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The utility of volunteer home-visiting support to prevent maternal depression in the first year of life

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Abstract

Background Maternal depression can be detrimental to infant development. Structured home visiting initiated either in pregnancy or soon after the birth by a professional has led to better outcomes for mothers and their children but some vulnerable families may respond more favourably to a local volunteer. The value of volunteer support provided in the UK by Home-Start for maternal well-being is noted in qualitative studies, but there is no evidence of its impact
from trials. The support is not structured and both the frequency and content of visits may vary.

Methods A cluster randomized study allocated Home-Start local schemes to intervention or control conditions. Mothers in all areas were screened at routine health checks in late pregnancy. In intervention areas names of those scoring 9+ on the Social Disadvantage Screening Index were passed to Home-Start to be offered a volunteer. Not all those offered the support accepted the offer. In control areas no support was offered. Research assessments were conducted at 2 and 12 months. The outcomes were major or minor depression occurring between 2 and 12 months (Structured Clinical Interview for Diagnostic and Statistical Manual – Third Edition – Revised) and depression symptoms at 12 months (Edinburgh Postnatal Depression Scale). Three groups were compared: supported, case-matched controls and those offered but not receiving support.

Results Almost one-third experienced depression during the time period. Volunteer support had no identifiable impact on the emergence of maternal depression from 2 to 12 months or on depression symptoms when infants were 12 months. The major predictor of both was depression identified at 2 months.

Conclusions It was not found that informal support initiated following screening for disadvantage in pregnancy reduced the likelihood of depression for mothers with infants.

Keywords
home-visiting, infancy, maternal depression, prevention

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Introduction

Maternal mental health problems following the birth of a child can have a detrimental impact on child development (Goodman & Gotlib 2002; Black *et al.* 2007). Home-visiting support from a professional, often a nurse, has been found to help mothers particularly when offered either prenatally or at birth (Oakley *et al.* 1990, 1996; Marcenko & Spence 1994; MacLeod & Nelson 2000; Olds 2006). Professional support is costly and is likely to be limited so the possibility of a beneficial impact of support from paraprofessionals or local community volunteers is attractive. In addition it is possible that some families may be more likely to engage with preventive support from an informal source (Barnes 2003). Nevertheless, there are

questions about the potential impact of non-professional support. In the USA, paraprofessionals' support for young first-time mothers did not have the same impact as professionals following the same structured intervention (Olds *et al.* 2002) but an Irish study found that 'community mothers' can be effective, using structured materials previously intended for use by professionals (Johnson *et al.* 1993).

In the UK much informal family support is provided by Home-Start, a UK-wide voluntary agency (Home-Start 2005). Several uncontrolled studies suggest beneficial impacts of volunteer support including improved maternal well-being (Shinman 1994; Frost *et al.* 1996) but one quasi-experimental study failed to identify significant effects on a number of outcomes, including maternal depression (McAuley *et al.* 2004).

The aim of this study is to evaluate the impact on maternal depression experienced in the first year of volunteer (Home-Start) support offered in late pregnancy or just after birth compared with families of similar vulnerability not receiving volunteer support.

Methods

Ethical approval

Ethical approval was obtained from the Multi-Centre Research Ethics Committee and relevant local Research Ethics Committees.

Study participants

Eligibility criteria for Home-Start schemes

Home-Start agreed to participate only if randomization was at the scheme level. Some schemes were ineligible because: their catchment area was also a Sure Start[1] area ($n = 15$); Home-Start UK judged they were not ready for involvement in research ($n = 20$); or the scheme was already actively offering support for new mothers in their area ($n = 7$). A further 34 were excluded for logistic reasons (too distant). Thus of 237 schemes in England 161 (68%) were approached and 41 (24%) agreed to be randomized. Each received a payment of £500 to cover the costs of training new volunteers.

[1] Sure Start Local Programmes were a national area-based government intervention, designed to strengthen and add to services for families with children from 0 to 3, all of which offered home visiting to all mothers with a new baby.

Randomization

The initial randomization for schemes was 1:1, with ongoing allocation by chance, stratified within each of three regions (North, Midlands, South), conducted by the project director blind to any information about scheme identity. However, insufficient schemes volunteered to meet the target of 50 so randomization was changed to 2:1 part-way through. A limit had been set on the number of research clients that each scheme would accept (set at 8) but slightly larger numbers could be recruited in the control areas. The final distribution was 25 intervention and 17 control schemes. During the trial one intervention scheme dropped out, leaving 24.

