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**THE
OXFORDSHIRE HOME VISITING
STUDY**



Three-Year Follow-Up

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Executive Summary

Background

The Oxfordshire Home Visiting Study is one of the few UK-based randomised controlled trials to evaluate the effectiveness of a professionally delivered, intensive home visiting programme beginning during the antenatal period, in improving parenting and child outcomes including the prevention of abuse and neglect.

Method

One hundred and thirty-one high-risk women registered with 40 GP practices across two counties were randomly allocated to receive intensive home visiting (n=68) or standard services (n=63). Women in the home visiting arm received weekly visits by specially trained health visitors beginning during the second trimester of pregnancy and continuing for a period of 18 months. All mothers and babies were followed up at 2-months, 6-months, and 12-months, and these results have been published elsewhere (McIntosh et al 2009; Barlow et al 2007; Kirkpatrick et al 2007; McIntosh and Barlow 2006; Barlow et al 2005; Brocklehurst et al 2004).

This report summarises the results of the 3-year follow-up of 131 women – Intervention group (n=51) and control group (n=46).

Results

Primary and secondary outcomes

The significant improvement in maternal sensitivity and infant co-operativeness that was identified at 12-month follow-up was not maintained at 3-years. The few significant differences between the intervention and control group for the remaining outcomes favoured the control group, although many non-significant findings favoured the intervention group.

Child abuse data

Non-significant trends were identified suggesting that children in the intervention group who suffered maltreatment were more likely to be identified, and more likely to suffer maltreatment for shorter periods of time. These differences may be clinically important, and may have reached statistical significance in a larger trial.

Economic Evaluation

The results suggest that intensive home visiting improved maternal sensitivity at 12-months and better enabled health visitors to identify infants in need of further protection at an incremental cost of £3,985 (95% bootstrapped CI for the cost difference: £192 - £5,297) per woman at 36 months. Looking at the 'health service only' costs, at 36-months the incremental cost was £4,232 (95% bootstrapped CI for the cost difference: £1,949 - £5,709). The extent to which these potential benefits are worth the costs, however, is a matter of judgment.

User perspectives

The majority of participants who were interviewed continued to view the home visiting service, in positive terms. Most were highly appreciative of the help and support they had received at the time, and reported significant ways in which they perceived the service to have been of help to them. Longer-term benefits included the close bond that they felt they had established with the study child, the introduction of parenting practices that helped them to address difficult behaviour, and a better ability to utilize other health services. However, only half of the women invited to take part in a 3-year follow-up interview accepted, and the views expressed in these interviews may not therefore be representative of the wider group of women who received the home visiting service.

Conclusion

This study did not identify any quantitative benefits from an eighteen-month intensive home visiting programme, and given the success of some other programmes of this nature, it seems likely that this may have been due to the

duration of the programme (many of the most effective programmes continue until the infant is 2-years of age), and the content of the visits (the lack of focus on specific child developmental outcomes), in conjunction with the fact that this study recruited a very high-risk group of women; just under a half of the sample were known to Child and Family Services by the time the child was three years of age.

However, data from in-depth interviews that were conducted with a range of stakeholders at both 12- and 36-months suggests that the partnership model of working that was provided to health visitors was effective in enabling the home visitors to gain the trust of a group of very vulnerable women, many of whom viewed all professionals very negatively, and that many of the participating women also felt that the service had had an ongoing impact in terms of their ability to parent, and their relationship with the study child.

Effective interventions for this very high-risk group of mothers and infants have yet to be identified, and will most probably involve the use of more intensive therapeutic interventions such as parent-infant psychotherapy (ref) or mentalisation-based parenting programmes (ref) or a multimodal approach that combines a number of these strategies. In the absence of effective interventions, early identification of infants in need of removal from the home remains the optimal strategy, and the data from this study *suggest* that home visited children were much more likely to be identified as abused, and more likely to suffer maltreatment for shorter periods of time. These findings may be particularly significant given what we now know about the impact of abuse during the first few years of life. While the findings of the economic analysis suggest that the costs of an intensive intervention of this nature are always likely to be significantly more, society must ultimately decide whether such additional costs are worthwhile.

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1. Introduction

There is currently much interest in how best to meet the needs of children who come from vulnerable families where parenting skills are poor, social and environmental risk factors are high, and there is a significant risk of abuse. The children of these families are often victims of neglect and have a high incidence of emotional and behavioural problems, school failure and delinquency in childhood/ adolescence, and of mental and social difficulties as adults. This points to the need for primary preventive interventions aimed at improving parenting practices in such 'high-risk' families. While home visiting programmes are not uniformly effective, a recent review of reviews concluded that they could be an effective means of addressing some of these problems (e.g. Bull et al., 2004).

Over the past 15 years a variety of home-visiting programmes have been developed in the USA to reduce the incidence of child abuse and neglect (e.g. Gomby, Culross and Berhman, 1999). These have typically involved structured visits by a professional experienced in child health and development, during the child's first, and occasionally second year of life. The evaluation of these programmes has shown a range of beneficial effects in both the short and long-term (ibid). There has been a small number of home visiting trials conducted in the UK over the last decade (MacAuley et al., 2004; Wiggins et al., 2004; Morrell et al., 2001), but none of these have addressed the effectiveness of home visiting with parents who have been identified prenatally as being at high-risk of poor parenting postnatally.

This report summarises the findings of a 3-year follow-up of a study that was conducted to evaluate the effectiveness of a new intensive home visiting service, established at 40 GP practices across Oxfordshire and Aylesbury. The service comprised the following components:

- i) The screening of all women at the booking-in visit by midwives attached to the 40 participating GP practices.

- ii) The provision of an intensive (weekly) home visiting service to all women who were identified as being 'vulnerable' by the midwife at the booking-in visit. The home visiting commenced up to six months ante-natally and continued for twelve months post-natally, and comprised weekly visits from a home visitor who had received training in understanding the processes of helping and the skills of relating to parents effectively (using the Family Partnership Programme) in addition to methods of promoting parent-infant interaction.

- iii) Intensive supervision of all home visitors.

The results of the 12-month follow-up have been summarised in full (Barlow et al., 2007). The aim of the current research was to evaluate the following:

- i) To establish at 3-year follow-up the effectiveness of the intervention in improving a range of outcomes associated with poor or abusive parenting, and the early identification of infants in need of removal from the home

- ii) To establish the views of service recipients and providers concerning the value of the intervention and its impact

- iii) To evaluate the cost-effectiveness and cost-benefit of the intervention

2. Methodology

2.1 *Three year follow-up*

This section reports the methodology for the three year follow-up of the Oxfordshire Home Visiting study. The methodology for the child abuse data collection, economic and qualitative analyses are reported at the beginning of each relevant section.

2.1.1 Research participants: The study participants comprised vulnerable women who were identified during pregnancy by community midwives attached to one of 40 participating GP practices in Oxfordshire and Buckinghamshire using a range of criteria (i.e. risk factors) such as mental health problems, domestic violence, drug/alcohol abuse (see page 3 for a detailed list).

2.1.2 Sample size, type and location

The sample consists of 131 mother and infant dyads in total. Sixty-eight women were randomly allocated to receive intensive home visiting by specially trained health visitors for a period of 18 months beginning during the second trimester of pregnancy, and 63 were randomly allocated to receive standard services during and after pregnancy. The women were mostly located in Oxfordshire and Buckinghamshire. Although some women moved outside the two counties to other parts of the UK, an attempt was made to follow up all participants irrespective of their location.

2.1.3 Loss to Follow-up

Loss to follow-up in trials of home-visiting ranges from 20% - 50% especially where the follow-up period is greater than three years. The loss to follow-up in the current study has, however, been low – 7% at 6 months; and 8% at 12 months. We estimated that while the loss to follow-up at 3 years was likely to be greater, it would not exceed 15% because of the financial incentives for continued participation (i.e. a total of £40 in Boots gift vouchers which is both

useful and appropriate to the needs of this population) and the ongoing relationship established with trial participants.

2.1.4 Revised sample size calculation

The study was originally powered to enable us to detect a change of 0.5 sd with a 0.05 significance level and power of 80%. It was estimated that a sample size in the region of 111 women (i.e. 55 in each group) would enable us to detect a change of 0.5 sd with a significance level of 0.05 and a power of 80% or 0.6 sd with a significance level of 0.05 and power of 90%. Steps were taken to locate and obtain consent for follow-up from the whole sample at 3-years, irrespective of the loss at 1-year, thereby maintaining the original study power.

2.2 Methods of working

2.2.1 Quantitative data collection

During the first stage of this study families were followed-up until the infant was 1-year of age. At the 1-year assessment participating women were asked to provide written consent for the researchers to contact them in the future and to invite them to take part in a further follow-up of themselves and their baby. Consent was obtained from all women who participated at the 12-month follow-up. Consenting participants were provided with address cards, which they were asked to return in a prepaid envelope in the event that they had a change of address. They were also asked to provide the name and address of a relative or friend who would be able to inform us of their new address or pass a letter from us onto them. Reassurance was provided that these people would only be contacted if we could not contact the participant directly.

At the 3-year follow-up, consenting participants were contacted by letter in the first instance and invited to take part in a further follow-up of their progress. As with the 1-year follow-up, the 3-year assessment was conducted over the course of two visits (for which the respondent was remunerated with a £20 gift voucher

at each visit). During the first visit (approximately 1.5 hours) the mother was asked to complete a questionnaire comprising a number of standardised outcome measures (see below). She was also interviewed using a standardised measure to assess the home environment (see below), and videotaped playing with her toddler for a period of 3 minutes. During the second visit to the home (approximately 45 minutes) an assessment was made of the toddler's development (see below). Permission was obtained to administer an assessment of the emotional and behavioural adjustment of the toddler with the child's nursery teacher (where appropriate). All nursery teachers were given a £20 book token as a gesture of appreciation.

2.2.2 Outcomes

Most of the maternal outcomes that were assessed at 12-months have been included in the 3-year assessment. Those that are no longer developmentally appropriate for the child have, however, been replaced. Additional outcomes and measures included at the three-year follow-up comprised: maternal life course; toddler preschool experiences; toddler emotional and behavioural adjustment (nursery nurse/teacher report).

<p>Maternal</p>	<ul style="list-style-type: none"> • Mental health - <i>General Health Questionnaire (GHQ-28)</i> (Goldberg, 1981) is used to identify depression, anxiety and social impairment • Social support - <i>The Social Support Questionnaire</i> (Sarason, 1983) quantifies the availability of, and satisfaction with, social support. • Parenting stress - <i>The Parenting Stress Index (PSI)</i> (Abidin, 1996) is a reliable and well-validated instrument designed to measure child, parental and situational characteristics associated with the presence of parenting stress and dysfunctional parenting, in particular in relation to stress arising from the maternal role, from parent-child interactions, and relating to child characteristics. • Parent attitudes - <i>The Adult Adolescent Parenting Inventory (AAPI)</i> (Bavolek, 1986) was designed to detect five constructs of patterns of abusive and neglectful parenting - inappropriate expectations, parent-child role reversal, lack of empathy toward the child's needs, parental value of physical punishment and parental views concerning control and the independence of the child.
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	<ul style="list-style-type: none"> • Parenting competence - The <i>Parenting Sense of Competence scale</i> (PSOC) (Gibaud-Wallston and Wandersman, 1998). This scale comprises 17 items measuring parents' perspectives of their sense of competence. Two subscales measure skills/knowledge and valuing/comfort. • Relationship with child – The <i>Child Parent Relationship Scale (CPRS)</i> (Pianta, 1994) was used to assess the mother's perceptions concerning her relationship with her child. • Relationship with partner - was assessed using the <i>Golombok Rust Inventory of Marital State</i> (GRIMS) (Rust, Bennum, Crowe & Golombok, 1988). • Self-esteem was measured using the <i>Rosenberg Self Esteem Inventory</i> (RSI) (Rosenberg, 1986). • Self-efficacy was measured using the <i>Generalised Self-Efficacy Scale</i> (Jerusalem & Schwarzer 1992) which is a reliable and validated measure of the extent to which an individual feels a personal sense of control. • Subsequent pregnancies – parent report • Life experiences – alcohol/drug use; domestic violence; life course (e.g. education; work; finances; housing etc)
Child	<ul style="list-style-type: none"> • Abuse/neglect – number of children for whom there are child protection concerns; on child protection register; child care proceedings; removed from the home • Hospital admissions and attendance at A&E • Physical and cognitive development – was assessed using the <i>Bayley Scales of Infant Development</i> (Bayley, 1969), which is a reliable and well-validated instrument covering a number of important aspects of development including motor, perceptual, cognitive and social abilities, language, comprehension, and expression. • Emotional and behavioural adjustment (nursery nurse/teacher report) - the <i>Eyberg Child Behaviour Inventory</i> (ECBI) teacher report form was used to obtain an independent assessment of the children's conduct, emotion, hyperactivity, peer problems and prosocial behaviour (ECBI) (Robinson, Eyberg and Ross, 1980). • Preschool experiences e.g. nurseries
Mother-Child	<ul style="list-style-type: none"> • Observed parent-child interaction - was assessed using a 3-minute videotape recording - <i>Child-Adult Relationship Experimental</i>

interaction	<i>Index – CARE-Index</i> (Crittenden, 1988). The CARE-Index measures three aspects of maternal behaviour (sensitivity; covert and overt hostility; unresponsiveness) and 4 aspects of toddler behaviour (cooperativeness; compulsive compliance; difficultness; and passivity). These scales are highly correlated with the infant Strange Situation assessment of pattern of attachment and also differentiate abusing from neglecting, abusing and neglecting, marginally maltreating, and adequate dyads. Scores range from 0 to 14, higher scores indicating better sensitivity and/or co-operation etc.
Environment	<ul style="list-style-type: none"> • Independent assessment of the home environment – was assessed using the <i>HOME Inventory</i> (Bradley and Caldwell, 1979). This is a well validated and reliable instrument, comprising 6 subscales including acceptance of the child, learning materials, parental involvement, parental responsibility, variety in experience and organisation of the environment. • Use of family centres and parent/toddler groups • Use of all health care services by mother and child*

* Service use data will be validated where possible (e.g. hospital; GP and social service records will be checked).

