

Giving breastfeeding a boost

Community-based approaches to
improving breastfeeding rates

A literature review

February 2005

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Abbreviations

ABA: Australian Breastfeeding Association

AIDS: Acquired Immunodeficiency Syndrome

ATSI: Aboriginal and Torres Strait Island

CALD: Culturally and linguistically diverse

CCE: Centre for Clinical Effectiveness

CEA: Cost effectiveness analysis

CI: Confidence interval

CUA: Cost utility analysis

GNP: Gross National Product

LRC: Lactation Resource Centre

MIDIRS: Midwives Information & Resource Service

NHS: National Health Service

NHMRC: National Health and Medical Research Council

NESB: Non-English speaking background

OR: Odds ratio

PICO: Population (P), intervention (I), comparison (C) and (O)

RCT: Randomised controlled trial

SES: Socio-economic status

SWSBSC: Strong Women, Strong Babies, Strong Culture

TPB: Theory of planned behavior

UNICEF: United Nations Children Fund

VACCHO: Victorian Aboriginal Community Controlled Health Organisation Inc

VAHS: Victorian Aboriginal Health Service

WHO: World Health Organisation

WIC: Women, infants and children

Table of contents

Abbreviations	iii
Executive summary	vi
Introduction	1
Background	1
Aims of the project	1
Search strategy	1
Levels of evidence	3
Definitions	4
Policy and practice	5
Introduction	5
Benefits of breastfeeding	6
International perspectives	6
National perspectives	7
State perspectives	8
The Australian context	9
Community and consumer feedback	9
Discussion with indigenous women	10
Barriers and strategies	13
Barriers	13
Strategies to improve breastfeeding rates	13
Overview of the evidence	15
Initiation and duration	15
'At risk' populations	20
Models	25
Models in public health	25
'Stages of change' model	26
Conclusions	34
Appendices	35
Appendix 1	35
Appendix 2	36–39
Appendix 3	40–53
References	54

List of tables

Table 1 Evidence dimensions	3
Table 2 Levels of evidence	3
Table 3 Barriers to breastfeeding	13
Table 4 Summary of intervention models	26
Table 5 Strategic objectives and levels of applicability of the model	28–29

List of figures

Figure 1 How mothers learnt about breastfeeding	9
Figure 2 Gaps identified in breastfeeding services	10
Figure 3 Suggested inclusions in model of breastfeeding support	10
Figure 4 Levels of application of the model stages	25
Figure 5 An overview of the model, health care phases, and the message	27

Executive summary

Background

Rates of breastfeeding vary between and within populations. Barriers to breastfeeding include returning to the workforce, difficulties experienced breastfeeding in public and giving complementary feeding or introduction of solids earlier than is optimal. A number of groups have been previously identified in the literature as being at particular risk of either not initiating breastfeeding or of discontinuing exclusive breastfeeding at an early stage –before the recommended six months. Those most ‘at risk’ of not breastfeeding in Australia appear to be women with low education who are unaware of the benefits of breastfeeding, young women, and women from low socio-economic backgrounds. Other ‘at risk’ groups identified are women with limited access to information because of language, literacy or cultural barriers.

A collaborative project was therefore undertaken by the Centre for Clinical Effectiveness, Monash Institute of Health Services Research and the Australian Breastfeeding Association to consider the most effective strategies to improve breastfeeding initiation rates and subsequent duration. This included a review of the literature and consultation with breastfeeding women. It was funded by the Victorian Department of Human Services, Public Health Group.

Aims

The aims of the project were to:

- review literature on specific ‘at risk’ groups
- seek information and feedback from breastfeeding women.
- suggest a possible change model that would include a community-based and directed framework

Literature Review

A systematic search of the relevant literature was completed by establishing predetermined inclusion and exclusion criteria. Specific questions were formulated to identify the most relevant articles for specific populations, such as adolescent mothers, different support strategies, such as partner support, and the addition of formula or solids to infant diets. The literature on breastfeeding models in public health with specific reference to changing behaviour was also reviewed. In addition, a search of the databases and the Internet was conducted to find literature related to the economic implications of interventions.

As much of the literature in this field is qualitative, there were significant limitations to making generalisations. However, as it was desirable to include the widest possible search of published and unpublished literature, no formal appraisal strategy was used to filter the research, and while systematic reviews

and randomised clinical trials were identified and reviewed, lower levels of evidence as determined by the National Health and Medical Research Council (NHMRC) were also included.

Additional difficulties were due to inconsistencies in the definitions used such as ‘exclusive breastfeeding’, ‘initiation’ and ‘duration’ and commonly used terms such as ‘usual postnatal care’ varied widely across settings and studies.

Data collection

The Australian Breastfeeding Association collected qualitative data from consumers and counsellors across a number of regions of Victoria. A small group of indigenous women was also consulted about the issues they faced in choosing whether to breastfeed or not, and the implications of their decisions.

Barriers and strategies

Barriers to initiation and continued breastfeeding were diverse and varied across different populations. The literature supported many of the findings from the consumer feedback and consultations, and identified community attitudes and perceptions about breastfeeding, structural barriers (such as lack of facilities), workplace policies and legislative gaps. Other barriers identified included lack of partner or family support and inconsistent health care provider

information and advice.

Strategies to improve breastfeeding rates were also identified. Some studies treated initiation and duration as separate concepts while others did not differentiate. Only rarely was 'initiation' clearly defined. Similarly, periods of duration measured varied markedly. However, there was little evidence of effectiveness of education strategies, particularly where there was minimal opportunity for interaction. Peer group support was found particularly useful in extending duration for young and low socio-economic status (SES) women who intended to breastfeed.

'At risk' groups

A number of groups were identified in the literature as being at particular risk of either not initiating breastfeeding or of discontinuing exclusive breastfeeding at an early stage—before the recommended six months. At-risk groups were defined as women with low education unaware of the benefits of breastfeeding, younger women, women from low socio-economic backgrounds and women with limited access to information because of language, literacy or cultural barriers. Numerous strategies have been employed to attempt to improve breastfeeding rates in these groups but evidence of effectiveness and the ability to generalise across groups has been difficult to establish, despite the scope of research.

Models of behaviour change

Models of behaviour change have been used in other public health domains. However, there is little evidence of widespread use of theoretical models being applied in promoting breastfeeding. The focus of many breastfeeding promotions is closely associated with individual and community beliefs, intentions, and behaviours. In deciding on a model to promote continuance of breastfeeding, the 'stages of change' model was selected as it has been used in other public health interventions, it is measurable, and it focuses on the beliefs and stages of readiness that can be tailored specifically to breastfeeding interventions.

Conclusions

Interventions that have been shown to be successful in extending duration include:

- Peer support with back-up from health care providers
- Small, interactive information, discussion and knowledge sessions for the breastfeeding woman and her significant others
- Early interventions assisting women with decision making about their infant feeding options
- Consistent advice and information for women.

The literature does suggest that informed choice and sufficient education and knowledge will result in the choice to breastfeed. However, other research on

decision making and patient choice is less clear. Strategies need to be evidence-based and targeted at appropriate populations across time and stages of readiness.

Implications

There are some important themes that emerged from the research. Implications for action fall into five broad categories: choice and support, information, access, research, and education and training.

Choice and support

The literature is primarily focused on methods to improve breastfeeding rates for the wellbeing of the infant, the mother, and the community. However, this may result in women feeling pressured, opting out or being resistant to well-meaning advocates. The fundamentals of informed choice require knowledge of all the options given in an unbiased way and support given for whatever choice is made. The right of women to breastfeed, and to see others breastfeeding, in a society that values breastfeeding requires a major attitude change across all levels of society.

Greater emphasis should also be placed on peer support programs that involve the partner and family, and that take into account the social circumstances of the mother.

Few programs take into account the rapidity of physical and psychological change during pregnancy and the impact

that these changes have on decision making and attitudes. Likewise, awareness and interest in options available will vary. Programs need to accommodate changes in needs and information requirements over time.

Consistent Information

Lack of consistency of information and advice is a recurrent theme. This might be addressed by the development of cooperative relationships between providers, support groups and governments, rather than independent programs and competing agendas.

Access

Breastfeeding women, their partners and their families require ongoing education in addition to well coordinated local support services that include expert advice, peer support and spreading the care across a family and the community.

Research

There is a clear need for Australian research on cost-effectiveness of interventions that can provide data and evidence within local settings.

Training and education

Finally, training of health care providers requires not only input into their initial training but also within ongoing professional development and accreditation mechanisms. Training should clearly include not only professional expertise and knowledge that is evidence-based but also an awareness of the social model of health, and of the dynamics of reproductive health.

Chapter 1

Introduction

Background

Rates of breastfeeding vary between and within populations. The literature suggests that there is a high rate of breastfeeding in many developing countries. Often it is the more affluent women in societies who choose to bottle feed their children.¹ In some new settler populations in Australia, this situation is reversed, with many women opting to bottle feed in preference to breastfeeding.^{2,3} Barriers to breastfeeding include returning to the workforce,^{4,5} difficulties experienced breastfeeding in public⁶ and giving complementary feeding or introduction of solids earlier than is optimal.^{7,8} Those most 'at risk' of not breastfeeding in Australia appear to be women with low education who are unaware of the benefits of breastfeeding, young women, and women from low socio-economic backgrounds.⁹ Other 'at risk' groups identified are women with limited access to information because of language, literacy or cultural barriers.⁹

This project involved looking at the literature underpinning existing strategies that promote exclusive breastfeeding as well as the barriers to the continuance of breastfeeding. The project is specifically directed at issues and barriers experienced by 'at risk' populations. The project also aims to develop a framework for a cost-effective, community-based and directed implementation model, adaptable to a variety of situations and populations.

The Australian Breastfeeding Association is an important project partner and has an extensive specialist library which contains both published and non-published reports and studies on this topic. It has also provided qualitative data by surveying its counsellors and consumer groups.

Through the literature a range of strategies have been identified that demonstrate community-based behaviour change and that might be adaptable to meet the aims and objectives of the project brief. The Steering Group provided guidance through the project. Consultations with a range of stakeholders were undertaken at Southern Health that provided advice about the continuum of care and multidisciplinary, and community-focused approaches. Models found to be the most relevant to women considered to be 'at risk' were also identified. This project was funded by the Victorian Department of Human Services, Public Health Group.

Aims of the project

The aims of this project were to build on previous work carried out on breastfeeding initiation rates, nutrition initiatives and health promotion strategies.

The project:

- targeted the significant decrease in breastfeeding rates by 3 months of age in particular 'at risk' populations where differential rates have been demonstrated

- considered the issue of breastfeeding within a community-based and directed framework.

The primary outcomes of interest were

- duration and exclusivity of breastfeeding
- information leading to an increase of knowledge and positive attitudes about breastfeeding
- changes in community and hospital practices.

Search strategy

The 'best available evidence' has been defined as that research identified as least susceptible to bias.¹⁰ Generally, this is determined according to pre-defined NHMRC criteria.¹¹

The methods used included a search for systematic reviews, evidence-based clinical practice guidelines, health technology assessments and randomised controlled trials. If sound, relevant material of this type was identified the search would usually stop. In this instance, however, the search strategy was broadened to include case-control longitudinal cohort studies, observational and case series studies, narrative reviews, consensus statements and qualitative studies—published and unpublished. Such studies can produce accurate results but have greater potential for bias, and it is therefore difficult to assess their validity beyond the immediate settings. The rationale for including all levels of research relates to the importance of qualitative research in

this context. Resources searched included databases and Internet web sites. Databases included Medline, PreMedline (2002), Medline in Process 2004, Cinahl, Cochrane Library, PubMed, Australasian Medical Index and Current Contents.

The volume of literature available from published and unpublished sources is immense. To narrow the scope of the literature search and to maintain a focus on 'at risk' groups, specific questions with predetermined inclusion and exclusion criteria were devised.

The formulation of the research question is critical to carrying out a structured and focused search strategy. The PICO approach was used to question formulation. This method requires the question to include identification of the patient or subjects in a study (P), the intervention (I), the comparison (C), if any, and the outcomes (O). The primary questions are outlined below.

Adolescent mothers

In adolescent mothers, is lack of social support a barrier to establishing and maintaining breastfeeding beyond three months?

In adolescent mothers, are fathers' or other support people's attitudes a barrier to establishing and maintaining breastfeeding beyond three months?

In adolescent mothers, is provision of milk replacement or infant formula a barrier to establishing and maintaining breastfeeding beyond three months?

Mothers with low literacy

In mothers with low literacy, is lack of social support a barrier to establishing and maintaining breastfeeding beyond three months?

In mothers with low literacy, are fathers' or other support people's attitudes a barrier to establishing and maintaining breastfeeding beyond three months?

In mothers with low literacy, is provision of milk replacement or infant formula a barrier to establishing and maintaining breastfeeding beyond three months?

Lower socio-economic groups

In mothers from lower socio-economic groups, is lack of social support a barrier to establishing and maintaining breastfeeding beyond three months?

In mothers from lower socio-economic groups, are fathers' or other support people's attitudes a barrier to establishing and maintaining breastfeeding beyond three months?

In mothers from lower socio-economic groups, is provision of milk replacement or infant formula a barrier to establishing and maintaining breastfeeding beyond three months?

Ethnic groups

In ethnic groups, is lack of social support a barrier to establishing and maintaining breastfeeding beyond three months?

In ethnic groups, are fathers' or other support people's attitudes a barrier to establishing and maintaining breastfeeding beyond three months?

In ethnic groups, is provision of milk replacement or infant formula a barrier to establishing and maintaining breastfeeding beyond three months?

Inclusion criteria

- women—including 'at risk' groups such as young mothers, single mothers, indigenous women, women with low SES, low literacy, and culturally and linguistic diverse (CALD) women
- support people such as grandmothers and partners
- interventions to improve rates and duration of breastfeeding
- publication year 1990–2004 (except for the Australian databases where relevant older material was also included)
- quantitative or qualitative research
- models of behaviour change
- primary and secondary research
- case reports (case reports are included only in the event that no higher level of evidence is identified)
- English language articles
- in a context comparable to an Australian setting
- full-term healthy infants.

Exclusion criteria

- low birth weight infants
- premature infants
- multiple births
- research related solely to techniques for breastfeeding
- research where other issues are the primary focus; for example, AIDS, eating disorders, sick babies
- maternal cognitive impairment

- complication in delivery
- research from developing countries (due to differences in applicability or compatibility with community settings in Australia).

Levels of evidence

The NHMRC recommends that evidence assessment move toward an evaluation of specific 'dimensions'.¹¹ These dimensions (Table 1) consider important aspects of the evidence supporting a particular intervention and include three main domains: strength of the evidence, size of the effect and relevance of the evidence. The first domain is derived directly from the literature identified as informing a particular intervention. The last two require expert clinical input as part of its determination.

The strength of the evidence is composed of three sub-domains. Previous assessments concentrated only on the first of these: the level of the evidence.¹¹ Table 2 lists the designations recommended by the NHMRC.

The assessment of quality, another important sub-domain, was based on characteristics known to reflect important aspects of study design.¹² Table 2 summarises these characteristics and the ordinal scale used in the assessment.

Table 1 Evidence dimensions¹¹

Type of evidence	Definition
Strength of the evidence: Level	The study design used, as an indicator of the degree to which bias has been eliminated by design.
Quality	The methods used by investigators to minimise bias within a study design
Statistical precision	The p-value or, alternatively, the precision of the estimate of the effect. It reflects the degree of certainty about the existence of a true effect.
Size of effect	The distance of the study estimate from the 'null' value and the inclusion of only clinically important effects in the confidence interval.
Relevance of evidence	The usefulness of the evidence in clinical practice, particularly the appropriateness of the outcome measures used.

Table 2 Levels of evidence.*

Level of evidence	Study design
I	Evidence obtained from a systematic review of all relevant randomised controlled trials
II	Evidence obtained from at least one properly-designed randomised controlled trial
III-1	Evidence obtained from well-designed pseudo-randomised controlled trials (alternate allocation or some other method)
III-2	Evidence obtained from comparative studies (including systematic reviews of such studies) with concurrent controls and allocation not randomised, cohort studies, case-control studies, or interrupted time series with a control group
III-3	Evidence obtained from comparative studies with historical control, two or more single arm studies, or interrupted time series without a parallel control group
IV	Evidence obtained from case series, either post-test or pre-test/post-test

* Modified from¹¹

Definitions

The primary outcomes of specific interest were exclusivity of breastfeeding at three and six months. The NHMRC guidelines on breastfeeding based on the World Health Organisation (WHO) recommendations is that the ideal food for infants is exclusive breast milk up to six months of age. Exclusive breastfeeding is defined as breastfeeding for six months without the addition of other foods added to the infant's diet.¹³

'At risk' populations

It was important to attempt to define the specific populations for this review.

- Young or adolescent women were defined as women under 20.
- Low SES populations were defined differently across studies, particularly studies from different countries.¹⁴ For example, women in the US were described as low SES if qualified for inclusion into the women, infants and children (WIC) programs.^{15, 16}
- Scott et al have associated social class and SES. Any studies, which included participants categorised as 'low SES', were reviewed as part of this report.¹⁴
- Indigenous populations were self-selecting.
- Low literacy was defined as highest education level reached = year eight.
- Culturally and linguistically diverse (CALD) populations, which is a broader concept that simply non-English speaking background (NESB).

Other terms

The term 'evidence' is defined as 'the integration of best research evidence with clinical expertise and patient values'¹⁰ in accordance with the definition used by the NHMRC.¹¹

Limitations of the review

The information provided in this report is primarily designed to give readers a starting point to consider currently available research evidence. This review was conducted in the first instance in 2002 and subsequently updated in 2004. Sources cited represent only a small selection of the available literature on this topic and selection has been pragmatic to give a broad overview in specific areas. The authors recognise that there is a large body of work published and unpublished that has not been possible to include.