Sample size

The number of schemes and consequent sample size derives from power calculations based on the Edinburgh Postnatal Depression Scale (EPDS). The mean EPDS in Cox and colleagues (1987) in a population sample was 12.9 for women with depressed mood and 13.8 for those experiencing minor definite depression. If the mothers in this study had a mean between these two states (13.4), and assuming a mean shift downwards with support of 2 points (SD 5.5), the power would be 0.98. A total sample of 240 (120 each for the control and intervention) would be required, allowing for a possible cluster effect within any one Home-Start scheme (with on average eight participants per scheme) with an intraclass coefficient of 0.1.

Eligibility criteria for families

Eligibility criteria for inclusion were: living in the geographical areas covered by the Home-Start scheme; mother at least 18 years; able to understand spoken English; infant birthweight $\geq$2500 g; $\leq$5 days in Special Care Baby Unit; and a score of 9 or greater on a modified version of the Social Disadvantage Screening Index (SDI) (Osborn *et al.* 1984) with a range from 0 to 21. The Index includes: highest occupation of either partner; highest educational qualification of either partner; tenure of accommodation; overcrowding; accommodation shared or not; availability of a vehicle; and type of neighbourhood. The Jarman Index (Underprivileged Area Score) (Jarman 1984) rather than a subjective rating of the neighbourhood. The original work developing the SDI (Osborn *et al.* 1984) found that it was a strong predictor of maternal depression and suggested a cut-off point of 10 indicating disadvantage. In this study, based on pilot work and as one item (lack of a bathroom) had been removed, it was

decided to use a slightly lower cut-off point of 9 to identify those at least one standard deviation above the mean.

Recruitment was in waiting areas by researchers during routine antenatal checks. Mothers were told that the study was designed to offer home-visiting volunteer support to families and to see what difference it made. All completed the SDI and gave initial consent so that details of their infant's birth could subsequently be obtained. They were told that not all families would be contacted, depending on background characteristics collected at recruitment. In intervention areas they were told that they might be contacted by Home-Start and also visited by a researcher; those in the control group were told that the support was not available in their area, but they might be contacted for research visits.

After SDI scoring was completed names of those eligible in intervention areas were passed to the Home-Start schemes. The usual Home-Start referral procedure was then followed: an initial visit by the Home-Start co-ordinator to jointly decide with the family if they want support and to discuss needs, then allocation of a volunteer, matched as closely as possible to the family. If the family was eventually not eligible for the research because of infancy characteristics (e.g. low birthweight) Home-Start continued with the support but the families were not included in the research study.

Procedure

Research visits, at 2 and 12 months, took place in participants' homes; a £10 shopping voucher was given at the end of each visit. The research visits were conducted blind to whether the area was intervention or control. The timing of the first visits would preferably have been sooner after the birth to obtain a 'true' baseline but, in conjunction with Home-Start, it was decided that families should not be contacted by researchers until the immediate stresses of child birth had passed and until they had been able to develop a relationship with their volunteer. The second visit was timed at 12 months because other outcomes were also studied (parenting and child development, see Barnes *et al.* 2006a).

Participants

A total of 1007 mothers-to-be agreed to be involved at the first stage of recruitment, 541 in intervention areas and 466 in control areas of which 527 (52%) met eligibility criteria; 51% ($n = 274$) intervention and 54% ($n = 253$) control (see Fig. 1). Of the 274 eligible intervention families 96 were supported, defined as receiving more than one visit from a Home-Start volunteer. Of the remaining 178, some were never contacted by Home-Start (29, 11%) others declined either following telephone contact (73, 27%) or an initial visit by the Home-Start scheme co-ordinator (60, 22%). Others were put on a waiting list (10, 4%) or received only one support visit (6, 2%).

All but one of the supported group ($n = 95$) received a 2-month visit, 93 a 12-month visit, 92 receiving both. When re-contacted after their child's birth, 195/253 (77%) of eligible control families agreed to a 2-month visit, 179 were seen at 12 months, with 178 receiving both. Because of the low percentage receiving Home-Start, those not being supported were approached part-way through the study to gain their agreement for research visits. Of 178, 130 were approached and 97 (75%) agreed. For some it was too late to conduct the 2-month assessments, which were possible for 73, and 90 had a 12-month visit, with assessments at both time points for 66 (see Fig. 1).