2.2.3 Methods of protecting against bias

The researcher was blind to the intervention groups. Steps were also taken to ensure that study respondents did not reveal their group allocation during the data collection process (i.e. they were asked during the contact prior to the meeting with the researcher, not to talk about which group they were in).

2.2.4 Consent

Written consent to take part in the three-year follow-up was obtained from participants prior to the data collection process. All study participants were given oral and written information about the follow-up prior to consent being obtained, and were given two weeks to make a decision about whether to take part in the follow-up. The information provided included details about the interviews and questionnaires, and reassurance concerning confidentiality and anonymity. Those participants who consented to take part were asked for their consent for further follow-up at a later date.

2.2.5 Data Analysis

The data was coded and entered onto a database using SPSS. Analysis was initially undertaken using outcome measures as continuous rather than dichotomous variables. This provided more information and increased the power of the study. Analysis of individual continuous variables was undertaken using independent groups Student's t-tests and analysis of individual categorical data was undertaken using chi-square tests. To take into account the repeated measures design of the study and the number of possible confounding and prognostic variables, including pre-natal risk assessment score and the range of services received, analysis of multiple variables were undertaken using a mixed effects, repeated measures analysis of covariance.

SECTION THREE - Results

3.1 Introduction

At the 12-month follow-up there was a significant improvement in maternal sensitivity ($p > 0.024$); and infant cooperativeness ($p < 0.011$) after adjusting for the number of risk factors at baseline. The two remaining independent assessments (Home Inventory and Bayley Scales) showed no significant difference between the two arms, and there were similarly no significant differences for any of the remaining parent or child measures.

This section of the report examines the outcomes described in section two above at three-year follow-up, to establish whether the significant effect identified at 12-months has been maintained, and whether there is evidence of sleeper effects for other outcomes.

3.2 Loss to Follow-up

The overall follow-up at 3 years was 74% ($n=97$) and was similar in both the intervention 77% ($n=51$) and the control 72% ($n=46$) groups.

3.3 Parent Outcomes

Table one shows the mean scores at 6- 12- and 36-months and results of ANCOVAs adjusting for baseline scores and total number of risk factors for maternal mental health, social support, self-esteem, relationship with partner and self-efficacy. There were no significant time by group effects for any of these measures, but a trend showing an improved relationship with partner at 36-months favouring the control group ($p < 0.08$).

TABLE One - Impact of intervention on maternal functioning - mean scores at 6- 12- and 36-months and results of ANCOVAs adjusting for baseline scores and total number of risk factors

Measure ^a	Study group	N	Assessment			ANCOVA p-values
			6- months	12- months	36- months	
Mental Health (GHQ)	Home visiting	51	14.13 (0.97)	12.79 (0.89)	12.49 (0.90)	.76
	Control	43	14.89 (1.06)	12.60 (0.97)	13.23 (0.98)	
Social Support (SSQ)	Home visiting	11	22.23 (1.36)	21.79 (2.45)	23.57 (1.35)	.99
	Control	5	14.71 (.10)	13.67 (3.71)	16.16 (2.04)	
Self-esteem (RSI)	Home visiting	47	28.37 (.62)	28.70 (.68)	30.10 (.68)	.61
	Control	44	28.08 (.64)	28.67 (.70)	29.16 (.70)	
Relationship with partner (GRIMS)	Home visiting	29	51.49 (2.56)	51.04 (2.01)	54.76 (2.16)	.08
	Control	20	54.66 (3.09)	54.89 (2.43)	50.30 (2.59)	
Self-efficacy (SEQ)	Home visiting	50	28.24 (.58)	28.98(.63)	28.94 (.57)	.77
	Control	42	26.93 (.63)	28.41 (.69)	27.99 (.63)	

^a Higher scores on the SSQ, RSI and SEQ indicate improvement; lower scores on the GHQ and GRIMS indicate improvement

Table two shows the mean scores at 6- 12- and 36-months and results of ANCOVAs adjusting for baseline scores and total number of risk factors for parenting attitudes using the five subscales of the AAPI – inappropriate expectations; lack of empathy; physical punishment; role reversal; control and independence. There were no significant time by group effects for any of the subscales, but a trend showing reduced inappropriate expectations favouring the control group ($p < 0.06$).

TABLE 2 - Impact of intervention on parenting attitudes (AAPI) - mean (SD) scores at baseline, 6- and 12-months and results of ANCOVAs adjusting for baseline scores and total number of risk factors

Measure	Study group	N	Assessment		ANCOVA p-values
			12-months	36-months	
			Mean (SE)		Time by group
AAPI scale^a					
Inappropriate expectations	Home visiting	48	4.84 (1.43)	4.76 (1.81)	.06
	Control	40	4.74 (1.43)	4.78 (1.94)	
Lack of empathy	Home visiting	49	4.85 (.19)	4.75 (.26)	.53
	Control	38	4.64 (.22)	4.85 (.29)	
Physical punishment	Home visiting	50	5.20 (.16)	5.64 (.26)	.90
	Control	41	5.37 (.18)	5.75 (.29)	
Role reversal	Home visiting	50	5.37 (.18)	5.72 (.24)	.93
	Control	41	5.26 (.20)	5.57 (.27)	
Control and independence	Home visiting	46	5.07 (.28)	4.92 (.31)	.26
	Control	40	4.77 (.30)	5.29 (.34)	

^a Higher score indicates improvement

Table three shows the mean scores at 12- and 36-months and results of ANCOVAs adjusting for baseline scores and total number of risk factors for parenting sense of competence - total score; skills and values subscales. There were significant time by group effects for the total score favouring the control group ($p < 0.05$) for parenting skills, and a trend showing greater total parenting competence for the control group ($p < 0.07$).

TABLE 3 - Impact of intervention on parenting competence (PSOC) – mean (SD) scores at 12 and 36 months and results of univariate ANCOVAs adjusting for total number of risk factors

Measure	Study group	N	Assessment		ANCOVA p-value
			12-months	36-months	
Parenting Sense of Competence Scale^a					
Parenting competence - total	Home visiting		43.55 (1.56)	41.56 (1.78)	.07
	Control		44.83 (1.61)	46.88 (1.84)	
Parenting competence - skills	Home visiting		20.34 (.79)	21.18 (.97)	.05
	Control		20.70 (.81)	24.04 (1.01)	
Parenting competence - value	Home visiting		23.10 (.93)	20.61 (.92)	.22
	Control		23.84 (.99)	22.96 (.98)	

^a Higher score indicates improvement

Table four shows the mean scores at 36-months and results of ANCOVAs adjusting for baseline scores and total number of risk factors for parenting stress. There was a trend for time by group effects for the total score favouring the control group ($p < 0.053$).

TABLE 4 - Impact of intervention on parenting stress (PSI) – mean (SD) scores at 36 months and results of univariate ANCOVAs adjusting for total number of risk factors

Measure	Study group	N	Assessment Mean (SE)	ANCOVA p-value
Parenting Stress Index				
Parenting stress – total	Home visiting	47	142.07 (2.82)	.053
	Control	44	134.07 (2.92)	

3.4 Child Outcomes

A number of independent assessments of child outcomes were made including the HOME Inventory, the Bayley Scale, and teacher reports of the Eyberg Child Behaviour Inventory.

Table five shows the mean scores at 12- and 36-months and results of ANCOVAs adjusting for baseline scores and total number of risk factors for the HOME Inventory (e.g. total score and six subscales) There were no significant time by group effects for any of the scales.

TABLE 5 - Impact of intervention on home environment (HOME) – mean (SD) scores at 12- and 36-months and results of univariate ANCOVAs adjusting for total number of risk factors

Measure	Study group	N	Mean (SD)		ANCOVA p-value
			12-months	36-months	
<i>HOME Scale^a</i>					
Total score	Home visiting	67	33.41	24.76	.98
	Control	64	32.16	23.45	
Acceptance of child	Home visiting	67	2.46	2.84	.97
	Control	64	2.39	2.76	
Provision of learning materials	Home visiting	67	7.23	5.55	.75
	Control	64	6.81	5.31	
Parental involvement	Home visiting	67	4.37	2.76	.32
	Control	64	3.86	2.60	
Parental responsibility	Home visiting	67	8.63	6.11	.61
	Control	64	8.14	5.30	
Variety of experience	Home visiting	67	2.84	2.46	.97
	Control	64	2.76	2.39	
Organization of the environment	Home visiting	67	4.40	3.47	.47
	Control	64	4.55	3.36	

^a A higher score indicates improvement

Table six shows the mean scores at 12- and 36-months and results of ANCOVAs adjusting for baseline scores and total number of risk factors for the Bayley Scales – Mental Development Index and Emotional Development Index. There were no significant time by group effects for either scale.

TABLE 6 - Impact of intervention on infant development (Bayley Scale) - mean(SD) scores at 12 months and results of univariate and multivariate ANCOVAs adjusting for total number of risk factors

Measure	Study group	N	Mean (SD)		ANCOVA p-value
			12-months	36-months	
<i>Bayley Scale Indices^a</i>					
Mental Development Index	Home visiting	48	95.31	90.10	.28
	Control	48	93.73	92.48	
Emotional development Index	Home visiting	49	43.13	38.64	.37
	Control	48	42.41	39.20	

^a A higher score indicates improvement

Table seven shows the mean scores at 36-months and results of ANCOVAs adjusting for total number of risk factors for the parent and teacher-reports of child behaviour. There were no significant time by group effects for parent-reports of the number or intensity of problems or for teacher reports of the intensity of problems (number not analysed).

TABLE 7 - Impact of intervention on child emotional and behavioural adjustment (Eyberg Child Behaviour Inventory) – mean (SD) scores at 36-months and results of univariate ANCOVA's adjusting for total number of risk factors

Measure	Study group	N	Mean (SD)	ANCOVA p-value
<i>Eyberg Child Behaviour Inventory a</i>				
Parent report - Number of problems	Home visiting	38	6.60 (1.31)	.32
	Control	38	8.45 (1.31)	

Parent report - Intensity	Home visiting	40	103.97 (5.71)	.85
	Control	36	109.35 (5.41)	
Teacher report - Number of problems	Home visiting	41	2.85 (5.41)	.09
	Control	40	2.47 (6.03)	
Teacher report - Intensity	Home visiting	40	89.82 (36.46)	.56
	Control	38	95.24 (44.85)	

^a A lower score indicates improvement

3.5 Parent-Child Interaction

Maternal sensitivity and infant co-operativeness was assessed using the CARE-Index. Table eight shows the mean scores at 12- and 36-months and results of ANCOVAs adjusting for baseline scores and total number of risk factors for the HOME Inventory (e.g. total score and six subscales) There were no significant time by group effects for either of the two scales.

TABLE 8 - Impact of intervention on mother-child interaction (CARE-Index) - mean(SD) scores at 12 months and results of repeated measures ANCOVA adjusting for total number of risk factors

Measure	Study group	N	Mean (SE)		ANCOVA p-value
			12-months	36-months	
<i>CARE Index scale^a</i>			12-months	36-months	
Maternal sensitivity	Home visiting	32	9.21 (.54)	9.09 (.41)	.14
	Control	38	8.55 (.49)	8.59 (.38)	
Infant cooperativeness	Home visiting	38	9.36 (.63)	9.68 (.48)	.09
	Control	32	8.14 (.58)	9.35 (.44)	

^a A higher scores indicates improvement

3.6 Summary

The significant improvement in maternal sensitivity and infant co-operativeness that was identified at 12-months was not maintained at the 3-year follow-up.

The only significant differences or trends towards significance at 3-years favoured the control rather than the intervention group.

SECTION FOUR - Child Abuse Data

4.1 Introduction

Due to the low base-rate of child abuse in the population, a range of proxy measures were used as primary outcomes in the primary study. Given the high-risk status of many of the women in the current study, it was nevertheless deemed worthwhile to collect data about child protection.

The 12-month follow-up data showed that while there were similar numbers of child protection concerns identified in both groups between 6- and 12-months postnatal (17% home visiting and 15% control group), there was a non-significant increase in the likelihood of infants in the intervention group being placed on a child protection register or being the subject of care proceedings (rr: 1.35 CI: 0.86 to 2.11), and a non-significant difference in the proportion of children being removed from the home (6% compared with 0%). Half of these children were returned to the home at a later date. There was one death in the control group about which there were child protection concerns and for which an open verdict was reached.

The next section reports the findings of child abuse data at both 1- and 3-year follow-up. It should be noted, that discrepancies between the 1-year data reported here, and that reported at the time, is due to the fact that the original 1-year data was obtained from health visitors. The data reported below, is as such, more accurate.

4.1 Methods

4.1.1 Sample

Child abuse data was collected on the entire original sample of 131 mother-child pairs.