Methodological issues

The breastfeeding literature reviewed demonstrates wide variation in the use of apparently 'commonly understood' terms. For example, 'usual postnatal care' varies between countries and within countries. Canada, for example, has one home visit after birth whereas in the UK, daily visits for ten days after discharge has been the norm. Other countries have other variations, which make comparisons in this review problematic.¹⁷ 'Exclusive breastfeeding', 'initiation' and 'duration' of breastfeeding are sometimes treated as a

unitary concept, used interchangeably or as separate issues. Other terminology such as inadequately defined 'at risk' populations makes it unclear whether valid comparisons can or should be attempted. The paucity of high quality rigorous quantitative research highlights the ethical difficulties inherent in blinding and randomisation necessary to control bias. It should be noted that 'low literacy' women have not been treated as a separate group as the literature included this group within either or both CALD or low SES groups of women.^{18, 19}

Chapter 2

Policy and practice

Introduction

The World Health Organisation (WHO) recommended that all infants should be breastfed exclusively for four to six months of age²⁰, a standard that has widespread support both overseas and in Australia.^{21, 9} In 2001, an amendment changed this recommendation to exclusive breastfeeding for six months (World Health Organisation, Statement at the Fifty-fourth World Health Assembly, 2001). Despite the demonstrated health benefits to the woman and to the baby, breastfeeding rates have tended to remain static.²¹ In the case of some 'at risk' populations, however, breastfeeding rates may be declining, especially where alternatives are readily available and 'lifestyle' issues may not be conducive to long term breastfeeding. The primary focus of this review has been on the identification of effective strategies to increase breastfeeding duration in the general population as well as in 'at risk' groups.

The decision to breastfeed is a dynamic process,²² which occurs in a social context.²³ It is social behaviour requiring deliberate decision making followed by action,²⁴ and is a learned skill both for mother and infant.²⁵ To be effective, messages about breastfeeding need to acknowledge and address each of these issues.

Additionally, the message needs to be delivered across the life span of both sexes. Young children are read books and play with toys where babies are routinely shown to be bottle fed. Within smaller

families, school age children may get limited opportunities to witness breastfeeding first hand. Many women have been shown to be hesitant about breastfeeding in public places, particularly where there are clearly mixed messages about public breastfeeding, and variable public and personal approval.²⁶

Some women have formed child-feeding preferences long before pregnancy. These decisions may be based on familial attitudes, personal experiences, and cultural norms. Other women may not have considered any of the options and when asked early in pregnancy may lack sufficient knowledge to make a fully informed choice. Some women when asked early in their pregnancy to make a decision about breastfeeding respond without the benefit of information or a full understanding of all their choices.²⁷

In making the initial decision and successfully navigating the transition to actually breastfeeding her baby, a woman can be influenced by many factors: her partner, her own mother and her health care providers or the community milieu.^{28, 29, 27} Similarly, information and levels of support have been shown to be variable even between health care providers^{30, 31, 32} and family and peers will be equally subject to the influences of social norms relevant to their community. After delivery, women may need ongoing support and timely information from reliable sources.

Relevant breastfeeding studies in 'at risk' populations were examined, in order to

identify the best available evidence relating specifically to community based strategies that have been shown to be effective for increasing the duration of breastfeeding.

While this approach has been used to identify those studies with the highest level of evidence qualitative or descriptive studies have not been excluded. For example, the systematic review carried out by Fairbank and O'Meara et al (2000) identified a range of strategies for initiation of breastfeeding and duration.²⁰ In appraising evidence, it is usual to identify only the highest level of evidence available. However, much of the breastfeeding literature was descriptive, non-randomised or qualitative methodology. While such research does have a greater likelihood of bias, it does address the legitimate issues of patient values and preferences and has added significantly to the body of research.^{24, 27} These methodologies, however, are more difficult to generalise to other populations and settings.

In recent years there has been a growing move towards recognition of the social context of health and the relationship of health with political and economic factors. Health promotion within a human rights framework places legitimate health issues within the arena of public concern and awareness and requires health care providers to consider the broader issues in which people make health decisions.³³ Such a framework is as applicable to breastfeeding as to any other health issue.

Benefits of breastfeeding

In addition to the considerable benefits to the baby's health, there are many benefits to the mother's health. Short-term benefits include decreased postpartum haemorrhage, hastening of uterine involution, reduction of body fat gained during pregnancy, and positive emotional and psychosocial effects.³⁰ In the longer term, it has been shown that women who do not breastfeed are at a greater risk of developing ovarian and premenopausal breast cancer in comparison to women who breastfeed.^{34, 35} There is conflicting evidence concerning the role of breastfeeding in the prevention of osteoporosis (Department of Health Nutrition and Bone Health Expert Group Report on health and social subjects 49. London: The Stationery Office; 1998, cited in Fairbank et al 2000).²⁰

The obvious benefits for the baby are the provision of all nutrients necessary for adequate physical and mental development of the child. Additionally, breast milk provides immunological protection against many common diseases. There is also evidence to suggest that infants who are not breastfed for the recommended time are more prone to specific health problems such as gastroenteritis, respiratory infection, otitis media, urinary tract infection and juvenile onset insulin-dependent diabetes cited in Fairbank et al 2000.²⁰ Evidence from a number of meta-analyses of prospective studies suggests that exclusive breastfeeding during the first three months after birth protects against childhood asthma, allergic rhinitis and

atopic dermatitis.^{36, 37, 38} Additional evidence suggests that babies who are not breastfed are at greater risk of sudden infant death syndrome (Department of Human Services, 1998, cited in Whittlesea study protocol).

In a Cochrane review of studies comparing infants breastfed exclusively for six months or more and infants exclusively breastfed for at least three to four months with continued mixed breastfeeding until at least six months, no deficits in growth were found among infants exclusively breastfed for six months or longer.³⁹ These findings are further supported by a WHO review of nutrient adequacy of exclusive breastfeeding for the term infant during the first six months of life which concluded that 'mean intakes of human milk provide sufficient energy and protein to meet mean requirements during the first six months of infancy'. The review found that the amount of nutrients such as vitamin A and B6 in human milk of well-nourished populations were adequate. The review also found that the content of calcium in human milk was not influenced by maternal diet and met the calcium requirements of the infant. However, the review also found that the amount of vitamin D in human milk was insufficient and infants needed to depend on sunlight exposure or exogenous intakes of vitamin D. In addition, the review suggested that adequacy of iron and zinc in human milk required dual dependency on exogenous dietary sources and endogenous stores.⁴⁰

There are also appreciable cost savings associated with breastfeeding. Studies carried out in the UK have shown that approximately £350 is saved by a woman who breastfeeds compared to one who chooses to use formula (MIDIRS and NHS Centre for Reviews and Dissemination. Informed choices for professionals: breastfeeding or bottle-feeding—helping women to choose. Bristol: MIDIRS: (1997) cited in Fairbank et al.)²⁰

International perspectives

UNICEF and WHO initiated the international programme of baby friendly hospitals in 1991. Tarkka et al (1998) suggested that the right of mothers and families to knowledge and support are necessary precursors of breastfeeding success and are key criteria to the baby friendly designated hospitals program.⁴¹

The UNICEF Baby Friendly Initiative (www.babyfriendly.org.uk/finance.htm) includes a seven-point plan for the protection, promotion and support of breastfeeding within community health care settings, which must be met before a hospital can become accredited. The seven points state that all providers of community health care should:

1. 'have a written breastfeeding policy that is routinely communicated to all healthcare staff
2. train all staff involved in the care of mothers and babies in the skills necessary to implement the policy
3. inform all pregnant women about the benefits and management of breastfeeding
4. support mothers to initiate and maintain breastfeeding

5. encourage exclusive and continued breastfeeding, with appropriately timed introduction of complementary foods
6. provide a welcoming atmosphere for breastfeeding families
7. promote cooperation between healthcare staff, breastfeeding support groups and the local community.'

The Baby Friendly Hospital Initiative and the WHO and UNICEF joint initiatives—the International Code of Marketing of Breast-milk Substitutes (1981) and the Innocenti Declaration on the Protection, Promotion and Support of Breastfeeding (1990)—have provided a foundation for the development of the Global Strategy for Infant and Young Child Feeding.⁴²

The Global Strategy for Infant and Young Child Feeding was unanimously endorsed by the Fifty-fifth World Health Assembly on 18 May 2002 and by the UNICEF Executive Board on 16 September 2002.

The Global Strategy covers comprehensive issues with regard to breastfeeding and highlights the priority actions, such as:

- protection
- promotion
- support through the health care system
- support in the community
- support in exceptionally difficult circumstances.⁴²

The global strategy also specifies the obligations and responsibilities of various parties for improving the feeding of infants and young children and for mobilising required resources. These

parties include:

- governments
- health professional bodies
- Nongovernmental organizations including community-based support groups
- commercial enterprises, such as manufacturers and distributors of industrially processed foods intended for infants and young children
- the social partners, such as employers and trade unions
- other groups, such as education authorities, mass media and child-care facilities
- international organisations, including global and regional lending institutions.⁴²

As stated in the global strategy, 'Although not every component is new, what is novel about the global strategy is the integrated comprehensive approach and the degree of urgency called for in implementing it, in order to deal effectively with so elementary a challenge as ensuring appropriate feeding for the world's children.'⁴²

A tool for assessing national practices, policies and programs was also developed and can be used in its entirety or as a companion piece to the Global Strategy.⁴³

Ottawa Charter

The strategies adopted by the Australian Breastfeeding Association in their five-year plan described below, are based on the Ottawa Charter, and are a multifaceted initiative including areas aimed at strengthening community

action, developing personal skills, reorienting health services, building health public policy and creating supportive environments.

National perspectives

At a national level Australia has the Goals and Targets for Australian Health in the Year 2000 and Beyond⁴⁴ which includes recommendations for breastfeeding. The recommended goal for breastfeeding initiation in this country is 90 per cent. For duration to six months the goal is for 80 per cent of women to still be breastfeeding. National rates of breastfeeding incidence and duration are not routinely collected, however it has been estimated that 84 per cent of babies are breastfed when they are discharged from hospital and that this falls to 61 per cent at three months and 49 per cent at six months (cited in the Australian Breast Feeding Association's five-year plan, available at www.breastfeeding.asn.au/advocacy/plan/html).

The Australian Breastfeeding Association has developed its five-year plan 'to protect and promote the initiation and increased duration of breastfeeding' (www.breastfeeding.asn.au/advocacy/plan/html). This plan aims to remove barriers to the initiation and extended duration of breastfeeding. Strategies to achieve these aims include:

- a national collection of breastfeeding statistics
- the incorporation of breastfeeding into the relevant National Priority Areas
- the development of appropriate public policies

- the establishment of a panel and/or coordinator to promote and protect breastfeeding
- initiatives to encourage maternity hospitals to attain Baby Friendly Hospital Accreditation (at present there are only 17 Baby Friendly Accredited Hospitals within Australia).

In addition, it is suggested that the inclusion of breast milk in the National Food Accounts would be beneficial. Further strategies are also suggested to educate women in the benefits of breastfeeding, via media campaigns, school programs, breastfeeding education classes and education in the workplace, as well as provision of telephone services, home visits and peer support programs.

In addition to the above measures taken by the Australian Breastfeeding Association the government's National Breastfeeding Strategy (www.health.gov.au/pubhlth/statag/brfeed) takes a multi-faceted approach to encourage breastfeeding, incorporating family education, national accreditation standards for maternal and infant care services, data collection and antenatal educators. Special attention is also given to employer support (via the Workplace Support Project), health professional education (via relevant guideline documents), and indigenous health.

State perspectives

Promoting Breastfeeding: Victorian Breastfeeding Guidelines was published by the Department of Human Services in January 1998. It covers topics such as

'Promoting breastfeeding: the essentials', 'Establishing breastfeeding', 'Solving common breastfeeding problems', 'Breastfeeding babies with special needs', 'Maintaining breastfeeding at home' and 'Further breastfeeding information and resources for health workers'. The policy statements call for hospitals, and other organisations that provide maternal services, to develop and implement explicit breastfeeding policies. While strongly supporting breastfeeding as an option, specific information should also be provided about all the options for infant feeding and that 'the right of a mother to make an informed choice' needs to be recognised (p3). It also advises on the need for developing community awareness about breastfeeding benefits (www.dhs.vic.gov.au/phd/hce/hwu/breast/breast.htm).

The Department of Human Services web site www.dhs.vic.gov.au is linked to the 'Better Health Channel'. This contains a number of 'fact sheet' style information pages on the subject of breastfeeding and related health issues. These include information on:

- breastfeeding and reduced asthma risk
- breastfeeding and a healthy diet for the mother
- dealing with mastitis and nipple problems
- the ideal time to begin breastfeeding—during the first hour after birth—and what to expect in the first few days
- calcium intake, and
- general information on breast and bottle feeding.

The Department of Human Services site also has information on the 'Best Start' Program, designed to improve 'the health, development and wellbeing of children' from pregnancy to eight years of age in Victoria, by providing better support and access to services. This program is not focused specifically on breastfeeding but does include links to the Australian Breastfeeding Association and information on services for families with a new baby. It has a link, via the Department of Human Services Public Health Group, to the document 'Promoting Breastfeeding: Victorian Breastfeeding Guidelines Jan. '98.'

Other initiatives are more regionally based, such as a study in Whittlesea (City of Whittlesea and La Trobe University Collaborative Scheme) to identify factors that lead to the low rates of breastfeeding found in this community despite the establishment of breastfeeding clinics. This study sought to develop a model to identify barriers to breastfeeding and strategies to overcome these obstacles, with the intention to extrapolate strategies for use in other municipalities. Based on the results obtained from the surveys and focus groups utilised in this study, it was recommended that strategies for changes to service provision within the Maternal and Child Health Service Council Initiatives be made. In addition, a collaborative regional health promotion strategy addressing the need for an integrated approach to breastfeeding was also suggested.⁴⁵

Chapter 3

The Australian context

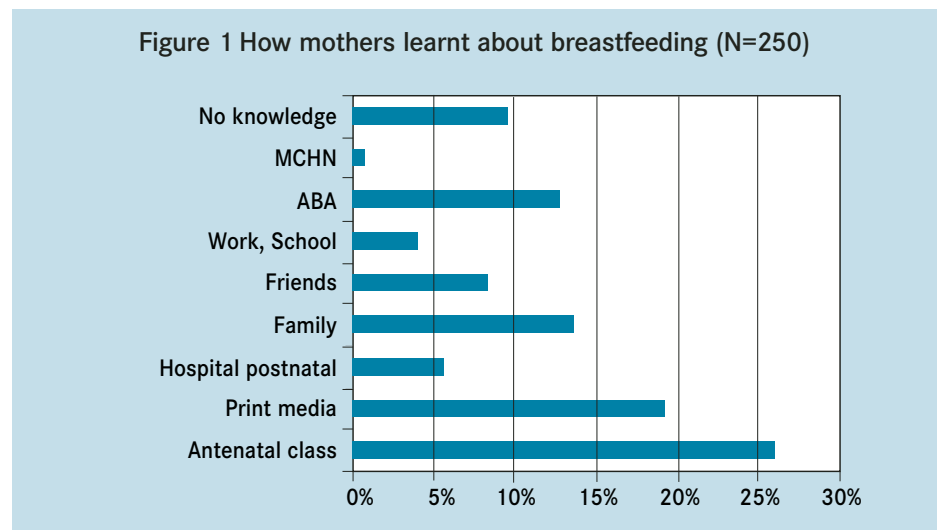
Community and consumer feedback

The community and consumer feedback provided valuable information within an Australian context from breastfeeding women and counsellors from a cross-section of Victorian metropolitan and regional communities. The Australian Breastfeeding Association sought feedback from breastfeeding women and counsellors in a range of Victorian metropolitan, regional and remote regions to gain a 'snapshot' of:

- current breastfeeding support services
- the effectiveness of current support services
- service gaps and suggestions on addressing these gaps
- perceptions of the barriers to continued breastfeeding
- suggestions for a model of community-based support for breastfeeding.

The methods used included focus groups, surveys, and questionnaires to mothers who had contact with the ABA (Appendix 1), as well as a telephone survey. Although providing insight, the data should be regarded with some caution as it was a convenience sample and is therefore subject to bias. Regions and demographic data are shown in Appendix 2.

The survey identified two major reasons given by women deciding to breastfeed, which together accounted for almost a third (32 per cent) of the women in this population. These were the perceived health benefits to the baby's wellbeing, and a belief that breast milk is the



optimal food for a baby. A further 16 per cent of women stated that their families influenced them, and another 13.6 per cent stated that convenience was the primary motivating factor. This latter finding gives some support for promoting breastfeeding with an emphasis on the benefits to the woman as well as the baby.

As shown in Figure 1, just over thirty per cent of consumers (30.5 per cent) indicated that hospitals were the primary source of information about breastfeeding support services. The next most frequently cited source of information (15.5 per cent) was maternal and child health centres.

While these responses indicated that 46 per cent had received information from these primary sources, the majority of women obtained information from a variety of other sources, emphasising the need for a multifaceted broad-based approach.