Demographic comparisons of the supported and control groups indicated that mothers accepting Home-Start support had on average more children, more educational qualifications, fewer were in employment and fewer were white. Thus it was decided for the analysis to create from the eligible 178 a matched control group of equal size to the 92 mothers in the supported group seen at 2 and 12 months, matching on: the number of children in the family, maternal occupational status, maternal educational qualifications and maternal ethnic group, resulting in groups with no differences in background characteristics (see Table 1). The 66 non-supported families visited on two occasions did not differ significantly from the supported group (see Table 1).

The intervention

There are Home-Start UK guidelines for how volunteers should be prepared and how support should be offered to families. Volunteers are mainly parents who live locally who have 10 half-day sessions of preparation. Two additional training sessions were created for the study (see Barnes *et al.* 2006a for more details) Volunteers and families jointly decide on needs and then on the frequency, length and nature of the visits, and how long the support should continue.[2] They may engage in a number of different activities, providing company, assistance with childcare or other household tasks, going out on joint trips to local facilities, or giving parenting advice (see MacPherson *et al.* 2009). Visits started on average just after the birth at 0.2

[2] For more details see http://www.home-start.org.uk/about/ Their aim is to 'increase the confidence and independence of families . . . by encouraging parents' strength and emotional well-being for the ultimate benefit of their children.'