4.1.2 Data collection

Child abuse data was obtained from social service department and health visitors who had access to case records. This method avoided bias associated with obtaining data from trial participants, including recall difficulties.

At recruitment, participating women gave written consent for health and social services records to be accessed for costing purposes.

Initial inquiries were made of primary care trusts (PCTs) to establish children's current whereabouts, and confirm they were still alive. Where necessary, families were also located in other ways, for example, from addresses of family and friends provided for this purpose.

In PCTs, children have one set of notes, which is retained by the current health visitor. Therefore, children's current health visitors were sent data collection questionnaires (see below for further detail). In addition, all Children and Family Service records held by individual Local Authorities were sent data collection questionnaires.

Where discrepant dates were provided by health and social services dates provided by social services were used where the discrepancy was small (i.e. a few days), since these are likely to be more accurate. Where discrepancies were large, additional clarification was sought.

4.1.3 Loss to follow-up

Children who had moved local authority were deemed to be lost-to-follow-up unless information was obtained from all the local authorities in which they had resided; however, in some cases health records provided a sufficiently comprehensive overview of social services involvement.

4.1.4 Confidentially

To preserve confidentiality, study ID numbers, rather than names were used on all questionnaires. Separate covering letters identified the child included in the study; instructions required this letter to be stored separate from the completed questionnaire.

4.1.5 Outcomes

Outcome data collected included the following:

- Child known to Children and Family Social Services (i.e. child “in need” of services or “at risk” of significant harm, Children Act 1989). Number of episodes, dates case opened and closed;
- Child protection concerns; nature of those concerns;
- Child on child protection register (i.e. at risk of or suffering significant harm). Number of registration episodes, category of registration, dates placed on and removed from register;
- Child subject of public or private legal proceedings, whether order was made, type of order, child removed from the home in the context of court proceedings, dates child removed and returned;
- Child spent time away from home other than due to court proceedings e.g. to live with a carer selected by child’s family, in local authority foster care with parental consent under section 20 of the Children Act 1989, dates child left and returned home;
- Whether study child had died, whether death might possibly be associated with maltreatment.

4.1.6 Blinding

To reduce bias, data collection, data entry and statistical analyses were undertaken blind.

4.1.7 Data entry

Data were entered into the statistical software package SPSS. Data were checked to minimise input errors.

4.1.8 Data analysis

An intention-to-treat analysis was undertaken, and data are presented for both one and three-year follow up.

Tests revealed data were not normally distributed. Therefore, non-parametric tests of significance were conducted; Chi Squared tests were employed for categorical data, and Mann-Whitney tests for continuous data.

To compare maltreatment outcomes with other data it was necessary to categorise trial subjects as maltreated or not maltreated. Children were categorised as maltreated if their name had been placed on the Child Protection Register, or if they had been removed from home at any point in the first three years of their life.

Correlations were made between maltreatment, number of risk factors and number of home visits undertaken. Pearson correlation was used because data on risk factors and home visits were continuous and normally distributed. For these analyses, <0.05 was taken to represent statistical significance.

4.2 Results

4.2.1 The Sample

The final sample comprised 126 mother-child pairs. The 126 children in the sample were born between 2001 and 2003. In the intervention group 6% were born in 2001 ($n=4$), 65% were born in 2002 ($n=43$) and 29% were born in 2003 ($n=19$). In the control group 7% were born in 2001 ($n=4$), 72% were born in 2002 ($n=43$), and 22% born in 2003 ($n=13$).

The intervention group children consisted of 48% females (n=32), 48% males (n=32); for 3% of children their sex was not recorded (n=2). The control group consisted of 48% females (n=29) and 52% males (n=31).

At three-years follow up, 56% (n=71) of the total sample had moved from their address at the trial outset: 56% in the intervention group (n=37), 57% in the control group (n=34). At three-years follow up, 9% of children (n=11) had moved to a different local authority: intervention group 12% (n=7), control group 8% (n=5).

4.2.2 Response rate

Health visitors completed questionnaires for 83% (n=105) of the total sample: 79% (n=52) of the intervention group and 88% (n=53) of the control group. Children and Family Services, in the borough where families resided at the trial outset, completed questionnaires in relation to 100% (n=126) of the children. For intervention group families that had moved between local authorities, Children and Family Services provided information in 4 out of 7 cases; for the control group in 3 out of 5 cases. In all cases where a second local authority had not provided information, health visitors had provided information about the children.

4.2.3 Children and Family Services involvement

At both one and three years, very similar proportions of children in the intervention and control groups had become known to Children and Family Services. At one year, 24% (n = 16) of the intervention group were known and 23% (n = 14) of the control group. At three years, this was 41% (n=27) for the intervention group and 38% (n=23) for the control group (Table 1).

Table 1: Children judged “at risk” or “in need” by Children and Family Services, and subsequent interventions

	<i>One year</i>			<i>Three Years</i>		
Proportion% (n)	Intervention	Control	p	Intervention	Control	p

	(n=66)	(n=60)	value	(n=66)	(n=60)	value
Referred to Children and Family Services	24.2 (16)	23.3 (14)	0.91	40.9 (27)	38.3 (23)	0.77
On Child Protection Register	7.5 (5)	5.1 (3)	0.55	9.0 (6)	6.8 (4)	0.62
Removed from mother's care	9.1 (6)	3.3 (2)	0.19	13.6 (9)	10 (6)	0.53
Removed from mother's care; not subsequently returned	3	1	0.36	(6)	(4)	0.73
Removed from mother's care; subsequently returned	3	1	0.36	(3)	(2)	0.73
Combined outcome: on Child Protection Register or removed from mother's care	(7)	(4)	0.43	(10)	(8)	0.77
Child died	0 (0)	1.7 (1)		0 (0)	3.4 (2)	0.14
Child protection concerns—any health or social services professional				28.8 (19)	21.7 (13)	0.36

Children in both groups became known to Children and Family Services at virtually identical ages, 352 days for the intervention group (SD 369.2) and 355 days for the control group (SD 428.2). Of those who became known to Children and Family Services, the majority in both groups became known before the age of one year (intervention group 59% (n=16); control 61% (n=14)).

Data on length of time known to Children and Family Services indicate how long children remained assessed as being in need or at risk (Table 2). Children in the intervention group were likely to have been known on average for 130 days longer: intervention group 374 days (SD 379.5), control group 243 days (SD 301.3). Again, standard deviations are large and the difference is not statistically significant.

Table 2: Age of children when judged “at risk” or “in need” by Children and Family Services, and duration of subsequent intervention

Days	<i>Intervention (n=66)</i>		<i>Control (n=60)</i>		<i>Mann Whitney Asymp. Sig (2-tailed)</i>
	No	Mean (SD)	No	Mean (SD)	
Age first referred to Children and Family Services	27	352.1 (369.2)	23	355.3 (428.2)	0.89
Total number of days child’s case remained open with Children and Family Services (may include more than one episode)	27	373.5 (379.5)	23	243.0 (301.3)	0.19
Age of child when case was last open to Children and Family Services	27	811.4 (323.2)	23	776.4 (364.6)	0.63
Age of child when first placed on Child Protection Register	6	284.3 (375.3)	4	246.5 (520.2)	0.29
Total number of days child remained on Child Protection Register	6	265.5 (213.5)	4	523.8 (443.7)	0.52
If name removed from on Child Protection Register, age removed	6	549.8 (364.9)	4	770.3 (377.9)	0.28
Age child removed from mother’s care	9	351.89 (346.22)	6	551.17 (391.55)	0.41
Time away from mother’s care	9	424.33 (422.22)	6	271.50 (297.42)	0.91
If returned to mother’s care, age returned	3	776.22 (486.02)	2	822.67 (430.12)	0.78

The age when children were last known to Children and Family Services was slightly older for the intervention group—again a non significant difference: intervention group 811 (SD 323.2), control group 776 (SD 364.6).

Table 3 shows similar proportions of children in each group in terms of the number of Social Services episodes.

Table 3: Children and Family Services, number of episodes where involved

<i>Episodes of involvement</i>	<i>Intervention (n=66), proportion% (n)</i>	<i>Control (n=60), proportion% (n)</i>
0	59.1 (39)	61.7 (37)
1	30.3 (20)	21.7 (13)
2	4.5 (3)	8.3 (5)
3	1.5 (1)	5.0 (3)
4	3.0 (2)	1.7 (1)
5	0 (0)	1.7 (1)
6	1.5 (1)	0 (0)

4.2.4 Child protection concerns

Child protection concerns—defined as concerns recorded by any health or social services professional—existed in relation to a higher proportion of children in the intervention group (29%, n=19) than the control group (22%, n= 13), a non-statistical difference of 7% (Table 1).

Among children subject to child protection concerns, physical abuse was the primary concern for 2% (n=1) in both the intervention and control groups (Table 4). Among both groups, the primary area of concern was neglect: intervention group 17%, control group 13%. Slightly more children in the intervention group were identified as suffering from neglect. Intervention children were also more likely to have been identified as suffering from emotional abuse; intervention group 11%, control group 7%. None of the differences approach statistical significance.

Table 4: Primary category of child maltreatment

	Intervention (n=66)		Control (n=60)	
	%	(n)	%	(n)
None	71.2	(47)	78.3	(47)
Physical Abuse	1.5	(1)	1.7	(1)
Emotional Abuse	10.6	(7)	6.7	(4)
Neglect	16.7	(11)	13.3	(8)
Sexual abuse	0	(0)	0	(0)

Table 1 shows that by one year, the names of 8% of children in the intervention group (n=5) and 5% (n=3) of children in the control group had been entered on the child protection register (CPR). At three years, 9% (n=6) of the intervention group and 7% (n=4) of the control group had ever had their names placed on the register. Among children in both groups, for the majority of those whose names were ever placed on the CPR, registration occurred before they were one-year-old; only one child in each group had their name added when aged older than one year. At both one and three years, slightly more children in the intervention group had their names recorded on the Child Protection Register—a non significant difference.

Of those children whose names were placed on the CPR, the mean age that this occurred was similar for each group, with intervention group children being registered slightly later (Table 2). Among the intervention group, mean age added to the register was 284 days (SD 375.3), mean age for the control group was 247 days (SD 520.2), a non-significant difference.

Intervention group children spent on average less time on the Child Protection Register than control group children: intervention group 266 days (SD 213.5), control group 524 days (SD 443.7). Standard deviations are large, and there is

no statistically significant difference. Intervention group children spent a shorter time on the register principally because they were registered slightly later on average, and because they were removed from the CPR at an earlier age than control children. On average, intervention group children were aged 550 days (SD 364.9) when removed from the CPR, control group children 770 days (SD 377.9).

By three years, 15 children had been removed from their mother's care. In all cases, Social Services were involved in initiating or facilitating the removal.

At both one- and three-years follow-up, more children in the intervention group had been removed than in the control group (Table 1). At one year, 9% (n=6) of the intervention group and 3% (n=2) of the control group children had been removed. At three years, the figures are 14% (n=9) for the intervention group and 10% for the control group (n=6). At neither point were these differences statically significant. The initial one-year follow-up study obtained from health visitor records only, suggested that no control group children had been removed from their mother's care: a trend approaching significance ($p = 0.07$). The fuller data presented here suggest a true value of 0.19.

Of those removed, children in the intervention group were removed on average earlier (Table 2). The mean age for intervention children leaving their mother's care was 352 days (SD 346.22), and for control children 551 days (SD 391.55) ($p = 0.41$). The majority (67%) of intervention group children were removed before the age of one year (control group 33%). Figure 1 shows the ages of children when removed from their mother's care.

Among children who were removed from their mother's care, intervention children spent on average more time out of her care: intervention group 424 (SD 422.22), control group 272 (SD 297.42). However, standard deviations are large and the difference is not statistically significant.

Of children removed, identical proportions in each group were returned (intervention group 33%, n=3, control group 33%, n=2); the difference in absolute numbers is small and not statistically different.

Combining numbers of children either on the Child Protection Register or removed from their mother's care yields the total number of children identified as requiring intensive intervention through the child protection process, a measure of maltreatment. Even combining these outcomes results in small numbers—a total of 18. Table 1 shows that, in the intervention group, the majority of such children were identified before one year, 70% (n = 7/10); in the maltreated group 50% were identified before one year (n = 4/8). Greater numbers of children in the intervention group were identified as maltreated; however, differences are small and not statistically significant.

No children in the intervention group, and two children in the control group, died (Table 1). One child for whom child protection concerns existed died before the age of one year and the coroner recorded an open verdict. A second child died from an organic disease after one year. A paediatrician involved had a high level of concern about non accidental bruises on the child, but the child died before a child protection investigation could take place.

4.2.5 Maltreatment among children aged three years and older

Data concerning maltreatment among children aged three years and older shows that in the intervention group one child was removed from the home for two weeks for her mother to have respite. This was not due to child protection concerns. Another child had their name placed on the Child Protection Register for the first time at three and a half years. In the control group one child had their name placed on the Child Protection Register for the second time after three years, and was removed from the home when four-years-old due to neglect.

4.2.6 Predictors of abusive parenting

This section compares children known to have been maltreated in the first three years of life, with all other children. Those deemed maltreated comprised 18 children (14% of the total) who were ever placed on a Child Protection Register or removed from their mother's care in the first three years of life.

5.2.6.1 Correlation between number of maternal risk factors and subsequent child maltreatment

Data on maternal risk factors was available for the whole sample. The mean number of maternal risk factors for the intervention group was 5.4 (SD 2.8) and for the control group 4.8 (SD 2.2). Data was sufficiently normally distributed for the Pearson correlation test to be employed. A significant correlation between number of maternal risk factors and subsequent child maltreatment was observed among the intervention group (0.004), but not among the control group (0.302).