Twenty per cent of these consumers reported that the single greatest barrier to breastfeeding duration was negative and ill-informed community attitudes. The next two most frequently identified barriers to maintaining breastfeeding were having insufficient breastfeeding knowledge (16.3 per cent), and the difficulty of returning to work without adequate breastfeeding support structures (15.2 per cent). Some of the women did give multiple responses. In the community feedback there was a strong preference for a *'community education campaign to increase acceptance of breastfeeding as a normal and valuable part of life'*. (ABA consumer feedback)

Consumers also indicated that *'education for breastfeeding women and their family'*, *'well-coordinated support services'*, and *'in home support for breastfeeding in the early weeks'* were necessary and recommended components to include in

Figure 2 Gaps identified in breastfeeding services (N=279)

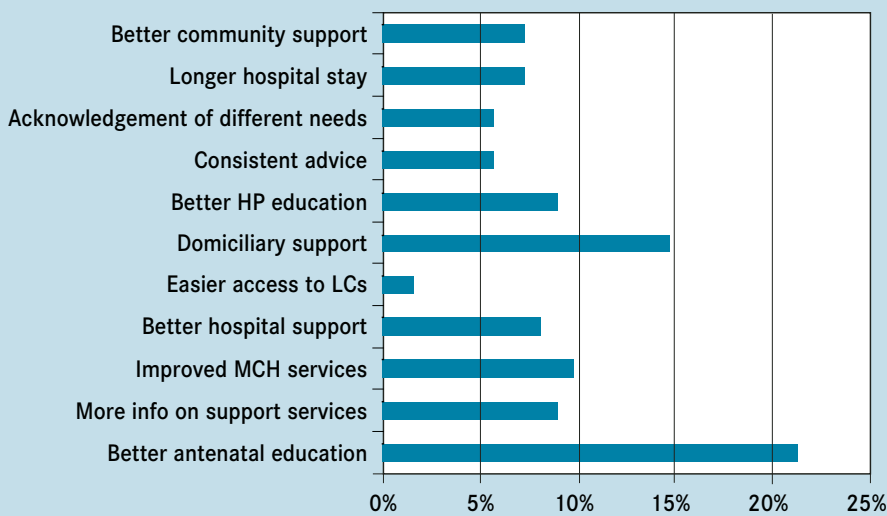
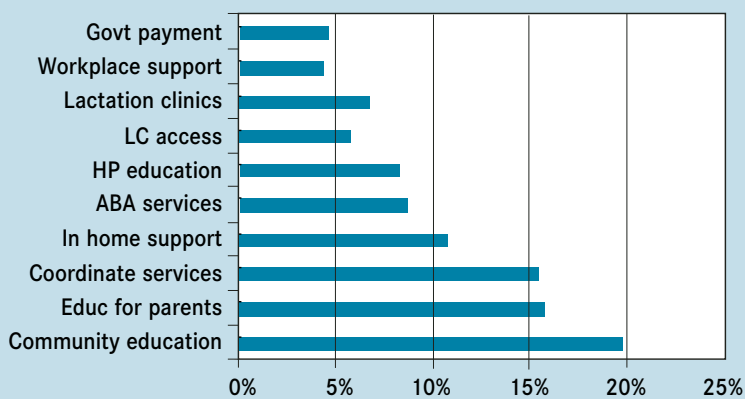


Figure 3 Suggested inclusions in model of breastfeeding support (N=203)



any community-based strategy to improve breastfeeding duration rates (see Figure 2).

Consumers and counsellors identified the important elements of a proposed model to improve breastfeeding initiation and duration. These are shown in Figure 3.

Discussion with indigenous women

An informal unstructured meeting took place between the researchers and a volunteer group of six indigenous women in a community playgroup setting. The meeting took place over about two-and-a-half hours. The principal purpose of the discussion was to listen to the women's views about breastfeeding, available current services, and access to information, barriers, community attitudes and what they would like to see changed. It was important for us to learn about their experiences and to determine the priorities important to them.

The women were free to come and go throughout the session to attend to other matters as they arose; they were friendly and frank in their responses. All of the women had some experience of breastfeeding. One woman breastfed only in hospital and stopped because she was worried about the baby not putting on weight. Another had breastfed three children to six weeks duration when she 'gave up' as she believed she had an inadequate supply. Another mother had always wanted to breastfeed but felt she was 'not very successful' and gave up after three months. Two mothers, who

had both had more than two babies, breastfed for six months before deciding to wean their babies.

While the questions asked were based on the ABA consumer and community feedback in the interests of consistency, the conversational flow and interest of the women themselves determined the order. The questions and responses are reported here in a structured way in the interests of clarity but do not reflect either the wording or the sequence or the format of the meeting.

Prior to having a baby, how did you learn about breastfeeding?

What influenced your decision to breastfeed?

The most common response to this question was *'it's easier'* and *'it's the natural thing to do'*. Women's experiences varied quite a lot in terms of family experience with breastfeeding. More than one woman did not know if she had been breastfed or not. Another said her mother had mostly bottle fed. Another said her mother had breastfed all of her own children. The majority felt that there was little education or advice passed down through families, and that even when mothers did give advice, daughters were mostly left to learn from their own experience. One woman's mother gave a lot of advice and support to her pregnant daughter, and this woman commented on her own confidence as a mother and as a breastfeeder. Another said her mother-in-law told her *'everything to do'*. These two women were the ones who successfully

breastfed for six months. Instead of attending formal classes, some of the other women said they listened to other mums' conversations. Another saw little point in education *'I knew I was pregnant and it can only come out one way'*. Another said she never remembered seeing breastfeeding or asking about it. One woman who was from the country said, *'you just put the baby on the breast. You were never told why'*.

The majority of women stated that breastfeeding was not something they had ever thought about as teenagers—they were too busy with just living life and having fun. There was an attitude of acceptance of the inevitable and a demonstrably external locus of control. *'If children come they come, if they don't that's okay'*, —and similarly for breastfeeding, acceptance of whatever happens—*'It's not an issue if it's not raised, no-one worries'*.

What were your experiences with support agencies that help with breastfeeding?

Most of the women stated that they had little contact with support agencies and relied on informal groups within their own community. There was significant regret expressed about the lack of indigenous staff trained and available to assist them, and an awareness of the discrepancies between mainstream 'best practice' and customary ways. One mother who had always thought she'd like to breastfeed had joined ABA when she had experienced difficulties. She found it very helpful.

What do you see as the advantages and disadvantages of breastfeeding?

Apart from convenience, for example not having to sterilise bottles or waiting for the kettle to boil, women also said that it made the bond with their kids really close. These women also stated that it was a pleasurable experience, and *'so natural'*, with one mother saying that *'you would forget you were doing it'*.

The disadvantages of breastfeeding were experienced as not being able to breastfeed easily in public when your baby is hungry, and the risk that wherever you are some man, of any cultural background, is likely to complain. One mother commented that she puts a towel over the baby's head when feeding in public but that when the baby cries and wants food it would be nice just to be able to feed it without any worry, stating that *'mums have got a right to do it'*. Another remarked in relation to her partner's discomfort with breastfeeding in public *'Like father, like son. Why should you have to cover up?'*

Some women felt there was a need to *'train boys'* in the community *'that it's okay to see breastfeeding—that it was him once'* and that men needed to be taught to appreciate the benefits of breastfeeding.

A few mothers also commented that fathers wanted to have a turn at feeding, that they sometimes felt jealous at missing out, and that mums therefore did an occasional bottle feed so that fathers could participate. For the one woman who mostly bottle fed, sharing the

feeding and the enjoyment of it amongst her family and friends was a positive experience. Another woman appreciated being able to get away for a week's break or holiday occasionally, and her partner would bottle feed during this time only.

What are your experiences of the health system and breastfeeding?

One woman particularly commented on negative experiences within the health system. She did not like it when *'hospital staff grab your breast to show you how to breastfeed'*, and felt it was invasive. Other women agreed with this. She also found that home visits by the maternal child health nurse were unhelpful because, she said, *'I was told I'm not doing it right and they make you feel stupid'* adding that *'nurses in the hospital often haven't had kids, so how can they advise?'* She said that in general she didn't feel comfortable dealing with the health system. Some of the other women felt similarly, though one expressed that she would have liked more home visits in the first few weeks, postpartum. None of the women felt particularly comfortable dealing with the mainstream health system, which extended to attending antenatal education classes, in which they frequently did not feel comfortable and felt 'different'. One woman said she wouldn't go to classes with a group. In addition, they preferred to bring their babies for weighing and checkups to the women they knew at their local community centre, and who were part of

their extended network.

It was commented that most Koori women don't get to antenatal classes. Apart from the comments above and additional considerations of money and transport, it was felt that the health system was just not a priority. None of these women knew of any antenatal classes specifically for Koori women.

One woman said it was frustrating: *'You don't need a trip to the doctor if you feel fine'*. Another woman commented that there is *'not a culture of questioning in Aboriginal communities, no asking why'*. Education was not seen as being enough, and neither is preventive health intervention common; it was thought that culture was the main reason. Aboriginal attitudes to preventive health and health in general were thought to be attitudes of *'not important'*. If aboriginal people get sick, they may *'not seek help until they end up in hospital'*.

While the women in this group clearly felt more comfortable with dealing with other Aboriginal women in a health-provider context, simply recommending additional Koori health workers was not seen as a simple solution. The perception was that there were splits within the Koori community and indigenous health workers need to deal with these very significant barriers. The women felt that in service delivery, the health worker needed to think, *'I'm here for the broader community'*.

In the course of our discussions the women acknowledged that they were aware of hospital liaison officers across the state, but felt that no one was particularly focusing on breastfeeding as an issue.

Chapter 4

Barriers and strategies

Over 1000 journal articles were reviewed. These focused on the primary ‘at risk’ groups of adolescent mothers, mothers with low education or low literacy, mothers with low SES, mothers with an ethnic origin, and specifically women of Aboriginal and Torres Strait Island (ATSI) origin.

Barriers

Barriers to breastfeeding can be divided into those that affect initiation, and those that affect duration. A methodological problem faced in reviewing the literature is that often the terms ‘initiation’ and ‘duration’ of breastfeeding are used interchangeably or are undifferentiated. It is therefore not always clear whether identified barriers apply to both, or only to one or the other and in some instances there appears to be some overlap. Barriers to breastfeeding are outlined in Table 3.

Barriers to breastfeeding may differ according to population groups. For example, while negative peer attitudes appeared to affect younger or adolescent mothers,²⁵ workplace barriers and lack of facilities¹⁴ as well as lack of access to lactation support services²⁷ had a greater impact on women of all ages and in lower income groups. Possible reasons for these observed barriers could be that low SES women need to return to work earlier or they might return to where the workplace cultures are less supportive of breastfeeding.⁵³ Similarly, unemployment and poverty are likely to limit access to

Table 3 Barriers to breastfeeding

Negative cultural perceptions, beliefs and practices in some ethnic groups ^{3,46}
Media representations and cultural perceptions of the breast as ‘sexual’ ^{20,47} and cultural attitudes to breastfeeding in public (ABA five-year plan, www/breastfeeding.asn.au/advocacy/plan.html)*
Lack of supportive policies and legislation such as formal adoption of WHO’s Code on the Marketing of breast milk substitutes, or the adoption of any code for retailers or for bottles and teats.
Inadequate maternity leave, and maternity leave and work place legislation* and lack of appropriate workplace facilities for breastfeeding (ABA five-year plan)*
Lack of supportive partner, maternal grandmother, and/or peers ^{29,27,48,49}
Unhelpful attitudes and inadequate knowledge levels of hospital staff and other health professionals ^{27,30,31,32}
Low levels of education and/or literacy ^{19,50,51}
Low SES. ^{19,14}
Lack of community facilities that encourage breastfeeding ^{52*}
Lack of ongoing breastfeeding support, or of access to such support ^{27,53*}
Lack of appropriate education and ongoing advice on techniques for successful breastfeeding establishment in the first six weeks postpartum ^{54,17*}
Lack of adequate and consistent advice on breastfeeding maintenance, and on factors that are likely to limit breastfeeding success (ABA five-year plan) ^{56,57,57-59*}

* Barriers, which have been specifically identified as those most likely to affect breastfeeding duration

support services and foster a sense of isolation.⁵³ Issues relating to breastfeeding for CALD women were more likely to be about acculturation into the norms of their new country² as well as poverty,⁶⁰ and lack of education and support services in their own language.¹⁸

Strategies to improve breastfeeding rates

An overview of the literature suggests there is a body of evidence supporting a number of strategies for breastfeeding. The studies identified were mainly

focused on interventions for increasing the duration of breastfeeding, with only a few studies evaluating strategies for initiation. The strategies identified differed with regards to ‘at risk’ populations, although some overlap between groups was observed. The following strategies for increasing duration and initiation were identified from the literature:

- One-to-one peer support programs for women of lower SES who have already decided that they wish to breastfeed were effective in achieving

breastfeeding duration for, on average, 15 weeks and maintaining exclusive breastfeeding during this time.⁶¹ One-to-one peer support was also found to be effective in the antenatal period assisting low SES women to initiate breastfeeding.^{62, 15} Schafer et al (1998) demonstrated that postnatal peer support assisted women to continue to breastfeed for three months or longer.¹⁶

- Small and informal education classes. These should be based on interactive strategies, rather than didactic models or literature-based education. These have been found particularly effective for women from lower SES and CALD backgrounds, and for women with low literacy levels. In a convenience sample of 124 postnatal Vietnamese women, 30 per cent suggested that breastfeeding education should take 'the form of discussion sessions'.³²
- Peer support groups. Peer groups that include contact with more experienced mothers who have successfully breastfed may be particularly useful for young and adolescent women, particularly when part of a breastfeeding initiation educational program.⁶³ Group learning with peers in general was successful in promoting breastfeeding duration to two months in a group also specifically involving CALD women.⁶⁴ The mentorship model using experienced mothers and their families on video has also been successful in improving feeding outcomes at three months.⁷

- Health education interventions involving the partner and grandmother may increase breastfeeding duration, especially for low SES women⁶⁵ and some CALD women and adolescent women. The attitude of the maternal grandmother has been found to be of particular importance.^{7, 66, 32}
- Multi media interventions, in particular videos, appear to be effective for younger women^{7, 67} and may be helpful for women with low literacy levels or with difficulties with English.^{67, 15, 64, 32}
- Lactation support services. Access to these services is often limited, particularly for women with lower SES, and for CALD women and ATSI women due to cultural preferences and language barriers.^{32, 18, 68}
- Programs and training at hospitals to ensure breastfeeding-friendly outcomes.^{69, 31, 30}

Some descriptive studies have identified other strategies but evidence of effectiveness is presently lacking. These strategies include:

- Entitlement to paid maternity leave for all women for a minimum of six months in support of policy-based, legislative and practical strategies towards the achievement of the Australian target of 80 per cent of women still breastfeeding at six months.^{70, 71}
- Training programs for health professionals specifically focused on the provision of accurate and consistent breastfeeding information. The need for consistent messages has been found especially important for messages relating technique and timing. For

example, Becker (1992) suggested breastfeeding initiation was greater where midwives had better breastfeeding knowledge and qualifications that were more recent.^{31, 72}

- Broad-based workplace initiatives and legislation to support women breastfeeding, including privacy and a legal right to feeding breaks.^{5, 4}
- Training for antenatal education providers to be proactive in breastfeeding promotion, to offer more information to all but especially to those who are undecided.²¹

While there does appear to be some overlap in the barriers for initiation of breastfeeding and the duration, this does not seem to be true for interventions. For example, specific interventions such as Hartley and O'Connor's (1996) examination of the Best Start programme,⁷³ and Rea's (1990) study of the Brazilian National Breastfeeding Promotion, found some interventions were effective in increasing initiation rates but were not statistically significant for duration.⁷⁴ The Manitoba Pediatric Society's 1982 study also found interventions that had a significant effect on breastfeeding duration, such as health sector education and media interventions, had no particular benefit in terms of initiation rates.²³ This would suggest that despite some overlap in the identified barriers to breastfeeding generally, intervention strategies may need to be specifically targeted to the particular needs and contexts of different populations and stages of the decision making process.

Chapter 5

Overview of the evidence

Initiation and duration

Methodological problems were identified by Fairbank et al (2000) in defining the term 'initiation'. The range of definitions includes women who have 'ever breastfed' even on a single occasion, and includes some overlap with 'duration' of breastfeeding.²⁰ It is outside of the scope of this review to attempt to more clearly define these terms. Our focus has primarily been on the duration of breastfeeding. However, it was found useful to include some of the findings from research where the duration measured has been shorter than three or six months. This approach enables a more complete examination of the influences of breastfeeding duration, as well as providing an overview of factors that can be applied to the design and implementation of future strategies.

From an initial selection of over 1100 articles identified, over 300 journal articles were reviewed that focused on the primary 'at risk' groups of adolescent mothers, mothers with low education or low literacy, those with low SES, CALD women and mothers of Aboriginal and Torres Strait Island (ATSI) origin.

One systematic review was identified which investigated the effect of interventions specifically promoting initiation of breastfeeding, and included secondary outcomes related to duration. This study was the highest level of evidence found for breastfeeding initiation, and systematically reviewed 59 studies (14 randomised controlled trials (RCTs), 16 comparative studies with

concurrent controls and 29 case series). Of the 59 studies included in the systematic review, only 22 overlapped with the inclusion criteria for this report.²⁰

Another systematic review looked at the available evidence on prenatal and postnatal primary care interventions to improve breastfeeding duration. Sixty-four studies were included, of which 37 were considered to be internally valid studies including 27 RCTs and ten quasi-experimental studies. The review found that, generally, interventions spanning the prenatal period or both periods were more effective than those provided only in the postnatal phase. The review also found that the most effective strategies included group sessions in the prenatal phase, home visits in the postnatal phase or in both phases, and the combination of interventions (including group sessions, home visits and individual sessions) in both phases. Individual sessions in the postnatal phase or in both phases were also found to be effective. In addition, the review found interventions that failed to show positive effects on breastfeeding duration. These interventions included small-scale short interventions, brief breastfeeding messages given amongst other topics, isolated use of printed materials, brief or no face-to-face interaction, and delivery of contradicted messages such as encouraging breastfeeding while providing infant formulas.⁷⁵

Fairbank et al (2000) grouped interventions into five categories and

reviewed the evidence supporting each of these. The interventions were health education, health sector initiatives, peer support programs, media campaigns and multifaceted interventions. Of the interventions evaluated in the literature only four types of interventions were found to be effective at increasing breastfeeding initiation:

- Small informal health education groups delivered during the antenatal period were effective across income groups and for women from some CALD backgrounds.
- One to one education was shown to be effective, particularly for lower income women.
- Antenatal and postnatal peer support programs were shown to be effective for both initiation and duration rates among lower income women and especially amongst women who had already made the decision to breastfeed.
- 'Packages of interventions' which included peer support and media campaigns combined with 'structural changes to the health sector', such as rooming-in facilities, were also reported to be effective.²⁰

This study also identified risk factors associated with breastfeeding initiation and duration that apply across all groups, such as smoking cessation, physical influences and feeding intention, all of which significantly affect breastfeeding success. In addition, Fairbank et al (p3) note that 'efforts to increase initiation rates should also take into account the resources needed to support women in

order for them to continue breastfeeding'.²⁰

Guise et al (2003) did a meta-analysis of the effect of primary care-based interventions on breastfeeding. They found that in primary care settings, educational programs were the most effective single intervention on both initiation and short-term duration. They also found that telephone or personal support increased short term and long term duration.⁷⁶

Physical factors supportive of increasing duration

Physical factors are one of the most common reasons given by women who stop breastfeeding earlier than intended.^{55, 54} A number of modifiable physical factors such as adequacy of milk supply, timing of first breastfeed,⁷⁷ early skin-to-skin contact,⁷⁸ breastfeeding technique, breast or nipple problems,⁵⁹ early introduction of solids⁵⁸ and ease of access to the baby⁷⁹ have been identified in the literature.

