Peer support and its effect on breastfeeding initiation and continuation: a randomised controlled trial, systematic reviews and a qualitative study

By

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Abstract

Background: Breastfeeding has the potential to significantly improve public health. As part of UK government policy peer support interventions have been recommended to increase breastfeeding rates but the evidence base for this is of low quality.

Methods: The aim of this thesis was to investigate the effect of breastfeeding peer support on initiation though a systematic review; on continuation through a randomised controlled trial and a systematic review; and to explore women's experiences through a qualitative study.

Results: Universal peer support to improve breastfeeding initiation was ineffective. Peer support for breastfeeding continuation in both the RCT and review findings appears to be effective in low/middle income countries; when provided in an intensive schedule of contacts (>5 contacts); and in the postnatal period. Women's experience of peer support is generally positive and those interviewed gave several suggestions of how current local services may be modified.

Conclusions: Peer support per se, in any format in the UK-setting, has not been supported. Targeted and intensive peer support may improve breastfeeding rates in the UK but this must be evaluated using high-quality methodologies. Peer support appears to be effective in the developing world, were it is intensive and targeted to those already considering breastfeeding.

For Gramps

1918-2013

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Chapter 5.

Introduction

Breastfeeding is accepted as the optimal nutrition for infants and as such one of the most effective interventions to improve child health, particularly for those born in the developing world. There is ample evidence of infant and maternal health benefits resulting from any breastfeeding and exclusive breastfeeding. In the United Kingdom (UK) there is government policy to assist the implementation of interventions to increase breastfeeding, and laws to protect the rights of breastfeeding mothers. It is the 'interventions' that are of interest to me in particular those of peer support. This thesis presents a randomised controlled trial, two systematic reviews and a qualitative interview study to explore peer support interventions to increase breastfeeding rates.

The aims of this thesis are to investigate the effect of peer support on the outcomes of breastfeeding initiation and continuation, and to explore women's experiences of support and peer support for breastfeeding. Whilst preparing the thesis some of the findings have been disseminated in the form of publications in peer reviewed journals. The thesis remains an original piece of work.

In this first Chapter I present the epidemiology of breastfeeding both nationally and internationally, following this is a section on the health benefits and mechanisms of breastfeeding. The concept of peer support and specifically breastfeeding peer support is then presented followed by an exploration of UK policy on peer support programmes for breastfeeding. In this Chapter I also refer to the Heart of Birmingham Breastfeeding Initiation Trial (HOBBIT), the primary outcome results were published in 2009: ***MacArthur C, Jolly K, Ingram L, Freemantle N, Dennis CL, Hamburger R, Brown J, Chambers J, Khan KS. Antenatal per support workers and initiation of breast feeding: Cluster randomised controlled trial. Br Med J 2009; 338 (b131).*** *Contributions:* CM, KJ, NF, C-LD, JC, and KSK designed the study. CM, KJ, and LI coordinated the day-to-day management of the trial. NF was the trial statistician. CM, KJ, LI, RH, JB, and KK sat on a trial management committee. CM, KJ, LI,

NF, C-LD, JB, and KK formed the trial steering committee. CM drafted the manuscript and all authors commented on the manuscript and approved the final draft. RH, JB, and JC contributed to the writing of the paper.

Chapter 2 addresses my first research question: ***Are antenatal peer support interventions effective in increasing breastfeeding initiation rates?*** To answer this I present a systematic review and meta-analysis. This is an original contribution to current knowledge has been published: ***Ingram L, MacArthur C, Khan KS, Deeks J, Jolly K. Effect of antenatal peer support on breastfeeding initiation: A systematic review. Can Med Assoc J 2010; 182(16):1739-1746.*** *Contributions:* CM conceived the study. LI, KJ, KSK designed the study protocol, and LI designed and carried out the searches. LI and KJ screened the initial references for retrieval and extracted the data. KJ performed the meta-analyses, and JJD provided advice on statistical methodology. LI interpreted the data with input from KJ, CM and KSK. LI and KJ drafted the manuscript, and KSK, JJD and CM critically reviewed it.

Chapters 3 and 4 address my next research question: ***Are postnatal peer support interventions effective in increasing breastfeeding continuation rates?*** Chapter 3 presents work from the HOBBIT trial six month follow-up study (funded by the Heart of Birmingham teaching Primary Care trust (HOB PCT) and University of Birmingham). The work presented is that of the secondary outcome, breastfeeding continuation, and contributes to the existing high quality evidence on the longer-term effects of breastfeeding peer support. I present an extended version of the paper published in 2011 (REF): ***Jolly K, Ingram L, Freemantle N, Khan KS, Chambers J, Hamburger R, Brown J, Dennis CL, MacArthur C. Effect of a peer support service on breast-feeding continuation in the UK: A randomised controlled trial. Midwifery 2011: 28(6):740-745.*** *Contributions:* CM, KJ, NF, CD, JC and KSK designed the study. CM, KJ and LI co-ordinated the day-to-day trial management. NF was the trial statistician. CM, KJ, LI, RH, JB and KSK sat on a trial management committee and CM, KJ, LI, NF,

CD, JB and KSK formed the trial steering committee. KJ drafted the manuscript and all authors commented upon it.

Chapter 4 addresses this second research question in another systematic review, I present a modified version of the published paper. This systematic review is an original contribution to the field. ***Jolly K, Ingram L, Khan KS, Deeks JJ, Freemantle F, MacArthur C. Systematic review of peer support for breastfeeding continuation: Metaregression analysis of the effect of setting, intensity, and timing. Br Med J 2012; 344:d8287.*** *Contributions:* KJ, CM, KSK, and LI conceived the study. LI designed the search strategy. LI and KJ selected the papers for inclusion and abstracted the data. CM and KSK resolved differences in inclusion and abstraction. JJD and NF provided advice about the meta-analysis. JJD, KJ, and LI undertook the meta-analyses. KJ, CM, and LI wrote the first draft.

Chapter 5 addresses my third and final research question in this thesis: ***What are women's experiences of one-to-one breastfeeding peer support and what are their recommendations to improve such support services?*** To answer this question I present a qualitative interview study which I developed and executed. The results of this study are an important contribution to the evidence-base on women's views of peer support for breastfeeding.

Each of the previous Chapters have a discussion relating the findings to the literature and considers the strengths and limitations. In Chapter 6 therefore I summarise the findings of the thesis and set them in context with current policy and evidence and make general conclusions in relation to peer support for breastfeeding and recommendations for future research.

Chapter 1

Breastfeeding: epidemiology, health benefits, UK policy and peer support

"Breastfeeding is the normal way of providing young infants with the nutrition they need for healthy growth and development. Virtually all mothers can breastfeed, provided they have accurate information, and the support of their family, the health care system and society at large." [1]

1.1 Purpose of this chapter

This Chapter reviews the literature that is relevant to this thesis. It describes the definitions and phrases used around breastfeeding, the epidemiology of breastfeeding, national and international rates of breastfeeding, health benefits of breastfeeding, policies and interventions to improve breastfeeding rates; and then the HOBBIT trial is introduced, the six month follow-up of which comprises part of this thesis.

1.2 Definitions of breastfeeding practices

The definition of 'breastfeeding initiation' used by the UK Department of Health (DH) is: "the mother is defined as having initiated breastfeeding if, within the first 48 hours of birth, either she puts the baby to the breast or the baby is given any of the mother's breast milk"[2]. The UK Infant Feeding Survey (IFS) uses a similar definition termed as 'breastfeeding initially' which refers to the percentage of babies who were breastfed initially by being put to the breast even if this was only once[3].

The World Health Organisation (WHO) define 'exclusive breastfeeding' as "the infant only receives breast milk without any additional food or drink, not even water (other than medications and vitamins)[4]." The term 'any breastfeeding' is the giving of any breast milk therefore either partial or exclusive breastfeeding[5]. 'Complementary breastfeeding' or 'partial breastfeeding' means breastfeeding in addition to either formula or other fluids or food[6]. 'Predominant breastfeeding' is mainly breastfeeding but also giving additional water and teas[6]. 'Mixed feeding' commonly refers to the practice of providing both breast and artificial (bottle) milk to the infant.

The WHO global strategy for infants and young child feeding[7] set out their recommendation that all infants be exclusively breastfed for the first six months of life. 'Suboptimal breastfeeding' is not exclusive breastfeeding for six months as recommended by the WHO.

1.3 The epidemiology of breastfeeding: UK data

It is well documented that breastfeeding has substantial implications for public health due to its protective effect against illnesses for both the infant and mother (such benefits are explored in the next section). Despite this, the breastfeeding rates of high-income countries remain low and this is the case in the UK. Breastfeeding practices in the UK have been consistently monitored over the last 35 years following the introduction of the IFS in 1975.

1.3.1 The Infant Feeding Survey (2010)

Published every five years the IFS presents data on breastfeeding practices, influences and problems, the IFS also identifies associations with characteristics of mothers and infant feeding behaviour in the UK. Although there are other sources of data on infant feeding behaviours and associated maternal characteristics this population-based survey is sent to a large representative sample of UK-based mothers and is carried out to a high standard. The Survey methodology was designed to ensure as far as possible that the results could be representative of UK mothers. To do this the IFS authors over-sampled in each country for young mothers and mothers from the most deprived quintile using the Index of Multiple Deprivation. These two groups were chosen to be over-sampled because they were expected to be less likely to respond to the questionnaires but they also represent characteristics associated with non-initiation of breastfeeding and early cessation of breastfeeding. During the initial sampling stage for the first questionnaire (sent to mothers with an infant between four and 10 weeks old) a lower than expected response was received, however a sufficient sample for the Survey was drawn.

The 2005[8] IFS questionnaires were updated for the IFS of 2010[3] and this could be answered either in paper format. There were also some questions added and some were removed. The 'new' questions were added to reflect changes in health policy, for example, questions were included to identify the

usage of the means-tested 'Healthy Start' scheme aimed at pregnant women and mothers with children between 12 months and four years of age. This scheme was introduced to improve the uptake of breastfeeding, increase the consumption of nutritious foods, and provide free vitamins for pregnant women. There were additional questions to identify: premature babies; births in UNICEF Baby Friendly accredited Trusts; the proportion of mothers who had skin-to-skin contact with their infant at birth; and how many mothers felt confident to breastfeed their infant in the presence of others.

All of the questionnaires were piloted (stages 1, 2 and 3) in all countries. This piloting had been done in previous IFS reports but in 2010 this was done on a larger scale. IFS researchers accessed mothers for piloting through community-based support groups across the UK in order to assess acceptability of the questionnaires. Mothers were asked to complete a questionnaire either on paper or online and a sample of these mother's from all countries except Northern Ireland were then interviewed by the IFS researchers to describe their experience of questionnaire completion and to discuss any problems they may have had which could be addressed by the IFS group ahead of the actual mailing of the Survey. During this piloting there was a low completion rate of the online questionnaires at the community-based groups, as a result 200 mothers who attended National Childbirth Trust (NCT) support groups were contacted to pilot the online questionnaire. Mothers who attend NCT are a homogenous group which does not necessarily reflect the diversity of UK mothers.

The most recent IFS[3] was sent out to 30,760 mothers who gave birth between August and November 2010. There are three data collection stages when mothers were sent questionnaires, the intention of which was to capture data at six to ten weeks, four to six months and eight to ten months after giving birth. Mothers were only sent questionnaires at the second or third stages if they had responded at the previous stage. The response rate at each stage was: 15,724 (51%); 12,565 (80% of

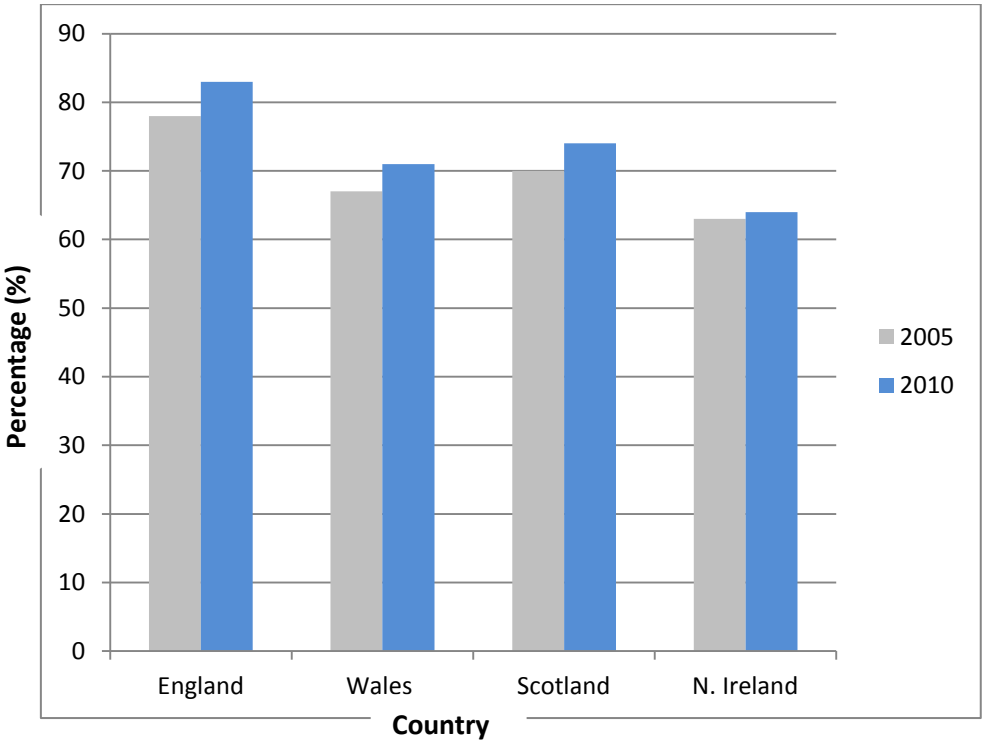
responders); and 10,768 (86% of responders). A total of 10,768 mothers responded to all three questionnaires.

The incidence of breastfeeding for the UK overall has increased since the previous IFS in 2005[8] (when it was 76%) to 81% in 2010[3] (Figure 1.1). Of those who initiated breastfeeding, 69% were continuing to breastfeed at one week, this reduced to 55% at six weeks and then 34% at six months. By country, initiation rates were 83% in England; 74% in Scotland; 71% in Wales; and 64% in Northern Ireland. Overall in the UK based on all mothers, exclusive breastfeeding at birth was 69%; at one week this fell to 46% and then to 23% at six weeks. At six months only 1% of mothers were practising exclusive breastfeeding.

It should be noted that although the sampling is intended to be representative there is potential for responder bias. It is possible that the women who responded to the questionnaires were those that were more likely to continue to breastfeed. It is also possible that social acceptability bias had an effect on response rates whereby women responded with answers that they felt were more socially acceptable, for example the continuation of breastfeeding.

Maternal age: Across the UK the association of older maternal age with breastfeeding was evident as in previous Surveys. Older mothers were more likely to initiate breastfeeding (≥30 years, 87%) and continue up to six months (≥35 years, 45%) compared to the youngest mothers (<20 years) of whom 58% initiated breastfeeding and 11% continued to breastfeed at six months. This trend was apparent for rates of exclusive breastfeeding too.

Figure 1.1: Histogram of initial breastfeeding rates as reported in the Infant Feeding Surveys (2005 and 2010)



Parity: Compared to those having subsequent children, first-time mothers were more likely to initiate breastfeeding (78% versus 84% respectively) and exclusively breastfeed (67% versus 71% respectively). At six weeks more mothers having a subsequent baby were breastfeeding than first-time mothers (70% versus 60% respectively). ***Breastfeeding history:*** As with previous IFS findings, 97% of the mothers who had a breastfeeding history of at least six weeks breastfed their subsequent child. Similar proportions of mothers with and without breastfeeding experience stopped breastfeeding after the first week (39% versus 37% respectively). When measured at six weeks 45% of mothers with a breastfeeding history of at least six weeks were exclusively breastfeeding, 20% of mothers with no breastfeeding history were still exclusively breastfeeding at this time-point. ***Socio-economic status (NS-SEC) of mother*** *(based on current or previous occupation):* Across the UK all breastfeeding rates have increased in all socio-economic groups, the greatest difference being in the proportion of women breastfeeding in 'routine and manual' occupations (65% in 2005[8]; 74% in

2010[3]). Across the UK, mothers in 'managerial and professional' occupations were more likely to initiate breastfeeding: 90% of these mothers breastfed initially. As the level of skill reduced in the occupations so too did the rate of breastfeeding initiation: 'intermediate' occupations (80%); 'routine and manual' occupations (74%); mothers who had never worked (71%). A similar downward trend was observed in the prevalence and rates of exclusive breastfeeding. ***Deprivation:*** Mothers in the most deprived quintile were least likely to initiate breastfeeding (76%), the converse was apparent for mothers in the least deprived quintile (initiation rate 89%). This trend was apparent at all stages of follow-up for both prevalence and rate of excusive breastfeeding.

Education**:** Mothers with higher educational attainments were more likely to initiate and continue breastfeeding at each stage of the follow-up. Those who completed full-time education after 18 years old were more likely to have ever breastfed compared to those who left full-time education at ≤16 years (91% of versus 63% respectively across the UK). ***Ethnicity*** *(not collected in Northern Ireland):* As in previous Surveys, women from ethnic minority groups were more likely to breastfeed compared to White mothers. Initial breastfeeding rates per ethnic groupings were: 97% amongst Chinese/Other ethnic origin; 96% amongst Black mothers; 95% amongst Asian mothers (Indian/Pakistani/Bangladeshi/any other Asian background); 89% of mothers of Mixed Race compared to 79% of White mothers. Compared to all other ethnic groups, White mothers were less likely to continue breastfeeding at six months, and less likely to breastfeed exclusively.

Support: As shown in the previous Surveys, the 2010 IFS found that 85% of women who stopped breastfeeding between one and two weeks would have liked to have continued for longer. Mothers reported that receiving more support and guidance from hospital staff, midwives and family (23%); if it was easier to latch their baby onto the breast (19%); and if breastfeeding was less painful (14%) as the most common thoughts as to what would help them breastfeed for longer. Whilst in hospital

most women (69%) had been given support with how to breastfeed and the majority of this group was made up of first-time mothers (84%). Of the 33% of women that were not supported, relatively few of these however (10%) would have welcomed support or information. Of those who had initiated breastfeeding, mothers who had not worked (52%) were less likely to, and mothers in managerial/professional occupations (73%) were more likely to, receive support in hospital. Women in manual/routine occupations and those who had never worked were more likely to report having someone stay with them for the duration of a breastfeed than mothers from managerial/ professional occupations (18%; 20%; 13% respectively).

When women were asked about any problems they had experienced a similar proportion of all women reported such difficulties whilst in hospital (84%) and at home (82%). The most common problems reported by mothers whilst in hospital who were either exclusively breastfeeding or giving any breast milk were: baby not sucking (59%); difficulty with latching (47%); and discomfort (27%). A large proportion of mothers reported receiving support for any problems in hospital (84%), with a similar proportion reporting having support for problems experienced at home (82%). In hospital and at home those most likely to provide support were midwives (82% and 55% respectively). Whilst at home 20% of mothers were supported by breastfeeding support groups, very few mothers reported support from peer supporters (3% of mothers in hospital and 8% of mothers at home). Women who received support once discharged from hospital were more likely to continue to breastfeed at two weeks than those who had not (88% vs. 80% respectively). For the first time since the IFS was introduced data were collected on the usage and awareness of hospital and community-based support (individuals or groups). The majority of all mothers (90%) were *aware of* and/or had actually received breastfeeding support from a voluntary group or charity (e.g. National Childbirth Trust (NCT)), a peer supporter ("a mum who has breastfed themselves and been trained to give support to other mums") or a breastfeeding support group. Those aware of such groups despite not

actually using them were more likely to be breastfeeding at two weeks than mothers who were unaware or had not used such support services (85% vs. 70% respectively).

To identify additional factors associated with an increased likelihood to initiate breastfeeding the IFS used a logistic regression model and found that: early breastfeeding support (within the first days after birth); being breastfed as an infant themselves; had skin-to-skin contact within 24 hours of birth; had friends that had breastfed; were aware of the health related benefits; lived in the South of England; and were aware of the signs of milk transfer were more likely to initiate.

The IFS analysed factors associated with exclusive breastfeeding through a logistic regression model and found that several characteristics associated with initiation were still associated with breastfeeding at six weeks. These were ethnicity, how the mother was fed as an infant herself and how her friends fed their babies. In addition exclusive breastfeeding at five weeks, previous breastfeeding experience and support with breastfeeding problems were all associated with continued breastfeeding at six weeks.

The latest IFS has shown that the maternal characteristics associated with likelihood of breastfeeding have not changed since the last IFS in 2005[8]. Mothers who initiate breastfeeding are more likely to be older (≥30 years), having their first baby, have managerial or professional occupations, finished full-time education later (>18 years of age) and from minority ethnic groups (non-White). These associations are also present in relation to the likelihood of continuing breastfeeding with the only exception being mothers having a subsequent child being more likely to continue to breastfeed than first-time mothers.

1.3.2 Other sources of data on the epidemiology of breastfeeding

A recent UK-based survey[9] found an association between breastfeeding duration and deprivation as measured by the Indices of Multiple Deprivation. Of the 216 postal survey respondents (unknown denominator) all had at least one child aged between six and 24 months (mean 12.69 months), those with more than one child were asked to give details on feeding their youngest child. The mean age of respondents was 28.16 years (SD 6.07) and mean years in education was 13.50 (SD 2.81). Although most respondents were primiparous (72%), no significant differences relating to parity and level of deprivation were observed in this study. No difference was found for the mean age of child at time of response between primiparous and multiparous women (12.62 and 13.05 months respectively). A large difference in age of the infant at time of response may have introduced responder bias. Brown and colleagues[9] identified a significant positive association with breastfeeding duration and married mothers; those who owned their home; and lived in an area that was not deprived. Mothers who had remained in full-time education for longer, had higher salaries and they or their partner had a managerial/professional occupation breastfed for significantly longer.

The Millennium Cohort Study (MCS) is a large longitudinal survey following the progress and development of nearly 19,000 children born in 2000-2001. The MCS research group reported on breastfeeding initiation and duration of exclusive breastfeeding at six months by social class[10]. Data were analysed for 18,125 singletons and a breastfeeding initiation rate of 71% was reported which was similar to the national rate at that time from the IFS (69%) [11]. To assess the effect of social class the MCS research group used the National Statistics Socioeconomic Classification (NS-SEC) social class classification by occupation. This new classification accounted for more than level of skill as in previous classifications, for example working conditions and job security were assessed in order to make up the seven tier classification. The highest social class by occupation were 'higher managerial and professional' and the lowest were described as 'routine'. Logistic regression analysis adjusted

for the following potential confounders: parity; sex of baby; mother's age; cigarette smoking; household income; and family structure.

The MCS results reflect the trends already presented. As maternal age increased so did likelihood to initiate breastfeeding. Mothers in routine occupations, with lower household incomes, smokers and lone parents were less likely to initiate. This pattern was repeated for exclusive breastfeeding behaviour with the exception of parity – mothers having their first baby were less likely to breastfeed exclusively for as long as mothers having a subsequent baby. Logistic regression analysis identified an association between the breastfeeding outcomes and occupational social class. At all three time-points mothers in routine occupations were less likely to initiate and breastfeed exclusively compared to mothers in the highest occupational classes. Table 1.1 presents the results of this analysis for 'routine' and 'lower managerial and professional' occupations.

Table 1.1: Adjusted odds ratios (95% confidence intervals) of the effect of social class occupations on initiation and exclusive breastfeeding[10]

Breastfeeding outcome	***Routine occupation***	***Lower managerial and professional***
Initiation	0.22 (0.18, 0.29)	0.56 (0.43, 0.67)
Exclusive at 1 month	0.42 (0.36, 0.50)	0.77 (0.67, 0.91)
Exclusive 4 months	0.50 (0.31, 0.77)	0.83 (0.63, 1.11)

Reference group: Higher managerial and professional occupation

Another large cohort study to provide data on associations between demographic characteristics and breastfeeding was the Born in Bradford (BiB) longitudinal multi-ethnic family cohort study[12]. The BiB group present their findings after analysing the relationship between ethnicity and the breastfeeding outcomes of initiation and continuation of any and exclusive breastfeeding at 12 weeks[13]. Data on

the 1,365 women included was adjusted for the following potential confounders: maternal age; education level; marital status; smoking during pregnancy; body mass index; parity; gestational age; birth weight; and mode of birth. The ethnic groups were self-reported as White British, Pakistani, Other South Asian (Indian, Bangladeshi and Other South Asian), and 'Other' ethnicities (White other, Black, mixed race, other unspecified). Compared to White British women (reference group) all mothers of the other ethnic groups were significantly more likely to initiate breastfeeding and provide any breast milk at four months. There was however no difference in rates of exclusive breastfeeding at four months: these are shown in Table 1.2.

Table 1.2: BiB longitudinal multi-ethnic family cohort study adjusted prevalence rate ratio (95% CIs) for breastfeeding outcomes by ethnic group[13]

Breastfeeding outcome	***Ethnic group***		
	Pakistani	***Other South Asian***	***Other ethnicities***
Initiation	1.19 (1.10, 1.29)	1.29 (1.18, 1.42)	1.33 (1.21, 1.46)
Any at 4 months	1.27 (1.02, 1.58)	1.99 (1.52, 2.62)	2.45 (1.86, 3.21)
Exclusive at 4 months	0.77 (0.54, 1.09)	1.55 (0.99, 2.43)	1.50 (0.88, 2.56)

Reference group: White British

Another prospective cohort study[14] - the Gateshead Millennium Baby Study – recruited 912 mothers who gave birth in 1999-2000 and presented their findings on the maternal characteristics in association with outcomes of initiation and continuation of breastfeeding at four months. Logistic regression analysis accounted for the potential confounders of socioeconomic (SE) group (affluent/deprived), maternal education and Townsend deprivation score quintile. In their analysis Wright et al used the 'deprived' SE group, 'none/other' maternal education and the most deprived Townsend quintile as the reference groups. They found that the mothers more likely to initiate breastfeeding were 'affluent' (OR 2.08, 95% CI 1.5, 2.9), had attended higher education (OR 8.14,

95% CI 4.6, 14.5) and in the most affluent Townsend quintile (OR 2.78, 95% 1.6, 4.9). These maternal characteristics were also associated with breastfeeding at four months (Higher SE group OR 1.20, 95% CI 0.67, 2.14; higher education OR 7.69, 95% CI 3.2, 18.4; and Townsend OR 3.11, 95% CI 1.3, 7.3).

1.4 The epidemiology of breastfeeding: international data

In the United States (US) the Centres for Disease Control and Prevention (CDC) annually consolidates state-by-state breastfeeding data. Based on 2009 data the latest report in 2012[15] showed a national initiation rate of 76.9% and the proportion of infants being breastfed (any breast milk) at six and 12 months was 47.2% and 25.5% respectively. Exclusive breastfeeding rates were 36% and 16.3% at three and six months respectively. All of these measures increased marginally since the previous annual report. The CDC also collects breastfeeding data through other surveys including the annual Pediatric Nutritional Surveillance System that reports on the nutrition of nearly nine million children in low-income families across the US. In the latest report (2012)[16] based on 2010 data, initiation was 63.2%, 25.1% were breastfed until at least six months and 16.9% for at least 12 months. Only proportions were reported. Data on exclusive breastfeeding were provided by 27 states and 10.7% of infants received breast milk alone for least three months.

Breastfeeding rates in Australia are higher than in the UK or US. A cross-sectional study[17] in two areas of New South Wales using 2000-2004 data from two databases (Obstetrics Package and Ingleburn Baby Information Systems) identified associations with maternal socio-demographic and related characteristics and breastfeeding practices. Data available on 9,618 mother-infant dyads were estimated to represent 70-90% of the potential population. The mean age of infants was two weeks when breastfeeding continuation data were collected; 59.8% of mothers were giving any breast milk at this time. Five independent predictors of *not* breastfeeding (statistically significant at

p<0.001) were: mother born in Australia (OR 1.67 (95% CI 1.45, 1.89)); unmarried (OR 1.79 (95% CI 1.52, 2.11)); living in 'disadvantaged accommodation' (OR 1.90 (95% CI 1.60, 2.26)); education only to a lower level (OR 1.88 (95% CI 1.38, 2.54)) and current smoker (OR 1.72 (95% CI 1.51, 1.96)).

Data analysis[18] from three (1995, 2000, 2004) Australian national health surveys link socio-economic status using the Index of Relative Socio-economic Disadvantage with breastfeeding initiation and continuation at three, six and 12 months. Compared to the most deprived mothers, the least deprived mothers were more likely to initiate and continue breastfeeding at all time points across the three surveys. These findings are consistent with those from the UK and US.

The first Australian National Infant Feeding Survey 2011[19] was a result of one of the recommendations in the Australian National Breastfeeding Strategy 2010-2015[20]. Prior to this national population-based survey there was little continuity around the collection of such information. A pool of 52,008 mothers with infants aged up to 24 months were randomly selected to receive a questionnaire and the overall response rate was 56.4% (n=28,759). The survey reported on a number of pre-specified indicators; those of interest to this thesis and the selected results are shown in Table 1.3. As found in the UK and US, characteristics associated with initiating breastfeeding were maternal age over 30 years, university education, not smoking, and having an annual income of $156,000 (Australian dollars) or more.

Table 1.3: Selected indicators and results from the Australian National Infant Feeding Survey 2010[19]

Indicator	***Selected reported results***
Breastfeeding initiation	95.9%
Proportion exclusively breastfed	1 month 55.8%
	6 months 2.1%
Proportion predominantly breastfed	1 month 60.3%
	6 months 3.9%

Breastfeeding rates in some parts of Europe, particularly Scandinavian countries, are considerably higher than in the UK. In a report from the Organisation for Economic Cooperation and Development[21] the proportion of infants ever breastfed ranged from 93-99% amongst the Scandinavian countries. The Swedish National Board of Health and Welfare reported in 2000 that 97% of infants being breastfed with 93% being breastfed exclusively, and at six months 73% of infants were still receiving breast milk with 41% being exclusive breastfed. As observed by Galtry[22] both Swedish government policy and cultural attitude are likely to have a great influence on the prevalence and practices of breastfeeding. Economic and social policies have created the opportunity for prolonged breastfeeding to be practised. In Scandinavian countries, mothers are paid by their employers between 80-90% of their full pay during maternity leave and fathers are actively encouraged to take their statutory two months paid paternity leave. It is the norm for parental leave to total 15 months so more mothers remain at home during the first 12 months than is the case in the UK. A report from the global charity Save the Children[23] presented the proportion of mothers that ever breastfed, breastfed exclusively for three months and practised any breastfeeding at six months (Table 1.4). Interestingly, despite the social and economic policies the Scandinavian countries have still been unable to meet the WHO recommendation for all babies to be exclusively breastfed until six months of age.

Table 1.4 Breastfeeding rates in Scandinavian countries (2012) *adapted from Save The Children report*[23]

Breastfeeding outcome	***Country (%)***		
	Norway	***Sweden***	***Denmark***
Ever breastfed	99	98	98
Exclusive at 3 months	70	60*	48
Any at 6 months	80	72	-

*Measured at 4 months

Current breastfeeding rates for other countries, in particular from developing countries, are difficult to demonstrate due to less systematic data collection methods. Two published datasets[24] from the United Nations Children's Fund (UNICEF) provide information on breastfeeding initiation (updated 2013) and exclusive breastfeeding and continuation up to 24 months (data between 2000 and 2007). Most of the data were identified either through the UNICEFs own Multiple Indicator Cluster Surveys (MICS) a system established in 1995 that originally identified baseline characteristics of populations across the world and then focussed on health, mortality and education related Millennium Development Goals. MICS appears to be a robust and systematic data collection method but it is a disadvantage that some of the data are not up-to-date. Data were also attributed to the Demographic and Health Survey, a US government funded organisation established in 1984 to collect data related to health outcomes of childbearing and infants.

Breastfeeding initiation reported between 1996 and 2011 for 114/199 countries[24] shows diverse rates. The lowest rate was identified in Serbia at 8% (collected in 2010) and the highest in Samoa at 88% (collected in 2009). UNICEF also published exclusive breastfeeding rates (up to 5 months) for 130 countries with data reported between 1987 and 2008. Data ranged from 1-88% and overall proportions for regions were given; Africa 32%; Middle East and North Africa 30%; Asia 41%; Latin America and Caribbean 41%; Central and Eastern Europe/Commonwealth of Independent States 27%; developing countries 37%; least developed countries 39%.

1.5 Health benefits of breastfeeding

Breast milk is described as the optimal nutrition for infants and the WHO recommend it can be given exclusively until six months of age which is when foods and other liquids can be introduced to the infant's diet[25,26]. The main components of breast milk are protein, carbohydrates, fats and vitamins[26]. These are thought to vary in proportion for every mother and at the different stages of

the lactation period. Additional elements in breast milk are immunological, hormonal and enzymatic that cannot be replicated in formula milk. Maternal antibodies are transferred to the infant particularly in colostrum, the first milk that mothers produce.

There is a wealth of evidence supporting the short and long term health benefits of breastfeeding for both mother and infant. For infants in the developing world where access to health care is limited and environmental factors increase the risk of infection (e.g. poor sanitation and inadequate nutrition) these health benefits are critical and are related to mortality. The two most authoritative publications on the health benefits of breastfeeding are the systematic reviews and meta-analyses of Horta et al[27] and Ip et al[28]. The systematic reviews and meta-analyses of Horta et al[27] focussed on the long-term effects of breastfeeding for infants on: blood pressure and blood cholesterol in later life; risk of overweight and obesity in later life; risk of type 2 diabetes; school achievement/intelligence levels. A contemporaneous search of the Medline database and references of identified studies by hand was described with quality assessment performed using a 'standardised form'. In total nearly 300,000 participants were included in Horta et al's[27] review: blood pressure in later life - 28 observational studies and two randomised controlled trials (RCTs) total n=30,308; blood cholesterol in later life - 22 observational and one RCT total n=10,024; risk of overweight and obesity in later life – 37 observational studies total n=135,417; risk of type 2 diabetes - 5 observational studies total *n*=89,140; school achievement/intelligence levels - three meta-analyses n=34,290 (number of participants only identifiable from one meta-analysis).

The systematic review and meta-analysis of Ip et al[28] reviewed the evidence base in the developed world on short and long term breastfeeding-related health benefits for both infants and mothers. Thorough and contemporaneous literature searches are described which lead to the inclusion of 43 primary studies for infant and 43 primary studies for maternal outcomes in addition to 29 systematic

reviews or meta-analyses which themselves included a total minimum of 343 to a maximum of 494 primary studies. Appropriate quality assessments for each study design, systematic review or meta-analysis were reported. These two prominent systematic reviews and meta-analyses have been summarised by Hoddinott[29] and are presented in Tables 1.4 and 1.5 for infants and mothers respectively.

More recently Eidelman and colleagues[30] published an updated policy statement in support of breastfeeding as the optimal method of infant feeding on behalf of the American Academy of Pediatrics. The evidence cited by the group is described as a summary of the review by Ip and colleagues[28] and an update of the evidence for the purposes of the policy statement. Although not described in the policy, it is assumed that a systematic search and standard procedures were followed. There is no description of the methods used for literature searching, quality assessment of the included studies and only the raw data are presented and are not pooled. The raw data presented by the group from the more recent studies support the conclusions drawn by Ip et al[28]. Recent findings include a 77% reduction in the risk of necrotising enterocolitis for preterm infants who only receive breast milk during their admission to intensive care compared to infants who are mix-fed. Also associated with exclusive breastfeeding is a reduced risk of Sudden Infant Death Syndrome (SIDS) (OR 0.27 (95% CI 0.27, 0.31) compared to those who had mixed feeds (OR 0.55 (95% CI 0.44, 0.69). There is strong support for exclusive breastfeeding as it appears to maximise infant health gains.

Table 1.5: Short and long term health benefits of breastfed *infants* in developed countries (*adapted from Hoddinott et al*[29]) *(continued overleaf)*

Condition	*Incidence or risk reduction*	*Studies included*	*Author*
Acute otitis media	Reduced risk when comparing ever breast fed with never (OR 0.77, 95% CI 0.64, 0.91) and exclusive breastfeeding for >3 months with never breastfed (OR 0.50, 95% CI 0.36, 0.70)	5 cohort and 1 case-control study	Ip
Atopic dermatitis	Reduced risk comparing children with a family history of atopy exclusively breast fed for over three months with those breastfed for less than three months (OR 0.58, 95% CI 0.41, 0.92)	MA of 18 prospective cohort studies	Ip
Childhood asthma	Reduced risk for infants with no family history of asthma in children under 10 who were breastfed for over three months compared to those not breast fed (OR 0.74, 95% CI 0.60, 0.94). There is conflicting evidence for infants with a family history of asthma	MA of 12 prospective cohort studies with mean 4.1 years follow-up; 10 prospective cohort studies	Ip
Childhood leukaemias	Any breastfeeding for at least six months reduced the risk of acute lymphocytic leukaemia (OR 0.80, 95% CI 0.71, 0.91) and acute myelogenous leukaemia (OR 0.85, 95% CI 0.73, 0.98)	MA of 14 case-control studies	Ip
Gastro-intestinal infection	Reduced risk of diarrhoea in the first year for those breastfed compared to not (OR 0.36, 95% CI 0.18, 0.74)	One systematic review of 14 cohort and three case control studies	Ip
Hypertension	Reduction of <1.5mHg systolic and of <0.5mmHg diastolic BP in adults ever breast fed vs. those never; reduction of 1.21 mmHg (95% CI to -1.72 to -0.70) in systolic and 0.49 mmHg (-0.87 to -0.11) in diastolic BP in adults using above comparison	Two meta-analyses of 26 studies (13 studies present in both); MA of 30 cohort and cross-sectional studies.	Horta

*CI confidence interval; MA Meta-analysis; NEC necrotising enterocolitis; OR odds ratio; SR systematic review; T1 Type 1 diabetes; T2 Type 2 diabetes † included by Horta et al; * included by Ip et al*

Table 1.5*:* Short and long term health benefits of breastfed *infants* in developed countries (a*dapted from Hoddinott et al*[29]*) (cont.)*

Condition	*Incidence or risk reduction*	*Studies included*	*Author*
Lower respiratory tract diseases	Reduced risk of hospitalisation in term infants <1 year old exclusively breast fed for >4 months vs. formula milk fed infants (OR 0.28, 95% CI 0.14 to 0.54)	MA of seven cohort studies	Ip
NEC	Reduced risk when comparing breast milk with formula milk in preterm births (risk ratio 0.42, 95% CI 0.18, 0.96)	MA of four trials in preterm infants (n=1134)	Ip
Overweight and obesity	Reduced risk of obesity in adolescence/adulthood for ever breastfed vs. never (OR 0.76, 95% CI 0.67, 0.86; OR 0.93, 95% CI 0.88, 0.99) in 2 MAs; a third meta-regression found 4% risk reduction (unadjusted OR 0.96/month of breastfeeding, 95% CI 0.94, 0.98) of being overweight in adult life for each additional month of any breastfeeding in infancy*. Those *ever* breastfed were less likely to be overweight/obese adults (OR 0.78, 95% CI 0.72, 0.84)†	2 MA of 9 & 17 cohort/cross-sectional studies & 1 SR using meta-regression of 28 cohort/cross-sectional studies*; MA of 33 cohort/ cross-sectional studies†	Ip* Horta†
Total cholesterol	Small reductions in total & low density lipoprotein cholesterol in adults ever breastfed vs. those never breastfed; 0.18mmol/l (95% CI -0.30, -0.06) reduction in mean total cholesterol in adults with above comparison	MA of 37 cohort and case-control studies; MA with 28 estimates of total cholesterol (23 cohort & cross-sectional studies	Horta
Type 1 diabetes	Any breastfeeding >3 months vs. any breastfeeding for <3 months reduced the risk of childhood T1 diabetes (OR 0.81, 95% CI 0.74, 0.89; OR 0.88, 95% CI 0.81, 0.96)	2 MAs of 18 & 17 case-control studies	Ip
Type 2 diabetes	Any breastfeeding reduced the risk of T2 diabetes in later life vs. exclusive formula feeding (OR 0.61, 95% CI 0.44, 0.85*; OR 0.63, 95% CI 0.45, 0.89)†	MA of 7 cohort and cross-sectional studies*; MA of five cohort studies†	Ip * Horta†

*CI confidence interval; MA Meta-analysis; NEC necrotising enterocolitis; OR odds ratio; SR systematic review; T1 Type 1 diabetes; T2 Type 2 diabetes † included by Horta et al; * included by Ip et al*

Table 1.6: Short and long term health benefits of breastfeeding for *mothers* in developed countries *(adapted from Hoddinott et al[29])*

Condition	***Incidence or risk reduction***	***Studies included***	***Author***
Breast cancer	Reduced risk of 4.3% for each year of breastfeeding in one MA and 28% reduction for at least 12 months cumulative breastfeeding in another; 1 of the meta-analyses and a systematic review reported decreased risk mainly in premenopausal women	Two meta-analyses and 1 systematic review of 47, 23 and 27 cohort and case control studies	Ip
Ovarian cancer	Any breastfeeding was associated with a reduced risk compared with never breastfeeding (OR 0.79, 95% CI 0.68, 0.91)	Meta-analyses of 9 case-control studies	Ip
Type 2 diabetes	For women without a history of gestational diabetes, each additional year of breastfeeding was associated with a reduced risk (OR 0.63, 95% CI 0.54, 0.76 in one cohort; OR 0.76, 95% CI 0.71, 0.81 in another)	Two large cohort studies from the USA nurses' health study, one prospective (n=83,585) and one retrospective (n=73,418)	Ip
Postnatal depression	Three studies found an association between early cessation of breastfeeding or not breastfeeding and an increased risk of postnatal depression; cause and effect cannot be determined	Six prospective cohort studies (n= 5,524)	Ip

CI confidence interval; MA Meta-analysis; OR odds ratio

1.6 Interventions to increase breastfeeding rates in the UK

As breastfeeding confers substantial health benefits there is potential for considerable public health gains and financial savings for the NHS[31] if breastfeeding rates were to increase. This has been recognised by the UK DH for some years and they have recommended many breastfeeding promotion interventions one of which being peer support. The concept of peer support is described below and is followed by an exploration of the evidence of effectiveness of peer support specifically for breastfeeding.

1.6.1 Peer support

Peer support is the naturally occurring 'organic' coping mechanism used to support one another through a shared experience which may be positive or negative. One of the first areas to conceptualise and explore this type of support was mental health within a human rights movement to improve the treatment and management, both medical and societal, of mental health patients. It was felt that the patients themselves knew their condition better than any other and so supporting each other through their experiences would be beneficial[33]. This beneficial effect was soon taken up by others, such as those with physical disabilities, and peer support is well known in Recovery programmes such as Alcoholics Anonymous and also within groups with chronic health conditions such as rheumatoid arthritis, cancer and diabetes. Peer supporters are 'lay' (non-professional) and they usually do not have professional or technical qualifications but instead what 'qualifies' one as a peer is having the same or similar personal experience of a situation as the another. Mead[33] defines peer support as:

"Peer support is a system of giving and receiving help founded on key principles of respect, shared responsibility, and mutual agreement of what is helpful. Peer support is not based on psychiatric models and diagnostic criteria. It is about understanding another's situation empathically through the shared experience of emotional and psychological pain. When people find affiliation with others whom they feel are "like" them, they feel a connection. This connection, or affiliation, is a deep, holistic understanding based on mutual experience where people are able to "be" with each other without the constraints of traditional (expert/patient) relationships."

This definition highlights the basis of peer support being a shared experience, both parties having been through the same or very similar situations enabling them to understand what the other is 'going through'. Mead alludes to the unavoidable hierarchy in relationships between patients and professionals which is absent between peers. Another element specific to peer support which is absent in patient/health professional relationships is reciprocity. This is captured by Heisler[34] who cites three foundations of peer support: informational support; emotional support; and reciprocal support. Informational support may include knowledge on the local area and what services are available as well as experience of negotiating them. Emotional support encompasses encouragement, advocacy and moral support[32]. Aside from a reciprocal relationship crossing the boundaries of professional conduct there are further characteristics that if shared are thought to be more likely to result in a beneficial relationship, these include culture, ethnicity, age, language and gender[32].

Whilst the literature pertaining to mental health can be generalised, Dennis[36] sets out a definition of peer support in a health care context and in comparison to Mead's definition provides more detail on the content of the support itself (page 329):

"peer support, within the health care context, is the provision of emotional, appraisal, and informational assistance by a created social network member who possesses experiential knowledge of a specific behaviour or stressor or similar characteristics as the target population, to address a health related issue of a potentially or actually stressed focal person"

Peer support can be provided on a one-to-one basis, in groups, via telephone and more recently online. Peer support has been formalised in the healthcare sector which has led to the emergence of paid and volunteer supporter worker roles. With this shift to formalisation of what was an 'organic' peer role there are inevitable cost implications to provide appropriate training and ongoing supervision. Although funding these roles is less expensive compared to employing health professionals the cost of maintaining a peer support service is substantial which can affect the successful commissioning of such programmes. In addition to the cost implications it is important to consider that the move to 'professionalise' peers through training does indicate a departure from being 'organic' peers and entering into a more para-professional role. Peer supporters work in a large number of areas which means that a wide range of people can be supported in this way but it does make comparison between examples of peer supporter interventions a challenge. Despite there being evidence of peer support implementation across the UK, quantitative data on this is sparse hence the precise coverage is unclear.

Peer support for breastfeeding has been tailored to meet the needs of different groups especially women in ethnic minority groups where various religious and cultural observances affect breastfeeding practices. In the UK there has been targeted health education for South Asian communities to address myths such as colostrum being 'old milk' and unhealthy for babies. A Bristol-based study[37] used focus groups and interviews to explore the health and cultural beliefs of South Asian grandmothers (usually the matriarch) around infant feeding and how this influenced

breastfeeding. The research group[37] also evaluated an information leaflet that described health benefits of breastfeeding, positioning and attachment and how families can support exclusive breastfeeding. The leaflet was well received and the group concluded that inclusion of the extended family in health education about breastfeeding was essential in order to maintain awareness of good infant feeding practices and particularly of the benefits of exclusive breastfeeding. A more recent qualitative study[38] using in-depth interviews found that women of South Asian ethnicity cited living with extended family and having limited privacy as influential in compromising their intention to breastfeed.

It is understandable why peer support was formalised and used to support breastfeeding women, it is plausible to expect to see an improvement in breastfeeding rates when women are supported by other women like them from the same community, age and ethnicity who have usually had experience of breastfeeding. It was in the US that peer support was initially used to support breastfeeding, specifically in low-income groups of women. The early studies reported 20 years ago were on the effect of Women Infants and Children-based (WIC) peer support[39,40] which demonstrated an effect on breastfeeding rates but the studies were of low/medium quality. Policy in the UK was informed by such studies in the early 2000's and is described below. The acceptability of peer support has been studied and in Chapter 5 I present a literature review on women's experiences of support and peer support for breastfeeding.

1.6.2 Systematic review evidence and UK policy recommendations

A systematic review to estimate the effect of breastfeeding promotion programmes *on initiation, continuation and exclusive breastfeeding* rates published by the DH[41] included 59 studies. The studies comprised 14 RCTs, 16 'non-randomised controlled trials' (non-RCTs) and 29 'before-after studies' defined by the group as including cohort and cross-sectional studies. The interventions

implemented in the studies comprised training of healthcare professionals, media campaigns, the Baby Friendly Hospital Initiative (BFHI) and peer support, the latter evidenced by two non-RCTs from the US and Scotland. The US-based study[39] which compared 'peer counselling' with no peer counselling is probably better described as a cohort study. The reported results showed a statistically significant association between breastfeeding initiation, duration at 6 and 12 weeks, and mean duration of exclusive breastfeeding. The other 'non-RCT' from Scotland appears to be the preliminary report of the later published quasi-experimental trial from the same author[42]. This study compared rates of breastfeeding between selected geographical areas; one area was allocated as the intervention area (peer support) and the other the control (standard care). The results reported for the outcome of initiation in this study suggest a marginal effect on the outcome of breastfeeding initiation (Relative Risk (RR) 1.228 (95% CI 0.957, 1.575)). Based on this evidence the reviewers recommended implementation of peer support programmes for low-income women in the UK.

A Cochrane systematic review of interventions that promote *initiation*[43] included only RCTs. Eight RCTs were found and the interventions tested were: health education of pregnant women (5 RCTs); peer support (1 RCT); breastfeeding promotion discharge packs (1 RCT); and early infant-mother contact (1 RCT). The single RCT[44] compared a peer support intervention with usual care in a defined US-based Hispanic community that intended to breastfeed. Even though this trial was of adequate quality the outcome measures were not clearly described as primary or secondary and no sample size calculation was given. The RCT reported rates of *non*-initiation as lower in the intervention than the control group (RR 0.39, 95% CI 0.18, 0.86) but there was no difference in the rate of stopping breastfeeding at one, three or six months. The review concluded that although there was potential for a peer support intervention to impact initiation rates but cautioned that generalisibility was limited due to the setting and the specific demographics of the study population.

Based on three systematic reviews and a review of reviews the 'evidence into practice briefing'[45] identified evidence-based interventions to *promote breastfeeding* with particular interest in women less likely to breastfeed. The briefing was produced for professionals with links to breastfeeding support services, from clinicians to commissioners and referred to improving breastfeeding *initiation and continuation*. The report included evidence from two studies of peer support interventions. One was a non-randomised trial[46] of peer support versus no peer support in a group of women receiving federal support from the WIC programme. The non-RCT[46] was assessed as being of moderate quality and reported a greater proportion of women initiating breastfeeding and continuing to breastfeed at four weeks in the intervention compared to the control arm (82% versus 31% respectively; 56% versus 10% respectively) and a longer period of breastfeeding in the intervention compared to the control arm (5.7 versus 2.5 weeks respectively).

The other study was an RCT assessed as high quality which evaluated the effect of a telephone-based peer support service in Canada[47]. This intervention demonstrated a statistically significant difference at 12 weeks in both breastfeeding duration and exclusivity (both significant at $p<0.01$) in favour of the peer intervention group. Based on these two trials similar programmes were recommended for the UK although it was acknowledged that observation of any implementation should be done. However, as none of the evidence was UK-based a recommendation of high-quality evaluation alongside implementation may have been appropriate.

A systematic review[48] of 80 studies of public health interventions promoting the *continuation of breastfeeding* was used to make recommendations on potentially beneficial and effective interventions to prolong breastfeeding. The public health interventions that showed a beneficial effect on breastfeeding duration included: hospital-based skilled support from health professionals or peers; removing free formula milk from discharge packs; unrestricted mother-infant contact, skin-

to-skin contact and feeding; avoiding milk supplements; antibiotics for infective mastitis with continued regular feeding. In addition, beneficial interventions identified were community-based postnatal support from health professionals and peer supporters for those who initiated breastfeeding. The evidence on peer support interventions came from three RCTs, two based in Canada[47,49] and one in the UK[50]. The two Canadian RCTs both of telephone based peer support produced conflicting results: Mongeon[49] found no difference in breastfeeding at six months whilst as reported earlier the study by Dennis[47] showed significant benefit at all time points (four, eight and 12 weeks). The third RCT was UK-based[50] and found no evidence of significant effect of NCT counsellor support on breastfeeding at any time point (initiation, six weeks and 16 weeks). The reviewers were pragmatic and acknowledged that substantial effort would be needed to make a difference to breastfeeding rates in the UK. They also acknowledged the limitations of the UK evidence and recommended UK-based evaluations of effectiveness, content and cost-effectiveness of peer support interventions.

Another Cochrane systematic review[5] on the effe*ctiveness of support for breastfeeding mothers* included 34 RCTs or quasi-RCTs that compared extra support (lay or professional or both) with usual maternity care. 'Lay support' was described as that supplied on a voluntary basis or provided through employment in a specific role which was waged. The meta-analyses of *all forms of support* showed*:* increase in duration of any breastfeeding (RR of stopping any breastfeeding before 6 months 0.91, 95% CI 0.86, 0.96) and increase in duration of exclusive breastfeeding (RR 0.81, 95% CI 0.74, 0.89). *Lay and professional support combined* showed*:* extended duration of any breastfeeding (RR of stopping breastfeeding before 4-6 weeks 0.65, 95% CI 0.51, 0.82; RR of stopping breastfeeding before 8 weeks 0.74, 95% CI 0.66, 0.83). *Lay support alone* showed*:* significant reduction in cessation at the last study follow-up (RR 0.86, 95% CI 0.76, 0.98); reduction in cessation of exclusive breastfeeding before the last study follow-up (RR 0.72, 95% CI 0.57, 0.90), before 4-6 weeks (RR 0.66,

95% CI 0.46, 0.96), before 2 months (RR 0.44, 95% CI 0.26, 0.73), before 3 months (RR 0.42, 95% CI 0.31, 0.57) and before 5 months (RR 0.47, 95% CI 0.40, 0.54).

There were six lay support RCTs included in this Cochrane review from the US[44], UK[50-52], Canada[47] and Brazil[53]. One Canada-based study already described above as an RCT[49] is categorised here by the review authors as a quasi-RCT and two cluster RCTs from Mexico[54] and Bangladesh[55]. Of the three RCTs based in the UK[50-52], only one[51] demonstrated a positive effect for the outcome of exclusive breastfeeding: a moderate/high risk of bias was given to the trial as the allocation method was inadequate and not concealed – women were allocated to the intervention or control group on an alternate basis: there was no sample size calculation and a very small sample (n=38) was drawn. Recommendations from the systematic review were for more trials to target those less likely to breastfeed.

The DH has long supported the promotion of breastfeeding with the objective to improve UK breastfeeding rates. Since 2000 there has been an emphasis on finding evidence based interventions that can improve these rates and ultimately improve public health. Peer support has been strongly linked with increasing initiation and duration by all of the reviews, but with conditions. In summary these systematic reviews and evidence-based reports have recommended the implementation of peer support as part of antenatal and/or postnatal care, and as a telephone-based service. The evidence comes largely from poor to moderate quality studies from countries other than the UK. In the UK standard care includes routine support and advice for pregnant women about breastfeeding; which this raises the issue of generalisibility of trials in other settings. High quality RCTs based in the UK have not demonstrated significant effects of peer support on breastfeeding rates, the high quality RCTs that do show significant effects are from other countries. With relatively few UK-based high-quality studies there is a need for further robust evaluations of peer support programmes

particularly amongst mothers less likely to choose to breastfeed. However, the evidence described from the earlier systematic reviews and reports has been used as the basis for the UK current policy recommendations around breastfeeding promotion. As a result, peer support programmes are being established across the UK.

1.7 National breastfeeding policy

UK government policy has long supported the promotion of breastfeeding: the Committee on Medical Aspects of Food Policy of 1974 recommended all mothers be encouraged to breastfeed. In 1990 the 'Innocenti Declaration' of the WHO recommended exclusive breastfeeding for four to six months. Confirmation of this as the optimal duration of breastfeeding came from a Cochrane systematic review[25]. This recommendation remains and has been transposed into the UK DH Infant Feeding Recommendation in 2003[56].

In order to action and support the recommendations made by government, several initiatives have been undertaken across the UK including the annual National Breastfeeding Awareness Week (launched in 1993), the establishment of the National Network of Breastfeeding Co-ordinators (est. 1995) and the Infant Feeding Initiative launched in 1999. The Infant Feeding Initiative came after the government's inquiry into health inequalities[57] which highlighted social inequalities and infant feeding. This inequality has been discussed at length in the literature and goes beyond just infant feeding; the most deprived in communities are those with poorest health outcomes[58-60]. The IFS and other evidence discussed earlier in the Chapter have consistently identified mothers who are less likely to breastfeed as those living in the most deprived areas, having manual occupations, young (<30 years) and single parents.

The Infant Feeding Initiative commissioned the evaluation of 79 infant feeding projects across the country in deprived communities in 1999 to 2002[61]. The aim of the evaluation was to determine feasibility and acceptability of community-based support centres to make a change to the non-breastfeeding culture, education of health professionals and school children; and peer support. Twenty-six of the projects were community-based peer support programmes. The evaluation of these projects resulted in information to aid the set-up and organisation of future projects; overall the communities accepted the projects and through the qualitative data collected there were trends of increased breastfeeding continuation. The report does not attribute causal links between the interventions and any changes in breastfeeding rates.

The DH's 'Improvement, expansion and reform: the next three years. Priorities and planning framework' (2003-2006)[62] set the target for each Primary Care Trust (PCT) to achieve an annual 2 percentage points increase in breastfeeding rates with a focus on supporting minority ethnic groups. In 2004 the DH National Service Framework (NSF) for Children, Young People and Maternity Services published 11 standards to protect particular groups. Standard 11[63] focused on maternity services and includes the need to promote breastfeeding and that breastfeeding support be easily accessible, include 'mother-to-mother' support and be community-based. Building on the NSF and Infant Feeding Initiative is the 'Good practice and innovation in breastfeeding' document for NHS Trusts[64] recommending peer support and including 'top tips' on setting up mother-to-mother support groups.

More recently in 2009, the DH published their strategy to help improve the health of children and young people[65]. Integral to the strategy was staff training and establishing peer support programmes. To aid this process a commissioning guide was produced for local authorities[66] outlining implementation of peer support as part of a wider breastfeeding support service that integrates with the community. This commissioning guide only references the Infant Feeding

Initiative report[67] when evidencing the need for peer support programmes and recommended the regular collection of demographics and qualitative feedback from all parties involved, particularly the mothers receiving the service.

The next section of this Chapter describes a large cluster RCT that evaluated a new community-based peer support worker service that provided universal breastfeeding support across Heart of Birmingham teaching (HOB) PCT, UK.

1.8 The Heart of Birmingham Breastfeeding Initiation Trial (HOBBIT)

In 2005 breastfeeding initiation in HOB PCT was 58%, substantially lower than the national average of 77% in England and Wales at that time[8]. Continuation rates up to six months were also low in the PCT. In response to this, the PCT developed a structured programme to improve these rates but also to meet the government's recommended two percentage point annual increase in initiation[62]. As part of this programme the PCT successfully secured funding to employ 11 community-based peer support workers (PSWs) to provide antenatal information and advice on breastfeeding to pregnant women based in the General Practice (GP) antenatal clinics. The PSWs would also provide home-based postnatal support to the women who initiated breastfeeding. The HOBBIT trial[68] was commissioned to evaluate this new community-based service alongside its implementation by randomly allocating the clusters of GP practices to the new PSW service or current (usual) care. It found no difference in the primary outcome of breastfeeding initiation between the two trial arms (cluster adjusted OR 1.11, 95% CI 0.87, 1.43). The secondary outcome was breastfeeding continuation and these results make up the HOBBIT follow-up study. The HOBBIT follow-up study is presented in Chapter 3 of this thesis.

1.9 Summary

The literature presented here shows that the initiation and continuation of breastfeeding and exclusive breastfeeding practices are associated with certain maternal characteristics. Mothers who are in older age groups, having their first baby, affluent, employed in professional or managerial occupations, who remained in education for longer and those in ethnic minority groups represent those more likely to breastfeed. This has been shown in a number of large cohort studies based in the UK and by data from international surveys. The health related benefits of breastfeeding are numerous and have the potential to optimise the health and reduce mortality of infants in the developed world and to make a crucial impact on the health of infants in the developing world. It is clear that breastfeeding can improve public health.

