

Health Development Agency

The effectiveness of public health
interventions to promote the
initiation of breastfeeding

Evidence briefing

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Foreword

In 1999 the white paper, *Saving Lives: Our Healthier Nation*, was published. It signalled that the Health Development Agency (HDA) would be established and that it would have, as one of its roles, building the evidence base in public health with a special focus on reducing inequalities in health. In April 2001 the Department of Health published its Research and Development Strategy. The strategy identified the task for the HDA as:

'Maintaining an up-to-date map of the evidence base of public health and health improvement, advising on the setting of standards in the light of evidence, for public health and health promotion practice, and effective and authoritative dissemination of evidence to practitioners.'
(Department of Health, 2001)

To translate this into reality the HDA has developed a number of ways of taking a systematic approach to compiling the evidence, identifying gaps and making the evidence base accessible. This publication, one in a series of evidence briefings, is a milestone in that activity.

This evidence briefing is a review of reviews about public health interventions to promote the initiation of breastfeeding. The necessity for reviewing reviews, or tertiary level research, stems from the proliferation of systematic and other types of review in medicine and public health over the last decade or more. The HDA has already published evidence briefings on the prevention and reduction of alcohol misuse, teenage pregnancy and parenthood, HIV prevention and health impact assessment. Over the next few months evidence briefings dealing with the following issues will be published: sexually transmitted infections, obesity, smoking, drug use, accidental injuries in children and older people, and depression in older people. Other briefings will be about the promotion of physical activity, good mental health, and social support in pregnancy.

Taken together these briefings will provide a comprehensive synthesis of the evidence drawn from systematic and other kinds of review. They will all be available on the HDA's website www.hda.nhs.uk/evidence and the electronic versions will be updated on a regular basis as new evidence becomes available.

The first editions of the briefings have been based on evidence drawn from systematic and other kinds of reviews. This means that the type of evidence that does not traditionally find its way into reviews has not been considered in detail for these documents. In future editions of the evidence briefings it is planned to extend the coverage of evidence beyond reviews to other methodologies and other types of study, where these are available.

The construction of the evidence base has involved collaboration with a number of partners who have interests and expertise in practical and methodological matters concerning the drawing together of evidence and its dissemination. In particular the HDA would like to acknowledge the following: the NHS Centre for Reviews and Dissemination at the University of York, the EPPI-Centre at the Institute of Education at the University of London, Health Evidence Bulletins Wales, the ESRC UK Centre for Evidence Based Policy and Practice at Queen Mary College, University of London and its nodes at the City University London and the MRC Public Health Sciences Unit at the University of Glasgow, members of the Cochrane and Campbell collaborations, the United Kingdom and Ireland Public Health Evidence Group and the members of the Public Health Evidence Steering Group. This latter organisation acts as the overall guide for the evidence-building project of the HDA. The cooperation of colleagues in these institutions and organisations has been of significant help in the general work in preparing the framework for how we assess the evidence. The HDA is,

however, responsible for the presentation and organisation of the material in the briefings.

We would also like to express our gratitude to the breastfeeding evidence base reference group and to HDA colleagues who assisted in organising the literature searches.

Every effort has been made to be as accurate and up to date as possible in the preparation of this briefing. However, we would be very pleased to hear from readers who would like to comment on the content or on any matters relating to the accuracy of the briefing. We will make every effort to correct any matters of fact in subsequent editions. Comments can be made by using our website www.hda.nhs.uk/evidence

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Reference

Department of Health (2001). *A Research Development Strategy for Public Health*. London: Department of Health.

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Summary

Introduction

This briefing presents the current evidence from selected good quality systematic reviews and meta-analyses published since 1996. It will be updated regularly as new evidence becomes available and can be accessed via www.hda.nhs.uk/evidence. The briefing is intended to inform policy and decision-makers, NHS providers, public health physicians and other public health practitioners in the widest sense.

Evidence shows that breastfeeding has both short- and long-term health benefits, and has an important contribution to make towards meeting the new target to reduce infant mortality as a core element in reducing health inequalities:

'Starting with children under one year, by 2010 to reduce by at least 10% the gap in mortality between routine and manual groups and the population as a whole.'

(Department of Health, 2002a)

As well as providing complete nutrition for the development of healthy infants, human breastmilk has an important role to play in protection against gastro-enteritis and respiratory infection (Kramer et al., 2001; Howie et al., 1990; Wilson et al., 1998; Cesar et al., 1999). There are also strong indications that breastfeeding plays an important role in preventing otitis media (Duncan et al., 1993; Aniansson et al., 1994), urinary tract infection (Marild et al., 1990; Pisacane et al., 1992), atopic disease if a family history of atopy is present (Lucas et al., 1990; Burr et al., 1989; Saarinen and Kajosaari, 1995), juvenile onset insulin-dependent diabetes mellitus (Mayer et al., 1988; Virtanen et al., 1991) and obesity (Dewey et al., 1992; von Kries et al., 1999; Gilman et al., 2001).

Breastfeeding is also beneficial to the mother's health. Women who do not breastfeed are significantly more likely to develop epithelial ovarian cancer (Gwinn et al., 1990) and pre-menopausal breast cancer (Beral, 2002; Newcombe et al., 1994) than women who breastfeed. Other benefits for the breastfeeding mother include the increased likelihood that she will use up the body fat deposited in pregnancy (Dewey et al., 1993).

The World Health Organization recommends that wherever possible infants should be fed exclusively on breastmilk from birth until six months of age (World Health Organization, 2002). In the UK, the policy statement of the British Paediatric Association (1994) supports the promotion of breastfeeding. Following the white paper, *Saving Lives: Our Healthier Nation* (Department of Health, 1998), the Action Report on reducing health inequalities (Department of Health, 1999) outlines recommendations to increase the uptake of breastfeeding. It identifies the promotion of breastfeeding as a means of assisting improvements in health as well as the reduction of health inequalities among mothers and children in the UK.

Taking this a step further, the Department of Health's recent *Priorities and Planning Framework 2003-2006* has set a target for breastfeeding to 'deliver an increase of two percentage points per year in breastfeeding initiation rates, focusing especially on women from disadvantaged groups' (Department of Health, 2002b).

Since the 1980s there have been several international and national programmes aimed at promoting the initiation and duration of breastfeeding. The UK Infant Feeding 2000 survey (Hamlyn et al., 2002), however, shows rates of initiation are relatively low, with initial breastfeeding rates at 71% in England and Wales, 63% in Scotland and 54% in Northern Ireland. Inequalities in breastfeeding

exist at present. Babies of mothers classified in higher occupations are much more likely to be breastfed at birth than babies of mothers in lower occupations. The UK Infant Feeding 2000 survey (Hamlyn et al., 2002) shows that mothers most likely to initiate breastfeeding are those who reach higher educational levels, are aged over 30 years, and are feeding their first as opposed to subsequent babies.

The challenge remains in the UK for policy-makers, healthcare professionals and managers to develop and deliver effective breastfeeding promotion programmes that also address the socio-economic bias in the uptake of breastfeeding. If successful, this would enable mothers and infants in low income groups to share in the health benefits of breastfeeding.

Methodology

The evidence briefing is a review of reviews, a synthesis of high quality systematic reviews, meta-analyses and other syntheses (papers which met the inclusion criteria of systematicity, transparency and relevance for the HDA Evidence Base as assessed by critical appraisal). Other literature or narrative reviews have informed the context and commentary in this evidence briefing, but have not been included in the HDA Evidence Base. This synthesis is not a systematic review of primary data. Practice data ('good' or 'best' practice studies) and grey literature were not included in the search. While such data have an important place in the process of gathering evidence for decision-making, there is a lack of tools enabling such data to be properly searched and rated (Kelly et al., 2002).

The following procedures were used to identify the reviews to be included in the briefing:

- Systematic searching of the literature
- Selection of relevant systematic reviews and meta-analyses
- Critical appraisal of selected reviews by two readers for transparency, systematicity and relevance
- Assessment of the quality of the evidence, gaps in the evidence identified and recommendations made for further research.

Findings

Two reviews met the criteria for inclusion:

- Tedstone, A., Duncie, N., Aviles, M., Shetty, P. and Daniels, L. (1998). *Effectiveness of interventions to promote healthy feeding in infants under one year of age: a review*. London: Health Education Authority.
- Fairbank, L., O'Meara, S., Renfrew, M. J., Woolridge, M., Sowden, A. J. and Lister-Sharp, D. (2000). A systematic review to evaluate the effectiveness of interventions to promote the initiation of breastfeeding. *Health Technology Assessment Programme 2000* 4 (25).

The Fairbank et al. (2000) review was comprehensive in scope and identified and assessed all types of health promotion intervention. Tedstone et al. (1998) focused on studies evaluating interventions targeting women themselves and these were generally educational. Where there was an overlap of papers, the findings from both reviews were found to be consistent, despite different approaches.

Health education

Health education interventions aim to provide factual information about breastfeeding. These may be delivered through educational sessions or leaflets and are often grounded in professional expertise.

- There is some evidence that distributing breastfeeding literature alone among the general population is not effective in promoting breastfeeding among women of different income and ethnic groups in the UK, Republic of Ireland and USA.
- Breastfeeding literature and formal education delivered to low income groups in the USA were not effective at promoting the initiation of breastfeeding. However, evidence was based on small-scale studies.
- Group health education can be effective among women from different ethnic and low income groups in westernised countries.
- One-to-one educational programmes were more effective for women who planned to bottlefeed whereas group programmes were more effective for women who planned to breastfeed. This evidence is based on studies of low income black Americans.
- Paying participants to attend increased participation rates for group classes.
- In a coordinated three-step approach to health education for women in Sweden, advice, leaflets and

routine health education plus intensive staff training had significant effects on initiation rates. There may be some difficulties in generalising the intervention to the UK but, in principle, the combined approach looks promising.

- Breastfeeding promotions delivered over both the ante- and postnatal period were most likely to have a positive effect on breastfeeding. The interventions involved were intensive, involving multiple contacts with a professional promoter or peer counsellor.
- Antenatal educational sessions were more effective when enhanced by contact with peer counsellors.
- Weaker evidence suggests promotion efforts may be assisted by including partners, providing incentives and changing the content of commercial hospital packs given to women upon discharge from hospital.
- The least successful interventions were those where breastfeeding promotion was only one part of a multiple health promotion programme, and involved special visits to the hospital/clinic or took place by telephone.