Adequacy of milk supply

A number of studies were identified which reported 'inadequate milk supply' as one of the primary reasons for early cessation of breastfeeding.^{77, 51} In the study by Buxton et al (1991) 25 per cent of women stated that this was the primary reason for early cessation.⁸⁰ However, Lowe (1994) found that although this was a common reason given for stopping breastfeeding, it was more often a perception of insufficient

milk supply. In most cases the baby was not actually losing weight.⁵¹ The woman's anxiety about milk supply was a more probable explanation. In a small, longitudinal study, Motil et al (1997) found there was significantly lowered milk production in adolescent women compared to adult women. These findings were thought to be due in part to behavioural differences such as feeding frequency. Differences between adolescent and adult milk production were found to be significantly different at six, 12, 18 and 24 weeks and were associated with daytime feeding frequency at six weeks ($p < 0.01$, $r = 0.80$) 12 weeks ($p < 0.05$, $r = 0.39$) 18 weeks ($p < 0.01$, $r = 0.74$) and 24 weeks ($p < 0.01$, $r = 0.71$) (p447). However, Motil et al (1997) suggested that biological factors associated with the maturational process might also contribute to lower milk supply and shorter duration of breastfeeding in adolescent women.⁸¹

Early weaning associated with inadequate milk supply, can in part be explained by early introduction of solids or other liquids^{79, 58} as well as processes of establishing milk supply such as timing of the first breastfeed.⁷⁷

Early introduction of solids or other liquids

Exclusive breastfeeding may also be interrupted with the introduction of supplementary foods or liquids, with a number of studies showing a reduction in breastfeeding duration, regardless of

whether formula, other liquids or solids were used.^{58, 79} Furthermore, a study by Arlotti et al (1998) found that exclusive breastfeeding was significantly associated with longer overall (either exclusive or non-exclusive breastfeeding) duration 'at two weeks, one month and two months' follow up.⁴⁸ This statistical significance was lost, however, after three months, which is highly predictable as a considerable number of mothers begin weaning at three months.

There would also appear to be some association between hospital discharge packages and early introduction of solids. A systematic review by Donnelly et al (2001) found that there was an 'overall reduction in breastfeeding maintenance' at a number of specified time points post-partum and a significant reduction in the maintenance of exclusive breastfeeding when commercial hospital discharge packs were given.⁸ Hospital discharge packs were defined as 'containing branded information with or without free formula, plus other items of use in bottle feeding' such as 'bottles, teats or pacifiers'.⁸ There was no significant evidence that commercial discharge packs led to early cessation of non-exclusive breastfeeding. But when the introduction of solids was included as a variable in the studies, commercial packs were associated with the earlier introduction of solids.

The introduction of solids has been shown to be predictive of earlier cessation of exclusive and non-exclusive

breastfeeding.⁵⁸ Introduction of solid foods early on in breastfeeding was more likely to occur in lower income women⁵⁸ and adolescent mothers.⁷ However, there appears to be a lack of understanding by mothers over what actually constitutes 'solid food'. A study by Solem et al (1992) reported that 37 per cent of mothers stated that their babies were started on solids by four months. However, when the same group of women were asked about adding cereals to a bottle,⁷⁵ per cent had done so before four months⁵⁸.

Possible reasons for these results may be explained by Coreil's (1995) study, which found that lower income women have only limited access to the in-depth knowledge and services of a lactation consultant.²⁷ When these women were given access to expert advice and assistance with feeding techniques and overcoming problems and incentives (donated prizes for partner and the woman), breastfeeding rates significantly improved.⁸²

Timing of first breastfeed

The timing of the first breastfeed after delivery has been shown to be of critical importance and strongly predictive of overall duration. Buxton et al (1991) found that delays in first feed were significantly predictive of cessation of breastfeeding within seven days (OR 3.44, 95 per cent, CI 1.21–9.87).⁷⁷ However, this study found no significant association between in-hospital formula supplementation or commercial

discharge formula packs, and overall breastfeeding at seven days. It should be noted, however, that for women still feeding at or beyond seven days, formula packs and supplementation, whether in-hospital or ongoing, was predictive of earlier cessation in many studies including Caulfield et al (1998) which focused on low-income women.¹⁵

Early skin-to-skin contact

Early skin-to-skin contact is defined as when a naked infant is placed prone on the mother's bare chest at birth or no later than 24 hours after birth. A Cochrane systematic review found that, compared with usual hospital care, early skin-to-skin contact had positive effects on breastfeeding at one to three months after birth (OR 2.15, 95 per cent CI 1.10–4.22) and breastfeeding duration (weighted mean difference 41.99 days, 95 per cent CI 13.97–70.00 days). However, the reviewer suggested further investigation was required concerning the variations in the quality of methodology, implementation of the intervention and outcome of the studies included.⁷⁸

Ease of access to baby

Buxton et al (1991) also found that 'lack of rooming-in with the baby' was associated with failure to breastfeed beyond seven days.⁷⁷ Other studies, notably Lindenberger et al (2000) found that rooming-in was significantly associated with breastfeeding beyond three months.⁸³ Thirty nine per cent of

women who had constant rooming-in while in hospital had weaned their babies fully by four months, compared to 50 per cent of women who were separated from their babies and had weaned by four months.

Social support

Sikorski et al (2004) conducted a comprehensive systematic review of a range of support mechanisms for breastfeeding women. In the most recent update (2004) that compared all forms of extra support with usual maternity care, there was evidence of greater beneficial effect on the duration of exclusive breastfeeding for the extra support groups, but the effect of professional support was less clear.¹⁷ Sikorski et al (2004) found that one extra woman in every nine would breastfeed to two months where support was provided by professionals with specialist skills. This was true for exclusive breastfeeding and for non-exclusive breastfeeding. Lay support was also found to be effective for promoting exclusive breastfeeding but the effects on duration were less clear. Sikorski et al (2004) also found that face-to-face interventions were successful in preventing the cessation of breastfeeding, whereas telephone interventions failed to have a significant benefit. This review did not focus specifically on any particular 'at risk' groups of women. The aims were to test whether 'interventions containing both antenatal and postnatal elements were more effective' than postnatal

interventions only. It should also be noted that participants in the included studies were 'women who intend to breastfeed, or who initiate breastfeeding' when their children are born.¹⁷

Schafer (1998) and Hoddinott (2000) identified social support as a significant factor in the initiation and maintenance of breastfeeding.^{16, 84} Libbus (1997) also noted that 'the influential support source may vary depending on maternal age and ethnicity'. Peer and maternal grandmother support were the most important sources of support for adolescent women, while male partner support followed by maternal grandmother were important for low SES women.²⁴

In a randomised controlled trial to evaluate the effect of telephone-based peer (mother-to-mother) support on breastfeeding duration among first-time breastfeeding mothers, Dennis et al (2002) found that, compared with conventional care only, extra peer support was effective in maintaining breastfeeding to three months post-partum and improving mothers' satisfaction with the breastfeeding experience.⁸⁵

Giuglaini (1994) found that the attitude of a partner who was supportive of breastfeeding increased the likelihood that a woman would breastfeed, regardless of her age, ethnicity, or education level (OR=32.8). Antenatal class attendance (OR=2.7, CI 1.19–6.14) and support from lay people

(OR= 3.3 CI 1.44–13.86) increased the likelihood of breastfeeding. Breastfeeding information provided by doctors, nurses, and nutritionists was not found to be associated with the maternal decision to breastfeed.²⁹ These results point toward the need for a reassess the value of antenatal care interventions, including the need for greater emphasis on partners in breastfeeding education, and on supportive community-based programs.

In a descriptive study of 52 women who participated in a structured interview at two and four months, Barton (2001) found that a woman's primary support person may change over time.⁸⁶ This may be due to changes in type of support needed or to changes in access to support. In this study, lower income women identified their partners and their mothers as the support persons regarding breastfeeding, whereas at the second interview (when their babies were four to six months old), women found greater support and advice about breastfeeding predominantly from their own mothers and mothers-in-law. Changes over time are not often noted as support and type of support are treated as a constant variable. In addition, support as a generic concept is often summarised rather than each variation tested for effectiveness. This was highlighted in the Sikorski et al (2004) systematic review, which identified a need to undertake research to determine which forms of support are the most

effective and for which populations.¹⁷ They did not address the issue of changes over time or which support strategies were most appropriate to addressing specific issues or populations.

Feeding intention

Intention to breastfeed has been shown to be consistently associated with a wide range of variables such as higher educational level,^{87, 44} older age,^{87, 44, 88} higher socio-economic groups,⁸⁷ non-smoking status⁸⁹, day care⁹⁰ and gender roles.⁹¹ Intention to feed encompasses the decision to begin to feed and the expected or desired duration. While intention to feed has been shown to have some relation to other variables, it has also been shown to be an independent predictor of initiation and duration, when all other factors are controlled.⁹² The decision to breastfeed is often made during the prenatal or antenatal period and some instruments have been developed using the theory of planned behavior (TPB) conceptual framework expanded to include breastfeeding-specific variables to identify 'at risk' groups⁹².

While antenatal factors have been shown to be aimed at improving initiation rates, there is some evidence that a better understanding of antenatal influences on duration may improve intervention outcomes. O'Campo et al (1992) found anticipated length of breastfeeding to be positively associated with prenatal factors such as parity, intention to return

to work or school, and maternal confidence.⁹³

In a large, longitudinal study of 556 women in Perth, Scott et al (1999) found that intended duration of breastfeeding was predictive of actual duration. Other associations with duration of breastfeeding were maternal age and education.⁴⁴

Many women do not appear to have made any decision prior to their first antenatal visit, contrary to some health provider assumptions.²⁷ Such assumptions are particularly unhelpful for 'at risk' populations such as low-income women. Health providers acknowledged that they 'rarely followed up with more discussion of options once a woman stated a preference for artificial feeding'.²⁷ This may be indicative of health care providers making a low investment of time and resources where there was little perceived likelihood of success or an acceptance of women's rights to choose.²⁷

Health worker knowledge and support

There is some support in the literature and from consumer feedback for the complaint by breastfeeding women of inconsistent and inaccurate messages from health care providers, both in the community and in mainstream health services (Consumer and Community Feedback and Koori Discussion Group feedback).^{94, 95, 53} There is also some indication that there are significant gaps in health care provider knowledge.^{31, 96}

In a survey of lactation education services offered to low-income women, Libbus (1994) found that only 17 per cent of health worker staff believed that 'women should breastfeed exclusively for at least three months', (p6) whereas nearly half thought women should breastfeed exclusively for at least six weeks.⁹⁴ This study included staff from the US Department of Health, public antenatal clinics, county health departments and WIC programs in this study.

A study collecting data from focus groups of low-income mothers and providers on their 'perceptions of professional breastfeeding counselling', reported that providers frequently ask about 'feeding intentions without offering much information on which to make a decision'.²⁷ Buxton et al (1991) in a stratified survey study design found that those who are 'very certain' about 'the decision to breastfeed' were significantly more likely to make the decision pre-pregnancy or antenatally.⁷⁷ Coreil et al (1995) suggested that many women who may not yet have made a strong decision, may decide on 'bottle feeding because they feel it necessary to give an answer' when asked.²⁷

Libbus (1994) suggested that an opportunity was missed for breastfeeding education when clients were undecided about their feeding intentions. Almost a third of providers stated that they simply offer information about both bottle feeding and breastfeeding, presumably impartially.⁹⁴

Providers were often reluctant to question a woman's stated feeding choice.⁹⁴ In a descriptive study in a maternity ward setting,³⁰ 34 per cent of nursing staff accepted a mother's uninformed feeding choice; however, how these mothers were categorised as uninformed was undefined. Low-income mothers perceived health professionals as disinterested or half-hearted about breastfeeding if they 'did little or nothing to educate women on infant feeding after inquiring about' their intentions, even if they stated they intended to bottle feed.²⁷

Other studies^{95, 53} indicated that this lack of opinion on the part of health providers can be experienced as unhelpful and can have negative effects on breastfeeding outcomes. Women who intended to formula feed were far more likely than those who intended to breastfeed (74 per cent compared to 58 per cent) to report that they 'either did not know their doctors opinion or the doctor did not care' about her feeding choice.⁹⁵

The role of knowledge

Knowledge, education and training can be applied to three main target groups: antenatal and postnatal women, health care providers and the general community. Education and training to improve knowledge has relevance for both the design of professional staff training, general media promotions, and information and education for pregnant and breastfeeding women. The measurement of both current and

increased knowledge have been found to be valid predictors of improved breastfeeding rates when applied to hospital health care staff.³¹

Discrepancies were found in this study between self-perceived levels of knowledge and the health provider's actual knowledge of breastfeeding. Additionally, despite the agreement of all staff in a hospital unit that they had enough breastfeeding knowledge, 86 per cent of the midwives in the unit thought more staff training would increase breastfeeding rates.³¹

However, knowledge alone in terms of testable factual information about health benefits has not been shown to be a key variable in improved breastfeeding outcomes when applied to low-income women in particular.⁹⁷ This study involved structured face-to-face interviews with 154 women. Women were defined as being from a lower income group if they were in receipt of a WIC benefit.⁹⁸ Lower income women who chose to bottle feed valued factors other than the benefits of breastfeeding more than did women who opted for breastfeeding. However, the study has some weaknesses as multiple comparisons between and within groups were used. These can lead to systematic error if multiple tests are used without correction.

Smoking

The literature of the past eight years has found a consistent association between maternal smoking and intentional choice to bottle feed, early cessation of breastfeeding and early introduction of solids.^{99, 100, 101, 102, 103, 104, 105} An interesting aspect of these findings is that smoking can indeed be regarded as an independent risk factor when investigators controlled for low socio-economic background and low levels of education.^{103, 104}

Various physiological factors have been identified in the relationship of maternal smoking and shorter breastfeeding duration. Nicotine-blocked prolactin levels directly inhibit lactation capacity¹⁰⁰ and nicotine-induced adrenaline release may prevent milk letdown.¹⁰⁴ In addition, there is a clear dose-response curve between maternal smoking and duration of lactation. The more cigarettes the mother smokes, the shorter the breastfeeding duration.^{103, 105}

To this date, no unanimous evidence is available but there is a strong suggestion that the above findings also hold up when the mother is frequently exposed to passive smoking.¹⁰¹ An important factor, which has implications beyond this report, is the finding that maternal smoking is a significant predictor of poorer infant nutrition, even when controlled for socio-demographic factors.

In fact, the authors recommended for 'maternal smoking status' to be included in clinical screening tools for infant nutrition.¹⁰³

'At risk' populations

Aboriginal women

In a literature review of factors associated with initiation and duration of breastfeeding, Scott (1999) reported a breastfeeding initiation rate of 82 per cent in Aboriginal women in Perth.¹⁴ This was similar to state-wide rates found at the time by Hitchcock et al (1982) cited in Scott (1999). Aboriginal women living in an urban environment were found to breastfeed for a shorter time than were women in the general population. Fifty per cent of aboriginal mothers compared to 64 per cent of women in general were still breastfeeding at three months. When socio-economic status was controlled for, these differences disappeared. However, many of the studies reviewed were describing data more than twenty years old.¹⁴

Studies that are more recent have found that over 90 per cent of Aboriginal women in remote regions followed traditional practices of breastfeeding for at least 12 months.⁹ In a study of birth weights of Aboriginal infants in North Western Australia in remote regions, very high rates of breastfeeding initiation and duration were found. 'More than 95 per

cent of full term infants were breastfed for the first six months and 85 per cent were still being breastfed at 12–18 months'.¹⁰⁶ This initiative was the Strong Women, Strong Babies, Strong Culture (SWSBSC) program started in 1992 by the Territory Health Services in Darwin. The primary aim was to improve the birth weights of Aboriginal babies and children up to three years. It was grounded on 'interactive community activities', which specifically emphasised 'traditional cultural values relating to pregnancy and childbirth as well as ... appropriate nutrition, hygiene and prenatal care'.¹⁰⁶ The program trained Aboriginal women with appropriate qualifications, who then took on additional educational and support roles for their communities. Increases in birth weights from 12–36 months rose by 30g ($p=0.001$) were attributed to the intervention.

In a descriptive study of urban Aboriginal women who had given birth in the previous 15 months, 89 per cent had initiated breastfeeding and 70 per cent were still breastfeeding at six to 12 weeks; however, urbanisation was linked, independently of age, with a reduction in breastfeeding duration.¹⁰⁷ Additionally, it has suggested that 'the loss of traditional culture' may be one explanation.¹⁰⁸ Holmes et al (1997) suggested that practices and attitudes promoted on missions where Aboriginal women and their families lived during the 1940s, 50s and 60s may have led to traditional customs being abandoned and families

becoming separated, leading to a lack of role models. Traditionally, breastfeeding has been regarded as women's business and not the preserve of men.¹⁰⁹

Intention to breastfeed has not been found to be a reliable predictor of actual duration. In a survey of breastfeeding rates in the Aboriginal community in Melbourne, 116 women living in the metropolitan area were asked to complete a questionnaire. During their pregnancies, just over 85 per cent expressed an intention to breastfeed. At three months 50 per cent (CI 40.9–59.1) were still breastfeeding and only 32 per cent (CI 23.5–40.5) at six months. This study found that women under 20 (73 per cent) were less likely than older women (87 per cent) to breastfeed. Over half of the women (51 per cent) had added formula or foods before four months.