5.2.6.2 Correlation between number of health visitor home visits and maltreatment

Data were available on 104 mother-child pairs (83% of the total) regarding number of health visitor home visits; intervention group 89% (n=59), control

group 75% (n=45). The mean number of visits among the intervention group was 41.2 (SD 10.9), among the control group 9.0 (SD 6.9).

Among both groups, numbers of visits were reasonably normally distributed. Mothers in the intervention group received up to 70 home visits. There was a non-significant Pearson correlation of 0.07 between the number of visits and child maltreatment; children who received a higher number of visits were more likely to have been identified as maltreated. About half the group had more, and about half less than 40 visits. A chi square test was conducted to determine whether receiving more or less than 40 visits yielded a significant difference in child maltreatment outcomes; a non-significant result was obtained.

For the control group, the distribution of visits was 0-28, producing a non-significant Pearson correlation with child maltreatment of 0.06. It was noted that all the maltreated children had more than 10 visits. A chi-square test was conducted to determine whether receiving more or less than 10 visits yielded a significant difference in child maltreatment outcomes; a non-significant result was obtained.

3.4 Summary

Non-significant trends were identified suggesting that children in the intervention group who suffer maltreatment are more likely to be identified, and more likely to suffer maltreatment for shorter periods of time. These differences may be clinically important, and may have reached statistical significance in a larger trial.

SECTION FIVE – Economic Analysis

5.1 Introduction

The results of the economic analysis at the 12-month follow-up showed that the mean total cost of intervention was £3,874 for control families and £7,120 for home visited families. The incremental cost of the intervention arm was therefore £3,246 (bootstrapped 95% confidence interval for the difference: £1,645 - £4,803), with 72% of these extra costs being due to additional home visits.

In terms of the cost-effectiveness analysis bootstrapping methods were used to examine the variation around the costs and effects generated by the trial data, and showed that for the outcomes 'reduced risk of exposure to abuse' and maternal sensitivity/infant co-operativeness the intervention was always more costly but also more effective. The incremental cost-effectiveness ratio (ICER) for a reduced risk of exposure to abuse was £824 (i.e. the mean additional cost of reducing risk exposure by one month). Similarly, the ICERs for maternal sensitivity and infant co-operativeness were £2,723 and £2,033 respectively namely that for an extra unit of maternal sensitivity it would cost an extra £2,723 in home visiting resources and likewise for an extra units improvement in the infant cooperativeness outcome measure it would cost an extra £2,033.

Looking at the 12-month economic results from a decision makers viewpoint the cost-effectiveness acceptability curves showed that if decision-makers were willing to pay £2,500 to reduce an infants risk of exposure to maltreatment by one month, the home visiting service would have a 90% probability of being cost-effective and if they were willing to spend £3,100 to reduce the risk of exposure to maltreatment by one month, the home visiting intervention would have a 95% probability of being cost-effective. Similarly, the cost-effectiveness acceptability curve for maternal sensitivity revealed that if decision-makers were willing-to-pay £16,100 per unit improvement in maternal sensitivity, there was a 95% chance that the home visiting intervention would be cost-effective for this outcome. For

infant co-operativeness, a willingness-to-pay of £4,000 per unit improvement would have resulted in a 95% chance that the intervention would be cost-effective for this particular outcome.

This section reports the results of the three-year economic follow-up in which women taking part in the trial were followed up from 12 months to 36 months and their resource use for this period identified, measured and valued.

5.2 Methods

5.2.1 Cost-effectiveness data

Continuing from the original study, the economic component comprised a cost-effectiveness analysis (using effectiveness data obtained from the study). The cost data was collected as an integral part of the data collection process (i.e. each questionnaire included questions concerning service use during the last 12 months – see below). Unit costs were attached to the items of resource used to identify a mean difference in costs between the two arms of the trial.

Incremental cost-effectiveness ratios and their associated measures of variance were then estimated. Where no significant differences in effectiveness were found, the economic evaluation explored the probability of cost-effectiveness analysis using bootstrapping methods.

As part of the economic analysis a Markov model was developed using the cost and outcomes data generated in this three-year follow-up combined with those identified in the original study. The aim of this economic model was to explore the potential longer term costs and benefits of the home visiting intervention as recommended by Olds et al (1993) and Morrell et al (2000).

5.2.2 Data collection

The resource utilization questionnaire (*see Appendix 2*) administered at 2, 6 and 12 months to women participating in the Home Visiting trial was administered at 36 months. This questionnaire asked the women about their resource utilization over the last 2 years since the 12 month follow up point. Unit costs (2007/8) adjusted by appropriate quantities were attached to the items of resource-use to obtain a study cost. Costs were summed for each participant and the mean difference in costs between the two arms of the trial estimated. Unit costs were attached to resources to allow the reporting of variance in cost arising through economic significance as well as statistical significance. The majority of unit costs were obtained from Netten & Curtis (2007) and the 'New NHS' 2007/8 reference costs. Hospital and Community Health Services (HCHS) and Personal Social Services (PSS) inflationary indices were used where relevant. Discount rates of 3.5% were applied where appropriate (HM Treasury 2003). An overall societal perspective was adopted such that costs to the health service, social services, legal costs, local authority housing costs and costs to families were included. However sensitivity analysis was carried out on the perspective adopted such that a 'health service' only cost perspective was also identified.

As this is a follow up study, it was anticipated that the data would suffer from a proportion of loss to follow-up i.e. attrition. As a consequence, any missing data were analyzed to identify type of 'missingness' in the first instance to assess the most appropriate method of data handling (Briggs et al 2003). Where the data were missing completely at random (MCAR) due to random drop-out (i.e. where the drop-out was not a function of allocation group) then appropriate statistical methods were employed. Often, however, it is the case that missing data are not MCAR and hence this assumption must firstly be tested before appropriate statistical imputation methods are employed. In order to carry out these analyses the missing IDs were re-instated and data analyzed according to type of missingness. In addition to this, tests of normality in the cost data distributions were tested using non-parametric one sample KS tests. Where such tests were

rejected the skewness has been reported, and median values reported alongside the mean values, and the 95% confidence intervals for the mean cost difference have been computed using non-parametric bootstrapping methods.

5.3 Results

The three year data set for the economic analyses comprised 102 women, a loss to follow-up of 22%. Analyses of these drop-out data to test for type of 'missingness' revealed no statistically significant difference in drop out as a function of either trial allocation ($p=0.73$) or as a Pearson's correlation incorporating the sum of risk factors ($p=0.884$). Based on these results and given the presence of unit non-response missing data, IDs for these data were reinstated and regression algorithms were employed to impute missing data for key cost variables as well as the total cost variables.

A mean cost estimate per woman per arm of the trial was computed. Tests of normality on the cost data distributions were rejected (one sample KS tests, $p<0.000$). The 95% confidence interval for the cost difference between arms was therefore obtained using non-parametric bootstrapping methods.

The mean health service only costs in the control and intervention arms at 36 months were: £1,826 vs. £3,329, a difference of £1,503, $p = 0.083$ (bootstrapped 95% confidence interval for the cost difference: -£609 - £2,565). The mean societal costs in the control and intervention arms at 36 months were: £3,963 vs. £4,196, a difference of £233, $p=0.812$ (bootstrapped 95% confidence interval for the cost difference: -£2,740 - £1,454). The total health and societal costs of the intervention arm shown in Table 1 are statistically significantly greater for home visits for both study mother and infant (although we can assume these were the same visits). Additional greater although non-significant health and social service costs incurred in the intervention arm were for: GP appointments for the study

infant; social work home visits for the study mother; alcohol and drug support for the study mother; paediatric visits for the study infant; psychiatrist costs for the study mother and housing department appointments. A number of resource costs, however, were non-statistically greater in the control arm, these were for: social worker home visits for the study infant; obstetric appointments for the study mother; family centre visits for the study mother and infant; local advice centres; citizen's advice bureau visits and private child care.

Table 1 Mean cost differences arising between arms of the trial at 36 months follow up for key cost variables

Resource Use	Control costs	Home Visiting costs	Mean Cost Difference	P
GP Visits (Infant)	£170	£217.70	£47.70	0.4
Social worker home visits (Mother)	£93.43	£249.33	£155.89	0.2
Social worker home visits (Infant)	£165.55	£36.87	(-)£128.68	0.1
Alcohol/drug support appointments (Mother)	£82.12	£761.87	£679.75	0.3
Pediatrician appointments	£4.40	£48.83	£44.43	0.3
Obstetrician appointments	£281.86	£143.60	(-)£138.26	0.3
Psychiatrist appointments (Mother)	£213.02	£313.31	£100.29	0.6
A&E Visits (Infant)	£51.70	£102.48	£50.78	0.3
Home start visits (Mother & Infant)	£5.63	£924.38	£918.75	0.016*
Family centre Visits	£267.81	£58.24	(-)£209.57	0.14
Housing department appointments (Mother)	£24.15	£43.35	£19.20	0.24
Housing department appointments (Infant)	£4.28	£32.78	£28.50	0.079
Citizens Advice Bureau (Mother)	£2.10	£0.00	(-)£2.10	0.074
Local Advice Centre	£97.53	£0.00	(-)£97.53	0.3
Private child care (Infant)	£706.87	£307.09	(-)£399.78	0.3
Total Health Service cost	£1,826	£3,329	£1,503¹ 95% CI²: (-£609 : £2,565)	0.083
Total Societal cost³	£3,963	£4,196	£233¹ 95% CI²: (-£2,740: £1,454)	0.8

¹ The total cost variable includes all costs, not only those which were statistically significantly different, and not all reported in the Table above. This allows cost

differences to be economically significant although not statistically so. For a comprehensive list of all resource items included see Appendix 1.

² The 95% confidence interval for the cost difference was obtained using non-parametric bootstrapping to account for the skewed nature of the cost data in each arm of the trial.

³ Societal costs include all health service costs and the following costs: preschool, child and family team costs, family centre costs, sure start costs, home start costs, housing department appointment costs, women's aid costs, legal aid costs, citizens advice bureau costs, local advice centre costs, crèche costs, shoppers crèche costs, playgroup costs, private child care costs and 'other' costs.

* Statistically significant at the 5% level.

Combined data from 12 months and 36 months

Combining the societal 12 month cost data with the 36 month cost data by inflating the 12 month cost data to 2007/8 levels reveals that at 36 months the total societal cost of the home visiting arm is £12,427 compared to the control arm of £8,441, a difference of £3,985 (95% bootstrapped CI for the cost difference: £192 - £5,297). Looking at the 'health service only' costs, at 36 months the cost of the home visiting arm is £9,901 while the control arm is £5,669, a difference of £4,232 (95% bootstrapped CI for the cost difference: £1,949 - £5,709). Figures 3 and 4 below show these figures graphically.

Figure 3 Combined 12 and 36 month societal costs

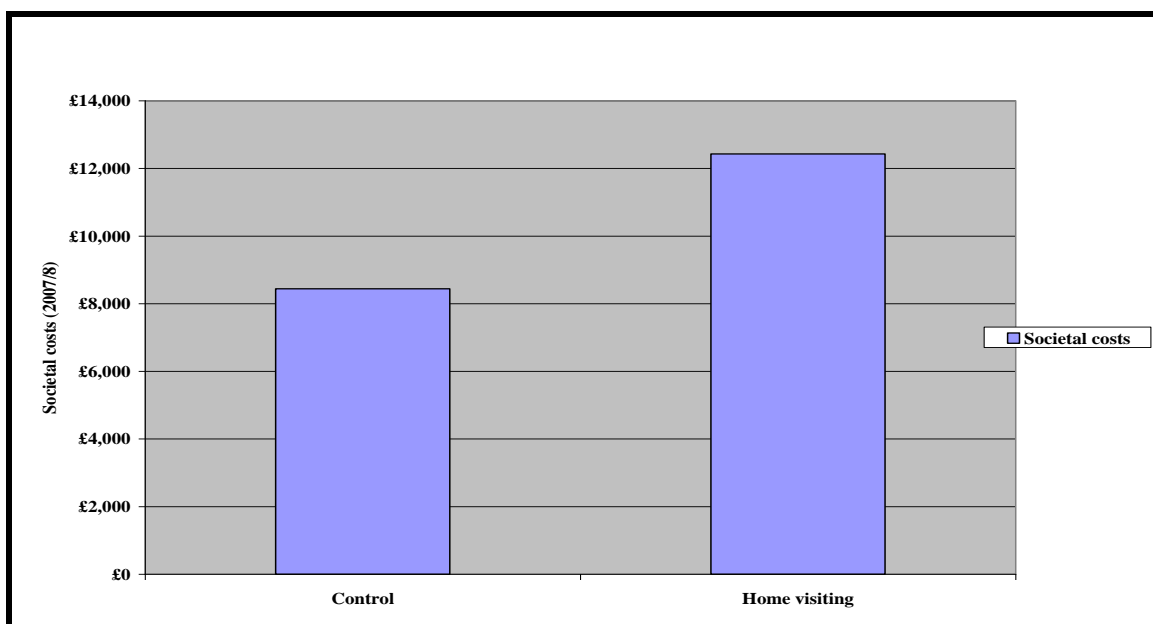
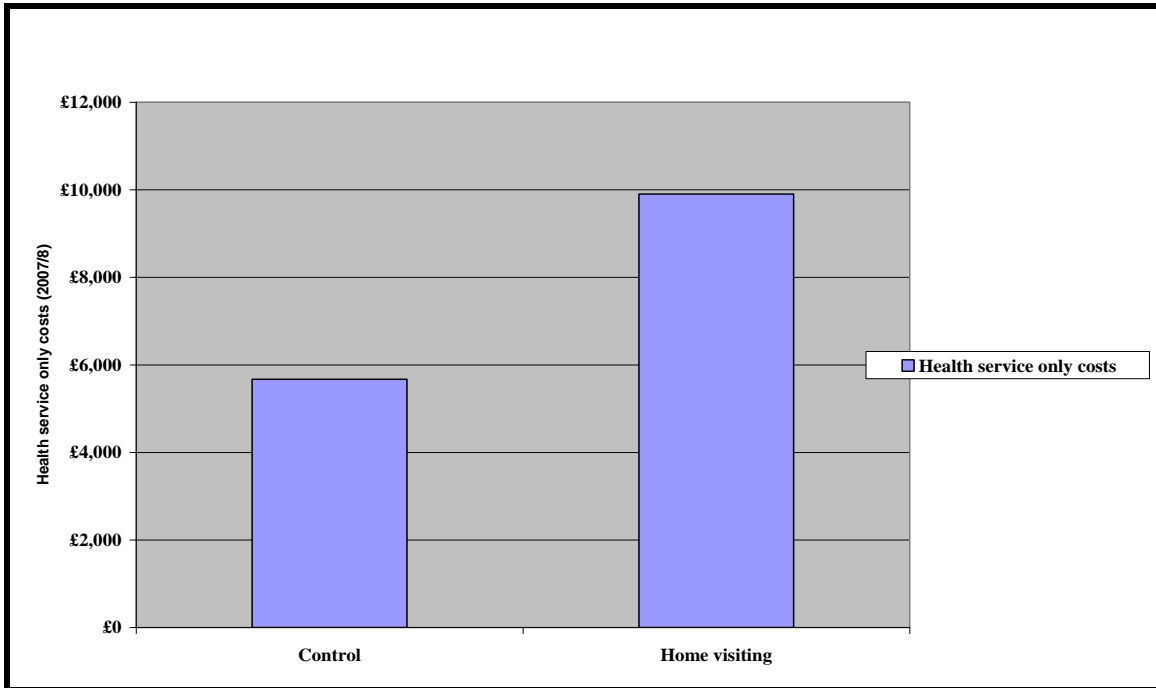