Despite numerous interventions and support from UK government there have been no remarkable improvements in breastfeeding rates in the UK over the past 10 years. Peer support has been recommended as one intervention to improve breastfeeding initiation and duration, particularly amongst low-income women. However UK evidence is poor and further high quality UK-based studies are necessary. One high-quality cluster-RCT was the HOBBIT trial which evaluated a new Birmingham-based peer support worker service alongside its implementation. After the HOBBIT trial findings on breastfeeding initiation were found to be negative, I undertook a systematic review of the evidence of the effectiveness of peer support interventions for increasing breastfeeding initiation. This is presented in Chapter 2.

1.10 Research questions and thesis overview

There is a discrepancy between the evidence-base used in UK policy documentation and current high quality evidence from the UK on the effectiveness of peer support for breastfeeding. This thesis aims

to address the effectiveness of peer support for breastfeeding by answering the following research questions:

1. ***Are antenatal peer support interventions effective in increasing breastfeeding initiation rates?***

Chapter 2 will address this question through a systematic review and meta-analysis.

2. ***Are postnatal peer support interventions effective in increasing breastfeeding continuation rates?***

Chapters 3 and **4** will address this question by presenting the findings of the HOBBIT trial follow-up evaluating a peer support worker service and a systematic review and meta-analysis respectively.

3. ***What are women's experiences of one-to-one breastfeeding peer support and what are their recommendations to improve such support services?***

Chapter 5 will address this question by presenting a qualitative interview study I developed and carried out with 16 women (not part of the HOBBIT trial).

Finally **Chapter 6** presents the conclusion, implications for practice and policy, and research recommendations.

Chapter 2

The effect of antenatal peer support on breastfeeding initiation: a systematic review

Ingram L, MacArthur C, Khan K, Deeks J, Jolly K. Effect of antenatal peer support on breastfeeding initiation: A systematic review. Can Med Assoc J 2010; 182(16):1739-1746.

Thesis author contribution

I designed the study protocol in conjunction with KJ and KSK. I designed and carried out the systematic database searches. Independently and in duplicate I screened the initial references for retrieval and extracted the data. KJ and I performed the meta-analyses. I interpreted the data with input from KJ, CM and KSK. I drafted the manuscript with input from KJ and KSK, JJD and CM critically reviewed it.

2.1 Purpose of the chapter

Chapter 1 outlined the epidemiology of breastfeeding and it is clear which groups of women are more likely to initiate and continue breastfeeding. Improving breastfeeding rates has the potential to improve public health dramatically, particularly for those who are least likely to breastfeed. Supported by the UK government, the UK DH has recommended the implementation of breastfeeding peer support programmes particularly those that target low-income women. The evidence used to support these policy recommendations is from countries outside of the UK and/or of poor scientific quality. As the HOBBIT study[68] (Appendix A) showed that peer support had no effect on breastfeeding initiation I carried out a systematic review to update the current evidence base on the effect of antenatal peer support on breastfeeding initiation. This review has been published[69] (Appendix B) and an extended version is presented in this Chapter.

2.2 Background

As described in the previous chapter, breastfeeding confers numerous benefits for mothers and infants[27,28], yet many women still do not initiate breastfeeding[3]. The WHO[26] recommends exclusive breastfeeding to six months based on the evidence in their systematic review of mainly non-randomised but also quantitative studies, from both developed and developing countries. National governments have implemented initiatives to increase initiation rates[62, 70]. Peer support has been put forward as one intervention to increase breastfeeding rates overall, but there have been only a small number of high quality RCTs carried out on initiation. The evidence on which UK government recommendations have been based are not the high quality RCTs, however. One systematic review[41] (published in 2000) concluded, based only on two non-randomised studies, that antenatal peer support had a positive effect on initiation. While it is the case that most of the RCT evidence was published after 2000, the national recommendation was based on poor quality evidence.

Another systematic review[43] (published 2005, updated 2007) only included RCTs, but excluded those in which the primary purpose was to affect duration. This excluded a large number of trials as their intervention was to be delivered in both the antenatal and postnatal periods despite their chosen primary outcome. Based only on one RCT, the latter review concluded that peer support is likely to result in improvements in initiation among low income women where baseline breastfeeding rates are considered low. Methodological weaknesses of the available evidence and inclusion restrictions in the most recent review lead to uncertainty in the recommendations made. Yet despite this, antenatal breastfeeding peer support is being incorporated into routine maternity care in some parts of the world[45].

Antenatal peer support could be provided as a universal service to all women, or targeted at only those considering breastfeeding. Although trials made this distinction, previous reviews have not. New evidence has become available presenting an excellent opportunity to look again at this question as part of this thesis. As such, the purpose of this review was to assess the effectiveness of antenatal peer support, either as a universal or targeted service, including all studies with concurrent controls, which examine breastfeeding initiation.

2.3 Methods

A protocol was developed prospectively to conduct the review, using widely recommended methods[71]. This was to ensure as far as possible that no changes would be made or restrictions set in light of any aspect of the review process.

2.3.1 Literature search

The following bibliographic databases and resources were searched: British Nursing Index (1981-2008); CINAHL (1982-2008); Cochrane library; EMBASE (1980-2008); Medline (1950-2008); Controlled

Trials website. Reference lists of retrieved articles were manually searched. An updated search was carried out in January 2009 in Medline (1950-2009); see Appendix C for search strategy.

Citations and papers were selected using an inclusion/exclusion form. Inclusion criteria were: (i) pregnant women; (ii) peer support intervention provided in the antenatal period irrespective of whether it was also provided in the immediate postnatal period; (iii) any comparator;(iv) breastfeeding initiation reported; (v) Study design either RCT, quasi-randomised or cohort study with concurrent control. Peer support was defined as support offered by women who have themselves breastfed, usually from the same socio-economic background and locality to women they are supporting and who have received appropriate training. Peer supporters may be voluntary or receive basic remuneration and/or expenses[45]. Universal peer support was described as being offered to all women and targeted peer support offered only to women who were considering breastfeeding. Targeted peer support may be more effective in increasing initiation, since it has a greater chance of success at the outset due to women's motivation. For the purposes of this review breastfeeding initiation was defined as any attempt to breastfeed, even if only once. Non-randomised studies were included to explore the full spectrum of evidence as many studies in this area have been conducted in this way.

No language restrictions were applied so that all potentially relevant citations could be sought. Potentially relevant citations were identified through a comprehensive electronic search carried out by myself. Inclusion and exclusion criteria were applied to all citations and hard copies of potentially relevant papers were obtained and assessed for relevance by myself and a colleague. When there was uncertainty it was resolved by consulting co-authors of the published paper.

2.3.2 Data extraction and study quality assessment

Data were extracted on participants, intervention, type of peer support (universal/targeted), outcome, study type, methods, results and quality. A tool[72] was adapted to assess the risk of bias in both experimental and observational studies[73]. The tool (Table 2.1) classified study quality into 'high', 'medium' or 'low' for selection, performance, measurement and attrition bias based on descriptions of the design, execution and analysis. Studies scored with the same quality level in two or more of the four categories were considered to be of that quality overall.

2.3.1 Data synthesis

The data were tabulated and studies categorised as implementing universal or targeted peer support. Risk ratios (RR), with 95% confidence intervals (CI), were used where available or were calculated from the other measures of effect reported. When pooling studies it is important to choose a summary statistic likely to be constant across settings. Although trials typically discuss the relative proportions breastfeeding, it is more likely that the relative risk (RR) of not initiating breastfeeding would be constant across settings where initiation rates vary, i.e. that an effective intervention would cause a greater number of women to breastfeed in a setting where rates are low than where few women do not breastfeed. So, for the purposes of meta-analysis the pooled RR of failure to initiate has been used, which to aid interpretation has been re-expressed as the absolute number of additional women initiating.

Meta-analysis was only considered for studies with a low risk of bias. Heterogeneity was explored among included studies qualitatively (by comparing their characteristics) and quantitatively (using χ^2 test of heterogeneity and I^2 statistic). Where appropriate, I combined results from included studies for each outcome to give an overall estimate of the treatment effect. For cluster trials the design effect was computed by a statistician from data presented in the reports (intra-class correlation

coefficients (ICCs) and cluster adjusted estimates) and the standard errors of the relative risk adapted to make appropriate allowance for clustering[74]. Where ICCs were not reported, a statistician computed a design effect using mean ICC from the trials in which they were available.

Table 2.1: Quality assessment criteria[72]

Bias	***High quality***	***Medium quality***	***Low quality***
Selection	Studies with randomisation, allocation concealment, similarity of groups at baseline	RCTs with some deficiencies in randomisation e.g. lack of allocation concealment, or non-randomised studies with either similarities at baseline or use of statistical methods to adjust for any baseline differences	Non-randomised, with obvious differences at baseline, and without analytical adjustment for these differences.
Performance*	Differed only in intervention, which was adhered to without contamination, groups were similar for co-interventions or statistical adjustment was made for any differences	Confounding was possible but some adjustment was made in the analysis	Intervention was not easily ascertained or groups were treated unequally other than for intervention or there was non-adherence, contamination or dissimilarities in groups and no adjustments made.
Measurement	Outcome measured equally in both groups, with adequate length of follow-up (i.e. at least 6 weeks postpartum), direct verification of outcome, with data to allow calculation of precision estimates.	Inadequate length of follow up or length not given	Inadequate reporting or verification of maternal mortality or differences in measurement in both groups
Attrition	No systematic differences in withdrawals between groups and with appropriate imputation for missing values		Incomplete follow-up data, not intention-to-treat analysis or lacking reporting on attrition

**Blinding was not a quality assessment as blinding of participants or caregivers to intervention types was not possible*

2.4 Results

2.4.1 Identification of the literature

371 citations were identified in the primary scoping search, of which 348 were excluded due to irrelevance or duplication. Of 23 studies assessed in full, 12 were excluded; leaving 11 for review. See Figure 2.1 for the flow chart to show the identification of literature. Of these studies, seven[40,42,46,54,68,75,76] reported an intervention of universal peer support and four[39,44,50,77] targeted peer support. Tables 2.2 and 2.3 show the study characteristics by universal and control interventions respectively. All control groups received routine maternity care practised in that region although this was not always clearly described.

2.4.2 Quality of the studies

The quality of the eleven included studies varied. Three universal RCTs[54,68,76] and three targeted RCTs[44,50,77] were classified as high quality overall. The other studies were of medium to low quality, one was a targeted cohort with concurrent control[39] and the remaining four were universal – one cluster-RCT[40], one quasi-RCT[42] and two observation studies[46,75].

2.4.3 Study Settings and populations

Six of the eleven studies were undertaken in the US[39,40,44,46,75,77], one in Mexico[54] and four in the UK (two in Scotland[42,76] and two in England[50,68]. The populations in all studies were predominantly low income women. Of the studies in the US they all included women eligible for assistance from the federal assistance programme WIC. This programme is available for low income pregnant women, breastfeeding mothers, and infants under five years of age. To qualify, the household must have an income below 185% of the US Poverty Income Guideline. The studies undertaken in the developing world included women that had limited access to health care and lived it what could be considered,

basic conditions. All of the UK studies included women considered to be on low income although none of the studies describe clearly what level of income women received.

Figure 2.1 Identification of relevant literature on antenatal peer support to improve breastfeeding initiation

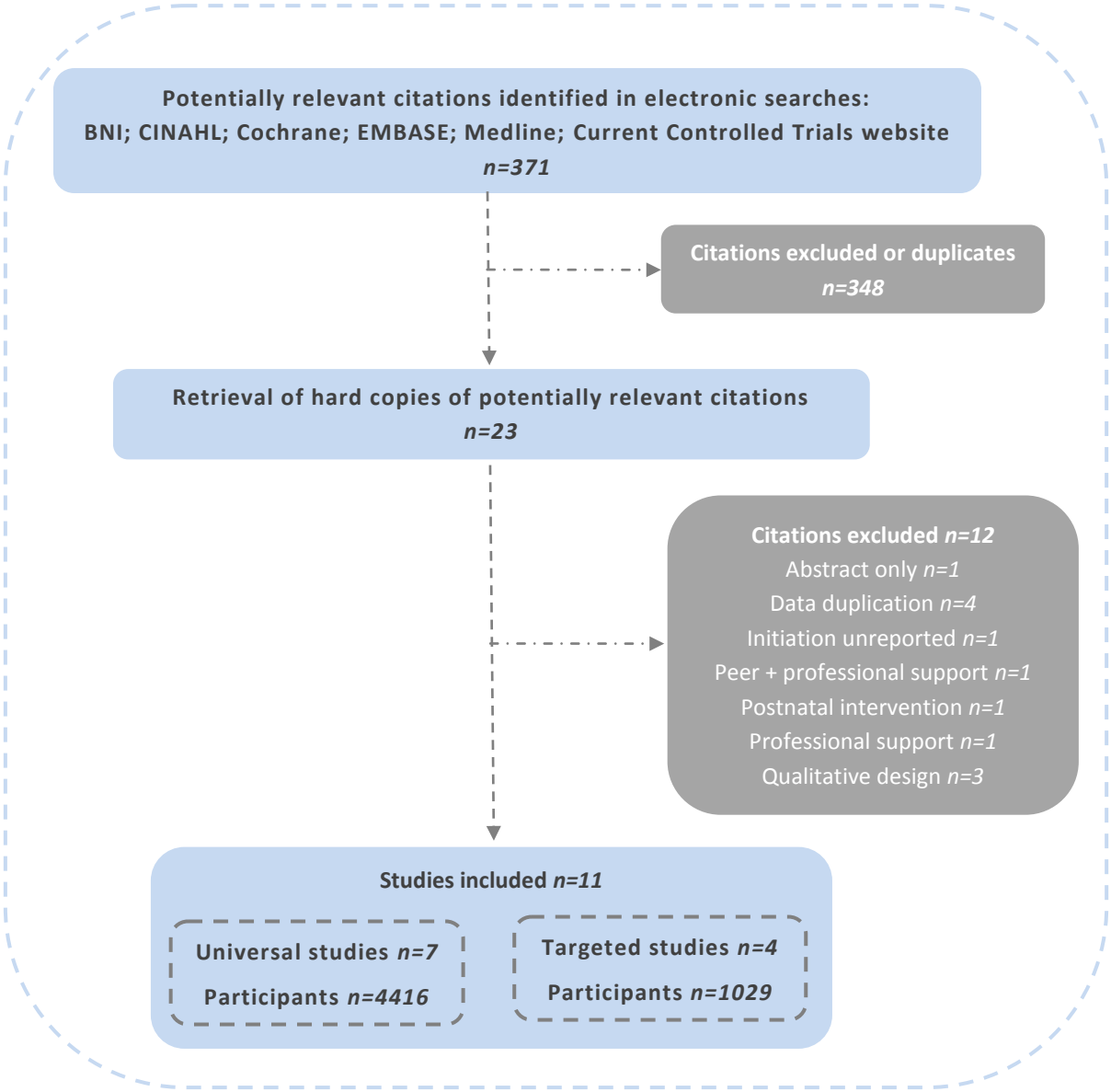


Table 2.2: Characteristics of included studies with universal peer support interventions *(continued overleaf)*

Study	***Methods***	***Participants***	***Intervention***	***Outcomes***	***Reported initiation results***	***Quality****
MacArthur[68]	*Study design:* Cluster RCT *Location:* Birmingham, UK *Study group:* 66 GPs Intervention *n*=1140, Control *n*=1371 Total *n*= 2511 *Analysis:* Intention to treat	All pregnant women registered within the health district remaining in the area	Routine antenatal care, 2 antenatal peer support visits at home/clinic (24-38 wks; 32-34 wks gestation). *Control*: Routine care	*Primary outcome*: Breastfeeding initiation	Initiation data on 2398 (95%) *Intervention*: 747/1083 (69.0%) *Control*: 896/1315 (68.1%) Cluster adjusted OR 1.11 95% CI 0.87, 1.43, p=0.40	1: H 2: H 3: H 4: H

BF breastfeeding; C control; GP general practice; H High; HIV Human Immunodeficiency Virus; I intervention; L Low; M Medium; NICU Neonatal Intensive Care Unit; *PC Peer Counsellor/Counselling; PN Postnatal; RCT randomised controlled trial; UK United Kingdom; USA United States of America; WIC Women, Infants & Children programme *1: selection bias; 2: performance bias 3: measurement bias 4: attrition bias.*

Table 2.2: Characteristics of included studies with universal peer support interventions *(cont.)*

Study	*Methods*	*Participants*	*Intervention*	*Outcomes*	*Reported initiation results*	*Quality**
Muirhead[76]	*Study design*: RCT *Location*: Ayrshire, Scotland *Clinical setting*: One general practice *Study group*: 225 women, followed-up to 16 weeks postnatal. Intervention *n*=112 Control *n*=113 *Analysis*: Intention to treat	Pregnant women at 28 wks gestation were recruited. No inclusion/exclusion criteria given.	Home-based peer support from volunteers. At least 1 antenatal contact (more if requested). If breastfeeding on hospital discharge would receive home-based support. Peers to contact women at least every 2 days (phone/ home visit) or as often as required until 28 days postnatal. Peers provided further support until 16 weeks. *Control* - usual care: community midwives until 10 days postnatal then transferred to health visitor, breastfeeding support groups	*Primary outcomes*: Breastfeeding initiation; Breastfeeding duration at 10 days, 6 and 16 weeks; Exclusive breastfeeding at 6 and 8weeks	*Intervention*: 61/112 (54.5%) *Control*: 60/113 (53.1%) (difference of 1.4%, 95% CI -11.7, 14.4)	1: H 2: H 3: H 4: H

BF breastfeeding; C control; GP general practice; H High; HIV Human Immunodeficiency Virus; I intervention; L Low; M Medium; NICU Neonatal Intensive Care Unit; *PC Peer Counsellor/Counselling; PN Postnatal; RCT randomised controlled trial; UK United Kingdom; USA United States of America; WIC Women, Infants & Children programme *1: selection bias; 2: performance bias 3: measurement bias 4: attrition bias.*

Table 2.2: Characteristics of included studies with universal peer support interventions *(cont.)*

Study	***Methods***	***Participants***	***Intervention***	***Outcomes***	***Reported initiation results***	***Quality****
Morrow[54]	*Study design*: Cluster RCT *Location*: Mexico City Mexico *Clinical setting*: Area was mapped into 39 domains. 13 clusters were randomly allocated to each of the 3 study arms. *Study group*: 130 participants recruited. Intervention 1 *n*=44; Intervention 2 *n*=52; Control group 1 *n*=34 *Analysis*: unspecified	Pregnant women living in study area that wanted to participate & had an ongoing pregnancy with a positive outcome. Ineligible for study if they moved out of the area before the first postnatal visit. Follow up for 3 months (for rates of exclusive breastfeeding and of diarrhoea) and 6 months (duration of any breastfeeding)	Community peer counselling. *Intervention 1:* 6 peer counsellor home visits (mid & late pregnancy and in weeks 1, 2, 4 and 8 postnatal) *Intervention 2*: 3 peer counsellor home visits (one in late pregnancy & then in the week one and two after birth) *Control*: Usual care - experiencing lactation problems would contact their physician. No other source of breastfeeding counselling available.	*Primary outcome*: Exclusive breastfeeding up to 3 months BF initiation was reported as a baseline.	Initiation data on 127 (97%) *Intervention 1*: 44/44 (100%) *Intervention 2*: 51/52 (98%) *Control:* 32/34 (94%)	1: H 2: H 3: M 4: H

BF breastfeeding; C control; GP general practice; H High; HIV Human Immunodeficiency Virus; I intervention; L Low; M Medium; NICU Neonatal Intensive Care Unit; *PC Peer Counsellor/Counselling; PN Postnatal; RCT randomised controlled trial; UK United Kingdom; USA United States of America; WIC Women, Infants & Children programme *1: selection bias; 2: performance bias 3: measurement bias 4: attrition bias.*

Table 2.2: Characteristics of included studies with universal peer support interventions *(cont.)*

Study	***Methods***	***Participants***	***Intervention***	***Outcomes***	***Results initiation results***	***Quality****
Caulfield[40]	*Study design:* Cluster RCT *Location:* Baltimore, USA *Clinical setting:* Four WIC practices *Study group*: n=548 reduced to n=242 Intervention 1: *n=55* Intervention 2*: n=64* Intervention 3*: n=66* Control: *n=57* *Analysis*: not stated	African-American women with singleton pregnancy <24 weeks gestation on registering for antenatal care at 1 of the 4 WIC clinics, not planning on termination, eligible for WIC, planning to remain in study area. Excluded if breastfeeding was contraindicated (HIV/ medications)	*Intervention 1*: Antenatal (≥3 contacts) and postnatal (weekly until 16 weeks) peer counselling only (clinic/home/ telephone) *Intervention 2:* Motivational videotape in clinic waiting area *Intervention 3*: Peer counselling (as in Intervention 1) and motivational videotape in clinic waiting area *Control*: usual care	Outcomes: Breastfeeding initiation; Breastfeeding continuation up to 7-10 days.	Initiation data on 242 (44%) *Intervention 1*: 34/55 (62%) *Intervention 2*: 32/64 (50%) *Intervention 3*: 34/66 (52%) *Control*: 15/57 (26%)	1: M 2: M 3: M 4: L

BF breastfeeding; C control; GP general practice; H High; HIV Human Immunodeficiency Virus; I intervention; L Low; M Medium; NICU Neonatal Intensive Care Unit; *PC Peer Counsellor/Counselling; PN Postnatal; RCT randomised controlled trial; UK United Kingdom; USA United States of America; WIC Women, Infants & Children programme *1: selection bias; 2: performance bias 3: measurement bias 4: attrition bias.*

Table 2.2: Characteristics of included studies with universal peer support interventions *(cont.)*

Study	***Methods***	***Participants***	***Intervention***	***Outcomes***	***Reported initiation results***	***Quality****
McInnes[42]	*Study design:* Quasi-experiment *Location:* Glasgow, Scotland (UK) *Clinical setting:* Community *Study group:* 995 participants recruited in antenatal period. 919 completed the 6 weeks follow up. Intervention n= 474, control n=521 *Analysis:* Intention to treat.	Pregnant women. Home town defined whether participants were in the intervention or control group. Excluded if did not complete pregnancy/adverse birth outcome/moved out of the study areas/moved from intervention to control area or vice versa/did not deliver at either of the hospitals linked to the areas	Peer support - 2 antenatal and 2 postnatal contacts Control - routine care	*Primary outcomes*: Feeding Intention; Breastfeeding initiation; Breastfeeding duration at 6 weeks	Initiation data on 926 (93%) *Intervention:* 105/449 (23%) *Control:* 94/477 (20%) OR 1.95, 95% CI 1.22, 3.14 p=0.006	1: L 2: M 3: M 4: H

BF breastfeeding; C control; GP general practice; H High; HIV Human Immunodeficiency Virus; I intervention; L Low; M Medium; NICU Neonatal Intensive Care Unit; *PC Peer Counsellor/Counselling; PN Postnatal; RCT randomised controlled trial; UK United Kingdom; USA United States of America; WIC Women, Infants & Children programme *1: selection bias; 2: performance bias 3: measurement bias 4: attrition bias.*

Table 2.2: Characteristics of included studies with universal peer support interventions *(cont.)*

Study	***Methods***	***Participants***	***Intervention***	***Outcomes***	***Reported initiation results***	***Quality****
Shaw[75]	*Study design:* Retrospective cohort with concurrent control *Location:* West Tennessee (USA) *Clinical setting:* 9 community based WIC clinics *Study group:* 291 participants recruited in antenatal period. Intervention n=156, control n=135 *Analysis:* Not specified	Women who had registered for antenatal care at WIC clinics and were currently between 6 weeks and 6 months postnatal. Exclusions: women not seen during pregnancy by health department staff.	Women choosing peer counselling made up the intervention group – 2 antenatal and as required postnatal contacts Women who did not want peer counselling plus those who did not have access to a peer made up the control group who received usual care	*Primary outcomes*: Breastfeeding initiation and any breastfeeding at 6 weeks	Initiation data on 290/293 (99%) *Intervention:* 82/155 (53%) *Control:* 45/133 (33%) Adjusted OR 2.43, 95% CI 1.23, 4.67 p<0.05	1: L 2: L 3: M 4: L

BF breastfeeding; C control; GP general practice; H High; HIV Human Immunodeficiency Virus; I intervention; L Low; M Medium; NICU Neonatal Intensive Care Unit; *PC Peer Counsellor/Counselling; PN Postnatal; RCT randomised controlled trial; UK United Kingdom; USA United States of America; WIC Women, Infants & Children programme *1: selection bias; 2: performance bias 3: measurement bias 4: attrition bias.*

Table 2.2: Characteristics of included studies with universal peer support interventions *(cont.)*

Study	***Methods***	***Participants***	***Intervention***	***Outcomes***	***Reported initiation results***	***Quality****
Schafer[46]	*Study design:* Prospective cohort *Location:* Iowa (USA) *Clinical setting:* 8 rural WIC clinics *Study group:* 207 participants recruited in antenatal period. Intervention n=143, Control n=64 *Analysis:* Not specified	Rural low income pregnant and postnatal women qualifying for WIC referred to the programme by WIC clinics. Counties were chosen to be included in the study that were predominantly rural, had no nutrition programme or peer support programme (in last 3 years), electronic records were available and the local managers were willing to facilitate. Women were included based on WIC referrals and 'word-of-mouth'.	Pregnant women requesting peer counselling in 2 counties made up the intervention group. Antenatal and postnatal contacts were needs-based. Pregnant and postnatal women in 6 counties made up the control group who received usual care.	*Outcomes*: Breastfeeding initiation; Breastfeeding duration at 12 weeks	Initiation data on 207 (100%) *Intervention:* 117/143 (82%) *Control:* 20/64 (31%)	1: L 2: L 3: L 4: L

BF breastfeeding; C control; GP general practice; H High; HIV Human Immunodeficiency Virus; I intervention; L Low; M Medium; NICU Neonatal Intensive Care Unit; *PC Peer Counsellor/Counselling; PN Postnatal; RCT randomised controlled trial; UK United Kingdom; USA United States of America; WIC Women, Infants & Children programme *1: selection bias; 2: performance bias 3: measurement bias 4: attrition bias.*

Table 2.3: Characteristics of included studies with targeted peer support interventions *(continued overleaf)*

Study	***Methods***	***Participants***	***Intervention***	***Outcomes***	***Reported initiation results***	***Quality****
Chapman[44]	*Study design:* RCT *Location*: Hartford, Connecticut (USA) *Clinical setting*: Hartford hospital antenatal clinic. *Study group:* 219 participants recruited in antenatal period. 165 still eligible after delivery. 144 completed the 6 month follow up. Intervention n= 113, control n=106 Intervention *n*=113 Control *n*=106 *Analysis*: Intention to treat	Pregnant women ≤26 weeks, eligible for WIC, ≥18 years old, available for telephone follow-up, living in the greater Hartford area, not enrolled in peer counselling programme considering breastfeeding. Gave birth to a healthy full -term singleton of a normal weight, no congenital anomalies and no history of maternal HIV Not admitted to NICU. Predominantly Hispanic women.	Evaluation of the effectiveness of an existing breastfeeding peer counselling programme (est.1994). Routine breastfeeding education plus ante-, intra- and postnatal peer counselling. *Control*: usual care	*Primary outcomes*: Breastfeeding initiation; Breastfeeding rates at 1, 3 and 6 months	Not initiating breastfeeding; (Data available on 165 (75%) women) Intervention: 8/90 (9%) Control: 17/75 (23%) RR 0.39 (95% CI 0.18, 0.86)	1: H 2: M 3: H 4: H

BF breastfeeding; C control; GP general practice; H High; HIV Human Immunodeficiency Virus; I intervention; L Low; M Medium; NICU Neonatal Intensive Care Unit; *PC Peer Counsellor/Counselling; PN Postnatal; RCT randomised controlled trial; UK United Kingdom; USA United States of America; WIC Women, Infants & Children programme *1: selection bias; 2: performance bias 3: measurement bias 4: attrition bias.*

Table 2.3: Characteristics of included studies with targeted peer support interventions *(cont.)*

Study	***Methods***	***Participants***	***Intervention***	***Outcomes***	***Reported initiation results***	***Quality****
Graffy[50]	*Study design*: RCT *Location*: South London and Essex (UK) *Clinical setting*: 32 General Practices *Study group*: 720 participants recruited whilst pregnant. 620 completed follow up at 4 months. Intervention *n*=363 Control *n*=357 *Analysis*: Intention to treat.	Pregnant women 28-36 weeks and considering breastfeeding. Not previously breastfed >6 weeks, English speaking and not planning on moving from the area until at least 4 months postnatal.	Antenatal and postnatal volunteer counselling provided by the NCT. 1 antenatal home visit, postnatal support available over the telephone/home visits if requested by women alongside usual care. *Control*: usual care	*Primary outcome*: Any breastfeeding at 6 weeks. *Secondary outcomes*: Breastfeeding initiation; Duration of any breastfeeding; Exclusive breastfeeding at 6 weeks.	*Secondary outcome* Initiation data on 644 women (89%) *Intervention*: 95% *Control*: 96% RR 0.99, 95% CI 0.84, 1.16, p=0.44	1: H 2: H 3: H 4: H

BF breastfeeding; C control; GP general practice; H High; HIV Human Immunodeficiency Virus; I intervention; L Low; M Medium; NICU Neonatal Intensive Care Unit; *PC Peer Counsellor/Counselling; PN Postnatal; RCT randomised controlled trial; UK United Kingdom; USA United States of America; WIC Women, Infants & Children programme *1: selection bias; 2: performance bias 3: measurement bias 4: attrition bias.*

Table 2.3: Characteristics of included studies with targeted peer support interventions *(continued overleaf)*

Study	***Methods***	***Participants***	***Intervention***	***Outcomes***	***Reported initiation results***	***Quality****
Anderson[77]	*Study design:* RCT *Location*: Hartford, Connecticut (USA) *Clinical setting*: Hartford hospital antenatal clinic. *Study group*: 182 participants recruited whilst pregnant. 162 eligible on delivery, 135 completed the 3 month follow up. Intervention n=90 Control n=92 *Analysis*: Intention to treat	Pregnant women under 32 weeks considered on low income and qualify for WIC. At least 18 years old, booked to deliver in Hartford hospital. No medical conditions and considering breastfeeding. Gave birth to a healthy full - term singleton of a normal weight with Apgar >6 at 1 and 5 minutes. Not admitted to NICU and staying in Hartford until 3 months postnatal. Predominantly Hispanic women.	Peer counselling to improve exclusive breastfeeding rates. Peer counselling and routine care. Women were offered 3 antenatal home visits, daily in hospital visits and 9 postnatal home visits. *Control*: routine care only: conventional breastfeeding education, care from maternity ward staff. A Lactation Consultant was available for those with problems.	*Primary outcomes:* Exclusive breastfeeding at hospital discharge, 1, 2 and 3 months. Breastfeeding initiation; Any breastfeeding at 3 months.	Not initiating breastfeeding; (Data available on 135 (74%) women) *Intervention*: 6/63 (9%) *Control*: 17/72 (24%) RR 2.48 (95% CI 1.04, 5.90)	1:H/M 2: H 3: H 4: H

BF breastfeeding; C control; GP general practice; H High; HIV Human Immunodeficiency Virus; I intervention; L Low; M Medium; NICU Neonatal Intensive Care Unit; *PC Peer Counsellor/Counselling; PN Postnatal; RCT randomised controlled trial; UK United Kingdom; USA United States of America; WIC Women, Infants & Children programme *1: selection bias; 2: performance bias 3: measurement bias 4: attrition bias.*

Table 2.3: Characteristics of included studies with targeted peer support interventions *(continued overleaf)*

Study	***Methods***	***Participants***	***Intervention***	***Outcomes***	***Reported initiation results***	***Quality****
Kistin[39]	*Study design:* Cohort with concurrent control *Location*: Cook County Hospital, Chicago (USA) *Study group*: 102 participants recruited whilst pregnant. Intervention n=59 Control n=43 *Analysis*: Intention to treat	Pregnant women who requested a peer counsellor and intended to breastfeed.	Antenatal peer counselling if possible and postnatal peer counselling by telephone	*Outcomes*: Breastfeeding initiation; Exclusive breastfeeding; Breastfeeding duration	Initiation data on 85 (83%) Intervention: 55/59 (93%) Control: 30/43 (70%) p= <0.05	1: L 2: M 3: L 4: M

BF breastfeeding; C control; GP general practice; H High; HIV Human Immunodeficiency Virus; I intervention; L Low; M Medium; NICU Neonatal Intensive Care Unit; *PC Peer Counsellor/Counselling; PN Postnatal; RCT randomised controlled trial; UK United Kingdom; USA United States of America; WIC Women, Infants & Children programme *1: selection bias; 2: performance bias 3: measurement bias 4: attrition bias.*

2.4.4 Intensity of the interventions

All studies included both antenatal and postnatal peer support in the intervention. Differences in the intensity of the interventions are shown in Tables 2.4 and 2.5, giving the number and place of intended antenatal support contacts and compliance in terms of actual contacts and population coverage in universal and targeted peer support interventions respectively. The two US-based RCTs of targeted peer support[44,77] also included daily in-hospital peer support starting within 24 hours of birth, which may have had an additional effect on initiation.

2.4.5 Universal peer support - RCTs

Three cluster RCTs[40,54,68] and one individual RCT[76] investigated universal peer support. Morrow et al[54] in their cluster RCT in Mexico reported no significant difference in breastfeeding initiation rates between the control and two intervention groups: intervention group one (2 antenatal peer counselling visits) and intervention group two (1 visit) had initiation rates of 100% and 98% respectively, compared to 94% in the control (no peer counselling). In the UK HoBBIT[68] also showed no difference in initiation between intervention and control groups; intervention 69.0%; control 68.1% (cluster adjusted RR of not initiating 0.97, 95% CI 0.63, 1.50). A cluster RCT by Caulfield in the US[45] reported the breastfeeding initiation rates from the four clusters (three intervention clusters relative to control): peer counselling intervention only initiation 62%, control initiation 26%; (RR 0.52, 95% CI 0.36, 0.75). An RCT carried out in Scotland by Muirhead[76] reported no significant difference in initiation: intervention 54.5%; control 53.1% (RR 0.97, 95% CI 0.73, 1.29). The pooled analysis showed no significant effect on non-initiation of breastfeeding RR 0.96 (95% CI 0.76, 1.22) χ^2 for heterogeneity 0.81, p=0.67, I^2 0.0% (Figure 2.2). Only the three high quality RCTs[54,68,76] were pooled, with the fourth[40] excluded because of methodological weaknesses.

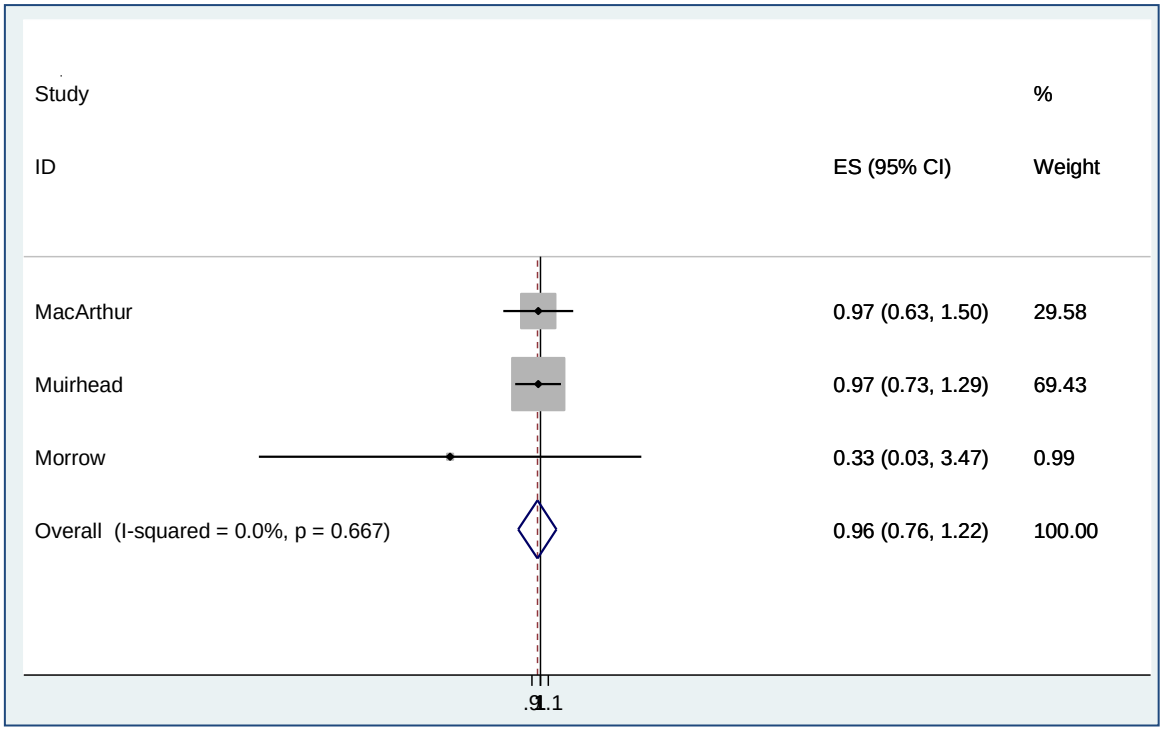
Table 2.4: Characteristics of the interventions in the universal studies included in the systematic review of the effect of antenatal peer support on breastfeeding non-initiation

Study	***Intervention n*** *(n with initiation data)*	***n peers***	***Intervention contact method/venue***	***Number of antenatal contacts per woman***		***Overall coverage***
				Proposed	***Actual***	
MacArthur[68]	1140 (1083)	11	Clinic or home	Two	2 received by 42%	74%
Muirhead[76]	112 (112)	12	'Visited'	At least one	'Limited'	Not stated
Morrow[54]	96 (95)	3	Home	1 or 2 (depending on intervention group)	Not stated	Not stated
Caulfield[40]	Not stated (242)	Not stated	Home or telephone	1 (those interested were followed up ≥3 times)	Not stated	Not stated
McInnes[42]	474 (449)	7	'Visited'	2	One	71%
Shaw[75]	156 (156)	7	Telephone, clinic, home and hospital	Needs-based	One	81%
Schafer[46]	143 (72)	94	Home / clinic / telephone	Not stated	Not stated	100%

Table 2.5: Characteristics of the interventions in the targeted studies included in the systematic review of the effect of antenatal peer support on breastfeeding non-initiation

Study	***Intervention n*** *(n with initiation data)*	***n peers***	***Intervention contact method/venue***	***Number of antenatal contacts per woman***		***Overall coverage***
				Proposed	***Actual***	
Chapman[44]	113 (90)	3	Home	At least 1	1	53%
Graffy[50]	363 (350)	28	Home and telephone	1	1 received by 80%	80%
Anderson[77]	90(63)	2	Home	3	3 received by 89%	89%
Kistin[39]	59 (55)	Not stated	Telephone only	Talk to pregnant women 'if possible'	Not stated	Not stated

Figure 2.2: Forest plot for meta-analysis of universal peer support on breastfeeding non-initiation from high quality studies



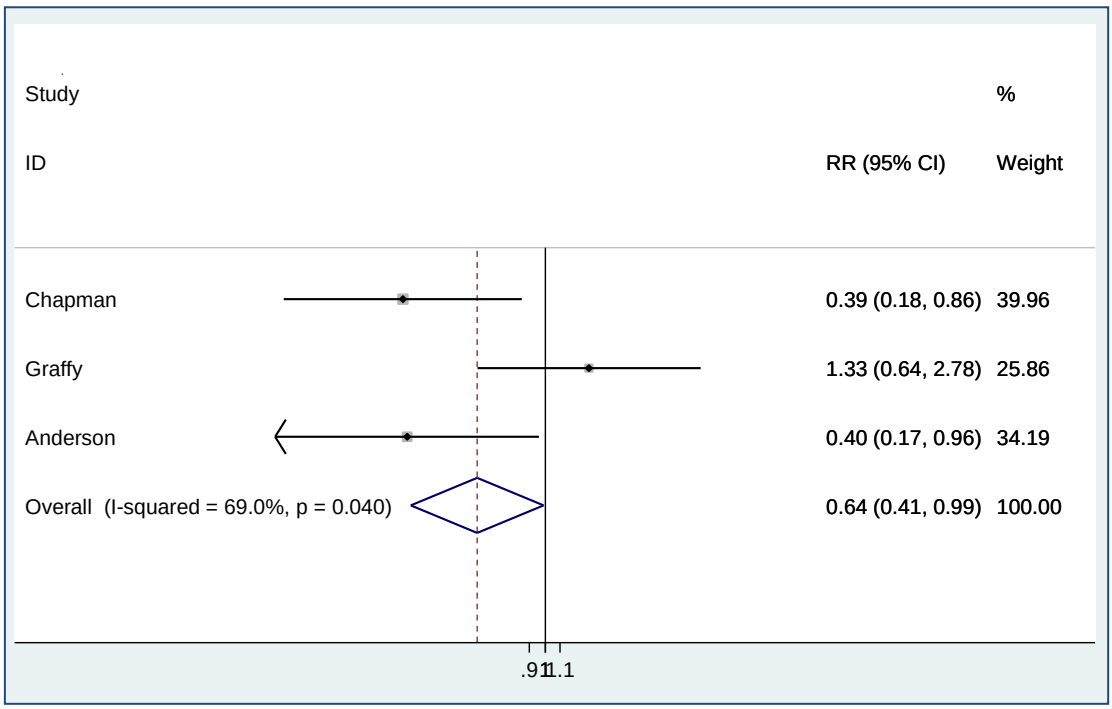
2.4.6 Universal peer support - non-randomised studies

The quasi-RCT by McInnes[42] observed that intervention group women were more likely to initiate breastfeeding than the control group; 23% compared to 20% respectively, which was statistically significant only when adjusted for confounding variables including socio-economic deprivation. Two non-randomised studies[46,75] both US-based showed a difference in breastfeeding initiation with universal peer support. Schafer[46] reported that 82% of women initiated breastfeeding in the intervention group versus 31% in the control (RR 0.26, 95% CI 0.16-0.44). Shaw[75] reported that women in the intervention group were significantly more likely to initiate breastfeeding (53%) than those in the control group (33%) (RR 0.71, 95% CI 0.58, 0.78).

2.4.7 Targeted peer support - RCTs

In three RCTs the study populations only included women who were considering breastfeeding; two in the US[44,77], one in the UK[50]. Both US-based trials reported a significant increase in breastfeeding initiation rates in the intervention compared to the control groups: 91% v 77% (RR non-initiation 0.39, 95% CI 0.18, 0.86)[44] and 90% v 76% (RR non-initiation 0.40, 95% CI 0.17, 0.96)[77]. The trial populations were low income Hispanic women who were considering breastfeeding. Graffy[50], in the UK RCT reported no difference in initiation between intervention (95%) and control (96%) groups. The pooled analysis of the three RCTs[44,50,77] showed a significant reduction in breastfeeding non-initiation (RR 0.64, 95% CI 0.41, 0.99) (Figure 2.3). However, there was significant heterogeneity (χ^2 for heterogeneity 6.44, p=0.04, I^2 69.0%).

Figure 2.3: Forest plot for meta-analyses of targeted peer support on breastfeeding non-initiation from high quality studies



2.4.8 Targeted peer support - non-randomised controlled studies

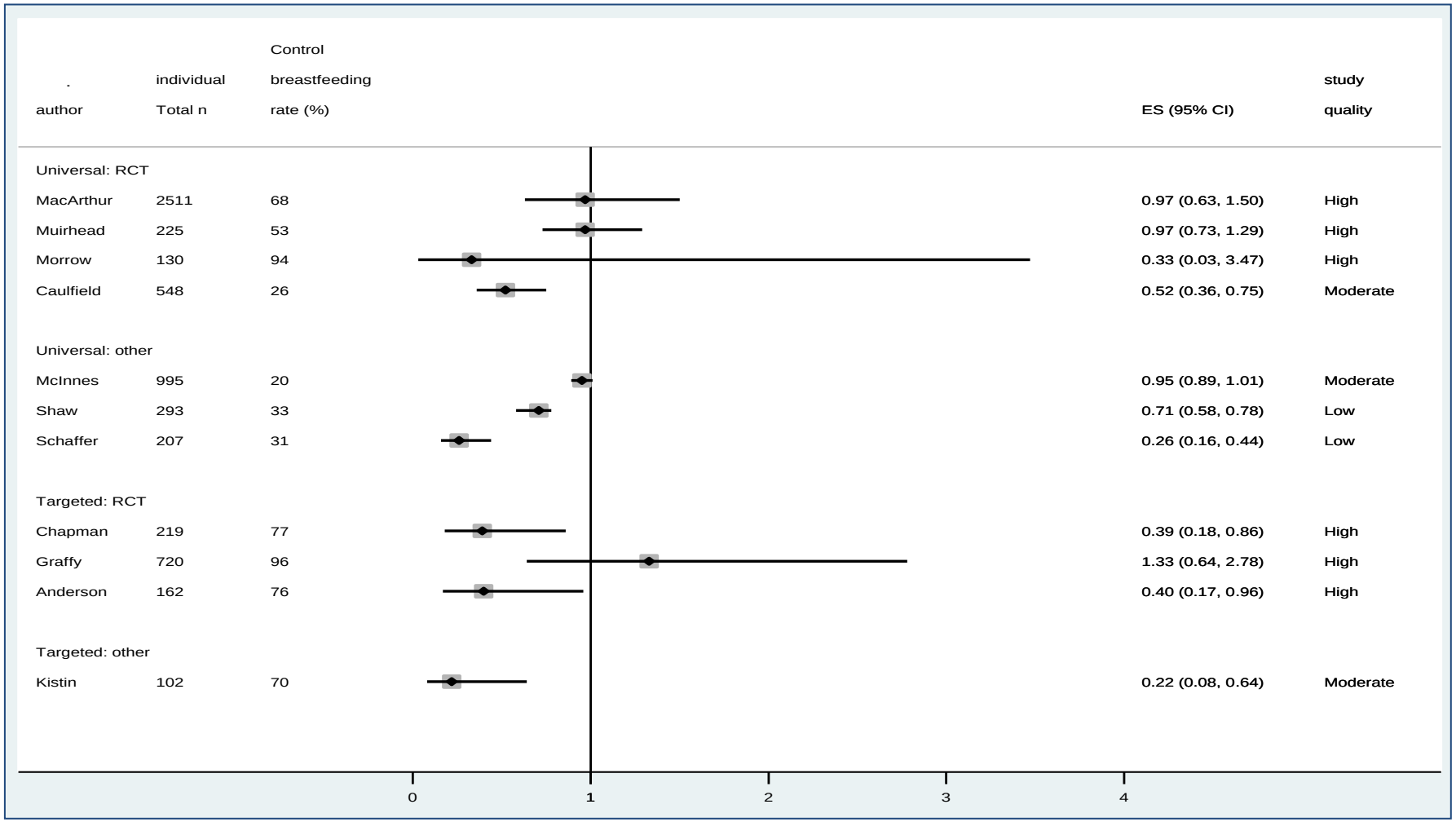
One small cohort study[39] with concurrent control in the US reported a significant difference in initiation: 93% in intervention and 70% in control group (RR non-initiation 0.22, 95% CI0.08, 0.64). Figure 2.4 shows the effects of both universal and targeted peer support for RCTs and other study designs.

2.5 Discussion

2.5.1 Principal findings of the review

This systematic review was carried out in response to the additional evidence brought to the current knowledge base by the HoBBIT trial[68], the results of which form part of this thesis. It was important to update the knowledge base in light of this new evidence. As described at that start of this review, the national government's recommendations for improving breastfeeding rates were based on limited evidence although from a highly credible source[43]. This present review includes broader, but perhaps more appropriate, inclusion criteria for studies compared to the review by Dyson et al[43]. This review includes trials that are both randomised and non randomised in order to combine all of the evidence on the effect peer support has on breastfeeding initiation, unlike the review by Fairbank[41] which only included non-randomised evidence. The studies were also aiming to improve initiation rates and were reported as primary or secondary outcomes, unlike the review by Dyson et al[43] which only included trials on duration of breastfeeding rather than initiation.

Figure 2.4 Forrest plot showing the effect of antenatal peer support on non-initiation of breastfeeding for all studies included in the systematic review



I initially displayed the effect on initiation for all the studies divided into universal and targeted peer support and by RCT and other studies. It appeared that over half of the studies showed an effect on non-initiation of breastfeeding, but it was the lower quality non-randomised studies that made up the majority of this effect. Because of this, I went on to meta-analyse only the high quality RCT evidence[50,68,76] and found that universal antenatal peer support does not reduce breastfeeding non-initiation (RR 0.96 (95% CI 0.76, 1.22) χ^2 for heterogeneity 0.81, p=0.67, I^2 0.0%).

If targeted antenatal peer support is considered, the meta-analysis shows that it may have an effect. However, this is based on two relatively small RCTs carried out in the small geographical area amongst Hispanic women in USA[42,77] and one non-randomised US study[39]. To interpret these findings, if the observed baseline breastfeeding rate was 75%, providing targeted peer support to 100 women would cause an additional 9 women to initiate breastfeeding.

2.5.2 Comparison with other studies

Our findings may be influenced by the intensity of interventions, underlying breastfeeding rates and breastfeeding information provided to the control groups. The interventions were generally similar, although in one trial[42] community breastfeeding awareness events also took place and one used only telephone peer support[39].

All studies included additional postnatal peer support to breastfeeding women, so it is not possible to determine the sole effect of antenatal peer support on duration or exclusivity. Two RCTs also included peer support daily whilst in hospital following birth[44,77], which may have contributed to the significant effects in both. It is interesting to note the number of peer support workers in these two trials. In the trial by Chapman[44] carried out in 2004 there were three peer support workers available to the 90 women randomly allocated to the intervention group, however it is noted in the paper that

the programme was understaffed for nearly half of the study period. When asked, 94% (67/71) of the participants reported contact with a peer in the antenatal period with this falling to 50% (38/76) in the postnatal period (intrapartum contact is not distinguished). This programme had been established for some ten years prior to the trial being carried out. It is remarkable that this trial had such a positive effect given the limitations on the service being evaluated.

Anderson et al[77] in 2005 reported their findings one year after Chapman et al[44]. Anderson et al[77] only had two peer support workers to provide support to the 90 women in their trial. Both studies were carried out in the same geographic area in the US, recruiting participants booked to give birth in the same hospital with Anderson building on the findings from Chapman et al[44] in order to investigate what could be effective for the Hispanic women in this particular area. Anderson[77] appears to have recruited new peer support workers rather than use the same workers from the programme outlined by Chapman[44]. The two workers were able to support 89% (56/63) of women in the antenatal period and 64% (40/63) at six months postnatal. Again, the proportion of women receiving support in the intrapartum period was not distinguished. Anderson et al[77] demonstrated a limited effect on non-initiation of breastfeeding, less than that demonstrated by their colleagues Chapman et al[44]. It is difficult therefore to identify accurately whether antenatal peer support alone can improve initiation or whether a combination of antenatal and very early, postnatal support is what is required.

There was significant heterogeneity which may be a result of the in-hospital postnatal peer support provided in the two US-based trials[44,77] that may have affected initiation rates. Graffy[50] was located in the UK, where baseline initiation is not high. At recruitment however, all but 2% and 4% respectively of intervention and control groups had already decided to breastfeed thus 'considering breastfeeding' may have been interpreted differently in this study. Their primary outcome, any breastfeeding at 6 weeks, also showed no difference between trial groups. Additionally, the trial by

Chapman[44] and colleagues stated breastfeeding initiation as a primary outcome, but the focus of the intervention by Anderson et al[77] was on exclusivity. Graffy[50] had a primary outcome of breastfeeding at 6 weeks.

Unlike the RCTs, all non-randomised trials reported a significant effect regardless of whether they provided a universal or targeted peer support intervention. Apart from the trial by Caulfield[40] which evaluated a universal peer support intervention, interventions do not appear to have been more intensive than those in the RCTs. The intervention in the Caulfield[40] cluster randomised trial was provided in both the antenatal and postnatal periods, it was intended that women receive three or more contacts during their pregnancy and then weekly after birth until 16 weeks postnatal. Unfortunately the actual proportion of women who received the intended support is not reported.

The much lower underlying community rate of breastfeeding initiation in the non-RCTs, may explain the finding of significant results as there is more potential for improvement, but this was not true for Kistin[39]. The effect is probably explained by higher levels of selection and attrition biases. Kistin[39] reports the findings of a small non-randomised study in which the participants were assigned to a peer support worker based on the availability of the latter (numbers of peers not reported). There were 59 women who requested a peer counsellor who then formed the intervention group, and 43 women who requested peer support but were unable to receive such support due to inadequate numbers of trained workers, formed the control group. The peer support programme had been running for just two years when the study commenced. Kistin[39] reports very low loss to follow-up rates declaring five women in the intervention and four women in the control group being lost before the 12 week follow-up, however, this does not appear to be reflected in the results which depict 100% follow-up.

Shaw et al[75] also present findings from a non-randomised study. The community background rate of breastfeeding initiation is 44% with duration at six months dropping to 14%. This study was carried out in an east-south-central region of the US which according to Shaw[75] reportedly has the lowest breastfeeding rates in the country. Breastfeeding was initiated by over half (53%) of the intervention group and only a third (33%) of the control group, the former being above the average for that area and the latter being below. This result was statistically significant. Shaw[75] reports a 99% follow-up rate at six weeks.

The final non-randomised trial to be described here is reported by Schafer et al[46]. Their study was also carried out in the US, this time in Iowa. The allocation to intervention or control groups was rather haphazard with the WIC clinics in two counties in the nearby area being chosen as the intervention and those within six other counties making up the control group. There was imbalance in numbers of the women in each of the two groups with 143 in the intervention and 64 in the control. More than this, the intervention group consisted of only pregnant women but the control consisted of pregnant *and* postnatal women. Further to this discrepancy, the control group was also divided into those who did breastfeed and those who did not. Only 50% of the intervention group were reported as completing all the data collection measures, it is not clear what the follow-up rate in the control group was.

2.5.3 Limitations

This review has some limitations. The quality of included studies varied. All but one of the RCTs rated as high quality overall, but the non-randomised studies were all of lower quality. This was taken into account by only including the high quality trials in the meta-analyses. The outcome measure of breastfeeding initiation was collected using different methods. The majority relied on women's self-report either by completing the study questionnaire[42,46,50,75,76] or by interview[39,44,54,40,77]. Only one

study used hospital data to report initiation rates[68]. The largest trial was in the UK[68] and reported data on 2398 women. In comparison, the other RCTs reported data for between 127[54] and 644[50] women. The non randomised studies included between 207[46] and 926[42] women and most were subject to high loss to follow-up.

The intensity of the interventions varied, both in planned and actual contacts between peer supporters and women, varying from one to three[77]. Coverage ranged from 53%[44] to 100%[46], but this was not always reported[39,40,54,76]. There is insufficient information given to determine whether a relationship exists between intensity of antenatal peer support and initiation. Routine advice provided antenatally to controls about breastfeeding was generally poorly described, but appears to have mainly been clinic-based and written information.

Three RCTs although not stating breastfeeding initiation as a primary or secondary outcome[50,54,77], reported the measure. Exclusion of these would not have changed the interpretation of findings. In two RCTs[50,54] control breastfeeding initiation rates were very high, allowing little scope for improvement from intervention. In the RCT based in Mexico[54], (universal peer support) this was because almost all women initiate breastfeeding there, the problem being continuation and exclusivity and these outcomes did improve with intervention. The other was in the UK[50] (targeted peer support) where baseline initiation was under 70%, but in the trial population it was over 95% thus only women who had already decided to breastfeed were recruited. The primary outcome of breastfeeding at 6-weeks however, showed no effect.

The systematic search was repeated in 2013 and one RCT[78] was found for potential inclusion (conference presentation)). Yet to be published the Kenyan-based RCT evaluated two peer-support interventions compared to usual care from existing healthcare facilities. The interventions were

monthly group-based face-to-face peer support and bi-weekly mobile telephone based peer support for a group of low-income women living in an urban location. The interventions were targeted to women who planned to breastfeed and were to be provided in the late antenatal period (women to be 24-32 weeks gestation at randomisation) until three months postnatal when the primary outcome of exclusive breastfeeding would be recorded. It is unclear from the information available who the peer supporters were or how/if they were trained and the results are not provided. Therefore, the systematic review recommendation for an evaluation of targeted postnatal peer support remains unchanged in the light of this subsequent publication.

2.6 Conclusions and implications for further research

Universal antenatal peer support appears ineffective in increasing breastfeeding initiation when provided as one or two contacts between peer supporter and pregnant woman, with strong evidence from the UK[68,76]. There may be a significant increase in initiation when antenatal peer support is targeted at women considering breastfeeding, but with evidence of effect only from low income Hispanic women in the US. Due to differences in community breastfeeding rates and levels of breastfeeding support in routine care in the studies, findings of this review may have limited generalisability. When peer support is introduced as an intervention to improve breastfeeding initiation there should be concurrent high quality evaluation to determine its effectiveness. Future research might focus on more intensive interventions and the combination of antenatal and immediate post-partum support.

2.7 Summary

The systematic review and meta-analysis presented in this Chapter have highlighted new research questions to be answered, particularly in the UK if we are to identify if targeted peer support is

effective in a variety of setting with different populations. In the next Chapter the HOBBIT trial is presented with particular focus on the results of the six month follow-up study. The findings of the follow-up study and this systematic review and meta-analysis lead on to another systematic review on the effect of postnatal peer support on breastfeeding continuation which has also been published as presented in Chapter 4.

Chapter 3

The Heart of Birmingham Breastfeeding Initiation Trial: six month follow-up study

Thesis author contribution

As the research midwife on HOBBIT I was responsible for co-ordinating the day-to-day trial management alongside CM and KJ. I recruited participants to the follow-up study from each GP antenatal clinic across the study area. With help from interpreters when necessary, I collected a proportion of the six month follow-up data myself. I entered much of the follow-up data. I independently analysed all of the data presented in this Chapter which is a considerable extension of the published paper. LI produced the first draft with input from KJ along with the study team who commented upon it.

3.1 Purpose of the chapter

The HOBBIT study[68] was introduced in Chapter 1 of this thesis and the six month follow-up study is the focus of this Chapter. The peer support intervention was provided in the antenatal and postnatal periods and the follow-up study aimed to investigate the effect on breastfeeding continuation rates. The results shown here cover the baseline demographics, intensity of the intervention, any and exclusive breastfeeding continuation at 10-14 days, six weeks and six months and breastfeeding problems comparing the intervention and control groups and the responders and non-responders as appropriate. No effect was found in breastfeeding continuation at any of the time-points which is consistent with other RCT evidence from the UK. The main results of the six month follow-up are published[79] (Appendix D). All follow-up findings and with more detail are presented in this Chapter.

3.2 Study setting

As part of a programme of breastfeeding promotion interventions intended to increase breastfeeding rates HOB PCT commissioned a research team at the University of Birmingham to evaluate a new community-based PSW service. The PCT employed 11 community-based PSWs to provide universal antenatal support and postnatal support to those women who initiated breastfeeding. The PSWs were managed by the Infant Feeding Team in the PCT.

Residents of HOB PCT represent a diverse range of cultures, ethnicities and lifestyles. HOB PCT residents are described as comprising a transient population in the centre of Birmingham where deprivation is high as are rates of morbidity and mortality[80]. Around the time that the HOBBIT trial was commissioned in 2005 the Birmingham perinatal mortality rate was 17.4 per 1000 live births[81], compared to the national rate of 8.2. The infant mortality rate in HOB was also higher than the rate in England and Wales at that time at 10.7 per 1000 live births[80]. As part of the government drive to tackle health inequalities, the PCT set out to improve breastfeeding rates and in turn public health.