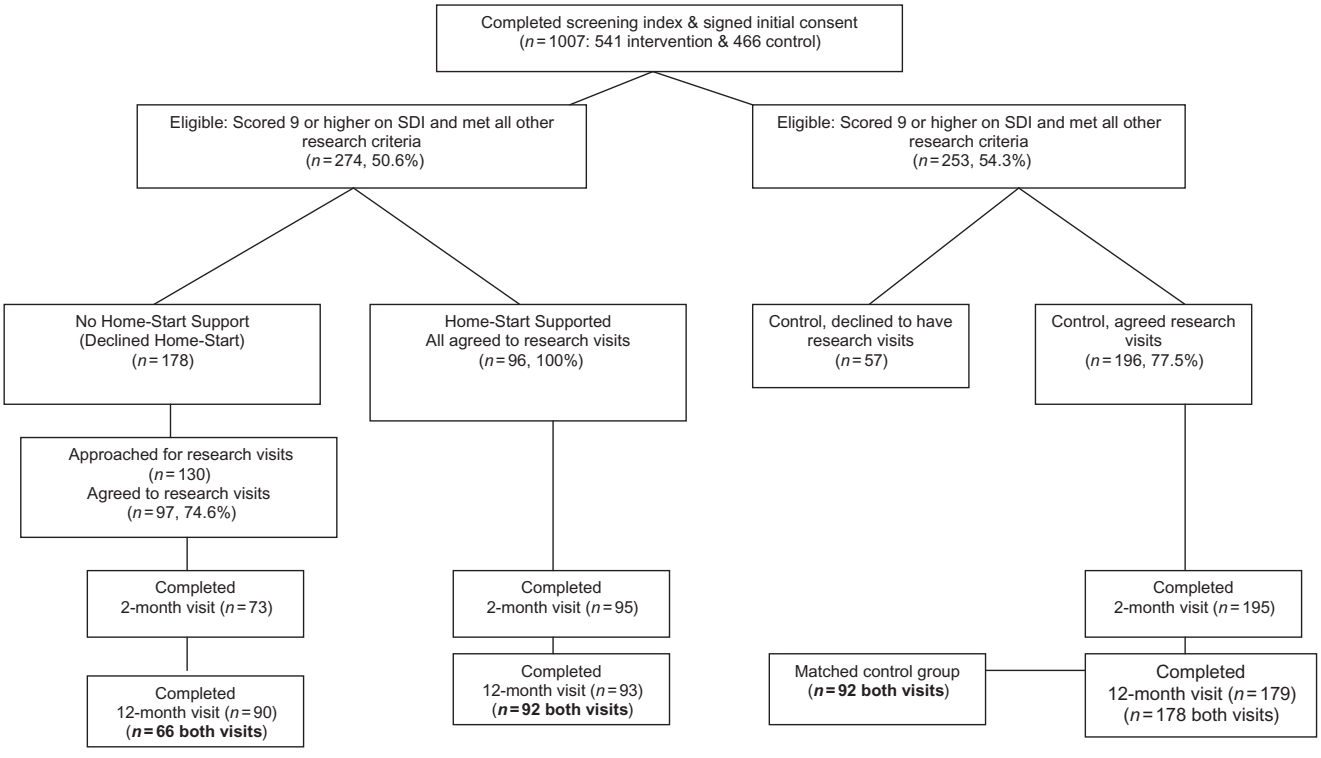

Figure 1. Consort diagram. SDI, social disadvantage index.

months (SD 1.7), the average number was 15.1 (SD 11.9) and average months of support were 5.5 (SD 3.6).

Measures

Two-month measures

The Structured Clinical Interview for Diagnostic and Statistical Manual – Third Edition – Revised (SCID) (Spitzer *et al.* 1990) Depression Section from the Mood Disorders Module (covering the previous 4 weeks) was administered. This diagnostic interview has good reliability (Riskind *et al.* 1987; Skre *et al.* 1991) and the internal consistency of responses to the nine symptoms with this sample was $\alpha = 0.93$. A minor depressive episode is two to four of the nine symptoms, a major depressive episode is five or more. Two are essential for diagnosis ('depressed mood' and/or 'loss of interest or pleasure'). The remaining seven are: significant change in weight or appetite; insomnia or hypersomnia; psychomotor agitation or retardation; fatigue or loss of energy; feelings of worthlessness or guilt; impaired concentration or ability to make decisions; and thoughts of suicide or self-harm. Depression symptoms in the past 7 days were assessed with the EPDS (Cox *et al.* 1987), a 10-item self-report questionnaire developed for use by primary care health workers to screen and identify postnatal depression. Items are scored 0–3, with a cut-off of 13 or more indicating depression. Its internal consistency with this sample was high ($\alpha = 0.87$).

Other questionnaires evaluated aspects of parenting and the home environment known to be relevant to maternal well-being; the Parenting Stress Index (Abidin 1995), the Maternal Social Support Index (MSSI) (Pascoe *et al.* 1981) and the Infant Characteristics Questionnaire (Bates *et al.* 1979). See Barnes and colleagues (2006a) for full details of these measures and their psychometric properties with this sample. As additional measures of social support respondents were also asked how many grandparents lived in the local neighbourhood and how many people were known locally. Demographic information collected for the SDI during recruitment was confirmed.

Twelve-month outcome measures

Presence of minor or major depression between 3 and 12 months was assessed using the Depression section from the SCID (Spitzer *et al.* 1990) and depression symptoms during the previous 7 days were assessed with the EPDS (Cox *et al.* 1987).

Table 1. Demographic characteristics of families with 2 and 12 month assessments (standard deviation or percentage in brackets, no significant differences between groups)

	Home-Start support ***n*** **= 92**	**Matched controls** ***n*** **= 92**	**No Home-Start support** ***n*** **= 66**
Mean maternal age (years)	29.0 (5.7)	29.0 (5.7)	28.6 (5.9)
Mean number of children in family (including new baby)	2.1 (0.8)	2.1 (0.8)	1.9 (0.8)
New baby male	48 (52.2)	47 (51.1)	35 (53.0)
Biological father in the home	73 (79.3)	76 (82.6)	51 (77.3)
Mother White	76 (82.6)	79 (85.9)	48 (72.7)
Mother single	17 (18.5)	13 (14.1)	13 (19.7)
Living with partner	27 (29.3)	40 (43.5)	22 (33.3)
Married	48 (52.2)	39 (42.4)	31 (47.0)
Mother's highest qualification			
Degree/higher degree	19 (20.7)	10 (10.9)	7 (10.6)
A-level	8 (8.9)	11 (12.0)	5 (7.6)
General Certificate of Secondary Education	26 (28.3)	26 (28.3)	19 (28.0)
Other	32 (34.8)	38 (41.3)	28 (42.4)
None	7 (7.6)	7 (7.6)	7 (10.6)
Mother's occupation			
Professional	9 (9.8)	10 (10.9)	4 (6.1)
Intermediate/small employer	17 (18.5)	21 (22.8)	14 (21.2)
Lower supervisory/technical/semi-routine/routine	21 (22.8)	19 (20.7)	24 (36.4)
Unemployed/student	45 (48.9)	42 (45.7)	24 (36.4)
Father's highest qualification			
Degree/higher degree	14 (17.7)	8 (9.5)	7 (13.7)
A-level	7 (8.9)	11 (13.1)	4 (7.8)
General Certificate of Secondary Education	28 (35.4)	34 (40.5)	18 (35.3)
Other	18 (22.8)	25 (29.8)	18 (35.3)
None	12 (15.2)	6 (7.1)	4 (7.8)
Father's occupation			
Professional	9 (10.8)	5 (5.8)	6 (10.2)
Intermediate/small employer	21 (25.3)	21 (24.4)	10 (16.9)
Lower supervisory/technical/semi-routine/routine	43 (51.8)	52 (60.5)	37 (62.7)
Unemployed/student	10 (12.0)	8 (9.3)	6 (10.2)