Figure 4 Combined 12 and 36 month health service only costs



Extrapolation beyond the end of the follow-up period

In the absence of neither statistically significant outcome summary scores nor statistically significant sub groups of summary scores (as identified in the original study) this analysis has been restricted to a cost-analysis. However, it has been possible to extrapolate the costs from their original 12- and 36-month time points to 5 years to give an indication of the 5 year time point costs of the home visiting intervention. In order to do this, the original 12-month trial costs were inflated to allow all costs to be compared in the same base year, 2007/8. To do this the readily available HCHS inflator was used. The extrapolation was done using both a linear trend and an exponential growth function for the difference in costs. The linear trend fits a linear prediction trend line as a function of available data while the exponential growth function also calculates predicted exponential growth by using existing data. Two time points were available to carry out the extrapolation, 12 months and 36 months. The results, shown in Figures 1 and 2 below, reveal that using these functions the cost differences between the arms of the trial would be between £277 and £828 at 5 years (60 months). The linear trend function predicts the converging of costs at 5 years and 5 months (65 months) whereas the exponential growth function predicts the converging of costs much later at 20 years. Given the empirical cost estimates from which the prediction was based and the declining nature of the costs the exponential trend may better predict the costs, due to the fact that since the services are aimed at the early years of an infant's life it may be the case that costs based on this model are predicted further into the future than is actually the case.

Figure 1: Linear Trend Extrapolation of Trial Health Service Cost data

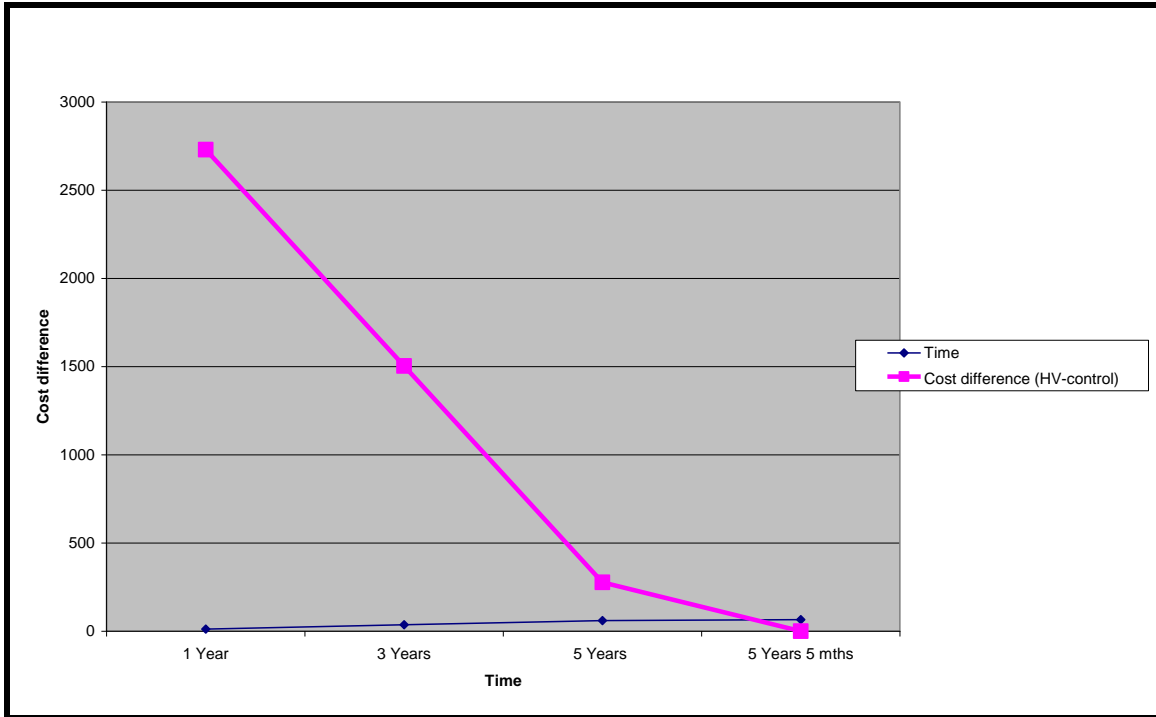
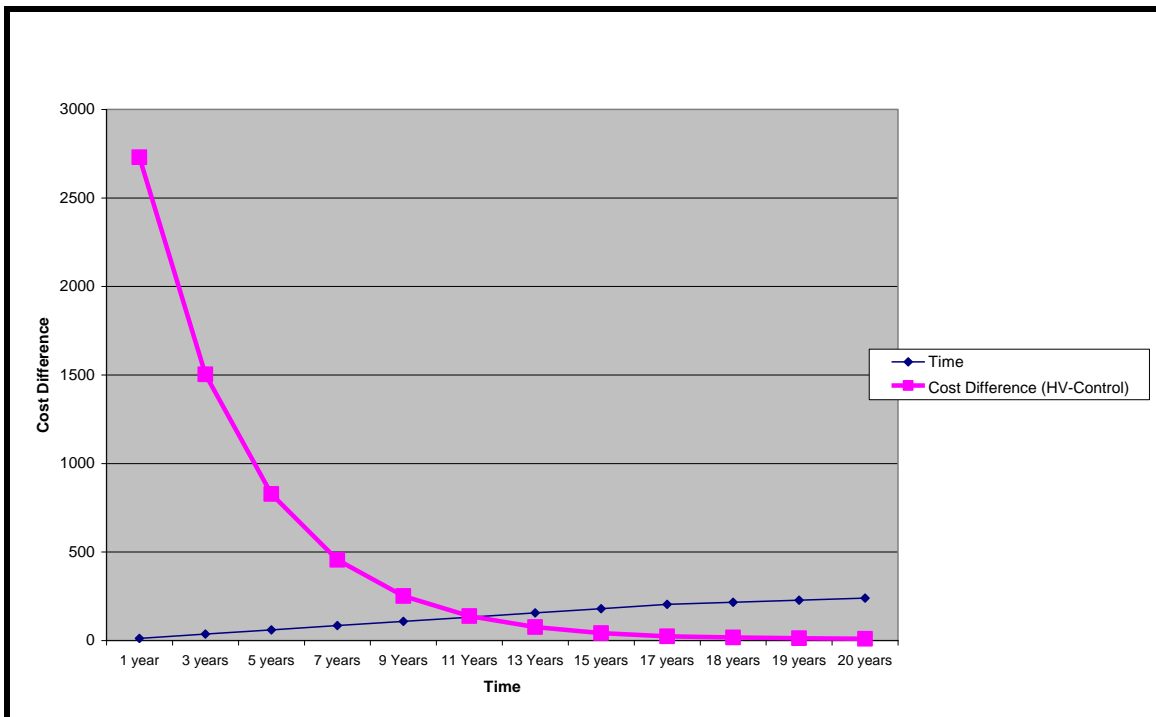


Figure 2: Exponential Power Curve Extrapolation of Trial Health Service Cost data



Following on from the above and given literature in this area it is important to also highlight that it is predicted that such parenting interventions are highly likely to give rise to a substantial number of societal and health service cost savings in future years of infants lives⁸.

5.3 Summary

The results suggest that intensive home visiting improved maternal sensitivity at 12-months and better enabled health visitors to identify infants in need of further protection at an incremental cost of £3,985 (95% bootstrapped CI for the cost difference: £192 - £5,297) per woman at 36 months. Looking at the 'health service only' costs, at 36-months the incremental cost was £4,232 (95% bootstrapped CI for the cost difference: £1,949 - £5,709). The extent to which these potential benefits are worth the costs, however, is a matter of judgment.

SECTION SIX – User Views

6.1 Introduction

In-depth interviews with women who had received the service at the 12-month follow-up showed a high level of satisfaction across the board, and provided moving testimony concerning participants' perceptions about the impact of the service on the lives of themselves and their children. A number of themes were identified which showed that despite their initial concerns and negative preconceptions about health and social service professionals, women greatly valued the relationship with their home visitor and identified a number of ways in which they had benefited. These included increased confidence, improved mental health, improved relationships including closeness with their baby, fewer child behaviour problems in the infant's siblings, and changes in their attitudes toward professionals. Although some participants clearly resented the involvement of social services, no adverse effects of the intervention were reported (ref).

The aim of the interviews at the 3-year follow-up was to explore in detail mothers' perceptions about their progress and that of their infants since the last follow-up, and the contribution of the home visiting intervention to any benefits or problems since then.

6.2 Methods

6.2.1 Sample

In-depth interviews were conducted with a purposive sample (n=20) of women who had received the intervention.

6.2.2 Data collection

This data was collected during the last six months of the 3-year follow-up with women who had already completed the quantitative data collection process, to ensure that blinding was not lost.

6.2.3 Method of working

Interviews were undertaken in the participants' homes. A semi-structured interview topic guide was used to explore the mothers' views about her own progress and that of her toddler, since the last follow-up, and the contribution of the home visiting intervention to any benefits or problems that they had experienced.

Interviews were exploratory and interactive in form, and questioning was responsive to the views, experiences and circumstances of the individuals involved.

2.3.5 Data analysis

Interviews were recorded, fully transcribed, and analysed using 'framework' analysis (Richie J, Spencer L 1994). This involved subjecting the transcripts to a rigorous content analysis, by systematically sifting, summarising and sorting the verbatim material according to key issues and themes, within a thematic matrix.

6.3 Results

6.3.1 Uptake

A total of 40 invitation letters were sent out, eliciting 18 positive responses in total. Five women stated they did not wish to take part in a follow-up interview.

Despite the use of a random process to select participants, around half of the women who took part in the three-year follow-up had also taken part in the 12-month qualitative follow-up. This may be due to the fact that a significant number of families had changed their contact details and were no longer traceable.

A total of 18 women were interviewed, with a mean number of six risk factors and an average of 46 visits from home visitors.

The findings reported are structured around the key themes and issues emerging

from the research, grounded in the accounts of the respondents. They have been illustrated with the use of verbatim quotations, and case illustrations.

6.3.2 Family changes during the last two years

At the point of interview, the children of the study participants were aged between 4 and 5 years old. Many of the participants reported positive changes in their lives that had taken place within the family during the time since the visits ended. Positive changes included:

- New partner
- Marriage
- New baby (more than one in some families)
- House move/s
- Now working – self or partner
- Committed attendance at Alcoholics Anonymous

While many participants felt that overall, the past few years had been good, for some, the past few years had included more difficult times:

- Unsuitable housing allocated
- Child/ren identified with special needs
- Death of one or more parent (participant parent)
- Move to be nearer family not worked out
- Experienced bullying at work
- Behaviour and discipline issues within the family

The findings of the in-depth interviews have been divided into two sections. First, women's perceptions about the original service; and second, women's perceptions about its impact on their life since the last follow-up at 12-months (i.e. last two years).

6.3.3 Reflections on the home visiting service at 3-years

6.3.3.1 Best aspects of the service

i) Feeling supported was the most significant aspect of the service for the majority of the participants. Having somebody available to provide support on a regular, weekly basis was cited as one of the most valuable resources to have been offered. Several factors were cited as contributing overall to the feeling of being supported.