Health sector initiatives

Initiatives in the health sector aim to change the organisation of health services and care received by women in favour of the promotion of breastfeeding. These interventions are mostly conducted in the hospital sector and have included evaluations of the training of health professionals, 'rooming-in' (a home-like, private room), the reduced use of artificial milk, health education activities and studies by the WIC programme (US Department of Agriculture's Program for Women Infants and Children – www.fns.usda.gov/wic).

- In a combined approach, training of staff, employment of a breastfeeding counsellor, written information and rooming-in were effective for both initiation and duration in the USA among low income women. However, this evidence is based on a poor quality trial.
- The large health sector initiative set up by the US Department of Agriculture's WIC programme focused on low income American women and reported increases for initiation and duration of breastfeeding. Interventions included group or individual health education and/or peer support programmes, delivered in both the antenatal and postnatal periods in either hospital or clinic settings. Programmes including a peer support component appeared to be most effective.
- Rooming-in has been shown to be an effective measure in developing country settings, although studies have before-after study designs. Rooming-in, early contact and breastfeeding education were effective for initiation and duration in Brazil.

Training of health professionals

- Training health professionals as a standalone intervention did not produce statistically significant increases in initiation rates.
- Women's knowledge and attitudes about breastfeeding were significantly improved by the training of health professionals as part of a health sector initiative. A five-year programme, which included training of health professionals, reported small increases in initiation but these were not proved to be statistically significant.
- There is limited evidence to show that intensive lactation training courses for health professionals alone can have an effect on breastfeeding initiation rates. A package of interventions including training, however, may be more likely to influence attitudes and encourage uptake of breastfeeding.

Social support from health professionals

- Only one UK-based randomised controlled trial (RCT) was found (Oakley, 1990), which evaluated the effect of social support for socially disadvantaged women. Support was provided in the form of home visits and telephone calls by a midwife on hospital discharge.
- No significant difference was reported in initiation rates between the intervention and control groups. However, this finding may have been influenced by the support received by some of the control group as 'standard care'. Feedback given by women regarding the intervention was very positive and suggested that a midwife listening to them was important.

Peer support programmes

- Peer support programmes as standalone interventions have been shown to be effective in both the antenatal and postnatal periods for women who expressed a wish to breastfeed, but not for women who had decided to bottlefeed.
- Three out of five effective WIC interventions with women on low incomes included a peer support programme.
- Qualitative research exploring why some women on low incomes do not want to breastfeed concluded that breastfeeding is a practical skill. The confidence and commitment to breastfeed successfully are best achieved by exposure to breastfeeding rather than talking or reading about it.

Media campaigns

- Local media campaigns (in one case TV) can be effective in improving attitudes towards breastfeeding.
- One study (Coles et al., 1978) showed an increase in initiation rates as a result of a hospital-based media campaign, although the age and methodological quality of the study limit its usefulness.

Multi-faceted interventions

- Multi-faceted interventions have been shown to increase initiation rates. Five out of six effective multi-faceted interventions included a media campaign, in combination with health education programmes, training of health professionals and/or changes in government and hospital policies.
- Four out of six effective multi-faceted interventions included a peer support programme in combination with health education programmes, media programmes and/or legislative and structural changes to the healthcare sector.

Package of interventions: the Scandinavian experience

In Scandinavia, where breastfeeding rates have remained at around 98%, multi-faceted interventions have been implemented at a national level over the last 20 years.

Four types of intervention, listed below, have contributed to the high level of breastfeeding in Scandinavia.

However, no evaluation has been undertaken to examine which, if any, of these aspects were more effective, or if the combined package was necessary.

Interventions:

- An increase in problem-based information about breastfeeding, written mostly for and often by mothers, but read also by health workers. Consequently, more health workers also succeeded in their own breastfeeding.
- Increased availability of mother-to-mother support groups, health workers with better management skills and sometimes personal experience, and the rise in collective breastfeeding experience as more women successfully breastfeed.
- Increase in paid maternity leave with guaranteed return to previous employment.
- Maternity ward practices changed substantially towards mother-infant contact and autonomy.

Recommendations for research

Based on the findings of this review, the following recommendations are made.

- The quality of research in the promotion of breastfeeding should be improved to ensure all studies meet key quality criteria. In particular, studies should be adequately sized, and use appropriate experimental and descriptive designs, consistent definitions of feeding, and useful measures of outcome. New studies should be properly grounded in previous research from appropriate, relevant fields (eg research on behaviour change).
- Evaluation, using a 'fully factorial' design (investigating every factor and all factor interventions), is needed to assess the impact of the following interventions when delivered individually or in combination, and among different population groups by income and ethnicity, with particular focus on those in lower socio-economic groups and minority ethnic groups:
 - Small group informal health education from a midwife or nurse in the antenatal period
 - Peer support during the ante- and postnatal periods
 - Changes to maternity ward practices to increase mother-infant contact and autonomy
 - Increases in maternity leave
 - National media campaign.
- To measure the impact of the new target for breastfeeding (Department of Health, 2002b), work is needed to examine ways of standardising the measurement of initiation and continuation of breastfeeding across the NHS, and in all four countries of the UK. A manual could be developed, using standardised definitions of breastfeeding and weaning, to allow the efficient collection of data which would enable comparison across social and regional groups in the UK, as well as in other countries. Such data should include information on social factors associated with breastfeeding, to examine whether or not the aim of reaching women from the most disadvantaged groups is met.*
- A national review of access to quality and affordable birthing services for women living in disadvantaged areas should be conducted. Quality criteria should be based on the Baby Friendly Hospital Initiative (Woolridge, 1994) and the more recent Seven Point

* The Department of Health plans to publish further information on the measurement of breastfeeding initiation during 2003.

Plan for promoting breastfeeding in community healthcare settings (UNICEF UK, 1999).

- Evaluation is needed of innovative health education approaches to increase initiation rates among women on low incomes that foster participation of partners, mothers or peers as part of the intervention.
- The impact of breastfeeding promotion programmes on breastfeeding practices among women of different ethnic groups in the UK should be evaluated.
- Evaluation is needed of the impact of advertising and marketing of breastmilk substitutes on families and health professionals in the UK.
- There should be evaluation of the impact of intensive breastfeeding training courses and in-service lactation training programmes for health professionals, particularly those servicing the needs of women living in disadvantaged circumstances. Training programmes should be evaluated as single interventions and, using an appropriate factorial design, as part of a package of health service reforms to promote breastfeeding. Different training programmes should be compared, including one-off and ongoing programmes, and the experience of health professionals taking such courses should be examined, including the effects of asking health professionals to discuss their own personal feeding experiences.
- Community based evaluation is needed of the effect of improved facilities for breastfeeding outside the home (eg cafes that welcome breastfeeding, breastfeeding facilities in local stores and shopping malls) on initiation and duration rates.
- Epidemiological evaluation is needed of the forthcoming legislative increases in maternity leave in terms of changes in the numbers of women starting to breastfeed in the UK and among different socio-economic and ethnic groups.
- Further research should be undertaken to explore the effects of media campaigns in changing attitudes of women, families and society towards breastfeeding, particularly among socially disadvantaged groups. Media campaigns should be evaluated as single interventions and, using an appropriate factorial design, as part of a package of activities to promote breastfeeding.

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Introduction

The HDA Evidence Base

Decisions about policy and practice in the public sector are increasingly driven by consideration of the best available evidence. The process of drawing together, analysing and synthesising evidence from research is a central principle of evidence-based practice. Typically, the process of reviewing an area of practice or intervention will include the production of a systematic review of effectiveness, a meta-analysis or some other review-level synthesis and interpretation of evidence from research.

As more reviews and meta-analyses are carried out across the spectrum of public health, there is an increasing need to map the areas that they cover, assess their quality and pull together any common findings about what works in particular areas to improve health and reduce health inequalities. The Health Development Agency (HDA) has taken on the task of mapping and synthesising the best available review-level evidence for the effectiveness of interventions to improve health and reduce health inequalities across priority areas of public health. This evidence briefing is part of the first set of publications from the project. Mapping and synthesis of review-level data will enable practitioners and policy-makers to view the aggregate strength of the evidence in key areas, see clearly where review-level evidence is lacking, and inform the development and commissioning of future research and reviews.

Evidence briefings are essentially reviews of reviews, analysing the strengths and weaknesses at this level in a topic's evidence base, identifying gaps in the evidence, analysing future primary and secondary research needs, and discussing the implications of findings for policy and practice. Each briefing has a freestanding summary that is published separately. The evidence briefings are also

published on and supported by the HDA website (www.hda.nhs.uk/evidence). The evidence base website will contain the latest edition of this briefing and the authors recommend that readers refer to the website to ensure they have the latest version. Access to the original reviews on which these briefings are based can also be found on the evidence base website, when they are available. Evidence briefings are designed to be accessed by a variety of users including those simply looking for headline findings, those wanting complete and detailed syntheses, and those who need to track back to the original primary and secondary sources.

Providing comprehensive, up-to-date syntheses of the literature available in reviews is the chosen first step in a process of building the public health evidence base. As our programme of work continues, we will turn our attention to bringing into our evidence briefings work that does not usually find its way into systematic reviews.

At present, a three-tier structure underpins the HDA's work to develop the public health evidence base.

- A Public Health Evidence Steering Group (PHESG) with membership drawn from universities, public health and research and development divisions of the Department of Health, other government departments, public health practitioners, representatives of research funding bodies, the NHS Centre for Reviews and Dissemination, Cochrane and Campbell collaborations, the EPPI-Centre, and other UK and World Health Organization (WHO) representatives. The group is chaired by a high-ranking official from the Department of Health on behalf of the Chief Medical Officer for England. This overarching group advises on the broad strategic direction of the evidence base and has a remit to quality assure the processes developed by the HDA to construct the evidence base.