At the time of the HOBBIT trial there were approximately 5500-6000 births per annum, most of which took place in one of the three main hospitals in the city. Around 3-4% of births were in hospitals in the wider geographic area and the home birth rate was around 1%. Routinely collected hospital data showed that 70% of the childbearing women in the PCT were in the lowest Townsend deprivation decile. More than a quarter of all births were to women who themselves were born outside the UK[80] and rates of perinatal and infant mortality were twice the national average in some of the wards in the PCT.

3.3 Study design

The HOBBIT trial used a cluster RCT design with the GP antenatal clinics (hereafter described as clinics) as the unit of randomisation. This design was chosen to reduce the risk of contamination: on a practical level the PSWs could be certain that they only gave support to women in the intervention arm, which could have been very difficult if individual women were randomised within each clinic. A further potential source of contamination was the pregnant women recruited to the study. If women were individually randomised this would mean both intervention and control arms would be represented in every clinic and it would be highly unlikely that women would not discuss their care and share information which would affect the 'dose' of the intervention.

At the time of the trial 66 GP clinics served the women of HOB PCT and all were included in the randomisation which was performed by the trial statistician. Nine teams of community midwives covered the area and several provided care at a number of clinics in both trial arms. The clinics were stratified by midwifery team and number of births per clinic. Thirty three clinics were randomly allocated to each trial arm. One small intervention practice closed soon after randomisation but prior to the PSW service being implemented. The clinics varied in size and one or two PSWs were assigned by the PCT to the intervention clinics as appropriate.

For the primary outcome of breastfeeding initiation data were routinely collected and supplied to the researchers simply according to GP practice and trial arm. On this basis individual consent by women was deemed by the ethics committee not to be required. For non-routine data on continuation consent was required as described later.

3.4 Recruitment and inclusion criteria

Women included in the analysis of breastfeeding at 10-14 days were not asked to give consent for the study as breastfeeding continuation at 10-14 days was routinely collected by health visitors and was available on women resident in the PCT during the trial period. Continuation data at 10-14 days and six weeks were anonymised before reaching the research team and the REC deemed that individual consent unnecessary.

Given that there were no routine data collection systems for the outcomes of breastfeeding continuation at six months women had to be approached to give informed consent for this. Women who were recruited to the follow-up study will be referred to as the 'consented sample'. Eligible women were those registered with a GP in HOB PCT who presented at a study clinic between August 1st 2007 and April 31st 2008. Women were approached and asked if they were willing to be sent a postal/telephone questionnaire (Appendix D) about their infant feeding choices six months after birth. Recruitment of women for follow-up was undertaken by their community midwife. Recruitment was monitored on a monthly basis and was subsequently undertaken by myself and three research nurses in order to increase the rate.

3.5 Ethical approval

Ethical approval was gained from the Black Country Research Ethics Committee (REC reference 05/Q2709/170).

3.6 Planned peer support intervention

The 11 PSWs were local residents in and around the PCT and were trained by the PCT Infant Feeding Team in line with the WHO/UNICEF Baby Friendly breastfeeding management course and was delivered daily over eight weeks. Training also included cultural beliefs that are relevant to infant feeding and practices of the population they were to support. It was intended as far as possible that the characteristics of the peers were similar to the women they were to support. The ethnic groups represented by the PSWs included Pakistani, Afro-Caribbean, Indian, Arabic and one PSW was White British. The PSWs were able to support women with a range of language needs with some of them speaking Urdu, Punjabi and Arabic. All except one of the PSWs were mothers that had personal experience of breastfeeding. Most of the PSWs worked part-time.

The PSWs were to be a visible presence in the intervention clinics they were assigned to. Here they would introduce themselves to the pregnant women and unless the woman did not want any more PSW contact they would register them on an 'activity log'. These logs were kept by the PSW and were designed to document all PSW interactions with the women that they approached and supported. PSWs were asked to arrange at least two antenatal support sessions of which one would ideally be in the woman's home. The first support session was to be scheduled for 24-28 weeks gestation and the second between 32-34 weeks gestation. These times were chosen as midwives in the area start discussions around infant feeding at 24-28 weeks and the later gestation would allow for the PSWs to maintain contact and remind women they were available to provide postnatal support.

It was planned that the hospital-based PSWs (part of usual care) would inform the community-based PSWs of the discharge of any women in the intervention arm of the trial. Postnatal PSW contact was to start with a face-to-face home visit within 24-48 hours of either hospital discharge after birth or a

home birth. The planned minimum PSW support schedule for each woman was at least one visit/contact in the first week, then weekly until 6 weeks and then monthly until 6 months. PSWs were encouraged to meet the individual woman's needs so additional support could be provided if needed.

3.7 Usual care

A team of community midwives linked to GP clinics provide routine antenatal care which includes breastfeeding promotion. A multi-disciplinary hospital-based team including midwives and PSWs provide breastfeeding support and once discharged home the community midwives regain their role as lead healthcare professionals. Generally at around 10-14 days postnatal the midwife transfers care to the health visitor. There were community-based breastfeeding support services in the PCT available on a referral basis. For example, a group called 'Best Buddies' was available to give breastfeeding support in the postnatal period.

3.8 Sample size

The sample size for the trial was calculated to be powered for the primary outcome of initiation. The trial statistician based the calculation on the breastfeeding initiation rate of 58% (2005) in the PCT and there were approximately 6000 expected births per year. An increase of 6% in breastfeeding initiation was considered by members of the PCT as a worthwhile increase to sustain the service. As HOBBIT was a cluster RCT the degree of clustering at the GP level was estimated using a previous RCT of postnatal care[82]. Using the approach of a previous study[83], and taking the inter-practice correlation coefficient to be 0.005 as indicated in that trial[82], the trial statistician inflated the sample size by 2.45 times from a non-cluster randomised trial. Therefore a total of just under 3000 women was required to estimate a 6% absolute difference in initiation of breast feeding with a power (1-β) of 90%.

3.9 Data collection

3.9.1 Baseline

Baseline questionnaires (Appendix D) were completed by women at recruitment in the consented sample. Items collected were ethnicity, parity, infant feeding intention, previous infant feeding practices and contact details. At six months women could be contacted by postal questionnaire written in English or by telephone in the language they chose, and at recruitment women were asked to specify their preference.

3.9.2 Six month follow-up

Women in the consented sample were contacted by their preferred method. Questionnaires were identifiable only by the participant's unique trial identification number to maintain blind assessment and reduce assessor bias. A freepost envelope was included to eliminate any financial cost to the women and increase the likelihood of a response. After two weeks a reminder with another questionnaire was posted and if no response after another fortnight women were telephoned and if possible the questionnaire verbally administered. Questionnaires returned as 'address unknown' or undeliverable were followed up by contacting the GP for current contact details.

Telephone questionnaires requested in English were carried out by me with a maximum of five contact attempts made at different times and days in an effort to maximise response rate. GPs were contacted for women's updated contact details but often there were none. Telephone calls requested in any other language were made by interpreters and problems with establishing contact were dealt with in the same way as above. The main languages were Arabic, Bengali, Polish, Punjabi and Urdu. Four women requested to be contacted in Somali or Pushtu and unfortunately appropriate interpreters were not available. To maintain data protection, all interpreters contacted

women from the trial office and did not keep identifiable information. All interpreters were employed at a local hospital and therefore had Criminal Records Bureau clearance.

The questionnaire was designed to be easy to complete requiring either a tick box or writing short statements. Items requested included birth-related data, breastfeeding initiation and timing, current infant feeding practice, reasons for stopping breastfeeding and any breastfeeding problems. Reasons for choosing to breastfeed comprised an open question with space available for women to respond. To identify who influenced their decision to breastfeed options were given to select from. The number of antenatal and postnatal contacts with PSWs was requested. Questions to ascertain the adequacy of breastfeeding information/advice had a list of four options to choose from. Finally there was space for additional comments that the woman might want to make.

3.9.3 PSW activity

The research team and PSW managers designed antenatal and postnatal 'activity log' data collection forms (Appendix D). Every PSW contact was to be captured using the forms which were designed to maintain women's anonymity by using their unique hospital identification number and if applicable their HOBBIT continuation trial number as a reference. Each activity log required the woman's GP practice code and the PSWs individual identification code to be recorded so as to assess the level of activity per clinic and PSW. The activity logs were carbonated in duplicate so I could collect a copy on a monthly basis for data entry. The logs were designed to capture data on the content of the support, further support required and process outcomes of venue for contact and duration and frequency of contacts.

3.10 Analysis

Six week and six month breastfeeding rates were calculated from the reported cessation of exclusive and any breastfeeding in the six month questionnaire. All analyses were undertaken following the intention to treat principle. SPSS version 15 for Windows was used. All data collected from the consented sample and PSW activity logs were entered into an Access database by me and two assistants. Characteristics of the consented sample were compared between trial arms and between responders and non-responders. The characteristics of women who initiated breastfeeding in the consented sample were compared between the intervention and control arms using the chi-squared test[63].

Analysis of peer support activity was descriptive and tabulated. Open free text responses from participants were read and grouped into common themes, then described quantitatively. Analysis adjusting for the trial cluster-effect was undertaken by the trial statistician which I present are here for completeness.

3.11 Results

3.11.1 Participant flow through the trial and baseline characteristics

There was a consistently even balance across arms throughout the trial (Figure 3.1). **The consented sample:** Many of the characteristics were evenly balanced across trial arm. Exceptions to this were ethnicity when it was observed that there were fewer White British/Irish women represented in the intervention arm (n=36, 8.7%) compared to the control arm (n=89, 20.6%) and there were more Pakistani women in the intervention arm (n=175, 42.1%) than the control arm (n=136, 31.5%). Overall, most women had planned to breastfeed. See Table 3.1.

Responders versus non-responders: The overall response rate at six months was 67.4% (572/848) and rates per arm were similar with 271 (65.5%) responding in the intervention and 301 (69.4%) in the control. When responders were compared with non-responders very few differences were identified. Responders were more likely to be in the control arm, of white British/Irish ethnicity and were planning to breastfeed. The most common reason for non-response from those who were contacted was being un-contactable (n=229, 82.9%). See Table 3.2 for full characteristics.

Figure 3.1 Participant flow through the HOBBIT trial

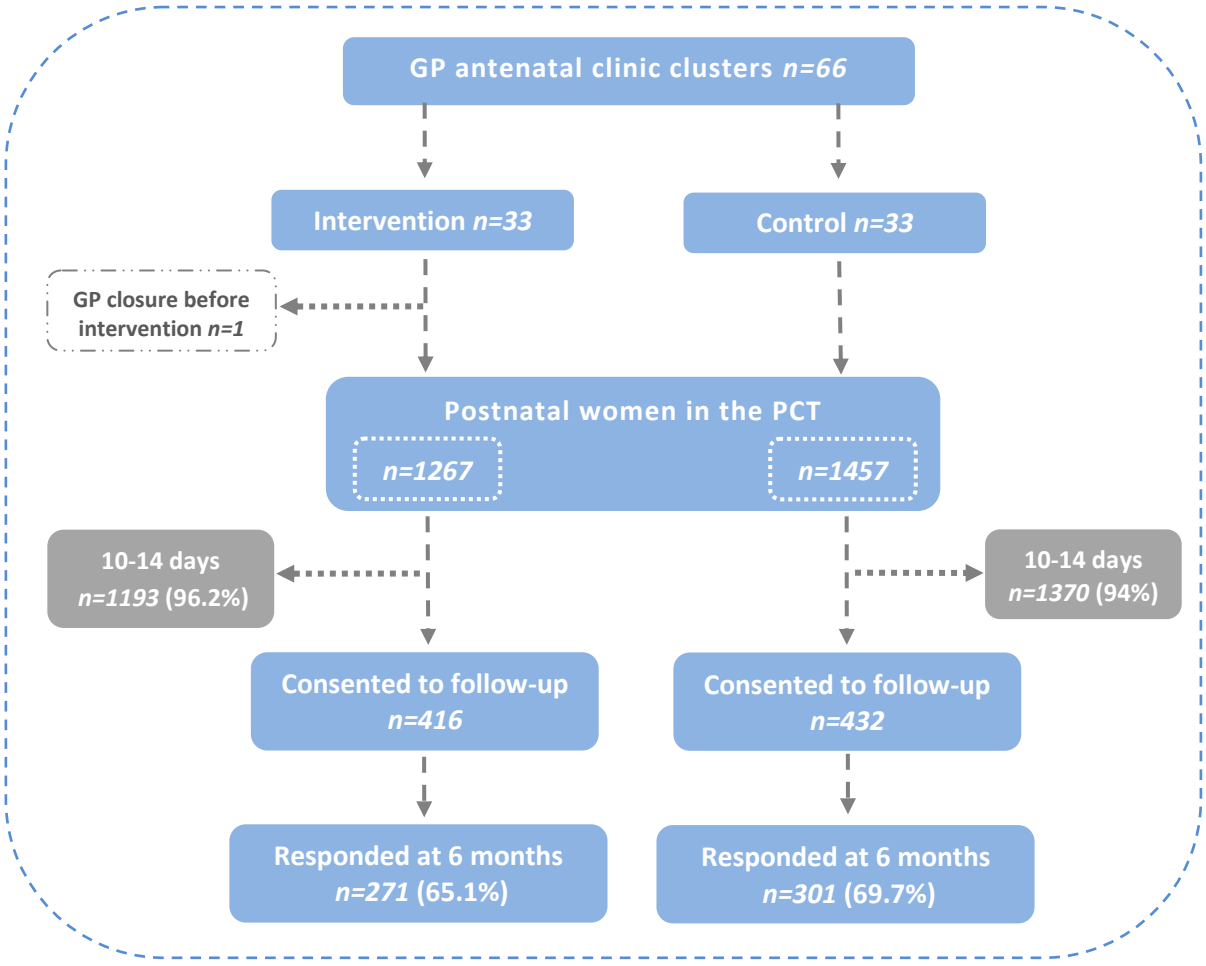


Table 3.1: Baseline characteristics of the consented sample by trial arm

Characteristic	***Intervention (n=416) n (%)***	***Control (n=431) n (%)***
Mean age in years (SD)	27.8 (5.47)	28.2 (5.73)
Ethnicity		
White British/Irish	36 (8.7)	89 (20.6)
African-Caribbean	70 (16.8)	66 (15.3)
Indian	33 (7.9)	40 (9.3)
Pakistani	175 (42.1)	136 (31.5)
Bangladeshi	43 (10.3)	46 (10.6)
Other Asian	15 (3.6)	11 (2.5)
Mixed	14 (3.4)	11 (2.5)
Other	30 (7.2)	32 (7.4)
Parity		
Primigravid	176 (42.3)	179 (41.4)
Multiparous	240 (57.6)	252 (58.3)
Breastfeeding history		
Yes	196 (47.1)	195 (45.1)
No	156 (37.5)	177 (40.9)
Missing data	64 (14.8)	60 (13.8)
Feeding plans		
Breastfeed	329 (79)	333 (77)
Bottle feed	16 (3.8)	26 (6)
Mix feed	10 (2.4)	18 (4.1)
Undecided	41 (9.8)	32 (7.4)
Missing data	20 (4.8)	23 (5.3)

Table 3.2: Characteristics of responders and non-responders (the consented sample)

Characteristic	***Responders (n=572) n (%)***	***Non- responders (n=276) n (%)***
Intervention	270 (47.2)	145 (52.5)
Control	302 (52.7)	131 (47.4)
***Age** (SD)*	28.04 (5.60)	27.02 (5.43)
Reason for no response		
Refused	-	9 (3.2)
Moved away	-	34 (12.3)
Not contactable	-	229 (82.9)
*Pregnancy loss /NND**	-	4 (1.4)
Ethnicity	572	275
White British/Irish	97 (17.0)	28 (10.2)
Indian	55 (9.6)	18 (6.5)
Pakistani	222 (38.8)	89 (32.4)
Bangladeshi	56 (9.8)	33 (12.0)
Caribbean	47 (8.2)	29 (10.5)
African	32 (5.6)	28 (10.2)
Mixed	20 (3.5)	5 (1.8)
Other	42 (10.8)	41 (15)
Missing	1 (0.2)	4 (1.5)
Baseline parity	***571***	***276***
Nil	236 (41.3)	119 (43.1)
One	160 (28)	65 (23.6)
Two	92 (16.1)	51 (18.5)
Three	52 (9.1)	22 (8)
Four or more	31 (5.5)	19 (6.9)
Breastfeeding history	572	276
Yes	275 (48.1)	116 (42)
No	295 (51.5)	151 (54.7)
Missing	2 (0.3)	9 (3.3)
Feeding plans	572	276
Breastfeed	466 (81.5)	196 (71)
Bottle feed	26 (4.5)	16 (5.8)
Mix feed	15 (2.6)	13 (4.7)
Undecided	44 (7.7)	29 (10.5)
Missing	21 (3.7)	22 (8)

**NND Neonatal death*

3.11.2 Breastfeeding outcomes by trial arm

Analysis of breastfeeding rates taking account of cluster effect was carried out by the trial statistician. No differences for any outcome at any time point were observed (Table 3.3). Women's self-reported initiation was higher than had been obtained in the anonymised hospital data but, there was no difference between the two trial arms. Any and exclusive breastfeeding rates were similar across trial arms at all time points. See Table 3.4.

Table 3.3: Breastfeeding outcomes by trial arms[73]

Breastfeeding outcome	***Intervention Individual n (%)***	***Control Individual n (%)***	***OR (95% CI)***	***ICC***
Any				
10-14 days	818/1193 (68.5)	928/1370 (67.7)	1.07 (0.87, 1.13)	0.05
6 weeks	170/271 (62.7)	194/301 (64.5)	0.93 (0.64, 1.35)	0.23
6 months	93/271 (34.3)	117/301 (38.9)	1.06 (0.71, 1.58)	0.17
Exclusive				
10-14 days	446/1193 (37.4)	470/1370 (34.3)	1.21 (0.96, 1.52)	0.04
6 weeks	204/271 (38.5)	123/301 (40.9)	0.91 (0.62, 1.34)	0.22
6 months	48/271 (17.8)	59/301 (19.6)	0.89 (0.58, 1.39)	0.24

CI: Confidence interval, ICC intra-cluster correlation co-efficient, OR: odds ratio

Table 3.4: Breastfeeding outcomes in women who consented to follow-up

Outcome (self reported)	***Intervention n (%)***	***Control n (%)***
Initiated	243 (89.7)	265 (88.0)
Not initiated	28 (10.3)	36 (11.9)
Any breastfeeding		
1 week	216 (79.7)	239 (79.4)
2 weeks	206 (76.0)	228 (75.7)
6 weeks	170 (62.7)	194 (64.5)
4 months	108 (39.9)	130 (43.2)
6 months	93 (34.3)	117 (28.9)
Exclusive breastfeeding		
1 week	157 (58.1)	171 (56.8)
2 weeks	146 (54.1)	156 (51.8)
6 weeks	104 (38.5)	123 (40.9)
4 months	58 (21.5)	69 (22.9)
6 months	48 (17.8)	59 (19.6)

3.11.3 Breastfeeding initiation in the intervention arm of the consented sample

The proportion of women in the intervention group who initiated breastfeeding by the characteristics of the mother, breastfeeding intention and support received are shown in Table 3.5. Of the women in the intervention arm that consented to follow-up at six months, those more likely to initiate breastfeeding were aged between 20 and 29 years (n=158; 90.8%) but this was not statistically significant (p=0.6). Women of White/Irish ethnicity were less likely to initiate breastfeeding (n=17, 73.9%) whereas women in all other ethnic groups reported rates of initiation higher than the national average ranging from 86.7% (n=26 Bangladeshi) to 100% (n=16 African/Caribbean). The association between breastfeeding initiation and ethnicity was not statistically significant (p=0.1). Women who reported having previously breastfed were more likely to initiate breastfeeding than those who had no breastfeeding history, this was statistically significant

(p=0.01). Mode of birth was not statistically significant although the national trend was followed with fewer women initiating breastfeeding after a caesarean section and more women initiating breastfeeding following a normal vaginal birth. Initiation of breastfeeding did not appear to be associated with the number of antenatal PSW contacts; the majority of women (n=62, 89.9%) who initiated breastfeeding had no antenatal contact.

3.11.4 Breastfeeding at six weeks and six months in the intervention arm of the consented sample

At six weeks characteristics significantly associated with *any* breastfeeding were maternal age (p=0.04), ethnicity (p=0.006), previous breastfeeding history (p=0.002) and feeding plans (p=0.02). *Exclusive* breastfeeding was significantly associated with breastfeeding history (p<0.001), feeding plans (p=0.002) and mode of birth (p=0.04). Antenatal PSW contact had no effect on any or exclusive breastfeeding. See Table 3.6.

Any breastfeeding at **six months** was more often practised by older women, although not statistically significant (p=0.08). Any breastfeeding was significantly associated with ethnicity and previous breastfeeding history (both at p<0.001) with 100% of African/Caribbean women breastfeeding at six months. Significant associations with *exclusive* breastfeeding were found for ethnicity again with the highest rates in African/Caribbean women and women who had previously breastfed (both at p<0.001). See Table 3.7.

Table 3.5: Baseline characteristics and breastfeeding initiation in the intervention arm of the consented sample

Characteristic	***Initiated n (%)***	***P value***
Age group		0.6
<20 years	16 (84.2)	
20-29	158 (90.8)	
30 years +	69 (88.5)	
Ethnicity		0.1
White British/Irish	17 (73.9)	
Indian	22 (91.7)	
Pakistani	107 (88.4)	
Bangladeshi	26 (86.7)	
African/ Caribbean	16 (100)	
Other Asian	22 (91.7)	
Mixed	2 (100)	
Other	2 (100)	
Breastfeeding history		0.01
Yes	129 (94.2)	
No	113 (85.0)	
Feeding plans		<0.001
Breast	211 (94.2)	
Formula	2 (25)	
Mix	4 (100)	
Undecided	17 (70.8)	
Mode of birth		0.5
Spontaneous vaginal	177 (90.8)	
Instrumental	13 (92.9)	
Caesarean section	53 (85.5)	
Antenatal contacts		0.9
None	62 (89.9)	
One	90 (90.5)	
Two	75 (89.3)	
Three	5 (83.3)	

Table 3.6: Relationship between baseline characteristics and breastfeeding at six weeks of the intervention arm in the consented sample

Characteristic	***Any BF n (%)***	***P value***	***Exclusive BF n (%)***	***P value***
Age group		*0.04*		*0.3*
<20 years	7 (36.8)		5 (26.3)	
20-29	110 (63.2)		65 (37.6)	
30 years +	53 (67.9)		34 (43.6)	
Ethnicity		*0.006*		*0.1*
White British/Irish	13 (56.5)		8 (34.8)	
Indian	11 (45.8)		9 (37.5)	
Pakistani	66 (54.5)		41 (33.9)	
Bangladeshi	21 (70.0)		6 (20.0)	
African/ Caribbean	16 (100)		9 (56.3)	
Other Asian	18 (75.0)		11 (47.8)	
Mixed	1 (50.0)		1 (50.0)	
Other	20 (74.1)		15 (55.6)	
Breastfeeding history		*0.002*		*<0.001*
Yes	98 (71.5)		68 (50.0)	
No	71 (53.4)		36 (27.1)	
Feeding plans		*0.02*		*0.002*
Breast	151 (67.4)		98 (43.9)	
Formula	2 (25.0)		0	
Mix	3 (75.0)		0	
Undecided	11 (45.8)		4 (16.7)	
Mode of birth		*0.9*		*0.04*
Spontaneous vaginal	121 (62.1)		83 (42.6)	
Instrumental	9 (64.3)		6 (42.9)	
Caesarean section	40 (64.5)		15 (24.6)	
Antenatal contacts		*0.9*		*0.8*
None	43 (62.3)		28 (41.2)	
One	66 (63.5)		40 (38.5)	
Two	50 (59.5)		28 (33.3)	
Three	4 (66.7)		2 (33.3)	

BF; Breastfeeding

Table 3.7: Relationship between baseline characteristics and breastfeeding at six months in the consented intervention sample

Characteristic	***Any BF n (%)***	***P value***	***Exclusive BF n (%)***	***P value***
Age group		*0.08*		*0.3*
<20 years	4 (21.1)		2 (10.5)	
20-29	55 (31.6)		28 (16.2)	
30 years +	34 (43.6)		18 (23.1)	
Ethnicity		*<0.001*		*0.048*
White British/Irish	6 (26.1)		2 (8.7)	
Indian	5 (20.8)		4 (16.7)	
Pakistani	30 (24.8)		19 (15.7)	
Bangladeshi	10 (33.3)		1 (3.3)	
African/ Caribbean	16 (100)		5 (31.3)	
Other Asian	10 (41.7)		6 (26.1)	
Mixed	0 (0)		0 (0)	
Other	13 (48.1)		9 (33.3)	
Breastfeeding history		*<0.001*		*<0.001*
Yes	61 (44.5)		36 (26.5)	
No	32 (24.1)		12 (9.0)	
Feeding plans		*0.09*		*0.08*
Breast	86 (38.4)		46 (20.6)	
Formula	1 (12.5)		0 (0)	
Mix	1 (25.0)		0 (0)	
Undecided	4 (16.7)		1 (4.2)	
Mode of birth		*0.7*		*0.06*
Spontaneous vaginal	64 (32.8)		39 (20.0)	
Instrumental	5 (35.7)		4 (28.6)	
Caesarean section	24 (38.7)		5 (8.2)	
Antenatal contacts		*0.9*		*0.6*
None	22 (31.9)		13 (19.1)	
One	37 (35.6)		18 (17.3)	
Two	26 (31.0)		12 (14.3)	
Three	2 (33.3)		0 (0)	

BF; Breastfeeding

3.11.5 Influences and reasons for breastfeeding

The majority of women identified their midwife as influential in their decision to breastfeed with a similar proportion in both arms reporting this (Table 3.8). Descriptive data were extracted from the open responses on why women chose to breastfeed and were grouped into common themes (Table 3.9). The most common reason was for the health benefits for their baby with women reporting 'breast is best', a well used phrase in breastfeeding promotion. A higher proportion of women in the control arm stated that their past successful breastfeeding experiences prompted them to breastfeed again.

Table 3.8: Breastfeeding influences

Influence *(in descending order)*	***Intervention (n=271) n (%)***	***Control (n=301) n (%)***
Midwife	117 (43.1)	117 (38.8)
GP	18 (6.6)	12 (3.9)
Peer Support Worker	38 (14)	15 (4.9)
Friend/relative	88 (32.4)	116 (38.5)
Person at antenatal classes	13 (4.7)	12 (3.9)
Other influence	112 (41.3)	120 (39.8)

Table 3.9: Reasons for breastfeeding

Reasons for breastfeeding *(in descending order)*	***Intervention (238 responses) n (%)***	***Control (256 responses) n (%)***
Health benefits / bonding	120 (50.4)	111 (43.3)
Breastfed before – successful	33 (13.8)	55 (21.4)
Advised by health professional / family	38 (15.9)	36 (14.1)
Always wanted to / wanted to try	27 (11.2)	33 (12.8)
Breastfed before and unsuccessful	11 (4.6)	7 (2.7)
Religious / cultural beliefs	6 (2.5)	9 (3.5)
Free / easier than formula	2 (0.8)	4 (1.5)
Was breastfed as a child	1 (0.4)	1 (0.3)

3.11.6 Breastfeeding problems

Over half of the women experienced one or more problems associated with breastfeeding. More women in the intervention arm reported problems than in the control arm (61.4% versus 54.3% respectively). Types of problems identified were of similar proportions in both trial arms (Table 3.10).

Table 3.10: Breastfeeding problems[†]

Problem	***Intervention n (%)***	**Control *n (%)***
Sore nipples	88 (32.5)	88 (29.1)
Not enough milk	78 (28.8)	74 (24.5)
Not latching properly	66 (24.2)	68 (22.5)
Engorgement	11 (4.0)	16 (5.3)
Mastitis/infection/abscess	11 (4.0)	7 (2.3)
Other problems	17 (6.2)	18 (5.9)

[†]*Women could report more than one problem*

3.11.7 Reasons for stopping breastfeeding and reasons for giving formula

Women were asked when they stopped breastfeeding and their reasons for this; their responses were grouped and are shown in Table 3.11. The most common problems experienced by women in both arms were with insufficient milk production and latching baby on to the breast. The latter was more frequently reported in the intervention arm (n=45 (24.8%)) compared to the control arm (n=24 (14.3%)). Not all women who stopped breastfeeding responded to the question on reasons for stopping so prevalence of reasons for stopping may be under-reported.

Most women gave formula milk at some point in the first six months with marginally more women in the intervention arm (91.5%) reporting this compared to the control arm (85.7%) doing so. After grouping the reasons for giving formula most of the women said they chose to mix feed to supplement breastfeeding. Similar responses are given here to the reasons why women stopped breastfeeding, for example women in both arms commonly reported giving formula because they believed their breast milk was insufficient or did not satisfy their baby. See Table 3.12.

Table 3.11: Reasons for stopping breastfeeding[†]

Reason	***Intervention (181 responses) n (%)***	***Control (167 responses) n (%)***
Insufficient /no milk/milk dried up	38 (20.9)	47 (28.1)
Not latching on /painful/infection	45 (24.8)	24 (14.3)
Maternal illness /on medication	18 (9.9)	18 (10.7)
Baby did not like/want breast	17 (9.3)	19 (11.3)
No time/other commitments	15 (8.2)	9 (5.3)
Hungry /big /unsatisfied baby	10 (5.5)	13 (7.7)
*Baby unwell**	9 (4.9)	14 (8.3)
Mixed feeding	10 (5.5)	6 (3.5)
Planned to stop /weaning started	8 (4.4)	0 (0)
Mother returned to work	5 (2.7)	15 (8.9)
Too time consuming /no privacy	4 (2.2)	0 (0)
Lack of support	2 (1.1)	2 (1.1)

[†]*Some mothers gave more than one reason * NNU /jaundiced /weight loss*

Table 3.12: Reasons for giving formula milk[†]

Reason	***Intervention (186 responses) n (%)***	***Control (190 responses) n (%)***
Mix feed / top up	37 (19.8)	43 (22.6)
Breast milk not satisfying baby	34 (18.2)	34 (17.8)
Insufficient breast milk	16 (8.6)	21 (11.0)
Gave up BF/started weaning	16 (8.6)	13 (6.8)
Unsure how to BF/had problems	12 (6.4)	15 (7.8)
Too tired after birth	11 (5.9)	8 (4.2)
Maternal illness	10 (5.3)	7 (3.6)
Returning to work /college	7 (3.7)	13 (6.8)
*Baby unwell**	9 (4.8)	7 (3.6)
Disliked BF/ refused breast	7 (3.7)	5 (2.6)
Unsure of quantities consumed	5 (2.6)	3 (1.5)
Wanted to formula feed	4 (2.1)	4 (2.1)
Given formula at birth	3 (1.6)	3 (1.5)
Tried to give formula, baby refused	2 (1.0)	3 (1.5)
*Other***	13 (6.9)	11 (5.7)

[†]*Women gave more than one reason *NNU /jaundiced /weight loss ** E.g. baby slept for longer/ convenience*

3.12 Intensity of peer support

3.12.1 Antenatal support contact

Table 3.13 gives the number of antenatal contacts made by each PSW showing that there was considerable variation between PSWs in the extent of their antenatal contacts with their women. The number of women provided with only one antenatal support contact ranged from 3 (PSW#11) to 24 (PSW#5) whilst the number provided with two contacts ranged from 2 (PSW#4) to 24 (PSW#10). Most of the PSWs only provided one support contact and very few provided three.

Table 3.13: Number of *antenatal* peer support contacts with women in the intervention group of the consented sample

PSW ID	*Number of women (%) given 1 contact*	*Number of women (%) given 2 contacts*	*Number of women (%) given 3 contacts*	*Total contacts given*
#1	19 (79.2)	5 (20.8)	0	***29***
#2	12 (54.5)	9 (40.9)	1 (4.5)	***33***
#3	20 (32.5)	12 (37.5)	0	***44***
#4	11 (84.6)	2 (15.4)	0	***15***
#5	24 (52.2)	21 (45.7)	1 (2.2)	***69***
#6	6 (42.9)	8 (57.1)	0	***22***
#7	23 (62.2)	12 (32.4)	2 (5.4)	***49***
#8	7 (25.0)	20 (74.1)	1 (3.6)	***50***
#9	23 (65.7)	6 (17.1)	6 (17.1)	***53***
#10	6 (19.4)	24 (77.4)	0	***54***
#11	3 (37.5)	5 (62.5)	0	***13***
Total women	***154***	***124***	***11***	**-**

Table 3.14 shows the data extracted from each activity log which the PSWs were to complete after each contact with women in the intervention arm. Using these data it was possible to compare the characteristics of the women who received antenatal support contact with those who did not. It was also possible to compare the characteristics of the women who received one, two and three support contacts during the antenatal period. All women who attended clinics in the intervention arm were to be offered peer support. Some women in the control arm reported contact with PSWs but from PSW records this was only the case for one woman given by mistake on one occasion. A possible explanation for this is that each hospital had PSWs based on the postnatal wards as part of usual care and available to all women. These may be who the control arm women were referring to. There are also other support and outreach workers available to the HOB community particularly for women accessing maternity care so it is plausible that women may have mistaken these for community PSWs when asked to recall any contact.

Table 3.14: Characteristics of intervention group of the consented sample by number of antenatal support contacts

Characteristic	***Number of antenatal contacts: n (%)***			
	None	***1***	***2***	***3***
Intervention group	109 (27.0)	158 (39.2)	125 (31.0)	11 (2.6)
Responders (n=263)	69 (26.2)	104 (39.5)	84 (31.9)	6 (2.3)
Mean age (SD)	27.96 (6.08)	27.11 (7.26)	26.54 (4.67)	25.67 (4.50)
Ethnicity				
White British/Irish	15 (41.7)	14 (38.9)	6 (16.7)	1 (2.8)
African/Caribbean	11 (32.4)	16 (47.1)	6 (17.6)	1 (2.9)
Pakistani	41 (24.7)	57 (34.3)	60 (36.1)	8 (4.8)
Indian	11 (33.3)	10 (30.3)	12 (36.4)	0
Bangladeshi	8 (18.6)	20 (46.5)	14 (32.6)	1 (2.3)
Other Asian	10 (27.8)	17 (47.2)	9 (25.0)	0
Mixed	1 (25.0)	2 (50.0)	1 (25.0)	0
Other	12 (27.9)	18 (41.9)	13 (30.2)	0
Parity				
Primiparous	44 (25.0)	66 (37.5)	58 (33.0)	8 (4.5)
Multiparous	65 (28.6)	92 (40.5)	67 (29.5)	3 (1.3)
Breastfeeding history				
Yes	54 (29.0)	73 (39.2)	58 (31.2)	1 (0.5)
No	54 (25.5)	81 (38.2)	67 (31.6)	10 (4.7)
Plans for feeding				
Breast	85 (26.8)	118 (37.2)	106 (33.4)	8 (2.5)
Formula	6 (40.0)	8 (53.3)	1 (6.7)	0
Mix	2 (20.0)	5 (50.0)	2 (20.0)	1 (10.0)
Undecided	13 (31.7)	15 (36.6)	11 (26.8)	2 (4.9)
Midwifery Team				
Aston & Nechells	5 (16.1)	11 (25.5)	14 (45.1)	1 (3.2)
Great Barr	3 (10.3)	16 (55.2)	10 (34.5)	0
Group 3	10 (27.0)	15 (40.5)	6 (16.2)	6 (16.2)
Handsworth	21 (32.8)	29 (45.3)	14 (21.9)	0
Highgate	7 (13.7)	11 (21.6)	32 (62.7)	1 (2.0)
Ladywood	22 (45.8)	14 (29.2)	11 (22.9)	1 (2.1)
Newtown & Lozells	9 (22.5)	23 (57.5)	8 (20.0)	0
Sparkbrook	11 (25.0)	15 (34.1)	18 (40.9)	0
Sparkhill	21 (35.6)	24 (40.7)	12 (20.3)	2 (3.4)

From this analysis, few differences are apparent in the types of women and the amount of peer support received. In relation to ethnicity, White British/Irish women represented the largest proportion overall who reported not receiving any antenatal support contact but a similar proportion received only one contact. Women from the South Asian groups (Pakistani, Indian and Bangladeshi) received the most contact. Similar proportions of primiparous and multiparous women had none, one, two and three support sessions. Breastfeeding experience was not associated with receipt of support or not. The number of women who did not receive any support contact was lowest in the Aston and Nechells and Great Barr teams, with the highest being Ladywood, Handsworth and Sparkhill. Women cared for by the Highgate team were more likely to receive two support contacts out of all the teams.

3.13.2 Postnatal support contact

The number of postnatal contacts carried out by each PSW is shown in Table 3.15. As with antenatal support provision there was considerable variation between the number of women supported by the PSWs. The lowest number of contacts was by PSW#11 who reported providing one woman with a single support contact. PSW#8 provided 35 contacts overall, most of which were to women who had two contacts from her. The completion of the support logs by the PSWs was variable, although training had been given regarding completion and the logs made as simple as possible. The service managers were available on a day-to-day basis to assist with any queries from the PSW but it came to light that there were some concerns with the literacy skills of certain PSWs. These were dealt with internally and data queries were submitted to the PSWs from the Trial Office.

Table 3.15: Number of *postnatal* peer support contacts with women in the intervention arm

PSW ID	*Number of women (%) given 1 contact*	*Number of women (%) given 2 contacts*	*Total contacts given*
#1	0	2 (100)	***4***
#2	2 (28.6)	5 (71.4)	***12***
#3	4 (22.2)	14 (77.8)	***32***
#4	2 (40.0)	3 (60.0)	***8***
#5	16 (69.6)	7 (30.4)	***30***
#6	9 (100)	0	***9***
#7	15 (93.8)	1 (6.3)	***17***
#8	5 (25.0)	15 (75.0)	***35***
#9	1 (50.0)	1 (50.0)	***3***
#10	9 (60.0)	6 (40.0)	***21***
#11	4 (100)	0	***4***
Total women	***67***	***54***	***-***

Postnatal peer support was only available for the women who initiated breastfeeding in the intervention arm, this was 243 (89.6%) of the women followed-up at six months. Table 3.16 shows maternal characteristics in relation to the number of postnatal support contacts received. Just under half of these eligible women received any postnatal peer support (n=121, 49.7%). When considering women's ethnicity most of the African/Caribbean women (n=12, 75%) did not receive any postnatal support from the PSWs. Women from 'Other Asian' ethnicities (n=15, 68.2%) were also more likely not to have any contact from PSWs. Pakistani and Indian women were more likely to receive two contacts from a PSW.

Multiparous women were more likely than nuliparous women to have had no contact with a PSW (n=82, 58.5% vs. n=40, 39.2%) respectively whilst nuliparous women (n=33, 32.4%) were more likely to have two contacts with a PSW compared to multiparous women (n=21, 14.9%). Women with

previous experience of having breastfed were more likely to have no contact with a PSW (n=78, 60.5%). Nearly half (n=104, 49.3%) of the women who had planned to breastfeed received no support contacts and only (n=51) 24.2% of women intending to breastfeed had 2 support contacts.

Considering the number of contacts per community team, only one woman in the Great Barr team was not given any postnatal contact; eight women had one contact; and 4 women had two contacts. Although the numbers here are small the women under the care of this team were provided with the most support. The women cared for by the Group 3 team had very little contact with PSWs; the majority had no contact at all (88.9%) and only two women actually received a single contact. Similarly the women cared for by the Newtown and Lozells team received little support from the PSWs with only eight women (25.8%) having one contact and two women (6.5%) received two contacts.

PSWs were encouraged to make the first postnatal contact with mothers who had initiated breastfeeding within 48 hours of discharge home. Data on this first postnatal interaction were available for 190 women. This showed that one third of the women (64/190, 33.6%) were contacted within the pre-specified time frame, with the majority (153/190, 80.5%) contacted within 7 days of discharge home. The majority of the initial contacts were made by telephone (154/185, 83.2%) with the remaining 16% (31/185) taking place in the women's home. From the data collected on the activity logs the two most common reasons for no postnatal support being given were that the woman was bottle feeding (35/196, 17.8%) or breastfeeding successfully (25/196, 12.7%). Of the women who then went on to receive further contact the majority of these took place in the woman's home (96/201, 47.7%) with the second contact most likely to take place in another setting (e.g. Children's centre or other family home 124/201, 61.6%).

Table 3.16: Characteristics of women in the intervention arm who initiated breastfeeding by number of postnatal support contacts

Characteristic	***Number of postnatal contacts n (%)***		
	None	***1***	***2***
N	122 (50.2)	67 (27.6)	54 (22.4)
Mean age (SD)	27.72 (7.45)	26.95 (5.07)	27.26 (6.51)
Ethnicity			
White British/Irish	9 (52.9)	4 (23.5)	4 (23.5)
African/Caribbean	12 (75.0)	3 (18.8)	1 (6.3)
Pakistani	52 (48.6)	32 (29.9)	23 (21.5)
Indian	7 (31.8)	4 (18.2)	11 (50.0)
Bangladeshi	10 (38.5)	9 (34.6)	7 (26.9)
Other Asian	15 (68.2)	4 (18.2)	3 (13.6)
Mixed	1 (50.0)	1 (50.0)	0 (0)
Other	15 (55.6)	8 (29.6)	4 (14.8)
Parity			
Primiparous	40 (39.2)	29 (28.4)	33 (32.4)
Multiparous	82 (58.5)	38 (28.3)	21 (14.9)
Breastfeeding history			
Yes	78 (60.5)	35 (27.1)	16 (12.4)
No	44 (38.9)	32 (28.3)	37 (32.7)
Plans for feeding			
Breast	104 (49.3)	56 (26.5)	51 (24.2)
Formula	2 (100)	0 (0)	0 (0)
Mix	3 (75.0)	1 (25.0)	0 (0)
Undecided	7 (41.2)	8 (47.1)	2 (11.8)
Mode of birth			
Spontaneous vaginal	86 (48.6)	55 (31.1)	36 (20.3)
Instrumental	5 (38.5)	3 (23.1)	5 (38.5)
Caesarean section	31 (58.5)	9 (17.0)	13 (24.5)
Midwifery Team			
Aston & Nechells	9 (45.0)	8 (40.0)	3 (15.0)
Great Barr	1 (7.7)	8 (61.5)	4 (30.8)
Group 3	16 (88.9)	2 (11.1)	0 (0)
Handsworth	12 (34.3)	6 (17.1)	17 (48.6)
Highgate	14 (34.1)	10 (24.4)	17 (41.5)
Ladywood	20 (71.4)	3 (10.7)	5 (17.9)
Newtown & Lozells	21 (67.7)	8 (25.8)	2 (6.5)
Sparkbrook	11 (47.8)	7 (30.4)	5 (21.7)

3.13 Advice from health service staff

Women were asked two multiple choice questions regarding the adequacy of information, advice and support they felt that they had received from 'health service staff', firstly during pregnancy and secondly during their hospital stay. The following responses were available: all I could possibly need; some, but not enough; hardly any; and did not want any. This was not a validated tool. A similar proportion of women across the trial arms reported that they had 'all I could possibly need' regarding breastfeeding information during their pregnancy (164 (60.7%) intervention women; 156 (51.6%) control women) and during their postnatal hospital stay (159 (58.8%) intervention women; 165 (54.6%) control women).

3.14 Discussion

3.14.1 Principle findings

The follow-up study has shown that consistent with breastfeeding initiation there was no effect on breastfeeding continuation at 10-14 days or six weeks in the intervention group relative to the controls: nor was there any effect at six months, among the women consented to be contacted at that time. The HOBBIT follow-up findings are consistent with other UK-based trials that have investigated effects of peer support on breastfeeding continuation. Two UK-based RCTs investigating the effect of peer support interventions found no difference in breastfeeding continuation rates; Graffy[50] measured this outcome at six weeks and Muirhead[76] measured this outcome at 16 weeks.

The HOBBIT follow-up results are not consistent with the Cochrane review of support for breastfeeding mothers[5] which concluded that lay/peer support was effective in extending the duration of any and exclusive breastfeeding. However, significant heterogeneity was observed in both meta-analyses (any and exclusive breastfeeding continuation to last study assessment). The HOBBIT follow-up findings are also not consistent with other studies in the international literature.

In Canada a high quality RCT[47] testing the effectiveness of telephone peer support demonstrated a significant effect on breastfeeding at four, eight and 12 weeks. A US-based RCT[77] identified a statistically significant effect on exclusive breastfeeding up to three months. The lack of effect in the UK and contrasting beneficial effect observed in Canada and the US may be explained by the difference in setting. Maternity care in the UK is routinely provided through a structured schedule of appointments with a multi-disciplinary team. Women have regular contact with their named midwife and breastfeeding is part of the usual care that each midwife should provide. As such, routine care has a substantial baseline level of breastfeeding support. In other countries however, as there is not such structured provision of maternity health care, it is plausible that *any* breastfeeding support has the potential to have a greater impact on breastfeeding rates than in the UK.

An unexpected finding was that responders were more likely to be women in the control arm; often research participants in the intervention arm are more likely to respond. However, due to the clustered nature of the trial, with the peer support intervention 'rolled out' as part of usual care the control women were unlikely to perceive that they had 'missed out' on additional support. Despite the PSWs intervention many women reported encountering problems with breastfeeding, and in fact more women in the intervention arm reported breastfeeding problems than those in the control. The types of problems reported are consistent with those reported in other studies as reasons to stop breastfeeding[84] as well as in a national population based survey[3]. Such problems therefore did not appear to be alleviated by PSW support contact. It may be that because the women in the intervention group had the opportunity to acknowledge having a concern to their PSW this made them more likely to then report this when asked at six months. It is also possible that the PSWs identified a problem that the woman had not recognised, for example more women in the intervention arm had mastitis or an infection or an abscess than in the control arm.

The intensity of this PSW intervention was low. Reporting of actual contacts in other studies is often presented as overall coverage of the study population rather than the actual number of contacts received. This makes identifying the actual intensity of the intervention difficult and inconclusive. Chapter 4 addressed this possibility in the systematic review with meta-analyses comparing more or less intensive interventions (see sections 4.4.3 and 4.5.1).

3.14.2 Intensity of the intervention

There was wide variation in the number of women that PSWs provided support contacts to. In the antenatal period PSW#5 provided the most contacts (n=69) with PSW#11 providing the least (n=11). In the postnatal period the most contacts were provided by PSW#8 (n=35), with PSW#11 providing the least (n=1).

Due to problems arising with some of the PSWs literacy levels, it is plausible that not all of the support contacts were recorded on the activity logs so the actual intensity was greater than that recorded. This is a potential problem of collecting process data by peers as they may lack certain organisational or as was found here, literacy skills. Some of the PSWs did note at various times during the trial that they found the paperwork a problem and did not always complete it. This was addressed by the service managers. The low intensity of support is likely to have impacted on the observed lack of effect. As already noted, it is possible that some contacts were made with women but not recorded. However, the reported low intensity of the PSW intervention may be real and potential explanations for this were considered. It may be that the workloads of the individual peers were such that they were unable to provide as much support as intended. Transport issues may have affected the number of contacts the PSWs could make and although each PSW was given a geographical location to work in there may have been longer distances to cover which would have been time consuming particularly if using public transport. There is potential to argue that antenatal

support was ‘easier’ to provide than postnatal support. PSWs approached women in clinics where they were a ‘captive audience’, they could give the appropriate advice and a home visit could be arranged for later in the pregnancy. Once women had been discharged home after birth the PSWs had to resume their relationship with the women and contact them to offer support. The first days and weeks after birth can be a stressful and tiring time so it may have been difficult to arrange a home visit during this period. It may also be that the PSWs simply preferred the antenatal contacts with women.

Looking at the characteristics of the women who received postnatal peer support, out of the ethnic groups African/Caribbean women were more likely not to receive any support contacts. This is of interest as the IFS consistently reports mothers from non-White women are more likely to breastfeed compared to White women. This may be a reflection on the lack of support required by this group. However, Pakistani and Bangladeshi women were more likely to receive PSW contacts (either one or two). To revisit the literature on the authenticity of peer support, sharing a culture and ethnicity is important to foster relationships and to validate the ‘peer-ness’ of the supporter. As most of the PSWs were from South Asian backgrounds and there was only one White PSW this may have been an influence on the success of breastfeeding in the respective groups.

These issues of the intensity of the delivered intervention, the capabilities of those providing the service and whether they can replicate being a peer to the women they support are all important considerations if a new peer support service is to be commissioned, and also for existing services that may benefit from certain adaptations.

3.14.3 Strengths and limitations

Using anonymised data to obtain the outcome of continuation at 10-14 days and six weeks ensured a virtually complete dataset which strengthens the reliability of these results. Given the socio-demographics of the population this high follow-up rate is unlikely to have been replicated if individual data were required. Although the recruited sample was approximately one third of the overall available sample (at PCT level), the response rate to the questionnaire at six months was 67.5%, a rather small proportion of the overall available sample. However, the findings at this final stage of follow-up are consistent with those of *all* women at both 10-14 days and six weeks. The follow-up questionnaire response rate can be considered typical amongst the population recruited who have been previously reported and acknowledged as low-responders based on their socio-demographic characteristics[85,86]. In addition the majority of the consented sample consisted of women from ethnic minority groups which have been recognised as often poor responders to follow-up[87,88].

There was one imbalance across the consented sample in ethnicity but this would have been accounted for in the cluster analysis. It is possible that community midwives asked women to consent to the six month follow-up but they declined to participate. However, the midwives already had a considerable workload which may have meant that recruitment of the consented sample was not maximised.

The low intensity of this PSW intervention limited the effectiveness of it. Other studies have reported similar difficulties regarding completion of trial data collection, Dennis et al[47] reported a telephone support log completion rate of 59% (78/132) of in her trial based in Canada. In addition Di Meglio[89] reported incomplete records from their PSW intervention in the US-based trial. The HOBBIT PSW intervention lacked in intensity, other trials have shown significant results when testing peer

support interventions that are also provided in the immediate postnatal period, usually when women are still in hospital[44,77]. Although PSWs were also present in the hospitals during the HOBBIT trial they were part of standard care and therefore available to both intervention and control groups.

A woman's decision to breastfeed is complex and can be influenced by a number of factors including personal experience, friends, family, culture, religion, ethnicity and social norms[90]. Women who are supported by their partner, family and a health professional are more likely to continue to breastfeed at 6 weeks compared to those with no such support[91]. South Asian women are more likely than White women to have been advised by their mother or mother-in-law about infant feeding[37,38]. The UK government[63-63] has recommended that breastfeeding support be culturally sensitive and individualised for young women and those from ethnic minority groups. Focussing on these two groups of women is based on the evidence that they are more likely to be living in deprived communities and as such are more likely to have poor health outcomes overall and are less likely to initiate and continue to breastfeed[58-60]. With this in mind it may be that peer support to date, particularly for women in ethnic minority groups, has not been structured in the most accessible way. The PSWs in the HOBBIT study provided one-to-one rather than group-based support with the expectation being they would individualise their support and tailor it to take into account the culture and situation of the individual mother. The PSWs were similar to the women they supported regarding characteristics; the PSWs were from a range of ethnic groups and several spoke local community languages. The PSWs were trained in awareness of cultural beliefs relevant to infant feeding practices of the population they were to support.

A Bristol-based qualitative study[92] supports the DH recommendation for culturally sensitive and individualised peer support; Ingram et al[92] state that when planning community-based peer support services the diversity and characteristics of that community must be taken into account. Separate

focus groups with Somali, South Asian and Afro Caribbean mothers facilitated discussion around their perceived barriers and facilitators to exclusive breastfeeding and the extent to which breastfeeding support groups may be beneficial for them. All of the mothers reported that their breastfeeding practices were influenced by extended family members. The mothers suggested ways to tailor breastfeeding support groups to meet their particular cultural traditions, for example, Afro-Caribbean mothers felt that a support group that also promoted friendship and gave more general child rearing advice would be beneficial. Somali women expressed the preference for a breastfeeding support group to be limited to only Somali women where experienced mothers could act as role models for others; they also said they would appreciate someone with expertise/training to answer questions they may have (e.g. a health professional).

Whilst the findings from this qualitative study cannot be generalised it has illuminated the influence of mothers and mothers-in-law in South Asian families in infant feeding decision making. To try and moderate for this the HOBBIT PSWs were trained to include extended family members in the home visits or support sessions with women. The former HOB PCT area has a very diverse population, such that it would be difficult to provide peers for each group. There are limitations in generalising the HOBBIT follow-up results; similar inner-city settings would be likely to see similar results. However, the study provides high quality evidence that low intensity individual peer support even taking culture into account was ineffective in this UK population.

3.15 Conclusion and summary

The result of this RCT of the effectiveness of a new universal antenatal and postnatal peer support service did not demonstrate an effect on any and exclusive breastfeeding continuation rates. These results are consistent with other UK based RCTs but this is counter to national policy recommendations of peer support programme implementation[66]. It is possible that a more intensive

postnatal peer support service might have been effective but this would come with substantial cost implications.

In this Chapter I have described the methods of HOBBIT RCT[68] with particular focus on the consented sample followed-up at six months. Given the division between policy and this and other trial results, I carried out a systematic review with meta-analyses to investigate the effect of peer support on breastfeeding continuation rates further. This is presented in the next Chapter.

Chapter 4

Systematic review of peer support for breastfeeding continuation: a meta-analysis of the effect of setting, intensity and timing

Thesis author contributions

CM, KJ, KSK and I conceived the review. I designed the study protocol in conjunction with KJ. I designed and carried out the systematic database search strategy. Independently and in duplicate with KJ we selected the papers for inclusion and extracted the data. I independently undertook the meta-analyses and interpretation was in conjunction with KJ. I wrote the first draft of the manuscript for publication in conjunction with KJ and CM.

4.1 Purpose of the chapter

In Chapter 2 the systematic review[69] on the effect of peer support provided in the antenatal period on breastfeeding initiation showed that antenatal peer support targeted at women who were considering breastfeeding increased breastfeeding initiation. However, antenatal peer support provided universally to all women does not appear to increase initiation of breastfeeding. Completion of the antenatal peer support systematic review prompted the question 'what peer support interventions may improve breastfeeding continuation rates?' Therefore this Chapter presents a systematic review and meta-analysis of studies testing the effect of postnatal peer support on that outcome. The published paper[84] also includes a metaregression which is not part of this thesis since I was not involved in this extended analysis.

4.2 Background

As described in Chapter 1, systematic reviews[5,41,43] show that peer support is effective in increasing breastfeeding continuation. Breastfeeding promotion and interventions to improve breastfeeding rates are recommended by the UK government in various public health reports and through NICE guidance. The DH 'Evidence into Practice Briefing'[45] recommended that breastfeeding peer support interventions be implemented in the antenatal and postnatal periods to improve the duration of breastfeeding. This recommendation came from the evidence of one US-based cohort study[46]. A further recommendation was that telephone-based peer support in addition to usual care be implemented; this was based on a high quality RCT from Canada[47]. Guidance from NICE[85] to improve the nutrition of low-income pregnant and breastfeeding mothers recommends peer support programmes as an intervention to improve breastfeeding rates. This is counter to the evidence from five UK-based RCTs[42,50,76,79,95] that did not show improvements in 'any' or exclusive breastfeeding rates.

A Cochrane systematic review[5] on the effect of support on breastfeeding continuation included studies that were RCTs or quasi-RCTs, and where the intervention was contact with either professionals or lay personnel (or a combination of the two) provided in addition to routine support. Britton[5] defined lay support as either from volunteers or paid workers and the included trials were those including peer support programmes. Interventions provided in the antenatal period and those described as 'educational' were excluded. The total review included 34 trials comprising 29,385 mother-infant dyads from 14 countries, Australia, Bangladesh, Belarus, Brazil, Canada, India, Iran, Italy, Mexico, Nigeria, Sweden, the Netherlands, UK and USA.

The main results of this review[5] were: all additional support compared to routine care increased the length of 'any' breastfeeding (RR for stopping any breastfeeding before 6 months 0.91 (95% CI 0.86, 0.96); all types of support extended the duration of exclusive breastfeeding compared to any breastfeeding (RR 0.81, 95% CI 0.74, 0.89). When combined lay and professional support were provided this significantly extended any breastfeeding (stopping breastfeeding before 4-6 weeks: RR 0.65, 95% CI 0.51, 0.82; before 2 months RR 0.74, 95% CI 0.66, 0.83) and exclusive breastfeeding was significantly extended with UNICEF training (stopping breastfeeding RR 0.69, 95% CI 0.52, 0.91).

Britton et al[5] included nine trials in their analysis of lay support compared to usual care and found a positive effect (stopping any breastfeeding before last study assessment: RR 0.86, 95% CI 0.76, 0.98). The studies were carried out in developed and developing countries including: Bangladesh[55]; Brazil[53]; Canada[47,49]; Mexico[54]; UK[50-52];and the USA[44,77]. The analysis presented in this thesis will include the results from the HOBBIT RCT[68] previously described in Chapters 1 and 3. This systematic review therefore aims to determine whether lay/peer support interventions provided in the antenatal and postnatal, or postnatal period only have an effect on extended breastfeeding continuation at the last study follow up.

4.3 Methods

4.3.1 Literature search

The following bibliographic databases and resources were searched in November 2010: British Nursing Index (1981-2010); CINAHL (1982-2010); Cochrane library; EMBASE (1980-2010); Medline (1950-2010); Controlled Trials website (2010). Reference lists of retrieved articles were manually searched. The electronic searches were based on a keyword combination for the concepts of "breastfeeding" and "peer/lay/volunteer support/counsellors" using text words, MeSH headings and word variants (see Appendix 3 for search terms).

Citations and papers were selected from the database searches by using an inclusion and exclusion form, assessing: **population** - pregnant women followed through to the postnatal period or postnatal women; **intervention** – peer support in the postnatal period (± support in the antenatal period); **comparator** - usual care; **outcome measure** - 'any' or 'exclusive' breastfeeding at follow-up (to at least 4 weeks) which could either be primary or secondary outcomes. The study design had to be an RCT or a quasi-RCT to be comparable to the Cochrane review[5]. No language restrictions were applied to ensure the full range of trials could be included. All citations and papers were assessed independently and in duplicate.

4.3.2 Data extraction and assessment of risk of bias

Data were extracted on participants, intervention, timing of peer support, outcome, study type, methods, and length of follow-up, results and quality. This was independently undertaken in duplicate by myself and my supervisor (KJ) to ensure a robust process. A tool from the Cochrane Handbook for systematic reviews[96] was used to assess the risk of bias (Table 4.1).

Table 4.1 Cochrane Collaboration risk of bias assessment tool[96]

Domain	*Description*	*Review authors' judgement*
Sequence generation	Describe the method used to generate the allocation in sufficient detail to allow an assessment of whether it should produce comparable groups	Was the allocation sequence adequately generated?
Allocation concealment	Describe the method used to conceal the allocation sequence in sufficient detail to determine whether intervention allocations have been foreseen in advance of, or during, enrolment.	Was allocation adequately concealed?
Blinding of participants, personnel and outcome assessors*	Describe all measures used, if any, to blind study participants and personnel from knowledge of which intervention a participant received. Provide any information relating to whether the intended blinding was effective.	Was knowledge of the allocated intervention adequately prevented during the study?
Incomplete outcome data*	Describe the completeness of outcome data for each main outcome, including attrition and exclusions from the analysis. State whether attrition and exclusions were reported, the numbers in each intervention group (compared with total randomised participants), reasons for attrition/exclusions where reported and any re-inclusions in analyses performed by the review authors.	Were incomplete outcome data adequately addressed?
Selective outcome reporting	State how the possibility of selective outcome reporting was examined by the review authors, and what was found.	Are reports of the study free from suggestion of selective outcome reporting?
Other sources of bias	State any important concerns about bias not addressed in the other domains on the tool. If particular questions/entries were pre-specified in the review's protocol, responses should be provided for each entry/question.	Was the study apparently free of other problems that could put it at high risk of bias?