The relationship with h/v

“She was very very approachable when I got to know her. It felt like you could talk to her about anything. It didn’t matter what it was. I felt I could talk to her and she was there to listen” (Debbie)

“It was really good to feel I had a good relationship with her. It meant that it didn’t matter sort of how small or insignificant my worries might be, I could go to her” (Anna)

“She was really down to earth, you could have a good laugh and a joke with her.....” (Sarah)

Being listened to

“I remember she would come round, we’d have a cup of tea and a chat, and I would pretty much moan...she listened, which was good” (Sally)

“She encouraged me to talk about my personal life, and it was good to get it all off my chest and feel like... relieve the anger sort of thing....” (Amy)

“She was there for. ...helping me through that time and that was really helpful. Because I knew she was coming round and I knew that I got somebody that I could talk to” (Debbie)

Independent advice

"I was able to admit to [HV] that I really didn't want to be pregnant, and I really didn't want the baby... I never told anyone else apart from her. And it was nice because you could get it off your chest and say what you thought, she was really supportive and everything and I knew that nobody else round here would know... I didn't want anybody else to know really." (Carol)

"Oh it was a godsend, I sort of relied on her coming. Someone to talk to, completely independent." (Jo)

"We talked about my situation with [study infant's father], which was helpful at the time, it was nice to be able to talk to somebody separately from everything else, independent of my family," (Melanie)

Non judgmental and confidential

"There was nothing I could say to her that would shock her. I found that I could talk to [HV] about just about anything without her judging me" (Gill)

"...but sort of outside the house I never said anything to anyone and I just pretended everything was wonderful. So again it was nice to just, well in the end I don't think I could have hidden it any longer anyway." (Carol)

Knowledge, information, and advice

"She knew all the answers that I had questions for" (Amy)

"Even the minor little things didn't matter. And major things, it always made you feel better, you know, because they had an answer. And if they didn't have an answer they knew somebody who would have an answer. So instead of sitting there and worrying yourself silly, you know, you have got that person and you could sort of say.... I'm really worried about this or

that...it didn't matter if it was something sillyit was nice to be able to say to someone, look, I have got this problem..." (Angie)

"It didn't matter how small or insignificant my worries were, I could go to her" (Anna)

The home setting

"I wouldn't have gone (to clinic setting), I wouldn't have had the time or anything....but somebody coming to me, you know, it was good." (Jo)

"[HV] would know from one week to the next. One week she would come in and I would be like really happy and other weeks she would come in and say -right you are down today. Like you know- what has happened? [...] she knew when I was feeling down, she knew when I wasn't..." (Liz)

Regularity of contact

"For me, it was a lifeline...to have someone there who you knew was coming at a regular time each week, it being the same person with whom you could talk about any problems, relating to both childcare and more generally..." (Lesley)

"It was a godsend, I sort of relied on her coming. [...] The fact that it was regular, and the fact that it was weekly. The fact that they would come out to my house that was really important.... (Jo)

Ante-natal contact

"Someone to talk to if I had a problem because she come and saw me before I had [study infant] which was nice, because usually you have your midwife and then the health visitor comes afterwards but with [home visitor] it was nice because I had her beforehand so if I didn't feel right about something

then I could talk to her and as I say I had her afterwards which was great as well." (Sarah)

" She was coming round before I had actually had [study infant] for a little while. It was very nice to get to know her and have the support there even before the baby was stirring to talk through the sort of...she was always able to offer ideas on support and different groups and things. Anything that she could really help with. And she was very helpful also with our financial situation, letting us know what sort of funds were available, what benefits were available " (Anna)

"I thought it was superb. I really liked the fact before I gave birth that I had somebody to talk to, to be there..... I was housebound at that point. Very housebound actually". (Wendy)

ii. Perceptions about helpfulness

Study participants spoke about a range of issues that had been addressed during the time the home visitor had been visiting them that they had found particularly helpful.

Child development and childcare

I worried about [study infant's] weight.... I think I was extremely anxious you know because of my problems (alcohol dependency) that I may have damaged him, and you know, what to do about his development." (Melanie)

"I think it helped because I was so young, she helped me understand what I was doing" (Liz)

"I could ask about thingsto do with digestion or if she wasn't latching on properly, or not drinking enough, or the colour of pooh! Well, not things I

would have rung up about if I didn't have the relationship I had with her"
(Wendy)

"She would tell me things, little things, like give him a lot of praise and if they want a cuddle then give them a cuddle. Don't push them away, because in a way that is what my mum did with me". (Sarah)

Relationship support

"To be honest without her [home visitor] I'm not sure where my marriage would be today. For me, it was a lifeline" (Lesley)

Parenting support/behavioural issues

'He [study infant] attacked me and she showed me ways of holding him so that he couldn't attack me... I was getting head butted in the face and kicked and punched. [...] he was head banging as well and getting bruises all around his head, and she saw how he was...that made me feel better because they didn't think I was sort ofhurting him...' (Carrie)

"if I had a problem like with say one of the boys with schooling because two of them were at school at the time. If I had problems with them she would try and help me sort it out with it." (Sarah)

Reassurance

"Because she had had children of her own as well that helped. It just felt like you were talking to someone else on your level. I know she is you know a health visitor and everything. And after a while you sort of forget that bit, you know. [...] And you could sit there and talk and because she has got kids and she has been through it you know. She didn't say oh well I did this and I did that. It wasn't that sort of thing, but she sort of understood ..." (Carol)

Tackling social isolation

“I was very isolated, on my own at the time and it gave me the chance to get to know someone that I could speak to, it made me feel a little less isolated to have somebody there that I knew I could turn to if I needed to.....and she definitely introduced me to more people.” (Anna)

Help with housing

“My little girl got really ill.and she was taken into hospital because the room that we were staying in at my mums was really damp. And she is really badly asthmatic now and she was taken into hospital and her lungs collapsed and she got bronchial pneumonia. And she very nearly died and then [home visitor] wrote a letter to the council” (Liz)

Coping with depression

“Obviously as she was in our house all the time she could tell if I was more down or if I was happier” (Anna)

Support in difficult circumstances

“I wouldn’t have seen a health visitor really, unless they had come to me, because of the situation I was in at the time [agoraphobia] (Wendy)

Some of these issues are illustrated by the following case study:

Case study 1

Gill had experienced severe post natal depression after the birth of her first child. She had found breastfeeding particularly difficult and she had found it very difficult to establish a bond with her baby. When she became pregnant again with her second child, the study infant, she was very anxious and concerned about whether she would experience PND for a second time, and what impact that would have on the hard won relationship with her first child.

“I had problems bonding with [first child] because I had been so poorly, it took me probably nine to ten months to actually feel that I was a good mother and that my daughter did love me. And when I found out I was pregnant again I thought oh I had spent a year trying to build up a relationship with her, so to suddenly unexpectedly to become pregnant and find that she wouldn’t come near me. [...] because [study infant] wasn’t planned and I was ... finding I was pregnant with her I was really quite scared that I was going to end up as in again. . “

Gill felt very pleased to find that she had been allocated a home visitor who would support her through weekly visits during her second pregnancy.

“..... knowing that I was going to have [H/V] around from even before the word go that really helped”

When the study infant was born, the older child was indeed unreceptive and resentful and Gill’s fears were realized:

“When we came home from hospital, my sister had actually had her [first child] for the afternoon, and when [first child] came back and she saw the Moses basket there, oh ...[...] and she would not come near me, and that absolutely broke my heart. So yes, so having ongoing support from [home visitor] really, really helped, even though before I had [study infant] you know, when she was explaining it. ...talking about it, although it kind of sort of sunk in that yes, things would obviously be sticky, it just helped because [home visitor] had such a kind of reassuring thing about her, if [she] had told me the world was coming to an end tomorrow I would have believed her. So of course when she was telling me you know everything, although it might be a bit difficult it would get better.

[...] And even on the days that she wasn't visiting me she actually gave me her, she gave me her mobile number. And told me that I could ring her quite literally at any time."

During the weekly meetings with the home visitor, Gill valued the fact that there was no set agenda and that she was able to use the time in whatever way she needed to at the time:

"...her time with me was my time. I could do with that time whatever I wanted. If I wanted to sit there and cry the entire time I could. If I wanted, if I was wanted I could talk about weaning, it was totally whatever I wanted."

Gill felt that the intervention had helped her with almost all aspects of her life at the time:

"My mother was a bad mother. So I had no role model and I was convinced because I had had no good role model that I was a bad mother too. Especially given the fact that I have depression. I couldn't breastfeed [...] So although obviously the whole depression thing took up probably most of the whole study just trying to get me through the everyday hurdles of being a parent - how to try and get your child to sleep at night, how to ... you know and I mean it was invaluable. I can't word it any better than that. [...] And it helped. It helped us [husband and self] to understand each other a little bit better because there were times when he was getting frustrated with me, because he thought that I could snap out of it. I was getting frustrated with him...."

6.3.3.2 Activities involving the study infant

A number of women who had engaged with activities aimed at improving the mother-infant relationship, spoke in positive terms about their helpfulness.

i. Baby dance and baby massage

Just over half the women who were interviewed recalled doing baby massage and/or baby dance activities with their baby as part of the home visiting intervention. Women who had been taught massage and dance techniques (massage was spoken about more than dance) on the whole found them to be a very successful way of calming and soothing their baby, feeling closer to them, and a source of enjoyment and fun for both of them. A small proportion of the women said that they still used massage techniques with their [now older] child to calm them down and soothe them if they were fractious or to help with behaviour problems. Those women who had engaged with these activities recognised their potential role in helping to forge close bonds and attachments with their babies. Carrie found that the massage calmed her son down, was enjoyable, and despite initial misgivings, found that it increased her own sense of confidence in being able to do something constructive that helped to bring her close to her son during periods when his behaviour was proving difficult:

“It was really good and it made you closer to the baby. And he baby was calm because of the massage and exercises. He loved exercise, he enjoyed it. [...] she [home visitor] would say yes, you can do it...and I’m thinking....no, I can’t! She would show you if you weren’t sure and keep showing you until you felt like – yes, I can do it!” (Carrie)

“It was relaxing, the kids would lie here and love it. It was cool. I thought it was really good. I think it relaxes them and makes them feel secure.” (Carla)

Carla had utilised the massage techniques with her subsequent new baby and, along with several other of the participants, said she continued to find it a useful technique for calming, soothing and bonding with her children.

Sarah had found the baby massage technique to be invaluable in creating a bond between herself and her new baby, and she had encouraged her partner to utilise the techniques as well. Sarah recognised that her relationship with her

own mother was not a close one and was determined to ensure that her relationship with the study infant did not take the same form. She had also made connections between her older children experiencing difficulties growing up without their father in their lives (recently one had been in trouble with the police), and wanted to ensure that the study infant's father (not same as older children's father) would develop a strong bond with her.

"I thought, I'm going to make sure I have got the bond. The mother and daughter bond that I didn't have. I am going to make sure that I have got that with her. [...] she loved it, she would just fall asleep she would! And [partner] wanted to be involved as well. So what I did was give her a massage, and I would say to him, do you want to have a go at doing it? So he would get down on the floor and he would have a go and she would be giggling away like a good un because she knew her dad was doing it as well..." (Sarah)

ii. Other infant focused support

A number of participants described advice and discussions they had had with the home visitor about strategies that might help with difficult behaviour, and the fact that they were supported through implementing some of the strategies e.g. bed time routines, diet. Participants spoke more generically of 'getting support' from the home visitor, without always finding it easy to recall the actual nature of the 'support'. Some mothers, however, recalled spending time with the home visitor sitting and watching their baby/infant and gaining pleasure from doing that.

"Oh yes, we did a lot of sitting down and watching her, watching how..... I mean she was beginning to start rolling around and things like that, and getting giggles and laughs out of her, and we did sit there a few times doing that!" (Debbie)

Another mother recalled sitting down with her infant and learning how to play and interact with her.

'We did the child play things. We would sit there and she showed me how to interact properly with [study infant] so she [infant] learned...and I used to have to play with things. We used to sit there and we would just coo over her....' (Liz)

6.3.3.4 Dislikes about the service

All of the women were asked whether there were any things that they disliked about the home visiting service. They were overwhelming in their positive feelings about the service, with the exception of two women who had expressed similar dislikes in the previous set of interviews.

In both cases there had been particular incidents regarding referral to social services that had left the participant feeling angry and upset. Sally had not regarded the home visiting intervention as particularly helpful to her family apart from it providing her with the facility to let off steam and have a good moan to somebody. She expressed feelings of betrayal and resentment towards her home visitor, whom she felt had been judgmental and had dealt with a particular issue in an underhand manner, without first talking to her about the problem. Sally felt that after that incident had occurred she became less interested in furthering the relationship between herself and the home visitor.

Similarly, Carol, disliked the way the home visitor had taken matters into her own hands (extreme PND) and intervened. Now, looking back, she recognised that the anger was towards the situation, rather than the actual service itself, and in this interview she commented *"I couldn't see any bad points from it [the service], Only when I had had enough from my own personal feelings, nothing to do with the home visiting service itself"* (Carol)

There were three issues that some participants felt might have been better handled differently.

i. Inflexibility

Some women felt that their need for support varied, and that more flexibility regarding the regularity of visits would have been helpful.