Analysis

Using SPSS version 12.0, binary logistic regression (enter method) was used to identify significant predictors of the presence of minor or major depression during the time from 2 to 12 months, based on the SCID. Multiple linear regression (enter method) was used to identify predictors of the number of depression symptoms reported at 12 months on the EPDS.

Results

Minor or major depression

There were no significant differences between the three groups in depression at baseline (see Table 2). At 12 months the rate of major or minor depression from 2 to 12 months in the supported group was at 30/92 (32.6%) not significantly different from that of the matched control group (24/92, 26.1%) or the unsupported group (18/66, 27.3%). The logistic regression model correctly predicted 74.1% of cases (χ^2 40.30, d.f. 20, $P = 0.005$; Nagelkerke R^2 0.215). Taking all demographic and family factors into account and whether or not the family was supported by Home-Start, the only significant predictor of a greater likelihood of depression was depression identified with the SCID at 2 months, while the only predictor of a lower likelihood of depression was more social support, as indicated by the MSSI, at 2 months (see Table 3). There was a non-significant trend for single mothers to be less likely than the married group to have been depressed between 2 and 12 months.

Depressive symptoms

Depression symptoms did not differ at baseline (see Table 2). The mean number of depression symptoms in the previous week (EPDS) at 12 months were similar for all three groups (supported 7.0, SD 5.9; matched control 6.3, SD 5.5, not supported 6.8, SD 5.0). The multiple regression predicted 39% of the variance in 12 month EPDS scores (F 13.01 [d.f. 13, 233]

Table 2. Family characteristics at 2 month (baseline) assessment for families with 2 and 12 month assessments (standard deviation in brackets)

	Home-Start support ***n*** **= 92**	**Matched controls** ***n*** **= 92**	**No Home-Start support** ***n*** **= 66**
Mean parenting stress (PSI)	72.6 (16.4)	67.5 (15.4)*	70.8 (15.9)
Mean social support (MSSI)	15.5 (4.0)	16.6 (3.7)	15.9 (3.7)
Mean number of grandparents living locally	1.6 (1.3)	2.0 (1.4)*	2.0 (1.5)
Mean local social network (number of people known)	8.3 (3.0)	8.9 (2.9)	8.6 (3.0)
Mean child difficulty (ICQ)	45.6 (12.2)	43.6 (11.5)	43.9 (12.4)
Mean symptoms of maternal depression, previous week (EPDS)	8.2 (5.8)	6.8 (4.9)	7.7 (5.7)
Number with minor or major depression in the previous month	20 (21.7%)	12 (13.0%)	10 (15.2%)

EPDS, Edinburgh Postnatal Depression Scale; ICQ, Infant Characteristics Questionnaire; MSSI,Maternal Social Support Index; PSI, Parenting Stress Index.
*Differs from Home-Start supported group at $P < 0.05$.