- For each topic area covered (eg accidental injuries and low birth weight), there is a reference group. These report to the PHESG, and consist of key academics, practitioners and officials with expertise in the area. Reference groups control the content of the evidence base and guide the production of evidence briefings.
- Finally, the HDA is working to establish a robust evaluation framework for the entire HDA evidence base project. This will include the formation of user panels to guide and inform our priorities and work.

The next stage in the process is the development of practice advice, derived from the findings of the evidence-based briefings. This briefing does not contain advice or guidance for practice. Following the publication of this briefing, a similar process of mapping and synthesis, informed and reviewed by practitioner and research experts, will take place, leading to practice-based advice and publications.

Who is this briefing for?

This briefing is intended to inform policy- and decision-makers, NHS providers, public health physicians and other public health practitioners in the widest sense. Further work will be done to turn the summary of evidence presented here into advice for practice. The limitations of this briefing and the data on which it is based, and alternative sources of evidence that may be helpful to inform policy and practice, are set out below.

What evidence?

At present, the systematic review is probably perceived to be the most robust and reliable marker of effectiveness, closely followed by a well-designed meta-analysis. They are used heavily in clinical sciences to inform practice, and are generally well regarded when used appropriately. This evidence-based briefing pulls together evidence from systematic reviews of effectiveness. Yet relying on this type and level of evidence to inform our conclusions about public health interventions to promote the initiation of breastfeeding has some limitations, and it is important to consider them when making decisions about policy or practice.

Definitions of what constitutes ‘good’ quality evidence in mainstream public health have been inherited from

medical and scientific paradigms, where the experimental evaluation of clinical efficacy is commonplace and often appropriate. Although there is an increasing use of these approaches, which rely on traditional evidence hierarchies, they may not always be the most appropriate methods of assessing the impact of interventions to improve public health, nor in particular to assess the impact of interventions on health inequalities.

At review (rather than single study) level, meta-analyses and systematic reviews of effectiveness can be very powerful tools for demonstrating the impact (or lack of it) of an intervention. However, they rely heavily on controlled evaluation studies and statistically measurable outcome variables. In contrast, public health interventions to promote the initiation of breastfeeding are highly complex and relational, and almost impossible to capture in terms of quantitative outcomes alone.

A second issue is that, while meta-analyses and systematic reviews (and sometimes, to a lesser extent, literature reviews) are well placed to make judgements about the strength of impact of an intervention, and the quality of the evaluation design, they tend not to examine the appropriateness or quality of an intervention itself, and certainly not in any robust or systematic manner. This can be a source of bias – an inappropriate intervention might have a strong impact on one quantifiable outcome measure, and therefore influence review conclusions, even though that outcome measure might not be the most appropriate or useful. In other words, there is a risk that inappropriate or ill-designed interventions can be given more weight than more suitable (and often more complex or long-term) interventions, because they may be simpler and quicker to evaluate, or because they can prove some effect relatively easily. However, in spite of these limitations systematic reviews are still a powerful tool in certain circumstances, based as they are on principles of finding good and effective interventions, eliminating harmful interventions, and facilitating public accountability – principles that are important cornerstones for the HDA in building the public health evidence base.

A third issue is that reviews tend to rely on data from certain types of evaluation design – most often experimental and quasi-experimental trials – thus excluding a substantive amount of literature from their consideration. It is important to note that if this evidence briefing has uncovered no evidence to support a certain

intervention or programme, it does not mean there is absolutely no evidence out there, just that we have found no evidence included in reviews that meet our criteria.

At present there are problems in trying to incorporate other types of evidence into our evidence briefings. In some areas, such as qualitative research, the thresholds as to what constitutes 'good' quality work are contested by different researchers. There is as yet no agreed method for systematically synthesising or reviewing such work, although there are a number of projects underway nationally and internationally to develop an appropriate methodology. Nor is there any clear or agreed method for combining non-traditional forms of evidence – such as that from qualitative research, action research, expert opinion and so on – with evidence from more traditional types of study to provide a more comprehensive assessment of the effectiveness of different interventions. For the time being, the HDA has taken a first step to pull together evidence from systematic reviews, meta-analyses and good quality narrative reviews, with an acknowledgement that this limits our data pool and may provide only partial answers to our research questions.

A final issue is that of time lag. Inevitably, if one relies on review-level data to gather information about effectiveness, some time – usually one or more years – will elapse between the publication of single studies, the subsequent examination of these single studies by reviewers, and the publication of their reviews. Because of the processes involved in carrying out meaningful, high quality research, this is to some extent inevitable, and it can be argued that the procedures that cause this delay – the need for publications to be peer-reviewed, the need for a body of work to build up before it can be reviewed and examined – help avoid publication or positive bias in review findings. It means that the reviews included in this briefing will take into account single studies with a cut-off date of at least one year before the most recent review. If one single study has been published in the meantime that alters common conceptions or consensus about public health interventions to promote the initiation of breastfeeding, it will take a while for the findings of that single study to filter into this forum. We expect to revise and update this briefing annually, which should ensure that new review data are included swiftly.

In summary, the data presented in this evidence-based briefing – data from reviews – are only a partial answer to

'what works' with respect to public health interventions to promote the initiation of breastfeeding. In using this briefing to inform practice or policy-making, there are a number of other sources of information and evidence that could usefully be taken into account. These include:

- Information from practice studies (eg practice databases, 'best practice' case studies)
- Research studies that are often or usually excluded from systematic reviews and meta-analyses (eg qualitative studies, non-controlled case studies, action research)
- Local data and project evaluations (local to your context and area)
- Expert and practitioner opinion
- Client opinion and experience.

Mapping, collating and making available data from these alternative sources will be a future priority for the HDA. In the meantime, the Public Health Electronic Library (PHeL – www.phel.gov.uk) will be a good starting point for the practitioner or policy-maker seeking to take these other types of evidence into account.

What is effectiveness?

In this briefing we use the term to describe demonstrable, intended effects on (usually quantitative) outcomes. However, the term is not uncontested. First, while 'demonstrable' effects, in this context, usually imply those that are statistically significant, in some situations – particularly where interventions require careful, long-term evaluation, this may be an ambitious definition. Second, in the UK at least, there are some tensions between different kinds of outcome measures, depending on the focus of the study.

The rating system that we have used (see the critical appraisal form, Appendix 2) favours reviews that have a transparent and replicable data search, methodology and analysis. This means that systematic reviews of effectiveness and meta-analyses tend to be rated highest (if they are well conducted) because of their clear methodology, relative to literature or other non-systematic reviews. This is not to say that literature reviews cannot be counted as strong evidence – where review rationale, methodology and analytic techniques are clear, they would be rated highly.

Note, however, that reviews are not always comparing the same thing – some reviews examine outcome data studies, others look at more prospective studies – so interpretation of what we have found is complicated by the state of the data pool. Equally, the reviews themselves sometimes make difficult or inappropriate comparisons between and across evaluation studies that examine different aspects of the problem.

Summary

This document aims to:

- Identify all relevant systematic reviews, meta-analyses and other reviews
- Review the evidence provided in these papers
- Highlight conflicting evidence and gaps in the evidence, and make recommendations about future research and commissioning.

It does not draw on other sources of evidence, or contain specific advice for practice: this will be developed as part of the next stage of the HDA's evidence into practice work. Systematic review-level evidence is only one source of evidence that should be used to inform guidance for practitioners. Evidence into practice requires gathering evidence from all sources and combining it with political and social information, and resource constraints, to develop learning that would be passed on to practitioners. The HDA has piloted this process of evidence into practice in two topic areas (physical activity and the prevention of accidental injuries) within the 2002-2003 financial year (Kelly and Speller, 2002).

Background to breastfeeding

Breastfeeding matters

Evidence shows that breastfeeding has both short- and long-term health benefits, and has an important contribution to make towards meeting the new target to reduce infant mortality as a core element in reducing health inequalities:

'Starting with children under one year, by 2010 to reduce by at least 10% the gap in mortality between routine and manual groups and the population as a whole.'

(Department of Health, 2002a)

Identifying the exact contribution that breast and formula feeding make to child health and illness is, however, problematic. There are serious methodological flaws in much of the literature relating to health outcomes and infant feeding. These include issues related to the classification of feeding (ie what constitutes breastfeeding or artificial feeding), reverse causality, and the use of long-term recall of infant feeding patterns rather than contemporaneous data. One result of these methodological problems is that findings from studies examining health outcomes can be inconsistent and, at times, contradictory.

In spite of these problems, there is still a strong and consistent finding that breastfeeding confers a number of important health benefits to the infant and the mother (and that artificial feeding results in a number of health hazards). This literature would benefit from a thorough critique, and new research should avoid the methodological pitfalls of past work.

It is clear that as well as providing complete nutrition for the development of healthy infants, human breastmilk has an important role to play in protection against gastro-

enteritis and respiratory infection (Kramer et al., 2001; Howie et al., 1990; Wilson et al., 1998; Cesar et al., 1999). There are also strong indications that breastfeeding has an important role to play in the prevention of otitis media (Duncan et al., 1993; Aniansson et al., 1994), urinary tract infection (Marild et al., 1990; Pisacane et al., 1992), atopic disease if a family history of atopy is present (Lucas et al., 1990; Burr et al., 1989; Saarinen and Kajosaari, 1995), juvenile onset insulin-dependent diabetes mellitus (Mayer et al., 1988; Virtanen et al., 1991) and obesity (Dewey et al., 1992; von Kries et al., 1999; Gilman et al., 2001).

Breastfeeding is also beneficial to the mother's health. Women who do not breastfeed are significantly more likely to develop epithelial ovarian cancer (Gwinn et al., 1990) and pre-menopausal breast cancer (Beral et al., 2002; Newcombe et al., 1994) than women who breastfeed. Other benefits for the breastfeeding mother include the increased likelihood that she will use up the body fat deposited in pregnancy (Dewey et al., 1993).

In addition to the nutritional and immunological superiority of breastmilk over formula milk, artificial feeding is associated with a number of specific health hazards to which breastfed babies are not exposed. These include the possibility of over- or under-concentrating formula milk during reconstitution, and the potential for infection introduced by using bottles, teats, and other vessels (Renfrew et al., in press).