These results were comparable with the general population. (Holmes et al 1997a) In a qualitative study on breastfeeding issues among urban Aboriginal women, concerns were expressed about breastfeeding in public, lack of knowledge about the benefits, fears about the adequacy of milk supply, and perceptions that 'breastfeeding was painful and inconvenient'. A focus group discussion was chosen intentionally for this group of women. The authors noted from experience that 'many in the Aboriginal community are wary of long questionnaires, while group discussions of important issues are customary'.⁶⁸ Key factors contributing to breastfeeding

problems were 'lack of knowledge, hospital practices, lack of support and appropriate advice, and lack of confidence and self esteem'.⁶⁸ There was, however, support for the belief that breastfeeding is a 'natural, accepted and traditional' even desirable practice for Aboriginal women.⁶⁸ The women identified a range of barriers:

- Antenatal education—where they often felt uncomfortable and alienated by the culturally different context of the information presented. Many said they would like antenatal and postnatal classes run by Aboriginal people at their own health centres.
- They complained about having their breasts touched roughly by midwives
- The complained about being given inconsistent, incorrect and unhelpful advice by midwives and doctors.⁶⁸

A video was produced as an outcome of the study along with classes and the training of doctors and other health workers.

In Victoria the Koori Women and Children's Health program is run by the Victorian Aboriginal Health Service (VAHS) with links to the Koori Maternity Strategy.¹¹⁰ Aboriginal health workers, trained in providing maternity services and with an understanding of Aboriginal cultural needs, have an essential role in the strategy and have emphasised the importance of maintaining linkages with mainstream health services, and encouraging partnerships.¹¹¹

In a report to the Victorian Aboriginal Community Controlled Health Organisation Inc (VACCHO) and the Victorian Department of Human Services, three themes emerged from the consultation process with different communities:

- Aboriginal community control
- need for a model of holistic care
- recognition of diversity within and between different communities.¹¹¹

Other issues raised in this report relate to ‘at risk status’: low maternal age in comparison to non-indigenous women (nationally, 16.5 per cent of indigenous women were aged under 20 in the period 1994–1996, compared to 4.8 per cent of non-indigenous women) drug dependence and abuse of alcohol and tobacco, and current health status. Some elements were common to the report and to our discussions with Koori women such as the belief that antenatal care was not valuable or necessary, disenchantment with mainstream health services, and the effects of poverty on choices and options.¹¹¹

The Koori Health Unit of DHS along with the Victorian Aboriginal Health Reform Strategy emphasised that ‘improving the health of Koori women and their newborn babies is an important step needed to improve the health of Koori people throughout the ongoing years of childhood and adult life’.
(<http://koori.health.vic.gov.au/counts/women/babies.htm>)

Adolescent women

Research has consistently suggested that adolescent women are less likely to both initiate breastfeeding and are likely to breastfeed for a shorter time than are older women. The main issues that have been identified as common barriers to breastfeeding for adolescents include fears about pain²² and particularly embarrassment about breastfeeding in public.^{22, 6, 112}

A survey of 55 young mothers (n=36) and expectant teenagers (n=19) found that decisions about breastfeeding were often left until late in the pregnancy. Only half of these women had discussed their options with a health care provider. Partners and maternal grandmothers were cited as influential in the decision making process.²⁵ A large study of 693 young mothers under the age of 18, interviewed 48 hours post-partum,¹¹³ compared young mothers who had considered breastfeeding but ultimately bottle fed, with young mothers who bottle fed and had not considered breastfeeding and with young mothers who breastfed. The findings from this study indicated that many young women who had considered breastfeeding but ultimately bottle fed had limited exposure to breastfeeding role models. They also had very limited experience of family and friends breastfeeding, compared to young mothers who did breastfeed. Adolescent women who bottle fed their babies and who had considered

breastfeeding were also more likely to be less confident about their decision to breastfeed. These findings have been well replicated in other studies.^{114, 25, 115, 112}

A self-administered questionnaire to 346 high school students and 244 college students indicated that the primary barrier to breastfeeding was perceived to be embarrassment, with less than 50 per cent believing that breastfeeding in public was acceptable.⁶ In general, many young women had positive attitudes towards breastfeeding and would like more information about it.⁶ This positive attitude has been reiterated in other studies of high-school age girls and adolescent mothers.^{112, 116} Schools, along with home and television, were the primary sources of breastfeeding information for over half of high school and college students in one study.⁶

The reasons given by adolescents for choosing to breastfeed, in descending order, were that it was ‘best for the baby’, ‘quick or convenient’, ‘cheap’ and ‘healthy’.²⁵ This survey also found that young women held a strong belief ‘that breastfeeding is good for the mother’s figure’. Interestingly, adolescents were less inclined than older women to name convenience or naturalness as reasons for breastfeeding.²⁵

A longitudinal study of two groups of adolescents for up to two years post-partum found a correlation between wanting to have a baby and breastfeeding.¹¹⁷ The young women who

had wanted a baby were more likely to have left school, adding support to the observation¹¹⁴ that pregnant teenagers at school were at risk of not breastfeeding and therefore may need more support to initiate and continue breastfeeding.

A comparative survey on breastfeeding between 48 adolescent (aged 14–18) and older mothers (aged 23–33) who were interviewed 48 hours post-partum, found that adolescents did intend to breastfeed for the same time as did the adult women but were less successful.⁸¹ This is contrary to other studies that suggest there is an association between intention and duration.

Factors that influenced the early introduction of solids into the baby's diet were the influence of the maternal grandmother and beliefs that it would help with the baby's hunger, crying and sleeping.⁷ One successful intervention working with adolescent mothers has been demonstrated in a randomised controlled trial of 181 black low-income first-time mothers who were less than 18 years old. Participants were randomised into an intervention group and a control group. The intervention utilised used a video produced according to a mentorship model. An 'advisory group of black adolescent mothers,' featuring themselves, their babies, partners and mothers, gave information on non-food management of crying, sleeping and hunger as well as negotiation strategies between the young woman and her

mother.⁷ This, in combination with a home-visit program, achieved a four times higher breastfeeding rate than the non-intervention group. This combination was also reported to be successful in other strategies for modifying adolescent care giving.⁷ A videotape and emphasis on visual images in preference to written or conversational material were also important features of a successful breastfeeding education intervention as part of a WIC and schools-based nutrition education program. Participants in the program were significantly more likely to initiate breastfeeding.⁶⁴

A focus group study involving 35 adolescent mothers aged between 12 and 19, identified the influence of the maternal grandmother in the feeding decision and her potential as an 'ally for health care providers' in encouraging breastfeeding.²² This study also emphasised the importance of acknowledging not only the benefits of breastfeeding but also looking realistically at the barriers. When 'someone' took the time to explain their options realistically including the benefits and the barriers and to explore concrete solutions, young women were more likely to plan to breastfeed and to try breastfeeding.²²

Women from culturally and linguistically diverse (CALD) backgrounds

It should be noted that some, rather than all, ethnic groups experience reduced breastfeeding rates when migrating to a new country. This phenomenon has been observed in breastfeeding studies of ethnic migrant women. For example, 139 Hispanic women living in the mainland US were interviewed to assess exclusive breastfeeding practices. This study found that a major factor influencing breastfeeding was acculturation. Many migrant women come from cultures where breastfeeding rates are traditionally high. When they enter a culture in which rates are both lower overall and particularly low amongst lower income groups, they tend to increasingly adapt towards the lower end of the range that is normal for their new country of residence.¹ This study showed that recent-arrival women not born in the mainland US were approximately six times more likely to exclusively breastfeed than women from ethnic backgrounds who were born in mainland US. This observation has also been reflected in other studies.^{98, 60} Additionally, migrant women must also contend with very different cultural perceptions and behavioural norms regarding the acceptability of breastfeeding in public, a practice that Anglo Saxon cultures do not appear to be particularly at ease with.

There is also some relationship between ethnicity and socio-economic status; however, it is difficult to know whether ethnicity or SES singly or together lower breastfeeding rates. This observation is supported by a study whereby 213 women recruited from a town on the Mexico–United States border, were administered structured interviews, two months prior to the birth, at the time of birth and two to three weeks postnatally.^{118, 119}

These studies have in general focused on minority groups living in the US and it is difficult to generalise the results to an Australian setting. However, a number of studies have been undertaken in Australia and the UK which add support to US findings.^{3, 2, 32}

Low socio-economic status (SES) mothers

Low SES populations were defined differently across studies, particularly studies from different countries. Studies where included where subjects have been classified as low SES but comparisons between studies should be made with some caution.

One hundred and fifty four low SES women who were either pregnant with their second child or with an infant under 12 months of age were interviewed about their breastfeeding beliefs. There were approximately equal numbers of women who had breastfed and women who bottle fed. The study reported that

knowledge of the health benefits of breastfeeding was not always sufficient to choose breastfeeding, despite both groups rating the health benefits of breastfeeding highly. Factors that were highly regarded were the nutritional benefits for the baby, disease protection for the baby, and improvement to the baby's physical and psychological development. However, women who bottle fed were more likely to be concerned about limitations to daily activities.⁹⁸

A descriptive longitudinal study of 36 low SES women, carried out over three months post-partum, examined the effect of peer support on exclusive breastfeeding and duration. This study found that the biggest impact on breastfeeding duration for post-partum women were their plans for returning to work or study. Women in this study who intended to return to work breastfed for six to nine weeks less than those who planned staying at home.⁴⁸ This study suggests that while attending breastfeeding education classes and support of a significant other are important and reliable predictors of increased breastfeeding duration, they may not be sufficient to counter a need to work, especially for low SES women.

The support of significant others for breastfeeding was the next strongest predictor of duration of breastfeeding for low SES women.⁴⁸ Other studies^{120, 72} indicated that a woman's partner is the

most important significant other, followed by the maternal grandmother, especially if she has also breastfed.

Attitudes to breastfeeding in 50 low SES women were assessed using focus groups and individual interviews. The women who chose to breastfeed wanted to have more information on technique.²⁷ Explicitly 'they would have liked to observe a woman breastfeed'. The women also preferred educational classes that were interactive and discussion-based rather than formal and didactic. Many women said they wanted information that was written and not oversimplified. Others wanted 'someone' to go through the information with them.

Chapter 6

Models

Models in public health

Research into rates of breastfeeding initiation and duration is usually focused on strategies designed to overcome barriers, particularly in groups perceived to be ‘at risk’ of either choosing not to breastfeed or of ceasing after a short time. Intentions and behaviours are less frequently addressed in educational programs and rarely within a theoretical context of behaviour change models. Models of behaviour change have been used in other public health domains such as smoking cessation¹²¹, safe sex¹²², and substance misuse¹²³ with varying degrees of success.

In breastfeeding intervention research, the ‘reasoned action model’ has also been used to study women’s intentions to breastfeed and their follow-up behaviour.¹²⁴ However, not taking into account differences in the demographic variables between subjects was a weakness in this study, increasing the potential for bias.¹²⁵

Advantages of using a theoretical model are:

- a consistent message and approach across levels of intervention
- tailoring to individual readiness to absorb information
- consistency of approach
- interventions can be readily developed either globally or in part.

The use of a range of strategies to address specific barriers or populations do not constitute a model and reflect the sometimes ad hoc approach to interventions designed to improve breastfeeding rates. Issues identified in breastfeeding literature, and by consumers, have included the claim that

interventions and health professionals have demonstrated a lack of consistency, accuracy, and health worker knowledge.^{94, 95, 31, 96}

‘Stages of change’ model

Rationale

The ‘stages of change’ or ‘transtheoretical’ model originally developed by Prochaska and DiClemente¹²¹ has been widely used in a number of settings but more particularly in substance misuse interventions. This model has been used in isolation and in conjunction with other models but only rarely applied to breastfeeding interventions.¹²⁵ In a study comparing a

modified reasoned action model and the ‘Stages of Change’ model, specifically in relation to breastfeeding intention, the ‘Stages of Change’ model was found to be a stronger predictor of breastfeeding intention, particularly for low-income women. Additionally, it was found that both positive and negative attitudes toward breastfeeding could be influenced in a given population. There were some limitations to this study. Samples were not randomised, nor was breastfeeding behaviour actually measured. Additionally, women in the study were at different stages of pregnancy, which is likely to have influenced the responses. Dichotomous scaling methods were used rather than Likert scales.¹²⁵

Figure 4 Levels of application of the model stages

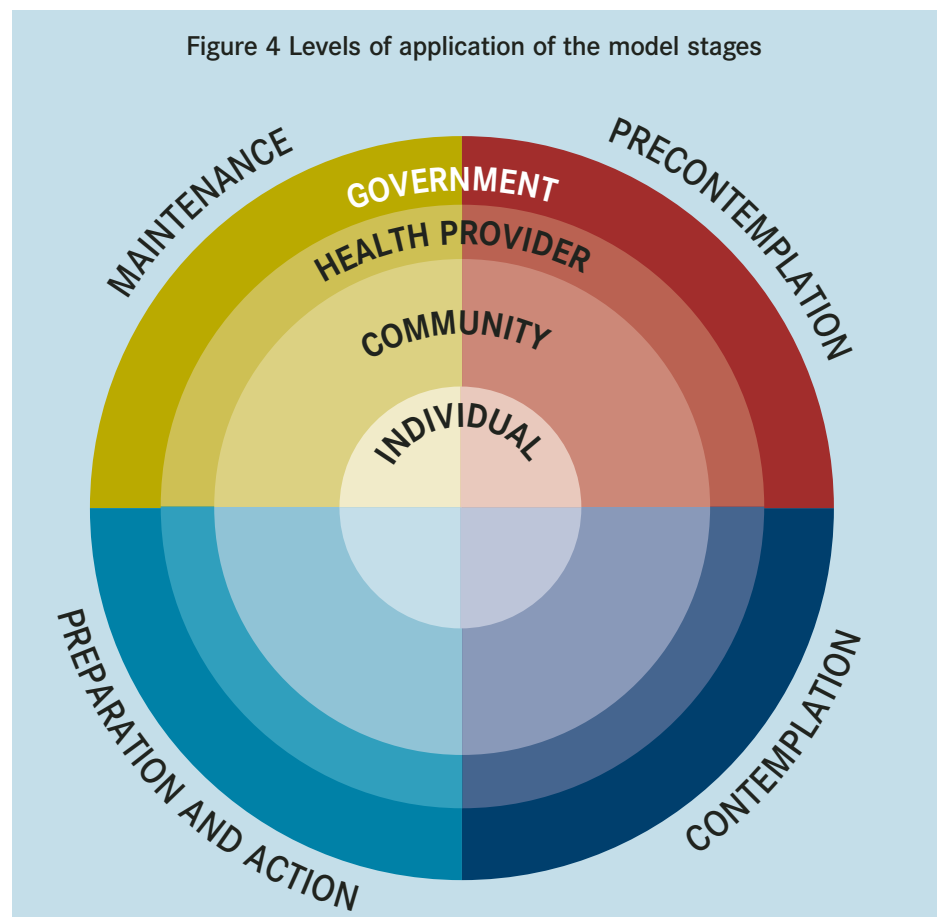


Table 4 Summary of intervention models

Theory/model	Level	Key concepts	Applicability
Learning theories	Individual	Reinforcement, cues shaping	Number, complexity and frequency of reinforcement schedules make this model impractical at a community level
Health belief model	Individual	Perceived susceptibility, severity, benefits, barriers, Cues to action, self-efficacy	Difficult to apply at any but individual level
Transtheoretical model	Individual	Precontemplation Contemplation Preparation Action Maintenance	Can be applied across a variety of levels, with adaptability of strategies.
Relapse prevention	Individual	Skills training Cognitive reframing Lifestyle rebalancing	Not relevant to breastfeeding strategies. More appropriate to longer term behaviour change and relationship to intermittent 'relapse prevention'
Social cognitive model	Interpersonal	Reciprocal determinism Behavioural culpability Self efficacy Outcome expectations Observational learning Reinforcement	Related to expectancy of long and short term benefits and outcomes and level of self-efficacy. Unlikely to be sufficiently effective in 'at risk' groups
Planned behaviour	Interpersonal	Attitude toward the behaviour Outcome expectations Value of outcome expectations Subjective norm Beliefs in others Motive to comply with others Perceived behavioural control	Related to confidence and sense of control over opportunities, resources and skills. Unlikely to be sufficiently effective in 'at risk' groups.
Social support	Interpersonal	Instrumental support Informational support Emotional support Appraisal support	Has some relevance to breastfeeding but is difficult to develop consistency in conceptualisation over different levels of application.
Ecological perspective	Environmental	Multiple levels of influence Intra-personal Interpersonal Institutional Community Public policy	Does have multiple levels/settings potential but has not been widely implemented or tested. It does include sociocultural and economic drivers of changing behaviour. Breastfeeding is less about behaviour change than attitude change and initiation of an activity.

Adapted from *Physical Activity and Health: A Report of the Surgeon General*, US Department of Health and Human Services, 1996.

Source: Adapted from Glanz K and Rimer BK *Theory at-a-glance: a guide for health promotion practice*, US Department of Health and Human Services, 1995.

One advantage of the ‘stages of change’ model is that the focus of the intervention is on the woman involved in breastfeeding—her intentions, beliefs, and behaviours. Many of the current resources have a primary focus on ‘selling’ the health benefits of breastfeeding for the baby and to the community rather than on the benefits to the mother. The ‘stages of change’ model also readily enables the intervention to be tailored to the individual, global or group setting and, most importantly, does not regard a decision made at one point to be an end point.