“the only thing I would have said is that after a couple of months, or maybe three or four months... perhaps it needn’t have been weekly. A year is a long time really. It’s not that I didn’t like it, but perhaps in some ways it was almost wasting her time...I always had something to say, and you know, we used to talk about the progress I was making but at the same time I think it could have been fortnightly or something nearer the end....” (Wendy)

ii. Ending of service at a point when help still needed

Gill expressed disappointment that at the point at which the study child had reached one year of age the service was discontinued, because at that stage she felt a continued need for intensive support and encouragement.

“ I wouldn’t have liked to have been a first time mum and got that [support] cut off after a year, being mentally unbalanced [PND] “ (Gill)

iii. Difficulties when home visitor was absent/moved

In some instances home visitors had been either unwell, or moved from the area and had to be replaced, either for a short while, or permanently. This was an unwelcome disruption for women who had successfully built a relationship and established a rapport with their home visitor.

Gill, who had continued to feel reliant on the home visitor after the study infant reached age one, had also experienced the loss of her home visitor twice during the period of the study due to her being unwell and having time off sick. Because of the complexity of her situation, particularly difficulties with trust and opening up to strangers, and her ongoing depressive illness, she had found it particularly difficult to cope with having a replacement home visitor with whom there was no

relationship, and that it was necessary to re-tell your 'story' to somebody completely new:

“During our time together there was (sic) two episodes where she had gone into hospital to have surgery and she was off on long term sick. And I found that really really hard to cope with [...] Well obviously with somebody new and obviously I didn't know how long I would be seeing this, this sounds awful but I can't remember her name. You know that I kind of felt that there was too much had already gone on for me, like, obviously to go back to the start. But then she obviously then couldn't help me very well with the current problems because there was so much had gone on already. [...] In hindsight I was probably very quite prickly towards her. I feel bad about that because [home visitor] had obviously put her there to try and help me. I mean it is hard enough to admit you are having problems anyway. It is hard enough to actually accept the help as well it is then a totally different thing to actually accept the help that is there and to start it all over again, not by your choice.” (Gill)

Gill was in fact highly supportive of the service she had received, and regarded it as a 'lifeline'. She recognised that the problems that she had encountered were beyond the home visitor's control, but felt that as the service was dealing with vulnerable people it could present difficulties for service users.

“I kind of felt let down by the service, rather than by [home visitor] . And I think obviously you are having that service it is because you are not right. And you do need the help and you do grow to rely on these.” (Gill)

6.3.3.5 Further contact with home visitor

Four of the participants continued to have further contact with their home visitor after the home visiting service had ended, in their capacity as health visitor. In one family the home visitor continued with intensive visiting beyond the age of one, because the mother had become pregnant again, and the family was still

vulnerable. Other women were allocated new health visitors after the service had ended. Most had now become accustomed to less regular contact, and acknowledged that their need for intensive support had lessened or ceased. For some, there had been times when they would have valued the support, opinion or advice of the home visitor with whom they had formed a bond. In some cases, women said they now rarely saw a health visitor, because they did not feel any sense of connection with the person, and because of the impersonal aspects of clinic settings (see later section).

6.3.4 Perceptions about the Impact of the Service during the last two years

Interview participants were asked whether they felt that any of the things they had learned or gained as a result of the home visiting service had been of any help to them during the years since their home visitor had stopped visiting.

i. Coping with motherhood

One of the key themes that emerged was the sense that the home visiting service had increased some women's sense of their ability to cope with being a mother, and to be less critical of themselves.

"I sort of learned a lot of things...how to cope with things, and how not to let things get to me and things like this. I just try and de-stress, take about five minutes out for myself, leave them to bicker and argue...go and take five minutes and then come back and sort them out!" (Debbie)

During her pregnancy and subsequently after the birth of her baby, Gill had felt overwhelmed by the PND she experienced. Looking back five years on, she felt that the home visitor had helped her to cope with this experience and not to feel ashamed:

“She made me realise that you know, it’s nothing to be ashamed of, it is just something that happens...” (Gill)

Likewise, Wendy felt that looking back over her experiences of being pregnant at a time when agoraphobia had left her unable to leave her house, and subsequently the development of severe OCD, the home visiting service had left her with a real sense of confidence that despite her difficulties, she was doing well bringing up her children.

‘Very definitely...she gave me the confidence to feel that actually I am a good mum, yes, I can cope. I have got these other issues, yes, but you know, I can look after my girls, so there are lots of positive things that came out of it’ (Wendy)

ii. Use of health services

Some of the women indicated that their involvement in the home visiting service had encouraged them to think differently about health professionals and that they were now more inclined to use their health visitor for advice, support and reassurance.

“I can always ring up and they will always come out to see me” (Jo)

Melanie had felt wary initially about the home visiting service. *“I’m a recovering alcoholic.... I felt a little bit at first like I was being checked up on...but I know now that was just my uncertainty....fears”*. Five years on, and Melanie now feels very differently about the role of health visitors.

‘They are not frightening scary people that somebody in my situation might think they are’ (Melanie)

Gill felt that her experience of having a home visitor had led her eventually to go for counselling. Having had some previous particularly negative experiences of

counselling in the past, Gill felt that it would have been unlikely that she would have done so without having had the intensive support through her post natal depression from the home visitor.

'I had experience with counsellors when I was younger, I was forced to see one because I was self harming, shop lifting and drinking... and the counsellor I was forced to go and see, her exact words to me were 'what possible reasons could a 14 yr old have for doing these things? [...] The fact that I was able to realise that I did need counselling came from [home visitor]' (Gill)

Most of the mothers had been allocated new health visitors after the home visiting service had ended, and contact with new health visitors varied depending on need, but also to some degree on how well they felt able to "connect" with their new health visitor. Amy felt more confident in asking for help from her old home visitor than from other health visitors in her GP practice, largely because of her knowledge and relationship with the family.

"Say with [home visitor] she seems to understand more. She knows exactly what I have been through with [study child]. She knows all the problems [study child] has. And she knows him personally as well" (Amy)

Amy described the way in which she felt her GP had been very patronising towards her several times – she related this to the fact that she is a young parent and felt that doctors sometimes didn't take her concerns seriously. This had occurred several times, when the child had been taken ill with meningitis at age 2 months, and, as he got older, when she visited the GP about his hearing problems. Because of this, she felt more willing to trust her home visitor, who she turned to for a second opinion on both of these occasions.

Some women, however, also appeared to feel less inclined to utilise health visiting services after the study had ended, particularly now that the onus was on

them to make contact and initiate a meeting, and because in comparison with the home visits they had become accustomed to, the clinic setting felt less personal and less conducive to dealing with problems. Some women commented on the lack of continuity in clinic settings (not seeing the same health visitor each time), the difficulties in getting there with young children, the timing of sessions being incompatible with other commitments (e.g. collecting older children from nursery/school), the lack of privacy, and the fact that being seen outside of the home could lead some women to 'put on a front'. (See section on subsequent pregnancies)

iii. Use of advice and knowledge as study child has grown older

A number of participants indicated that they were able to use advice and knowledge that they had obtained from their health visitor, during the subsequent years:

'I think looking back, there were things, you know, just tips I was given, that have stuck in my mind...' (Melanie)

Angie had found the study child's behaviour difficult to cope with at times since the end of the study, and had worked with her health visitor (who had been her home visitor) on strategies to help her to cope with him. Having been brought up to *'do as you are told, no room for arguing, no room for thinking'*, Angie's health visitor was able to show her different ways to gain cooperation from her child that she found worked well:

"He has choices...I can behave in this way and I know what mummy will be like, or I can behave in a different way and mummy will be happy with me" (Angie)

Gill had kept a folder with all the information and advice that her home visitor had given her at the time of the study, which she has found very helpful over the ensuing years:

"I have still got...she would bring along packs of stuff like.... how to help your child at like one year old.... what your child should be able to do. And I have kept all that. And she taught me baby massage, which I still do with both my girls even now. And just before the study ended she gave me advice on what to look for if there were – like problems at school or nursery" (Gill)

Sarah now felt confident enough in her own parenting skills and abilities to cope well without advice and support from a health visitor, and in working out how to solve problems, often thought about what her home visitor *might have* said.

"Sometimes now I wonder what [home visitor] would say if I did something this way or something that way, and I think 'oh, shall I ring her?' then 'no, I won't bother, I just get on with it now" (Sarah)

Liz regretted that she had not taken more notice of the parenting advice she had been given, because now that her children had become older she was finding their behaviour difficult to deal with:

'I think some aspects of my parenting skills improved but [study child] is just so horrible sometimes, she is the biggest nightmare ever and I sort of think, why didn't I listen to [home visitor] and just be firmer, and you know, when she was little, the naughty spot, because I have never done that, I was really soft. Now it is so much harder to actually get into that because I have never done it" (Liz)

Elaine who had moved away from the local area had since found it very difficult to access the kind of help and support that she felt she continued to need. She described herself as having lacked confidence in her parenting skills, was a single parent who was socially isolated and struggling with weight issues of her own and of her daughter (study infant). After the home visiting service had ended she had moved out of the area to be nearer to her own family hoping that

they would provide her with the support she felt she needed. In the event, she found that her family were less interested in playing an active part in her life than she had hoped, and she had struggled to find any similar type of service that would offer her the kind of support she had become accustomed to through the home visiting service. The health visitor she had been allocated in the new area had been off hand, preoccupied and busy, and she had not found the clinic setting to be as amenable to developing any kind of meaningful relationship. Elaine said she now contacted her current health visitor rarely, whereas she would have had no hesitation in contacting the home visitor for advice, reassurance or information.

iv) Relationship with the study child

The majority of women described their relationship with the study child, now 4 or 5 years old, in positive terms relating to their feelings of closeness to the child.

“We are incredibly close” (Melanie)

He is good as gold, he really is” (Jo)

Some of the children had ongoing health concerns that had led to continuing contact with health visitors or other services. Carrie’s son had extreme behavioural problems that led to violent and aggressive episodes and he had recently been diagnosed as autistic, as well as having a kidney condition, for which he has been referred to a specialist unit for treatment. Carrie’s son is currently receiving special help in school and is being assessed for a statement of special needs. Despite the difficulties, and having had two further children since the study ended, Carrie said that she felt very well supported by the various professionals she has encountered and she remains positive about the study child. She attributes her ability to cope with her son’s behaviour in part to the strategies she had learned from her home visitor.

“[He is] brilliant, he is a joker sort of thing so you can turn it around easier now than you could before [when he was a baby] because you have learned the strategy (distraction) over the time” (Carrie)

Despite describing positive relationship with their children, some women also experienced some difficulties with their current relationships because of challenging behaviour and/or sibling rivalry. On the whole, this was attributed to normal development with the use of phrases like ‘terrible two’s, troublesome threes’ ‘going through a naughty phase’, with the implication that the experiences were nothing more than any other parent might experience with a four or five year old.

“She is adorable but strong willed” (Gill)

Some of these parents were actively using their health visitor for advice and guidance when needed, particularly in families where further contact with health professionals had been initiated through subsequent births, and those who had found health visitors to be a helpful resource to make use of. Some women were accessing books and magazines for further support and advice, something they may not have done in the past.

“... and now I have actually gone out and bought books. I have the Child companion book.... which I find very helpful” (Melanie)

6.4 Summary

A number of families declined to have any further contact with the study, and a significant number were no longer contactable. As a result, the final sample included a significant proportion of women who had taken part in the end of service qualitative interviews that had been conducted three years previously. As a consequence, this interview data may not reflect the views of the wider study population.

The majority of participants looked back on the home visiting service five years on, in positive terms. Most were highly appreciative of the help and support they had received at the time. Some of those for whom the study infant was a first child and who had subsequently gone on to have another child/ren were now able to recognise the benefits of the intensive input they had received, compared to the standard service they received for the second child. They were also able to recognise the benefits of engaging with the home visitor during the antenatal period in preparation for the birth of their baby, and voiced satisfaction with having had the opportunity to build up a personal relationship with their home visitor.

Some of the recipients viewed the service as having helped them at a particular time in their lives from which they had now moved on. Some, however, were now able to look back and reflect on the service they had received in a much broader sense, and to recognise real long-term benefits to their family.

"I think I am able to appreciate now the overall help that I got, whereas at the time I couldn't look past any more than what I got that week. I didn't think at the time that I was retaining any more than like, one session's worth of help, but obviously I have done because I can recall a lot of it now. But if you had asked me at the time you know I would have been, like - have no idea what we did probably. [...] I strongly believe now that I am in a much better place, that if you can do a good enough job when your children are at this age and be happy in yourself and your children this age - you are going to get a lot less trouble from them when they are older [...] At the start I would have viewed it as just to get me through the end of each day...but certainly now I can see it as a bigger.... a much bigger picture" (Gill)

SECTION SEVEN – Discussion

7.1 Introduction

The effectiveness of home visiting programmes continue to be in dispute (Bull et al., 2004), and this study was one of the first UK evaluations of the effects of an intensive home visiting programme that was explicitly aimed at improving parenting and reducing abuse.

7.2 Quantitative and Qualitative data

The results of the 3-year follow-up show that the one significant finding at 12-months was not maintained, and no sleeper effects were identified. Indeed, the few significant findings identified at 3-years, favoured the control group. The explanations for these results are possibly twofold. First, we now know that the most effective home visiting programmes extend until the child is at least two years of age, and consist of structured visits that have clear goals at each visit in terms of the developmental needs of the child (Olds et al 1997).