**Assessments should be made for each outcome (or class of outcome)*

4.3.3 Quality assessment

Study quality was assessed independently and in duplicate by myself and my supervisor (KJ) using the tool shown in Table 4.2. The tool classified study quality into 'high', 'medium' or 'low' for selection, performance, measurement and attrition bias based on descriptions of the design, execution and analysis. Studies scored with the same quality level in two or more of the four categories were considered to be of that quality overall.

Table 4.2: Quality assessment criteria[72]

Bias	*High quality*	*Medium quality*	*Low quality*
Selection	Studies with randomisation, allocation concealment, similarity of groups at baseline	RCTs with some deficiencies in randomisation e.g. lack of allocation concealment, or non-randomised studies with either similarities at baseline or use of statistical methods to adjust for any baseline differences	Non-randomised, with obvious differences at baseline, and without analytical adjustment for these differences.
Performance*	Differed only in intervention, which was adhered to without contamination, groups were similar for co-interventions or statistical adjustment was made for any differences	Confounding was possible but some adjustment was made in the analysis	Intervention was not easily ascertained or groups were treated unequally other than for intervention or there was non-adherence, contamination or dissimilarities in groups and no adjustments made.
Measurement	Outcome measured equally in both groups, with adequate length of follow-up (i.e. at least 6 weeks postpartum), direct verification of outcome, with data to allow calculation of precision estimates.	Inadequate length of follow up or length not given	Inadequate reporting or verification of maternal mortality or differences in measurement in both groups
Attrition	No systematic differences in withdrawals between groups and with appropriate imputation for missing values		Incomplete follow-up data, not intention-to-treat analysis or lacking reporting on attrition

**Blinding was not a quality assessment as blinding of participants or caregivers to intervention types was not possible*

4.3.4 Data synthesis

When pooling studies it is beneficial to choose a summary statistic likely to be constant across all study settings. Using the relative risk of *not* breastfeeding will predict effective interventions to make a greater absolute impact in settings where more women do not continue breastfeeding than in settings where initiation and continuation of breastfeeding is already common. Meta-analysis of the relative risk of still breastfeeding would predict the opposite pattern, which is less tenable[97]. Odds ratios were avoided as they can risk misinterpretation when event rates are high, as with 'any'

breastfeeding in low/middle income countries[74]. Relative risks of not breastfeeding and not exclusively breastfeeding at last study follow-up with 95% confidence intervals were derived, clinical heterogeneity were explored by qualitatively comparing their characteristics among included studies and statistically (using χ^2 tests of heterogeneity and the I^2 statistic to measure heterogeneity[94]. Results were combined for each outcome to give an overall estimate of the treatment effect using random effects models throughout.

For cluster trials the design effect was computed from data presented in the reports (intra-class correlation coefficients and cluster adjusted estimates) and adapted the standard errors of the relative risk to make appropriate allowance for clustering[74]. Where intra-class correlation coefficients were not reported, the design effect was computed using mean intra-class correlation coefficient from the trials in which they were available. This was done by other authors of the publication, not me.

Three *a priori* hypotheses were explored for the differences in the effect of peer support on any and exclusive breastfeeding. These were:

1. Timing of the intervention: antenatal and postnatal period or postnatal period only
2. Study setting: high income and low/middle income countries[98]; UK and non-UK
3. Intensity of the intervention: not intensive (≤5) or intensive (>5 planned contacts)

The effectiveness of peer support in the United Kingdom was also investigated. This separate analysis was justified given the policy recommendation for peer support in the UK, against a highly developed routine community postnatal care service. All analyses were undertaken using the 'metan' function in Stata (version 11).

The denominator used in the analyses was the proportion of participants analysed at the last study follow-up point. This was chosen because there was a large range in the number of participants lost to follow-up across all trials. Thus a high risk of bias would have been created by taking into account the losses to follow-up, as assuming all lost to follow-up had stopped breastfeeding would lead to a conservative estimate, and assuming those lost to follow-up were all still breastfeeding is very doubtful and likely lead to over-estimating the effect of peer support.

4.4 Results

4.4.1 Literature search

Systematic scoping searches of the relevant electronic databases were carried out and identified 2160 potentially relevant citations. At the time of this search there was one unpublished trial known to me (now published[79]) therefore making 2161 potentially relevant citations in total. Of these, 2128 citations were excluded on the basis of being review articles, not meeting the study inclusion criteria or duplicates of the citations. This left 32 hard copies of citations to be retrieved, of which 15 were subsequently excluded leaving 17 trials to be included in this review. Two studies are not included in the meta-analysis but they added descriptively to the findings[95,99]. See Figure 4.1 for explanation of the identification of literature.

The 17 trials which were included in total comprised 8662 participants. Five trials were carried out in the US[44,77,89,99,101], four were carried out in the UK[50,76,79,95], two were carried out in Canada[47,49], two in Brazil[53,100] and one in each of the Philippines[102], Bangladesh[55], Africa[103] and Mexi[54]. Table 4.3 shows the characteristics of the included studies.

Figure 4.1 Identification of relevant literature for the systematic review of the effect of peer support on breastfeeding duration

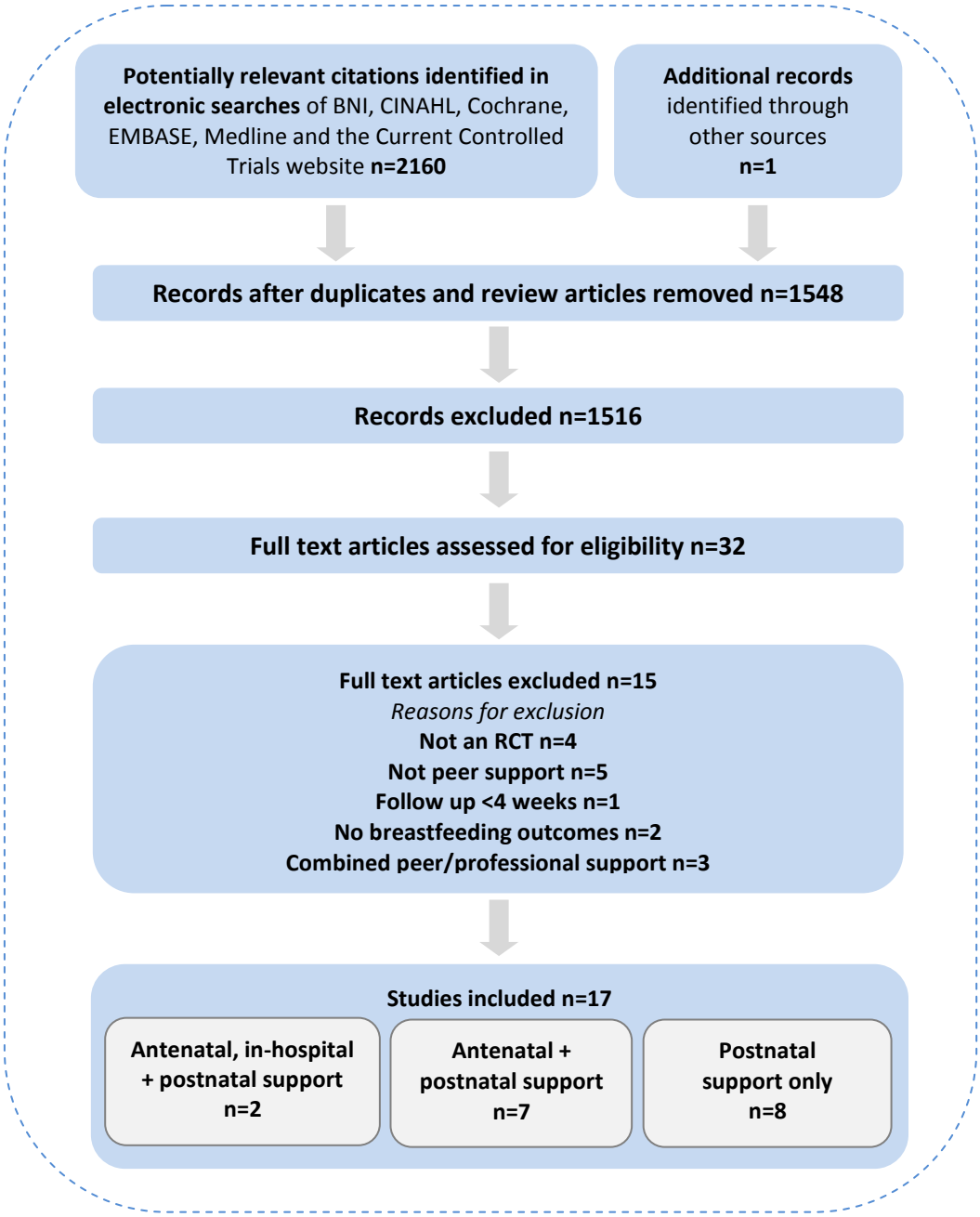


Table 4.3: Characteristics of the included studies *(continued overleaf)*

Study	*Methods*	*Participants*	*Intervention*	*Outcomes*	*Reported duration results*	*QA*
Chapman[44]	*Study design:* RCT *Location:* Hartford, Connecticut (USA) *Clinical setting:* Hartford hospital antenatal clinic *Study group:* 219 participants recruited in antenatal period. 165 still eligible after delivery. 144 completed the 6 month follow up. Intervention n= 113, control n=106 *Analysis:* Intention to treat.	Women up to 26 weeks gestation qualified for WIC, ≥18 years old, available for telephone follow-up. Considering breastfeeding, living in the study area, not enrolled in peer counselling programme, gave birth to a healthy full term singleton with no congenital anomalies and no history of maternal HIV. Infants admitted to the neonatal unit were excluded. Predominantly Hispanic women.	Evaluation of the effectiveness of an existing breastfeeding peer counselling programme (est.1994). Routine breastfeeding education plus ante-, intra- and postnatal peer counselling. *Control*: routine breastfeeding education only.	*Primary outcomes*: Breastfeeding initiation; Breastfeeding rates at 1, 3 and 6 months.	Not breastfeeding at 1 month *Control*: 49.3% *Intervention:* 35.7% RR 0.72 (95% CI 0.50, 1.05) Not breastfeeding at 3 months *Control:* 70.8% *Intervention*: 55.6% RR 0.78 (95% CI 0.61, 1.00) Not breastfeeding at 6 months RR 0.94 (95% CI 0.79, 1.11)	High

CI Confidence Intervals; GPs General Practitioners; OR Odds Ratio; HIV Human Immunodeficiency Virus; QA Quality Assessment; RCT Randomised Controlled Trial; RR Relative Risk; UK United Kingdom; USA United States of America; WIC Women Infants and Children

Table 4.3: Characteristics of the included studies *(cont.)*

Study	*Methods*	*Participants*	*Intervention*	*Outcomes*	*Reported duration results*	*QA*
Anderson[77]	*Study design:* RCT *Location*: Hartford, Connecticut (USA) *Clinical setting*: Hartford hospital antenatal clinic. *Study group*: 182 participants recruited whilst pregnant. 162 eligible on delivery, 135 completed the 3 month follow up. Intervention n=90 Control n=92 *Analysis*: Intention to treat	Pregnant women under 32 weeks considered on low income and qualify for WIC. At least 18 years old, booked to deliver in Hartford hospital. No medical conditions and considering breastfeeding. Gave birth to a healthy full - term singleton of a normal weight with Apgars > 6 at 1 and 5 minutes. No admission to the Neonatal Intensive Care Unit and staying in Hartford until 3 months postnatal. Predominantly Hispanic women.	Peer counselling to improve exclusive breastfeeding rates. Peer counselling and routine care. Women were offered 3 antenatal home visits, daily in hospital visits and 9 postnatal home visits. *Control*: routine care only: conventional breastfeeding education, care from maternity ward staff. A Lactation Consultant was available for those with problems.	*Primary outcomes:* Exclusive breastfeeding at hospital discharge, 1, 2 and 3 months. Breastfeeding initiation; Any breastfeeding at 3 months.	Not exclusively breastfeeding at 3 months *Control*: 98.6% *Intervention*: 79.4% RR 1.24 (95% CI 1.09, 1.41). Not breastfeeding at 3 months RR 1.26 (95% CI 0.93, 1.70).	High

CI Confidence Intervals; GPs General Practitioners; OR Odds Ratio; HIV Human Immunodeficiency Virus; QA Quality Assessment; RCT Randomised Controlled Trial; RR Relative Risk; UK United Kingdom; USA United States of America; WIC Women Infants and Children

Table 4.3: Characteristics of the included studies *(cont.)*

Study	*Methods*	*Participants*	*Intervention*	*Outcomes*	*Reported duration results*	*QA*
Mongeon[49]	*Study design*: RCT *Location*: Montreal, Canada *Clinical setting*: participants were recruited from antenatal clinics offered by the department of community health nurses *Study group*: 200 participants recruited whilst pregnant *Analysis*: not specified	Women intending to breastfeed and would be doing so for the first time.	Telephone based peer support. Schedule of visits included a home visit in the last month of pregnancy then weekly telephone calls during the first 6 weeks after birth. After this, telephone calls were every other week until 5 months or the child had been weaned. *Control*: usual care	*Primary outcome:* Proportion achieving intended duration of breastfeeding;	*Primary outcome* at ≥6 months: *Intervention*: Intended 55% Actual 25% *Control*: Intended 56% Actual 20%	Moderate

CI Confidence Intervals; GPs General Practitioners; OR Odds Ratio; HIV Human Immunodeficiency Virus; QA Quality Assessment; RCT Randomised Controlled Trial; RR Relative Risk; UK United Kingdom; USA United States of America; WIC Women Infants and Children

Table 4.3: Characteristics of the included studies *(cont.)*

Study	*Methods*	*Participants*	*Intervention*	*Outcomes*	*Reported duration results*	*QA*
Haider[55]	*Study design:* Cluster RCT *Location*: Dhaka, Bangladesh *Clinical setting*: 40 randomly selected zones in Dhaka City (20 intervention, 20 control) *Study group*: 726 pregnant women Intervention *n*= 363 Control *n*= 363 *Analysis*: individual level, cluster adjusted	Pregnant women 16-35 years old, ≤3 living children/parity 5, intending to stay in study area for trial duration and in trial area for ≥6 months after birth Eligible participants were identified by house-to-house surveys. Women with medical problems/eclampsia in previous pregnancy, multiple births, congenital anomalies, admission to intensive care and birth weight <1.8 kilos were excluded.	Home based peer counselling 10 visits; 2 in last trimester; 4 in first month (first within 48 hours of birth); day 5; between days 10-14,; 1 during days 24-28; monthly between 2 and 5 months. Adapted to fortnightly visits between months 2-5 due to women wanting more regular visits. Therefore total of visits was 15 but additional contacts could be made if required. *Control*: not described	*Primary outcome* Prevalence of exclusive breastfeeding at 5 months	*Primary outcome* *Intervention*: 70% *Control***:** 6% Difference of 64% (95 % CI 57%, 71%; p<0.0001)	High

CI Confidence Intervals; GPs General Practitioners; OR Odds Ratio; HIV Human Immunodeficiency Virus; QA Quality Assessment; RCT Randomised Controlled Trial; RR Relative Risk; UK United Kingdom; USA United States of America; WIC Women Infants and Children

Table 4.3: Characteristics of the included studies *(cont.)*

Study	*Methods*	*Participants*	*Intervention*	*Outcomes*	*Reported duration results*	*QA*
Morrow[54]	*Study design*: Cluster RCT *Location*: San Pedro Martir, Mexico City (Mexico). *Clinical setting*: Area was mapped into 39 domains. 13 clusters were randomly allocated to each of the 3 study arms. *Study group*: 130 participants recruited. Intervention group 1 *n*=44; Intervention group 2 *n*=52; Control group 1 *n*=34 *Analysis*: unspecified	Pregnant women living in study area that wanted to participate & had an ongoing pregnancy with a positive outcome. Ineligible for study if they moved out of the area before the first postnatal visit. Follow up for 3 months (for rates of exclusive BF and of diarrhoea) and 6 months (duration of any BF)	Community peer counselling – 2 interventions groups and 1 control. Intervention: **Group 1** – Six peer counsellor home visits (mid & late pregnancy and in weeks 1, 2, 4 and 8 postnatal) **Group 2** – Three peer counsellor home visits (one in late pregnancy & then in the week one and two after birth) **Control group** – 'usual care' described as those experiencing lactation problems would contact their physician. No other source of BF counselling available in the study area.	*Primary outcome*: Exclusive breastfeeding up to 3 months. *Secondary* outcome: Duration of breastfeeding;	*Primary outcome*: *Group 1*: 28/42 (67%) *Group 2*: 25/20 (50%) *Control*: 4/33 (12%) p=0.001 *Secondary outcome of* Breastfeeding at 6 months *Intervention:* 65/75 (87%) *Control:* 22/29 (76%) p=0.90	High

CI Confidence Intervals; GPs General Practitioners; OR Odds Ratio; HIV Human Immunodeficiency Virus; QA Quality Assessment; RCT Randomised Controlled Trial; RR Relative Risk; UK United Kingdom; USA United States of America; WIC Women Infants and Children

Table 4.3: Characteristics of the included studies *(cont.)*

Study	*Methods*	*Participants*	*Intervention*	*Outcomes*	*Reported duration results*	*QA*
Graffy[50]	*Study design*: RCT *Location*: South London and Essex (UK) *Clinical setting*: 32 General Practices *Study group*: 720 participants recruited whilst pregnant. 620 completed follow up at 4 months. Intervention *n*=363 Control *n*=357 *Analysis*: Intention to treat.	Pregnant women 28-36 weeks and considering breastfeeding. Not previously breastfed >6 weeks, English speaking and not planning on moving from the area until at least 4 months postnatal.	Antenatal and postnatal volunteer counselling provided by the NCT. 1 antenatal home visit, postnatal support available over the telephone/home visits if requested by women alongside usual care. *Control*: usual care	*Primary outcome*: Prevalence of any breastfeeding at 6 weeks. *Secondary outcomes*: Duration of any breastfeeding; Exclusive breastfeeding at 6 weeks.	*Primary outcome*: *Intervention*: 65%; *Control*: 63% RR 1.02 (95% CI 0.84, 1.24) p=0.69 *Secondary outcomes*: Any breastfeeding at 4 months: *Intervention:* 143/310 (46%) *Control:* 131/310 (42%) RR1.09, 95% CI 0.86, 1.39, p=0.33 Exclusive breastfeeding at 6 weeks: *Intervention*: 31% *Control*: 26% RR 1.20 (95% CI 0.89, 1.61)	High

CI Confidence Intervals; GPs General Practitioners; OR Odds Ratio; HIV Human Immunodeficiency Virus; QA Quality Assessment; RCT Randomised Controlled Trial; RR Relative Risk; UK United Kingdom; USA United States of America; WIC Women Infants and Children

Table 4.3: Characteristics of the included studies *(cont.)*

Study	*Methods*	*Participants*	*Intervention*	*Outcomes*	*Reported duration results*	*QA*
Muirhead[76]	*Study design*: RCT *Location*: Ayrshire, Scotland (UK) *Clinical setting*: One general practice *Study group*: 225 women, follow-up until 16 weeks postnatal. Intervention *n*=112 Control *n*=113 *Analysis*: Intention to treat	Pregnant women at 28 wks gestation were recruited. No inclusion/exclusion criteria given.	Home-based peer support from volunteers. At least 1 antenatal contact (more if requested). If breastfeeding on hospital discharge would receive home-based support. Peers to contact women at least every 2 days (phone/ home visit) or as often as required until 28 days postnatal. Peers provided further support until 16 weeks. *Control* - usual care: community midwives until 10 days postnatal then transferred to health visitor, breastfeeding support groups.	*Primary outcomes*: Breastfeeding initiation; Breastfeeding duration at 10 days, 6 and 16 weeks; Exclusive breastfeeding at 6, 8 and 16 weeks	Any breastfeeding 16 weeks *Intervention*: 23.2% *Control*: 17.7% (95% CI -5.0, 16.0) Exclusive at 16 weeks *Intervention*: 1.8% *Control*: 0% (95% CI -0.7, 4.2)	High

CI Confidence Intervals; GPs General Practitioners; OR Odds Ratio; HIV Human Immunodeficiency Virus; QA Quality Assessment; RCT Randomised Controlled Trial; RR Relative Risk; UK United Kingdom; USA United States of America; WIC Women Infants and Children

Table 4.3: Characteristics of the included studies *(cont.)*

Study	*Methods*	*Participants*	*Intervention*	*Outcomes*	*Reported duration results*	*QA*
Jolly[79]	*Study design*: Cluster RCT *Location*: Birmingham, UK *Clinical setting*: One PCT *Study group*: 848 women, followed-up until 6 months postnatal. Intervention *n*=271 Control *n*=302 *Analysis*: Intention to treat	Pregnant women with a GP in HOB PCT	Home and telephone based peer support. Peer support workers providing support within 24-48 hours of discharge home and then once more within that first week then needs-based and either home visits/ telephone calls. *Control*: Standard care: routine visits from midwife until discharge (usually around 10 but no longer than 28 days postnatal)	*Primary outcome*: Breastfeeding initiation *Secondary outcomes*: Any and exclusive breastfeeding at 10-14 days, 6 weeks and 6 months	*Secondary outcomes*: Any breastfeeding 6 months: *Intervention*: 93/271 (34.3%) *Control*: 117/301 (38.9%) Cluster adjusted OR 1.06, 95% CI 0.71, 1.58, ICC 0.17 Exclusive at 6 months *Intervention*: 48/271 (17.8%) *Control*: 59/301 (19.6%) Cluster adjusted OR 0.89, 95% CI 0.58, 1.39, ICC 0.24	High

CI Confidence Intervals; GPs General Practitioners; OR Odds Ratio; HIV Human Immunodeficiency Virus; QA Quality Assessment; RCT Randomised Controlled Trial; RR Relative Risk; UK United Kingdom; USA United States of America; WIC Women Infants and Children

Table 4.3: Characteristics of the included studies *(cont.)*

Study	*Methods*	*Participants*	*Intervention*	*Outcomes*	*Reported duration results*	*Q A*
Tylleskàr[103]	*Study design*: Cluster RCT *Location*: Burkina Faso (24 clusters), Uganda (24 clusters) and South Africa (34 clusters) *Clinical setting*: Clusters were 1-2 villages/ communities with ~1000 inhabitants (~35 births/ year) *Study group*: 2579 mother-infant dyads Burkina Faso: Intervention n=392;Control n=402 Uganda: Intervention; n=396, Control n= 369 South Africa: Intervention n=535; Control n=485 *Analysis*: Intention to treat	Pre-inclusion assessment: Pregnant women intending to breastfeed, resident in a selected cluster, 7 months or visibly pregnant, no plan to move out of the cluster in coming 12 months, provided informed consent. 3 weeks postnatal assessment: singleton, live birth, no abnormalities to impair breastfeeding.	1 antenatal visit (third trimester) and 4 postnatal visits (1, 4, 7 and 10 weeks) from a peer counsellor. *Control*: Usual care in Burkina Faso and Uganda, help with birth certificates and benefits by peer supporter in South Africa	*Primary outcome:* Prevalence of exclusive breastfeeding at 12 weeks *Secondary outcomes:* Exclusive breastfeeding at 24 weeks and infant diarrhoea	*Primary outcome:* Burkina Faso: *Intervention*: 77%; *Control*: 23% Uganda: *Intervention*: 77%; *Control*: 34% South Africa: *Intervention*: 8%; *Control*: 4% *Exclusive prevalence at 24 weeks (7 day recall):* Burkina Faso: 7.53 (95% CI 4.42, 12.82) Uganda: 4.66 (95% CI 3.35, 6.49) South Africa: 9.83 (95% CI 1.40, 69.14)	High

CI Confidence Intervals; GPs General Practitioners; OR Odds Ratio; HIV Human Immunodeficiency Virus; QA Quality Assessment; RCT Randomised Controlled Trial; RR Relative Risk; UK United Kingdom; USA United States of America; WIC Women Infants and Children

Table 4.3: Characteristics of the included studies *(cont.)*

Study	*Methods*	*Participants*	*Intervention*	*Outcomes*	*Reported duration results*	*QA*
Dennis[47]	*Study design*: RCT *Location*: Toronto, Canada *Study group*: 256 participants recruited in the postnatal period prior to discharge home from hospital Intervention n=132 Control n=124 *Analysis*: Intention to treat	Primiparous, initiated breastfeeding, ≥16 years old, singleton birth at 37 weeks or onwards, had telephone access.	Telephone-based peer support. Support initiated within 48 hours of hospital discharge, schedule was to be individualised and therefore not prescribed. *Control*: conventional in-hospital and community postnatal support services including in-hospital BF management clinic and telephone support line run by hospital nursing staff.	*Primary outcome*: Breastfeeding (24 hour recall) at 12 weeks. *Secondary outcomes*: Exclusive breastfeeding at 4, 8 and 12 weeks	*Primary outcome* *Intervention*: 81.1%; *Control*: 66.9% OR 1.21 (95% CI 1.04, 1.41) p<0.01 *Secondary outcome:* 12 weeks: *Intervention*: 56.8% *Control*: 40.3% p=0.01	High

CI Confidence Intervals; GPs General Practitioners; OR Odds Ratio; HIV Human Immunodeficiency Virus; QA Quality Assessment; RCT Randomised Controlled Trial; RR Relative Risk; UK United Kingdom; USA United States of America; WIC Women Infants and Children

Table 4.3: Characteristics of the included studies *(cont.)*

Study	*Methods*	*Participants*	*Intervention*	*Outcomes*	*Reported duration results*	*QA*
Agrasada[102]	*Study design*: RCT *Location*: Manila, Philippines *Study group*: 204 participants recruited in the postnatal period (prior to discharge home ≤ the third day after birth). 179 completed follow-up until 6 months Intervention 1 *n*=68 Intervention 2 *n*=67 Control *n*=69 *Analysis*: Intention to treat	Primiparous aged 18 and over, intending to breastfeed, having a vaginal delivery of a live infant at 37-42 weeks gestation at low birth weight with an Apgar score ≥8 at 5 minutes. Those excluded were taking medication that would inhibit breastfeeding and were not staying in the study area until the infant was 6 months old.	Two different home-based peer counselling support. Both interventions had 8 visits scheduled at days 3-5, 7-10 and 21, and at 6 weeks then monthly until 5.5 months. *Intervention 1*: home-based BF counselling *Intervention 2*: home-based childcare counselling *Control*: no counsellors	*Primary outcome*: Exclusive breastfeeding at 2 and 4 weeks and each month until 6 months (7 day recall). *Secondary outcomes*: Duration of breastfeeding; Infant weight changes and diarrhoea morbidity	*Primary outcome*: Exclusive at 6 months *Intervention 1*: 44% *Intervention 2*: 7% *Control*: 0% Mothers in *intervention 1* were 6.3 times more likely to exclusively breastfeed than other groups (95% CI 3.53, 11.3 (p<0.001)) Any breastfeeding at 6 months *Intervention 1*: 63.2% *Intervention 2*: 31.3% *Control*: 29% (p<0.001)	High

CI Confidence Intervals; GPs General Practitioners; OR Odds Ratio; HIV Human Immunodeficiency Virus; QA Quality Assessment; RCT Randomised Controlled Trial; RR Relative Risk; UK United Kingdom; USA United States of America; WIC Women Infants and Children

Table 4.3: Characteristics of the included studies *(cont.)*

Study	*Methods*	*Participants*	*Intervention*	*Outcomes*	*Reported duration results*	*QA*
Coutinho[100]	*Study design*: RCT *Location*: Two maternity hospitals in Pernambuco, Brazil *Study group*: 350 postnatal participants recruited before discharge home from hospital Intervention *n*=175 Control *n*=175 *Analysis*: Intention to treat	Healthy singletons, birth weight >2500 kilos, mothers without serious illness	10 postnatal home visits versus no home visits on day 3, then four in month 1, fortnightly in month 2, then monthly to six months. *Control*: usual care, no home visits. Both groups received support in hospital (Baby Friendly).	*Primary outcomes*: Rate of exclusive breastfeeding from birth to six months.	Mean aggregated prevalence of exclusive breastfeeding from 10 days to six months: *Intervention*: 78% *Control*: 62% P<0.001	High

CI Confidence Intervals; GPs General Practitioners; OR Odds Ratio; HIV Human Immunodeficiency Virus; QA Quality Assessment; RCT Randomised Controlled Trial; RR Relative Risk; UK United Kingdom; USA United States of America; WIC Women Infants and Children

Table 4.3: Characteristics of the included studies *(cont.)*

Study	*Methods*	*Participants*	*Intervention*	*Outcomes*	*Reported duration results*	*QA*
Leite[53]	*Study design*: RCT *Location*: Fortaleza, Brazil *Study group*: 1003 participants recruited prior to discharge home from hospital (by day 5) Intervention *n*= 503 Control *n*= 500 *Analysis*: unspecified	Low birth weight baby, expected discharge home by 5 days old, living in the study area and remaining there for study follow-up period. Excluded were mothers having twins, those who lived outside the study area or had serious health problems requiring inpatient treatment, also, newborns with health problems requiring some level of intensive care.	Home based peer support Intervention: scheduled visits on days 5, 10, 15, 30, 60, 90 and 120 after birth. *Control*: no peer support, were to locate their nearby health service facility if they had any problems	*Primary outcome*: Method of feeding at 4 months *Secondary outcome*: Exclusive breastfeeding	*Primary outcome*: Relative Risk (frequency of bottle feeding compared to any form of BF) 0.61 (95% CI 0.50, 0.75) Breastfeeding rates *Intervention*: 326/427 (76.3%) *Control*: 265/432 (61.3%) p=<0.001 *Secondary outcome*: *Intervention*: 24.7% *Control*: 19.3% (p=0.044)	High

CI Confidence Intervals; GPs General Practitioners; OR Odds Ratio; HIV Human Immunodeficiency Virus; QA Quality Assessment; RCT Randomised Controlled Trial; RR Relative Risk; UK United Kingdom; USA United States of America; WIC Women Infants and Children

Table 4.3: Characteristics of the included studies *(cont.)*

Study	*Methods*	*Participants*	*Intervention*	*Outcomes*	*Reported duration results*	*QA*
Merewood[99]	*Study design*: RCT *Location*: Boston, Massachusetts (USA) *Study group*: 108 participants recruited within 72 hours of birth. Intervention *n*= 53 Control *n*= 55 *Analysis: unspecified*	Mothers with otherwise healthy premature infant (26-37 weeks gestation) receiving care in the neonatal unit, spoke English or Spanish and had decided to breastfeed. Women were excluded if they were 'incapacitated' by illness or birth complications. Infants <26 weeks were excluded as they were considered to be of high risk of medical complications that would impede breastfeeding	Hospital and home-based peer support Initial face-to-face contact within 72 hours whilst still in hospital; weekly contact for 6 weeks. Whilst the infant remained in the neonatal unit - at least 30 minutes of support at the hospital. After infant's discharge peer support contact was by telephone unless mother decided to come in to hospital. *Control*: Baby Friendly hospital – referral to lactation consultant as required, use of breast-pump in hospital and home, access to 3 breastfeeding classes per week.	*Primary outcome*: Receiving any breast milk at 12 weeks	*Primary outcome* *Intervention* group had odds of providing any breast milk of 181% greater than the *control* group OR 2.81 (95% CI 1.11, 7.14) p=0.01	High

CI Confidence Intervals; GPs General Practitioners; OR Odds Ratio; HIV Human Immunodeficiency Virus; QA Quality Assessment; RCT Randomised Controlled Trial; RR Relative Risk; UK United Kingdom; USA United States of America; WIC Women Infants and Children

Table 4.3: Characteristics of the included studies *(cont.)*

Study	*Methods*	*Participants*	*Intervention*	*Outcomes*	*Reported duration results*	*QA*
Hopkinson[101]	*Study design*: RCT *Location*: Texas, USA *Study group*: 522 mostly Hispanic participants recruited during hospital stay within 20-48 hours of birth Intervention n= 255 Control n= 267 *Analysis: intention to treat*	Mothers with low-risk infants, were mixed feeding in hospital (the aim of the trial to move these women to practice exclusive breastfeeding), had telephones, and had access to transport. Mothers were excluded if their infant had an increased risk of hyperbilirubinemia (risk factors provided).	Postnatal use of a hospital-based breastfeeding clinic. 'Paraprofessionals' provided breastfeeding education and support and promoted exclusive breastfeeding. Scheduled visit to clinic at 3-7 days after birth. Additional visits and/or phone calls available. *Control*: Breastfeeding assistance before discharge and free formula discharge packs. Contact telephone number of the WIC intervention clinic, advised to request breastfeeding support if required. First routine WIC contact at 2 weeks.	*Primary outcome*: Exclusive BF at one month. *Secondary outcomes*: Amount of formula milk given; Incidence of feeding problems	*Primary outcome*: *Intervention*: 16.8% *Control*: 10.4% Unadjusted OR 1.68 (95% CI 1.06, 2.30) p=0.045 Adjusted OR 1.87 (95% CI 1.07, 3.26)	High

CI Confidence Intervals; GPs General Practitioners; OR Odds Ratio; HIV Human Immunodeficiency Virus; QA Quality Assessment; RCT Randomised Controlled Trial; RR Relative Risk; UK United Kingdom; USA United States of America; WIC Women Infants and Children

Table 4.3: Characteristics of the included studies *(cont.)*

Study	*Methods*	*Participants*	*Intervention*	*Outcomes*	*Reported duration results*	*QA*
Di Meglio[89]	*Study design*: RCT *Location*: New York, USA *Study group*: 78 participants recruited between 12-36 or 24-48 hours depending on mode of birth Intervention *n*= 38 Control *n*= 40 *Analysis: intention to treat*	Infants born at 36 weeks gestation or over, birth weight of >2.0kg, not admitted to the neonatal unit for more than 6 hours, no congenital anomalies and were discharged home with their mother.	Telephone based peer support. Seven contacts scheduled at 2, 4 and 7 days post-discharge then at 2, 3, 4, and 5 weeks post-discharge *Control*: usual care comprising access to paediatric care providers and hospital lactation consultants.	*Primary outcome*: Duration of breastfeeding *Secondary outcome*: Duration of exclusive breastfeeding	*Primary outcome* Median days *Intervention*: 75 *Control*: 35 days Hazard Ratio of BF cessation 0.71 (95% CI 0.39, 1.30) p=0.26 *Secondary outcome* Median days *Intervention*: 35 *Control*: 10 Hazard Ratio 0.26 (95% CI 0.10, 0.70) p=0.004	High

CI Confidence Intervals; GPs General Practitioners; OR Odds Ratio; HIV Human Immunodeficiency Virus; QA Quality Assessment; RCT Randomised Controlled Trial; RR Relative Risk; UK United Kingdom; USA United States of America; WIC Women Infants and Children

Table 4.3: Characteristics of the included studies *(cont.)*

Study	*Methods*	*Participants*	*Intervention*	*Outcomes*	*Reported duration results*	*QA*
Watt[95]	*Study design*: RCT *Location*: Two boroughs of London (Camden and Islington), UK *Study group*: 315 participants recruited with babies less than 3 months old from 'baby clinics' within the boroughs Intervention n= 157 Control n=155 *Analysis:* intention to treat	Women from Register General occupation classes II-V (non-professional), babies born ≥37 weeks, birth weight >2.5 kilos, singletons, women able to understand spoken & written English, resident in the study area. Exclusions: <17 years old, infants with serious medical conditions/on special diets/>12 weeks old, women or their partners were from social class I (professional).	12 session programme delivered over 4 weeks. Monthly home visits from 3 months of age until 12 months of age. *Control*: Usual care from GPs and health visitors.	*Primary outcome*: Vitamin C from fruit at 12 months (daily intake). *Secondary outcome:* Exclusive breastfeeding at 4 months	*Secondary outcome* *Intervention*: 48% *Control*: 53% RR 0.9 (95% CI 0.7, 1.3)	Moderate

CI Confidence Intervals; GPs General Practitioners; OR Odds Ratio; HIV Human Immunodeficiency Virus; QA Quality Assessment; RCT Randomised Controlled Trial; RR Relative Risk; UK United Kingdom; USA United States of America; WIC Women Infants and Children

Table 4.4 shows that when grouped together, all trials had a beneficial effect on the duration of both any breastfeeding (RR 0.85, 95% CI 0.77, 0.94) and exclusive breastfeeding (RR 0.82, 95% 0.76, 0.88). When study setting was analysed the interventions in low/middle income countries were beneficial for prolonging the duration of both any and exclusive breastfeeding; this was also the case for the more intensive interventions (≥5 contacts) and timing (postnatal only). There was a marginal effect on prolonging exclusive breastfeeding and antenatal and postnatal interventions in high income countries. These analyses will be described further in the following sections.

Table 4.4: Relative risk of not breastfeeding at last study follow-up

	Any breastfeeding		Exclusive breastfeeding	
Variables	**Relative Risk (95% CI)**	**I^2 (%)**	**Relative Risk (95% CI)**	**I^2 (%)**
All	0.85 (0.77, 0.94)	61.7	0.82 (0.76, 0.88)	89.7
Setting (countries)				
High income	0.93 (0.87, 1.00)	16.7	0.90 (0.85, 0.97)	82.4
Low/middle income	0.70 (0.60, 0.82)	30.0	0.63 (0.52, 0.78)	93.4
Intensity				
<5 planned contacts	0.99 (0.90, 1.09)	0.0	0.83 (0.70, 1.00)	87.5
≥5 planned contacts	0.80 (0.71, 0.89)	62.7	0.81 (0.74, 0.88)	90.9
Timing				
Ante- and postnatal	0.94 (0.88, 1.01)	0.0	0.79 (0.71, 0.88)	91.5
Postnatal only	0.75 (0.63, 0.89)	64.5	0.82 (0.86, 0.88)	84.7

4.4.2 Timing of peer support

The timing of peer support was categorised into two groups: antenatal and postnatal periods; and postnatal period only. Seven trials[44,49,50,54,76,77,79] tested peer support interventions provided in the *antenatal and postnatal periods* and when combined in the analysis there was no statistically significant effect on the risk of stopping *any* breastfeeding (RR 0.94, 95% CI 0.88, 1.01). Heterogeneity was not statistically significant (X^2 2.54, p=0.864, I^2 0.0%), see Figure 4.2. In the trials providing a peer support intervention in the *postnatal period only* there was a statistically significant effect on the risk of *not* breastfeeding (RR 0.75 (95% CI 0.62, 0.89)) and heterogeneity was statistically significant (X^2 14.09, p=0.015, I^2 64.5%). See Figure 4.3.

Figure 4.2 Relative risk of *not* breastfeeding at last study follow-up: timing of support *antenatal and postnatal period*

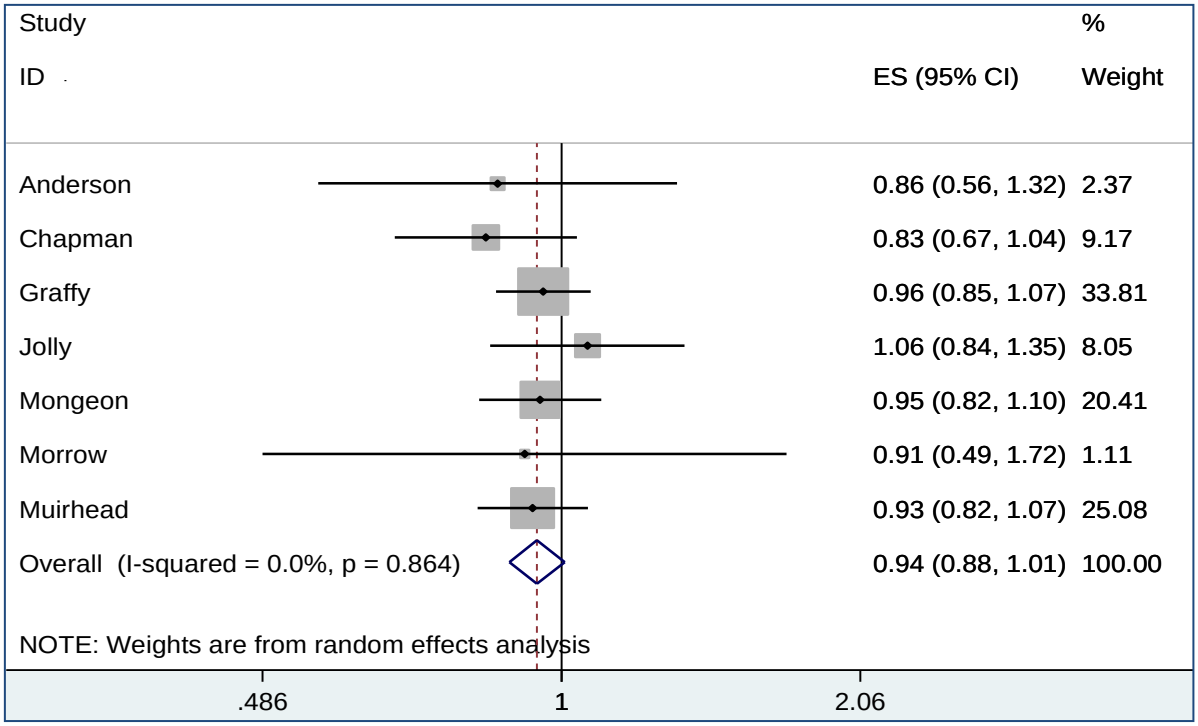
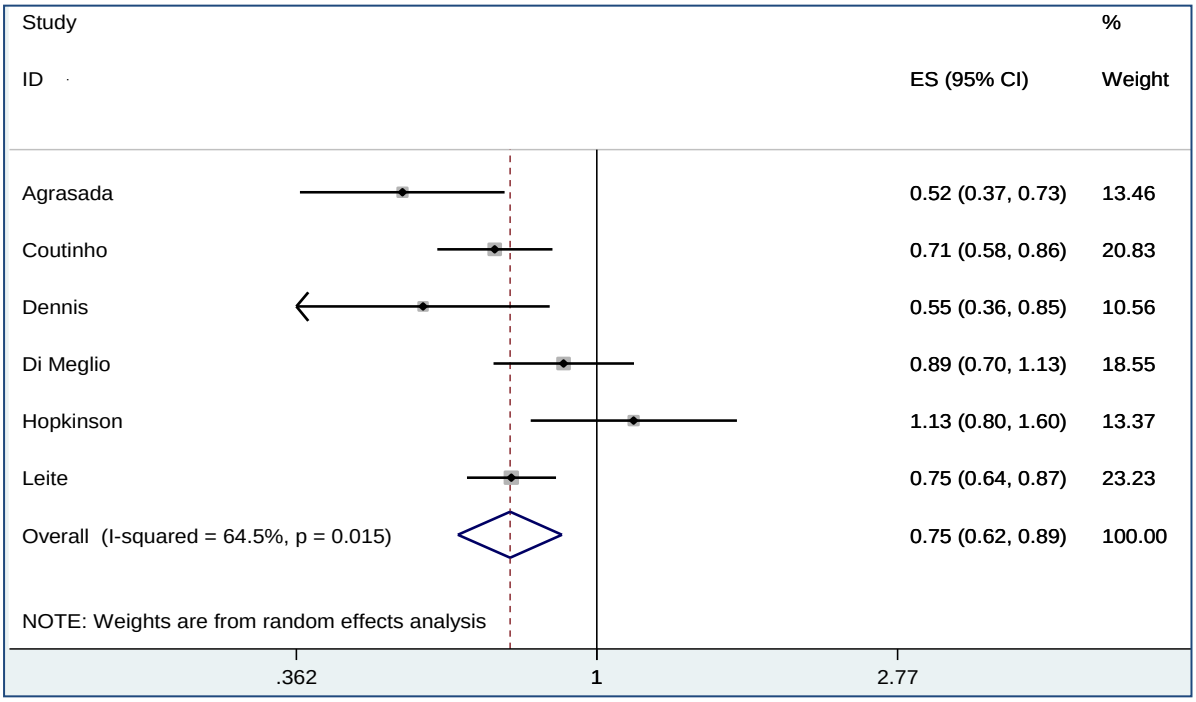


Figure 4.3 Relative risk of *not* breastfeeding at last study follow-up: timing of support *postnatal period only*



When combined, the trials testing peer support interventions provided in the *antenatal and postnatal periods* had a statistically significant effect on the risk of *not exclusively* breastfeeding (RR 0.79 (95% CI 0.71, 0.88). Heterogeneity was statistically significant (X^2 82.60, p=0.000, I^2 91.5%). For those trials with a peer support intervention in the *postnatal period only* the risk of not *exclusively* breastfeeding was statistically significant (RR 0.84 (95% CI 0.76, 0.93)) and heterogeneity was statistically significant (X^2 32.68, p=0.00, I^2 84.7%) See Figure 4.4 and 4.5 respectively.

Figure 4.4 Relative risk of not *exclusively* breastfeeding at last study follow-up: timing of support *antenatal and postnatal period*

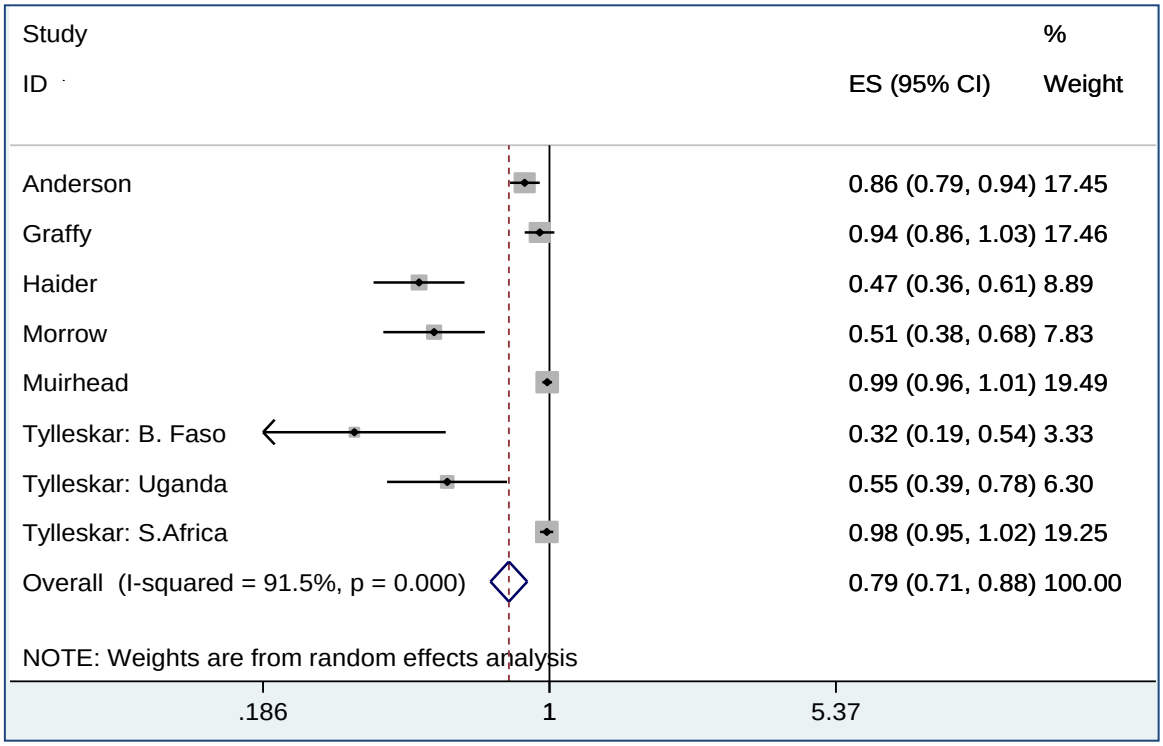
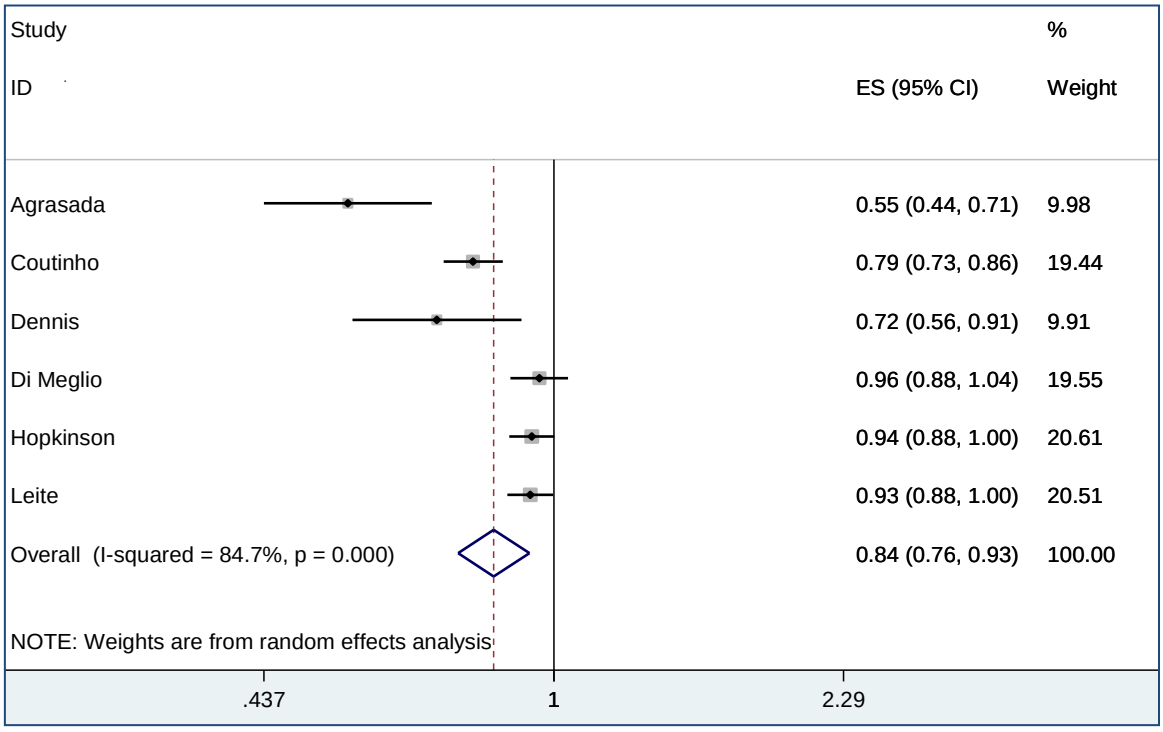


Figure 4.5 Risk Relative risk of not *exclusively* breastfeeding at last study follow-up: timing of support *postnatal period only*



4.4.3 Intensity of the peer support intervention

The intensity of an intervention is likely to impact on its effectiveness. It is dependent on women accepting the contact/s, how the individual peers adhere to the proposed schedule of contacts as well as the capacity of the peer support service. Although all of the studies set out a proposed schedule of contacts, not all reported the actual number received by women. Table 4.5 shows the intensity of the interventions provided in the antenatal and postnatal periods, Table 4.6 shows the intensity of the interventions provided in the postnatal period only.

When combined, trials with peer support interventions categorised as *'not intensive'* (<5 scheduled visits/contacts) had no effect on the risk of *not* breastfeeding (RR 0.99 (95% CI 0.90, 1.09) and heterogeneity was not statistically significant (X^2 1.33, p=0.723, I^2 0.0%). However, trials with interventions categorised as *'intensive'* (≥5 planned visits/contacts) did have a statistically significant effect (RR 0.79 (95% CI 0.71, 0.89)). Heterogeneity was statistically significant (X^2 21.46, p=0.006, I^2 62.7%). See Forest plots in Figures 4.3 and 4.7 respectively.

Figure 4.6 Relative risk of *not* breastfeeding at last study follow-up by intensity : *not intensive*

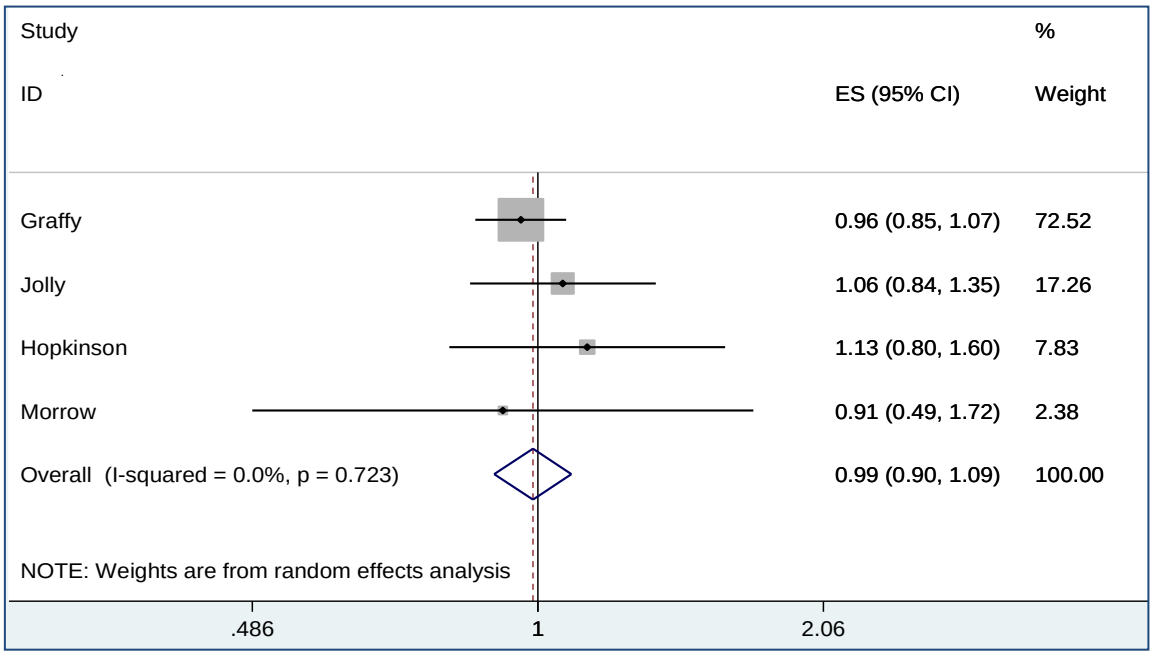


Table 4.5: Intensity of the interventions provided in the antenatal and postnatal periods

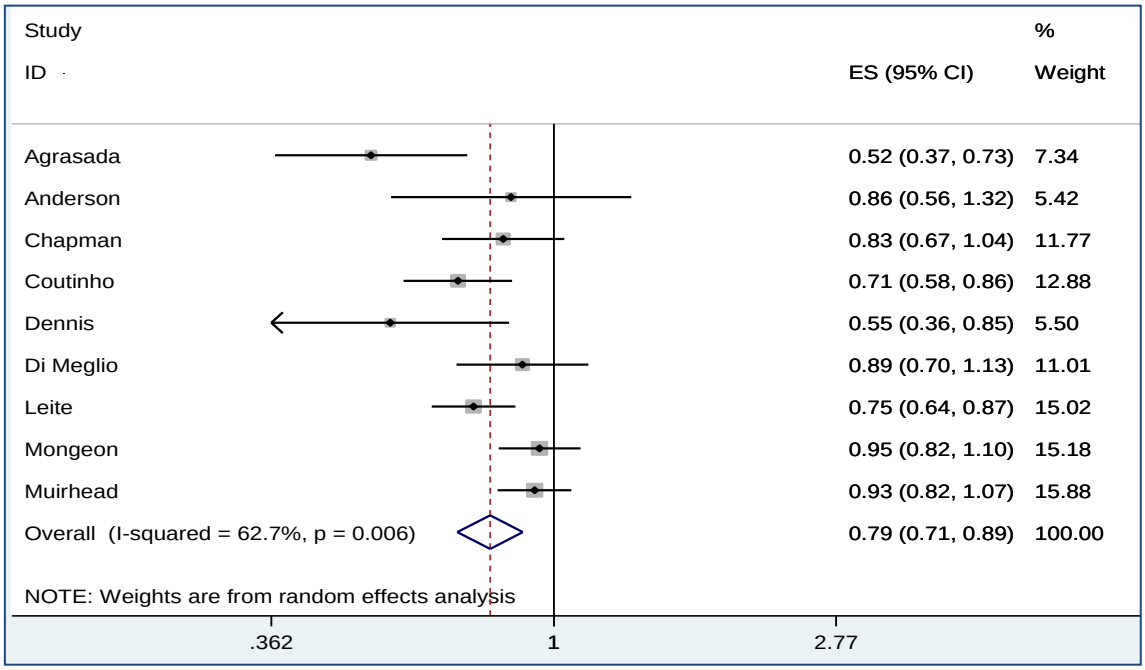
Study	*Intervention n*	*n peers*	*Contact*	*Proposed contact*	*Actual contact*	*Peer coverage*
Chapman[44]	90	3	Hospital, home and telephone	AN: offered 1 home visit; Perinatal: at least daily; PN: minimum 3 home visits	Not reported	AN : 94% (67/71) Home visit: 50% (38/76) Telephone: 53% (40/75)
Anderson[77]	63	2	In hospital, home and telephone	AN: 3 home visits; Perinatal: daily; PN: 9 home visits, telephone as necessary	Not reported	AN: not stated Home visit: 63.5% (40/63)
Mongeon[49]	95	20	Home (AN) and telephone (PN)	AN: 1; PN: weekly until 6 weeks	Not reported	Not reported
Haider[55]	363	20	Home	AN: 2 PN: 8	Not reported	Not reported
Morrow[54]	80	3	Home	2/3 depending on group	Not reported	Not reported
Graffy[50]	310	28	Home and telephone	AN: one PN: as required	At least 1 home visit	Home visits:20% (67/310) Telephone: 43% (143/310) No contact: 37% (126/310)
Muirhead[76]	110	12	Home or telephone	AN: at least 1 PN: every 2 days until 28 days/16 weeks if requested	Not reported	88% (97/110)
Jolly[79]	568	11	Home or telephone	AN: 2 PN: ≤24 hours of discharge, 1 home visit in first week then as required	1-2	First support session: 70% (322/460) Second support session: 48% (156/322)
Tylleskär[103]	392 (B.F); 396 (U); 535 (S.A)	28 (B.F); 12 (U); ? (S.A)	Home	AN: 1; PN: 3, 6, 12, 24 weeks, more if requested	Not reported	Not reported

AN Antenatal; B.F Burkino Faso; PN Postnatal; S.A South Africa; U Uganda.