Even taking account of the methodological shortcomings of current research, it is clear that breastfeeding has a fundamentally important role to play in public health.

The World Health Organization (WHO) recommends that wherever possible infants should be fed exclusively on breastmilk from birth until six months of age (WHO, 2002).

2002). In the UK, the policy statement of the British Paediatric Association (1994) demonstrates support for the promotion of breastfeeding. Despite this, rates of initiation are relatively low in the UK. Recent data from the Infant Feeding 2000 survey (Hamlyn et al., 2002) show that initial breastfeeding rates were 71% in England and Wales, 63% in Scotland and 54% in Northern Ireland.

Infant feeding and inequalities in health

The NHS Plan (Department of Health, 2000) proposes to address inequalities in healthcare. The Acheson Report (Department of Health, 1998b) gives high priority to addressing policies aimed at improving health and reducing health inequalities in women of childbearing age, expectant mothers and young children. It states that interventions to promote rates of breastfeeding should decrease the incidence of infant infection and lead to other health gains for the mother and baby.

Inequalities in breastfeeding exist at present. Babies of mothers classified in higher occupations are much more likely to be breastfed at birth than babies of mothers classified in lower occupations. The UK Infant Feeding 2000 survey (Hamlyn et al., 2002) shows that mothers most likely to initiate breastfeeding are those who reach higher educational levels, are aged over 30 years, and are feeding their first as opposed to subsequent babies.

Acheson (Department of Health, 1998b) suggests that interventions to promote breastfeeding should include support to mothers during pregnancy, labour and after birth. The report notes, however, that it is unknown whether such interventions can be developed to be particularly effective in disadvantaged groups.

Following the white paper, *Saving Lives: Our Healthier Nation* (Department of Health, 1998a), the Action Report on reducing health inequalities (Department of Health, 1999) outlines recommendations to increase the uptake of breastfeeding. It identifies the promotion of breastfeeding in order to assist improvements in health as well as the reduction of health inequalities of mothers and children in the UK. Taking this a step further, the Department of Health's recent *Priorities and Planning Framework 2003-2006* has set a target for breastfeeding to 'deliver an increase of two percentage points per year in breastfeeding initiation rates, focusing especially on women from disadvantaged groups' (Department of Health, 2002b).

The problem

Since the 1980s there have been several international and national programmes aimed at promoting initiation and longer duration of breastfeeding. The Baby Friendly Hospital Initiative is one such international policy, arising from the WHO/UNICEF policy statement on the special role of maternity services to protect, promote and support breastfeeding (WHO/UNICEF, 1989). The UK developed a national programme for its implementation in the hospital sector in 1993 (Woolridge, 1994). This was followed by the Seven Point Plan in the community based healthcare sector (UNICEF UK, 1999). A handbook for midwives, *Successful Breastfeeding* (Royal College of Midwives, 1988; 2002), which aimed to make the breastfeeding advice offered by midwives consistent and evidence-based, has been published and widely distributed. National Breastfeeding Awareness Week is supported across the UK.

National initiatives in the UK have included:

In England

- A series of government reports published by the Committee on Medical Aspects of Food Policy Infant Feeding Panel (COMA Reports, 1974, 1980, 1988). These highlighted the importance of demand feeding, rooming-in and early initiation of breastfeeding.
- The government's Joint Breastfeeding Initiative, which aimed to promote improvements in maintenance rates of breastfeeding through the use of non-government support organisations (Department of Health, 1988).
- Establishment of the National Breastfeeding Working Group, which produced a publication, *Breastfeeding – good practice guidance to the NHS*, in 1996.
- In 1999, a three-year Infant Feeding Initiative was launched by the Department of Health, with the aim to increase the incidence and duration of breastfeeding among those groups of the population who are least likely to breastfeed. As part of this initiative, money from the Public Health Development Fund has been awarded to projects that identified and developed good breastfeeding practices within the NHS. Over the past three years, 79 local projects have been funded. These projects will be evaluated to capture learning for the evidence base.
- As part of the Infant Feeding Initiative, two part-time national infant feeding advisers have been appointed in the Department of Health to act as a focus for developing and implementing strategies for promoting breastfeeding.

In Northern Ireland

- Targets for breastfeeding rates were set in 1995, remaining unchanged to date. These are set at 50% of women initiating breastfeeding, with 35% still breastfeeding at six weeks.
- A Breastfeeding Strategy for Northern Ireland was produced in 1999. This includes an action plan which outlines the need for coordinating activities, commissioning services, collecting regional information, focusing research, training health professionals, supporting breastfeeding in special circumstances, raising public awareness, limiting the promotion of artificial milk, legislative change, and monitoring progress.
- A Breastfeeding Strategy Implementation Group is supporting the implementation of the strategy.
- A Breastfeeding Coordinator was appointed in 2002, with a primary role of promoting and assisting in the implementation of the strategy.
- A report, *Priorities for Action 2003/2004* (Department of Health, Social Services and Public Safety, 2003), urges trusts to collect breastfeeding statistics by electoral ward, and to target social need in relation to promotion and support.

In Scotland

- The Scottish Joint Breastfeeding Initiative (SJBI) was established in 1991.
- In 1994, a national target was set for 50% of mothers to be still breastfeeding their babies at six weeks of life by 2005. Health boards were asked to set local targets taking local cultural influences into account.
- A multi-disciplinary Scottish Breastfeeding Group was established in 1995, building on the work of the SJBI. Its remit is to maintain a focus on breastfeeding promotion, provide a national resource of information and advice about breastfeeding, liaise with the Health Education Board for Scotland, and promote a multi-disciplinary approach.
- A national breastfeeding adviser was appointed in 1995. The remit is to assist NHS boards in achieving their breastfeeding targets, provide advice, training resources and support to the NHS and lay workers, act as a facilitator and support to local breastfeeding initiatives, and report and make recommendations to the Scottish Breastfeeding Group.

- A website has been established to provide in-depth information about breastfeeding in Scotland (www.show.scot.nhs.uk/breastfeed).
- Since 1996, Scottish health policy documents have all highlighted the importance of breastfeeding.
- Scotland has also ensured high quality collection of data about breastfeeding rates. By collecting information about breastfeeding on the Guthrie card, at the same time as the routine screening for PKU is conducted, Scotland has ensured the consistent collection of information about feeding in the first week of life. (PKU – phenylketonuria: an inherited disease where a baby is unable to break down the amino acid phenylalanine. PKU is diagnosed through a simple blood test after birth.)

In Wales

- The Welsh breastfeeding strategy was launched in 2002, entitled 'Investing in a better start'.
- Over £60,000 has been given in recent years to local organisations to support breastfeeding initiatives across Wales.
- An all-Wales Breastfeeding Coordinator will be appointed in 2003 to lead the implementation of the breastfeeding strategy.

The UK Infant Feeding 2000 survey (Hamlyn et al., 2002), however, shows that in the UK 30% of mothers did not breastfeed at all, using infant formula from birth. At between four to 10 weeks, the first stage in the survey, 58% of mothers were using infant formula exclusively, and 75% were using it either entirely or in conjunction with breastmilk.

Using data uncorrected for the changed social class composition of the sample in 2000, the Infant Feeding survey suggests that there has been a significant rise in breastfeeding across the UK (Hamlyn et al., 2002). The highest incidence is still found among women with the highest educational levels, from the higher occupations, aged over 30 years, mothers with their first as opposed to subsequent babies, and those from minority ethnic groups.

When considering the existing social gradient in breastfeeding in the UK, for example, 85% of mothers classified in the higher occupations initiated breastfeeding, compared to 73% in the intermediate groups and 59% in lower occupations (Hamlyn et al., 2002).

Of interest is the fact that significantly more mothers of subsequent babies in 2000 were changing their feeding method in favour of breastfeeding. In the UK, only 18% of mothers of subsequent babies changed their behaviour in 1995, compared to 26% in 2000 (Hamlyn et al., 2002).

When the data are corrected to account for the relatively higher social class composition of the 2000 sample, however, most of the changes described above are no longer apparent. Only Scotland and Northern Ireland show a real increase in breastfeeding rates (Hamlyn et al., 2002), though there is some indication that rates may be rising among lower social class groups in England, too.

In some European countries, the rates of breastfeeding have increased substantially over the last decade (most notably Scandinavia) as well as in other industrialised nations (Canada, Australia and New Zealand) (Renfrew et al., 2000). In Norway, 98% of women initiated breastfeeding in 1994, with 80% still breastfeeding at three months after birth. In the UK in 2000, only 42% of babies were still being breastfed at six weeks, falling to 21% at six months (Hamlyn et al., 2002).

Breastfeeding rates in other industrialised nations show that it is possible to increase sustained breastfeeding rates, even in cultures where artificial feeding has been considered the norm.

The challenge remains in the UK for policy-makers, healthcare professionals and managers to develop and deliver effective breastfeeding promotion programmes that will also address the socio-economic bias in the uptake of breastfeeding. If successful, this would result in mothers and infants in low income groups also being able to enjoy the health benefits of breastfeeding.

Factors associated with the initiation of breastfeeding

There are many social, psychological and clinical factors which may influence a woman's decision to start breastfeeding. The literature suggests that initiation of breastfeeding is dependent on multiple factors relating to the mother, the infant and the supportive environment. These have been classed as non-modifiable and modifiable in a recent review of studies assessing factors

associated with initiation of breastfeeding (Scott and Binns, 1999).

In the light of government initiatives to address broader socio-economic factors that impact on health, we have reworded their classification as 'macro socio-economic factors – modifiable in the medium to long term' and 'micro socio-economic and health factors – modifiable in the short to medium term'.

Macro socio-economic factors – modifiable in the medium to long term:

Disadvantage as a result of –

- Maternal age and level of education. Older and/or more educated women are more likely to initiate breastfeeding
- Socio-economic and marital status
- Ethnicity. Evidence from the USA suggests that ethnicity is associated with breastfeeding, Anglo-American mothers being more likely to initiate breastfeeding than other ethnic groups. This is not necessarily the case in the UK, however, where rates of initiation of breastfeeding were higher among minority ethnic groups, but with a more rapid discontinuation rate (Hamlyn et al., 2002)
- Biomedical factors – parity, method of delivery and infant health. Recent multivariate studies have shown that these factors were less consistently associated than previous univariate analysis had shown.