Table 3. Results of binary logistic regression to predict major or minor depression from 2 to 12 months, based on the SCID at 12 months

Predictors	**Coefficient**	**Standard error**	**Wald**	***P*-value**	**Odds of minor/major depression**	**95% confidence interval for odds**
Intercept	–0.94	1.91	0.24 (1 d.f.)	0.62	0.39	
Support group			0.87 (2 d.f.)	0.65		
Not supported	–0.30	0.4–0	0.56 (1 d.f.)	0.45	0.74	0.34 to 1.63
Matched control	–0.30	0.37	0.67 (1 d.f.)	0.41	0.74	0.36 to 1.53
Maternal educational qualifications			1.32 (4 d.f.)	0.86		
General Certificate of Secondary Education	–0.39	0.63	0.38 (1 d.f.)	0.54	0.68	0.20 to 2.32
Other qualification	–0.28	0.62	0.20 (1 d.f.)	0.65	0.76	0.22 to 2.56
A level	–0.59	0.76	0.61 (1 d.f.)	0.44	0.55	0.13 to 2.44
Degree	–0.74	0.78	0.92 (1 d.f.)	0.34	0.48	0.10 to 2.18
Maternal occupational status			3.09 (3 d.f.)	0.38		
Lower supervisory/semi-routine/routine	0.65	0.40	2.72 (1 d.f.)	0.10	1.92	0.88 to 4.18
Intermediate	0.46	0.46	1.04 (1 d.f.)	0.40	1.59	0.65 to 3.88
Professional	0.07	0.65	0.01 (1 d.f.)	0.98	1.07	0.30 to 3.84
Maternal age	0.03	0.03	0.70 (1 d.f.)	0.40	1.03	0.96 to 1.10
Maternal ethnic group non-white	–0.52	0.47′	1.19 (1 d.f.)	0.28	0.60	0.24 to 1.51
Marital status			5.36 (2 d.f.)	0.07		
Living with partner	0.18	0.37	0.24 (1 d.f.)	0.62	1.20	0.58 to 2.48
Single	–1.07	0.57	3.35 (1 d.f.)	0.06	0.34	0.11 to 1.06
Number of children	–0.01	0.23	0.01 (1 d.f.)	0.98	0.99	0.70 to 1.55
New baby's gender male	–0.25	0.32	0.59 (1 d.f.)	0.44	0.78	0.41 to 1.47
Child difficulty at 2 months (ICQ total)	–0.01	0.02	0.04 (1 d.f.)	0.84	1.00	0.97 to 1.03
Parental stress at 2 months (PSI total)	0.02	0.01	2.25 (1 d.f.)	0.13	1.02	0.99 to 1.05
Number of grandparents living locally	0.16	0.12	1.60 (1 d.f.)	0.21	1.17	0.92 to 1.49
Social support at 2 months (MSSI total)	–0.12	0.05	5.25 (1 d.f.)	0.02	0.89	0.80 to 0.98
Major or minor depression at 2 months (SCID)	1.00	0.41	5.79 (1 d.f.)	0.02	2.71	1.20 to 6.10

Indicator values for categorical variables: Support group – Home-Start support; maternal education – no qualifications; maternal occupation – unemployed/student; marital status – married; maternal ethnic group – white; child gender – female; SCID at 2 months – no depression.
ICQ, Infant Characteristics Questionnaire; MSSI,Maternal Social Support Index; PSI, Parenting Stress Index; SCID, Structured Clinical Interview for Diagnostic and Statistical Manual – Third Edition – Revised.
χ^2 40.30, 20 d.f., $P = 0.005$. Cox & Snell R^2 0.15, Nagelkerke R^2 0.22. Percentage correct prediction 74.1%.

$P < 0.0001$). The only significant predictor of more depression symptoms at 12 months was more at 2 months (see Table 4).

Discussion

The screening was designed to identify potentially disadvantaged mothers and despite recent evidence, not available when the study was started in 2001, about the difficulties of screening to predict postnatal depression (Austin & Lumley 2003) this strategy appears to have been successful in that a substantial proportion in all three groups, between one-quarter and one-third, experienced at least one episode of minor or major depression between the time their child was 3 and 12 months old. However, the provision of unstructured support from a

Table 4. Results of multiple regression to predict total depression symptoms in the previous week at 12 months, based on the EPDS