Table 4.6: Intensity of the interventions only provided in the postnatal period

Study	*Intervention n (duration data)*	*n peers*	*Contact*	*Proposed contact*	*Actual contact*	*Peer coverage*
Dennis[47]	107	58	Telephone	As required	5 or more contacts	59% (78/132) call logs were reported by peers but logs were not always completed
Agrasada[102]	60	8	Home	Eight	Not reported	Not stated
Coutinho[100]	330	5	Home	10	Six or more	99.6% received first 4 visits. On average 82.6% received 5 of the planned 6 further visits.
Leite[53]	427	20	Home	Six	Not reported	Not reported
Merewood[99]	43	5	Hospital based face-to-face and telephone	Seven	Not reported	43 (89%) had records of peer support
Hopkinson[101]	226	3	Hospital clinic/ telephone support	1 clinic visit in first week then as required	88 (34.5%) visited the clinic in first week	144 (56.5%) had support in first week
Di Meglio[89]	19	5	Telephone	Seven	Not reported	19 (63%) received some support
Watt[95]	212	27	Home	12 over 4 weeks	5 on average (range 1-10)	5 on average (range 1-10)

Figure 4.7 Relative risk of *not* breastfeeding at last study follow-up by intensity: *intensive*



When analysing the effect of peer support on the risk of not *exclusively* breastfeeding, interventions that were *'not intensive'* had no effect (RR 0.83 (95% CI 0.70, 1.00) but trials with an '*intensive'* peer support intervention did have a statistically significant effect (RR 0.80 (95% CI 0.74, 0.88). Heterogeneity was statistically significant in both analyses respectively (X^2 16.03, p=0.000, I^2 87.5%); (X^2 109.46, p=0.000, I^2 90.9%). See Forest plots in Figures 4.8 and 4.9 respectively.

Figure 4.8 Relative risk of not *exlcusively* breastfeeding at last study follow-up by intensity*: not intensive*

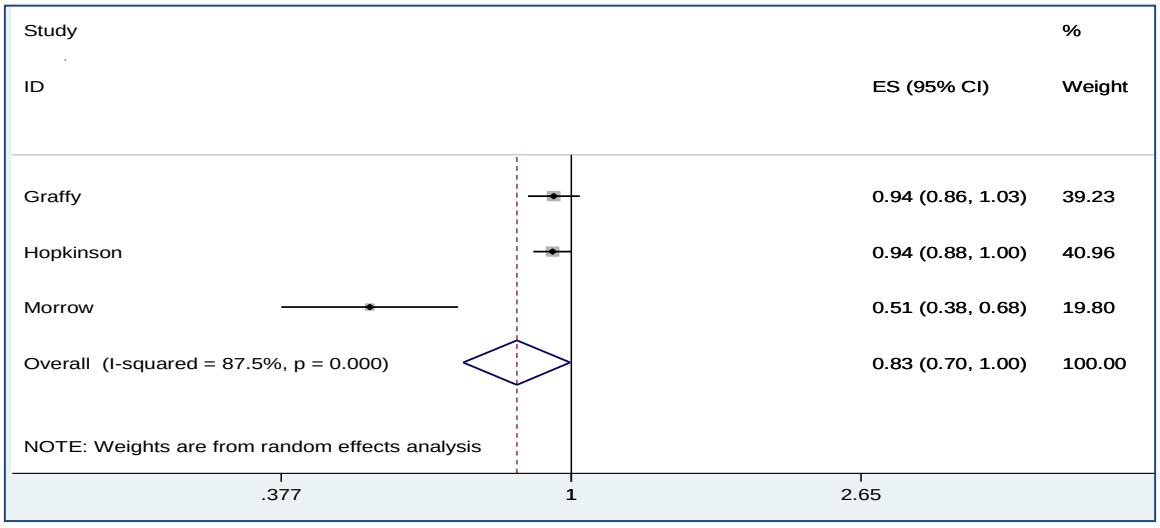
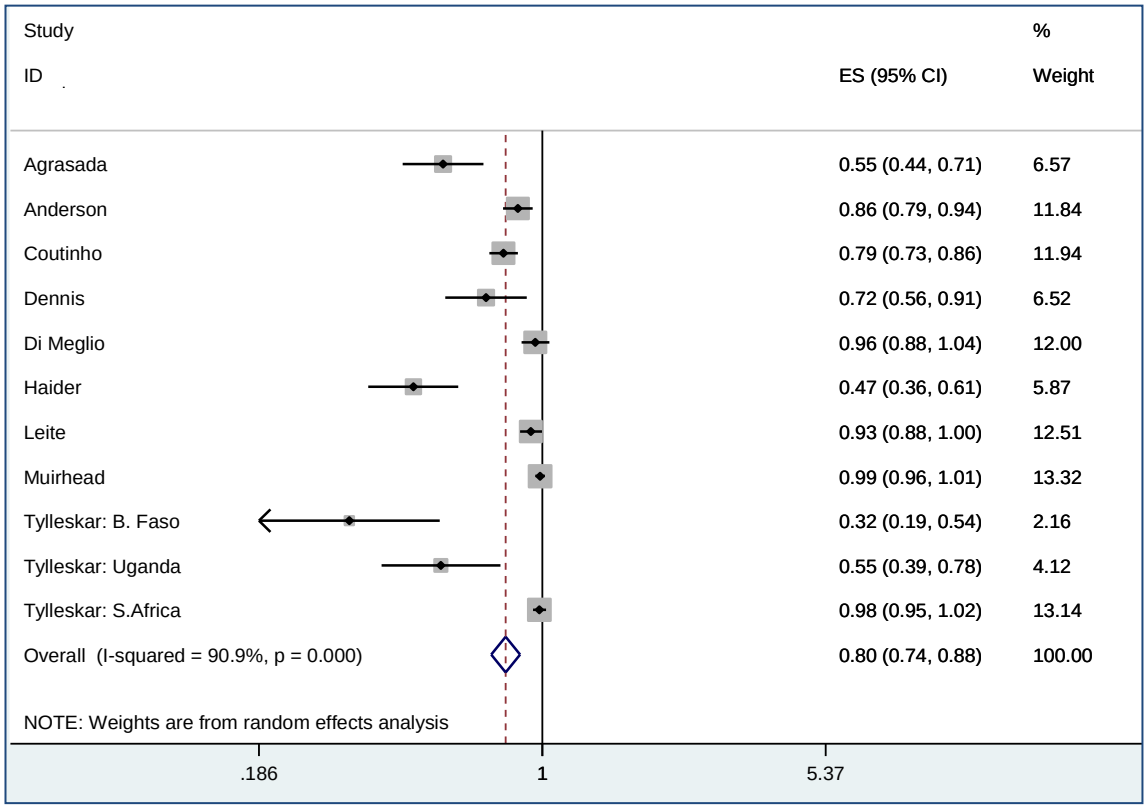


Figure 4.9 Relative risk of not *exclusively* breastfeeding at last study follow-up by intensity: *intensive*



4.4.4 Study setting

Study setting may influence the effectiveness of an intervention taking into account cultural practices and routine health care provision. To analyse the effect that study setting may have on breastfeeding the included studies were grouped into high income or low/middle income countries[98]. An analysis of UK-based countries was also carried out. Table 4.7 presents the trial outcomes assessed and effects of the interventions by this categorisation of study setting.

In *high income countries* (Figure 4.10) peer support had no effect on the risk of *not* breastfeeding (RR 0.93, 95% CI 0.87, 1.00) and heterogeneity was not statistically significant (X^2 for heterogeneity 9.60, p=0.294, I^2 16.7%). For *low/middle income countries* (Figure 4.11) there was a statistically significant effect on this outcome (RR 0.70, 95% CI 0.60, 0.81). Heterogeneity was not statistically significant (X^2 4.29, p=0.232, I^2 30.0%).

Figure 4.10 Relative risk of *not* breastfeeding at last study follow-up by setting: *high income countries*

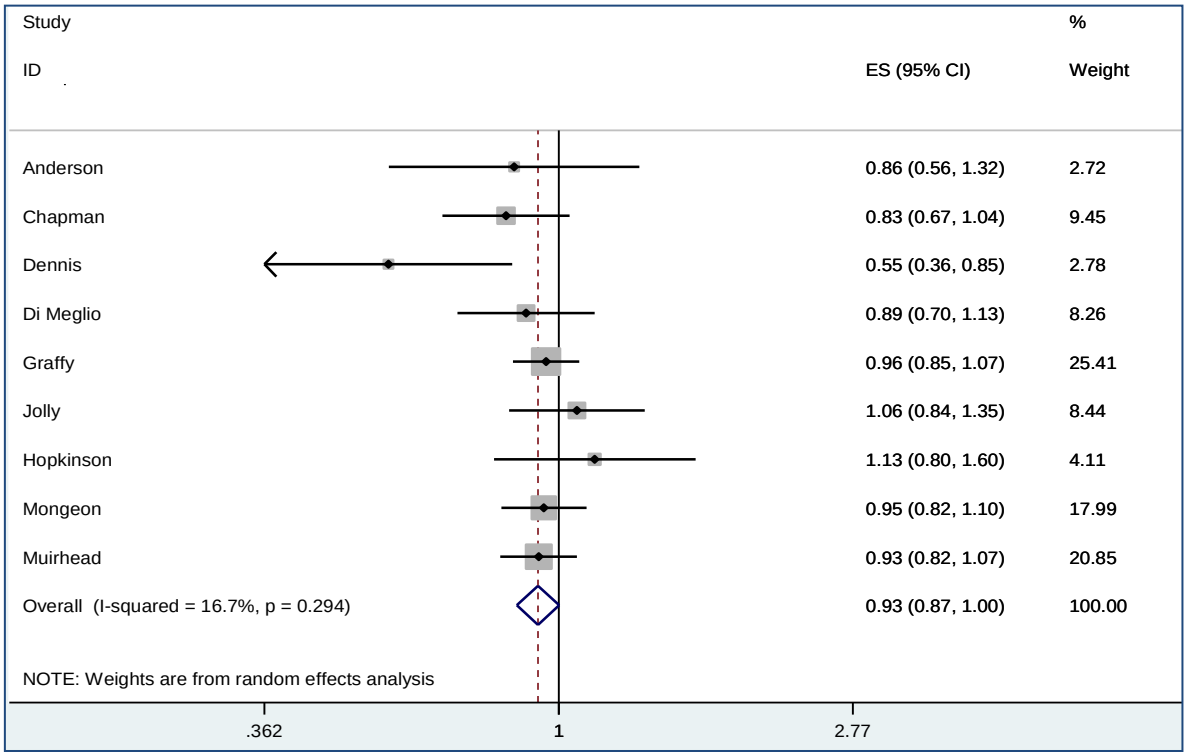


Figure 4.11 Relative risk of *not* breastfeeding at last study follow-up by setting: *low/middle income countries*

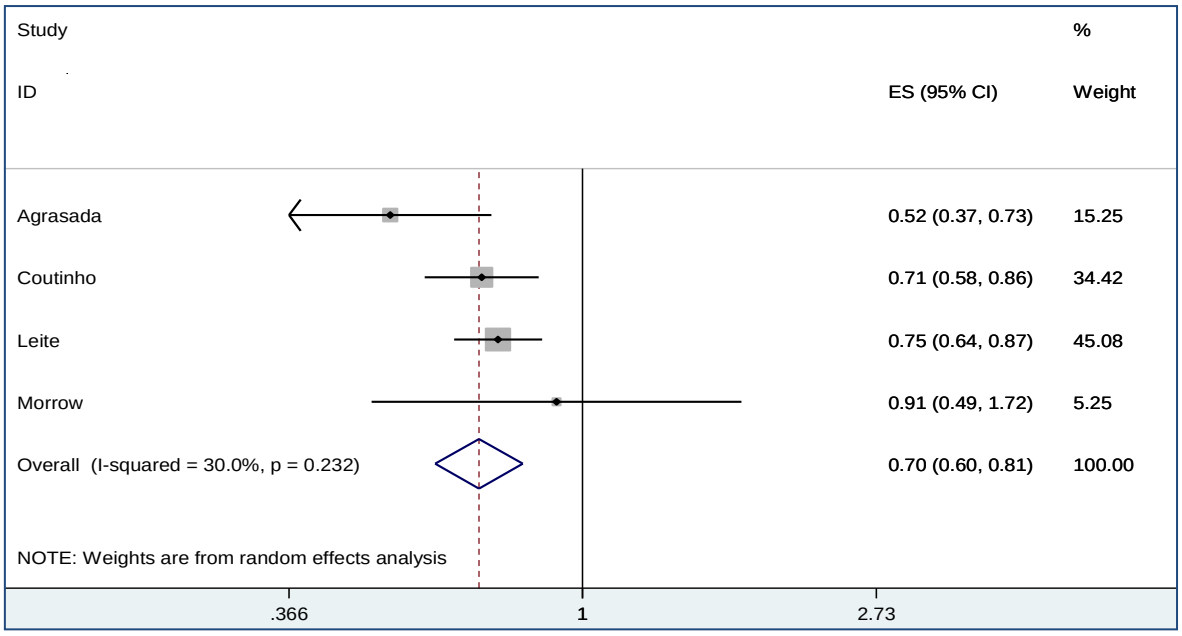


Table 4.7 Observed effect at last study assessment of all included trials by study setting

Study	*Country*	*Breastfeeding outcome*	*Effect measure*	*Significant Effect*
Tylleskär[103]	Africa (3 sites)	Exclusive	Prevalence ratio	B.F – Yes U –Yes S.A - No
Haider[55]	Bangladesh	Exclusive	Proportion	Yes
Coutinho[100]	Brazil	Exclusive	Mean aggregated prevalence	Yes
Leite[53]	Brazil	Any Exclusive	Relative Risk	Yes Yes
Dennis[47]	Canada	Any Exclusive	Odd Ratio	Yes Yes
Mongeon[49]	Canada	Any	Proportion	No
Morrow[54]	Mexico	Any Exclusive	Proportion	No Yes
Agrasada[102]	Philippines	Any Exclusive	Proportion	Yes Yes
Muirhead[76]	UK	Any	Proportion	No
Jolly[79]	UK	Any	OR	No
Watt[95]	UK	Exclusive	Risk ratio	No
Graffy[55]	UK	Any Exclusive	Relative Risk	No No
Chapman[44]	USA	Any Exclusive	Relative Risk	No No
Anderson[77]	USA	Any Exclusive	Relative Risk	Yes Yes
Merewood[99]	USA	Any	Odds Ratio	Yes
Di Meglio[89]	USA	Any	Hazard Ratio	No
Hopkinson[101]	USA	Exclusive	Odds Ratio	Yes

B.F Burkina Faso; U Uganda; S.A South Africa

The UK-based peer support trials showed no effect on the risk of stopping *any* or *exclusive* breastfeeding: *not* breastfeeding (RR 0.96, 95% CI 0.89, 1.04); not *exclusively* breastfeeding (RR 0.98, 95% CI 0.96, 1.01). Heterogeneity was not significant for the first analysis (X^2 0.93 p=0.629, I^2 0.0%) and was for the second (X^2 0.91 p=0.341, I^2 0.0%). Forest plots are given in Figures 4.12 and 4.13 respectively.

Peer support had a statistically significant effect on the risk of not *exclusively* breastfeeding prior to the last study assessment in *high income countries* (RR 0.90 (95% CI 0.85, 0.97) and in *low/middle income countries* (RR 0.63 (95% CI 0.52, 0.77). Heterogeneity was statistically significant in both analyses: *high income countries* (X^2 34.16, p=0.000, I^2 82.4 %); *low/middle income countries* (X^2 91.47, p=0.000, I^2 93.4%). See Forest plots in Figures 4.14 and 4.15 respectively.

Figure 4.12 Relative risk of *not* breastfeeding at last study follow-up by setting: *UK*

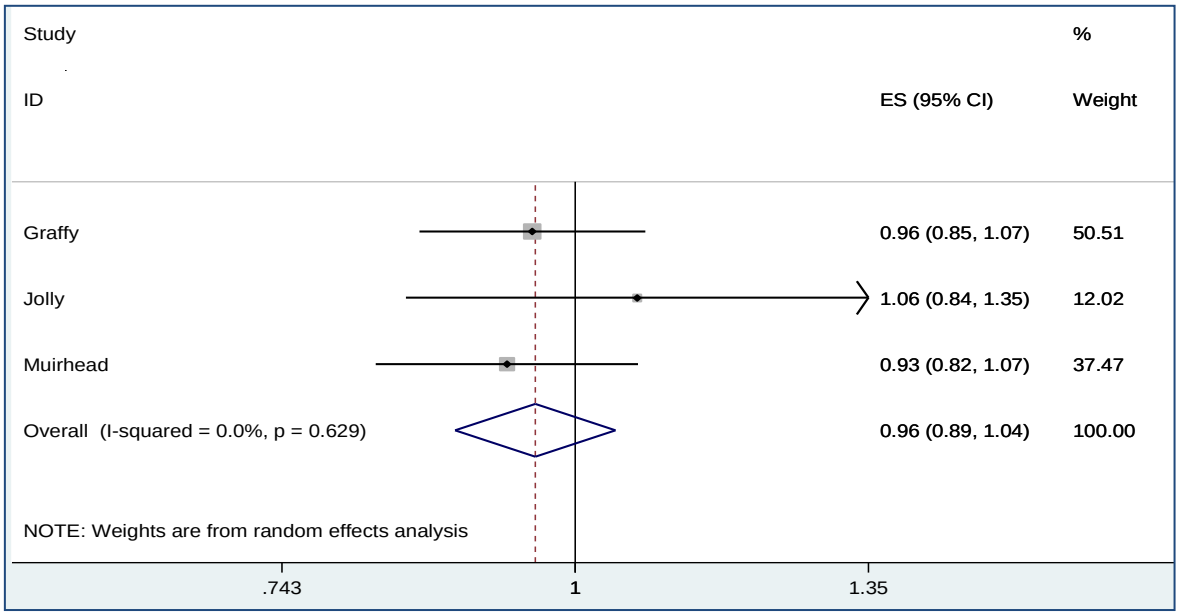


Figure 4.13 Relative risk of *not exclusively* breastfeeding at last study follow-up by setting: *UK*

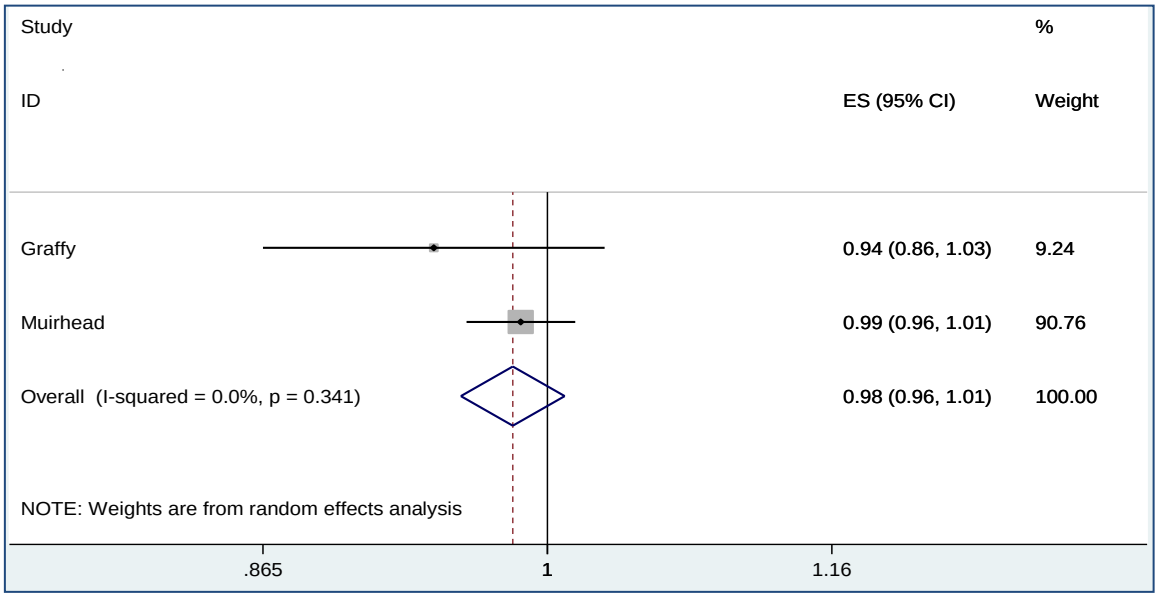


Figure 4.14 Relative risk of *not exclusively* breastfeeding at last study follow-up by setting: *high income countries*

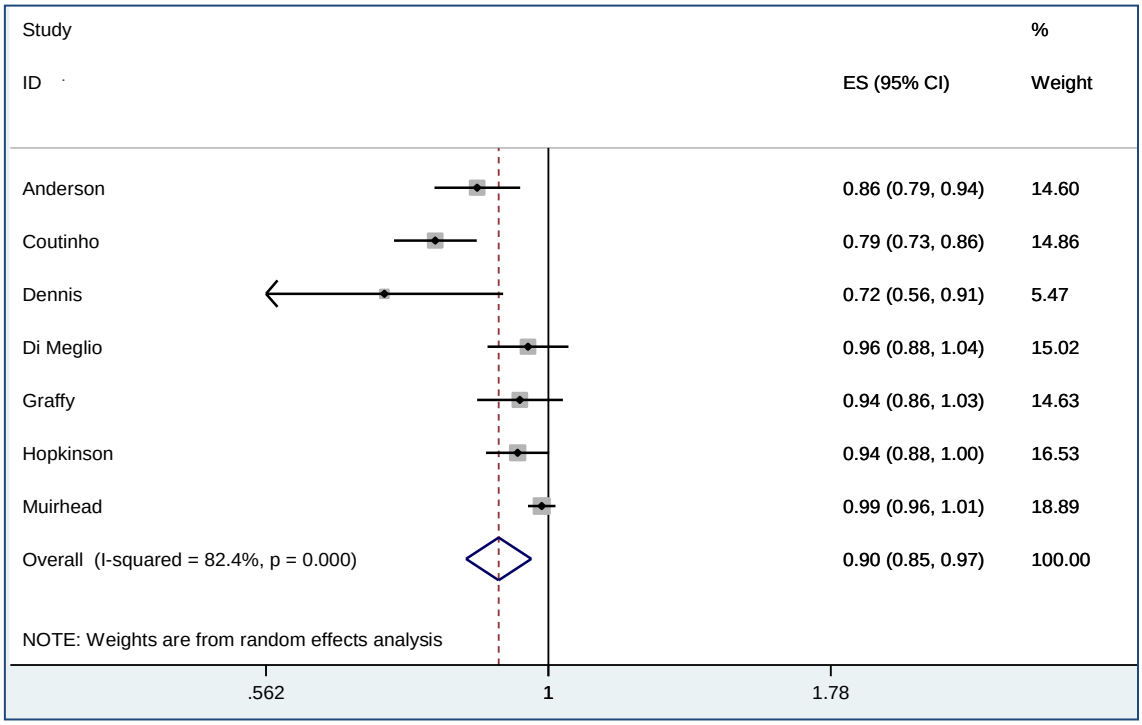
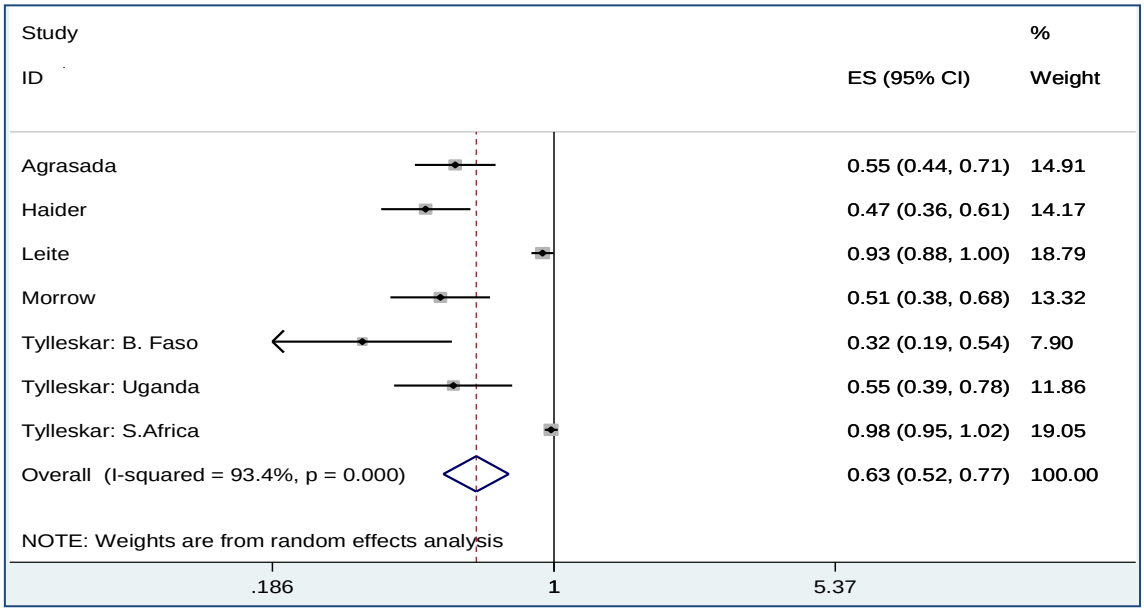


Figure 4.15 Relative risk of *not exclusively* breastfeeding at last study follow-up by setting: *low/middle income countries*



4.5 Discussion

4.5.1 Interpretation of principle findings

Two analyses were carried out on all studies reporting data on the two outcomes of interest: any and exclusive breastfeeding. Whilst a statistically significant effect was observed for both outcomes overall, the subgroup analyses revealed insights into the variables that influence the effectiveness of peer support interventions.

Timing: When this subgroup of trials were analysed according to timing those with postnatal only interventions demonstrated a significant effect on any and exclusive breastfeeding. In the analyses for both outcomes heterogeneity reached the level of statistical significance. A cautious interpretation of these findings could be that the postnatal period may be the most appropriate time to offer women support with breastfeeding. Also interventions provided antenatally are usually set to improve initiation rather than continuation or exclusive breastfeeding.

Despite logic, the interventions provided in the postnatal period *only* were effective and those with additional antenatal support were not, this however is congruent with the findings of Britton et al[5]. The individual studies that were effective (with postnatal only interventions) for both outcomes of any and exclusive breastfeeding were the same. They were carried out in the Philippines[102] with eight scheduled home visits on successive day starting on day 3-5, 7-10 and day 21 then every six weeks until 24 weeks. This trial was effective in reducing the risk of stopping any and exclusive breastfeeding (both outcomes $p<0.001$). In Brazil, Coutinho et al[100] scheduled 10 home visits starting on day three, then four visits in first month and then fortnightly in the second month reducing to one a month until six months. Coutinho and colleagues[100] demonstrated a significant effect on reducing the number of women not exclusively breastfeeding ($p<0.001$). Finally in Canada, Dennis et al[47] scheduled telephone peer support to start within 48 hours of hospital discharge and was provided as needs-based until 12 weeks demonstrated a significant effect on stopping any breastfeeding ($p\leq0.01$).

It is plausible that women relate more to the type of support given in the postnatal period, particularly perhaps that which can be practically applied. Furthermore postnatal breastfeeding support is targeted by its very nature so these women are likely to be more committed to continuing to breastfeed than not.

Intensity: The more intensive interventions (≥5 planned contacts) were most effective at extending any and exclusive breastfeeding. The only analysis where heterogeneity *did not* reach statistical significance was for the outcome of any breastfeeding with interventions categorised as 'not intensive'. Two trials[44,77] in particular scheduled intensive and well-timed interventions by included daily in-hospital peer support contacts.

The two trials[44,77] were US-based and one built on the findings of the other and were reported by the same research group. The earlier trial by Chapman et al[44] set out a schedule of one antenatal home visit, daily in-hospital visits and then a minimum of three postnatal home visits. This schedule did not result in any difference in the breastfeeding outcomes for the study groups. Anderson et al[77] in the later trial scheduled daily in-hospital visits but also additional antenatal home visits (n=3) and postnatal home visits (n=9) complemented by additional telephone support as necessary. This more intensive schedule was effective in significantly reducing the number of women not giving any breast milk (RR 1.26) and not exclusively breastfeeding (RR 1.24) at three months. In both trials the majority of women recruited were of Hispanic ethnicity and whilst it is important to find culturally sensitive and appropriate breastfeeding support it would be beneficial to determine the generalisability of the intervention. Determining feasibility in other settings would also be worthwhile as employment of peers would probably be necessary and setting up such a service can incur substantial financial implications. It would be of great interest to identify if this would be effective in the UK.

Study setting: It plausible that the standard provision of health care and health promotion in a country may influence the effectiveness of peer support. Routine maternity care in the UK offers a level of health promotion unlike low/middle countries and even other high income countries such as the US and Canada. In the UK, depending on parity low-risk pregnant women can expect routine antenatal care to consist of at least 7 or 10 contacts[104] with a midwife if they are multiparous or nulliparous respectively. A recent survey in 2010[105] of women's experience of maternity care reported multiparous women received an average of 9 antenatal contacts and nulliparous women 10 contacts. The same survey found that on average, regardless of parity, women had 3.8 postnatal home visits by a midwife. Although in the UK postnatal care is described as the 'orphan' of the NHS

maternity services due to diminished staffing levels and shorter hospital stays, postnatal care is still more consistent and robust than in other countries regardless of economic status.

When the trials were analysed by high or low/middle income country it was only in the latter setting that there was a significant effect on reducing the number of women stopping any and exclusive breastfeeding. Statistically significant heterogeneity was present in trials measuring exclusive breastfeeding, but not in those measuring any breastfeeding. As with the previous analysis there is potential for cultural practices having an impact, economic factors are also likely to have an influence. A reduced risk of not exclusively breastfeeding is particularly important for infants in the developing world where sub-optimal sanitation levels increase the risk of contracting infections. That is not to say that there are not benefits for the infants born in the developed world.

Peer support interventions in all trials *not* based in the UK significantly reduced the number of women not giving any breast milk and not exclusively breastfeeding. For both outcomes heterogeneity was present at a statistically significant level so interpretation should be cautious. It is possible that the effect demonstrated may be due to the level of routine maternity care provided; this makes it more challenging to demonstrate an effect by the provision of further support.

All of the UK-based trials[50,76,79,95] recruited participants from communities considered to be socio-economically disadvantaged or having an ethnically diverse population. It is known that those socially disadvantaged have poorer health outcomes and are less likely to breastfeed. It is also known that women from ethnic minority groups are more likely to breastfeed compared to White women. Despite providing support in these settings none of the trials found any beneficial effect on breastfeeding outcomes. Reasons for this remain slightly unclear but it is plausible that this lack of

effect may also be related to culture, for example, in the UK it is rare to see women breastfeeding in public places.

Scott et al[106] carried out a focus group study of low-income Scottish women who had received peer support for breastfeeding. The women reported rarely having seen another mother breastfeeding but due to embarrassment they themselves did not breastfeed in public. Another study identified that having recently observed a mother breastfeeding is a determinant of feeding intention, furthermore women were more likely to intend to breastfeed if they had a positive attitude towards seeing a mother breastfeed[107].

Haider et al[55] describe the majority of households as lower-middle and low socio-economic class in the study areas in Bangladesh. Almost half of those recruited did not receive antenatal care and most gave birth in their home attended by an untrained 'dai' (traditional birth attendant) or by an 'experienced relative'. Haider et al[55] report a statistically significant difference in the prevalence of exclusive breastfeeding at five months in favour of the intervention group ($p<0.0001$). This result highlights an interesting point, Haider et al[55] state that whilst it is common for indigenous women to breastfeed it is also common to give additional fluids and therefore not exclusively breastfeed. This also appears to be the case in the trial by Morrow et al[54] based in Mexico. There was no difference in the rate of any breastfeeding between the groups which overall were very high (94% (control), 98% (group 2) and 100% (group 1)). However there was a significant difference in rates of exclusive breastfeeding at three months ($p=0.001$). Exclusive breastfeeding has a critical impact on the health of infants in countries such as Mexico and Bangladesh where health care is not readily available and/or accessed particularly by those most deprived.

4.5.2 Strengths and weaknesses

This was a high quality systematic review and meta-analyses on the effect of peer support on any and exclusive breastfeeding rates. In addition analysing the data in the pre-specified subgroups provided insight into whether the setting, timing and intensity of peer support interventions might have a differential effect. Peer support is effective when provided in: non-UK settings; low/middle income countries; the postnatal period *only*; and with a schedule of intensive support visits. Cautious interpretation is necessary due to the presence of statistically significant heterogeneity in many of the analyses. However, the findings of this review could be used by commissioners when considering implementing peer support programmes.

A weakness of this review is the inclusion of trials of lower quality compared to the Cochrane review of Britton et al[5]. For example, the follow-up rates of two studies[79,89] were below the criterion of 75% for inclusion in the Cochrane review[5] threshold and one trial was a quasi-RCT[76] which is not as methodologically rigorous as RCTs, which was the only study design included in Cochrane review[5]. However, the present review did assess quality using the Cochrane risk of bias tool[96] and has captured the contemporary and relevant high quality trials.

4.6 Conclusions

Overall peer support appears to be effective in increasing the duration of both any and exclusive breastfeeding however recommendations cannot be based on these findings and the analyses should be interpreted with caution. Peer support interventions appear to be effective in increasing the duration of exclusive breastfeeding in low/middle income countries. The protective effect of breast milk is critical for this population and has the potential to improve public health. Some high income countries and countries with routine breastfeeding support are unlikely to see such benefit from peer support programmes. Commissioning of peer support programmes must consider the context it

will be provided, the specific population needs, the intensity of the support and what outcomes are chosen to be measured. It is recommended that implementation of any peer support programmes should be alongside a robust and scientific evaluation, particularly in high income countries.

4.7 Summary

This chapter has presented a systematic review on the effect of peer support interventions on the continuation of breastfeeding. The findings complement those of the systematic review on the effect of peer support interventions on the initiation of breastfeeding.

In the UK there is divergence between policy which recommends the implementation of peer support programmes and RCT evidence which demonstrates no beneficial effect on breastfeeding initiation and continuation rates. Anecdotally women have reported positively on their experience of peer support for breastfeeding and have described what they valued in terms of attributes of the peer supporters themselves. The next Chapter explores the qualitative evidence of women's experiences of breastfeeding and peer support, this is followed by a qualitative interview study to explore women's experiences of one-to-one peer support and their recommendations for peer support services.

4.8 Update (2013)

A literature search of the electronic databases EMBASE and MEDLINE was carried out in 2013 to identify any new RCTs that may add to the findings of the systematic review here. No new RCTS were identified however two informative systematic reviews were. One systematic review of peer support interventions for breastfeeding[108] included 34 citations that ranged in quality and used quantitative or qualitative methods. There were no studies included by Kaunonen et al[108] that could be further added to the systematic review presented in this Chapter. In agreement with the review

presented in this Chapter, Kaunonen et al[108] identified peer support provided in the postnatal period to be more effective than that provided at another time point. Overall, Kauonen et al[108] concluded that continuous support was essential to promote and prolong breastfeeding and that a range of interventions/support strategies were required to meet mothers' needs at different stages of childbearing. Their conclusion regarding the provision of peer support was that it had potential in the absence of professional support.

The second systematic review is an update of the 2007 Cochrane review now authored by Renfrew et al[109]. They included 52 studies that were either RCT or quasi-RCT in design with interventions provided by professionals and/or peers to women during the postnatal period +/- the antenatal period. They carried out similar sub-group analyses to the review I present in this Chapter; type of supporter; type of support; timing of support; whether support was proactive (offered by the supporters) or reactive (in response to a woman's request); baseline breastfeeding initiation rates; and intensity of the support. The review's conclusions remain unchanged and emphasised that mothers benefit from all additional support whether it is provided by professionals or peers/lay supporters. Only one of the RCTs included by Renfrew et al[109] would be eligible for inclusion in the systematic review I present in this Chapter. The targeted RCT[110] took place in Turkey where there is a high baseline breastfeeding initiation rate and the intervention under evaluation was provided by trained lay supporters who visited mothers once at home on day three post birth. The RCT[110] outcomes were exclusive breastfeeding at 2 and 6 weeks, 6 months and breastfeeding continuation at 18 months, and they reported a 'significant increase' at all time-points. If added to the meta-analyses of the review presented in this Chapter the RCT[110] results are likely to have strengthened the findings regarding setting and timing only i.e. postnatal only peer support interventions are effective in increasing exclusive breastfeeding in low-middle income countries where baseline initiation rates are high.

Chapter 5

Qualitative study of women's experiences of one-to-one peer support for breastfeeding

Thesis author contributions

I devised and planned this interview study which Professors MacArthur and Jolly oversaw. I created and carried out the database searches for the literature review. I devised the study specific documents, contacted relevant peer support services to identify potential participants. I devised the interview schedule and carried all of the interviews myself. I transcribed all of the interviews and coded them. A transcript was independently coded by Dr Gale who also confirmed that the coding framework was appropriate. All analysis was done by me.

5.1 Purpose of the chapter

Peer support programmes as discussed in Chapter 1 are part of the UK Department of Health's plan to improve breastfeeding rates and there is guidance on *how* peer support should be implemented alongside current services[61,99,100]. PCTs across the country have therefore implemented programmes that are both community and hospital based. Although there is insufficient high quality RCT evidence from the UK to support universal peer support programmes as shown in earlier sections of this thesis, the peer supporters and health care professionals often report that women who have this support like it and describe cases where women have derived benefit from it. There is however a relative paucity of UK-based in-depth literature focussing on women's own views of their experience of one-to-one peer support for breastfeeding and some of this is embedded within qualitative studies of women's general experiences of breastfeeding. A literature review was carried out then a qualitative interview study was designed and implemented to explore the experiences of women who had received one-to-one or group-based peer support for breastfeeding in the last 12 months and find out what they would recommend for such support to meet women's needs better.

5.2 Literature review

A literature search was undertaken to find what is already known about women's experiences of peer support for breastfeeding. Two syntheses[101,102] that focused their analyses on mothers' and health professionals' descriptions of support for breastfeeding and included reports on peer support were known to me. Three further qualitative syntheses[103-105] were found through searching references of articles and reviews. These examined women's experience of breastfeeding and although covering a much broader area they include descriptions of support sometimes from peers although mainly from health professionals. The latter was still considered potentially relevant as it may provide insight into what aspects of support women thought were not provided by health professionals.

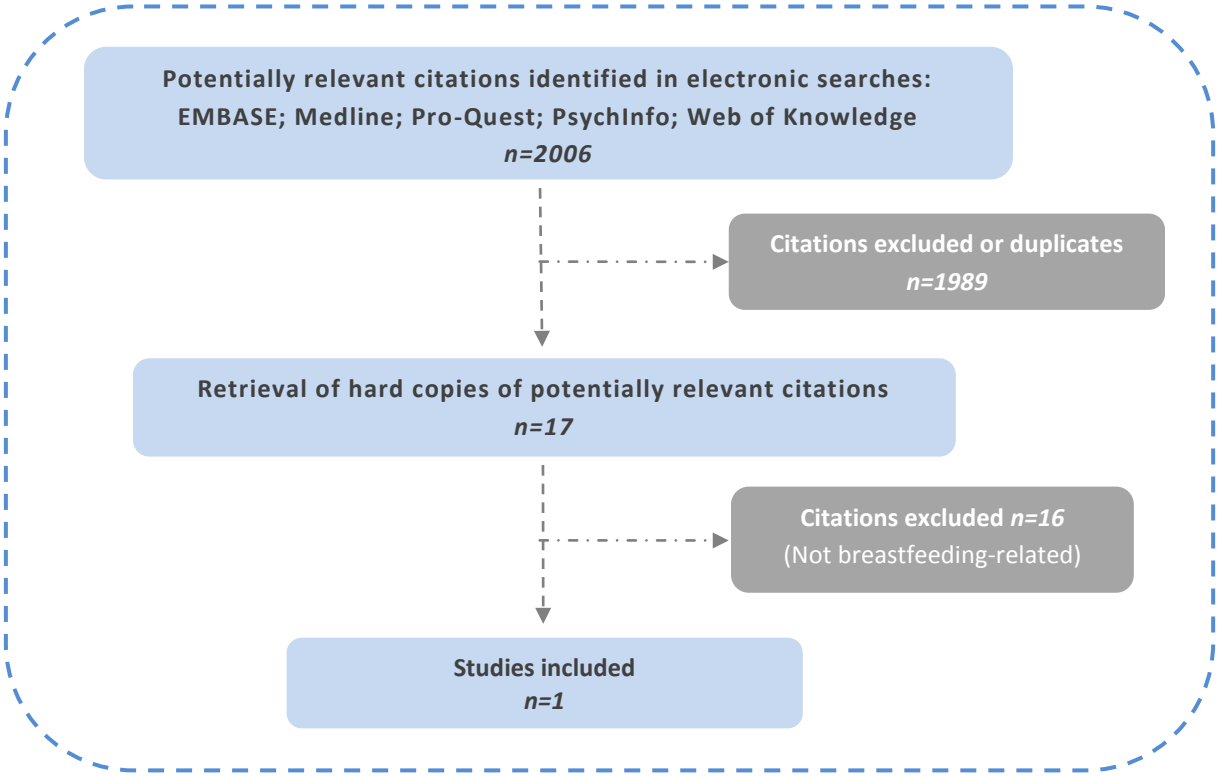
The references of all the syntheses were reviewed to find which studies had specifically included mothers' descriptions of their peer support experience in order to consider these original studies in more depth. Four studies[106-109] met these criteria and will be discussed later in this chapter.

References of published studies and qualitative syntheses known to me were searched by hand, further to this I carried out an electronic databases search limited by year of publication according to the latest searches in the current literature (2007-2013) in the following databases: ***Embase***; ***Medline***; ***Pro-Quest*** *(ASSIA, BNI, IBSS, Pro-Quest Nursing and Allied Health Source, Social Services Abstracts, Sociological Abstracts);* ***PsycInfo***; ***Web of Knowledge*** *(Web of Science, BIOSIS Citation Index, Medline and Journal Citation Reports).*

5.2.1 Search strategy

To maximise the yield of the electronic searches two strategies were employed. Firstly I utilised a research strategy designed by Shaw et al[110] to optimise the identification of studies with qualitative methodologies in databases of scientific literature. In addition search terms to identify peer support and breastfeeding were used. These terms chosen were those from the systematic reviews discussed earlier (Chapters 2 and 6) in this thesis. The second strategy was broader and simply combined the terms 'qualitative', 'research' and 'support'. As expected this yielded several thousand records and the search was refined by limits on publications from 2007-2013, in English and journal articles or reviews. One new study[111] was identified through the electronic searches. Figure 5.1 presents the search yields.

Figure 5.1 Search yields



5.2.2 Quality assessment

How to assess the quality of qualitative studies is much debated and whilst there may not be a consensus many have suggested measures and questions to help determine the quality of these studies. Dixon-Woods et al[112] identify the need for a broad and a specific appraisal and give prompts, as opposed to criteria, to assess quality in single studies. The prompts question the appropriateness and clarity of the research questions, aims and description of methods. They question if the interpretation of findings is supported by adequate evidence and if there is a clear link between the data, interpretation and conclusions and finally ask if the research makes a constructive contribution. Dixon-Woods and colleagues[112] highlight that as qualitative studies can utilise methods from different approaches it has been difficult to agree on a single quality assessment tool and as it stands quality assessment is subjective and dependent on each reviewer and their experience. The prompts

can be applied to all qualitative approaches and are similar to the 'key questions' suggested by Popay et al[113] in their work on assessing the quality of systematic reviews.

The key questions of Popay and colleagues[113] consider the appropriateness of each element of the study. Here in opposition to quantitative research there is the need to acknowledge the subjectivity of the data and the experience of the individual as most important. The key questions urge the reader to consider if the study methods were appropriate but also if they have been adapted and not controlled in the light of findings in order to answer the research question (e.g. moving from purposive to theoretical sampling) in the best way. The process of data interpretation should link clearly to the conclusions but all study processes should be well described to help gauge study credibility.

5.2.3 Qualitative syntheses

The earliest of the broader reviews was a metasynthesis of qualitative breastfeeding studies published by Nelson in 2006[103]. Fifteen qualitative studies published within 10 years prior to the metasynthesis were included with data from 247 women in total from the US, Australia, Canada and the UK. Nelson[103] did not exclude any studies based on their 'scientific merit' arguing that this may have resulted in loss of instrumental data. Adding to the credibility of this review is that to synthesise the studies Nelson[103] implemented the meta-ethnography approach devised by Noblit and Hare[114], consisting of seven stages to guide the comparison and determination of similarities across the studies. This is an iterative process, reading and re-reading the data to describe what links them together, what interpretations can be deduced and what has been concluded. Nelson[103] created tables that detailed the metaphors, key phrases and concepts grounded in the data of each study. Using this grid Nelson[103] completed the process of analysis by translating the studies into each other; this is termed reciprocally translated by Noblit and Hare[114].

The global translation resulting from the analysis was that breastfeeding is 'an engrossing, personal journey' and one of the main themes identified was 'a need for support'. Nelson[103] cites studies that suggest support is integral to ensuring continued breastfeeding but support did not always meet the needs of the women. The subtheme 'it takes a village' highlighted that women have many supporters including their mother, family, friends, partner, health professionals and peer counsellors. The supporters met a different need for the women, for example Nelson[103] cites that women sought out informational, technical and emotional support from health professionals. Some women found the professionals unhelpful and unable to meet their expectations because they gave conflicting or unsupportive advice, for example giving formula milk against a mother's wishes and not giving personalised advice. Some women described the attributes they valued in their peer counsellors who were praised for their 'availability' and 'time'. Positive descriptions of supporters included 'caring', 'compassionate', 'friendly' and 'believable'. In response to these findings Nelson[103] recommended that women's families be more involved in discussions around breastfeeding and that health professionals increase the sensitivity of their approach to optimise women's self esteem and self-belief.

The metasynthesis of Larsen et al[104] moved the focus from women's (mother's) experiences to a mother's *confidence* in breastfeeding. The group analysed the discourses women were involved in to find any links they had to maternal confidence and breastfeeding cessation. As with Nelson[103], Larsen et al[104] add credibility to their review by using the meta-synthesis methodology of Noblit and Hare[114]. The meta-synthesis included seven studies published between 2001 and 2005, this timeframe being chosen so that they could compare women's experiences who could have been exposed to similar discourse around breastfeeding. The studies represented data from 883 women from Australia, Ireland, the UK and Sweden. Only one study[115] overlapped with those included in Nelson's review[95].

Using Foucault's method of discourse analysis Larsen at al[104] interpreted the interactions between mothers and healthcare professionals. Central to Foucauldian theory is the belief that there is power and knowledge in discourse[116]. Knowledge is given or withheld which in itself is a demonstration of power, and one is socially conditioned to believe that 'experts' - in this case the health professionals - are the most trusted source of breastfeeding knowledge or information. Larsen et al[104] present several examples of how women's confidence was affected through conversations with the experts who have 'the right to speak about breastfeeding'. Women who were given conflicting advice were left unsure and having to decide between what they believed to be true and what they had been told to be 'the truth about breastfeeding'. Furthermore women found it difficult to absorb and translate knowledge that was given to them in medicalised terms; it limited their understanding of how to put this in to practice.

Larsen et al[104] recommend moving away from describing breastfeeding as 'natural' as this can have detrimental effects such as isolation for those who have difficulties. Women can feel excluded when breastfeeding doesn't come naturally to them and a more realistic presentation of it as a learned practice would be preferred. In-keeping with the recommendations from Nelson[103], Larsen et al[104] conclude that breastfeeding experts could build on their supportive techniques through listening and acknowledging women's individual experiences and as a result of moral support and affirmation, women's confidence may be improved.

Building on the work of Nelson[103] and Larsen et al[104] is the meta-ethnographic synthesis of women's experiences of breastfeeding from Burns et al[105]. Of the 17 studies included, eight[106,115,117-122] had also been included by Nelson[103] and two[119,123] by Larsen et al[104]. The studies in this synthesis were published between 1990 and 2008 with data on a total of 577 women from Australia, Canada, New Zealand, UK and the US. Burns et al[105] used the Noblit and Hare[114] approach to synthesise the

qualitative studies in order to, as they say, "make the hidden obvious" (Burns et al[105] p.203) of the breastfeeding experience. Through Foucauldian discourse analysis Burns et al[105] examined the presence and possible effects of power and knowledge in the experiences described.

Burns et al[105] found most of the included studies shared metaphors, concepts and phrases and they identified two main themes: 'expectations and reality' and 'discourses of connection and of disconnected activity'. The first theme was determined by women's expectations of breastfeeding with the majority of women describing it as 'natural'. They were met with the reality that breastfeeding was to be learned, was therefore important to get right and to do so required persistence and determination. The concept of 'nature discourse' highlighted the belief that breastfeeding is natural and best for baby. Promotional material was commonly identified as misrepresenting breastfeeding to encourage women somehow to choose this method of feeding. Women wanting to 'get it right' came from the scientific discourse whereby the medicalisation and mechanising of breastfeeding presents women with the one right way to do it. The second theme was informed by descriptions of positive and negative experiences. Positive experiences were aligned with confidence, support and a feeling of closeness with their infant; negative experiences were not aligned with any of these. In-keeping with Larsen et al[104] Burns et al[105] identified that the use of this language such as the discourse described by Burns et al[105] as 'success/failure and the good mother' affects a woman's confidence and self-belief.

In describing support Burns et al[105] identify the theme of 'potential support people were very unhelpful'. In particular health professionals in developed countries were described negatively with women describing being 'grabbed at' without permission, receiving conflicting advice, professionals having an 'unhelpful attitude', being 'rude' and even 'intimidating'. Recommendations from this

group are for further research into the health professionals' discourse to understand the effect this has on the breastfeeding experience.

The majority of included studies in the three broader qualitative syntheses[104-106] report on women's experiences of breastfeeding support from health professionals or hospital staff during their hospital stay. All studies were undertaken in developed countries. The descriptions are in the main unfavourable accounts and indicate that there is much that could be done to change the effectiveness and delivery of support. Women are still pursuing support that contains consistent, realistic and individualised advice that is easy to understand and simple for them to put in place. Women are still waiting for adequate levels of practical and informational support provided in a kind and supportive manner.

The first of the support-specific qualitative syntheses by McInnes and Chambers published in 2008[101] present broad narratives of both mothers' and health professionals' perceptions of breastfeeding support. Forty-seven studies with 1,627 women participating were included that were mainly from the UK, US, Canada, Australia, New Zealand and Sweden. Of these studies four[115,118-120] were included by Nelson[103], three[107,115,123] by Larsen[104] and five[107,118,120,125,126] by Burns and colleagues[105]. McInnes and Chambers[101] separated their overarching theme of support for the breastfeeding mother into 'health service postnatal support' and 'social support' with the latter consisting of friends, with 'family members' defined as an additional support unit.

Within the theme of 'importance of skilled help' positive and negative descriptions of support were found. Volunteer supporters who gave advice were categorised under social support and in contrast to health professionals they were aware of the need to ascertain a mother's knowledge before advising her and the importance of verifying understanding of the advice given. The descriptions of

unsupportive health professionals included “bossy”, “judgmental” and “uncaring”. As identified in the previous syntheses women valued being given realistic advice and being listened to, along with the use of non-medicalised and non task-orientated language. Conflicting advice was again described by women and was problematic.

The most recent meta-synthesis by Schmied et al[102] published in 2010 focussed on women’s perceptions and experiences of breastfeeding support from professionals or peers who were either formal or ‘created’ peers, not family or friends. Thirty-one studies published between 1990 and 2007 mainly from the UK and US but also from Canada, Australia, New Zealand and Tanzania were included with data from 2083 women in total. Eleven of these studies [107,109,119,120,123,125,127-130] had also been included by McInnes and Chambers[101] in their synthesis.

The aim of this most recent meta-synthesis[102] was to determine what women considered to be effective support and whether there were any perceived differences between professional and peer support. They presented four synthesised themes linked to the concept of social support to describe and interpret the experiences. Women valued rapport and a trusting relationship with a supporter which was more likely with peers than professionals, and appreciated supporters who were empathetic and were able to listen to them. This was evidence of an ***authentic presence***. Strongly and positively associated with this was a ***facilitative style*** whereby realistic, accurate, sufficiently detailed, practical support with sensitive encouragement was provided. In contrast to this style is a ***reductionist approach*** exemplified by women as the receipt of conflicting advice or advice which was not tailored to meet their needs. This negative approach was further characterised by women describing feeling undermined, pressurised on their choices (both breast and bottle-feeding mothers) partly due to not being given enough time by supporters. Resulting from these negative accounts was the theme of ***disconnected encounters***.

The findings and recommendations from the two support-specific qualitative syntheses are consistent. Women identify more with the peers than with health professionals partly because peers have more time to spend with them, communicate in clear language and are kind and caring in their approach. Women found it easier to build a relationship with peer supporters and felt a bond of trust between them. To understand the relationship between women and peer supporters further, four of the studies that reported specifically women's experiences of one-to-one peer support[106-109] are discussed in more detail. They were also included in two of the syntheses[101,103]. They also gave an insight into changes that could potentially maximise the effectiveness of this type of support.

A qualitative study linked to the US WIC programme aimed to explore the experiences of low-income breastfeeding women to gain insight into how to provide more effective support for this group[106]. A convenience sample was drawn to take part in focus groups, of 42 low-income women aged 16-39 who had received one-to-one support from peer counsellors. The women represented a range of ethnicities (described as white, black and multiracial): 23 were primiparous and 19 were multiparous, nine of whom had previous breastfeeding experience. The women had infants aged between one week and nine months. This study presents data that give further insight into the experience of peer support from 38 women who responded to being asked to describe the differences in support from a peer counsellor and a health professional. The women described peers as providing practical, technical and emotional support, liked the peers visiting them at home and recognised that their support was individualised. Women also acknowledged that peers had more time to support them, developed trusting relationships with them and some even described them with affection saying "she's more personal" and "she's a friend". For some women this was the only social support they had and they appreciated the motivation and encouragement from the peers even if they only visited them once a month. A number of women specifically attributed their continued breastfeeding as

being a direct result of the peer support. Raisler[106] recommended peer support programmes be combined with support from health professionals and lactation consultants to create a network of breastfeeding support for women of similar backgrounds to those in the focus groups. This study is now 10 years old and although in the UK peer support programmes have been placed within the NHS, the current literature does not demonstrate an effect on breastfeeding rates of women in disadvantaged, low-income groups (such as those in this US study). These women remain the most difficult to reach in terms of public health promotion.

A qualitative study using focus groups with 19 women who had received peer support through the Glasgow Breastfeeding Initiative peer support programme available in an area considered as one of the most socially deprived in the city was carried out by Scott et al in 2003[109]. These researchers wanted to find out about women's experience of 'breastfeeding in a bottle feeding culture' and nearly all of the women had no source of support for breastfeeding other than their peer supporter. Most of the women had initiated breastfeeding (17/19) and a wide range of breastfeeding duration from one day up to around 12 months was reported. Initiating and continuing breastfeeding differentiated this group from their social peers. The discussion around peer support drew out that women identified with their supporters as someone they could talk openly and honestly with knowing that they would understand their situation. The peer supporters were held in high regard by the women and were often identified as those with the most time to spend with them. The women knew that health professionals did not have enough time to support them. Whilst Scott and colleagues[109] do not make any recommendations for future research or clinical practice they do acknowledge that there is much to be done to improve the social acceptability of breastfeeding (particularly in public) in areas of social deprivation.

As part of a UK-based RCT[45] women were randomised to either receive additional support from trained NCT counsellors or usual care. The trial found no difference in breastfeeding outcomes between the NCT counsellor group and usual care. Graffy and Taylor[45] presented some qualitative results in the same publication as the RCT findings. These included: 179 women had support from an NCT counsellor, 169 of these women responded to the six week follow-up questionnaire. Women were asked how helpful they felt their NCT counsellor was and the majority (123/169, 73%) agreed that they were 'very helpful'. Additional data analysed thematically were provided in a separate publication[107] of women's views on all sources of breastfeeding support. Although described as a qualitative study, data collection through a semi-structured postal questionnaire sent to trial participants at six weeks postnatal, with a response rate of 91% (654/720) was achieved. Of these 492/654 (75%) were first-time mothers and 200 (31%) were from ethnic minority groups group. As Graffy and Taylor[107] wanted to find out about all forms of support received by both trial groups there were no direct questions to explore the perceptions of the particular support provided by the NCT counsellors. Some mothers did comment that they 'liked' that their NCT counsellor was knowledgeable, had personal breastfeeding experience and had the time to sit with them and listen with a non-judgemental attitude. Women had the opportunity at the end of the semi-structured questionnaire to make any further comments and some gave descriptions of how support may be improved. After thematic analysis of these descriptions Graffy and Taylor[107] identified five elements of 'good breastfeeding support': information about breastfeeding and what to expect; practical help with positioning; effective advice and suggestions; acknowledgement of mothers' experiences and feeling; reassurance and encouragement.

A qualitative evaluation[108] of the US-based WIC Mother-to-Mother Peer Counsellor Programme set out to explore the views of both the peers and the women they supported. Twenty-two peers took part in one of three focus groups as did 20 women; peers and women were in separate focus groups.

A potential weakness of this study is that the peers recruited the women to attend the focus groups which may have resulted in selection bias. Most of the women were between 20-29 years of age and most described themselves as 'African American/non-Hispanic', with a few as 'white/non-Hispanic' and one or two as 'Hispanic'. Most of the peers were between the age of 30 and 45 years which made them older than the women they supported; half of the peers described themselves as African American/non-Hispanic with the remaining half mainly being white/non-Hispanic which was similar to the women's descriptions of their ethnicity.

Women reported having a trusting relationship with their peer counsellor, likening their closeness to that with a family member or friend. They said their peer supported them in reaching their breastfeeding goals and provided emotional and practical support and encouragement. When asked how the programme could be improved the overwhelming response was making it available to more women including those not eligible for WIC, increasing the number of supporters and the area they covered. Also expressed was the need for more peer support during their hospital stay, improvements in the education of the staff there and for peer counsellors to be available in the antenatal clinics to make contact with women during pregnancy. The last point may be a reflection on the discussion around how prepared for breastfeeding the women felt, as those who felt most prepared were recruited to the programme during pregnancy compared to those recruited after they had given birth.

The interview study[111] identified from my electronic search was of 47 women who received peer support from the 'Star Buddies' (buddies) service in north-west England. The buddies were a group of local breastfeeding women trained to become Breastfeeding Network (BfN) supporters. Buddies worked in the community and the local hospital supporting women from pregnancy until 8 weeks postnatal. Women's ages ranged between 19 and 39 years (mean age 29 years), their infants were

aged between 2 weeks and 17 months and almost all were married or living with a partner. The majority were still breastfeeding (n=30), had received the full 8 weeks of support after birth, and had only one child. The authors of this study[111] explored how peer support facilitates continued breastfeeding.

The women interviewed consistently described how the peers gave them 'hope' to achieve their breastfeeding goals. Focussing on this concept of hope they went on to analyse the data by applying the conceptual framework of Morse and Doberneck[131] that describes how 'hopefulness' presents. Notwithstanding the possible selection bias by the buddies identifying women they had supported to take part in these interviews, all of the women were extremely positive and praised the support of the buddy. Buddies gave them emotional, appraisal, informational and instrumental support; women intimated that the support led to improvements in their self-esteem and self-efficacy. Although there was no quantitative measure of these two outcomes it is clearly a beneficial gain. It is clear from the descriptions that these mothers were greatly encouraged and felt closeness, even friendship, with the buddies. Many women said they owed their breastfeeding success to their dedicated buddies who supported women when they were being paid to do so but also when they were off-duty. Furthermore the buddies were able to engage extended family members and accompanied women to breastfeeding support groups which were an opportunity to create a support network with others like them. Thomson et al[111] acknowledge that replication of such a service may be difficult.

Unlike the other studies the buddies here were described as providing information on the realities of breastfeeding, something that all of the qualitative syntheses reported as essential for an improvement in support services. Women learned personally but also vicariously through the embodied knowledge and experience of the buddies. Women valued the buddies having a personal

experience of breastfeeding and its inherent problems. In addition the buddies used language and descriptions that women could relate to, little or no clinical or textbook language was used. Although the buddies were described as breastfeeding experts this was seen as a quality which is in contrast to the negative connotations associated with this term in the synthesis by Larsen et al[104].