Micro socio-economic and health factors – modifiable in the short to medium term:

- Organisation of health services, antenatal instruction and lactation education
- Provision of supportive environments outside the home and the workplace environment
- Father's opinion, an important influence regardless of maternal age, ethnic group, education or marital status
- Social support provided by woman's partner, family and friends
- Attitudes of partners, mothers and peer groups
- Perceived cultural norm of infant feeding. This is an underpinning factor: individuals choose to either comply or deviate. It is within this context that the other complex range of psychological, social and clinical factors operate. In the UK, USA and most of western Europe (with the exception of Scandinavia), artificial feeding has become established as the cultural

norm, particularly within low income groups (Renfrew et al., 2000). Breastfeeding rates remain relatively low, despite extensive breastfeeding promotion programmes. An outcome of the more widespread use of artificial feeding is that there is a collective loss of knowledge and experience of breastfeeding in the community (Oakley, 1992). Many women giving birth in the UK over the last decade are likely to have mothers who did not breastfeed. However, a subculture has developed among women of higher income groups, where breastfeeding is considered the preferred feeding method. Evidence suggests that women who had regularly seen other women breastfeeding successfully were more likely to be committed to breastfeeding antenatally and more likely to succeed themselves. The confidence and commitment to breastfeed successfully may be best achieved by exposure to breastfeeding rather than theoretical knowledge gained by talking or reading about it (Hoddinott, 1999).

The development and evaluation of interventions to promote the initiation of breastfeeding must take into account the multiple factors associated with it. This is particularly relevant when addressing what works to reduce existing social gradients in breastfeeding, which may be compounded by such factors.

Aims and methodology

This research aims to:

- Identify systematic reviews, meta-analyses and other review literature on the topic of promoting breastfeeding initiation for inclusion in the Health Development Agency's Evidence Base. Papers identified would typically show findings derived from randomised controlled trials (RCTs) or, where such research is lacking, from non-RCT, quasi-experimental or observation studies
- Summarise the existing review evidence and identify gaps, with particular attention to what works to reduce existing social gradients in breastfeeding.

Search strategy

All relevant electronic databases were searched for English language papers on interventions to increase/encourage breastfeeding. Papers had to be systematic reviews, literature reviews or meta-analyses published between 1996 and October 2001. Searches were undertaken by the NHS Centre for Reviews and Dissemination at the University of York in discussion with the HDA. Searches were carried out on the following electronic databases:

Cochrane Library

DARE database

'Wider Public Health' report

MEDLINE

TRIP

HTA

SIGN

Health Evidence Bulletins Wales

National Guideline Clearinghouse

NCCHTA website

NICE web pages

REFER

National Research Register

Clinical Evidence

EMBASE

Sociological Abstracts

PsycINFO

See Appendix 1 for details of the results. Thirty-three papers were identified and their references searched for any potentially relevant reviews.

Two researchers (L. Protheroe and C. Mulvihill) independently appraised papers for relevance, systematicity and transparency using the HDA's critical appraisal process (see Appendix 2). There was no blinding of authorship of retrieved papers. Each reviewer completed a critical appraisal form and a joint decision was reached about whether a paper should be included on the HDA Evidence Base, used in the review to inform discussion, or discarded.

Only two reviews met the criteria for inclusion in the Evidence Base (excluded papers are listed in Appendix 3):

- Tedstone, A., Duncie, N., Aviles, M., Shetty, P. and Daniels, L. (1998). *Effectiveness of interventions to promote healthy feeding in infants under one year of age: a review*. London: Health Education Authority.
- Fairbank, L., O'Meara, S., Renfrew, M. J., Woolridge, M., Sowden, A. J. and Lister-Sharp, D. (2000). A systematic review to evaluate the effectiveness of interventions to promote the initiation of breastfeeding. *Health Technology Assessment Programme 2000 4 (25)*.

Table 1 summarises the methodology of these reviews. Both reviews included interventions targeting all types of participants with the exception of women with specific

health considerations or problems, eg AIDS (Fairbank et al., 2000), or dietary fads and allergies (Tedstone et al., 1998).

As this briefing is a review of reviews and not a systematic review of individual intervention trials, it should be noted that it was not possible to include the findings of a recent large intervention study of 17,046 mother-infant pairs conducted in the Republic of Belarus (Kramer et al., 2001). This intervention increased the duration and exclusivity of breastfeeding, but at present the study's findings are not available in the systematic review literature and are not considered further in this document.

Table 1: Methodology of reviews included in the HDA Evidence Base

Author and year	Number and type of study included	Period of reviewed studies	Details included				
			Databases and years searched	Search strategy	Study inclusion criteria	Assessment of the quality of studies	Results of individual studies
Tedstone et al. 1998	26 studies considered; 20 studies included (all RCTs)	1984-1996	✓	✓	✓	✓	✓
Fairbank et al. 2000	1,100 studies considered; 59 studies included (14 RCTs, 16 non-RCTs, 29 before and after studies)	Up to Nov 1998	✓	✓	✓	✓	✓

Evidence

Findings are reported using the following categories of intervention for the promotion of initial breastfeeding (Fairbank et al., 2000):

Health education

Health sector initiatives

Training of health professionals

Social support from health professionals

Peer support

Media campaigns

Multi-faceted interventions

Package of interventions: the Scandinavian experience.

Health education

Health education interventions aim to provide factual information about breastfeeding. These may be delivered through educational sessions or leaflets and are often grounded in professional expertise. Evidence appears to suggest that small, informal discussion classes, emphasising the benefits of breastfeeding and giving practical advice on how to breastfeed can increase initiation rates. This may be particularly effective among women of certain ethnic groups. Literature alone appears to have little impact.

Findings from Fairbank et al. (2000):

- There is some evidence that breastfeeding literature alone among the general population is not effective in promoting breastfeeding among women of different income and ethnic groups in the UK, Republic of Ireland and the USA.
- Breastfeeding literature and formal education among low income groups in the USA were not effective at promoting initiation of breastfeeding. However, evidence was based on small-scale studies.

- Group health education can be effective among women from different ethnic and low income groups in westernised countries. This is based on one US study (Kisten et al., 1990) and one UK study (Wiles, 1984) in which group sessions were shown to be effective, although there are some methodological weaknesses in both studies. An Australian study of Vietnamese women (Rossiter, 1994) also found group sessions to be effective.
- A further four RCTs in the USA targeted low income women, but only one reported increased initiation rates. This trial involved the use of a self-help manual designed to motivate women to breastfeed. It included a problem-solving section for managing common breastfeeding problems with usual breastfeeding advice. When the results were recalculated to include all women regardless of whether they withdrew, the findings were no longer statistically significant.
- One-to-one educational programmes were more effective for women who planned to bottlefeed, whereas group programmes were more effective for women who planned to breastfeed. This evidence is based on studies of low income black Americans.
- Paying participants to attend has been shown to be effective at increasing participation rates for group classes.
- In the UK, one study (Hart et al., 1980) assessed the provision of additional health education from community staff through face-to-face and telephone contacts in the antenatal and postnatal periods. Frequency of contact was increased, guidelines on managing breastfeeding problems were formulated, and telephone advice offered. The increase in numbers of women starting to breastfeed as a result was not statistically significant.
- In a coordinated three-step approach to health education in women in Sweden, advice, leaflets and routine health education plus intensive staff training

had significant effects on initiation rates. There may be some difficulties in generalising the intervention to the UK but, in principle, the combined approach could be effective.

- No studies reported statistically significant negative effects in terms of the number of women initiating breastfeeding or any other adverse effect.

Findings from Tedstone et al. (1998):

- One-to-one educational sessions were more successful than group sessions when they were aimed at promoting initial breastfeeding with women who had already made a decision to bottlefeed.
- Breastfeeding promotions delivered in the period both before and after birth were most likely to have a positive effect on breastfeeding. These interventions were intensive, involving multiple contacts with a professional promoter or peer counsellor.
- The effectiveness of prenatal educational sessions in initiating breastfeeding was enhanced by contact with peer counsellors.
- Weaker evidence shows that including partners, providing incentives and changing the content of commercial hospital packs given to women upon discharge from hospital may aid promotion.
- The least successful interventions were those where breastfeeding promotion was only one part of the focus of multiple health promotion programmes and involved special visits to the hospital/clinic or took place by telephone.

Health sector initiatives

Initiatives in the health sector aim to change the organisation of health services and care received by women in favour of the promotion of breastfeeding. These interventions are mostly conducted in the hospital sector and have included evaluations of the training of health professionals, 'rooming-in' (a home-like, private room), the reduced use of artificial milk, health education activities and studies by the WIC programme (US Department of Agriculture's Program for Women Infants and Children – www.fns.usda.gov/wic).

Findings from Fairbank et al. (2000):

- In a combined approach, training of staff, employment of a breastfeeding counsellor, written information and rooming-in were effective for both initiation and

duration in the USA among low income women. However, this evidence is based on a poor quality trial.

- Evidence suggests that initiation rates can be increased following the implementation of WIC programmes among low income women. This large health sector initiative, set up by the US Department of Agriculture's WIC programme, focused on low income American women and reported increases in initiation and duration of breastfeeding. Interventions included group or individual health education and/or peer support programmes delivered in both the antenatal and postnatal periods in either hospital or clinic settings. In particular, programmes including a peer support component appeared to influence breastfeeding initiation.
- Rooming-in has been shown to be an effective measure in developing country settings, although studies have before-after study designs. Rooming-in, early contact and breastfeeding education were effective for initiation and duration in Brazil.

Findings from Tedstone et al. (1998):

- One study (Hartley and O'Connor, 1996) evaluated a breastfeeding educational package in the USA, Best Start. This involved training health professionals to promote breastfeeding, educating women to make an informed choice and providing the support of a lactation specialist. These measures were found to increase initiation rates. However, design problems may affect the validity of the results.
- Another study (Bruce and Griffioen, 1995) evaluated the effects of policy changes in the UK, including the appointment of a breastfeeding adviser (BFA) and training of staff, and including the reduction of staff that worked predominantly night shift, to enable exposure to the new policy and training. The BFA trained maternity staff and ran prenatal and postnatal outpatient sessions for mothers, and visited all mothers in hospital after delivery. These measures, however, were found to have no effect on initiation or duration of breastfeeding. Thirty per cent of women reported not having seen the BFA and were found to be less likely to have started breastfeeding.

