthesis of costs and benefits**
The costs and benefits were not combined.

**Authors’ conclusions**
The intervention may have the potential to improve parenting and increase the identification of infants at risk of abuse and neglect in vulnerable families. However, further investigation is needed, along with long-term follow-up to assess possible sleeper effects.

**CRD COMMENTARY - Selection of comparators**
Although no explicit justification was provided for the comparator used, it would appear to represent current practice in the authors’ setting. You should decide if the comparator represents current practice in your own setting.

**Validity of estimate of measure of effectiveness**
The analysis was based on a randomised controlled trial. Power calculations were performed to ensure that the size of the study sample was adequate for two of the measures of effectiveness. The authors argued that their study was perhaps inadequately powered to identify differences in the other measures. The authors did not describe the study sample in sufficient detail for readers to be able form a reasonable impression of the extent to which their own patients are comparable with those in the study. The numbers refusing to participate, the methods of randomisation and loss to follow-up were reported in detail, suggesting that the internal validity of the study is likely to be good. The nature of the intervention prevented blinding of the patients and health visitors providing care, but the researchers were blind to the intervention group when making their assessments. This minimises the potential of bias in the assessment of effectiveness. The groups were shown to be comparable at baseline. The authors compared the baseline data of those who refused to participate with those who agreed and found them to be similar; this supports the validity of the estimate of measure of effectiveness.

**Validity of estimate of measure of benefit**
The authors did not derive a summary measure of benefit. In effect, a cost-consequences analysis was performed. The comments above (‘Validity of estimate of measure of effectiveness’ field) therefore apply.

**Validity of estimate of costs**
The authors reported that the costs were collected from a "societal perspective”. However, no productivity costs were considered. The unit costs and the quantities were not reported, which limits the generalisability and transferability of the findings to other settings.

**Other issues**
Comparisons with one other study were made but generalisability was not discussed. The authors drew attention to some possible limitations of their study. They suggested that most of the findings favoured the intervention group but they lacked statistical significance, suggesting that the study might have been underpowered. They also suggested that qualitative studies involving focus group discussions and in-depth one-to-one interviews may help provide insights into effects of the programme that were not obvious in the quantitative study.

**Implications of the study**
The authors indicated that "the uncertainty surrounding the results means that the case for provision is not strong and suggests the need for further research, both to confirm the findings and possibly to increase the efficacy of the programme".

**Source of funding**
Funded by the Department of Health and the Nuffield Foundation.

**Bibliographic details**
Barlow J, Davis H, McIntosh E, Jarrett P, Mockford C, Stewart-Brown S. Role of home visiting in improving parenting and health in families at risk of abuse and neglect: results of a multicentre randomised controlled trial and economic evaluation. Archives of Disease in Childhood 2007; 92(3): 229-233

**PubMedID**
17068074

**DOI**
10.1136/adc.2006.095117

**Indexing Status**
Subject indexing assigned by NLM

**MeSH**
Adolescent; Adult; Child; Child Abuse /prevention & control; Child Welfare; Community Health Nursing /economics /standards; Cost-Benefit Analysis; Female; House Calls /economics; Humans; Infant; Maternal Health Services /economics /standards; Mental Health; Mother-Child Relations; Multivariate Analysis; Parenting; Pregnancy; Prognosis; Risk Factors; Self Concept; Self Efficacy; Social Support

**AccessionNumber**
22007000611

**Date bibliographic record published**
31/08/2007

**Date abstract record published**
31/08/2007