What may have added to the findings of this study would be the experiences of those mothers who did not have such determination to succeed, or those who stopped breastfeeding very early on. A one-sided view is presented in this study which may be a missed opportunity to understand the experience of this support more deeply and/or how the service could be adapted to meet the needs of the other mothers not represented here. It is questionable whether a service that was not as accessible would have any impact on breastfeeding duration and or the nature of mothers' experiences of breastfeeding.

Along with the study found in the literature search, another which was published in 2006 that was not included in any of the syntheses is the qualitative study by Hoddinott et al[132]. The study followed-up women in deprived areas of rural Scotland participating in a peer-coaching intervention study with main findings reported[133] earlier the same year. The primary study found that more women accessed group-based rather than one-to-one based support and the qualitative study was designed to explore reasons why. Peer coaching support was available in the form of group support and one-to-one coaching could be requested at the group sessions. It was intended that the one-to-one peer coaching would be a mutual mother-to-mother (untrained) arrangement.

The data collection methods were triangulated through a focus group, individual interviews (n=21) and observations of 31 peer coaching group sessions. In addition all women who initiated breastfeeding were sent a questionnaire and 60% (206/345) returned this. Of those women

responding to the survey only 14 (7%) had one-to-one coaching; the majority of whom also went to group sessions. Free text for responses for reason/s why this was not taken up was given by 105 (55%) women. Most (60/105 (57%)) said they had sufficient support from family or friends or health professionals.

Women described anxieties at attending group sessions as they did not know what to expect but they described the groups as enjoyable. Hoddinott et al[132] acknowledge that the groups offered women support, enhanced their confidence and provided consistent advice which they may not have otherwise received. When it came to one-to-one coaching women were also unsure about what to expect but had preconceived ideas. It was suggested by women that if it was in their home it would exclude them from social interactions and they thought they would have to abide by set rules. In addition there was concern that the facilitator may pair them with someone they would not get along with.

Women who did want one-to-one coaching appeared to gain more if their coach had experienced problematic breastfeeding, preferred to identify someone themselves and naturally gravitated to those similar to themselves and friendships were formed. In this case it is possible that the level of one-to-one coaching was actually under-reported as it could be argued that this natural gravitation was an antecedent to one-to-one support that did not necessarily take place at the group.

This qualitative evidence shows that women seem to value peer support whether it is one-to-one or group-based however, the RCT evidence presented in Chapters 2, 3 and 4 of this thesis shows that peer support interventions in the UK evaluated so far have not had an effect on the breastfeeding rates. The qualitative evidence described in this Chapter suggests there is room for improvement in training health professionals, women report preferring peer support and the clash of women's

expectations and the reality of breastfeeding should be addressed. As highlighted by Thomson et al[111] there are a limited number of studies however that have explored women's experience of peer support. I decided therefore to undertake a qualitative study to explore women's experiences of breastfeeding; women's experiences of one-to-one peer support from paid workers or volunteers; what women felt they had really benefitted from; and what recommendations they had for breastfeeding peer support services. The women interviewed are **not** those who received peer support as part of the HOBBIT trial.

5.3 Methods

5.3.1 Study design

The breastfeeding experience is clearly a very personal one; each woman has their own narrative to tell. The most common data collection method in the literature review (Section 5.2) was one-to-one interviews. Childbearing is a major life event and as such I expected women to be able to recall this time and their experience of breastfeeding support (or lack of) when asked and/or probed in a one-to-one interview situation. I chose to implement semi-structured one-to-one interviews because the aim of the study was focussed rather than exploratory and data required for this study would need to be generated through questioning and probing. Furthermore it would have been logistically challenging to record a focus group of women and their babies. As the study was to address a moment in time rather than a process over time it was not necessary to make this a longitudinal study so was considered acceptable to carry out a single interview[134].

5.3.2 Research questions

The qualitative study had the aim of answering the following main questions:

1. What are women's experiences of breastfeeding?
2. What are women's experiences of one-to-one peer support from paid workers or volunteers?

3. What suggestions do women have to modify breastfeeding peer support services?

These questions were chosen because they could be feasibly answered through the defined methods within the scope of this thesis. They are clear and unambiguous, of interest and relevance to the development of breastfeeding support services with the potential to add to the knowledge base, all of which are requirements of research questions[134].

5.3.3 Sampling

Initially, potential participants were to be identified from another on-going trial that I was also working on. However, a poor response to invitation to be interviewed meant that a larger pool of potential participants needed to be identified. After a scoping exercise of contacting local Children's Centres and health centres it was found that there were relatively few organisations that provided one-to-one peer support for breastfeeding. The available support identified included two NCT-led support groups (one also had a community nursery nurse to support women and weigh babies) where the breastfeeding counsellors leading the groups also provided one-to-one support. There was a local breastfeeding peer support worker service (Best Buddies) provided by a team of nine women as part of a social enterprise called Health Exchange. Women living largely in central areas of Birmingham were eligible for support from Best Buddies; they could either self-refer or be referred by a health professional. The Buddies provided a home and telephone-based one-to-one service until eight weeks after birth. Most of them were community-based but there were also two on the postnatal wards of two hospitals in the city. Another support group was led by a specialist midwife with peer volunteers and paid peer support workers based at one of the Children's Centres. Finally there was another Children's Centre that had volunteer 'Buddies' who were local mothers who supported breastfeeding mums, although it was subsequently found that no women actually got one-to-one support. Every support group was open to all and there were no 'age limits' based on the

baby's age. Further information on the constituents of each group and service are presented later in this chapter.

The method of sampling was influenced by a number of elements. As described in Chapter 1 many women who breastfeed have similar characteristics in relation to age, ethnicity, educational attainment and employment status so it was anticipated that the sample would be fairly homogenous. Two sampling methods were implemented; firstly purposive sampling based on age, ethnicity and parity; then snowballing sampling was implemented by asking women who had agreed to take part to pass on my details to friends who had received one-to-one peer support for breastfeeding. It was anticipated that between 15 and 20 interviews would be required to gain sufficient data to explore the main research questions.

5.3.4 Recruitment and interviews

I met with several of the Best Buddies to discuss the study and provided them all with an information pack that comprised helpful phrases to introduce the study, potential questions and answers, participant information leaflets, formatted slips for women's contact details (name, telephone number and a good time to be contacted) and a freepost envelope to return this in. Once I had received a woman's details I contacted them to explain the purpose of the study, the interview process and answered any questions. If the woman was willing to take part an interview was arranged. When I attended support groups I was able to introduce the study myself. Any women over the age of 16 years who had received one-to-one peer support, could read and write in English and gave informed consent were included in the study.

An interview schedule (Appendix 6) was developed through personal knowledge as a midwife, the themes identified in the literature review presented earlier in this Chapter and discussion with an experienced qualitative researcher. The schedule was amended following a pilot interview. The

structure was ordered chronologically to help the women to recall their experience as recommended by Arthur et al[135] starting with questions about intention to breastfeed and broadly leading on to preparation for breastfeeding, the first experience, who helped, any problems encountered, how they found out about the support they accessed and then what recommendations they might have for support services. To confirm my understanding of the information given I summarised what the women had said, and to close the interview I asked women if there was anything further they wanted to say. When the recording was stopped there was often an informal chat which facilitated a 'wind-down' for the women. It was expected that women would naturally cover most of the schedule through their descriptions, however I used prompts and encouraged women to expand on their experience as necessary to optimise the depth and richness of the data. It was expected that interviews would take about half an hour. Interviews were digitally recorded, transcribed verbatim and double-checked by myself.

5.3.5 Researcher safety

Safety of the researcher is an important consideration for all studies that involve interaction with study participants. As I was interviewing women in their homes I adhered to the University's guidance on 'lone working' and followed the process of SMS texting or telephoning a colleague based at the research office to notify them when I entered and exited a woman's home. No difficulties were encountered.

5.3.6 Ethical approval

South Birmingham REC approved both the initial study and the subsequent substantial amendment to change the method of sampling. Approval was given on 28th June 2012.

5.3.7 Consent and withdrawal

Written informed consent was obtained at the meeting prior to the interview, after the woman had

had the opportunity to ask questions. Women were informed that they had the right to withdraw from the study at any time without their rights or any care being affected. All data were anonymised and once the digital recording was transcribed and double-checked it was deleted.

5.3.8 Analysis

The data were analysed using the Framework approach, which is the systematic method to gain an overview of the data which is then refined through constant comparison[136] and categorisation to draw out the interactions and relationships[137]. Through the general inductive approach[138] I familiarised myself with the data by reading and re-reading, the transcripts were then coded and categories were derived. Using an Excel spreadsheet a framework was produced that encompassed the characteristics of the women and who supported them, the experience of breastfeeding, their experiences of professional and of peer support and what they would recommend as part of a breastfeeding support service. As codes were interpreted from the data they were added to the framework as themes or sub-themes as appropriate. An experienced qualitative researcher and sociologist independently coded the first transcript and independently assessed the framework to ensure data were coded appropriately. All other transcripts were coded by me and further analysis was done only by me.

Descriptive analysis is the cornerstone of most qualitative analysis[137]. Although not the most advanced method of analysis it was deemed appropriate for the purposes of this study as it met the study objective. In line with recommended practice each code was re-visited, in-vivo descriptions of the elements describing the codes were created. Categories were then derived from these elements that were slightly more abstract but grounded in the data. Of particular interest for the purposes of this thesis are the themes that I interpreted from women's experience of peer support and their recommendations to change and/or add to current support services. To describe women's experiences of support I used Langford et al's[139] conceptual analysis of social support. Langford et al

describe social support as a reciprocal relationship defined by emotional, appraisal, instrumental and informational attributes. Women identified elements of these attributes when they described their interactions with the peer supporters, women who attended groups also identified these elements and shared in the reciprocity with other mothers there.

5.4 Results

5.4.1 Characteristics of the women

The women involved (n=16) were aged between 30 and 44 years, most were of white British ethnicity (n=11), two women were Pakistani, one was Bengali, one was Chinese and one was Polish. Half of the group had given birth to their first baby. Most of the women (n=13) were on maternity leave and would be returning to work. Most of the mothers (n=12) were exclusively breastfeeding at the point of the interview and the babies were aged between 2 days and 12 months. Table 5.1 presents all of the maternal characteristics.

All of the mothers had one-to-one peer support and seven of these also had group-based support. Table 5.2 shows the type of support each woman had. There was only one hospital-based Best Buddy and one community-based Best Buddy that referred women to me to be interviewed. The support group was led by an infant feeding specialist midwife and peer support workers and volunteers (not Best Buddies). NCT counsellor^{C1} is also an infant feeding specialist but not a health professional. The NCT group^{G1} she leads is with the help of a community nursery nurse who also weighs the babies there. NCT counsellor^{C2} is not a health professional and leads an NCT group^{G2} with volunteers. BfN group^{BG1} is led by a lactation consultant who is not a health professional along with peer volunteers. Another BfN counsellor^{BC} is not a health professional and leads a BfN group^{BG2} with peer volunteers.

5.4.2 Women's experiences of peer support

After coding and charting to refine the data several categories were formulated that capture the women's experiences of peer support. These are:

- Limited hospital-based support
- Nature of the support services
- Appraisal and emotional support
- Accessing support services
- Show me, tell me

The categories will be taken in turn and described. The following principles will be used in the quotations, all of which are verbatim:

- An ellipsis (...) denotes a pause or an omission of part of a quote because it is not relevant
- Bold font is used to denote what is said by the interviewer
- [ ] are used to insert anonymous text
- ( ) indicate reactions

Limited hospital-based support: Women described limited support in hospital but this was linked to both positive and negative experiences. See Box 1 for quotations.

Box 1 *Limited hospital-based support*

1004 – *First-time mother describes poor support in hospital*

"Well a lot of the moms, like I said, you know what a lot of especially the new moms with their first babies you really don't know what to do I mean come on I'm in the profession and I didn't know with her, you know, so and I don't even want to, you know, guesstimate what other mums are going to go through who don't have the language skills, don't have the knowledge base, don't have you know that support. God only knows what they're feeling... You know, tell the mum, okay you know what I understand, baby sick, okay give the baby to me for five minutes let me calm her down then I'll put her back. You know just have that human reaction. That's all a person needs."

1016 – *Mum of two describes lack of support with her 'early' baby.*

"I mean I had him and then he went, yeah just put him straight to the breast I think after he was born and I knew that I wanted erm and he wasn't very good at feeding but they didn't really check at the hospital they, we were discharged the same day despite him being four weeks early."

Table 5.1: Characteristics of qualitative interview study participants

Study ID	*Age*	*Ethnicity*	*Occupation*	*Number of children*	*Previous feeding method/s*	*Current feeding method*
1001	32	White British	Manager	1	-	Exclusive breast
1002	30	Polish	Technician	1	-	Exclusive breast
1003	30	Pakistani	Mother	3	Exclusive breast (both)	Exclusive breast
1004	32	Bengali	Medical	1	-	Breast + bottle
1005	35	Pakistani	Mother	3	Breast + bottle (both)	Breast + bottle
1006	40	White British	Professional	1	-	Exclusive breast
1007	-	White British	Clerical	3	Breast + bottle (both)	Breast + bottle
1008	30	White British	Analyst	2	Exclusive breast	Exclusive breast
1009	44	White British	Manager	1	-	Exclusive breast
1010	33	White British	Support worker	2	Exclusive breast	Exclusive breast
1011	35	White British	Professional	2	Exclusive breast	Exclusive breast
1012	44	Chinese	Researcher	2	Exclusive breast	Exclusive breast
1013	35	White British	Manager	2	Exclusive breast	Exclusive breast
1014	31	White British	Teacher	1	-	Exclusive breast
1015	32	White British	Medical	1	-	Exclusive breast
1016	32	White British	School worker	2	Exclusive breast	Cow's milk

Table 5.2: Description of support received by qualitative interview study participants

Study ID	*Type of support*	*Venue/s*	*Provider/s*
1001	One-to-one	Home	Best Buddy
1002	One-to-one	Hospital	Best Buddy
1003	One-to-one	Home	Best Buddy
1004	One-to-one	Home	Best Buddy
1005	One-to-one	Hospital	Best Buddy
1006	One-to-one; Group	Hospital; Community	Best Buddy; NCT group^{G1}
1007	One-to-one	Hospital	Best Buddy
1008	One-to-one; Group	Home; Community	Peer supporter; group
1009	One-to-one; Group	Community	BfN counsellor^{BC1}; BfN group^{BG1}
1010	One-to-one; Group	Home; Community	NCT counsellor^{C1};NCT group^{G1}
1011	One-to-one; Group	Home; Community	NCT counsellor^{C2}; NCT group^{G2}
1012	One-to-one; Group	Home; Community	BfN counsellor^{BC2}; BfN group^{BG2}
1013	One-to-one; Group	Home; Community	NCT counsellor^{C1}; NCT group^{G1}
1014	One-to-one; Group	Community	NCT counsellor^{C2}; NCT group^{G2}
1015	One-to-one; Group	Home; Community	NCT counsellor^{C1}; NCT group^{G1}
1016	One-to-one; Group	Home; Community	NCT counsellor ^{C2}; NCT group^{G2}

NCT: National Childbirth Trust. BfN: Breastfeeding Network

Accessing support services: Some women were completely unaware of breastfeeding support groups. Even those who knew about local services struggled to initiate access citing cultural and emotional reasons (Box 2).

Box 2 *'Accessing support services' (continued overleaf)*

1004 – *First-time mother describes how her culture had an impact on asking for help*

"I was told by my antenatal midwife that you know there are support groups. I just wish I had contacted them earlier... I was trying to do on my own before you know crying 'help!"

"This probably sounds very, very, very, racist but given the ethnic background we come from it is very difficult for a lot of the women to express themselves... and one of the things I was really glad that support worker [Best Buddy] was there was because she sort of understood the background I come from and the extended family we live in... it's hard to reach out and say 'OK, I need help with this'".

1009 – *First-time mum describes difficulties in finding support*

"I think the only reason we were able to get the support is because my friend who had at baby about seven weeks before I did had gone through the problems and actually found where to get help, erm, whereas when you're in the thick of it that's not when you want to start 'Google-ing' or ringing round to try and find the help you need and the leaflet that I was given from hospital some of the numbers, information was out of date, the numbers weren't right any more, which if you've rung a couple of numbers that aren't right that's it - this leaflet isn't going to help me anymore."

1010 – *Mother of two remembers contacting the NCT counsellor[C1] for the first time*

"Yeah I mean the first time I found it quite a hurdle to overcome to ring her [NCT counsellor[C1]], I left it a long time before I rang anyone and I was – by the time I did ring a helpline I was really desperate coz I just, there's like a fear of ... I don't know, of needing help I suppose. Or-" ***Yeah*** *"or asking anyone, particularly to ask someone to come to the house I found that really I felt like I couldn't ask even though that was her job and she's prepared to do it and does it a lot it felt, I felt like I was imposing on her somehow... This mental thing about a: thinking I think you should be able to do it and b: being embarrassed to ask for help – I don't know what it is... I don't know. The second time round I was like right – I'm ringing her straight away but the first time I really, it was a big hurdle to get past to ask for help, it's much easier to go to the clinic I think but because you have to wait til Friday that can seem like an eternity if you're at the beginning of the week."*

Box 2 *'Accessing support services' (cont.)*

1011 – *Mother of two was taken to NCT group[G2] by a friend*

"...I think I remember my health visitor, either the health visitor or the midwife I can't remember who it was, promoted the NCT when I was struggling with the breastfeeding she would kind of like you know 'try and get along to one of those groups, it'll be good' as well so they do promote them on that side which is good-" ***Do you think- what do you think you would have done if she [friend] hadn't have been able to help you*** *[suggested going to NCT group[G2]]***?** *"I don't know, erm, it's a good question, I don't know. I guess because it would have been really painful I either would have got to the point where I would have given up or whether I think that again because my husband was so supportive whether he would have pushed me to get some help and the midwife had seen me in tears and whether she would have tried to push I don't know, it's a difficult one..."*

1012 – *Mother of two describes finding out about BfN group[BG2]*

"Yeah contact numbers and sort of saying well this is the one in your neighbourhood, call that for the breastfeeding support group but erm, yeah I mean... you know if it weren't for that and it weren't for you know the breastfeeding counsellor [BC] coming to my house I'm not sure that I would have found them, you know, like if I'd been given nothing at the hospital, if the breastfeeding counsellor hadn't come to my house I'm not sure that I would have known to look – I mean it didn't occur to me that there would be breastfeeding support groups around."

Nature of the support services: Women recounted a range of peer support experiences linked to their hospital stay and/or once they were discharged home. The categories that emerged from the data relating to hospital-based support are mainly positive and women were encouraged by the help of the support worker based there. One woman (1004) was particularly dismissive of the support worker as she had little time to spend with her on the day of her discharge home. Another woman (1014) was particularly upset that her daughter's tongue tie had not been picked up by the hospital support worker despite telling her and other staff there was a family history of this. See Box 3 for examples of quotations that illustrate this.

Box 3 *Nature of the support services*

1004 *– First baby, describes interaction with the hospital-based Best Buddy*

"I was, she was, it was on the day of my discharge though. She had the doll, she had everything, erm, yeah she just asked if I was doing exclusive breastfeeding and you know do I want any help with it blah, blah, blah and that's when she gave me the breastfeeding counselling numbers and yeah, it wasn't a long talk it was only five minutes!"

1006 *– First baby, this woman describes the Best Buddy's support in hospital*

*"…Erm so basically they were really practical and just like came in and sat with me and told me what to do and helped". "That was really helpful because it was actually having someone sit there and say you need to do this, this and this and just having someone show you what to do made all the difference." "...so I think just to say that the hospital staff were really helpful like the midwives and, I can't remember her name [**name of supporter**] – yeah, her particularly I think if it wasn't for them I wouldn't have got on with it at all."*

1007 *– Mother of three, describes the support from the Best Buddy in hospital*

"I mean the lady here, I mean she's been fabulous really you know she's not as rigid as I thought she would be; I thought they'd be a little bit more 'no, you have to do this, or, you have to do that or no you can't do this you can't do that' because, err, I the sort of I expected them to favour all 'breast, breast, breast and no bottles, no bottles' but no she's sort of saying "'OK, actually if you don't think baby is getting enough from just the breast you can sub with a bit of this and a bit of that' and she's advised me how to sort of keep the breast at the fore of the feeding so that she doesn't go off it and yeah you know it's, she's been really helpful err…"

1014 *– First-time mum describes the hospital support from the Best Buddy*

"Erm, the breastfeeding lady happened to be on a tour of the ward anyway and I thought 'in for a penny, in for a pound' – as she's here anyway we may as well and she showed me a couple of positions erm which was very helpful. Really the only thing that she didn't do which she should have done, was pick up, possibly, is pick up the tongue-tie..."

To describe the elements of support further and what it consisted of I used the model of social support from Langford et al[139]. Langford et al[139] described four elements making up this type of support: informational support (e.g. advice); instrumental support (e.g. demonstration of practical

tasks); emotional support (e.g. caring) and appraisal support (e.g. moral support). From the quotations above women have described the receipt of informational and instrumental support in the hospital. Examples of informational support include advice on positioning (1006) and expressing breast milk (1007), instrumental support was present in showing the women how to do something, for example syringe feeding (1002). Indentifying these elements within the support received led to the theme of 'Show me, tell me'.

Show me, tell me: This theme is mainly represented by informational and instrumental support from peer supporters as described by the women. 'Show me, tell me' was not only something the peers did for women; it was a reciprocal action. Women described how the peers would show them practical skills like positioning and give advice on aspects of baby care but women would also show the peers how they were positioning and feeding, and tell them about what they already knew or had been told and how they felt. See Box 4 for quotations that illustrate this.

Box 4 *'Show me, tell me' (continued overleaf)*

1001 *– First baby, describing the first and then subsequent home visit from the Best Buddy.*
"I talked a bit about what the breastfeeding counsellor [family friend] had told me to do... but I sort of said to her that's what I'd done. Erm, we talked, she watched me latch on and one of the things she did sort of teach me was... to try and get her to latch on coz I think erm I mean if she hadn't have showed me... to actually get her latched on; that was probably the best advice I've had from the Best Buddy..." "So we just talked, she didn't necessarily watch except it's more around knowing she's there than it is about them necessarily doing everything all the time"

1003 *– Mother of three, describes her first home visit from the Best Buddy.*
"So she helped me with that [releasing baby after feed] and er then on the first visit she stayed for like a while and watched me do a full feed and then er she helped me swap breasts as well and like we'd time him so she was really like I'm not gonna lie but she was really good."

Box 4 *'Show me, tell me' (cont.)*

1008 *– Mother of two describes the home visit from a peer support worker*

"She was really nice. Um, yeah she came to the house and just sat with me while I fed and sort of talked about it and coz it's a bit daunting somebody watching you feed you know coz she had to sit right next to me and a bit daunting but she made me feel really at ease and she was lovely and she sort of looked... on this side she sort of checked it out for me and she was like 'yeah, that's positioning, that's not thrush' and she checked him for thrush and he didn't have it... it was this bad positioning so she helped me with that as well."

1009 *– First baby, describes support from a BfN group[BG1] (information from lactation consultant)*

"Yeah, she gave me positions that I'd probably find it easier and that she'd find easier and some tongue exercises that were about getting her to move the tongue more and put the referral in for me which was the you know the most important thing that needed to happen."

1012 *– Mother of two describes receiving support with first child from a BfN group[BG2].*

"I went to the breastfeeding support group for him and that was in the Children's centre in [area] near where I lived. It was wonderful I mean you know like I went, like I said I had chapped nipples so it was really painful and they just kept helping me with latch and I mean I just went every week and even now, after breastfeeding was successful I just kept going just for the social group, you know just to hang out with the other mums."

1014 *– First baby, describes disappointment at the advice given at the NCT group[G2].*

"I did go to the breastfeeding support group [NCT [G2]] erm when she hit about 4 months it suddenly became incredibly difficult she became very wriggly and very frustrated obviously because she wasn't getting enough milk as fast as she wanted erm so I think retrospectively it should have been checked for or picked up or even 'I'm not sure but if you take her to such and such a place and they will do' and it wasn't –"

Whilst 'show me, tell me' was made up of the dual elements of informational and instrumental support, evidence of ***appraisal support and/or emotional support*** appeared when women attended support groups. See Box 5 for illustrations of appraisal and emotional support.

Box 5 *Appraisal and emotional support*

1001 *– First baby, describes how the Best Buddy encouraged her and her decision to give a 'top-up'*

"Erm, I mean there's a lot of praise, I mean, [BB] always says 'you're doing really, really well ... and I and as I say they're really good at sort of I'm telling her what I'm doing rather than her telling me and everything's a suggestion and as I say with the top-up, it wasn't like 'oh no, you shouldn't do that' it was a case of 'no, that's fine'."

1009 *– First baby, posterior tongue tie, describes the support from the BfN group*[BG1]

"...so the support about technically what I could do to help her feed came from the lactation consultant so the support from the [volunteers] was much more… Pastoral really, sort of tea and sympathy and chatting about it and the sort of 'keep going' that kind of support... so just having someone to, people to talk it through with and how I was feeling about it and erm, just a bit of a 'pat on the back' really the sort of 'you're doing all right, you know you're working hard, you'll get there' that kind of thing."

1012 *– Mother of two, describes the BfN support group*[BG2] *she went to with her first baby*

"Erm, everything I mean they were nice ladies and you know if I had any questions about breastfeeding I could always ask them and there were, I met some mums there who have you know kids around the same age as [son] and they're all going through kind of the same types of things and if I had any other sort of baby related issues I always felt like I could ask you know either the BFC or like the other mums-."

1013 *– Mother of two describes her first home-based support from NCT counsellor*[C1]

"So I rang [NCT counsellor[C1]*] as soon as I got home and she was amazing and came to my house in the evening over like a bank holiday weekend and she didn't push the baby onto me or you know man-handle my nipples but she actually just sat and watched me, really reassured me that I was doing it correctly but I just felt so not confident that I just, I was actually doing it fine but I just didn't think I was."*

1016 *– Mother of two describes the support from other mothers at the NCT group*[G2]

"Yeah, yeah, I mean I think you get, you get both [technical support from the 'professionalised supporters' and emotional/pastoral support from the other mums] from the ladies who run it because they are amazing erm but it's, I mean we just used to meet up during the week and go to each other's houses- "

5.4.3 Suggestions for future peer support services

I asked women what suggestions they would make for an 'ideal' support service and they provided many insights, most of which were realistic with potential to be implemented. After charting and coding the data from the transcripts the following categories were derived. Each will be described.

- Realistic preparation
- Show me, tell me again
- Consistent approach, advice and supporters
- Early home visits to establish breastfeeding
- Peer and professionalised support but need more experts
- 24/7 hospital support
- Midwives are not always seen as experts
- Been there, done that, got the certificate
- Being in the same boat

Realistic preparation: This is similar to the earlier category of 'realities and expectations'. Some of the women advocated a realistic approach to preparing for breastfeeding. The women were unprepared for the reality and suggest improvements in antenatal information (Box 6).

Box 6 *'Realistic preparation' (continued overleaf)*

1001 – *First time mum highlights the need for more realistic information to help deal with problems.*
"I don't think we're told enough about what might go wrong and how to deal with it, whether that's because they don't want to put you off breastfeeding but you know I think if I hadn't have had other people tell me I wouldn't know the symptoms to look for whereas again I'm worried about young mums who perhaps it wasn't in their stars to get pregnant so young trying breastfeed and then sort of not knowing how to, because it does really hurt (laughs)."

1007 – *Mother of three describes pre-conceived ideas of breastfeeding*
"Yeah, and to sort of break down those barriers and say 'this is flexible' - this isn't something that you have to sit in a rocking chair all day and do, you know you can have a life and still do all of these things you know I think that, that the whole image of breastfeeding is that it can be hard and you going to be stuck in your bed you know, I think that need to sort of be broken down a little bit."

Box 6 *'Realistic preparation' (cont.)*

1010 – *Mother of two describes what women should know before breastfeeding and asking for help.*

"Yeah, well certainly I think some honesty and realism would help, what it might be like and I think, to be honest I think the most important thing I think anyone could say to you before you start breastfeeding is 'this is where to get help and get it straight away before, if it's at all painful get help straight away' ...it shouldn't hurt at all, and I, the first time round I thought... it just hurts a little bit, it's clearly going to hurt and therefore don't worry about it but I now know that it should definitely should not hurt...so yeah that would be I think that would be the one thing that I would always say to everybody is like the minute it starts hurting... go somewhere and get some help and don't feel afraid to ask"

1011 – *Mother of two describes when she feels support should start.*

"So kind of almost a, erm, a contact almost, you know, obviously for people that early, you can't do it just before birth, but someone's due date you know, before then just to sit and talk to them and just go through it, and prepare them, I suppose. And just really to know that things might not go that smoothly, and as soon as you think things are going wrong, there's people to call on. And then, I guess, after birth, erm, contact fairly soon."

1012 *– Mother of two suggests informing women about local support when discharged home.*

"Right, well I mean I think when you first have a baby I think it helps for them to tell you 'OK, this is what's available' coz that's what happened at the hospital was they gave me all the leaflets for the Breastfeeding Network... you know if it weren't for that and it weren't for you know the breastfeeding counsellor (^{BfC}) coming to my house I'm not sure that I would have found them, you know, like if I'd been given nothing at the hospital, if the breastfeeding counsellor (^{BfC}) hadn't come to my house I'm not sure that I would have known to look – I mean it didn't occur to me that there would be breastfeeding support groups around."

1014 – *First-time mother describes the need for some reality around breastfeeding*

"-but I think people have this expectation that like I said earlier with the bird song and the rainbows and it just happens and it's amazing and it's not actually, it is hard and you have got to stick with it and you have got to persevere and be a bit bloody-minded and...be prepared to spend whole days just in bed with your child giving them milk because they're going through a growth spurt or something then do you know what – no, today it's not going to happen, we're not going to be able to go out"

24/7 Hospital support: Some women felt that there was a lack of breastfeeding support in hospital particularly at night. There was only one Best Buddy who covered two postnatal wards during the day on a part-time basis. Some women were unclear on what support was available and as one woman (1007) suggests there should be a breastfeeding team with a member that works nights. There is a dedicated Infant Feeding Team (IFT) but no members work at night and all do part-time daytime hours. Another woman is mistaken by labelling the NCT counsellor[C1] as a volunteer at the hospital and community-based group[G1]. See Box 7 for illustrative quotes.

Box 7 *'24/7 Hospital support'*

1007 – *Mother of three suggests night shift cover for breastfeeding support*

"... but I do think it would be nice and I said to the ward - the lady that came round [Best Buddy] - I really think there should be advice available in the night. I think that's when you need it the most you know when you're tired, your shaking, you can't you know you can't latch on, the midwives - I know it's the midwives job and people say "well that's the job of the midwife on the ward" anybody goes on to award in a maternity hospital and they see what happens at night everything goes crazy! ...they just don't have the time."

1013 – *Mother of two describes her distress in hospital and suggests more help should be available on the ward.*

"[NCT counsellor[C1]] was there I remember this you know she came to the ward and the point at which she came to see me when I was in hospital with [daughter] I wouldn't see her. I was literally crying my eyes out and I felt like I'd been prodded and poked so much I didn't want anyone to come in you know I just kind of had enough that day, erm but I think it's about someone always being there a well because erm... I dunno, well coz, you almost need help 24/7 don't you? And you know, I guess [NCT counsellor[C1]] is like a volunteer isn't she so not always there?"

Show me, tell me again: Some women did not feel they gained much from the breastfeeding advice or education they received whilst pregnant. Some forgot this information and very much needed to move from 'theory to practice' when they had their baby. These women benefitted from the hospital-based Best Buddy giving them support during their stay on the ward, this practical aspect allowed them to assimilate the theory into practice. See box 8 for quotations that underline this category.

Box 8 *'Show me, tell me again'*

1002 – *First baby; describes the need for breastfeeding information to be reiterated after birth*
"Well, I didn't remember [any information on breastfeeding] and then once you have the baby then you get to panic so I think once I think the thing is when you get a baby the first thing you need is someone coming over first day and just get latching on, how you doing with that, which I had anyway but that's very important." "I think it's actually really good – I need to say that – there is a lady like the Best Buddy she's coming over and she's having a chat with the ladies - that's what I think. Because no matter what you're gonna read, no matter what you're gonna watch, you're always gonna have a question."

1006 *– First-time mother describing how breastfeeding was an abstract concept*
"I couldn't imagine myself breastfeeding it was just weird I dunno I wanted to do but it was just like I wasn't sure I'd succeed at it and to go to a workshop about you just thought... I dunno I'm not sure it just didn't seem to stick very well whether it was like how they delivered it they kinda showed a video and the wasn't much group discussion stuff and I think I'm better at stuff that you kind of participate in, it felt more like there were giving out information so yeah when it actually came to breastfeeding him I'm not sure how helpful that workshop had been really." "That was really helpful because it was actually having someone sit there and say you need to do this, this, and this and just having someone show you what to do made all the difference. I think that's what I meant before it was too abstract."

Midwives are not always seen as experts: A woman in hospital described hospital midwives as too busy to help with breastfeeding, particularly at night, and this was an accepted truth. Another woman did not think that breastfeeding support was a specialism of midwives. One other woman felt that the reaction of the community midwives meant that they saw the Best Buddies as the experts and are reticent to give advice themselves. See Box 9 for selection of quotations linked to this category.

Box 9 *'Midwives are not always seen as experts'*

1001 – *First-time mother describes the Best Buddy as the 'expert' by the midwives.*
"... and the midwives are, I tend to find, when I've asked midwives questions they've, two of them have said they've done the training but that the Breast Buddies or Best Buddies are the best people to ask so I kinda get the impression they don't, when I say they don't really know, they don't really wanna give advice on it." "I get the sense that the training for midwives isn't as good" ***OK*** *"that they take the lead from the Best Buddies as opposed to them both having the same knowledge." "...I kinda get the sense that because there is this Best Buddies [the service] that the midwives leave it very much up to them rather than teaching you yourself – does that make sense?"*

1007 – *Mother of three thinks that midwives need someone to 'relieve the pressure'.*
"And I know they say that they say that's the midwife's job, that's what the midwives are there for but they, they're not just there to talk about feeding you know they're sort of everything aren't they all in one - mums care, baby's care, everybody's care, welfare. They you've got so much on it really is a little bit sort of stepping outside of their remit almost a little bit isn't it? They need ... somebody.. relieve the pressure; I think if every hospital had a breastfeeding team that was based in, you know, in its heart then I think they could do the clinics alongside the clinics and things like that."

1013 *– Mother of two does not identify midwives as specialists in breastfeeding support.*
"I think the information needs to be consistent in the hospital but rather than -I think the problem is everyone has good intentions but you've got so many different people and although they're midwives obviously, I don't know, that can't be their specialism, that can't be their... so you end up with just too much different information..."

Consistent approach, advice and supporters: Women described being confused with the different approaches to supporting breastfeeding. Women very much disapproved of being man-handled by midwives and midwifery assistants who also 'shoved' babies onto the breast. More skilled IFT members and NCT counsellors did not do this and instead observed and made suggestions and were very much 'hands-off' which women preferred. Inconsistent advice was evident which negatively affected women, deflating them and diminishing their confidence. One woman (1010) recounts a conversation she overheard in hospital where members of staff openly discredited what the IFT would advise. Some women appreciated seeing the same supporter/s who knew them and their history. Box 10 shows illustrative quotes for this category.

Box 10 *'Consistent approach, advice and supporters'*

1001 – *First baby. Mother describes advice around breastfeeding*

"I get a lot of mixed advice about how long the baby should be on one breast or whether they should use both or quite how to do that..." "I think it's good that you do have the one mentor [Best Buddy] as well, I'm glad that they don't kind of give you anybody that turns up through the door, I think that's really useful."

1010 –*Mother of two describes her experience of different support and a conversation she overheard*

"In hospital I got erm, well, when I first gave birth I didn't get any support at all (laughs)! The midwife was a bit – I don't know what she was doing – she didn't seem concerned about me feeding my baby er and then when I went to the ward I had a really helpful midwife who was good um and then I had quite a few attempts with the midwifery assistants who basically grabbed my boob and shoved her on um which I was pretty cross about to be honest (laughs) um... I just got to the point where I thought I know I can get help at home so I'd rather just be at home and get it sorted-"

Box 10 *'Consistent approach, advice and supporters' (cont.)*

1010 (*cont.)*

That's OK, but the breastfeeding supporters or the Infant Feeding Team weren't around? *"No coz it was a weekend and it was quite interesting really because I heard... It sounded like they were being really helpful but then I heard them say to her 'now, the Infant Feeding Team will come round tomorrow and they will undo everything that we've done but don't listen to them we're right blah, bah, blah, blah, blah' (both shocked and laugh)." "So quite interesting... but anyway that was nothing to do with me but it did make me think this is, there's obviously a bit of conflicting advice going on."*

1015 – *First baby, this mother describes the inconsistent support approach*

"And so the difference between how a midwife and midwifery assistant tried to help you do it versus [member of Infant Feeding Team] who doesn't touch you it is very confusing having two such different approaches."

1016 – *Mother of two reflects on an experience in hospital with her first son (aged 3 at time of interview) regarding inconsistent advice and the effect it had on her.*

"When I was in hospital with [eldest son] and he wasn't feeding every midwife told me something different, every midwife and I'm a very, I'm a, you know – new mum, really vulnerable, don't know what's going on trying to feed my baby and the people who are supposed to know what I'm supposed to do each one is telling me something different and some of them in a... nice way and some of a 'what are you doing that for?!' and I'm like 'because she told me to (describes this in a mock-distressed tone), I'm just doing what I was told!' and you end up just feeling, you lose all confidence in your own erm, kind of ability to figure out what's, what you should do" ***your intuition almost?*** *yeah, and but then everybody's telling you something different so actually having the breastfeeding group it's that – the consistency you're seeing the same people week after week after week who know you and know where you've come from and what problems you've had before and it's knowing as well that that is there so if you are struggling there's that as kind of a... um, yeah, something you know that's gonna be there to see- "*

Been there, done that, got the certificate: Women were keen to acknowledge concerns over training of any/all of those who were providing or were expected to provide breastfeeding support. Health visitors were universally criticised for their lack of breastfeeding knowledge and midwives appeared to refer women to the Best Buddies acknowledging *them* as the experts in this field. Women were keen that peer supporters knew their limits and would refer on to an appropriate other in such cases. Women wanted to see more signposting, particularly around detecting and dividing tongue-tie.

Box 11 'Been there, done that, got the certificate' (continued overleaf)

***1001** – First-time mother's feelings about supporters having personal breastfeeding experience*
"I think it is really positive and I think that the fact that [Best Buddy] breastfed, I don't know how... convinced I'd be if somebody was telling me who hadn't had a child or hadn't breastfed" ***Yep*** *"it does really help to know that that person's gone through it (giggles)."*

***1009** – First time mother supported at BfN group[BG1] sees the need for appropriate training.*
"As long as they're trained so they know who to refer to if it's something outside of their expertise that they can say 'I think that's something going on here and I'm going to get such a body to come and see you' and I think that would work very well."

1010 – Mother of two describes concerns around training and the remit peer supporters.
"Yeah because things like spotting tongue tie, they can have really obvious tongue-ties which don't cause a problem and then they can have really minor tongue ties that cause a really problem... So, I suppose my concern really about peer supporters would be have they had enough training and would they know, but, I guess if your aim is to keep someone going and to support someone with the emotional decision to keep going and all that then I think that would be really useful – that's what I found helpful from my friends." "...but if you've got a problem you probably need someone who really knows what they're talking about to help sort it out or you might need someone you know coz you might have thrush and it's not been detected or you might have you know all sorts of things a peer could do that as long as they don't make the problem worse by not recognising that is something they don't know how to deal with."

Box 11 'Been there, done that, got the certificate' (cont.)

1014 – *First-time mum suggests training for health visitors.*

"But that first round of they [HV] come to see you, if they could have a bit more... support training for breastfeeding and know how to check for a tongue tie and know how to check to see if the latch is appropriate and if you could work in, even if it's only 10 minutes within that visit I think that's the point where it could make a huge difference... so maybe if the health visitors had a bit more breastfeeding support training they could do a couple of very basic checks at that first home visit and I know they've already got quite a lot to do...." "So, I do think that could make a huge difference and I definitely, definitely, definitely think that health visitors need more training... coz we're told that the health visitor's our first port of call – if you have any concerns... Go to the health visitor..."

Peer and professionalised support but we need more experts: Women overall thought that there was benefit in receiving support from both or either peers and 'professionalised' supporters e.g. BfN and NCT counsellors. There appeared to be some concern over the capacity of both NCT groups due to their popularity and lack of similar support in neighbouring towns. See Box 12 for quotes to illustrate this category.

Box 12 *Peer and professionalised support but we need more experts (continued overleaf)*

1002 – *First-time mum doesn't think breastfeeding support needs to be given by a midwife*

"It doesn't need to be a midwife it can be anyone who knows obviously what they're doing and like they've got some knowledge about breastfeeding and, but I suppose if it is a midwife maybe it is more comfortable for the woman, if someone is going to come over especially for that profession."

1003 – *Mother of three supported by a Best Buddy*

"She [Best Buddy] was a lovely lady in like helping and um, she was like whatever she did she knew what she was doing but yeah, I wouldn't have mind if anyone had come out as long as they could have done what [Best Buddy] did but it was nice to hear her personal experiences as well and I think that gave me more confidence as well."

Box 12 *'Peer and professionalised support but we need more experts' (cont.)*

1006 - *First-time mum describes how she would have liked someone to contact her*

"I dunno really something more… My only criticism would be something like more outreach-y where you've got, you know say a breastfeeding counsellor can actually come out and see you at the beginning coz I think it's that beginning bit isn't it you know you're on your own and that was the point where I could have given up with it."

1009 - *First-time mother describes the importance of breastfeeding supporters having time*

"Erm, it needs to be somebody who's got the time because if it's not something that midwives have got the time to actually spend a couple of hours with you then much better to be a volunteer... Yeah somebody that is got the time to just, and sit with you and watch a full feed, it's no use just watching a baby go on - oh yeah, for the first five minutes it seems fine but then your problem is later on so yeah."

1011 – *Mother of two describes the busy NCT group*[G2]

"– I do find sometimes those groups are really busy and it must be hard to get to see everybody or if you turn up there it probably can be quite overwhelming if you're a new mum as well um so maybe that sort of initial support at home might help before you get there but then I guess the group is there for drop-ins if you've got problems from there or to keep going to make sure things are still going well."

1015 – *First-time mother expresses her concern over lack of support in her town and that the nearest NCT group*[G1] *to her is a 'victim of its own success'*

"There's <u>nothing</u> in, there's abs- <u>there is nothing</u> in [town]. There isn't even a, there isn't even a peer support, there isn't a, there isn't a breastfeeding cafe." "I think the other thing maybe is that [NCT group[G1]*] is a victim of its own success because it's so successful and coz they're so helpful, if any of my friends have had problems I've told them to go there, and I know a lot of people that have then gone there and then it's almost too busy..."*

Early home visits to establish breastfeeding: Women appreciated home visits from support workers or counsellors. This meant they didn't have to negotiate actually leaving the house with their young baby but also on a more practical level the supporter could see how the woman was feeding and give individual advice. Box 13 gives examples of quotations this category is derived from.

Box 13 *'Early home visits to establish breastfeeding'*

1001 – *First time mum describing the benefits of home-based support.*
"I think in terms of Best Buddies I mean I love the fact they come here, it's really hard as a new mum to get out so the fact that they come here and not go somewhere else is fab."

1003 – *Mother of three accounts for preferring home visits over group sessions.*
"To be honest with you it was because I don't think with a new baby I would wanna go out and like even if it's a planned centre of whatever but I don't think that – I think you're so tired and you're so busy in the household getting used to everything you've got your daily like and your new baby on top – things to adjust and that, if [Best Buddy] couldn't come to our house and I knew there was a breastfeeding support group out there who you can phone and over the phone they would help you or you could go to one of their allocated places where they help you I wouldn't have bothered to be honest. I would have just tried our own selves and given up in the end. But because she could come home for you that was better."

1008 – *Mother of two sees the benefit in home visits*
"I think the visits are better obviously coz they can see what you're doing and where you're going wrong and where you do it right as well and the phone calls are alright but I think a visit would be better definitely."

1009 – *First-time mum would have liked proactive and face-to-face contact*
"If things are going well, erm, for people then it's probably somebody just to check that everything is okay but I think it's where there are problems I think somebody needs to come and see you, erm, and I think it needs to be a bit proactive-""But I do think there needs to be someone that comes, it just comes out if you're having problems but for me… I'm not about to talk about anything emotional on the phone with somebody I've never met.

Box 13 *'Early home visits to establish breastfeeding' (cont.)*

1011 – *Mother of two suggest home visits may help establish breastfeeding but a lot can be gained from group support*

"I think initially I think you probably want people at home, there's a lot to be gained from the groups but I think maybe sometimes that initial contact, I mean when you go to those groups sometimes I mean, I've been to the one on Fridays with [daughter] quite a few times, it can be really busy and sometimes you just, you're not gonna get much time there so if you can have those early home visits to establish it and then get yourself going there to make sure-"

1012 – *Mother of two describes benefitting from a home visit*

"I don't know, like... and I definitely feel like I benefitted from having the [BC] come to my house to sort of check that breastfeeding was going OK and you know erm, she was also the one that told me about the breastfeeding support group – the weekly support group erm so I think that was definitely a good thing."

Being in the same boat: This category only emerged from the accounts of women who were attending breastfeeding support groups. Through their descriptions was a sense of relief that they had met like-minded women but more than that, women who had been through the same problems or experiences they had and had got through it to the other side, not unscathed but they were through it. This was motivation for some women to continue with breastfeeding. Quotations are in Box 14.

Box 14 *'Being in the same boat' (continued overleaf)*

1009 – *First-time mum describes how much the BfN group[BG1] meant to her.*

"Yes it was my saviour if I hadn't been going to the group I don't think I'd have been I'd have carried on breastfeeding."

Box 14 *'Being in the same boat' (cont.)*

1011 – *Mother of two describes how the NCT group[G2] was a chance to meet other mums like her who had gone through similar difficulties but 'had made it through the other side'.*

"And erm, and going to the groups, I remember the first time I went to the group, there was a girl there and, you know, she'd been through absolute hell trying to breastfeed her girl, and she was still there, and come out the other side of it. And it's nice to talk to other people... And it's nice to meet other people then that is hadn't been natural for and that had had troubles, and you know, had managed to get though it and out the other side and you could share a few stories I guess."

1016 – *Mother of two describes the mutual support between mothers at the NCT group[G2].*

"But also the peer support so I'm still in touch with the people I met when I went with [oldest son], we're still friends erm and it's that going through the same thing at the same time and having people as well who've got babies slightly older who've been through similar problems and made it through the other side."

5.5 Discussion

5.5.1 How this study fits with current knowledge

Most of the findings of this study are consistent with the qualitative syntheses presented in the literature review of this chapter. The women in this study described support from the peer support service and health professionals but also their family, husband or partner and friends. They appreciated the time that the peer supporters had to spend with them, their having personal experience of breastfeeding was important to the women and authenticated their role as a supporter. Health professionals were described as too busy and giving conflicting advice but were also described positively for example as 'really good' (1001) and 'the lovely lady' (1003).

Larsen et al[104] reported women experiencing something of a conflict between what they knew and what the 'experts' knew of breastfeeding and this was true for the women I interviewed. The

women I interviewed wanted to trust their instinct but also wanted the 'experts' (either health professionals or peer supporters) to validate their choices. An example of this validation was when the Best Buddy 'OK-ed' a formula feed as a top-up (1001). An example of a lack in validation was where one woman reported that a health professional gave her advice which was contrary to what she had researched and what she instinctively thought about her situation (1014). Contrary to the findings of Larsen et al[104] the women I interviewed did not describe the language used by supporter providers as 'medical' or 'technical'. In fact the women used very similar terminology across the whole group but this may have been due to the limited number of support providers.

There are similarities with the findings of Burns et al[105] pertaining to their theme of 'expectations and reality'. Compared to those described by Burns et al[105], the women I interviewed appeared to be expecting breastfeeding to be problematic but perhaps not quite to the same degree as transpired. In-keeping with Burns et al[105] I found that women recognised breastfeeding promotion to be unrealistic and unrepresentative of reality with an underlying intent to encourage more mothers to breastfeed, almost under false pretences.

In addition this study's findings are consistent with those of Burns et al[105]; the women interviewed experienced being 'man-handled' by health professionals and hospital staff and they recommended that these people receive further training. The process of establishing breastfeeding seemed mechanised with the use of syringes to extract drops of colostrum for babies in the first few days and women expressing milk at this early stage were unaware that their relatively meagre results were quite normal for that stage of lactation. One woman (1002) likened her experience of expressing breast milk to being a cow and wanting to give her milk directly, not by a bottle. Another woman (1014) had a very strong reaction to giving her expressed breast milk in a bottle, she could only associate formula milk with bottles and felt intensely guilty about this. This was compounded by a

health visitor refusing to document that she was exclusively breastfeeding because she gave expressed milk in a bottle.

The women I interviewed appreciated the time the peer supporters and counsellors could spend with them which was evident in the practical and appraisal support they gave. These are elements included in the positive interpretation of support through an authentic presence and facilitative style described by Schmied et al[121].

It became apparent that despite many of the women being 'typical breast-feeders' in that they were educated and employed, in their early to mid 30's and had little trouble vocalising their experiences to me, when it came to asking for help some hesitated and were anxious about making that call or going to that group (1003, 1004, 1006, 1007 and 1010). Some women shared similar personality traits, they described themselves 'stubborn' (1004 and 1009), 'bloody-minded' (1008, 1010 and 1014) and having the determination to persevere with breastfeeding, whatever it took (1003, 1008, 1010 and 1011). This demonstrated a level of commitment some of the women had never known before this (1010) and led two women to set themselves extremely hard targets for reasons unknown even to them (1008 and 1010). Burns and colleagues[105] reported persistence and perseverance as common themes linked to women's description of breastfeeding.

There has been considerable debate in the literature on the definition of peers and the extent to which peer supporters must be like those they support in order to be peers. Whilst this debate is outside the remit of this chapter I did reflect on how alike the peer and professionalised (both NCT counsellors) were to the women. Two women supported by the community-based Best Buddy were similar in ethnic background and culture (1003 and 1004) but the Best Buddy was older than these women. The NCT counsellor[1] was older than all of the women she supported but they all shared the

same ethnicity. The second NCT counsellor[2] was more like the women she supported and appeared to be of a similar age and was in the same ethnic group as them. I am unsure how important matches on ethnicity and age or any other demographic are for women. The women's recommendations for breastfeeding support services were not based on demographic characteristics they only wanted someone to help them, who had been well trained, could identify problems and resolve them or refer onto another person if they were unsure.

5.5.2 What this study adds

The category of *'midwives are not always seen as experts'* is not consistent with the literature presented in Section 5.1. Larsen et al[104] observed health professionals as the 'breastfeeding experts' and Nelson[103] found that women sought informational, technical and emotional support from health professionals, this is contrary to what I found. I found that women sought 'technical' information from the community-based breastfeeding counsellors and the peer supporters were who they viewed as the 'experts'. There was a mixed reaction to the support given by midwives; as described above they were seen as the 'authority' to validate infant feeding choices but the limited home-visits and limited time (both at home and hospital) they could offer were noted by some women (1001, 1004, 1007, 1010 and 1015). Of greater interest was when midwives themselves acknowledged that they were not the experts and endorsed the Best Buddy service and the NCT group[G2] as the best sources of breastfeeding expertise.

Some women I interviewed said that support needed to be more widely available, the category of *'peer and professionalised support but we need more experts'* demonstrating this. However it was apparent that women (1007, 1013) were unclear about what hospital-based support there was, evidenced by their suggestion for a hospital-based breastfeeding team when there already is one. In addition all of the women who attended the NCT group[G1] assumed that the woman helping the NCT

counsellor[C1] by weighing babies and giving weaning advice was a health visitor but in fact she was a community nursery nurse. The breastfeeding 'guru' and NCT counsellor[C1] was mistaken for a volunteer and several women were not aware that she was also the IFT lead at the local hospital. It would be beneficial for women to know about the IFT so they can ask for them specifically but also know that there is specialised support available.

Women described beneficial gains from both home visits and group support from peers. The categories of *'early home visits'* and *'being in the same boat'* link these two types of support that are individually beneficial but I would argue that support could be maximised if women received both levels of support. At home women got emotional, moral, appraisal and individualised support which was also clearly evident for the women who had group-based support. One-to-one support is readily given at all of the groups but from the counsellors, volunteers and other mothers. What the groups add that cannot be replicated through home-based support is the reassurance that what they are going through is normal and the sense of 'being in the same boat' as them. This was true 'peer' support, women supporting each other who were going through or had been through similar experiences could 'share stories' (1011) and were proof that they got to the other side and were 'OK' (1011). These findings match those of McInnes and Chambers[101].

5.5.3 Strengths and limitations

Most of the Best Buddies were difficult to engage with this study and I was only able to interview women who were supported by one of the community-based workers. The only reason given by the other Buddies for not introducing the study was because the women they supported did not speak English. I did not have the resources to fund interpreters and as a result this did mean that non-English speaking women were excluded from the study. On reflection with more time it may have been possible to use different sampling methods, specifically theoretical sampling to develop the

emerging categories. Although I recognise that women who choose to breastfeed are a largely homogenous group it may have been beneficial to sample those least likely to breastfeed by including young mothers and those most likely to breastfeed by including mothers from ethnic minority groups. I used snowballing to increase the sample size which was effective. Exploring the views of mothers from ethnic minority groups would have proved interesting in relation to the follow-up study presented in Chapter 3, their experiences and suggestions for peer support may have been used to develop the breastfeeding peer support service in the ethnically diverse population in Birmingham.

Contextualising the results of this study in a behavioural or social theoretical framework may have been beneficial. To describe the women's experiences of support I used Langford et al's model of social support (ref), however, I could have explored alternative models of such as the theory of social support, behaviour change theories or health promotion models, which may have been useful to develop an understanding of women's experiences of breastfeeding and of peer support. One such promising model of wider support is Rogers' et al's (ref) systems of support framework which includes support for an individual from personal communities (e.g. family), community groups, non-health professionals, and health professionals. This was developed for the management of long term conditions, but may have resonance in the context of breastfeeding support.

A strength of the study is that it adds to the existing relatively limited knowledge of women's views on peer support for breastfeeding. Whilst some findings support what is already known new elements have been exposed through the categories 'midwives are not always seen as experts' and 'accessing support services'. To develop the understanding of these categories theoretical sampling could be implemented to identify potential interviewees. It would be important to explore midwives views on supporting breastfeeding to elicit whether they see themselves as 'breastfeeding experts'

and what this concept means to them. Their views on this could inform additional training needs which could be done through semi-structured or in-depth longitudinal interviews informed by focus groups to maximise richness of the data.

5.5.4 Reflexivity

The insider/outsider debate is usually confined to observational and ethnographic studies but Corbin-Dwyer[140] argues that it should be extended to other methodologies. This debate centres on whether the researcher shares characteristics or experiences with those they are studying and this struck me as a point to reflect on as I considered my position. As a midwife I have some 'insider' knowledge (of breastfeeding) but do not consider myself a legitimate insider as I am not a mother. My insider knowledge has been gained vicariously through intimate experiences of breastfeeding in my clinical practice and with close personal friends who I have supported to breastfeed. I told the women that I was a research midwife and I believe this helped as it seemed to validate the study, however it is possible that knowing this may have tempered what the women said in case I 'reported back', or it may have given them an opportunity to speak out in the belief that I may be have the power to initiate changes they suggested. Study methodology may influence which side one is on and as an interviewer I was implicitly presenting myself as needing the information the women could supply; I had not experienced what they had. In observational studies it may be easier to conceal one's status which may be of benefit as those being studied may either ignore or become used to the researcher's presence. Overall I think that my 'informed outsider' status benefitted me and the study gave the women had a chance to debrief about their experiences but also potentially help change the support services.

Naturally I had expectations of what the women would say about particular supporters; this was informed by my experiences as a midwife and a researcher, the literature and my own personal

views. I was expecting to hear positive experiences linked to peer supporters and negative experiences linked to health professionals. I did hear this but I also tried to ensure I heard what else was said. I was not expecting to find that women did not regard midwives as the experts, nor was I expecting to find that women had difficulty in accessing support services because they were intimidated, unsure and somewhat anxious to do so. Neither did I expect to hear that women benefitted from peer support on an individual level but gained different benefits at a group-based level, more seemed to be gained by women who had support at both levels.

5.6 Conclusions

This study answered the research questions that it was designed to. It explored women's experiences of breastfeeding and of one-to-one peer support from paid workers or volunteers, and determined what recommendations women would make for breastfeeding support services. Some of the findings are consistent with those already shown in the literature and some add new elements that would be interesting to explore further. Women reported benefit from using support services that are made up of both peers and professionalised workers (e.g. NCT counsellors). They reported receiving informational, instrumental, appraisal and emotional support and there appeared to be benefit from one-to-one support in hospital, at home and in community-based support groups.

Women felt that knowing about breastfeeding support services whilst they were pregnant would be advantageous, they thought it would be helpful to know there was someone they could go to for advice and would be there to support them once they got home. Women could be informed of the support services by their midwife or the supporters themselves. Along with this was the recommendation that support services make proactive contact with women who had initiated breastfeeding once they had been discharged home. In addition women were keen for women to be aware they should contact their local support service as soon as they felt they had a problem and not to delay making this contact. Another recommendation was for early home visits soon after women

were discharged home to help establish breastfeeding, following this women could access local groups in order to meet other mothers and then benefit from mother-to-mother peer support as well as having professionalised supporters on hand (e.g. NCT counsellors).

Recommendations for hospital-based support were that it should be available '24/7' and a dedicated breastfeeding team on the ward to provide required support. As there is already an IFT on the postnatal wards it may be beneficial for them to consider how they could make more women aware of them. However what would be more difficult would be to actuate the 24/7 support, particularly at night which is when women identified insufficient numbers of staff to help with breastfeeding.

Overall women thought that support did not have to be provided by midwives or other health professionals. As long as the supporters were adequately trained and knew when to refer women to a professional, they would be happy to be supported by a non-health professional. The recommendations women made would be fairly simple to implement but could have cost implications which would need to be considered. A specific recommendation easily made is to increase awareness and the early detection of tongue-tie. Any implementation of new services should be accompanied by a pragmatic evaluation to determine its effect.

5.7 Summary

This chapter summarises the qualitative literature, specifically meta-syntheses and a meta-ethnographic synthesis of women's experiences of breastfeeding and breastfeeding support. A qualitative interview study was carried out to explore: women's experiences of breastfeeding; women's experiences of one-to-one peer support; and their recommendations for breastfeeding peer support services.

This thesis has presented the epidemiology of breastfeeding, the findings of the HOBBIT follow-up study and two systematic reviews of the effect of peer support and breastfeeding initiation and continuation and finally the analysis of a qualitative interview study designed by me. The next chapter presents a final summary of the findings of this thesis, the conclusions drawn and implications for practice.

Chapter 6

Conclusion, implications and future research priorities

This thesis aimed to investigate the effect of peer support on breastfeeding initiation and continuation, and to explore women's experiences of peer support for breastfeeding. These aims were set so that a contribution could be made to the current knowledge base on the effectiveness of peer support and maternal views and experiences of such support. In the process of this doctoral research original contributions to the literature have been made, the results of this body of work have adding to what is already understood by experts in the field. To explore the aims of this thesis three research questions had been set.