Training of health professionals

Findings from Fairbank et al. (2000):

- Training health professionals as a standalone intervention did not produce statistically significant increases in initiation rates.
- Women's knowledge and attitudes about breastfeeding were significantly improved by the training of health professionals as part of a health sector initiative package. A five-year programme which included training of health professionals reported small increases in initiation of breastfeeding, but these were not proved to be statistically significant.
- There is limited evidence to show that intensive lactation training courses for health professionals alone can have an effect on breastfeeding initiation rates. A package of interventions including training, however, may be more likely to influence attitudes and promote breastfeeding.

Social support from health professionals

Fairbank et al. (2000) report on one UK-based RCT (Oakley, 1990) which evaluated the effect of social support for socially disadvantaged women. This took the form of home visits and telephone calls by a midwife on hospital discharge. No significant difference was reported in initiation rates between the intervention and control groups. However, it is noted that this finding may have been influenced by the support received by some of the control group as 'standard care'. Feedback given by women was very positive and suggested that a midwife listening to them was important.

Peer support programmes

Findings from Fairbank et al. (2000):

- Peer support programmes as standalone interventions have been shown to be effective in both the antenatal and postnatal periods, for women who expressed a wish to breastfeed but not for women who had decided to bottlefeed. This evidence is based on two trials (non-RCTs of good and fair quality respectively) in the UK and USA which targeted women on low incomes.

- More generally, three out of five effective WIC interventions with women on low incomes included a peer support programme. Peer support was also an integral part of three out of six effective multi-faceted interventions (see below).
- Qualitative research exploring why some women on low incomes do not want to breastfeed concluded that breastfeeding is a practical skill. The confidence and commitment to breastfeed successfully are best achieved by exposure to breastfeeding rather than talking or reading about it.

Media campaigns

Findings from Fairbank et al. (2000):

- Local media campaigns (in one case TV) can be effective in improving attitudes towards breastfeeding.
- One study (Coles et al., 1978) showed an increase in initiation rates as a result of a hospital-based media campaign, although the age and methodological quality of the study limits its usefulness.

Multi-faceted interventions

Findings from Fairbank et al. (2000):

- Multi-faceted interventions have been shown to increase initiation rates of breastfeeding. Five out of six effective multi-faceted interventions included a media campaign, in combination with health education programmes, training of health professionals and/or changes in government and hospital policies.
- Four out of six effective multi-faceted interventions included a peer support programme in combination with health education programmes, media programmes and/or legislative and structural changes to the healthcare sector.

Package of interventions: the Scandinavian experience

In Scandinavia, where breastfeeding rates have remained at around 98%, multi-faceted interventions have been implemented at a national level over the last 20 years. Four types of intervention that have contributed to the high levels of breastfeeding in Scandinavia are

summarised below, as described in Fairbank et al. (2000). However, it should be noted that there has been no evaluation to examine which, if any, of these aspects were more effective, or if the combined package was necessary.

Interventions:

- An increase in problem-based information about breastfeeding, written mostly for and often by mothers, but read also by health workers. Consequently, more health workers also succeeded in breastfeeding their own babies.
- More mother-to-mother support groups, better management skills among health workers (and more workers with personal experience), and an increase in the collective sharing of breastfeeding experience due to the rising numbers of women who have successfully breastfed.
- Increase in paid maternity leave with guaranteed return to previous employment.
- Maternity ward practices changed substantially towards mother-infant contact and autonomy.

Quality of evidence

Primary data

Many methodological weaknesses were identified in the primary research.

- The terms breastfeeding, exclusive breastfeeding and partial breastfeeding were often used loosely or left undefined, leading to confusion as to whether babies were fed only breast milk or received additional fluids (Tedstone et al., 1998).
- Lack of information about how women were recruited into the studies suggests that many participants volunteered. This means there may be sampling bias within the studies reviewed, and findings may be affected by the fact that samples may not be representative (Tedstone et al., 1998).
- Findings may be influenced by the Hawthorne effect, which states that the act of participating in a healthcare study is likely to increase health-enhancing behaviour (Tedstone et al., 1998).
- Intervention group contact with a health promoter not shared by the control group may have influenced the outcome in some studies, regardless of the nature of the intervention (Tedstone et al., 1998).
- Most studies relied on self-reporting of feeding methods, which may have led to measurement bias (Tedstone et al., 1998).
- Papers often lacked the information needed to evaluate an intervention or replicate it in future (Fairbank et al., 2000).
- Publication bias may have influenced papers available for review, as studies reporting a positive outcome are more likely to be published than those reporting a null or negative effect (Fairbank et al., 2000).
- Potential confounders for evaluating breastfeeding were not always taken into account. For example, whether a woman was a first-time mother or had previous infant feeding experiences is a major

confounder which many studies failed to take into account (Tedstone et al., 1998).

- Power and sample-size calculations were often omitted, making it impossible to assess the adequacy of the study (Tedstone et al., 1998).
- Outcome assessment was rarely validated and attrition was often high or unreported (Tedstone et al., 1998).
- The relative effectiveness of different intervention components was not evaluated within individual studies, nor the effect of the same intervention on different sub-groups. There is a need to evaluate the effect of the same intervention on different population groups (Fairbank et al., 2000).

As stated in Fairbank et al. (2000) the following methodological improvements in future evaluation studies would strengthen the evidence base:

- Provision of detailed information about the intervention and its implementation methods, and details of the setting and method of delivery (where appropriate)
- Comprehensive baseline data for all groups
- Sample sizes that are adequate to detect significant effects if they exist
- Details of the method of allocation
- Analysis on an intention-to-treat basis
- Analysis at the correct level. For example, if communities are the unit of allocation they should also be the unit of analysis – adequate adjustment should be made if individual-level data are used
- Use of fully factorial designs to determine which programme components are effective.

Both reviews (Tedstone et al., 1998; Fairbank et al., 2000) found examples of studies which were too small to be useful, or methodologically flawed. The RCT remains the preferred study design for evaluation of effectiveness of an intervention; unfortunately, in this field, high quality

RCTs are scarce, in part because of the difficulties of conducting such trials in a topic area where studies need to be very large and complex. Where an RCT or a non-randomised controlled trial is impractical, before-and-after studies could be considered (eg for the evaluation of policies or organisational changes within the health sector). In such cases, particular attention should be paid to sampling methods, group comparability and the impact of confounding factors on the observed effect of the intervention. In addition to the need for experimental research, high quality qualitative studies of the experience of women and their families, and the ways in which support can be offered to them, are required.

The absence of a standard and internationally recognised definition of initiation of breastfeeding limits effective comparison of evaluations of breastfeeding promotion interventions (Auerbach et al., 1991; Labbok and Krasovec, 1990). The definition of initiation as 'ever breastfed', referring to all babies who were put to the breast at all, even if this was on one occasion only, would be consistent with the definition used in national infant feeding surveys in the UK. Similarly, duration of breastfeeding was defined as the length of time for which breastfeeding continued at all, regardless of when non-human milk and other drinks or foods were introduced. This has been measured at one and two weeks and four, six and nine months in the UK (Hamlyn et al., 2002).

Finally, the way outcome (ie breastfeeding) is measured often differs. It may be measured as point prevalence (the number of women breastfeeding at, for example, one, two or three months after birth) or as continued prevalence (ie the mean duration of breastfeeding). This makes it difficult to compare results across studies. An agreed approach to the measurement of outcomes in infant feeding studies would address this.

Reviews

The Fairbank et al. (2000) review was comprehensive in scope and identified and assessed all types of health promotion intervention. Tedstone et al. (1998) focused on studies evaluating interventions targeting women themselves, and were generally educational. Where there was an overlap of papers, the findings from both reviews were consistent despite different approaches, which increased confidence in their results.

Gaps in the evidence

Areas in which evidence has been identified as weak include:

- Tedstone et al. (1998) report that there is insufficient evidence to predict the design of successful programmes at present. Different breastfeeding promotional strategies need to be assessed in a number of different settings.
- Evaluations of interventions should be directed at groups where initiation of breastfeeding is particularly low. These include specific ethnic groups and low income groups in the UK; most evidence at present is based on studies of US populations (Fairbank et al., 2000).
- The effectiveness of interventions may be enhanced by ensuring that the needs of women and their families are addressed within the intervention (Tedstone et al., 1998).
- Participants' views, ie women's perceptions of interventions, need to be addressed. Qualitative methods may be used to explore women's views and should be included as an integral component of studies of effectiveness (Fairbank et al., 2000).
- More research is needed on the ways media campaigns can be used to shift cultural values so that breastfeeding is recognised as a cultural norm (Fairbank et al., 2000).
- More research is needed to evaluate health education approaches that target women's partners, mothers and peers, especially among women on low incomes where breastfeeding is not the norm (Fairbank et al., 2000).
- More research is needed on the impact of policy initiatives such as legislation and taxation. For example, the effect of increased maternity leave on initiation (current evidence relates to duration only) and the impact of the WHO Code of Marketing of Breast Milk Substitutes (Fairbank et al., 2000).
- More research is needed to evaluate the effects of supportive environments, for example, breastfeeding facilities outside the home, such as those in supermarkets (Fairbank et al., 2000).
- Evaluation is needed of the effect of the Baby Friendly Hospital Initiative, and other such initiatives in the UK, on breastfeeding outcome (Tedstone et al., 1998).
- More needs to be known about the targeting of women prior to pregnancy, and their partners, in breastfeeding campaigns (Tedstone et al., 1998).
- Peer support initiatives in the UK should be investigated further, including the potential role of midwives and health visitors in breastfeeding promotion (Tedstone et al., 1998).