The Prochaska and DiClemente approach has been well tested in the arena of public health related motivation and decision making and does encompass the dynamic nature of change.

Description

For this discussion, the model has been modified to retain simplicity and ease of implementation. It uses four stages: precontemplation, contemplation, preparation/action, and maintenance. These stages should not be considered to be either sequential or unidirectional.

As shown in Figure 4, the strategies for each level—that is, individual, community, health provider and government—is determined by the stage of the change of the individual or population. This enables an integrated approach that will address several important issues. These are:

- linkages between levels
- capacity building through strategic alliances
- consistency of approach
- reduction of duplication
- maximisation of resources

This model is consistent with the findings

in the research literature and is compatible with the evidence and with consumer needs as expressed in the consumer consultation. This model is also a useful mechanism for developing breastfeeding strategies that can be implemented globally or in modules; across multiple levels or within a single setting.

While Figure 5 suggests a possible relationship between pregnancy status and the stages of readiness to make a decision about breastfeeding, the literature does not support such a link. Unlike many other health interventions, pregnancy is a forced choice situation where ‘no choice’ is not an option. Decision making about breastfeeding has been shown to be a complex process. There is therefore a need to identify or develop and validate an appropriate, easy-to-use instrument to determine the state of readiness to make a decision. Some instruments are already available, however most are lengthy and require a major time commitment for the woman

and the program health care staff. The evidence on timing of the application of such instruments is also lacking.¹²⁶ Certainly some studies suggest women may be asked too early for a decision to breastfeed, often before they are ready, have sufficient interest or adequate information with which to make an informed choice.²⁷

Using this model, strategies are determined by the target population, targeted stage of change and desired scope of the program, either across the four levels or within a single setting. For example, an intervention might be planned with a target population of the general public, with the aim of raising awareness and support for breastfeeding—i.e. precontemplation stage—across all four settings or levels. Strategies might include a mass media campaign, incorporating the breastfeeding message alone or within other public health programs such as the QUIT campaign, poster displays at multiple points, and the concurrent

Figure 5 An overview of the model, health care phases, and the message

Pre-pregnant	Pregnant	Antenatal care	Birth	Postnatal
← Decision-making time →				
Precontemplation	Contemplation	Preparation and	Action	Maintenance
Global message aimed at the community in general re. positive views of breastfeeding—may not have considered it as an option relevant to present life choices	Aimed particularly towards young adults, with breastfeeding in the context of other health information and the rights of young women—contemplation of pros and cons of breastfeeding decision initiation and intended duration.	Concise detailed information on the benefits to mother and baby. Reassurance and information about perceptions of ease or difficulty. Options weighed.	‘How to’, information and support for dealing with problems.	Targeted information, support, reinforcement, encouragement, and confirmation of decision. Dealing with problems and achievements of intended duration. Support services for home, the workplace, school and community.

placement of general print and electronic advertisements. While awareness of breastfeeding benefits may initially be increased, long-term attitude change is

unlikely to be achieved without significant investment and repetition. Common elements of most intervention strategies are communication, resources and

effectiveness, training needs and relevant linkages across levels that lead to capacity building.

Table 5 Strategic objectives and levels of applicability of the model

Item	Precontemplation	Contemplation	Preparation and action	Maintenance
Strategy Objective Summary	Information provision	Advantages/benefits Barriers identified	Skills training, problem resolution support	Reinforcement and support, problem resolution
Level: Key players				
Individual	Availability of information in conjunction with other programs such as folate programs ^{127, 21}	Peers, family ^{128, 127, 129}	Women, partners and families/friends ^{130, 49}	Couple, individuals, family ¹²⁸
Community	Schools, maternal support group ¹³¹	Peer support groups, community health centres. ^{132, 28, 61, 27}	Chemists, community health centres, peer support groups, cultural groups ¹³³	Child health centres, local government, peer support groups ¹²⁸
Health provider	Education health and welfare workers ¹³¹	GPs, obstetricians, midwives, educators ¹³⁴	Midwives, GPs, other health care staff; for example, physiotherapy, social workers, cultural support workers. ^{128, 27}	Maternal and child health nurses, midwives, GPs ¹⁷
Government/ macro environment	Government, business and industry, public media ¹³⁵	Media, legislators, policy makers in health, educators, government authorities, business and industry. ^{4, 5}	Up-skilling of health professional and other staff in teaching, women and families/partners ^{31, 94}	Centrelink staff, policy makers, legislators, media ¹³⁵
Level : Target population				
Individual	General population	Women, family and friends	Women, family and friends,	Women, family and friends,
Community	General population	High-risk, hard-to-reach groups of women and family/partners ^{132, 136}	High-risk, hard-to-reach groups of women and family/ partners ^{136, 132, 27}	High-risk, hard-to-reach groups of women and family/partners ^{25, 136}
Health provider	General population	Women, family and friends ^{82, 66, 7}	Women, family and friends ^{82, 66, 7}	Women, family and friends ^{82, 66, 7}
Government	General population	General population	General population	General population

Continued next page>

Table 5 Strategic objectives and levels of applicability of the model continued

Item	Precontemplation	Contemplation	Preparation and action	Maintenance
Level: Program example				
Individual	Schools, health programs– information provision to address barriers such as community attitudes ²¹	Advantages and disadvantages explored or options available ^{27, 31, 30, 32}	Tailored interactive group and individual antenatal education programs ⁶²	Peer support GP and maternal and child health nurse support ¹⁶
Community	Schools health programs– information provision Supportive facilities such as access to transport. Community attitude change programs highlighting: Rights Health Naturalness Community benefits Economic benefits ⁶⁷	Peer support Interactive community education and access to multimedia information in own language and in a supportive cultural milieu. ¹³⁷	Peer support and reinforcement of decision to breastfeed. ¹³⁷ Child health centre, chemist, local government initiatives. Involvement of local employer groups and community stakeholders such as local shopping centres.	Targeted visits and support. Peer support (ongoing) ¹⁶ Barriers to breastfeeding such as attitudes, facilities, work are addressed. ^{82, 5}
Health provider	Health and community worker training and education–attitude change ^{69, 31}	Review benefits and barriers; for example, work issues– interactive sessions in antenatal care ³²	Support decision through provision of information, reassurance, rooming in facilities, skills training that is culturally sensitive ³²	Access to relevant information when needed. ^{18, 68}
Government	Local, State and Federal– Key legislation ^{71, 70} Mass media health information/rights/ information campaign ^{7, 67} Development of workplace programs, changes in work practices (for example, flexitime, breaks) and supportive facilities and infrastructure. ^{4, 5}	Targeted promotion of the benefits of breastfeeding. ²¹ Sponsorship Concessions Workplace initiatives ^{4, 5}	Facilitate appropriate public venues for breastfeeding; for example, 24-hour safe access ²¹	Incentive-based programs to reward breastfeeding and give recognition to the benefits derived by breastfeeding to the community ⁶⁵

Communication strategies

Communication strategies include the provision of information across the wider community, between health care providers, and between providers and target groups. Consumer and community groups and the literature have identified a lack of consistency in multiple messages about breastfeeding, specifically about technique and information on any breastfeeding problems encountered. Women face a range of conflicting messages in the community, including the mixed media messages, restraints on public breastfeeding and inappropriate facilities (such as public toilets) provided to breastfeeding women. Communication strategies therefore need to be focused on being consistent regardless of source, presentation content and delivery, and be considered within the broader context of corresponding services and facilities.

Precontemplation stage: The primary objective is to convey positive community messages about breastfeeding in a range of formats such as print media in public transport, or a schools-based package incorporated into a broader health education package of which information on breastfeeding is a part.

Message objectives:

- increase the value and acceptability of breastfeeding across the community
- communicate the health and social benefits to, mother, father and baby

- generate interest in breastfeeding along with other health-related behaviours such as prenatal folate, smoking cessation, safe sex, sun smart strategies—not as a stand-alone message
- provide role models from the community
- providing cues for action.

Programs to change attitudes are difficult to quantify except by monitoring actual breastfeeding rates and duration over time. Pre- and post-launch of media campaign surveys may identify changes in attitudes to breastfeeding. Despite often sophisticated social marketing strategies, the results of other campaigns in an Australian context have indicated only minimal short term gains, especially when conducted in isolation and not tied to other initiatives.¹³⁸ There is likely to be only limited impact on specific target ‘at risk’ groups.

At the ‘contemplation stage’, breastfeeding information needs to be conveyed to women who are considering breastfeeding, as well as to partners and grandmothers as primary influencers. Each of these populations may be undecided or have difficulty weighing up the advantages and disadvantages of infant feeding options. Sources of information about breastfeeding are diverse and include general practitioners, antenatal educators, public hospitals, community health centres, mass media, friends and relatives. Community

initiatives in the contemplation stage will need to focus on information and education strategies aimed at pregnant women and their partners, families and friends across these multiple sources. For some high-risk groups, such as indigenous women, information provision may need to be within specific settings from culturally credible sources. These women expressed considerable reluctance to access mainstream health services, including antenatal classes.

Opportunities for information provision and assessment of stage of readiness to make a decision about feeding options are ideally introduced in early pregnancy such as at the first antenatal visit. Community-based strategies include but are not confined to:

- access to other mothers who are already breastfeeding (peer education)
- opportunities for dialogue, education and information provision that look at both the advantages and the disadvantages of breastfeeding in the context of general information about pregnancy childbirth and postnatal issues.

Preparation/action: This stage encompasses both the decision to breastfeed and the behaviour, which may or not be concurrent. The timing of the decision to breastfeed has been shown to be a reliable predictor of both initiation and duration.⁹² In addition, the decision to breastfeed made before or early in pregnancy is particularly predictive of

longer duration. Partner and family norms have been shown to influence decision making and breastfeeding duration; therefore, communication strategies directed to this group as well may increase effectiveness.

Maintenance: At this stage, women need very specific information on maintenance techniques, support in overcoming any difficulties and ongoing reinforcement of their choice. They need information on nutritional needs, appropriate timing of introduction of solid foods, and addressing any physical or other difficulties; for example, mastitis, returning to work, managing multiple responsibilities, or tiredness. They require peer support programs, access to timely, credible advice, lactation support services, community facilities, mentoring programs and the provision of multi-lingual information and support.

Economic implications of choices about breastfeeding

The economic implications around the options of breastfeeding versus artificial feeding are complex and are difficult to compare across different environments. Although the main intention and scope of this analysis is to look at implementing the model of intervention guided by the evidence, a broader view needs to be considered. When opportunity costs are to be taken into account, it is important to look at both the costs of and 'effort involved in implementing projects ... and the rewards'.¹³⁹

Direct benefits of breastfeeding, for example, include significant health benefits to mother and child and fewer episodes of medical care. Conversely, costs of artificial feeding include formula, but also the individual and societal costs of medical care, but with some potential benefits derived, for example, from returning to paid work, thereby contributing to GNP. Of particular relevance in this debate is therefore the concept of opportunity cost. That is, every time resources are used in one way, opportunities are lost to use resources in another way. Problems with applying a cost benefit analyses in this instance lie in determining the dollar value of non-marketable goods and activities that may be valued differently by different groups over time. While there are techniques to address this issue, some difficulties remain primarily associated with 'unacceptable equity consequences' and a generally held view that the most 'appropriate measure of value is the intensity of individual preferences'.¹⁴⁰ Other methods such as cost effectiveness analysis (CEA) and cost utility analysis (CUA) each have advantages and disadvantages that are outside the scope of this report. A simple review of some of the identified costs demonstrates a need for comprehensive research that is specific to the Australian and Victorian contexts.¹⁴¹

The cost of formula has been calculated at between A\$2205 and A\$7442 per year per infant. These figures are an

underestimate of current costs, given that they were derived from US supermarket prices in 1998 and were dependent on the brand of formula used. Breastfeeding Support Consultants, Information on Infant Feeding Costs, April 1998 (based on Illinois and North Carolina suburban supermarket prices). When these are added to the costs of additional health care services, estimated to be between A\$629 and A\$872 per never-breastfed infant during the first year of life, the costs for the individual are clearly substantial.¹⁴² When considered in conjunction with the estimated potential savings to the community of increasing breastfeeding to the levels recommended by, for example, the US Surgeon General (75 per cent in hospital and 50 per cent at six months) savings of approximately A\$7 billion have been estimated in the US. This figure may also be an underestimation as it was calculated only on the cost to the community of only a few medical conditions such as otitis media, and gastrointestinal illnesses.¹⁴³ Others have also compared breastfeeding with formula feeding. Breastfeeding each infant enrolled in a WIC program saved A\$872 in WIC costs and Medicaid expenditures during the first 6 months of the infant's life.¹⁴⁴ Other researchers have attempted to estimate individual and community savings through increasing breastfeeding rates based on the anticipated consequent decreases in infant morbidity, maternal fertility, and formula purchases.¹⁴⁵

Ball and Wright (1999) re-analysed data from two earlier studies on the health benefits of breastfeeding. The sample comprised data from the Children's Respiratory Study and the Dundee Community Study. The inclusion criteria were healthy infants with normal delivery, defined health status and those who were continuing with the same health care provider for at least one year. Clinician records, parental self-report and medical records were used to determine the patterns of health care use over one year. Administrators calculated direct costs of care including salaries, equipment and supplies, consumables and occupancy. Infants were divided into three feeding categories: never breastfed, partially breastfed and exclusively breastfed. Mean differences were adjusted for potential confounding variables such as mother's education level and maternal smoking. The study found that exclusively breastfed infants had fewer episodes of medical care than did partially or never breastfed infants.¹⁴² Breastfeeding support groups in the US, CANADA and the UK cite this study with great frequency, despite significant potential for bias in the findings. However, it was difficult to find Australian studies that quantified the potential savings of breastfeeding or the real costs of formula feeding.

Zeretzke (1997) identified benefits for mother and baby based on the better lifetime health status of mother and baby. In the Australian context she reported that breastfeeding might add A\$4.3

billion to the national food output equivalent to 0.7 per cent of GNP, however such figures were estimates and lacked substantiation.¹⁴⁶

The costs related to specific interventions were more difficult to assess. For example, the UNICEF UK Baby Friendly Initiative has suggested that the 'savings associated with increased breastfeeding rates could release funds for training or for other areas of care...' even if this involved increased spending in the short term (www.babyfriendly.org.uk/finance.htm).

Health care and other workers

A wide range of direct and peripheral personnel are involved with any individual breastfeeding mother. These include mainstream healthcare workers, maternal and child health nurses, general practitioners, and chemists, and community support staff. Other agencies such as schools, local government, community services staff, and Centrelink are also likely to have some potential to influence the new breastfeeding mother and her partner, family and friends.

There is a clear need to be able to access initial and ongoing breastfeeding training initiatives for specialist and general staff. Breastfeeding education and training of midwives in health services is the prerogative of the organisation, however community initiatives and training responsibilities are more scattered. One of the mechanisms used by UNICEF UK Baby Friendly Initiative in the community is the requirement that curricula and

course outlines for different disciplines are available for review, and a training schedule for new staff developed. The limitations are that this is only applicable to specific organisations. Without formal linkages, the end messages to the woman and her family are unlikely to retain much sense of an integrated care plan.

Training of staff to provide a consistent message, support informed choice, and actively assist the woman and her family to breastfeed needs to be centralised, accessible, reviewed and monitored. Accreditation is one mechanism, as are benchmarks or specified service standards such as defined training completed within a specified time frame with adequate skills and knowledge demonstrated and evaluated. While standards can be readily applied to health care staff, there is greater difficulty with staff that encounters breastfeeding women on an intermittent or ad hoc basis. Nonetheless, organisations such as Centrelink, community support staff, and schools need to have developed transparent policies on breastfeeding that staff are aware of, and can demonstrate familiarity with, and that they can implement.

Specific initiatives will need to develop a training component commensurate with the scope and complexity of each program and staffing needs.

Linkages

There are already many diverse programs across multiple levels in breastfeeding as for other public health initiatives. There is

a lack of integration between Commonwealth, State and local, health-provider organisations, self-help and support groups, and community programs. Different presentation styles, focus and content demonstrate a fragmented approach many women have reported as confusing and contradictory, especially when combined with conflicting verbal instructions and advice. There is also a myriad of theoretical frameworks that reflect the proponent perspective rather than the consumer needs or perspective.

It is hard to argue for bigger and better breastfeeding programs while so much is already available, if not necessarily always accessible. For example, there is already a 24-hour 'hotline' operated by the Australian Breastfeeding Association, but the number is currently not displayed in the White Pages inside front cover with other emergency numbers. Similarly, there is an abundant range of materials from government and other web sites but barriers such as language, access to the Internet, and expertise limits specific 'at risk' target groups.

New links need not be costly, especially where existing or new infrastructure is planned. For example, in an innovative Commonwealth-funded program, childcare facilities have been developed at a secondary school enabling young women to have the opportunity to return to education. While the aim of this program is to improve the long term vocational prospects for this group of marginalised young women, it also

provides an ideal opportunity to facilitate breastfeeding in a sympathetic and supportive setting at low cost.¹⁴⁷ Linkages also need to be developed between schools, hospitals, Centrelink, and maternal and child health clinics as well as with other public health programs such as QUIT, folate, work practices, and sex education programs. As each part of the proposed model is developed, linkages between services need to be a priority to reduce duplication and develop capacity. Prenatal intervention programs in particular have been shown to improve breastfeeding duration and can readily be incorporated using existing resources and infrastructure. Although many 'at risk' groups have low attendance at both antenatal care and education classes, many women have at least one antenatal health visit, which is an opportune time for identifying 'at risk' women and initiating appropriate interventions.

The stage of change model is useful for both global (i.e. all stages at once across multiple levels) and more narrowly defined programs. Additionally, the model enables the progressive 'roll-out' of an integrated program across single or multiple levels as well as having the potential to incorporate existing programs into the concept.