6.1 Main findings and research recommendations

6.1.1 Research question 1

Are antenatal peer support interventions effective in increasing breastfeeding initiation rates?

It was the result of the HOBBIT trial primary outcome that prompted this research question. It found that universal peer support in the antenatal period had no effect on breastfeeding initiation in Birmingham (UK) which was in contrast to the DH recommendations[51-54,59-61]. The evidence used in the recommendations was of low to moderate quality and carried out in the UK but mainly in non-UK settings. To address this further I carried out a systematic review with meta-analysis of the effectiveness of antenatal peer support on breastfeeding initiation using acknowledged principles of good practice[66]. The main findings of this were that universal low-intensity antenatal peer support interventions are ineffective in increasing breastfeeding initiation rates in the UK; only one or two peer support contacts was not sufficiently intensive enough to result in any improvement in breastfeeding initiation rates. There was however, evidence of an effect from high quality US-based trials that demonstrated a beneficial effect of targeted peer support interventions that were provided specifically for low-income Hispanic women. Based on the findings of this first systematic review several research priorities were raised:

- Peer support services that provide a more intensive schedule of contacts may be effective.
- Peer support interventions that are focused on targeting women who are *considering breastfeeding* may be effective given that universal support is ineffective.
- Peer support that is provided to mothers still in hospital in the very early postnatal period may be of benefit.

The evidence presented in Chapter 2 is important. It immediately assisted in a more appropriate allocation of resources at a local Birmingham level with the PSW service restricting its provision of support to the postnatal period. If early in-hospital peer support is implemented for it to have the maximum possible impact several factors must be addressed. The peer supporters would need to be well integrated into the midwifery/maternity teams from the outset. This would require careful management to ensure that their role is made clear to all health professional and ancillary staff on the ward. Health professional staff could facilitate the introduction of the peer supporters to mothers wanting to breastfeed so that their support can be targeted. Ideally the peer support would be available to as many mothers as possible which would require careful planning and management. This would be difficult given that it would need to be provided in the limited period of time that mothers stay in hospital after they have given birth. Women are rapidly moved from the delivery suite to the postnatal ward and then home. Having enough peer supporters to cover the ward area during the day and night would need to be achieved. I learnt from my interviews with women (Chapter 5) that breastfeeding support during the night was lacking on the hospital wards.

To facilitate continuation of breastfeeding support following hospital discharge to home, good communication between the hospital ward staff and the community midwifery teams would be essential. An example of how this works in a local hospital is that all women supported by the hospital-based peer support workers are entered onto a database which can be accessed by the

community-based peer support workers. The hospital peer supporters update the database when a woman is discharged and the community peer supporters then telephone her within 48 hours of discharge and offer a home visit. In addition the hospital peer supporters give women details of their nearest Children's Centre which they can access to gain breastfeeding support. This example demonstrates that it would be important to ensure that all hospital staff particularly health professionals, midwifery assistants and ward clerks are aware of the available support services and how information gets passed on from hospital-based to community-based supporters. Without this understanding from all members of ward staff it is likely that some women's details may not be handed over in a timely manner. One of the suggestions women made during the interviews I carried out (Chapter 5) was that early, proactive at-home support would be very helpful.

The evidence from the work produced in Chapter 2 has implications for national policy. This is because they are in opposition to the evidence underpinning the current guidance and recommendations regarding the implementation of peer support. The evidence produced in this thesis has thus far not been integrated into policy or systematic reviews despite such publications being updated more recently (Renfrew Cochrane 2012). As demonstrated in the systematic review, antenatal peer support does not improve breastfeeding initiation. If policy was updated in line with these findings then antenatal peer support could be stopped and redirected to the early postnatal period for women who want to breastfeed, which may be a more appropriate and evidence-based allocation of resources as based on evidence from other high income countries (supported by findings in Chapter 4 and 5). I acknowledge that empirical data is required in order to test the hypothesis that targeted postnatal peer support may increase breastfeeding rate in the UK. Therefore, robust evaluations running alongside the implementation of peer support services provided in the UK could be recommended in the light of findings from the large UK based trials.

6.1.2 Research question 2

Are postnatal peer support interventions effective in increasing breastfeeding continuation rates?

This second research question was prompted by the findings of the previous systematic review (Chapter 2) and also the results of the secondary outcome of the HOBBIT trial; the six month follow-up study (breastfeeding continuation). In Chapter 3 I presented the HOBBIT follow-up study, the results of which demonstrated that peer support in the antenatal *and* postnatal period had no effect on any or exclusive breastfeeding continuation rates at 10-14 days, six weeks, or at six months in the consented sample of the population in Birmingham. The possible reasons for this were discussed in the chapter (section 3.14). Given that this was also counter to policy recommendations I conducted systematic review with meta-analysis on the effect of postnatal peer support on the outcome of breastfeeding continuation (Chapter 4); again using acknowledged principles of good practice [66,87].

Pre-specified meta-analyses to estimate the effect of timing, intensity and setting of peer support were carried out. The results of these meta-analyses identified that peer support interventions provided in the postnatal period *only* were effective whereas those provided in the antenatal and postnatal periods were not; this was true for both any and exclusive breastfeeding rates. Regarding the intensity of peer support it was found that there was an effect on extending the duration of any and exclusive breastfeeding with the more intensive interventions (≥5 contacts) but not those categorised as less intensive (<5 contacts). Peer support interventions in low/middle income countries and non-UK countries were effective but not those in high income countries and the UK at prolonging the duration of both any or exclusive breastfeeding. These results support the findings of the first systematic review and reinforce the need for research to evaluate the effect of the provision of immediate postnatal peer support in hospital and a more intensive schedule of peer support contacts. As with Chapter 2 the findings from the research presented in Chapter 4 are at odds with the DH recommendations on breastfeeding peer support programmes. The findings add to the UK-

based high quality evidence that had also not found peer support to be of benefit in terms of improving breastfeeding rates. This further emphasises the pertinence of taking the research in this thesis into account in UK national policy.

6.1.3 Research question 3

What are women's experiences of one-to-one breastfeeding peer support and what are their recommendations to improve such support services?

This question arose from the findings of Chapters 2, 3 and 4. It is plausible that peer support interventions could improve breastfeeding rates, yet in practice when evaluated in high quality UK-based trials, no beneficial effect has been identified. Anecdotally it is known that some women *like* the support provided by peers, women appreciated the time they had to spend with them; and some peers report having made a difference. It was considered that a qualitative study was required to explore and identify women's experiences of peer support. This was achieved in two stages, firstly, through a literature review of qualitative syntheses and individual qualitative studies on maternal perceptions of peer support. The literature review resulted in a low yield of individual studies that reported on experiences of breastfeeding peer support. The literature in this area was usually embedded in studies reporting a more general experience of breastfeeding and/or women's experience of support from health professionals. Several of these studies acknowledged the paucity of evidence on women's experiences of peer support and further research into this area was recommended.

Secondly I carried out an individual interview study with 16 mothers to explore their experiences of one-to-one peer support for breastfeeding and any suggestions they might make for these services. In the main, the women I interviewed described positive relationships with peer supporters and often attributed this support to persevering and ultimately continuing to breastfeed. The women

experienced a range of and timings of peer support; some women met their peer supporter whilst pregnant; some women received immediate in-hospital peer support, some had home-based peer support and others had support in a group-based environment with one-to-one support in addition. The women made several suggestions for future peer support services both based in-hospital and in the community that included:

- Starting in pregnancy, increasing awareness of peer support services and how to contact them when required
- Peer support in hospital should be more extensively available but particularly at night with the provision of a '24/7' service being the ideal
- The support (advice) offered must be consistent to avoid confusion
- The supporters should *approach* women in a consistent manner, providing a consistent style of support (e.g. hands-off)
- Early home visits to assist in establishing breastfeeding
- Accessibility: proactive support (e.g. telephone contact initiated by peer supporters rather than a reactive service); and at hospital discharge women should be informed of community-based peer support groups and services.

The suggestions were all representative of the difficulties that the women encountered during their experience of breastfeeding. Although they might have appeared realistic to the women and to some extent realistic to me, such suggestions could only be realised if resources were unlimited because logistically and financially they would be problematic to implement.

The research findings presented in Chapter 5 add to the evidence base on women's experiences of breastfeeding, they also contribute to the current limited evidence on women's experiences of peer support for breastfeeding.

6.2 Implications

The findings of the quantitative outputs of this thesis suggest that peer support for breastfeeding as provided in the intervention studies in the UK is not beneficial. Further research is required to ascertain the reasons why peer support does not appear to be effective, but also to identify if there are particular groups of women, other than those on low-income who have already been targeted, for whom peer support may be effective in the UK.

The findings revealed throughout this thesis provide a clear message - the intensity, timing, setting and accessibility of a peer support service are likely to influence its success. The reporting of the actual number of peer contacts received by women, that is the intensity of study interventions, varied in each of the studies included in the systematic reviews (Chapters 2 and 4), many being reported as an overall coverage of the intervention which made it more difficult to assess the 'dose effect'. However, it was apparent from both review meta-analyses that the more intensive interventions were effective, and those that were less intensive were ineffective. Two studies that set out the most intensive schedule of contacts were carried out in the US by the same team (Chapman et al[39] and Anderson et al[72]). As described earlier in the thesis (see Chapters 2 and 4) in their first RCT the researchers[39] tested the effect of breastfeeding peer support provided as one antenatal contact followed by daily contact whilst in hospital after the birth and then three in the postnatal period. I defined this as an intensive schedule being >5 contacts. This found a significant effect on breastfeeding initiation with fewer women in the intervention group *not* initiating breastfeeding compared to women in the control group but no effect was seen on the other outcomes of not breastfeeding at one or three months. Using a second study population from the same area, the team[72] evaluated the same type of peer support service again except that they scheduled a more intensive programme of contacts with three antenatally, daily during the hospital stay and then nine home-based contacts and telephone-based support once discharged home.

There was again an effect on initiation and on continuation at hospital discharge and at one month although still not at 3 months.

It is important to highlight that in both of these trials the study population was derived from a community mainly populated by families of Hispanic ethnicity. This raises concerns over the generalisibilty of the results. It could also be considered a strength; although Chapman et al[39] gives limited detail on the characteristics of the peer supporters employed to deliver the service tested, it would appear that they were close to true 'peers' to the women they supported. In Chapter 1 I presented evidence on how peers are defined and being similar and sharing characteristics, community, culture and experience is essential[29]. Chapman et al[39] states that their Hispanic study population were known to be "socially uncomfortable with breastfeeding" (page 898). By understanding this cultural norm and by being part of the same community the peers were likely to be sensitive to this which may have influenced the way they supported the women. It is plausible that this understanding authenticated and validated the peers, making women more likely to accept them and their support. This hypothesis would need to be tested.

The findings of Chapters 2 and 4 suggest that the timing of peer support services may be crucial, in-hospital support could help women have a successful first breastfeed. As suggested by the women interviewed in Chapter 5 if early postnatal support can be provided at home this may help to establish breastfeeding and give individual advice. The findings of the review in Chapter 4 illuminated that postnatal peer support was more effect in improving the rates of any and exclusive breastfeeding compared to antenatal *and* postnatal peer support. Given the short duration of a woman's postnatal stay in hospital it is important that postnatal community support services are adequately resourced so that women can be supported to continue to breastfeed for the length of time they want to. Prolonging breastfeeding will maximise the associated health benefits for mother and infant and consequently have a positive impact on public health. Improvement in public health

from increases in breastfeeding would be observed, although this would not be immediate but researchers have modelled likely effects and their magnitude. Renfrew et al (2012) present the possibility of substantial improvements in maternal and infant health and consequently significant cost savings for the NHS. Renfrew et al (2012) present several models that estimate cost savings related to increases in breastfeeding. One example of this estimates the potential for an incremental benefit of over £31 million over the lifetime of every annual cohort of first-time mothers (estimated at 313,000 per year). This incremental benefit is based on a reduction in the cases of breast cancer and reflects NHS cost-savings in treatment and a gain of quality adjusted life years (QALYs). Another example model presents a potential total cost saving of £17 million which would be reliant on 45% of women exclusively breastfeeding to four months and 75% of babies on a neonatal unit being breastfed on discharge. This is based on estimates of reduced hospital admissions, GP consultations and treatment costs for gastro-intestinal and lower respiratory tract infections, acute otitis media and NEC.

Accessibility to peer support services could potentially be improved or modified. Chapter 5 highlighted women's preference for proactive support; women suggested that peer supporters could telephone them after discharge home to offer their support. Not all women were aware of the support services based in the hospital or community, by promoting services more widely this may improve access to them which has the potential to improve breastfeeding rates if they are taken-up by women. Maternal satisfaction with peer support is not well researched and this thesis adds to this emerging evidence base. The findings from the qualitative study in Chapter 5 may influence the relevant organisations involved to change current practice at a local Birmingham level. This may be particularly relevant for the hospital-based Infant Feeding Team; the women interviewed were generally unaware of the team as demonstrated by their suggestion that the hospital would benefit from a dedicated breastfeeding support team. Better promotion of the team would be a simple way

to make women aware of them and their function. The women I interviewed also called for more breastfeeding support to be available during the night in hospital, this would require a greater change with subsequent financial implications. It is possible that providing more support during the day may ameliorate some of the problems experienced at night. If women were better informed and supported during the day they may feel better able to cope at night, this of course would need to be subjected to an evaluation.

Commissioning groups would need to consider several aspects prior to commissioning peer support services but current recommendations and policy do not include the published evidence found in this thesis. As such they do not have the most up-to-date evidence to base their decisions on. Commissioners would need to only consider interventions that have demonstrated an effect which would include: early and targeted in-hospital breastfeeding support from trained peers, lay workers or healthcare professionals; early and targeted proactive support once discharged home; intensive support that is individualised to meet the needs of each woman. These could and should be evaluated to determine their effectiveness and cost-effectiveness and funding for an RCT to evaluate these support interventions would have a strong case based on high quality evidence from the UK. Local authorities would benefit from an update of the evidence-base to help direct commissioning of breastfeeding support services as breastfeeding rates continue to be a key measure of public health.

Future studies would benefit from a cost-effectiveness analysis or reporting the service costs as a minimum, although peer support services are certainly less expensive than a service run by health professionals or lactation consultants they are still considerable. This is more likely for intensive services; in the present economic climate it is a substantial challenge to fund additional NHS services successfully. This could however be off-set by the potential cost-savings as outlined in the recent UNICEF commissioned report[28]; if modest improvements in breastfeeding were observed the NHS could save an estimated £40 million per year. Renfrew et al[28] only based their estimates on selected

conditions and they state that further savings are possible. The savings were based on reduced admissions for the following common conditions in infants: acute otitis media; gastrointestinal infections; lower respiratory infections; NEC; asthma; diabetes; leukaemia; celiac disease; cardiovascular disease; and sepsis. The maternal health benefits of breastfeeding including reduced risk of ovarian cancer and Type 2 diabetes add to this estimated cost saving.

Much of the current breastfeeding policy documentation in the UK was published some years ago (2000[36], 2006[40], 2003[51]) and was based on the contemporary peer support evidence[36,40,51]. This evidence was generally of lower quality and lacking in rigour due to poor methodological design. The policy documents and recommendations could be updated in light of more recently published high quality trials based in the UK (MacArthur et al 2009[63], Hoddinott et al 2009[133], Jolly et al 2012[73]) and two high quality systematic reviews (Ingram et al 2010[64], Jolly et al 2013[84]). The evidence gathered in and published as a result of this thesis should be considered by the Department of Health in order that policy recommendations are updated. It is essential that clinical recommendations and practice are based on current best evidence and that commissioners, particularly in the current economic climate, can make informed decisions about where best to allocate finite resources.

6.3 Conclusion

Breastfeeding promotion is a fundamental part of the drive to improve public health. Peer support interventions have been implemented in the UK in order to improve breastfeeding rates. From the evidence generated in this thesis it is apparent that peer support interventions in the UK are currently not effective in improving breastfeeding rates. Research recommendations have also been developed in this thesis in order to identify circumstances where peer support may be beneficial; timing, intensity and accessibility appear to be the main areas where there is potential for a beneficial effect.

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Appendix 1:

BMJ Publication (i)

MacArthur C, Jolly K, Ingram L, Freemantle N, Dennis CL, Hamburger R, Brown J, Chambers J, Khan KS. Antenatal peer support workers and initiation of breast feeding: cluster randomised controlled trial. Br Med J 2009; 338(b131).

BMJ

RESEARCH

Antenatal peer support workers and initiation of breast feeding: cluster randomised controlled trial

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ABSTRACT

Objective To assess the effectiveness of an antenatal service using community based breastfeeding peer support workers on initiation of breast feeding.

Design Cluster randomised controlled trial.

Setting Community antenatal clinics in one primary care trust in a multiethnic, deprived population.

Participants 66 antenatal clinics with 2511 pregnant women: 33 clinics including 1140 women were randomised to receive the peer support worker service and 33 clinics including 1371 women were randomised to receive standard care.

Intervention An antenatal peer support worker service planned to comprise a minimum of two contacts with women to provide advice, information, and support from approximately 24 weeks' gestation within the antenatal clinic or at home. The trained peer support workers were of similar ethnic and sociodemographic backgrounds to their clinic population.

Main outcome measure Initiation of breast feeding obtained from computerised maternity records of the hospitals where women from the primary care trust delivered.

Results The sample was multiethnic, with only 9.4% of women being white British, and 70% were in the lowest 10th for deprivation. Most of the contacts with peer support workers took place in the antenatal clinics. Data on initiation of breast feeding were obtained for 2398 of 2511 (95.5%) women (1083/1140 intervention and 1315/1371 controls). The groups did not differ for initiation of breast feeding: 69.0% (747/1083) in the intervention group and 68.1% (896/1315) in the control groups; cluster adjusted odds ratio 1.11 (95% confidence interval 0.87 to 1.43). Ethnicity, parity, and mode of delivery independently predicted initiation of breast feeding, but randomisation to the peer support worker service did not.

Conclusion A universal service for initiation of breast feeding using peer support workers provided within antenatal clinics serving a multiethnic, deprived population was ineffective in increasing initiation rates.

Trial registration Current Controlled Trials ISRCTN16126175.

INTRODUCTION

Breast feeding confers numerous advantages to the health of babies and their mothers, but a large proportion of women, especially in developed countries, do not initiate breast feeding.[1] In 2005 only 77% of women in England and Wales initiated breast feeding.[2] Although this has increased from 71% since 2000,[3] there is still variation across groups, with lower rates in socioeconomically deprived populations and in some ethnic minority groups. The UK government has set a target for primary care trusts to increase initiation rates for breast feeding by 2% year on year. Among other interventions to achieve this, peer support is being used.

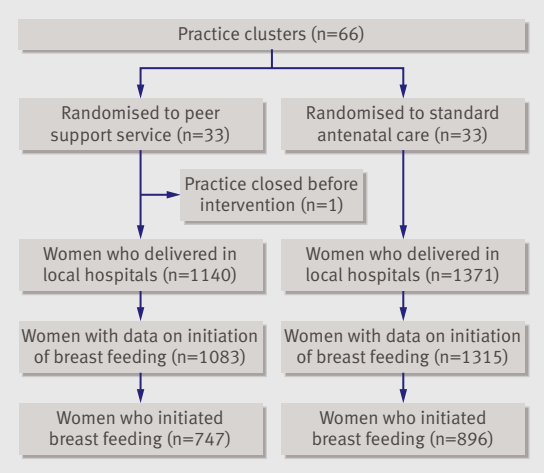
Several systematic reviews have evaluated interventions to increase breast feeding.[4-7] These found evidence from randomised controlled trials of benefit from peer or lay support on breastfeeding exclusivity and continuation mainly in women who had decided to breast feed, but no randomised controlled trials evaluating the effects on initiation of breast feeding. One subsequent small randomised controlled trial based in the United Kingdom found no improvement in initiation rates from antenatal peer support.[8] Only non-randomised studies have suggested benefit from such support on initiation rates, but these are inconclusive as a result of confounding, selection bias, or losses to follow-up.[6]

We evaluated the effectiveness of a community based antenatal service using peer support workers on initiation of breast feeding in a multiethnic deprived population.

METHODS

The study was a cluster randomised controlled trial, with the general practice antenatal clinic as the unit of randomisation. We considered a cluster design as necessary because of the high risk of contamination if peer support workers were to be located in antenatal clinics that served women in both intervention and control groups. The study setting was a primary care trust within a deprived urban area of Birmingham, which has 5500-6000 deliveries per year of which about

90% are to women from ethnic minority groups, with more than a quarter to women born outside the UK.[9] Most of the deliveries are in three hospitals (96%), with 3% in more distant hospitals and about 1% at home. We included all general practices in the primary care trust in the study. In some cases more than one practice shared the same antenatal clinic: as the peer support workers worked directly with the antenatal clinics for the purposes of trial allocation we considered these practices as one cluster. The size of the clinics varied. Eight teams of midwives worked for the primary care trust, with midwives from each team providing care at several antenatal clinics. Randomisation was stratified by size of antenatal clinic and by midwifery team and undertaken using a computer program by the trial statistician, who was blind to the identity of the antenatal clinics.



Patient flow through trial

Intervention

The intervention was a new community based antenatal breastfeeding service using peer support workers developed by the primary care trust mainly to increase its rate of initiation of breast feeding, which was lower than many primary care trusts in the UK. The service was in addition to usual antenatal care provided by midwives. It comprised 11 peer support workers for breast feeding who were recruited, as far as possible, to be peers of the women in the clinics in which they worked on the basis of ethnicity and language and to have had personal successful breast-feeding experience of several months' duration. They were trained by the infant feeding team within the primary care trust, which included specialist midwives and other health workers. The training was daily over eight weeks, based on the Unicef baby friendly breastfeeding management course, and addressed cultural beliefs and barriers appropriate to the local population. The peer support workers were oriented into the environment of the community antenatal service, and worked in their positions for three months. When we considered that the support service was fully operational the evaluation procedures were piloted for a month. The planned level of contact by a peer support worker was to make an initial introduction in the antenatal clinic followed by a minimum of two contacts, one at 24-28 weeks' gestation and the other around 36 weeks' gestation. The first of these could directly follow the initial introduction, but at least one contact was to be in the home. The duration of each support session was based on need. The peer support worker followed up women who initiated breast feeding to give postnatal support. The purpose of the antenatal consultations was to provide advice and information on the benefits of breast feeding and to be able to support women with particular cultural barriers or concerns. The peer support workers were managed by the infant feeding team but were also responsible to, and worked with, the midwives in the antenatal clinics.

All pregnant women registered with practices in the primary care trust randomised to provide the new peer support worker service were offered contact with a peer support worker. The peer support workers kept a log of women who reached 24-28 weeks' gestation, noting those who refused support and why. For those women who had a support session the peer support worker recorded any history of infant feeding and plans for feeding before giving advice, when and where each session took place, and issues covered. Women in the control clusters received standard antenatal care, which included usual information and advice from midwives on breast feeding, without input from community peer support workers. Intrapartum and early postpartum hospital care was the same for women in both intervention and control groups, which may have included advice and support from hospital (rather than community) midwives and peer support workers, the numbers of peer support workers having increased as part of the overall breastfeeding initiative of the primary care trust.

Outcome assessment

The primary outcome was initiation of breast feeding, defined as a positive response to whether the infant had had breast milk either at the time of delivery or by the time of hospital discharge, as recorded in the hospital records. Data were obtained anonymously from the three main hospitals that provide maternity care for women in the primary care trust for deliveries during the study period of 1 February to 31 July 2007. We did not include the few women who delivered in other hospitals or at home in the assessment of outcome, although those from intervention clusters would have been offered contact with a peer support worker antenatally. From hospital records we obtained information on general practice identifying code, date of delivery, age, parity, mode of delivery, ethnic group, and Townsend deprivation score. As data on outcome were supplied to the research team in an anonymised format the local research ethics committee approved that individual patient consent was not required.

Sample size

At the time the peer support worker service was planned in 2005, the initiation rate for breast feeding within the primary care trust was 58% and about 6000 deliveries took place per year. Members of the primary care trust considered that full and continued implementation of the service would be worthwhile with a 6% increase in initiation of breast feeding. To estimate the sample size for a cluster randomised trial we needed an estimate of the degree of clustering at the practice level, which was available from a previous randomised trial of postnatal care.[10] Using the approach of a previous study,[11] and taking the interpractice correlation coefficient to be 0.005 as indicated in that trial, we inflated the sample size by 2.45 times from a non-cluster randomised trial. We therefore required a total of just under 3000 women to estimate a 6% absolute difference in initiation of breast feeding with a power (1-β) of 90%.

Table 1 | Variables of women allocated to peer support for breast feeding or to standard antenatal care by a midwife. Values are numbers (percentages) of women

Variables	Peer support group	Control group	Total
Hospital:			
Women's	411 (38.0)	497 (37.8)	908 (37.9)
Heartlands	236 (21.8)	208 (15.8)	444 (18.5)
City	436 (40.3)	610 (46.4)	1046 (43.6)
Total	1083	1315	2398
Month of delivery:			
February	166 (15.3)	202 (15.4)	368 (15.3)
March	173 (16.0)	223 (17.0)	396 (16.5)
April	186 (17.2)	206 (15.7)	392 (16.3)
May	188 (17.4)	242 (18.4)	430 (17.9)
June	195 (18.0)	220 (16.7)	415 (17.3)
July	175 (16.2)	222 (16.9)	397 (16.6)
Total	1083	1315	2398
Age of mother:			
≤20	105 (9.7)	135 (10.3)	240 (10.0)
21-25	331 (30.6)	398 (30.3)	729 (30.4)
26-30	359 (33.1)	399 (30.3)	758 (31.6)
31-35	194 (17.9)	249 (18.9)	443 (18.5)
≥36	94 (8.7)	134 (10.2)	228 (9.5)
Total	1083	1315	2398
Mode of delivery:			
Spontaneous vaginal	783 (72.3)	902 (68.6)	1685 (70.3)
Instrumental vaginal	78 (7.2)	127 (9.7)	205 (8.5)
Caesarean section	222 (20.5)	286 (21.7)	508 (21.2)
Total	1083	1315	2398
Parity:			
Primiparous	376 (35.1)	440 (33.9)	816 (34.4)
Multiparous	695 (64.9)	858 (66.1)	1553 (65.6)
Total	1071	1298	2369
Parity not known	12	17	29
Ethnic group:			
White British	87 (8.4)	129 (10.3)	216 (9.4)
African-Caribbean	130 (12.6)	217 (17.3)	347 (15.1)
Pakistani	435 (42.0)	490 (39.0)	925 (40.4)
Indian	115 (11.1)	91 (7.2)	206 (9.0)
Bangladeshi	110 (10.6)	133 (10.6)	243 (10.6)
Other Asian	40 (3.9)	42 (3.3)	82 (3.6)
Mixed	40 (3.9)	38 (3.0)	78 (3.4)
Other	78 (7.5)	117 (9.3)	195 (8.5)
Total	1035	1257	2292
Ethnic group not known	48	58	106
Townsend 10th:			
First	746 (70.2)	906 (69.9)	1652 (70.0)
Second	126 (11.9)	152 (11.7)	278 (11.8)
Third	78 (7.3)	88 (6.8)	166 (7.0)
Fourth to 10th	113 (10.6)	151 (11.6)	264 (11.2)
Total	1063	1297	2360
Townsend 10th not known	20	18	38

Women of unknown breastfeeding status were excluded.

Statistical analysis

We undertook the statistical analysis according to the intention to treat principle. The women in the trial were described by a range of criteria prespecified in the data collection instrument. To account for over dispersion for the comparison of outcomes between trial groups, a conventional manner is to treat clusters (in this case the antenatal clinics) as random effects in the analysis.[12] In this way extra binomial variability can be accounted for in both the point estimate of the effect of treatment and the confidence intervals describing the degree of over dispersion in a manner adaptive to the observed clustering. For the analysis of the primary outcome we prespecified in our statistical analysis plan a non-linear mixed model with a logit link and binomial error, including a random effect with a Gaussian error structure. In the principal model we included only the intervention group as a fixed effect and the cluster as a random effect. Missing data were not imputed. In further prespecified exploratory analyses we examined the potential impact of the midwifery team (which covered more than one practice) by adding the team delivering care as a further fixed effect. The effect of parity, ethnicity, age, deprivation score, mode of delivery, and hospital on initiation of breast feeding was also examined. We did not adjust for multiple testing, as a single primary analysis had been prespecified in the statistical analysis. We used multiple imputation techniques to examine the potential effects of missing data. All analyses were done in SAS version 9.1 (SAS Institute, Cary, NC).

RESULTS

Of 66 general practice antenatal clinic clusters in the primary care trust, 33 were randomly allocated to the peer support service (intervention group) and 33 to standard antenatal care (figure). One small intervention practice closed after randomisation but before intervention. During the six months of the study 2511 women delivered in the three hospitals; 1140 (45.4%) received antenatal care in the 32 intervention practices and 1371 (54.6%) in the 33 control practices. Data on initiation of breast feeding were available for 2398 women (95.5%); 1083 (95.0%) in the intervention group and 1315 (96.0%) in the control group.

Table 1 shows the hospital, month of delivery, and other characteristics of women by trial group. Although there were generally no clinically important differences between the groups, the intervention group did have more deliveries in one of the three hospitals and fewer African-Caribbean women than the control group.

Primary outcome

Initiation rates for breast feeding did not differ between intervention and control groups; 69.0% and 68.1%. The cluster adjusted odds ratio was 1.11 (95% confidence interval 0.87 to 1.43, P=0.40, interpractice correlation coefficient 0.07; table 2). These rates excluded women with missing data on initiation of breast feeding. If missing data were assumed to be for women who had not initiated breast feeding then initiation rates would be 65.5% and 65.4%. Multiple imputation techniques provided a similar result to the analysis using complete data: cluster adjusted odds ratio 1.10 (0.86 to 1.42, P=0.44).

Effects of mothers' characteristics

Initiation of breast feeding varied according to several sociodemographic and delivery characteristics (table 3). Initiation was lower in Heartlands Hospital, younger and older women, those who had a Caesarean section, and multiparous women. Differences were large according to ethnic group, with the lowest initiation of breast feeding among white British women and the highest among African-Caribbean women. Substantial variation was found among Asian ethnic groups, with the lowest initiation of breast feeding among Bangladeshi women and the highest among women of Indian (subcontinent) origin. No difference was found for deprivation score, but 70% of the sample was in the lowest 10th. Multivariable analysis with adjustment for cluster showed that being from an ethnic minority group compared with being white British, and being primiparous were independently associated with an increased likelihood of initiating breast feeding (table 4). Accounting for confounding factors in the multivariable model, however, had little effect on the primary outcome.

Peer support worker logs

Logs completed by the peer support worker were analysed for women in the intervention group with a recorded expected date of delivery between 1 February and 31 July 2007. Records of a contact were available for 912 women (80.0% of deliveries during the period), and 846 (74.2%) had a support session. Of the women contacted, 64 (7%) refused a support session because they had already decided to bottle feed (n=21) or breast feed (n=43). The mean duration of the first support session was 13.1 (SD 10.2) minutes, and 799 (94.4%) took place in the clinic, with only 11 (1.3%) at home. Of the 846 women who accepted a first support session, 351 (41.5%) had a second session, again predominantly in the clinic, and 25 (3.0%) a third. The first support session took place at a mean of 28 (SD 6.5) weeks' gestation and the second at 34.5 (SD 3.6) weeks.

Before the start of the first support session the women were asked whether they had made any plans about feeding: 500 (59.1%) planned to breast feed, 174 (20.6%) were considering breast feeding, 35 (4.1%) planned to use both breast and bottle, 51 (6%) planned to bottle feed, and 64 (7.6%) were undecided. The issues discussed in the first support session included health benefits for the baby of being breast fed (n=809, 95.6%), health benefits for the mother (n=794, 93.9%), convenience of breast feeding (n=689, 81.4%), cost of feeding (n=603, 71.3%), perceived difficulties of breast feeding (n=499, 59.0%), partner's attitudes towards breast feeding (n=362, 42.8%), family attitudes towards breast feeding (n=309, 36.5%), discard of colostrum (n=265, 31.3%), and other cultural issues (n=56, 6.6%).

DISCUSSION

This large cluster randomised controlled trial showed no effect on initiation of breast feeding of a universal community based antenatal breastfeeding peer support service provided in a primary care trust with a high proportion of women from ethnic minority groups and a deprived population. Peer support was chosen by the primary care trust as the option most likely to increase initiation of breast feeding among women with these characteristics, as suggested by evidence into practice briefing by the UK health service.[13] However almost all the evidence on the effect of peer support on initiation of breast feeding has been from non-randomised studies, and we found no evidence on universal peer support from trials. Thus it was considered good practice to evaluate the peer support worker service, alongside its implementation, in a randomised controlled trial.

The lack of effect shown in this trial is consistent with the findings of a randomised controlled trial in one general practice in Scotland,[8] which aimed to increase

Table 2 | Breastfeeding status in women allocated to peer support for breast feeding or to standard antenatal care by a midwife

	Peer support group		Control group		Total	
Breastfeeding status	No (%)	% of total	No (%)	% of total	No (%)	% of total
Initiated	747 (69.0)	65.5	896 (68.1)	65.4	1643 (68.5)	65.4
Not initiated	336 (31.0)	29.5	419 (31.9)	30.6	755 (31.5)	30.1
Total	1083 (100)	—	1315 (100)	—	2398 (100)	—
Not known	57	5	56	4	113	5.5
Overall total	1140	100	1371	100	2511	100

the initiation and continuation of breast feeding. This report was published after the start of our trial and too recently to be included in systematic reviews. Antenatal peer support comprised one home visit, with further visits if requested. The trial included 235 unselected women, with group allocation stratified for previous experience of breast feeding. Initiation rates were similar—54.5% in the peer support group and 53.1% in the control group. Continuation of breast feeding to four months was also similar between the groups.

Table 3 | Initiation of breast feeding and variables for women. Values are numbers (percentages) of women

Variable	Breast feeding initiated	Breast feeding not initiated	Total
Hospital:			
Women's	630 (69.4)	278 (30.6)	908
Heartlands	285 (64.2)	159 (35.8)	444
City	728 (69.6)	318 (30.4)	1046
Total	1643 (68.5)	755 (31.5)	2398
Month of delivery:			
February	255 (69.3)	113 (30.7)	368
March	272 (68.7)	124 (31.3)	396
April	267 (68.1)	125 (31.9)	392
May	298 (69.3)	132 (30.7)	430
June	280 (67.5)	135 (32.5)	415
July	271 (68.3)	126 (31.7)	397
Total	1643 (68.5)	755 (31.5)	2398
Age of mother:			
≤20	152 (63.3)	88 (36.7)	240
21-25	511 (70.1)	218 (29.9)	729
26-30	543 (71.6)	215 (28.4)	758
31-35	289 (65.2)	154 (34.8)	443
≥36	148 (64.9)	80 (35.1)	228
Total	1643 (68.5)	755 (31.5)	2398
Mode of delivery:			
Spontaneous vaginal delivery	1163 (69.0)	522 (31.0)	1685
Instrumental	155 (75.6)	50 (24.4)	205
Caesarean section	325 (64.0)	183 (36.0)	508
Total	1643 (68.5)	755 (31.5)	2398
Parity:			
Primiparous	624 (76.5)	192 (23.5)	816
Multiparous	997 (64.2)	556 (35.8)	1553
Total	1621 (68.4)	748 (31.6)	2369
Parity not known	22 (75.9)	7 (24.1)	29
Ethnic group:			
White British	106 (49.1)	110 (50.9)	216
African-Caribbean	294 (84.7)	53 (15.3)	347
Pakistani	573 (61.9)	352 (38.1)	925
Indian	161 (78.2)	45 (21.8)	206
Bangladeshi	137 (56.4)	106 (43.6)	243
Other Asian	67 (81.7)	15 (18.3)	82
Mixed	56 (71.8)	22 (28.2)	78
Other	167 (85.6)	28 (14.4)	195
Total	1561 (68.1)	731 (31.9)	2292
Ethnic group not known	82 (77.4)	24 (22.6)	106
Townsend 10th:			
First	1129 (68.3)	523 (31.7)	1652
Second	182 (65.5)	96 (34.5)	278
Third	114 (68.7)	52 (31.3)	166
Fourth to 10th	189 (71.6)	75 (28.4)	264
Total	1614 (68.4)	746 (31.6)	2360
Townsend 10th not known	29 (76.3)	9 (23.7)	38

Table 4 | Multiple logistic regression for initiation of breast feeding

Variable	Odds ratio (95% CI)
Parity:	
Primiparous	1.0 (Reference)
Multiparous	0.57 (0.46 to 0.70)
Not known	1.03 (0.42 to 2.51)
Ethnic group:	
White British	1.0 (Reference)
African-Caribbean	6.48 (4.32 to 9.72)
Pakistani	1.89 (1.38 to 2.58)
Indian	3.78 (2.45 to 5.84)
Bangladeshi	1.56 (1.07 to 2.29)
Other Asian	4.83 (2.57 to 9.08)
Mixed	2.81 (1.59 to 4.97)
Other	6.17 (3.78 to 10.07)
Not known	3.63 (2.12 to 6.20)
Mode of delivery:	
Spontaneous vaginal	1.0 (Reference)
Instrumental vaginal	1.05 (0.73 to 1.51)
Caesarean section	0.70 (0.56 to 0.88)

Other randomised controlled trials of interventions incorporating antenatal peer support have been selective, including only women considering breast feeding, with postnatal peer support to increase continuation or exclusivity as their primary purpose. Although only one of these trials specified initiation as an outcome, five reported data on initiation. A UK trial, where selection for eligibility meant that initiation of breast feeding was high, found no effect of home based peer support on any breastfeeding outcomes.[14] Two small trials in the US did find an effect of peer support on initiation of breast feeding where the intervention incorporated home based antenatal peer contact as well as daily postpartum peer support in hospital.[15 16] Two trials in the developing world, where initiation was almost 100%, examined timing of initiation, and one found early initiation to be more common in the peer support group,[17] whereas the other found no difference.[18]

Strengths and weaknesses of the study

Our trial is larger than any other of the peer support trials that reported on initiation of breast feeding we found through a systematic search of the literature. The coverage of women was high but the intensity of the peer contact may be a limitation because this was less than planned. The service was universal, with 80% of women offered support and 74% taking up the offer. Two antenatal sessions were planned but these were attended by only 42% of women. In addition one session should have been at home but this rarely took place, and many sessions were short. It is possible that

more contacts took place than were recorded, since a parallel qualitative study found that some peer support workers had difficulties in completing the activity logs, which is perhaps unsurprising given that the peer support workers were selected for their peer characteristics rather than administrative experience. Moreover, despite recruiting peer support workers who were ethnically and linguistically appropriate for the local population, exact matches for the large number of ethnic and linguistic groups were not possible.

Another limitation of the trial could be that data on initiation of breast feeding were obtained from the routinely collected maternity records, which are not generally considered to be as error free as data specifically collected by a research team. However, this allowed a low loss to follow-up, at only 5%, and the quality of the data was similar across trial groups. Moreover, primary care trusts in the UK use such hospital based data to assess their targets for initiation of breast feeding.

Although the study groups did not differ in initiation rates a 10% absolute increase occurred from the rate when the primary care trust had decided to set up the new service. During this period other initiatives to increase initiation of breast feeding, especially its recording, were also implemented. This included increased hospital based peer support and much closer scrutiny and subsequent changes to the quality of the data given to primary care trusts by the hospitals to inform initiation rates. This illustrates the necessity of robust evaluation using a randomised controlled design rather than studies with a before and after design.

Meaning of the study

The lack of effect found from the predominately antenatal clinic based peer support worker service evaluated in this study suggests that such a service should not be adopted as standard care. If the service had included more home based contact it might have had an effect, although in the two other UK trials[8 14] peer support was entirely home based and no improvement occurred in any breastfeeding outcomes. The service might have needed to be more intensive, and in the other UK trials contact antenatally comprised only one visit for most women, fewer than in the present trial. In the two US trials, however, substantial improvements in initiation of breast feeding were shown, with only one and three antenatal contacts alongside peer support in hospital.[15 16] Perhaps the amount of advice on breast feeding and support already provided routinely in antenatal clinics in the UK allows for little additional gain from other interventions to increase initiation rates. A more intensive universal home based service would require greater investment. Rather than providing this, peer support might be more effective if targeted at specific groups, such as those women not planning to breast feed, which was around 40% of participants in this study, or those for whom routine advice on breast feeding is less accessible because of linguistic difficulties. Future service interventions, however, must be subject to proper evaluation.

Conclusion

We conclude that a universal, predominantly antenatal clinic based, peer support worker service for initiation of breast feeding serving a multiethnic deprived population is ineffective in increasing initiation rates.

WHAT IS ALREADY KNOWN ON THIS TOPIC

Peer or lay support is effective in prolonging exclusive breast feeding

Non-randomised studies show an association between peer support and higher rates for initiation of breast feeding

WHAT THIS STUDY ADDS

A universal, predominantly antenatal clinic based, peer support worker service for breast feeding is ineffective in increasing initiation rates

Contributors: CMacA, KJ, NF, C-LD, JC, and KK designed the study. CMacA, KJ, and LI coordinated the day to day management of the trial. NF was the trial statistician. CMacA, KJ, LI, RH, JB, and KK sat on a trial management committee. CMacA, KJ, LI, NF, C-LD, JB, and KK formed the trial steering committee. CMacA drafted the manuscript and all authors commented on the manuscript and approved the final draft. CMacA is the guarantor. The funding body was not involved in the study design, collection, analysis, or interpretation of the data. RH, JB, and JC contributed to the writing of the paper.
Funding: Heart of Birmingham Teaching Primary Care Trust.
Competing interests: RH, JB, JC are from the Heart of Birmingham Primary Care Trust and were involved in the employment and management of the peer support workers.
Ethical approval: Not required.

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Accepted: 1 November 2008

Appendix 2:
CMAJ Publication

Ingram L, MacArthur C, Khan K, Deeks JJ, Jolly K. Effect of antenatal peer support workers on breastfeeding initiation: A systematic review Can Med J 2010; 182(16):1739-46.

Appendix 3:

Search strategy for systematic reviews

Cochrane

#1 breast next feed* (1406)
#2 MeSH descriptor Breast Feeding, this term only (814)
#3 (#1 OR #2) (1406)
#4 peer* (3914)
#5 "peer counselling" (26)
#6 "lay support" (5)
#7 "volunteer support" (4)
#8 MeSH descriptor Voluntary Workers, this term only (134)
#9 peer next support (123)
#10 MeSH descriptor Peer Group, this term only (402)
#11 (#4 OR #5 OR #6 OR #7 OR #8 OR #9 OR #10) (4046)
#12 (#3 AND #11) (99)

MEDLINE

1. Breast Feeding/ or breast feed$.mp. (21686)
2. infant feed$.mp. (2347)
3. 1 or 2 (22547)
4. exp Voluntary Workers/ (6662)
5. social support/ (31337)
6. peer$.mp. (32280)
7. peer group/ (8505)
8. 4 or 5 or 6 or 7 (68527)
9. 3 and 8 (614)
10. limit 9 to "therapy (sensitivity)" (122)
11. from 10 keep 1-122 (122)

EMBASE

1. Breast Feeding/ or breast feed$.mp. (10074)
2. infant feed$.mp. (2454)
3. 1 or 2 (11326)
4. peer counsel$.mp. (124)
5. peer$.mp. (17982)
6. peer counseling/ (55)
7. social support/ (14025)
8. volunteer/ (10448)
9. peer group/ (1074)
10. 4 or 5 or 6 or 7 or 8 or 9 (41821)
11. 3 and 10 (212)
12. limit 11 to "treatment (2 or more terms high sensitivity)" (97)
13. from 12 keep 1-97 (97)

British Nursing Index

1. breast feed$.mp. (591)
2. peer$.mp. (514)
3. volunteer$.mp. (441)
4. lay$.mp. (423)
5. peer support.mp. (81)
6. volunteer.mp. (164)
7. lay support.mp. (4)
8. peer group.mp. (22)
9. 2 or 3 or 4 or 5 or 6 or 7 or 8 (1359)
10. 1 and 9 (10)

CINAHL (EBSCO)

1. peer* (abstract)
2. (or) volunteer* (abstract)
3. (and) breast* (abstract)

Appendix 4:
HOBBIT six month follow-up study

Appendix 4.1: Midwifery publication

Jolly K, Ingram L, Freemantle N, Khan K, Chambers J, Hamburger R, Brown J, Dennis CL, MacArthur C. Effect of a peer support worker service on breast-feeding continuation in the UK: a randomised controlled trial. Midwifery 2011; 28(6): 740-5.

Appendix 4.2: HOBBIT follow-up, six month questionnaire

Appendix 4.3: HOBBIT follow-up, baseline questionnaire

Appendix 4.4: Antenatal and postnatal peer support worker activity log

Trial no: «StudyId»

HoBBIT

Heart of Birmingham Breastfeeding Initiation Trial

6 Month Questionnaire

1. **Baby's date of birth: _____ / _____ / _____**

2. **What type of delivery did you have?**

   ☐ Normal vaginal delivery
   ☐ Forceps or vacuum extraction (ventouse) delivery
   ☐ Planned Caesarean section
   ☐ Emergency Caesarean section

3. **Did you have one baby or a multiple birth?**

   ☐ Single birth
   ☐ Multiple birth If multiple, how many babies did you have? _____

4. **Did you breastfeed your baby at all (even if only once)?**

   ☐ Yes ☐ No (*if No, go to question 12)*

   If Yes, when did you first breastfeed your baby?

   ☐ Within about 1 hour of delivery
   ☐ Later than this but within the first day
   ☐ On the 2nd day
   ☐ On the 3rd day
   ☐ On the 4th day or later

5. **How old was your baby when you stopped breastfeeding him/her?**

   _____ days _____ weeks _____months

   ☐ I am still breastfeeding

6. **If you have stopped breastfeeding, what were your reasons for stopping?**

   ……

   ……

   ……..

7. How old was your baby when you first gave him / her any formula milk?

_____ days _____ weeks _____ months

☐ Never had formula milk

8. If he / she had formula milk, why did you decide to give this?

……

……

……..

9. Did you have any problems with your breastfeeding?

☐ Yes ☐ No

If Yes, what were they? (tick all that apply)

☐ Sore/cracked nipples
☐ Mastitis/infection/abscess
☐ Didn't have enough milk
☐ Baby not 'latching' on properly
☐ Engorgement
☐ Other (please say what) ……

……

10. What made you decide to breastfeed your baby?

……

……

……..

11. Before your baby was born, who influenced you in your decision to breastfeed? (tick all that apply).

☐ Midwife
☐ G.P. (family doctor)
☐ Peer support worker
☐ Relative/friend
☐ People at antenatal classes
☐ Other (please say who) ……..

12. What made you decide to bottle feed your baby?

……

……

……..

13. If you saw a peer support worker to get information, advice or help about breastfeeding, how many times did you see her?

Number of times before birth: _____

Number of times after birth: _____

14. Did you go to any antenatal classes about breastfeeding?

- ☐ Never
- ☐ Once
- ☐ Twice
- ☐ Three times
- ☐ Four or more times

15. Before your baby was born, did you feel that you had enough information/advice/help about breastfeeding from health service staff?

- ☐ All I could possibly need
- ☐ Some, but not enough
- ☐ Hardly any
- ☐ Did not want any

16. When you were in hospital after your baby was born, did you feel that you had enough information/advice/help about breastfeeding?

- ☐ All I could possibly need
- ☐ Some, but not enough
- ☐ Hardly any
- ☐ Did not want any

17. When you were at home after the birth, did you feel that you had enough information/advice/help about breastfeeding from health service staff?

- ☐ All I could possibly need
- ☐ Some, but not enough
- ☐ Hardly any
- ☐ Did not want any

18. Did you see any adverts anywhere in your health area that were about breastfeeding?

☐ Yes ☐ No

If Yes, what and where were these?

……

……

……..

Thank you very much for answering this questionnaire. If there is anything else you would like to say, please use the space below.

……

……

……..

……

……

……..

……

……

……..

THANK YOU FOR COMPLETING THIS QUESTIONNAIRE

PLEASE USE THE ENVELOPE THAT CAME WITH IT TO RETURN IT TO THE STUDY OFFICE

NO STAMP IS REQUIRED

HoBBIT

Trial Sticker……

Hospital No……

MOTHER'S BASELINE QUESTIONNAIRE

PLEASE ESNSURE *ALL* SECTIONS ARE COMPLETED

Today's date (dd-mm-yyyy)**:** _ _ / _ _ / _ _ _ _

Baby's due date (dd-mm-yyyy)**:** _ _ / _ _ / _ _ _ _

Last name: ……

First name(s): ……

Date of birth (dd-mmm-yyyy)**:** _ _ / _ _ _ / _ _ _ _

Address: ……

……

Town: ……

Post code: ……

Home tel. no.: ……

Mobile no.: ……

Relatives tel. no.: ……

Relationship to patient: ……

Registered GP: ……

GP address: ……

……

Town: ……

Post code: ……

Please turn over.

What is your ethnic group?

White:	**Asian:**	**Black or Black**
☐ British	☐ Indian	☐ Caribbean
☐ Irish	☐ Pakistani	☐ African
☐ Other	☐ Bangladeshi	☐ Other
	☐ Other	

☐ Chinese ☐ Mixed ☐ Any other group not listed ☐ Refused

What languages do you speak? ……..

How many babies have you previously had? ……..

Have you ever breastfed a previous baby? ☐ Yes ☐ No

If 'Yes', what is the longest time that you breastfed for?

_____ day/s _____ week/s _____ month/s

Do you have any plans about feeding this baby?
☐ Yes ☐ No

If 'Yes' what are these?

……

When your baby is 6 months old, how would you prefer us to contact you?

☐ By postal questionnaire in English

☐ By telephone in (Please specify language)……

Thank you for completing this questionnaire. Please return to the person who gave it to you.

For office use only:

CPSW: …… GP: ……

CPSW ANTENATAL ACTIVITY LOG

To be completed for all women in HoBt PCT who book for maternity care

Trial number: ☐☐☐☐☐☐ **GP code:** ☐☐☐☐☐☐

Hospital Number: ☐☐☐☐☐☐☐☐☐☐☐ **CPSW number:** ☐☐

1. Estimated date of delivery: ___ / ___ / ___ **2. DoB:** ___ / ___ / ___

3. Estimated date of reaching 28 weeks: ___ / ___ / ___
(point at which CPSW investigates if no contact)

4. Ethnic group: ☐ White ☐ Asian: ……
☐ Black ☐ Other: ……

5. Pregnancy did not progress in HoB: ☐ Moved ☐ Miscarriage ☐ Termination

6. Woman told midwife did not want contact with CPSW: ☐

FIRST CPSW CONTACT

7.
☐ Had first support session
☐ Woman did not want further contact as definitely going to bottle feed
☐ Woman did not want further contact as definitely going to breast feed
☐ Arranged support session one: …… (date/time)

ANTENATAL CPSW SUPPORT SESSION ONE

8. Today's date: ___ / ___ / ___ **9. Weeks gestation:** ……

10. Place/method: ☐ Clinic ☐ Home ☐ Other: …. ……

11. Parity: ☐ First baby
☐ Subsequent baby: number (including this pregnancy) ……
Previously breastfed? ☐ Yes, longest duration ……. weeks/months
☐ No, only ever bottle-fed

12. Feeding plans before first contact: (tick one only)

☐ Definitely breast ☐ Considering breast ☐ Definitely bottle ☐ Mixed ☐ Undecided

13. Issues covered: (tick all that apply)

☐ Health benefits to baby
☐ Health benefits to mother
☐ Convenience
☐ Cost
☐ Difficulties
☐ Attitudes of partner
☐ Attitudes of other family members
☐ Discarding colostrum
☐ Other cultural issues: ……
☐ Other issues: ……

14. Duration of contact: ……minutes

15.
☐ Arranged next contact (date/time) ……
☐ Will follow-up later
☐ Does not want further contact - Why? ……

PLEASE ENSURE ALL SECTIONS HAVE BEEN COMPLETED IN FULL

Trial number: ☐☐☐☐☐☐ **GP code:** ☐☐☐☐☐☐

Hospital Number: ☐☐☐☐☐☐☐☐☐☐☐ **CPSW number:** ☐☐

ANTENATAL CPSW SUPPORT SESSION TWO

16. Today's date: ___ / ___ / ___ **17. Weeks gestation:** ……

18. Place/method: ☐ Clinic ☐ Home ☐ Other:……

19. Feeding plans at second contact: (tick one only)

☐ Definitely breast ☐ Considering breast ☐ Definitely bottle ☐ Mixed ☐ Undecided

20. Issues covered: (tick all that apply)

☐ Health benefits to baby
☐ Health benefits to mother
☐ Convenience
☐ Cost
☐ Difficulties
☐ Attitudes of partner
☐ Attitudes of other family members
☐ Discarding colostrum
☐ Other cultural issues: ……
☐ Other issues: ……

21. Duration of contact: …… mins

22. ☐ No further antenatal contact planned
☐ Further antenatal contact arranged …… (date/time)
☐ Refused any postnatal contact - Why?: ……

ANTENATAL CPSW SUPPORT SESSION THREE

23. Today's date: ___ / ___ / ___ **24. Weeks gestation:** ……

25. Place/method: ☐ Clinic ☐ Home ☐ Other:……

26. Feeding plans at second contact: (tick one only)

☐ Definitely breast ☐ Considering breast ☐ Definitely bottle ☐ Mixed ☐ Undecided

27. Issues covered: (tick all that apply)

☐ Health benefits to baby
☐ Health benefits to mother
☐ Convenience
☐ Cost
☐ Difficulties
☐ Attitudes of partner
☐ Attitudes of other family members
☐ Discarding colostrum
☐ Other cultural issues: ……
☐ Other issues: ……

28. Duration of contact: …… minutes

29. ☐ No further antenatal contact planned
☐ Further antenatal contact arranged …… (date/time)
☐ Refused any postnatal contact - Why?: ……

PLEASE ENSURE ALL SECTIONS HAVE BEEN COMPLETED IN FULL

Appendix 5:
BMJ Publication (ii)

Jolly K, Ingram L, Khan KS, Deeks JJ, Freemantle N, MacArthur C. Systematic review of peer support for breastfeeding continuation: metaregression analysis of the effect of setting, intensity, and timing. Br Med J 2012; 344(d8287).

BMJ

BMJ 2012;344:d8287 doi: 10.1136/bmj.d8287 (Published 25 January 2012)

RESEARCH

Systematic review of peer support for breastfeeding continuation: metaregression analysis of the effect of setting, intensity, and timing


OPEN ACCESS

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Abstract

Objective To examine the effect of setting, intensity, and timing of peer support on breast feeding.

Design Systematic review and metaregression analysis of randomised controlled trials.

Data sources Cochrane Library, Medline, CINAHL, the National Research Register, and British Nursing Index were searched from inception or from 1980 to 2011.

Review methods Study selection, data abstraction, and quality assessment were carried out independently and in duplicate. Risk ratios and 95% confidence intervals were calculated for individual studies and pooled. Effects were estimated for studies grouped according to setting (high income countries, low or middle income countries, and the United Kingdom), intensity (<5 and ≥5 planned contacts), and timing of peer support (postnatal period with or without antenatal care), and analysed using metaregression for any and exclusive breast feeding at last study follow-up.

Results Peer support interventions had a significantly greater effect on any breast feeding in low or middle income countries (P<0.001), reducing the risk of not breast feeding at all by 30% (relative risk 0.70, 95% confidence interval 0.60 to 0.82) compared with a reduction of 7% (0.93, 0.87 to 1.00) in high income countries. Similarly, the risk of non-exclusive breast feeding decreased significantly more in low or middle income countries than in high income countries: 37% (0.63, 0.52 to 0.78) compared with 10% (0.90, 0.85 to 0.97); P=0.01. No significant effect on breast feeding was observed in UK based studies. Peer support had a greater effect on any breastfeeding rates when given at higher intensity (P=0.02) and only delivered in the postnatal period (P<0.001), although no differences were observed of its effect on exclusive breastfeeding rates by intensity or timing.

Conclusion Although peer support interventions increase breastfeeding continuation in low or middle income countries, especially exclusive breast feeding, this does not seem to apply in high income countries, particularly the United Kingdom, where breastfeeding support is part of routine postnatal healthcare. Peer support of low intensity does not seem to be effective. Policy relating to provision of peer support should be based on more specific evidence on setting and any new peer services in high income countries need to undergo concurrent evaluation.

Introduction

Breast feeding, both exclusively and partially, confers health benefits to infants and mothers. This led to the World Health Organization's recommendation that all babies should be exclusively breast fed for the first six months after birth.[1] Breastfeeding rates are, however, suboptimal in many countries.[2] Overall, 76% of women in the United Kingdom and 74% in the United States reported initiation of breast feeding, but rates are considerably lower in some regions within countries. Although many low and middle income countries[3] have high rates of some degree of breast feeding, exclusive breast feeding even up to four months is often low (50% in Bangladesh and 29% in Pakistan).[2]

A Cochrane systematic review[4] of trials up to 2005 reported that lay support significantly reduced the risk of not breast feeding: not breast feeding at all (at end of studies) by 14% (95% confidence interval 2% to 24%) and not exclusively breast

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Extra material supplied by the author (see http://www.bmj.com/content/344/bmj.d8287?tab=related#webextra)

Details of search strategy
Web references w1-w14

feeding by 28% (10% to 43%). The results of the studies for both analyses showed substantially statistically significant heterogeneity, with I^2 values (a measure of the percentage of total variance across studies attributable to the heterogeneity rather than to chance) of 76% and 97%, respectively. In this situation, explanations for the observed differences in effects should be explored as these can provide useful information for generating guidance.

The UK National Institute for Health and Clinical Excellence issued guidance that peer support programmes should be used to increase breast feeding, especially among women with low incomes.[5] However, none of the four UK based randomised controlled trials and the one quasi-randomised trial were able to show significant improvements in any or exclusive breastfeeding rates.[6-10] We hypothesised that differences in effects between studies may result from different levels of routine support for breast feeding in different settings or the intensity or timing of the delivery of the peer support intervention. It is probable that in settings where the routine level of support for breastfeeding mothers is high, more intensive interventions would be required to achieve an effect.

We carried out a systematic review and meta-analyses of the effectiveness of peer support on breast feeding, investigating the effect of setting, intensity, and timing of the intervention on continuation of any and of exclusive breast feeding.

Methods

Peer support was defined as support offered by women who have received appropriate training and either have themselves breast fed or have the same socioeconomic background, ethnicity, or locality as the women they are supporting. Peer supporters may be voluntary or receive basic remuneration or expenses.

We looked at two outcomes: any breast feeding at the end of the study follow-up and exclusive breast feeding at the end of the study follow-up. We used each paper's definition of exclusive breast feeding, which in most was the definition used by WHO.[1]

Literature search

We identified potentially relevant citations through a comprehensive electronic search of the following bibliographic databases and resources: British Nursing Index (1994-June 2011), CINAHL (1967-2011), the Cochrane Library, Embase (1974-June 2011), Medline (1948-June 2011), and controlled trials website (see web extra on bmj.com for search terms). We manually searched the reference lists of retrieved articles.

A form containing inclusion and exclusion criteria was used to select citations and papers. To be included the trials needed to have recruited pregnant or postpartum women, provided the peer support intervention in the antenatal and postnatal period or postnatal period only, had usual care as the comparator, reported any or exclusive breast feeding at least four weeks postpartum, and used randomisation to create the study groups.