Recommendations for research

Based on the findings of this review, the following recommendations are made:

- The quality of research in the promotion of breastfeeding should be improved to ensure all studies meet key quality criteria. In particular, studies should be of adequate size and use appropriate experimental and descriptive designs, consistent definitions of feeding and useful measures of outcome. It would be helpful if information about the incidence and prevalence of breastfeeding in the population being studied were given in study reports. New studies should be properly grounded in previous research from appropriate, relevant fields (eg research on behaviour change).
- Evaluation, using a 'fully factorial' design (investigating every factor and all factor interventions), is needed to assess the impact of the following interventions when delivered individually or in combination, and among different population groups by income and ethnicity with particular focus on those in lower socio-economic groups and minority ethnic groups:
 - Small group informal health education from a midwife or nurse in the antenatal period
 - Peer support during the ante- and postnatal periods
 - Changes to maternity ward practices to increase mother-infant contact and autonomy
 - Increases in maternity leave
 - National media campaigns.
- To measure the impact of the new target for breastfeeding (Department of Health, 2002b), work is needed to examine ways of standardising the measurement of initiation and continuation of breastfeeding across the NHS, and in all four countries of the UK. A manual could be developed, using standardised definitions of breastfeeding and weaning, to allow the efficient collection of data, which would enable comparison across social and regional groups in the UK, as well as in other countries. Such data should include information on social factors associated with breastfeeding to examine whether or not the aim of reaching women from the most disadvantaged groups is met.*
- Proposals for the reform of the Welfare Food Scheme have been published (Department of Health, 2002c) and have undergone a consultation exercise (Department of Health, 2003). However, there is a lack of evidence to inform the detail of the content and delivery of this new scheme and there is an urgent need to examine similar national schemes in other countries.
- A national review of access to quality and affordable birthing services for women living in disadvantaged areas should be conducted. Quality criteria should be based on the Baby Friendly Hospital Initiative (Woolridge, 1994) and the more recent Seven Point Plan for promoting breastfeeding in community healthcare settings (UNICEF UK, 1999).
- Evaluation is needed of innovative health education approaches to increase initiation rates among women on low incomes that foster participation of partners, mothers or peers as part of the intervention.
- Evaluation is needed of the impact of breastfeeding promotion programmes on breastfeeding practices among women of different ethnic groups in the UK.
- The impact of advertising and marketing of breast milk substitutes on families and health professionals in the UK should be evaluated.
- Evaluation is needed of the impact of intensive breastfeeding training courses and in-service lactation training programmes for health professionals, particularly health professionals servicing the needs

* The Department of Health plans to publish further information on the measurement of breastfeeding initiation during 2003.

of women living in disadvantaged circumstances. Training programmes should be evaluated as single interventions and, using an appropriate factorial design, as part of a package of health service reforms to promote breastfeeding. Different training programmes should be compared, including one-off and ongoing programmes, and the experience of health professionals taking such courses should be examined, including the effects of asking them to discuss their own personal feeding experiences.

- There should be community based evaluation of the effect of improved facilities for breastfeeding outside the home (eg breastfeeding cafes, and breastfeeding facilities in local stores and shopping malls) on initiation and duration of breastfeeding.
- Epidemiological evaluation is needed of the forthcoming legislative increases in maternity leave in the UK in terms of numbers of women starting to breastfeed, particularly among different socio-economic and ethnic groups.
- Further research is required to explore the effects of media campaigns in changing the attitudes of women, families and society towards breastfeeding, particularly among socially disadvantaged groups. Media campaigns should be evaluated as single interventions and, using an appropriate factorial design, as part of a package of activities to promote breastfeeding.

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APPENDIX 1

Breastfeeding search strategy

Provided by the NHS Centre for Reviews and Dissemination, October 2001

Limits

English language only

1996 to date

Human

NOT developing countries

Reviews only

Database checklist

	Version/service	File name
Cochrane Library	CD-ROM 2001/3	cochrane protocols.doc cochrane reviews.doc
DARE admin database	CRD website 17/10/01	dare.doc
'Wider Public Health' report	CRD website 17/10/01	–
TRIP	WWW 17/10/01	–
HTA database	CRD website 17/10/01	hta.doc
SIGN	WWW 17/10/01	–
Health Evidence Bulletins Wales	WWW 17/10/01	hebw.doc
National Guideline Clearinghouse	WWW 18/10/01	–
NCCHTA website	WWW 18/10/01	–
NICE web pages	WWW 19/10/01	–
REFER	WWW 19/10/01	–
National Research Register	CD-ROM 2001/3	NRR ong.doc NRR comp.doc
Clinical Evidence	Issue 4	–
EMBASE (1996-2001)	Datastar 19/10/01	embase.doc
Sociological Abstracts	Datastar 19/10/01	sociofile.doc
PsycINFO (2001/1 to 2001/8)	WinSPIRS 19/10/01	psycinfo.doc

Some search interfaces are relatively unsophisticated and extensive strategy searching is not possible. In those cases a range of high-level terms will be identified and used to search the resources, or publications lists will be scanned (for example with NCCHTA and SIGN websites).

Cochrane Library (2001/3) (searched 17/10/01)

breast-feeding:me(breastfeed* or (breast next feed*)) (breastfed or (breast next fed)) (#1 or #2) or #3)

DARE admin database (searched 17/10/01)

s breast(w)feeding/kwo

s breastfeed\$ or breast(w)feed\$

s breastfed or breast(w)fed

s s1 or s2 or s3

s (1996 or 1997 or 1998 or 1999 or 2000 or 2001)/dat

s s4 and s5

'Wider Public Health' Report (searched 17/10/01)

www.york.ac.uk/inst/crd/wph.htm

No relevant reference found.

TRIP (www.tripdatabase.com) (searched 15/10/01)

breast* retrieved no relevant references from databases other than CDSR, Health Evidence Bulletins Wales, DARE and NHS EED.

HTA database (<http://nhscrd.york.ac.uk/>) (searched 17/10/01)

s breast feeding/kwo

s breastfeed\$ or breast(w)feed\$

s breastfed or breast(w)fed

s s1 or s2 or s3

s (1996 or 1997 or 1998 or 1999 or 2000 or 2001)/xyr

s english/xla

s s4 and s5 and s6

SIGN (www.sign.ac.uk/guidelines/published/index.html) (searched 17/10/01)

No relevant guidelines found.

Health Evidence Bulletins Wales (searched 17/10/01)

There is a whole bulletin on maternity and early childhood, which was produced in October 1997. Chapter 17 is on infant feeding. Information on one potentially useful publication was found in this section.

National Guideline Clearinghouse (www.guideline.gov/index.asp) (searched 18/10/01)

search terms: breastfeeding or breast feeding.
No relevant guidelines found.

NCCHTA (www.hta.nhsweb.nhs.uk) (searched 18/10/01)

No relevant ongoing or completed technology assessments were found.

NICE (www.nice.org.uk/nice-web) (searched 19/10/01)

search terms: breast*
No relevant references found.

REFER (www.doh.gov.uk/research/rd3/information/findings.htm#refer) (searched 15/10/01)

search terms: breast feed* or breastfeed*
breast fed or breastfed
No relevant references found.

National Research Register (Issue 2001/3)

breast-feeding:me
(breastfeed* or (breast next feed*))
(breastfed or (breast next fed))
(#1 or #2) or #3
(review* or overview*)
((metaanalysis or metanalysis) or (meta next analysis))
(#5 or #6)
(#4 and #7)

Clinical Evidence

No relevant information found.

EMBASE (searched on DataStar 19/10/01)

meta adj analysis.de.metaanalys\$.ti,ab.meta-analys\$.ti,ab.meta adj
analys\$.ti,ab.cochrane.ti,ab,de.(review\$ or overview\$).ti.review.dt.synthes\$ with ((literature\$ or research\$ or studies or data).ti,ab.)
(pooled adj analys\$).ti,ab.
(data with pool\$) and studies
(medline or medlars or embase or cinahl or scisearch or psychinfo or psycinfo or psychlit or psyclit).ti,ab.
((hand or manual or database\$ or computer\$) with search\$).ti,ab.
((electronic or bibliographic\$) with (database\$ or data adj base\$)).ti,ab.
(review\$ or overview\$) with ((systematic\$ or methodologic\$ or quantitativ\$ or research\$ or literature\$ or studies or trial\$ or effective\$).ab.)
1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14
(retrospective\$ with review\$).ti,ab,de.
(case\$ with review\$).ti,ab,de.
(record\$ with review\$).ti,ab,de.
(patient\$ with review\$).ti,ab,de.
(patient\$ with chart\$).ti,ab,de.
(peer with review\$).ti,ab,de.
(chart\$ with review\$).ti,ab,de.
(case\$ with report\$).ti,ab,de.
(rat or rats or mouse or mice or hamster or hamsters or animal or animals or dog or dogs or cat or cats or bovine or sheep).ti,ab,de.
16 or 17 or 18 or 19 or 20 or 21 or 22 or 23 or 24
25 not (25 and 15)
15 not 26
editorial.dt.
letter.dt.
28 or 29
27 not 30
animal#
human#
32 not (32 and 33)
nonhuman#
human#
35 not (35 and 36)
34 or 37

31 not 38
(breast adj feed\$) or breastfeed\$
(breast adj fed) or breastfed
breast adj feeding.de.
40 or 41 or 42
39 and 43
..l 44 lg=en

Sociological Abstracts (searched on DataStar 19/10/01)

(breast adj feed\$) or breastfeed\$(breast adj fed) or
breastfed1 or 2..l 3 lg=en

PsycINFO (SilverPlatter version was searched on records added in updates during 2001; earlier record should form part of the DARE admin database)

"Breast-Feeding" in de
breastfeed* or breast feed*
breastfed or breast fed
#1 or #2 or #3
meta analy* in ti,ab
metaanaly* in ti,ab
(synthes* with (literature* or research* or studies or
data)) in ti,ab
(review or overview) in ti
(review or overview) in ab
(systematic* or methodologic* or quantitative or research*
or literature* or studies or trial* or effective*) in ab
(medline or medlars or embase or scisearch) in ab
pooled analys*
(data with pool with studies) in ti,ab
((hand or manual or computer or electronic or database)
and search*) in ti,ab
((electronic* or bibliographic*) with database) in ti,ab
(peto or der simonian or dersimonian or fixed effect*) in
ti,ab
"Literature-Review" in de
"Meta-Analysis" in de
#17 or #18
exact{literature-review-research-review} in pt
exact{meta-analysis} in pt
#5 or #6 or #7 or #8 or #9 or #10 or #11 or #12 or #13
or #14 or #15 or #16 or #19 or #20 or #21
#4 and #22
#23 and (ud >= "20001227")
#24 and (la = "english")