Some real-world issues remain. In particular, new privacy legislation has significant implications for how women will be identified and recruited, particularly some 'at risk' groups. One way to address this issue is to get 'at risk'

groups to identify themselves. 'Wellness' strategies, such as women being responsible for carrying their own pregnancy case notes, are based on the assumption that self-monitoring will lead to better health choices and greater compliance.¹⁴⁸

Data collection

The need for accurate and consistently collected data on breastfeeding is a crucial issue. It is important not only as a measure of trends in both initiation and duration, but also for identifying target groups for support, and for evaluating strategies.

The measurement of breastfeeding rates in the community as the main indicator of the success of breastfeeding programs should continue. It is valid to measure the provision of breastfeeding information and support as additional indicators, but in the long run even the most carefully designed and implemented communication processes cannot be said to be successful unless they are actually improving or maintaining breastfeeding initiation and duration rates.

According to a 2001 national Department of Health and Aging web site on breastfeeding, a 'framework for monitoring national breastfeeding rates is to be established as part of a National Nutrition Monitoring Program.

Chapter 7

Conclusions

Despite the vast literature on this topic, strategies to improving breastfeeding rates of initiation and of duration often appear to be uncoordinated and lacking a centrally driven, integrated plan. Different organisations or professional disciplines tend to employ strategies that are consistent with their own models of care or support. At an individual level, the only consistent factor in breastfeeding initiatives appeared to be the diversity of advice that women were faced with when they did seek information, education or support around pregnancy and childbirth issues in general and breastfeeding in particular. For many groups already 'at risk' or with pre-existing unrelated disadvantage, breastfeeding may appear too hard and lead to a sense of frustration and failure. At a macro level, the lack of a common, easily understood and acceptable core messages and integrated programs seems to result in duplication, and many well-intentioned initiatives occur in isolation.

The literature is variable in quality, ranging from comprehensive systematic reviews to narratives. Many studies were either inadequately powered to detect a real difference between groups if present or did not adequately account for potential biases. Some studies failed to describe how subjects were selected and did not include in the analysis subjects who dropped out during the course of the intervention. It is therefore uncertain how reliable the outcomes reported are and how they can be generalised in a broader community.^{151, 64} In part, the

deficits in the studies emphasise real world application and dilemmas, and the complexity and number of variables affecting decision making, decision support and ultimately the outcomes achieved. The conflicting results reported in the literature on the relative effectiveness of various interventions may be due to research design, or may be attributable to the lack of common or agreed understanding of much of the terminology. For example, support by peers, family and health professionals is often treated as a generic unitary variable.

While single intervention studies potentially enable the relationship between the intervention and the outcome to be measured, it does appear that single interventions tended to be less successful in extending the duration of breastfeeding compared to multifaceted approaches. However, causation or the interrelationships between variables were then more difficult to establish. It was clear that education and information strategies in isolation were not sufficient to change behaviour. Research on decision making and patient choice suggest that the decision making processes of consumers are complex and need to take into account both context and situational variables.¹⁵²

Evidence-based strategies targeted at appropriate populations have yet to be demonstrated to be effective across a variety of settings. Factors that have

been shown to have some efficacy in successfully breastfeeding were supportive communities, partners and peers. Educational strategies that were shown to have some efficacy were interactive and involved participants as equals

The use of a model framework to develop a repertoire of strategies and interventions permits an integrated approach that can be developed over time and across geographic and population boundaries. While many models are available, the transtheoretical model has been applied with some evidence of efficacy within a public health context. It also accommodates the multiple levels of application and addresses individual needs and preference.

The need for a coordinated strategy has been consistently demonstrated. A truly coordinated approach could be developed over time and across geographic locations, beginning with groups identified at highest risk of not breastfeeding. Concomitant consideration of legislation to ensure workplace and community access and rights to breastfeed, and the development of a media campaign to promote the benefits of breastfeeding to the wider community may also be useful to promote breastfeeding.

Appendices

Appendix 1

Australian Breastfeeding Association community and consumer feedback

Questionnaire:

Consumer feedback	ABA counsellor feedback
What factors influenced your decision to breastfeed?	1. What breastfeeding support structures are currently in place in your community?
Prior to having your baby, how did you learn about breastfeeding?	2. How well are they working?
How did you find out about support agencies that help with breastfeeding?	3. What strategies would you suggest could be put in place to improve current support structures in your community?
Have you approached any? How easy/difficult were they to access?	4. Is ABA actively engaged with other breastfeeding support agencies in your region?
Did you get the support you expected and needed?	5. What do you consider are the gaps in current community structures (Victoria-wide) to support breastfeeding?
What else do you consider would have been useful?	6. If you were developing a model of community-based support for breastfeeding, how would you see it?
What do you believe are the barriers to mothers being able to breastfeed for the length of time recommended by health authorities?	
If you were developing a model of community-based support for breastfeeding, how would you see it?	

Appendix 2

Demographics of consumer feedback

Region	Geography and demographics	Special needs groups	Consumer feedback	Counsellor feedback
Eastern Metropolitan Region	<p>Melbourne metropolitan, east urban with some semi-rural. Inner suburban to outer suburban (Warrandyte, Park Orchards).</p> <p>Largely middle class and affluent with areas of high student population (eg. Hawthorn) and some areas of housing commission (Ashburton).</p> <p>Large areas of Asian population, Chinese including Hong Kong Chinese, especially Manningham, Balwyn/Box Hill and Kew/Hawthorn. A growing Arabic population in Doncaster area. Also a growing Muslim population in some areas.</p> <p>Mainly well educated, many with tertiary education. Many mothers return to work early; eg. within six weeks of giving birth. Many in middle management areas.</p> <p>Public transport good in many areas with major train lines and tram lines in the area as well as bus services. However, there are many areas in Manningham and pockets of Kew with minimal public transport. Road access good and supported by freeways into and out of city.</p> <p>Seems to be an increase in older-than-average first-time mothers.</p>	<p>NESB Asian and Arabic are the main languages. Also, some Italian and Greek areas in Kew and Balwyn. A Spanish-speaking toddlers' group in Balwyn/Box Hill area, and a French-speaking toddlers' group in Ashburton/Glen Iris area. The majority of these ethnic backgrounds do not have a cultural background to support breastfeeding. Also, the Asian community supports an early return to work with grandparents helping to care for babies and young children.</p> <p>Tertiary student population at Swinburne, Deakin and Box Hill TAFE presents a culture that is not necessarily supportive of breastfeeding.</p> <p>Many working mothers in the area. Many do not have family support and are (either through economic status or society) pressured to return to work when their babies are very young. There are many young babies in child care centres. There does not appear to be encouragement for breastfeeding either in private or council-run centres. No real information is known about family day care providers, although they do receive council support and have council-run playgroups.</p>	Yes	Yes

Region	Geography and demographics	Special needs groups	Consumer feedback	Counsellor feedback
Gippsland Region	<p>The Australian Breastfeeding Association (ABA) Gippsland Region in Victoria is the state's largest region, extending from Pakenham in the west to Mallacoota in the east, and from the Great Dividing Range to the sea. The area encompasses almost all possible types of terrain and climate. There are eight ABA groups in the region, spread out fairly evenly. They are Warragul, Mirboo North, Moe, Traralgon, Yarram/Foster, Maffra, Sale and the Far East group, based in Orbost. Located in the southeast corner of mainland Australia, Gippsland provides a huge diversity in the landscape within the region. Bordered by the Great Dividing Range to the north, and Bass Strait to the south, there are literally opposite types of landscape. Within the range of the Far East Group, we have high mountain plains and seaside towns. To the western end of the region are the larger towns within the region and also rich farming country suitable for grazing as well as food production. We have the highest level of dairy farming in the state. Mainly rural—sheep and cattle grazing, horticulture, timber, fishing, power and energy</p> <p>The main demographics of the region could be described in the following:</p> <ul style="list-style-type: none"> • High unemployment, with pockets of some of the highest unemployment in the country. • Restructure in the traditional industries in Gippsland, i.e. power, timber and dairy, has not only lead to significant unemployment but combined with isolation and low higher education rates has resulted in large section of the community being unemployable or reliant on casual work. • Loss of people from small rural towns and low school retention rates. • In the Latrobe Valley, there is a higher than average incidence of welfare dependence and single parents. A large number of these people are poorly educated single parents, trapped in a cycle of welfare. • In the Far East, beyond the rail spine from Melbourne to Sale, the region is poorly serviced by public transport and the petrol prices are some of the most expensive in the state. We have areas that are isolated by distance and services. Poor mobile phone and Information Technology access contribute to this isolation. • There has also been a significant increase in the closure and moving of business away from the Region. <p>Gippsland also has some of the most fertile land in the country. It is one of the key centres of the dairy industry in Australia. It is a popular tourist destination and, except for Lakes Entrance and Phillip Island, is mostly under-developed and has potential for further development. Gippsland is also well serviced by education institutes, as there are two University campuses, three multi-campus TAFE colleges and numerous secondary colleges, both private and public.</p>	<p>Throughout Gippsland, there is a higher-than-average incidence of deemed special needs groups. For example, there is a high indigenous population (higher than the state average) with significant communities spread in several population areas. There are quite a number of second-generation migrants in the area, whose cultures may not encourage breastfeeding as openly as other cultures. The membership listings of Gippsland ABA groups tend to suggest that the majority of members are of Anglo-Saxon origin. Anecdotally, the incidence of breastfeeding is lower in some of these ethnic groups. This would warrant further statistical analysis to determine whether a breastfeeding campaign needs to be specifically targeted at these groups. Non-English speaking is generally not a problem in this area.</p> <p>Other areas of concern in the region are:</p> <ul style="list-style-type: none"> • Teenage mothers • Low socio-economic groups • Isolated rural parents on farms • High incidence of shift work, resulting in reduced partner support. 	No	Yes

Region	Geography and demographics	Special needs groups	Consumer	feedback
Counsellor feedback Loddon Region	Medium to low socio-economic background, large area of primary industry, small rural townships such as Boort and Wycheproof (800–1600 population) and bigger centres of Kerang (4500) and Swan Hill (10 000).	Fairly high rate of teenage pregnancy (with Northern District Community Health Service possibly operating support group in Kerang) with low breastfeeding rates; indigenous community; second generation migrants, some non-English speaking; seasonal workers, transient population. Isolation—physical and social—of many women with young	children, distance of some farms in relation to centres, lack of community transport. Yes	Yes
Yarra Valley Region	Preston/Reservoir—Northern suburbs, medium density living, large population, large number of families with young children, low to middle socio-economic status, high number of families with non-English speaking backgrounds (people come from 126 countries and speak 118 different languages); quite large Muslim community. Eltham—eastern metropolitan suburbs; professional, middle class; low unemployment, many double-income families; high home ownership levels; not many ethnic communities. Bundoora (including Mill Park, Epping, Greensborough, Watsonia, South Morang) north-eastern suburbs; includes all socio-economic groups; multicultural.	NESB mothers. The most common languages among women with young families are Arabic, Chinese, Vietnamese and Somali.	Yes	Yes
North East Region	Large town and rural farms; wineries. Yarrowonga/Mulwala. 6000 people in small rural town and outlying farming areas. Mainly Anglo-Saxon with no one age group predominating.	Families on farms out of town.	No	Yes
Nepean Region	Cheltenham, Parkdale, Oakleigh, Clayton, Hampton, Sandringham mothers.		Yes	No
Westgate Region	Covers part of the Melbourne CBD, large parts of western metropolitan Melbourne and into rural areas heading towards Ballarat, including Brimbank, Ascot Vale, Footscray/Yarraville, Hobsons Bay, Werribee, Macedon Ranges, Bacchus Marsh, Melton. Large numbers of mothers from non-English speaking backgrounds who often still have little English and also large number of mothers returning to the workforce in the first twelve months after baby's birth. Although breastfeeding rates are generally low in the region, the birth rate is quite high with many new housing areas are being developed and young families moving in.	Mothers from non-English speaking backgrounds Young mothers Vietnamese mothers Mothers with disabilities (deafness, vision impairment etc)	No	Yes

Region	Geography and demographics	Special needs groups	Consumer feedback	Counsellor feedback
Mallee Region	<p>Mallee region is quite isolated from Melbourne (about 6 _ hours' travelling time to Mildura). It is actually closer to Adelaide (3_ hours from Mildura). We have a collective population of about 25 000 in Mildura area and 5000 in the Robinvale area and possibly another 10 000 in outlying districts around these main centres.</p> <p>There are large populations of Aboriginal, Tongan, Vietnamese/Thai, Turkish, Greek, Italian and Anglo-Saxon people across the areas. It is a very transient community due largely to the seasonal work that surrounds the region. Being isolated, there is often a large movement of professionals within nursing, policing and education.</p> <p>The township of Robinvale is situated on the Victorian side of the Murray River, 95 km east of Mildura and 140 km north-west of Swan Hill. Part of the Rural City of Swan Hill local government area, it is comprises flat semi-arid plains. However, extensive irrigation from the Murray River has enabled the area to be used for intensive fruit and vegetable growing. Established in 1847, the area was initially settled as a wheat-farming pastoral lease. More rapid settlement, marked by an influx of Italian migrants, occurred in the 1920s with the opening of tracts of land for cultivation by irrigation and dry farming, supported by the extension of the railway line to Robinvale. Soldier settlement in the area followed after WW2 and a retail and commercial community grew alongside the expanding vine and horticultural activities. A number of Aboriginal communities have returned to the area since 1970, and more recently there has been a growth in the number of residents born in Tonga and IndoChina.</p> <p>The Australian Breastfeeding Association membership in the area covers Boundary Bend, Euston, Kooloonong, Kyndalyn, Lake Powell, Manangatang, Nurrung, Robinvale and Wemen. In 1998 the population in the area was 5000. There could be an influx of up to 5000 people in the picking season. The available statistical data does not as yet support 'on the ground' realities. It is apparent that there are a large number of people living in Robinvale who do not appear in the census.</p> <p>The area has a proportionally high number of families with young children. It consists of a melting pot of different cultures—573 Polynesian*, 470 Koori*, and greater than 500 Asian (police estimate; also the town supports two Asian food shops). Amongst the population are also second and third generation Greek and Italian families.</p> <p>*Robinvale District Health Service Survey 2000</p>	Mildura has one worker who speaks to mothers of special interest groups at antenatal check-ins at the public hospital. These are the cultural groups mentioned above, as well as mums with intellectual disabilities and teenage mums.	Yes	Yes

Appendix 3

Table of key studies

Key studies and study type and country	Target group	Intervention	Benchmarks	Outcome and strengths	Additional comment
ADOLESCENTS					
(63) US Comparative study with historical controls	Ninety-one pregnant adolescent women 14–19 years old in high school in Florida. A mix of white, black and Hispanic.	Breastfeeding Educated & Supported Teen Club (BEST)—a targeted educational program designed for pregnant teens. The control group attended a program with limited breastfeeding components in 1995–6. The intervention group in 1996–7 had three additional comprehensive sessions on the topic, and included a lactational ⁶³ expert and peer counsellor.	Breastfeeding initiation	Of 48 in the control group 14.6% initiated breastfeeding. Of 43 in the intervention group 65.1% initiated breastfeeding. this was significant ($p < 0.001$). There were no significant differences between age and ethnicity between groups. Provided a way for students to continue their education in a program that also develops parenting skills. Used game playing as an educational tool. Followed those who chose to breastfeed, with a peer counsellor and telephone support as needed.	Randomisation into intervention and control groups did not occur within the same year level. Instead, groups were separated by school year. Results for follow-up and duration were not reported

NOTE: The data presented in this table and the following tables includes adaptation and commentary from the cited studies. They present the data in summary format for the key tested strategies applying to ‘at risk’ populations only.