Second, this study recruited a very high-risk group of women. The average participant had five risk factors, with some having as many as ten. Furthermore, by three years just under half of the sample was known to Child and Family Services. Effective interventions for this very high-risk group of multiparous women and their infants have yet to be identified. The only home visiting programmes that have been consistently shown to be effective to date, have targeted demographically high-risk first-time teenage parents.

Effective interventions for this very high-risk group of multiparous mothers and infants have yet to be identified, and will most probably involve the use of more intensive therapeutic interventions such as parent-infant psychotherapy (Cohen et al 2000) or mentalisation-based parenting programmes (ref) or a multimodal approach that combines a number of these strategies.

7.4 Child Abuse data

In the absence of effective interventions, early identification of infants in need of removal from the home remains the optimal strategy, and the data from this study *suggest* that home visited children were much more likely to be identified as abused, and more likely to suffer maltreatment for shorter periods of time. These findings may be particularly significant given what we now know about the impact of abuse during the first few years of life.

7.3 Qualitative data

The data from the in-depth interviews represents the views of only a third of the women who received the home visiting intervention, and are not therefore representative of the entire sample, many of whom were not contactable, and some of whom did not wish to take part in an interview. These findings suggest that despite the absence of quantitative evidence of benefit, at least a third of the women who were visited as part of the home visiting study, perceived it to have been of benefit to themselves and their baby, in both the short and longer-term. The qualitative data suggests that the vast majority of participants who were interviewed had succeeded in building a close and warm relationship with their home visitor that had enabled them to feel able to discuss issues and feelings that might otherwise have remained hidden, despite some very negative preconceptions about health visitor and professionals more generally. This group of women are typically described as being 'hard to reach', and many of the participating home visitors had to work extremely hard to establish a relationship with these clients, continuing to visit through many missed appointments, and in very difficult settings. The interview data points to the importance of *working in partnership*, and to the relevance of continuity of care throughout the early years, in encouraging the engagement of vulnerable women with intensive services of this nature. Indeed, many of the women had found the return to standard services with subsequent pregnancies, difficult and unsatisfactory, making unfavourable comparisons between the home visiting service, and standard

health visiting services many of which consist only of clinic-based sessions. Indeed, the subsequent experiences of some participants appeared to have undermined the confidence that had been gained as a result of the home visiting service. One parent who had been referred to a parenting programme dropped out because the way the course was presented had made her feel patronised.

Overall, the participants perceived themselves to have been fortunate to have been offered the home visiting service, and viewed the time spent with their home visitor in a very positive light.

Earlier data (i.e. at 12-month follow-up) from focus groups with participating health visitors showed that standard or routine health visiting was viewed by participating health visitors as being a 'crisis management' approach, in contrast with home visiting which was viewed as allowing health visitors to work in accordance with a more preventive model of care, thereby enabling greater awareness of the lives of vulnerable and high-risk families. Specifically, in contrast with their routine work, health visitors felt that an intensive approach helped them to be more focused on facilitating change, relationship-building, and on the needs of both mother and baby including the mother-baby relationship. They felt that they were less directive, and that the time available to develop trusting relationships with families made it easier for them to challenge particular attitudes and behaviours that may be deleterious to the well-being of the infant, in addition to being able to address issues in a way which took account of the readiness of family members to change.

7.4 Economic analysis

The results of the economic evaluation suggest that home visiting interventions of this nature are always likely to be more costly, and that estimates of cost-effectiveness will vary depending upon how much value is placed on improvements in intermediate outcomes (i.e. such as the maternal sensitivity that was statistically significantly improved at 12-months).

An important limitation of this economic evaluation is the inability to link these trial-based intermediate outcomes to more substantial longer term economic and social benefits. Maternal insensitivity in the first year of life has been linked to a range of deleterious long term outcomes including conduct disorder, educational failure and social incompetence (Sroufe 1998; Burt et al 2005) as well as to abuse and neglect. Available studies looking at long term outcomes do not at present provide estimates of incremental change in outcomes for incremental changes in parenting. It is therefore not possible to include long-term benefits to the children in health economic studies such as this. Neither is it currently possible to include long-term benefits to the rest of society from reductions in crime and violence and increases in productivity, or long-term savings across multiple sectors of government spending. The results are, however, able to provide an estimate of the costs of such services for estimated gains in parenting. They show that such interventions are expensive, but that their costs fall within the limits of spending identified by policy makers responsible for publicly funded health services.

One of the complexities of the health economic analyses presented in both the 12-month and 36-month follow-up arises from the fact that the specially trained home visitors were better able to identify infants in need of child protection services than professionals working in traditional community health and social services. This added further cost to the home visiting arm with no measurable gain in the short term apart from reduction in exposure. Without long-term follow up it is impossible to estimate the extent of benefit from such reductions. Furthermore, such follow-ups are challenging to undertake. This cost-effectiveness study of a complex public health intervention has highlighted some key methodological issues. First, studies that rely on traditional unidimensional 'clinical' outcome measures do not provide an adequate basis for complex health economic analyses because they do not assess all potential effects. Earlier evaluations of home visiting programmes (Olds et al 1997) have shown that the

benefits are broad ranging, going beyond health to education, employment, housing, and crime (Olds et al 1997; Byrd 1997). So, whilst the costs of such services can be easily identified, the benefits and cost savings are more difficult to measure. In addition, the benefits and cost savings may accrue over a time period that extends far beyond the follow-up time allowed for in most trials and these costs are therefore not included in the cost-effectiveness estimates. The economic evaluations of complex public health interventions will benefit from a broader analytical approach such as cost benefit analysis (CBA).

7.5 Conclusion

This study did not identify any quantitative benefits from an eighteen-month intensive home visiting programme, and given the success of other programmes of this nature, it seems likely that this may have been due to the duration of the programme (many of the most effective programmes continue until the infant is 2-years of age), and the content of the visits (the lack focus on specific child developmental outcomes), in conjunction with the fact that this study recruited a very high-risk group of women (i.e. just under a half of the sample were known to Child and Family Services by the time the child was three years of age).

However, data from in-depth interviews that were conducted with a range of stakeholders at both 12- and 36-months suggests that the partnership model of working that was provided to health visitors was effective in enabling the home visitors to gain the trust of a group of very vulnerable women, many of whom viewed all professionals very negatively, and that many of the participating women also felt that the service had had an on-going impact in terms of their ability to parent and their relationship with the study child.

Effective interventions for this very high-risk group of mothers and infants have yet to be identified, and will most probably involve the use of more intensive therapeutic interventions such as parent-infant psychotherapy (Cohen et al 2000)

or mentalisation-based parenting programmes (Slade et al 2005) or a multimodal approach that combines a number of these strategies (e.g. Bakermans-Kranenberg et al 2003). In the absence of effective interventions, early identification of infants in need of removal from the home remains the optimal strategy, and the data *suggest* that home visited children were much more likely to be identified as abused, and more likely to suffer maltreatment for shorter periods of time. These findings may be particularly significant given what we now know about the impact of abuse during the first few years of life. While the findings of the economic analysis suggest that the costs of an intensive intervention of this nature are always likely to be significantly more, society must ultimately decide whether such additional costs are worthwhile.

SECTION EIGHT - References

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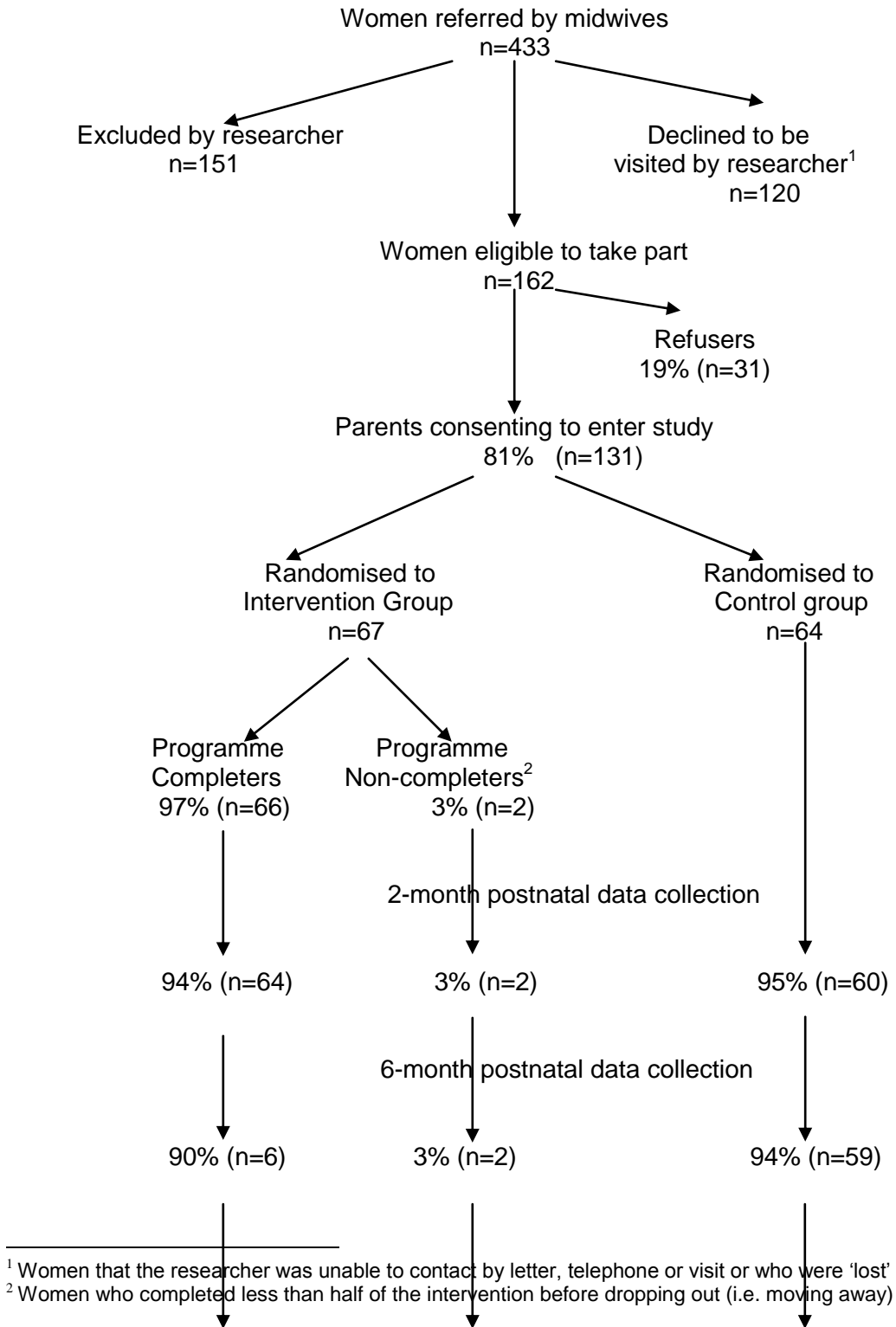
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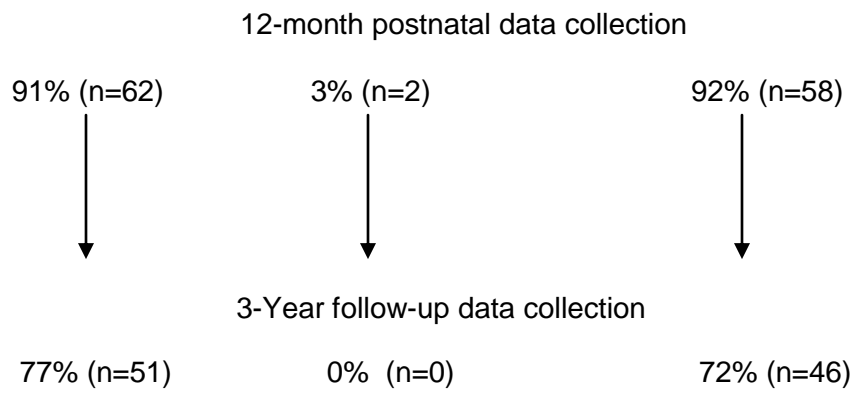
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SECTION NINE - APPENDICES

Appendix 1: Attrition and Loss to Follow-Up

Figure One: Uptake and attrition rates







Appendix 2 Economic section of follow-up questionnaire 'Your use of services'

SECTION C – Your use of Services

Have you or your baby had any visits or visited any of the following services since you joined the study? If so, please write the number of visits for yourself or your baby in the appropriate box. If you cannot remember the exact number of visits, don't worry, please just give your best guess. Please ignore any services that you have not heard of before. If you have already completed the diary about your use of services we sent you at the beginning of the study then please ignore this section and simply return your completed diary along with this questionnaire. Thank you.

Visits for Yourself Baby

Visits for Yourself Baby

	1	3		
<i>Example</i> GP				
Family Doctor (GP)			Pre-school teacher counsellor	
Health Visitor - clinic visit			Child and family team	
Health Visitor – phone call			Family centre	
Health visitor – home visit			Sure-start	
Social Worker – home visit			Home-start	
Social Worker – office visit			Housing department	
Social Worker – Phone call			Women's aid	
Alcohol/drug support			Legal aid	
Paediatrician (child's doctor)			Citizens Advice Bureau	
Obstetrician (woman's doctor)			Local advice centre	
HEPAC			Parent-toddler group	
Audiology			Crèche	
Speech and language			Shoppers crèche	
Ophthalmology			Playgroup	
Hospital A & E Department			Private child care (e.g. Jigsaw)	
Community Psychiatric Nurse			Other (Please specify)	
Psychologist			Other (Please specify)	
Psychiatrist				
Occupational Therapist				