Predictor variables	Unstandardized B SE in brackets	Standardized beta	*T*	*P*-value	95% confidence intervals for B
Support group*	−0.11 (0.33)	−0.02	−0.32	0.75	−0.75 to 0.54
Maternal educational qualifications	0.03 (0.28)	0.01	0.12	0.91	−0.51 to 0.58
Maternal occupational status	0.22 (0.32)	0.04	0.68	0.50	−0.41 to 0.84
Maternal age	0.10 (0.06)	0.11	1.79	0.08	−0.01 to 0.21
Maternal ethnic group	−0.20 (0.76)	−0.01	−0.26	0.80	−1.70 to 1.31
Marital status	−0.40 (0.44)	−0.05	−0.89	0.37	−1.27 to 0.48
Number of children	0.33 (0.40)	0.05	0.84	0.41	−0.45 to 1.12
New baby's gender male	0.59 (0.56)	0.05	1.05	0.30	−0.52 to 1.70
Child difficulty at 2 months (ICQ total)	0.03 (0.03)	0.07	1.12	0.26	−0.02 to 0.08
Parental stress at 2 months (PSI total)	−0.02 (0.02)	−0.07	−0.95	0.35	−0.07 to 0.03
Number of grandparents living locally	0.10 (0.22)	0.03	0.46	0.64	−0.33 to 0.53
Social support at 2 months (MSSI total)	−0.13 (0.09)	−0.09	−1.41	0.16	−0.30 to 0.05
Total depression symptoms at 2 months (EPDS)	0.62 (0.06)	0.62	10.07	0.00	0.50 to 0.74

*Coding for support group: matched control 1; offered but not receiving Home-start 2; received Home-Start support 3.
EPDS, Edinburgh Postnatal Depression Scale; ICQ, Infant Characteristics Questionnaire; MSSI, Maternal Social Support Index; PSI, Parenting Stress Index.
Adjusted R^2 0.39, $F_{[13, 233]}$ 13.01, $P < 0.000$.

community volunteer was not found in this trial to have any identifiable impact, either positive or negative, on the emergence of maternal depression during this time in comparison either with never being offered volunteer support or being offered and deciding against the support. It is interesting that there was a trend for single mothers to be less likely to develop depression between 2 and 12 months. Possibly their friends and family make greater efforts to support them than those with a partner, or alternatively coping with a new baby and an ongoing relationship adds to stresses likely to lead to depression?

Knowing the impact that maternal depression can have on child development, and given a recent trial finding little evidence of long-term benefits for children of clinically depressed mothers who received one of three types of therapy (Murray *et al.* 2003), it may be important to think about other ways to offer preventative support for mothers with young infants to reduce the likelihood of depression emerging and to help parents in eliciting optimal responsiveness from infants.

Public health approaches focus on prevention, to reduce the likelihood of more costly treatment at a later date. In contrast to medical preventive intervention such as childhood immunizations, suitable for the majority of the population, prevention to support families needs to be offered in a more targeted manner, fitting the manner of support to the nature of the family and their circumstances. Some highly targeted interventions, such as the Nurse–Family Partnership programme providing home visits from a trained nurse for young, are being offered in the UK to young first-time mothers (Barnes *et al.* 2008). However, most of the families in this study would not be eligible for that support, being older than the target age and with other children.

In a time of limited resources it may be tempting to refer potentially vulnerable families in the first instance to informal interventions such as Home-Start rather than more costly formal professional services. While informal volunteer support does, according to qualitative reports (e.g. Frost *et al.* 1996), make a difference to some families, this study does not provide any evidence that it will have a substantial impact across the board when offered preventively. Nevertheless, it may be particularly useful for particular types of family.

One of the few differences between the supported group and the matched control group was that the supported families were less likely to have grandparents living in the local neighbourhood. In addition, the level of social support within the home available at 2 months appeared to be a protective factor against depression for all the families in the study. Qualitative reports indicate that the most valued aspect of the volunteer involvement was the practical assistance with childcare or household chores that might otherwise come from a family member (MacPherson *et al.* 2009) so it may be useful to find out about the presence of extended family members when conducting outreach to identify families who could benefit from a preventative offer of support from a volunteer, as it may need to be in addition to more formal support such as extra visits from a health visitor or a primary mental health professional rather than as an alternative.

It must also be noted that there were several limitations to this study in drawing any conclusions about the potential impact of volunteer support. 'Real world' trials, particularly those that use cluster randomization, are usually compromises between scientific requirements and the values and beliefs of the

practitioners involved and this study was no exception. The group eventually accepting Home-Start support differed demographically from the larger control group which would have been less likely with individual randomization. This shortcoming was addressed by creating a post hoc matched control group, removing the bias identified in the control group (who were less vulnerable) but also reducing the sample size. It would have been preferable to randomize individuals within each scheme rather than to randomize schemes, but the national Home-Start organization was opposed to this strategy on principle.