No language restrictions were applied. Two reviewers (LI and KJ) obtained and assessed all citations and hard copies of potentially eligible papers for relevance. Uncertainties were resolved in consultation with other reviewers (CM and KSK).

Data extraction and risk of bias assessment

Two reviewers (LI and KJ) independently extracted data on participants, intervention (including setting, intensity, and timing of peer support) and comparator arms, study design, methods, and results. Where participants were missing from follow-up we assumed that they had stopped breast feeding, as is standard practice in meta-analyses in this specialty.[4 11] The same two reviewers independently assessed the risk of bias according to the methods in the Cochrane handbook,[12] documenting the quality of random sequence generation and allocation concealment, description of dropouts and withdrawals, blinded outcome assessment, and selective outcome reporting.

Data synthesis

Where available we used risk ratios, with 95% confidence intervals, or we calculated these from other reported data. Although trials typically discuss the relative proportions of women still breast feeding, we meta-analysed the relative risk of not breast feeding, as it is more likely to be constant across settings where initiation rates vary. Using the relative risk of not breast feeding predicts effective interventions to make a greater absolute impact in settings where more women fail to continue breast feeding than in settings where continued breast feeding is already common, whereas meta-analysis of the relative risk of still breast feeding would predict the opposite pattern, which is less tenable.[13] We avoided odds ratios as they risk being misinterpreted when event rates are high, as with "any" breast feeding in low or middle income countries.[14]

We derived the relative risk of not breast feeding and not exclusively breast feeding at last study follow-up along with 95% confidence intervals and explored both clinical heterogeneity (by qualitatively comparing their characteristics among included studies) and statistical heterogeneity (using χ^2 tests of heterogeneity and the I^2 statistic to measure heterogeneity[15]). We combined results from included studies for each outcome to give an overall estimate of the treatment effect using random effects models throughout. For cluster trials we computed the design effect from data presented in the reports (intraclass correlation coefficients and cluster adjusted estimates) and adapted the standard errors of the relative risk to make appropriate allowance for clustering.[14] For example, consider one scenario with a high continuation of breast feeding of 50% and another where continuation is less common, such as 20%. If peer support yielded a relative risk of 0.5 for not continuing breast feeding, this would predict that 25% (0.5×50%) more women (a total of 75%) would breast feed in the first scenario and 40% (0.5×80%) more (a total of 60%) in the second. The absolute benefit of the intervention would be largest in the scenario where most improvement could be made. This seems more tenable than the converse obtained by considering a relative risk of 2.0 for continuing breast feeding, which predicts increases in breast feeding of 50% (a total of 100%) in the first scenario compared with a smaller absolute increase of only 20% (a total of 40%) for the second scenario. Where intraclass correlation coefficients were not reported we computed a design effect using the mean intraclass correlation coefficient from the trials in which they were available.

We explored three a priori hypotheses for the differences in the effect of peer support on any and exclusive breast feeding: setting (high income and middle or low income countries[16]), intensity of the peer support intervention (<5 or ≥5 planned contacts); and timing of the support (antenatal and postnatal or postnatal only). For each hypothesis we subgrouped studies according to their characteristics and we used a random effects metaregression model to determine the significance of differences in effect between the subgroups for both outcomes. Owing to the restricted number of trials we entered only one covariate in each analysis. We investigated the effectiveness of peer support in the United Kingdom using meta-analysis only,

not metaregression. This separate analysis was justified given the policy recommendation for peer support in the United Kingdom, against a highly developed routine community postnatal care service. For all analyses we used the metan and metareg functions in Stata (version 11).

Results

The search identified 2160 citations, of which 612 duplicates and review articles were excluded. Screening identified 32 potentially relevant citations for which full text articles were obtained and assessed for eligibility. Seventeen were eligible and included in the review,[6 8-10 17-29 30] but only 15 had data that enabled inclusion in the quantitative syntheses. Data in two studies could be included only descriptively in the review (fig 1⇓).[9 17] A large cluster randomised controlled trial reported its results separately for the three study countries,[18] owing to differences in population breastfeeding rates, provision of healthcare, and population characteristics. The data for each country are included as separate studies in the meta-analyses.[18]

Description of studies

Four studies were based in the United Kingdom, five in the United States,[17 19-22] two in Canada,[23 24] two in Brazil,[25 26] and one each in Mexico,[27] Bangladesh,[28] the Philippines,[29] and sub-Saharan Africa (in Burkina Faso, Uganda, and South Africa)[18] (table 1⇓). The number of planned contacts ranged from one to 10 or more, with five studies categorised as "less intensive" (<5 planned contacts)[6 9 10 21 27] and 12 as "intensive" (≥5 contacts planned). The implementation of the peer support interventions was often poorly reported, with only five trials reporting both the number of contacts received and the proportion of women in the intervention groups who received some peer support.[6 10 21 23 25] Six of the studies reported neither the number of actual contacts received nor the overall uptake of the intervention.[18 24 26-29] Of the 17 studies, nine reported a peer support intervention that spanned the antenatal and postnatal periods, whereas eight reported a postnatal intervention only and were thus in women who had all initiated breast feeding, and one was a postnatal intervention to women with a baby on the neonatal intensive care unit who intended to breast feed.

In all but four of the 17 trials the peer supporters had previously breast fed a baby: in the others[9 21 25 27] this was not specifically stated but is likely to have been the case in those countries where breastfeeding initiation rates are high. Peer supporters were also of similar age,[22] culture,[23] language,[21] ethnicity,[10 24] education, or socioeconomic status,[23 25] or lived in the same locality as the women.[9 18] Some of the peer supporters were paid employees,[10 17 20 21] some received an honorarium[28] or payment per visit,[8 26] and others described the peers as volunteers, without a description of the payment.[9 23 24] Apart from one trial,[21] all trials offered peer support at home, usually in person, although in two trials support was by telephone.[23 24] The training of the peer supporters ranged from two and a half hours plus a handbook[23] up to an eight week course[10] and was unspecified in only two trials.[6 29]

Risk of bias in included studies

Several studies did not give sufficient information to assess risk of bias in detail (table 2⇓). Sequence generation was generally adequately described, but concealment of the random allocation was less well described. Eight studies reported taking measures to blind those involved in the outcome assessment. Losses to follow-up ranged from 1% to 41% but were generally balanced across study arms, with only one study having a difference of more than 10% in follow-up rate between study arms,[17] and in most studies characteristics were balanced between arms at baseline. One study did not undertake an intention to treat analysis, with exclusion of those who did not receive the intervention in the analysis.[17]

Overall effect of peer support on breast feeding

Thirteen of the studies reported the outcome of any breast feeding. Overall, compared with usual care those allocated to peer support had a 15% significantly lower risk of not breast feeding at the last follow-up (relative risk 0.85, 95% confidence interval 0.77 to 0.94), but with significant heterogeneity: χ^2=31.3 (P=0.002), I^2=61.7%.

Twelve of the studies reported on exclusive breast feeding. Compared with usual care those allocated to peer support had an 18% significantly lower risk of not breast feeding exclusively at the last follow-up (0.82, 0.76 to 0.88), with significant heterogeneity: χ^2=127, (P<0.001), I^2=89.7%

One study[17] reported a significant increase in any breast feeding in the mothers allocated peer support (odds ratio 2.81, 95% confidence interval 1.11 to 7.14), but not exclusive breast feeding (1.30, 0.30 to 6.65). Another study reported no difference in exclusive breast feeding at four months post partum.[9]

Setting

The relative risk of not breast feeding at last study follow-up in women allocated peer support was 30% lower than usual care in studies from low or middle income countries (relative risk 0.70, 95% confidence interval 0.60 to 0.81), but only 7% lower in studies from high income countries (0.93, 0.87 to 1.00) and specifically only 4% lower in studies from the United Kingdom (0.96, 0.89 to 1.04) (table 3⇓, fig 2⇓). Peer support interventions significantly reduced the risk of not exclusively breast feeding at last study follow-up compared with usual care in both high income countries and low or middle income countries, although the risk reduction of 37% in the setting of low or middle income countries was considerably larger than the 10% observed in high income countries (table 3, fig 3⇓). No significant effect was seen in the UK only trials (0.98, 0.96 to 1.01). This finding was supported by one study.[9] The metaregression analysis showed that these differences in the effectiveness of the peer support intervention between high income countries and low or middle income countries were significant for both the any breastfeeding outcome (P<0.001) and the exclusive breastfeeding outcome (P=0.01).

Intensity

Women in the more intensive interventions (≥5 contacts planned) had a significantly lower risk of not breast feeding at last follow-up compared with usual care (0.79, 0.71 to 0.89), whereas the less intensive interventions were not associated with lower rates of not breast feeding (0.99, 0.90 to 1.09) (table 3, fig 4⇓). This difference was significant in the metaregression analyses (P=0.02). The impact of the intervention on exclusive breast feeding (fig 5⇓) did not show a relation with intensity, the reductions in risk compared with usual care being similar (20% and 17%) in the two subgroups, and the small difference in the relative risk not being significant (P=0.73).

Timing of support

Combined antenatal and postnatal peer support was not associated with a significant improvement in not breast feeding at last study follow-up (0.94 0.88 to 1.01), whereas postnatal only interventions did significantly reduce not breast feeding (0.75, 0.63 to 0.89). Metaregression showed this difference to be significant (P<0.001). Combined antenatal and postnatal and postnatal only peer support interventions compared with usual care significantly reduced the risk of not exclusively breast feeding by a similar magnitude (table 3, figs 6⇓ and 7⇓).

Discussion

Our systematic review provides important clarification on the inconsistency of effects observed in trials of peer support for breast feeding in different settings, which is critical for generating guidance. We assessed the evidence from randomised controlled trials that compared breastfeeding continuation in women offered a peer support intervention, according to setting, intensity, and timing compared with usual care. Analyses according to setting clarify that peer support is effective in low or middle income countries and especially for exclusive breast feeding, which is critical in these settings. Our findings indicate, however, that peer support is likely to be ineffective for increasing breastfeeding rates in high income countries, in particular in the United Kingdom. Peer support provided at a low intensity (<5 planned contacts) seems to be ineffective for any breast feeding.

Comparison with existing literature

This review focused on the effectiveness of peer support on breast feeding, whereas previous reviews have included any lay support.[4 11] Both these reviews reached similar conclusions to our overall findings and expressed caution in interpretation of the analysis of pooled data owing to the low quality of reporting of many of the trials[4] and the heterogeneity identified.[11] Neither review explored possible reasons for the heterogeneity, however, which we have done using prespecified categories of setting, intensity, and timing of support.

Peer support has been defined as "the provision of emotional, appraisal and informational assistance by a created social network member who possesses experiential knowledge of a specific behaviour or stressor and similar characteristics as the target population."[30] The overlap between the definitions of peer and lay support is considerable and the terms are often used interchangeably. In most cases the peers in our included trials shared the experience of motherhood and previous breast feeding, whereas in other trials language, ethnicity, age, and locality were the criteria for being a peer. Almost all of the trials of lay support were of peers, but a retrospective sensitivity analysis, which included trials of lay support as well as of peer support, did not alter our findings. Other trials have used peers in the provision of a structured educational programme[31] or lay workers in complex interventions in which breast feeding was a minor component,[32 33] which were not included within our definition of peer support.

The lack of effect of peer support on any or exclusive breast feeding in the UK trials and on any breast feeding in high income countries may well be a result of the amount of support for breast feeding provided as part of standard postnatal care. Even in some highly developed countries, such as Canada, little postnatal breastfeeding support is routinely provided by the health service. Most trials reported support for breast feeding in hospital, but many then described usual care, which requires women to specifically initiate contact to obtain support if they have difficulties with breast feeding. One study in the United States, for example, described the first routine postnatal contact to be at two weeks, after the period when many women give up breast feeding owing to difficulties such as positioning, discomfort, or insufficient milk.[34 35] This was not the case for the trials in the United Kingdom, where home based midwifery support is provided routinely up to at least 10 days postnatally, and health visitors provide routine support after this time.

In the UK trials peer support was generally less intensive, with one trial not reporting this,[8] and, apart from another trial,[9] included antenatal support in addition to postnatal support. Some confounding of setting by intensity of support may exist because three of the five trials of a low intensity intervention were in the United Kingdom and only one in a low to middle income country. We do not know whether more intensive interventions in the United Kingdom might be effective, but they would necessarily be more costly if the peers were paid. Whether peer support targeted at women who have not breast fed before or who have no experience of breast feeding in their social groups might be of benefit is another question to be answered in the United Kingdom and other high income countries.

The effectiveness of peer support in increasing continuation of any and particularly exclusive breast feeding in low or middle income countries is critical. Breast feeding has been associated with significantly reduced deaths from neonatal sepsis[36] and deaths from diarrhoea and acute respiratory tract infections in the first six months of life.[37] Exclusive breast feeding, for which peer support had a substantial effect in low or middle income countries, is associated with a reduction in gastrointestinal infections,[38 39] longer periods of maternal lactational amenorrhoea,[40] and a non-significant reduction in infant growth at six months.[40] Thus peer support should contribute towards the Millennium Development Goal 4 of reducing child mortality in under 5s. To put into context the effectiveness of peer support for increasing exclusive breast feeding in low or middle income countries, we calculated the number needed to treat for an additional woman to be exclusively breast feeding at six months. Assuming a rate of not exclusively breast feeding of 90% in the population, which is similar to that reported in several of the trials included in this review,[18 26 27 29] and a relative risk of 0.63 (fig 3), three women would need to receive peer support for one additional woman to be practising exclusive breast feeding at six months.

That peer support provided in both antenatal and postnatal periods is ineffective at increasing any breast feeding is counterintuitive. This is probably because most trials that span both periods are also aimed at increasing breastfeeding initiation, thus the populations encompass much less motivated women. Those trials of only postnatal support are usually targeted at women who have already initiated breast feeding. In addition this comparison is confounded by setting since most women in low or middle income countries initiate breast feeding.

Strengths and limitations of the review

This review followed contemporary recommended methods.[12] Searching was systematic and not limited by language of publication. To reduce the potential for confounding we restricted the review to randomised controlled trials.

The trials within this review used a range of definitions of exclusive breast feeding, most following the WHO definition, but others used less robust definitions, such as limitation to the previous week[18 27] or no more than other liquids twice a week,[21] which may affect this outcome. Support for breast feeding provided to the usual care groups was rarely well described,

making it difficult to interpret fully the reasons for differences between trials and countries in the effectiveness of peer support. Although the intended schedule of contact by the peer supporters was usually described, the actual coverage[8 24 26-29] and intensity of support[8 17 19 20 24 26 27 28 29] was often not reported. It is thus hard to determine in some cases whether a lack of effect was due to ineffectiveness or to a low uptake of the intervention. We therefore had to use the planned intensity of support for our analyses. The lack of data on implementation of the interventions is a particular feature of peer support, possibly because of the nature of being a peer and sometimes a volunteer, rather than professionals who are used to recording activity. One trial from the United Kingdom[9] that aimed to increase exclusive breast feeding as a secondary outcome to improving infant nutrition, did not start the peer support until after 10 weeks post partum, which limited the duration of this support. The results of this trial are only presented descriptively but are consistent with the findings of the other UK trials.

The trials set in low or middle income countries were more likely to focus on exclusive breast feeding, as the health gains are likely to be much greater in these settings. However, these countries are also less likely to have highly developed universal healthcare incorporating routine postnatal support and peer support is likely to have its greatest impact when compared with no routine support. It is therefore possible that the greater effect size for exclusive breast feeding is due to confounding by setting.

We used the outcome of "not breastfeeding at last study follow-up," which was at three to six months for all but two of the trials, where follow-up was shorter. Sensitivity analyses to remove any possible bias that might have occurred as a result of differing follow-up durations were undertaken excluding the trials with shorter follow-up.[21 22] The results remained much the same, except that relative risk of not exclusively breast feeding in not intensive interventions just reached statistical significance (relative risk 0.90, 95% confidence interval 0.83 to 0.98). Selecting the last study follow-up may also fail to show a shorter term effect on breastfeeding rates when the intervention was of short duration.

Implications for future research or clinical practice

Although overall, peer support interventions seem to be associated with increases in any and exclusive breast feeding, considerable inconsistency exists and seeking explanation for this is critical for public health policy.[41] In low or middle income countries, peer support interventions are effective in increasing continuation of exclusive breast feeding and should be recommended. However, peer support interventions may not be effective where routine services to support breast feeding are already established, as in the United Kingdom or in some other high income countries. Policy relating to provision of peer support needs to be based on more context specific evidence. Alongside implementing such programmes in high income countries we strongly recommend a robust evaluation of outcomes.

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What is already known on this topic

Meta-analyses of lay support for increasing breastfeeding rates suggest an effect on both any and exclusive breast feeding

These meta-analyses, however, showed considerable heterogeneity, which has not been investigated

What this study adds

In low or middle income countries, peer support interventions are effective in increasing continuation of exclusive breast feeding and should be recommended

Peer support interventions, however, may not be effective where there are routine services already established to support breast feeding, as in the United Kingdom or in some other high income countries

New peer support services in high income countries need to undergo concurrent evaluation

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Tables

Table 1| Characteristics of included studies

Study, country	Study design and methods	Inclusion and exclusion criteria	Intervention	Outcomes	Reported results
Agrasada 2005[29] Philippines	Randomised controlled trial, 204 participants (intervention 1, n=68; intervention 2, n=67; control n=69) recruited in hospital in postnatal period before discharge home on or before third day after birth	Inclusion criteria: primiparous, aged ≥18, intending to breast feed, vaginal delivery of live infant at term of low birth weight with Apgar score of >8 at five minutes. Exclusion criteria: taking drug that would prevent breast feeding; not staying in study area until infant was 6 months old	Home based peer counselling support: eight visits at days 3-5, 7-10, and 21, and at six weeks, then monthly until 5.5 months. Intervention 1, home based breastfeeding counselling; intervention 2, home based childcare counselling (used as an attention control); control, usual care (no counsellors)	Primary outcome: exclusive breastfeeding prevalence at 2 and 4 weeks and each month until six months. Secondary outcome: duration of breast feeding, infant weight changes, and diarrhoea morbidity	Mothers in intervention 1 were 6.3 times (95% CI 3.53 to 11.3) more likely to exclusively breast feed than other groups. Exclusive breast feeding at six months, intervention 1, 44%; intervention 2, 7%; control 0%. Any breast feeding at six months, intervention 1, 63.2%; control, 29%; P<0.001
Anderson 2005[19] USA	Randomised controlled trial, 182 participants (intervention n=90, control n=92) recruited from prenatal clinics while pregnant	Inclusion criteria: pregnancy <32 weeks, predominantly Hispanic, eligible for Women, Infants, and Children grant, aged ≥18, considering breast feeding, healthy full term singleton. Exclusion criterion: admission to neonatal intensive care unit	Peer counselling to improve exclusive breastfeeding rates. Intervention, peer counselling: three antenatal home visits, daily hospital visits, and nine postnatal home visits. Control, usual care only: conventional breastfeeding education from antenatal clinic staff, at birth having hands-on assistance with breast feeding from maternity ward staff: if had serious breastfeeding problems then seen by lactation consultant.	Exclusive breastfeeding status at hospital discharge, months 1, 2, and 3. Any breast feeding at three months	Not exclusively breast fed at three months: control 98.6%, intervention 79.4% (relative risk 1.24, 95% CI 1.09 to 1.41). Not breast fed at three months (1.26, 0.93 to 1.70)
Chapman 2004[20] USA	Randomised controlled trial, 219 participants (intervention n=113, control n=106) recruited from hospital prenatal clinic in antenatal period	Inclusion criteria: predominantly Hispanic women, <27 weeks' gestation, qualified for Women, Infants and Children grant, aged ≥18, available for telephone follow-up, considering breast feeding, living in greater Hartford area, not yet enrolled in peer counselling programme, healthy full term singleton. Exclusion criteria: infants with congenital abnormalities, history of maternal HIV, infants admitted to neonatal unit	Intervention, routine breastfeeding education plus peer counselling: ≥1 antenatal home visit, daily in hospital visits, and ≥3 postnatal home visits. Control, routine breastfeeding education only	Primary outcomes: breastfeeding initiation and rates at months 1, 3, and 6. Exclusive breast feeding at one month	Percentage not breast feeding at one month: intervention 37.5%, control 49.3% (relative risk 0.72, 95% CI 0.50 to 1.05). At three months: intervention 55.6%, control 70.8% (0.78, 0.61 to 1.00). At six months: 0.94 (0.79 to 1.11). Risk of not breast feeding exclusively at one month 1.07 (0.90 to 1.27)
Coutinho 2005[25] Brazil	Randomised controlled trial, 350 participants (intervention and control, each 175) recruited in postnatal period before discharge home from hospital	Inclusion criteria: healthy singletons, birth weight >2500 g, mothers without serious illness	Intervention, 10 home visits starting three days postnatally, four visits in month 1, two-weekly in month 2, then monthly to six months. Control, usual care. Both groups received hospital care in line with baby friendly initiative	Primary outcome: rate of exclusive breast feeding from birth to six months. Any breast feeding	Mean aggregated prevalence of exclusive breast feeding from 10 days to six months: intervention, 78%; control 62%, P<0.001
Dennis 2002[23] Canada	Randomised controlled trial, 256 participants (intervention n=132, control n=124) recruited in postnatal period before discharge home from hospital	Inclusion criteria: primiparous, initiated breast feeding, aged at least 16, singleton birth at 37 weeks or onwards, had access to telephone	Intervention, telephone based peer support initiated within 48 hours of hospital discharge, schedule to be individualised therefore not prescribed. Control, usual care: conventional postnatal support including in-hospital breast feeding and telephone support line by nursing staff. Support from public health nurses at community health department if needed	Primary outcome: breast feeding within 24 hours preceding telephone interview at week 12	Odds ratio of any breast feeding at four weeks 1.10 (95% CI 1.01 to 2.72), P=0.03; eight weeks 1.13 (1.00 to 1.28), P=0.05; and 12 weeks, 1.21 (1.04 to 1.41), P<0.01

Table 1 (continued)

Study, country	Study design and methods	Inclusion and exclusion criteria	Intervention	Outcomes	Reported results
Di Meglio 2010[22] USA	Randomised controlled trial, 78 participants (intervention n=38, control n=40) recruited in hospital within 12-36 or 24-48 hours, depending on mode of birth	Inclusion criteria: infants of ≥36 weeks' gestation, birth weight >2000 g, and discharged home with mother. Exclusion criteria: infants admitted to neonatal unit for more than six hours, infants with congenital anomalies	Telephone based peer support. Intervention, seven contacts scheduled at 2, 4, and 7 days after discharge and at 2-5 weeks after discharge. Control, usual care comprising access to paediatric care providers and hospital lactation consultants	Primary outcome: duration of "any breast feeding" measured as age (days) at complete cessation of breast feeding	Duration of any breast feeding at eight weeks (median): intervention 75 days, control 35 days. Hazard ratio of breastfeeding cessation 0.71 (95% CI 0.39 to 1.30); P=0.26
Graffy 2004[6] UK	Randomised controlled trial, 720 participants (intervention n=363, control n=357) recruited from 32 general practices while pregnant	Inclusion criteria: 28-36 weeks pregnant and considering breast feeding, not breast feeding previous child for ≥6 weeks, English speaking, and not planning on moving from area until at least four months postnatally	Antenatal and postnatal volunteer counselling provided by National Childbirth Trust. Intervention, one antenatal visit and postnatal support offered by telephone, or further home visits if requested, and usual care. Control, usual care (not described)	Primary outcome: prevalence of any breast feeding at six weeks. Secondary outcomes: duration of any breast feeding and exclusive breast feeding at six weeks	Breast feeding at six weeks: intervention 65%, control 63% (relative risk 1.02, 95% CI 0.84 to 1.24); P=0.69. Breast feeding at four months: intervention 46%, control 42% (1.09, 0.86 to 1.39); P=0.33. Breastfeeding duration: intervention 110 days, control 96 days, P=0.445. Exclusive breast feeding at six weeks: intervention 31%, control 26%.(1.20, 0.89 to 1.61)
Haider 1999[28] Bangladesh	Cluster randomised controlled trial, 40 zones randomly selected within Dhaka city, 20 intervention sites and 20 control sites, 726 participants (intervention n=363, control n=363) recruited during pregnancy by house to house survey	Inclusion criteria: pregnant, aged 16-35, no more than three living children or parity 5, intending to stay in study area for duration of trial and in trial area for at least six months after birth. Exclusion criteria: women with medical problems or eclampsia in previous pregnancy; multiple births, congenital anomalies, admission to intensive care, and birth weight <1800 g	Home based peer counselling. Intervention, 10 visits scheduled as two in last trimester of pregnancy, four in first month, then monthly between two and five months after birth. This was changed when women reported wanting more regular visits during months 2 and 5, so visits were then fortnightly during this period. Total visits 15, but additional contacts could be made if required. Control (not described)	Primary outcome: prevalence of exclusive breast feeding at five months. Secondary outcomes: time taken to initiate breast feeding, proportion of mothers who gave prelacteal feeds (any fluid or food given before colostrum) after birth	Prevalence of exclusive breast feeding at five months: intervention 70%, control 6% (difference 64%, 95% CI 57% to 71%); P<0.001. Time taken to initiate breastfeeding: intervention, median 1 hour (range 0-49 hours); control 9 (0-95) hours; P<0.001. Initiation in first hour: intervention, 64%; control, 15%. Pre-lacteal feeds: intervention 31%, control 89%; P<0.001
Jolly 2011[10] UK	Cluster randomised controlled trial, 65 antenatal clinic clusters (intervention n=32, control n=33), 848 participants (intervention n=271, control n=302) recruited from antenatal clinics	Inclusion criteria: pregnant and with general practitioner in Heart of Birmingham Primary Care Trust, a multiethnic deprived area	Intervention, peer support workers within 24-48 hours of discharge home then once more in first week. Support then needs based, either by home visits or by telephone. Control, usual care routinely from hospital midwives then community midwives (about 10 days but no longer than 28 days postnatally) then health visitor	Primary outcome: breastfeeding initiation. Secondary outcome: any breast feeding at 10-14 days, six weeks, and six months	Any breast feeding at six months: intervention 34.3%, control 38.9% (odds ratio for any breast feeding in intervention group 1.06 (95% CI 0.71 to 1.58); P=0.77
Hopkinson 2009[21] USA	Randomised controlled trial, 522 participants (intervention n=255, control n=267) recruited during hospital stay within 20-48 hours of birth	Inclusion criteria: mothers (Hispanic) with low risk infants having mixed feeding in hospital (aim of trial to move these women to practise exclusive breast feeding), had telephone and access to transport. Exclusion criterion: infant with increased risk of hyperbilirubinaemia (risk factors provided)	Intervention, hospital based breastfeeding clinic visit scheduled 3-7 days after birth. Additional visits or phone calls if deemed necessary by mother and clinic staff. Control, usual care, bedside breastfeeding assistance before discharge. On discharge given telephone number of clinic to request breastfeeding assistance if required. First routine contact with Women, Infants, and Children grant at two weeks	Primary outcome: exclusive breast feeding at one month. Secondary outcomes: amount of formula milk given and incidence of feeding problems	Exclusive breast feeding at one month: intervention 16.8%, control 10.4% (adjusted odds ratio 1.87, 95% CI 1.07 to 3.26)
Leite 2005[26] Brazil	Randomised controlled trial, 1003 participants (intervention n=503, control n=500) recruited postnatally before discharge home from hospital (by day 5)	Inclusion criteria: unfavourably low birthweight baby, expected discharge home by five days, living in study area and remaining there for follow-up period. Exclusion criteria: multiple pregnancy, lived outside study area or had serious health problems requiring inpatient treatment. Also, newborns with health	Intervention, home based peer support scheduled visits on days 5, 10, 15, 30, 60, 90, and 120 after birth. Control, usual care: women to locate their nearby health service facility if any problems	Primary outcome: method of feeding at four months. Secondary outcome exclusive breast feeding	Breast feeding at four months: intervention 76.3%, control 61.3%; P<0.001. Relative risk of bottle feeding 0.61 (95% CI 0.50 to 0.75). Exclusive breastfeeding: intervention 24.7%, control 19.3%; P=0.044

Table 1 (continued)

Study, country	Study design and methods	Inclusion and exclusion criteria	Intervention	Outcomes	Reported results
		problems requiring some level of intensive care			
Merewood 2006[17] USA	Randomised controlled trial, 108 participants (intervention n=53, control n=55) recruited within 72 hours of birth in hospital	Inclusion criteria: mothers with otherwise healthy premature infant (26-37 weeks' gestation) receiving care in neonatal unit, English or Spanish speaking, had decided to breast feed. Exclusion criteria: women "incapacitated" by illness or birth complications; infants less than 26 weeks	Intervention, hospital and home based peer support. Initial face to face contact within 72 hours while still in hospital then weekly contact for six weeks. In-hospital: at least 30 minutes. After infant's discharge, peer support contact by telephone unless mother decided to come to hospital to see a counsellor. Control, usual care in hospital using a baby friendly initiative, referral to lactation consultant as required, use of breast pump in hospital and at home, access to three breastfeeding classes a week	Primary outcome: receiving any breast milk at 12 weeks	Any breast milk at 12 weeks (odds ratio 2.81, 95% CI 1.11 to 7.14); P=0.01
Mongeon 1995[24] Canada	Randomised controlled trial, 200 participants (intervention n=100, control n=100) recruited from antenatal clinics while pregnant	Inclusion criterion: women intending to breast feed and doing so for first time	Intervention, schedule of visits included home visit in last month of pregnancy then weekly telephone calls from peer supporter during first six weeks after birth. After this, telephone calls every other week until five months or child was weaned. Control, usual care from community nurses consisting of home visits in first month after birth. Contact after that initiated by mother	Primary outcomes: proportion of women achieving length of time originally intending to breast feed, and frequency of breastfeeding related difficulties	Proportion of women intending to and actually breast feeding at six months or more: intervention, intended 55%, actual 25%; control, intended 56%, actual 20%. No difference
Morrow, 1999[27] Mexico	Cluster randomised controlled trial, area mapped into 39 domains; 13 clusters randomly allocated to each of three study arms; 130 participants (intervention 1, n=44; intervention 2, n=52; control, n=34) recruited by door to door census during pregnancy	Inclusion criteria: living in study area and had an ongoing pregnancy with positive outcome. Exclusion criterion: moved out of area before first postnatal visit	Intervention 1, six peer counsellor home visits (mid and late pregnancy and in postnatal weeks 1, 2, 4, and 8), intervention 2, three peer counsellor home visits (one in late pregnancy then in weeks 1 and 2 after birth); control, usual care; those experiencing lactation problems to contact their doctor. No other source of breast friendly counselling available	Primary outcome: exclusive breast feeding. Secondary outcomes: duration of breast feeding, proportion of infants having episode of diarrhoea in first three months. Maternal satisfaction with counselling also reported	Exclusive breast feeding at three months: intervention 1 67%; intervention 2 50%; control 12%; P=0.001. Breastfeeding rates at six months: interventions 1and 2 combined 87%; control 76%; P=0.90
Muirhead 2006[9] Scotland, UK	Randomised controlled trial, 225 participants (intervention n=112, control n=113) recruited from general practice at 28 weeks' gestation	Inclusion criteria: women consented and randomised at 28 weeks' gestation	Home based peer support from volunteers. Intervention, at least one antenatal contact (more if requested by women). If still breast feeding on hospital discharge would receive peer support at home. Contact every two days or as often as required (phone or home visit) until day 28. Peers provided further support until 16 weeks. Control, usual care: home visits from community midwives for first 10 days, health visitor after this, breastfeeding support groups and workshops	Primary outcome: breastfeeding duration up to 16 weeks	Breast feeding at six weeks: intervention 31%, control 29% (95% CI of difference −10.0 to 14.0). Breast feeding at 16 weeks: intervention 23%; control 18% (95% CI of difference −5.0 to 16.0)
Tylleskar 2011[18] Burkina Faso, Uganda, and South Africa	Cluster randomised controlled trial, 82 clusters (Burkina Faso 24, Uganda 24, South Africa 34), 2579 participants (Burkina Faso intervention n=392, control n=402, Uganda intervention n=396, control n=369, South Africa intervention n=535, control n=485) recruited at about seven months' gestation	Inclusion criteria: pregnant and intending to breast feed, with no plans to move, recruited at seven months; those with singleton baby with no malformation that could interfere with breast feeding at three weeks post partum remained in trial	Intervention, one antenatal and at least four postnatal home visits: Burkina Faso: at weeks 1, 2, 4, 6, 16, and 20; Uganda and South Africa: weeks 1, 4, 7, and 10. Control, usual care in Burkina Faso and Uganda; help with birth certificates and benefits by peer supporter in South Africa	Primary outcome: exclusive breast feeding at 12 weeks. Secondary outcomes: exclusive breast feeding at 24 weeks and infant diarrhoea	Exclusive breast feeding at three months: Burkina Faso, intervention 77%, control 23%; Uganda, intervention 77%, control 34%; South Africa: intervention 8%, control 4%. Exclusive breastfeeding prevalence ratio at 24 weeks: Burkina Faso 7.53 (95% CI 4.42 to 12.82), Uganda 4.66 (3.35 to 6.49), South Africa 9.83 (1.40 to 69.14)

Table 1 (continued)

Study, country	Study design and methods	Inclusion and exclusion criteria	Intervention	Outcomes	Reported results
Watt 2009[9] UK	Randomised controlled trial, 312 participants (intervention n=155, control n=157) recruited from baby clinics, with infant aged less than three months	Inclusion criteria: women aged ≥17, not professionals, in deprived area, healthy term singleton babies of birth weight >2500 g	Intervention, monthly support from volunteer starting at three months. Only one or two supports before measurement of breastfeeding outcome	Exclusive breast feeding at four months	No difference in exclusive breastfeeding rates

Table 2| **Assessment of risk of bias**

Study	Sequence generation	Allocation concealment	Blinding of outcome assessment	Incomplete outcome data	Selective reporting
Agrasada[29]	Low risk of bias: irregular sized random blocks from random number tables	Unclear risk of bias: sequentially numbered sealed envelopes	Low risk of bias: trained interviewer unaware of mother's allocation group	Low risk of bias: missing data balanced across arms, unclear whether those lost were similar to those remaining, 87% follow-up	Unclear risk of bias
Anderson[19]	Unclear risk of bias: computerised software by study coordinator	Unclear risk of bias	Unclear risk of bias: telephone interviews by bilingual research staff member	Low risk of bias: missing data balanced across arms, no difference in characteristics between those that dropped out and those remaining, 74% follow-up	Unclear risk of bias
Chapman[20]	Low risk of bias: computerised software	Unclear risk of bias	Unclear risk of bias: telephone interviews—data on peer counsellor contact was collected at end of each interview	Low risk of bias: missing data balanced across arms, but unclear whether those lost were similar to those remaining, 93% follow-up	Unclear risk of bias
Coutinho[25]	Low risk of bias: random numbers table	Unclear risk of bias: drawing numbers from envelopes	Low risk of bias: data collected by researchers not aware of group allocation	Low risk of bias: missing data balanced across arms, those lost to follow-up did not differ in characteristics to those remaining, 94% follow-up	Unclear risk of bias
Dennis[23]	Low risk of bias: computerised by independent statistician	Low risk of bias: sequentially numbered sealed opaque envelopes	Low risk of bias: research assistant, blinded to group allocation, telephoned women	Low risk of bias: 99% follow-up	Unclear risk of bias
Di Meglio[22]	Low risk of bias: computer generated random numbers	Unclear risk of bias: sequentially numbered sealed envelopes	Low risk of bias: telephone interview by research assistant with no knowledge of study hypothesis or design	High risk of bias: follow-up rate 59%	Unclear risk of bias
Graffy[6]	Low risk of bias: random permuted blocks by statistician	Unclear risk of bias: sequentially numbered sealed envelopes	Low risk of bias: questionnaires coded blind to treatment allocation	Low risk of bias: similar drop-outs in each arm, 86% follow-up rate	Unclear risk of bias
Haider[28]	Low risk of bias: random number tables used to allocate clusters	Low risk of bias, cluster randomisation: women unaware of hypothesis	High risk of bias: interviewers aware of group assignment	Low risk of bias: missing data balanced across arms, no difference in socioeconomic characteristics of those who dropped out and were followed-up at five months, 79% follow-up	Unclear risk of bias
Jolly[10]	Low risk of bias: stratified computer randomisation of clusters by statistician	High risk of bias: women aware of allocation at recruitment	Low risk of bias: researcher blinded to trial allocation	High risk of bias: follow-up rate 68%	Low risk of bias
Hopkinson[21]	Low risk of bias: random number tables	Low risk of bias: opaque sealed envelopes	Low risk of bias: telephone interview blinded to group assignment	Low risk of bias: missing data balanced across arms, women lost to follow-up did not differ from study sample, 89% follow-up	Unclear risk of bias
Leite[26]	Low risk of bias: computerised random number tables in blocks of 20	Unclear risk of bias: sealed envelopes	Low risk of bias: interviewers unaware of objectives of research	Low risk of bias: missing data balanced across arms, no difference in variables studied for those that dropped out, 86% follow-up.	Unclear risk of bias
Merewood[17]	Low risk of bias: computer generated	Unclear risk of bias: sealed envelopes	Low risk of bias: research assistant unaware of mother's group assignment	High risk of bias: missing data balanced across arms, similar reasons for missing data across arms, 79% follow-up, intention to treat analysis not done	Unclear risk of bias
Mongeon[24]	Low risk of bias: unclear	Unclear risk of bias: drawing of numbered tickets	Unclear risk of bias: telephone interview by research assistant	Low risk of bias: 97% follow-up	Unclear risk of bias
Morrow[27]	Low risk of bias: clusters randomised by computer	Low risk of bias, cluster randomisation: women not informed about other study group	Unclear risk of bias: structured interviews by staff other than peer counsellors	Low risk of bias for exclusive breast feeding, high risk for any breast feeding: missing outcome data balanced across arms, 80% follow-up	Unclear risk of bias
Muirhead[8]	Low risk of bias: random allocation by computer in blocks of 10	Low risk of bias, post recruitment telephone randomisation	Low risk of bias: trial team not involved in questionnaire completion	Low risk of bias: 98% follow-up	Unclear risk of bias
Tylleskar[18]	Low risk of bias: clusters randomised by computer	Unclear risk of bias, cluster randomisation	Low risk of bias: data collectors masked to allocation concealment	Low risk of bias in Burkina Faso and Uganda, follow-up rates ≥87%. High risk of bias in South Africa, follow-up 69%	Low risk of bias

Table 2 (continued)

Study	Sequence generation	Allocation concealment	Blinding of outcome assessment	Incomplete outcome data	Selective reporting
Watt[9]	Low risk of bias: random digit computer tables	Low risk of bias, undertaken by administrator not involved in recruitment	Low risk of bias: those responsible for assessing outcomes masked to group assignment	High risk of bias: follow-up rate higher in control (80%) than intervention (73%) at one year's follow-up	Unclear risk of bias

Table 3| Relative risk of not breast feeding at last study follow-up

	Any breast feeding			Exclusive breast feeding		
Variables	**Relative risk (95% CI)**	**I^2 (%)**	**Metaregression P value**	**Relative risk (95% CI)**	**I^2 (%)**	**Metaregression P value**
All	0.85 (0.77 to 0.94)	61.7	—	0.82 (0.76 to 0.88)	89.7	—
Setting:						
High income countries	0.93 (0.87 to 1.00)	16.7	<0.001	0.90 (0.85 to 0.97)	82.4	0.013
Low or middle income counties	0.70 (0.60 to 0.82)	30.0		0.63 (0.52 to 0.78)	93.4	
Intensity:						
<5 planned contacts	0.99 (0.90 to 1.09)	0.0	0.020	0.83 (0.70 to 1.00)	87.5	0.729
≥5 planned contacts	0.80 (0.71 to 0.89)	62.7		0.81 (0.74 to 0.88)	90.9	
Timing:						
Antenatal and postnatal period	0.94 (0.88 to 1.01)	0.0	<0.001	0.79 (0.71 to 0.88)	91.5	0.379
Postnatal period only	0.75 (0.63 to 0.89)	64.5		0.82 (0.86 to 0.88)	84.7	

Separate metaregressions were undertaken for any and exclusive breast feeding for each of: setting, intensity, and timing of peer support.

Figures

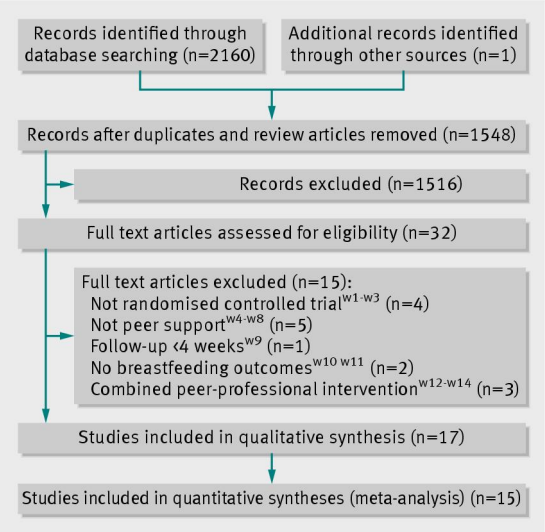


Fig 1 Identification of relevant literature on peer support to improve breastfeeding rates

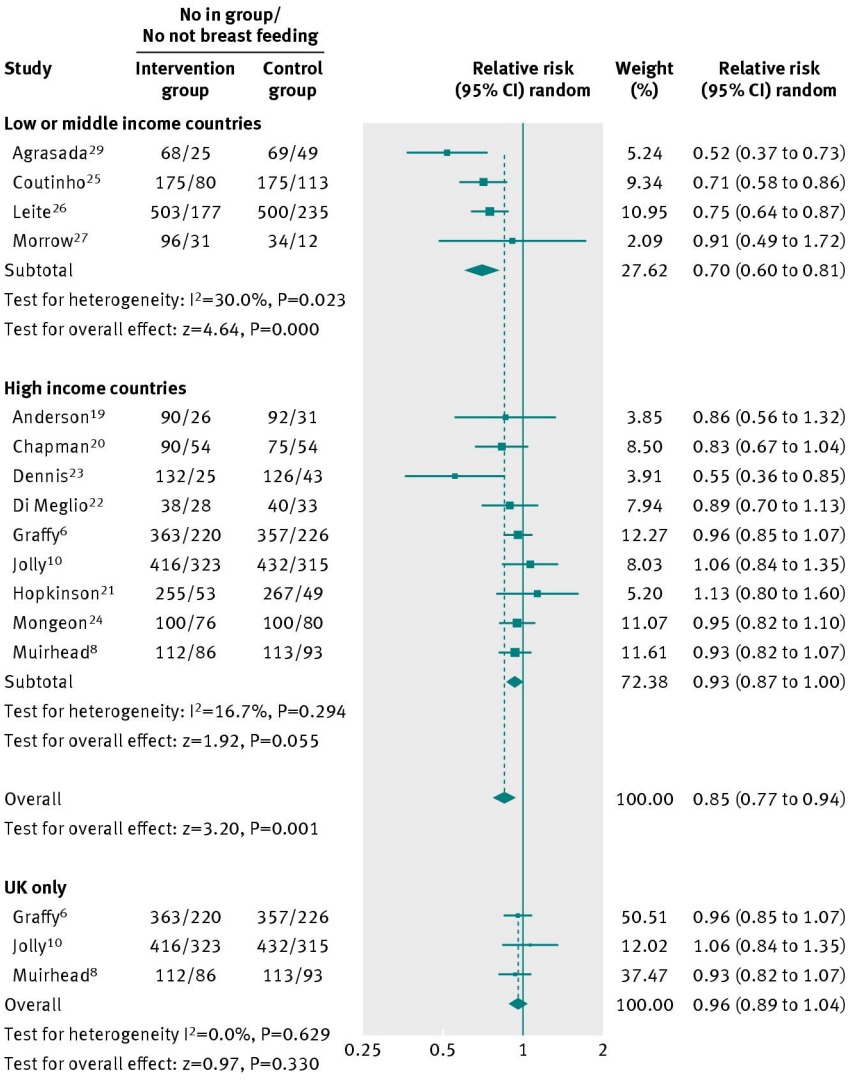


Fig 2 Relative risk of not breast feeding at last study follow-up by setting

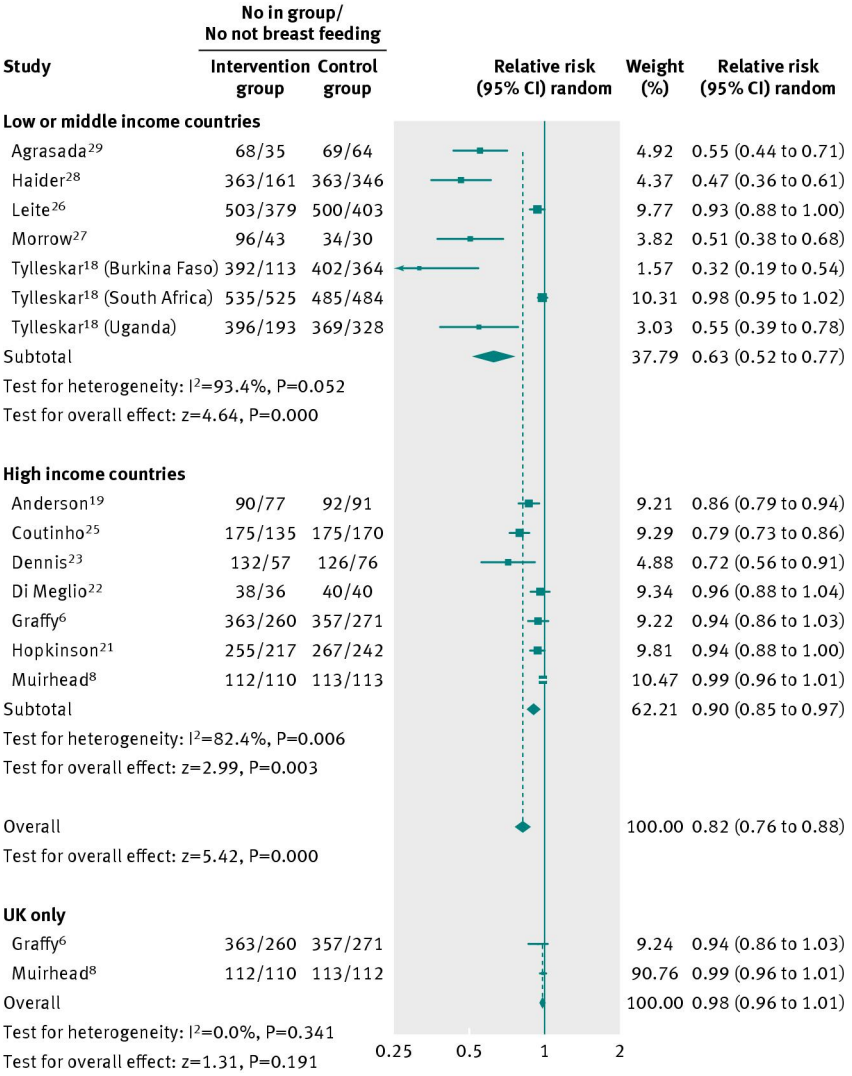


Fig 3 Relative risk of not exclusively breast feeding at last study follow-up by setting

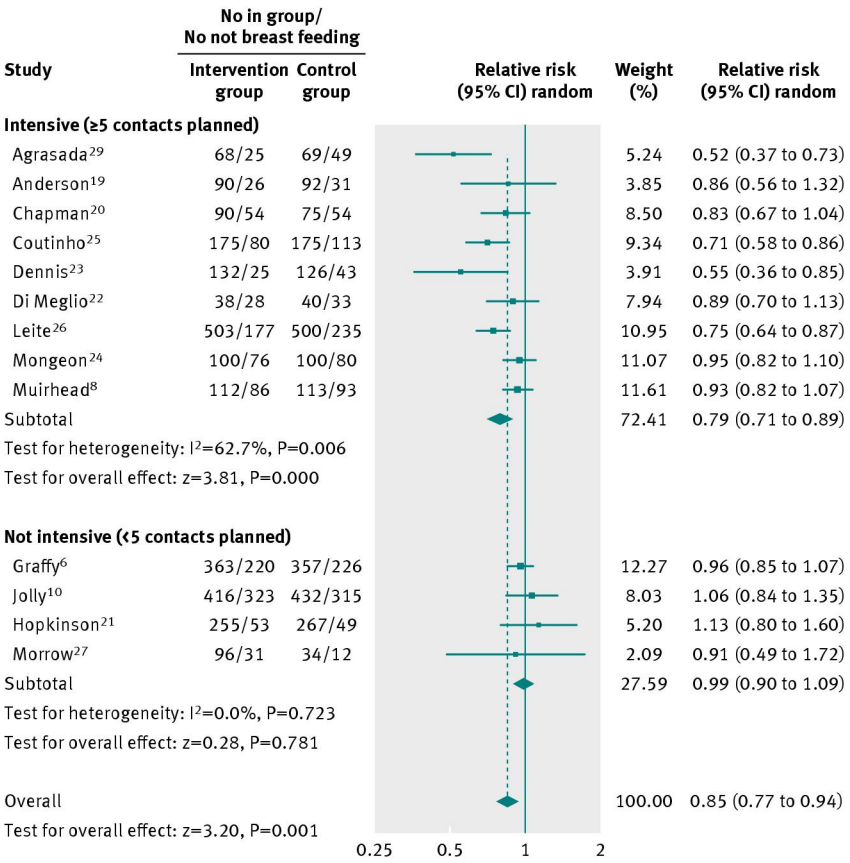


Fig 4 Relative risk of not breast feeding at last study follow-up by intensity

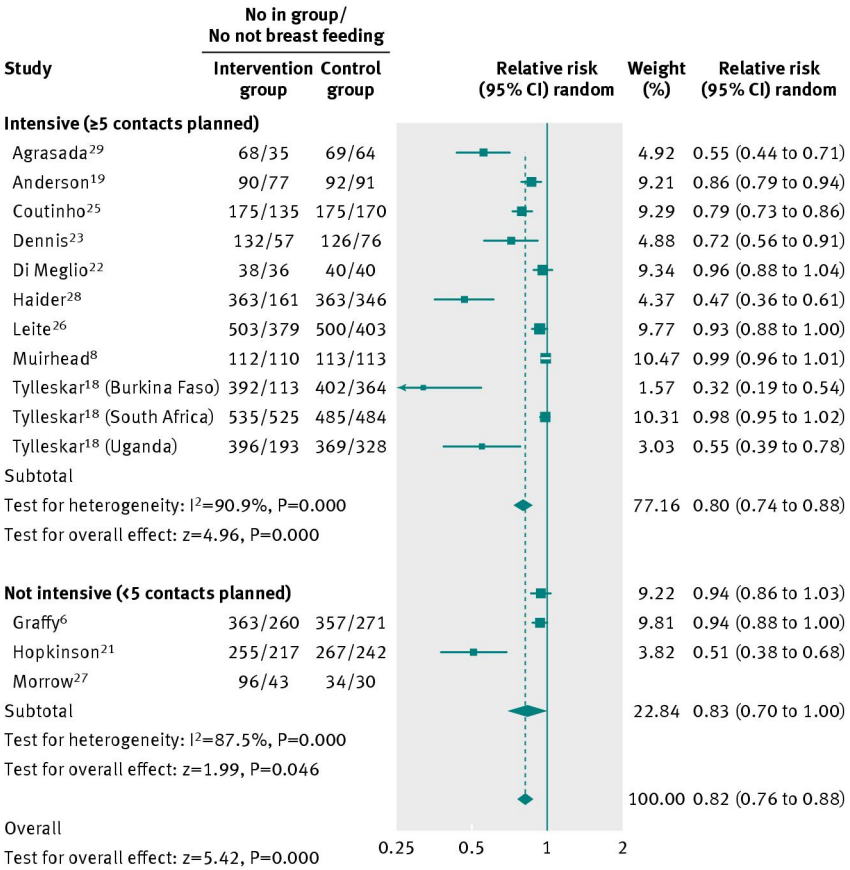


Fig 5 Relative risk of not exclusively breast feeding at last study follow-up by intensity

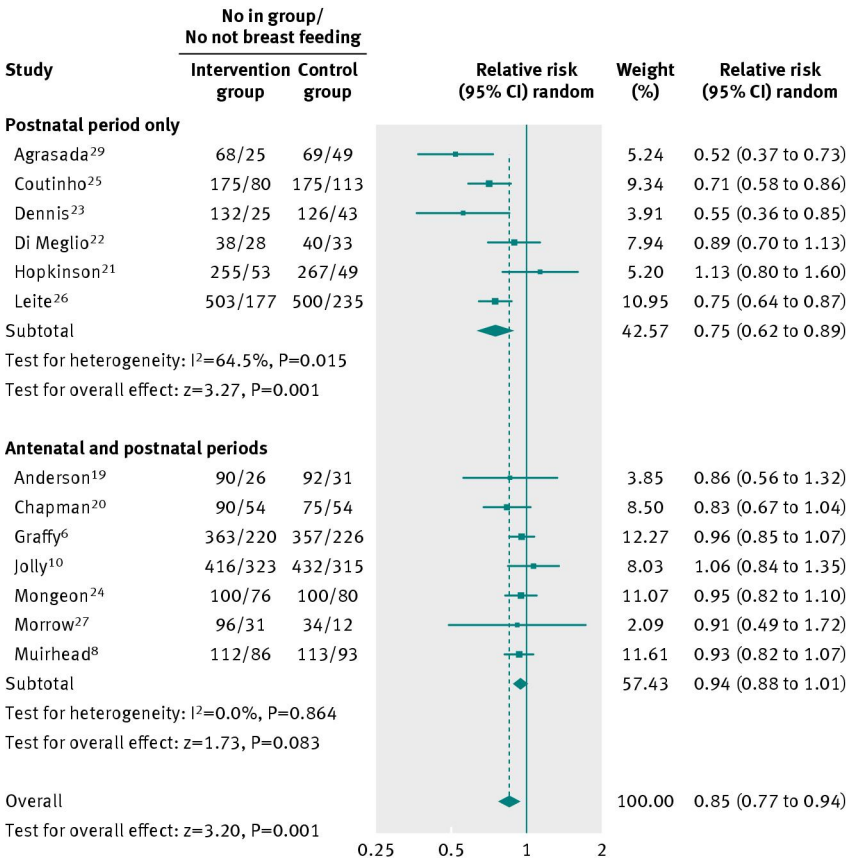
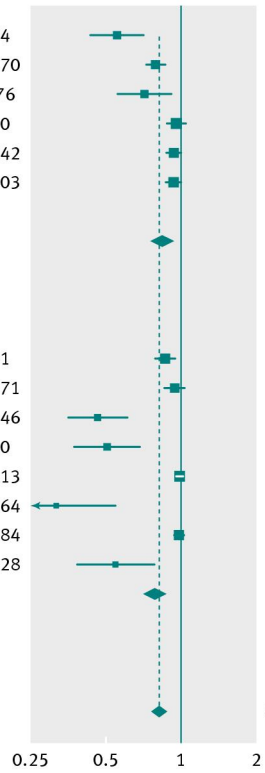


Fig 6 Relative risk of not breast feeding at last study follow-up: timing of support



Study	No in group/ No not breast feeding: Intervention group	Control group	Relative risk (95% CI) random	Weight (%)	Relative risk (95% CI) random
Postnatal period only					
Agrasada[29]	68/35	69/64		4.92	0.55 (0.44 to 0.71)
Coutinho[25]	175/135	175/170		9.29	0.79 (0.73 to 0.86)
Dennis[23]	132/57	126/76		4.88	0.72 (0.56 to 0.91)
Di Meglio[22]	38/36	40/40		9.34	0.96 (0.88 to 1.04)
Hopkinson[21]	255/217	267/242		9.81	0.94 (0.88 to 1.00)
Leite[26]	503/379	500/403		9.77	0.93 (0.88 to 1.00)
Subtotal				48.02	0.84 (0.76 to 0.93)
Test for heterogeneity: I^2=84.7%, P=0.000					
Test for overall effect: z=3.31, P=0.001					
Antenatal and postnatal periods					
Anderson[19]	90/77	92/91		9.21	0.86 (0.79 to 0.94)
Graffy[6]	363/260	357/271		9.22	0.94 (0.86 to 1.03)
Haider[28]	363/161	363/346		4.37	0.47 (0.36 to 0.61)
Morrow[27]	96/43	34/30		3.82	0.51 (0.38 to 0.68)
Muirhead[8]	112/110	113/113		10.47	0.99 (0.96 to 1.01)
Tylleskar[18] (Burkina Faso)	392/113	402/364		1.57	0.32 (0.19 to 0.54)
Tylleskar[18] (South Africa)	535/525	485/484		10.31	0.98 (0.95 to 1.02)
Tylleskar[18] (Uganda)	396/193	369/328		3.03	0.55 (0.39 to 0.78)
Subtotal				51.98	0.79 (0.71 to 0.88)
Test for heterogeneity: I^2=91.5%, P=0.000					
Test for overall effect: z=4.36, P=0.000					
Overall				100.00	0.82 (0.76 to 0.88)
Test for overall effect: z=5.42, P=0.000					

Fig 7 Relative risk of not exclusively breast feeding at last study follow-up: timing of support

Appendix 6:

Qualitative interview schedule

Interview schedule for women who initiated breastfeeding

The questions/topics may not be discussed in the order they are presented here.

Welcome and introductions
Recap the reason for interviewing.
Thank for agreeing to be interviewed (find out baby name and age).
Any questions.
Seek informed consent (written informed consent).

Current infant feeding practice
How are you feeding your baby now?
[If stopped breastfeeding] When did you stop breastfeeding?
[If stopped breastfeeding] Could you tell me what made you stop breastfeeding?

I wonder if we could go back a while to when you were pregnant
Influences
What were your thoughts on breastfeeding during your pregnancy?
Do you think anyone or anything influenced how you chose to feed your baby?
Did anyone talk to you about how you might feed your baby? When did this happen?

Prompts/probes
Who What advice How were you informed – groups or one-to-one

First feed
I would be really interested to hear about your first experience of feeding (baby name), could you think back and talk me through the first time you fed (baby name) please.
Prompts
Where you were How old baby was who was with you What it was like

Support
Did you have support for your decision to breastfeed?
Prompts
Emotionally, practically
Partner/boyfriend/family/friends/health professionals
***If no support** – how did this make you feel? Do you think it affected the way you chose to feed your baby?*
And what about when you were in hospital [assuming hospital birth] – on ward/delivery suite
Did anyone at the hospital help you with breastfeeding?
Prompts/probes
What support with breastfeeding did you get from midwives in the hospital?
Apart from the midwives, did anyone else provide you with support in the hospital?
Prompts
Midwifery assistants/Peer Support Workers
Confident about getting it established?
How did you deal with that?

At Home
What support with breastfeeding did you get when you got home?

Prompts
Who from, how often, helpful?
Best Buddies? Did you talk with them about breastfeeding?
Prompts/probes
Did your support worker help you to breastfeed?
What sort of things did she do or tell you that helped?
What about the positioning and attachment did she help you with that?
Practical help. Other support groups/workers? What was good, what could be better?

Problems
You've already told me about your first experience of breastfeeding, how did you find things after that?
Prompt
Did you have any problems? - Pain/Not enough milk/tired/baby wouldn't settle/No support

Future support
Based on your experience, what support do you think mums need and should have when they are breastfeeding?
Prompts
Who from; Timing; Venue; Practical advice; Telephone of face to face

Anything not covered
Is there anything you don't think that we have covered today, or that you would like to tell me about?

Closing
Thank you very much for taking the time to be interviewed.
Answer any questions.