APPENDIX 2

HDA Evidence Base – critical appraisal tool

Authors: _____

Title: _____

Source: _____

Relevance to topic			
Does this paper address your topic area?	Yes	No	Unsure
Circle the type of paper:			
• Systematic review			
• Meta-analysis			
• Synthesis			
• Literature review			
• Other review (please specify)			
Does it address (circle as appropriate)?			
• Effectiveness (interventions and treatments)			
• Causation			
• Monitoring and surveillance trends			
• Cost			
• Other (please specify)			
Transparency			
Does the paper have a clearly focused aim or research question?	Yes	No	Unsure
Consider whether the following are discussed:			
• The population studied	Yes	No	Unsure
• The interventions given	Yes	No	Unsure
• The outcomes considered	Yes	No	Unsure
• Inequalities	Yes	No	Unsure
Systematicity			
Do the reviewers try to identify all relevant English language studies?	Yes	No	Unsure
Consider whether details are given for:			
• Databases searched	Yes	No	Unsure
• Years searched	Yes	No	Unsure
• References followed up	Yes	No	Unsure
• Experts consulted	Yes	No	Unsure
• Grey literature searched	Yes	No	Unsure
• Search terms specified	Yes	No	Unsure
• Inclusion criteria described	Yes	No	Unsure
Is it worth continuing?	Yes	No	
Why/why not?			

Quality			
Do the authors address the quality (rigour) of the included studies? Consider whether the following are used:	Yes	No	Unsure
• A rating system	Yes	No	Unsure
• More than one assessor	Yes	No	Unsure
If study results have been combined, was it reasonable to do so? Consider whether the following are true:	Yes	No	Unsure
• Are the results of included studies clearly displayed?	Yes	No	Unsure
• Are the studies addressing similar research questions?	Yes	No	Unsure
• Are the studies sufficiently similar in design?	Yes	No	Unsure
• Are the results similar from study to study (test of heterogeneity)?	Yes	No	Unsure
• Are the reasons for any variation in the results discussed?	Yes	No	Unsure
What is the overall finding of the review? Consider: • How the results are expressed (numeric – relative risks, etc) • Whether the results could be due to chance (p-values and confidence intervals)			
Are sufficient data from individual studies included to mediate between data and interpretation/conclusions?	Yes	No	Unsure
Does this paper cover all appropriate interventions and approaches for this field (within the aims of the study)? If no, what?	Yes	No	Unsure
Relevance to UK			
Can the results be applied/are generalisable to a UK population/population group?	Yes	No	Unsure
• Are there cultural differences from the UK?	Yes	No	Unsure
• Are there differences in healthcare provision with the UK?	Yes	No	Unsure
• Is the paper focused on a particular target group (age, sex, population sub-group etc)?	Yes	No	Unsure
Accept for inclusion onto HDA Evidence Base?	Yes	No	Refer to third party
Additional comments			

APPENDIX 3

Table of excluded papers

Paper	Reason for exclusion
Bar-Yam, N. B. (1997). Nursing mothers at work: An analysis of corporate and maternal strategies to support lactation in the workplace. <i>Dissertation Abstracts International Section A: The Humanities and Social Sciences</i> 58 (5): 1947.	Not initial breastfeeding
Bar-Yam, N. B. and Darby, L. (1997). Fathers and breastfeeding: a review of the literature. <i>Journal of Human Lactation</i> 13 (1): 45-50.	Not interventions to promote breastfeeding
Bassett, M. T. (2000). Psychosocial and community perspectives on alternatives to breastfeeding. <i>Annals of the New York Academy of Sciences</i> 981: 128-35.	Not relevant
Bender, D. E., Dusch, E. and McCann, M. (1998). From Efficacy to Effectiveness: selecting indicators for a community-based lactational amenorrhoea method promotion programme. <i>Journal of Biosocial Science</i> 30 (2): 193.	Not relevant
Borton, L. (2000). Parenting choices or collapse of mutual recognition? An intersubjective analysis of extended breastfeeding. <i>Dissertation Abstracts International Section B: The Sciences and Engineering</i> 61 (5-B): 2747.	Not relevant
Bowes, A. and Demokos, T. M. (1998). Negotiating breastfeeding: Pakistani women, white women, and their experiences in hospital and at home. <i>Sociological Research Online</i> www.socresonline.org.uk/3/3/5.html	Not relevant
Caldwell, J. C. (1999). Can behaviour be modified to preserve health? <i>International Social Science Journal</i> 51 (3).	Not relevant
Dyson, L., McMillan, B., Woolridge, M. W., Green, J., Conner, M., Clarke, G., Bharj, K. and Renfrew, M. J. (2002). <i>Reducing inequalities in health among socio-economically disadvantaged and ethnic groups by increasing breastfeeding uptake: an examination of intentions and outcomes</i> . Draft report to the Department of Health.	Not a review
Goken, F. (2000). The role of social support and social influence in maternal infant feeding behaviour. Examination of social support as a multifaceted concept (Turkey). <i>Dissertation Abstracts International Section A: The Humanities and Social Sciences</i> 61 (5-A): 1665.	Not a review
Guttman, N. and Zimmerman, D. R. (2000). Low-income mothers' views on breastfeeding. <i>Social Science and Medicine</i> 50 (10): 1457.	Not relevant Study, not a review

Table of excluded papers (cont.)

Paper	Reason for exclusion
Haneuse, S., Sciacca, J., Ratliff, M., Alexander, D. and Rivero, M. E. (2000). Breastfeeding rates among Arizona WIC Participants. <i>American Journal of Health Behavior</i> 24 (4): 234.	Study, not a review
Hatem, A. M. and Fraser, W. (1999). Support interventions reducing cessation of breastfeeding within 2 months of delivery. <i>Evidence Based Medicine</i> 4 (5): 150.	Maintenance of breastfeeding, not initiation
Health Promotion Research Program (1996). <i>Promotion of breastfeeding maintenance</i> . Bristol: University of Bristol Briefing Review No.2: 1-11.	Maintenance, not initiation
Horton, S., Sanghvi, T., Phillips, M., Fielder, J., Perez Escamilla, R., Lutter, C., Rivera, A. and Segall-Correa, A. M. (1996). Breastfeeding promotion and priority setting in health. <i>Health Policy and Planning</i> 11 (2): 156-68.	Not a review
Ineichen, B., Pierce, M. and Lawreson, R. (1997). Teenage mothers as breastfeeders: Attitudes and behavior. <i>Journal of Adolescence</i> 20 (5): 505.	Not interventions to promote breastfeeding
International Lactation Consultant Association (1999). <i>Evidence-based guidelines for breastfeeding management during the first fourteen days</i> . International Lactation Consultant Association: Raleigh, North Carolina.	Not relevant
Keck, C. K. (1998). The initiation and duration of breastfeeding among employed women in the United States. <i>Dissertation Abstracts International Section A: The Humanities and Social Sciences</i> 58 (7): 2867.	Not interventions to promote breastfeeding (study of factors)
Ko, M. and Schulken, E. D. (1998). Factors related to smoking cessation and relapse among pregnant smokers. <i>American Journal of Health Behavior</i> 22 (2): 83.	Not relevant
Moodley, J., Linley, L. and Saitowitz, R. (1999). A review of the literature on breastfeeding – policy and research issues. <i>South African Medical Journal</i> 89 (6): 681-7.	Not interventions to promote breastfeeding
Murphy, E. (1999). 'Breast is Best': Infant feeding decisions and maternal deviance. <i>Sociology of Health and Illness</i> 21 (2): 187.	Not relevant
Neifert, M. R. (1998). The optimization of breastfeeding in the perinatal period. <i>Clinics in Perinatology</i> 25 (2): 303-326.	Not relevant
Raj, V. K. and Plichta, S. B. (1998). The role of social support in breastfeeding promotion: a literature review. <i>Journal of Human Lactation</i> 14 (1): 41-5.	Not systematic review, lower quality
Sandall, J. (2001). Improving breastfeeding in Tower Hamlets R and D Project.	Report not available

Table of excluded papers (cont.)

Paper	Reason for exclusion
<p>Sciacca, J. P., Dube, D. A., Phipps, B. L. and Ratliff, I. A. (1995). Breastfeeding education and promotion: Effects on knowledge, attitudes and support for breastfeeding. <i>Journal of Community Health</i> 20 (6): 473.</p>	<p>RCT included in Fairbank et al. (2000) review.</p>
<p>Scott, J. A. and Binns, C. W. (1999). Factors associated with the initiation and duration of breastfeeding: a review of the literature. <i>Breastfeeding Review</i> 7 (1): 5-16.</p>	<p>Not interventions to promote breastfeeding</p>
<p>Sikorski, J. and Renfrew, M. J. (1999). Selected Cochrane systematic reviews. Support for breastfeeding mothers. <i>Birth: Issues in Perinatal Care and Education</i> 26 (2): 131.</p>	<p>Addresses interventions to support breastfeeding, not to promote initiation</p>
<p>Sinha, V. and Menon, L. (1997). Being mother friendly: A practical guide for working women and breastfeeding. <i>Southeast Asian Journal of Social Science</i> 25 (2): 203.</p>	<p>Not relevant</p>
<p>Smith, T. R. (1998). Aspects of the infant-feeding decision. <i>Dissertation Abstracts International Section A: The Humanities and Social Sciences</i> 58 (7): 2869</p>	<p>Study, not a review</p>
<p>World Health Organization (1998). <i>Evidence for the Ten Steps to successful breastfeeding</i>. Geneva: WHO.</p>	<p>No detail provided of search strategy, databases searched, or inclusion criteria</p>
<p>Yngve, A. and Sjoestroem, M. (2001). Breastfeeding determinants and a suggested framework for action in Europe. <i>Public Health Nutrition</i> 4 (2B): 729-39.</p>	<p>Not a review</p>