Second, having agreed the cluster-randomization method a relatively small proportion of Home-Start schemes came forward to be part of the study which is a potential source of bias that weakens the validity of the findings. While they were the most positive about being in a research study one cannot know if they reflected the most effective schemes. Possibly some with very effective volunteers did not want to disrupt their work by being in the study. Third, even some of those schemes that agreed to take part were reluctant to provide the support to families identified through screening rather than through identified difficulties. Their usual referrals have more recognizable immediate needs and they were sometimes reluctant to 'use up' one of their volunteers for a family not reporting a high level of distress. Ongoing discussion took place with Home-Start schemes during the recruitment period but many of their comments suggested that, despite the explanation that this was a preventive offer of support, they were reluctant to agree with a family about receiving a volunteer if they could not identify current difficulties. A detailed study of the reasons for refusing the support (Barnes *et al.* 2006b) revealed that many changed their mind between their recruitment to the study during pregnancy and the Home-Start co-ordinator's visit that they wanted to cope without additional help, but it is not possible to say how much this view was 'helped' by the co-ordinator's comments. This reluctance to work with some families may also have been transmitted to the volunteers. They act with a certain amount of autonomy and can decide with a family that they are no longer required. If there had been an opportunity for the researchers to interact directly with the volunteers then more may have stayed with families for longer, which might have helped in the prevention of depression. The utility of intervening in a preventive manner may need to be discussed more by service providers, particularly when services are over-subscribed, which naturally leads to an inclination to help the most needy.

Finally, the small group out of those referred to Home-Start differed demographically from the larger control group. This shortcoming was addressed by creating a post hoc matched control group, removing the bias identified in the control group (who were less vulnerable) such as differences in ethnic background or occupational status but also reducing the sample size. The power calculations indicated that groups of 120 intervention and control would have substantial power (0.98) to detect a group difference so a reduction of 8% in the sample size, particularly when matched on a number of indicators, should have still had sufficient power, but it is also possible that a type II error occurred and that the groups really did differ.

In the end, the findings may have been different if these limitations had not been present but the study identified a number of issues pertinent to the collision of scientific requirements with real world practice. Although randomized trials are frequently spoken of as the 'gold standard' of evidence, practitioners resist the idea of offering their services in what is then a lottery, particularly if they have a strong belief that their actions lead to positive results. The cluster randomization was a compromise designed to avoid this, but this meant different information was given at recruitment to control and intervention mothers. Given the fact that the intervention group were told at that time that they might be supported while controls never expected this, the intervention families might have been more disposed towards support, which could bias towards the null hypothesis and obscure a positive finding.

Enthusiasm was greater at the national level in the organization than in local (independently run) Home-Start groups, whose personnel also change quite frequently so initial agreement was followed in some cases by poor communication with new local staff. Local organizational capacity has been highlighted by the families receiving Home-Start support as a potential source of problems (MacPherson *et al.* 2009) and this applied to the process of involving families in the study. There was also some reluctance to deploy valuable volunteers to families identified as potentially rather than obviously in need. Substantial delays in obtaining all the necessary ethical and other approvals, related to recruitment on Nation Health Survey premises, compounded this in that some initial enthusiasm was lost in the wait (MacPherson *et al.* 2005).

It was not feasible given the spread across the whole of England and the fact that volunteers do not meet regularly in groups to talk to them directly about ways to involve and work with the families, although regular meetings did take place with members of the Home-Start national team. Every effort was made for the research to be a strong collaboration but overall the different agendas of scientific rigour and the day-to-day decisions made in the communities in organizations with stretched resources about which families to support using

which volunteers made this 'best effort' study challenging to conduct, and eventually disappointing for the practitioners involved.

Key messages

- Professional home visitors following structured preventive interventions have improved maternal and child health outcomes for potentially vulnerable families.
- Unstructured volunteer support may not be sufficient if a mother is depressed postnatally, nor has this study found that it prevents depression developing in the first year after a baby's birth.
- Volunteer support may be a useful adjunct to professional support for families with few local family members.
- The study highlights issues that may arise when implementing scientifically rigorous research in the context of 'real world practice'.

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