Key studies and study type and country	Target group	Intervention	Benchmarks	Outcome and strengths	Additional comment
<p>(7) US</p> <p>Randomised control trial</p>	<p>Subset of 121 from a baseline study of 181 first-time black adolescent mothers, living with their mothers and recruited from three urban hospitals in Baltimore, Maryland. Mothers were less than 18 years old and of low income, 41% with a household income of <\$10 000 US.</p>	<p>A home-based intervention to delay introduction of complementary feeding—introduction of solids or liquids other than breast milk, formula or water.</p> <p>The control group received nothing after a baseline home evaluation within three weeks of delivery.</p> <p>Intervention group received additional fortnightly home visits for a year, and received a videotape at the first of these visits.</p> <p>Video presented how to interpret infant cues, non-food management of sleeping and crying, and mother–grandmother conflict negotiation strategies.</p> <p>Measurement done at three months.</p>	<p>Optimal feeding—defined as not including complementary food such as solids or cow’s milk.</p> <p>Accuracy of feeding messages received from WIC.</p>	<p>After controlling for infant age and household income, optimal feeders were more likely to have accurate WIC advice and four times more likely to have received the intervention.</p> <p>Fifty per cent of mothers received inaccurate WIC advice; 34% received no advice.</p> <p>Used a mentorship model—a video made by black adolescent mothers, featuring themselves and their children, partners and mothers.</p> <p>There were no differences in maternal age or education between participants and non-participants.</p> <p>The randomisation was done by random number table and was subset-stratified to have equal male/female infants and similar maternal age.</p>	<p>Didn’t differentiate between breastfeeding and formula feeding as optimal feeding.</p> <p>Not specifically promoting breastfeeding but readily adaptable to this.</p> <p>Unclear whether results as stated were before or after controlling for WIC advice—implies after.</p> <p>Intervention group received both the video and home visits—unable to assess unique contribution of each.</p>

Key studies and study type and country	Target group	Intervention	Benchmarks	Outcome and strengths	Additional comment
(64) Guam–US Comparative study with concurrent controls.	Four hundred and seven pregnant adolescents in Guam completed the study. They were drawn from WIC and public schools, and followed into parenting. A cultural mix with many language differences.	Early Experiences & Counselling for Effective Lactation (EXCEL)—an intensive nutrition education program including group learning and personal goal setting. It also included eight lessons and lesson booklets, videotape and follow-up booklets with home visits and telephone advice after birth if desired. Three intervention groups: school EXCEL not in WIC, school EXCEL in WIC, and WIC EXCEL in WIC, and two control groups: no EXCEL no WIC, no EXCEL in WIC.	Breastfeeding initiation, breastfeeding at two months and overall duration.	<p>Initiation: 79% of the intervention groups compared to 66.3% of the control groups initiated breastfeeding. A significant difference existed between groups after controlling for ethnicity, parity, age and enrolment in school. EXCEL groups were 1.89 times more likely to initiate breastfeeding (OR 1.180–3.030 at 95%).</p> <p>Duration: EXCEL groups were significantly ($p < 0.05$) more likely to be breastfeeding at two months. Of those who breastfed, mean duration was not significantly different.</p> <p>Visual images and video were used in preference to text and dialogue because of language differences.</p>	<p>Not much analysis of the drop-out group of 126 subjects, except that they had the highest school enrolment levels and were mostly amongst those not enrolled in WIC.</p> <p>Control groups received no EXCEL but exposure to any other breastfeeding education, for example from their physicians, is not known.</p>

Key studies and study type and country	Target group	Intervention	Benchmarks	Outcome and strengths	Additional comment
LOW SES					
(62) Quasi-experimental comparative study with concurrent controls	Nine hundred and nineteen pregnant women were included in the final analysis. Subjects were drawn from two different target communities in Glasgow that were low SES, socially and culturally similar, with the intervention group being slightly more disadvantaged. Data were collected from antenatal clinic bookings to six weeks after birth.	A breastfeeding promotion program incorporating personal prenatal peer counselling, postnatal support and local awareness-raising. Peer visits were offered to all intervention subjects regardless of feeding intention; 99.4% accepted and 70.5% actually had at least one antenatal visit. Postnatal visits were offered to those who initiated breastfeeding at birth. They were also encouraged to contact helpers for extra support if needed.	Feeding intention Breastfeeding initiation Duration up to six weeks Feeding type: exclusive breastfeeding, mixed, or exclusive bottle	At booking, 23.2% in the intervention group were uncertain about their feeding intention, compared to 10.9% in the control group. Of those who had decided, proportions of intending breastfeeders were similar. After adjusting for confounding factors, the intervention group was significantly more likely to initiate breastfeeding (OR 1.95 at 95%, CI 1.22–3.14, $p=0.006$). At six weeks the difference between groups did not reach quite reach significance, though women were 1.8 times more likely to breastfeed in the intervention group. Antenatal components in this study were more successful than postnatal components.	No in depth analysis of the drop-out group of 79 subjects. Most were excluded due to migration or negative reproductive outcomes rather than non-response. No randomisation procedures were specified. The optional nature of postnatal support may have weakened that component. Only 70.5% took it up and for those who had one visit it may not have been enough.

Key studies and study type and country	Target group	Intervention	Benchmarks	Outcome and strengths	Additional comment
(15) US Randomised control trial	Two hundred and forty-two women were included in the final analysis, drawn from one of four WIC clinics in Maryland matched for similar ethnicity and breastfeeding rates at one month of 2–5.9%. Randomised by clinic.	A breastfeeding promotion program of three intervention groups: a prenatal video of eight 2–5 minute vignettes addressing benefits and major barriers to breastfeeding playing continuously in two of the WIC waiting rooms without staff supervision or a peer counselling; intervention of one-to-one and group support addressing attitudes and misconceptions about infant feeding; and both exposure to the video and peer support. One control group with exposure to neither intervention.	Feeding intention Breastfeeding initiation Continuation at 7–10 days	43.4% of women intended to breastfeed at enrolment. Those intending to were nine times more likely to initiate. Eighteen per cent changed their feeding intention before birth. The number who initiated breastfeeding was significantly higher in the video, peer counsellor, and video plus counsellor groups—50%, 62% and 62% respectively. Only 26% in the control group initiated. At 7–10 days, breastfeeding in the intervention groups was 32%, 38% and 38% respectively, and 14% in the control group. This was no significant difference after controlling for the initial feeding intention stated at enrolment. Those receiving feeding instruction in hospital were twice as likely, and those receiving artificial milk discharge packs six times less likely, to breastfeed at 7–10 days.	No details of randomisation process given. Not much detail given on the 306 who dropped out at various stages. At two points around 25% were lost due to negative reproductive outcomes. States that characteristics of those followed and not followed to the 7–10 day point were compared and few differences were noted, except that women lost to follow up were slightly more likely to be multiparous. Points to the need for interventions in the first week post-partum as critical for increasing breastfeeding success.

Key studies and study type and country	Target group	Intervention	Benchmarks	Outcome and strengths	Additional comment
<p>(153) US</p> <p>Comparative study with historical controls</p>	<p>A total of 737 women who had at least one prenatal care visit in a two-year period at an inner city clinic for low-income patients. A mix of African American, Hispanic, white and other.</p>	<p>A program of prenatal breastfeeding education, post-partum gift packs, and support groups for all women in two intervention groups: Year 1 group from May '93–Jan '94 (N=144); Year 2 group from July '94– June '95 (N=405). Gift packs included a non-commercial breastfeeding pamphlet in English and Spanish.</p> <p>The control group baseline was from before the intervention was initiated, made up of women attending the clinic for prenatal care from Jan–Dec '92 (N=188).</p>	<p>Breastfeeding initiation at hospital discharge</p> <p>Breastfeeding continuation at the first 'well child' visit—usually two weeks postpartum</p> <p>Breast milk only</p> <p>Mixed feeding</p>	<p>Breastfeeding initiation rate increased from 36% in the baseline control group to 66% in the intervention groups ($p<0.05$).</p> <p>The proportion breastfeeding at two weeks likewise increased from 35% to 57% ($p<0.05$).</p> <p>Exclusive breastfeeding increased from 36% in the control to 51% and 55% in Years 1 and 2 respectively.</p> <p>Any or mixed breastfeeding rose from 50% at baseline to 61% and 67% in Years 1 and 2. Exclusive and mixed results were both significant ($p<0.05$).</p> <p>The breastfeeding pamphlets in English and Spanish were with pictures and written at an appropriate reading level for this group of women.</p>	<p>One woman in the baseline group and 15 from the Year 2 group dropped out. No reasons were given for this.</p> <p>The ethnic mix changed over the study period but there were increases in all groups except white women, who never constituted more than 15% of the subjects.</p> <p>Exclusive breastfeeding declined after initiation but most continued mixed feeding rather than stopping as the baseline group had.</p>

Key studies and study type and country	Target group	Intervention	Benchmarks	Outcome and strengths	Additional comment
<p>(48) US</p> <p>Comparative study with a concurrent control</p>	<p>A final convenience sample of 36 antenatal and post-partum women enrolled in WIC in a county in Florida. A mix of African American, white, Hispanic and other.</p>	<p>A program of peer counsellors who had attended a 20-hour training program in breastfeeding and communication skills developed by La Leche. Counsellors contacted mothers within a few days after birth, at two weeks, and at one, two and three months. Women in the intervention group were matched with a counsellor based on their desire to have one, and on availability. A control group was made up of those who were not matched. Each group had 18 participants.</p>	<p>Duration of any (exclusive and non-exclusive breastfeeding up to three months</p> <p>Duration of exclusive breastfeeding up to three months.</p> <p>Intention to return to work or school</p>	<p>Peer counsellor contact was not associated with duration overall.</p> <p>Contact with a peer counsellor was associated with longer duration of exclusive breastfeeding. In addition, exclusive breastfeeding was associated with longer overall duration.</p> <p>The strongest predictor of duration was a mother's intention to return to work or work and school. When all other variables in the model were controlled for, those intending to return to both work and school breastfed 9.3 weeks less on average, and those intending to return to work 6.75 weeks less on average, than those intending to stay at home.</p> <p>Desire to have a counsellor as the difference between the control and intervention groups was controlled for.</p>	<p>Ten dropped out of the initial sample. Compared to those completing the study, subjects who dropped out were statistically similar in education, marital status and race, but were significantly older (M=27 years vs. 23.3 years p 0.03).</p> <p>A major source of possible bias exists; 83% in the intervention group received support from their own mothers compared to only 50% in the control group. In addition, 22% in the control group had someone discouraging them from breastfeeding compared to only 5% in the intervention group.</p>

Key studies and study type and country	Target group	Intervention	Benchmarks	Outcome and strengths	Additional comment
<p>(61) US</p> <p>Comparative study with a concurrent control</p>	<p>A sample of 102 English- or Spanish-speaking women who gave birth in 1989 in Chicago's only public hospital serving mostly low income and minority women, and who were intending to breastfeed. A mix of African American, white, other or Hispanic.</p> <p>Both groups had around 30% with education less than 12 years.</p>	<p>A program of breastfeeding support from peer counsellors (who had completed at least six of eight 2-hour training sessions in breastfeeding promotion and management, nutrition, counselling and making referrals to community resources) or additional help only as needed. The intervention group consisted of 59 women who requested a counsellor. The control group of 42 women had requested a counsellor but due to inadequate supply did not receive one.</p>	<p>Breastfeeding initiation</p> <p>Breastfeeding exclusivity</p> <p>Breastfeeding duration</p>	<p>Women with peer counsellors had 93% initiation compared to 70% in the control group.</p> <p>In the intervention group, 77% breastfed exclusively compared to 40% in the control group.</p> <p>Duration was for an average of 15 weeks in the intervention and eight weeks in the control group.</p> <p>Only five in the intervention group and four women in the control group were lost to follow up before 12 weeks.</p> <p>The peer training based on Paulo Friere's techniques emphasising empowerment of trainees may have added to counsellors' success.</p>	<p>Counsellors were inconsistent in their follow up of women, and often waited until the women initiated contact. If this had not happened, results may have been even stronger.</p> <p>Counsellors documented client problems and issues but did not record every contact. A dose-response effect could therefore not be assessed.</p> <p>This study was not randomised</p>

Key studies and study type and country	Target group	Intervention	Benchmarks	Outcome and strengths	Additional comment
(82) US Randomised control trial	A total of 68 primiparous pregnant women attending WIC clinics in Flagstaff, Arizona, due to give birth between May and Dec 1992. Equal numbers were randomly assigned to an intervention and control group via their names written on a list. 'Partner' in this study refers to significant other; for 22 of the 26 women in the intervention group this was the baby's father, for four it was the woman's own mother.	The control group received the usual WIC breastfeeding education of a prenatal five-session series on childbirth preparation, including one unit on breast vs. formula feeding. It also included a bosom buddy peer support program for those intending to breastfeed, with mothers who had successfully breastfed contacting new mothers at various times post-partum to address any problems or questions. The intervention group received the same, plus the breastfeeding incentive program Caring Connection. This program consisted of a prenatal component with an expectant couples' breastfeeding class addressing fears and concerns, benefits, myths and techniques regarding breastfeeding, and a childbirth preparation series. Postpartum, women in the intervention group were offered incentives to contact peer counsellor within two days of discharge. Other incentives were offered the intervention group at intervals of six weeks, three and six months for up to six months postnatally.	Exclusive: breastfeeding at hospital discharge; breastfeeding at two weeks; breastfeeding at six weeks; breastfeeding at three months. Formula feeding at hospital discharge Formula feeding at six weeks Formula feeding at three months	Comparing intervention and control groups respectively: 88.5% and 55.2% were breastfeeding at discharge ($p=0.003$); 80.8% and 34.5% breastfeeding at two weeks ($p<0.0001$); 50% and 24.1% breastfeeding at six weeks ($p=0.023$); 42.3% and 17.2% breastfeeding at three months ($p=0.021$); 0% and 20.7% were formula feeding at discharge ($p=0.007$); 19.2% and 69% were formula feeding at six weeks ($p<0.0001$); and 38.5% and 75.9% were formula feeding at three months ($p=0.006$). Control and intervention groups were not significantly different in age, ethnicity or level of education. The program was incentives-based, as gifts were given to both partners in the intervention group. Participation involved women and their partners with excellent results.	The relatively small sample size may account for the largeness of the degrees of significance.

Key studies and study type and country	Target group	Intervention	Benchmarks	Outcome and strengths	Additional comment
(154) Canada Comparative study with concurrent control	A total of 493 women identified via local hospital maternity wards in five low-income communities in 1994. A mix of ethnicities: Canada, Vietnam, other, UK, China, Jamaica and Somalia	The intervention group was drawn from families taking part in a child and family health initiative 'Better Beginnings, Better Futures' which addressed factors such as child care, family functioning and parental health, as well as infant feeding mode. The families were from four communities with Better Beginnings program. The control was from a demographically similar community without funding for a Better Beginnings program.	Breastfeeding at birth Breastfeeding at three months	<p>Seventy-seven per cent of all mothers were breastfeeding at birth. After a series of logistic regressions, attending prenatal class as well as greater-than-high-school education, being married rather than a single parent, and lack of financial stress were significantly associated with breastfeeding initiation ($p < 0.001$).</p> <p>Participation in the home visitor program significantly predicted continuation of breastfeeding to three months (logistic regression ($B = 0.53$, $p < 0.05$)). However, it did not significantly explain the difference between those who were breastfeeding at three months and those who stopped earlier.</p> <p>Of those who formula fed, 19% were embarrassed or uncomfortable with breastfeeding.</p>	<p>Recruitment into the study occurred after birth and data were obtained at three months post-partum. However, it is unclear when the intervention started.</p> <p>The selection process was not very clearly stated.</p>

Key studies and study type and country	Target group	Intervention	Benchmarks	Outcome and strengths	Additional comment
(155) US Pseudo randomised control trial	Thirty-one prenatal WIC participants in three rural Oklahoma counties	Fourteen women intending to breastfeed were in the intervention group, which received 'specific antenatal breastfeeding education in two group classes presented by nurse practitioners. Seventeen subjects also intending to breastfeed were assigned to the control group. Groups were assigned via attendance at the 'next' class, which alternated between being a standard antenatal nutrition class and an intervention class. Intervention classes included lactation initiation and maintenance, advantages of breastfeeding for mother and child, and mechanics and management of breastfeeding problems.	Breastfeeding initiation Breastfeeding up to six months maximum or until weaning	There was no significant difference between groups regarding initiation. This is to be expected as all women in the study intended to breastfeed. There was, however, a significant difference in achieved duration with an average number of breastfeeding days in the control group of 29.5 +/- 43.6, and an average of 76.1 +/- 104 days in the intervention group with specific in-depth breastfeeding information.	Sixteen women dropped out due to moving county or negative reproductive outcomes. This group was not analysed for differences. Although the effect size of the intervention was large at 0.73, the small sample size meant that there was only a 49% chance of detecting a true difference between groups

Key studies and study type and country	Target group	Intervention	Benchmarks	Outcome and strengths	Additional comment
(156) US Randomised control trial	A final study group of 97 low-income women intending to breastfeed, who had delivered a full-term healthy baby in the Ohio State University Hospital, Columbus, between March 1986 and Jan 1987.	<p>Women were assigned to intervention and control groups by random coin toss. During their post-partum hospital stay, intervention group women received a visit from a registered nurse from the Ohio State University breastfeeding promotion project who had extensive lactation counselling experience. The nurse gave each mother a 30-45 minute session on proper breastfeeding technique, management of problems and the inappropriateness of formula use. Intervention mothers were given an easy to read breastfeeding booklet and a help line number. They were also contacted five times by telephone up to three weeks post-partum for help with problems.</p> <p>Control group mothers had 'only' routine teaching on infant care and feeding as delivered by nurses in post-partum wards.</p>	<p>Current feeding method, age at weaning and introduction of supplementary feeding if relevant—all obtained at six weeks postpartum.</p> <p>Those who were still nursing at six weeks were followed up monthly until weaning</p>	<p>The early introduction of supplementary feeding, including water, glucose water, formula, and added juice or cereal was strongly associated with weaning before six weeks. The median age for receiving supplementary feeding was one to two weeks for those weaned by six weeks. Lack of prenatal classes was also associated with early weaning;</p> <p>81% of the 55 still nursing at six weeks had received no supplementary feeding.</p> <p>There were no significant differences between the intervention and control groups regarding breastfeeding at six weeks, three months and six months.</p> <p>All infants were weaned by Oct 1998.</p>	<p>Twenty women, or 17% of an initial 117 women who were offered enrolment in the study, dropped out mostly because they believed they had adequate breastfeeding knowledge and experience.</p> <p>The lack of difference between groups is likely to be due to a contamination effect, as the presence of intervention nurses in obstetric wards seemed to influence regular staff's interest in breastfeeding promotion.</p> <p>About 30% of all the women had prenatal classes but none had specific instruction on breastfeeding before birth; 86% had bedside instruction from regular ward nurses.</p>

Key studies and study type and country	Target group	Intervention	Benchmarks	Outcome and strengths	Additional comment
(16) US	A final study group of 136 rural low-income pregnant and post-partum women who qualified for the WIC program on nutrition in a total of eight rural counties in the US	<p>Seventy-two women completed the intervention assessment.</p> <p>A further 64 were divided into two control groups: those who initiated breastfeeding and those who did not initiate.</p> <p>The educational intervention was given one-to-one by a trained peer counsellor from the community who had previous personal experience with successful breastfeeding. They gave short lessons in breastfeeding and nutrition, answered questions, addressed concerns and gave information and moral support for breastfeeding. For the control group pre- and post-program nutrition knowledge was measured.</p> <p>The control group had received no significant breastfeeding promotion education over the previous three years.</p>	Breastfeeding initiation Breastfeeding at 12 weeks	<p>Only 31% initiated breastfeeding in the control group, compared to 82% who initiated breastfeeding in the intervention group.</p> <p>At 12 weeks duration 0% of the control group who had initiated breastfeeding were still breastfeeding, compared to 43% of the intervention group who were still breastfeeding. This was significant ($p < 0.001$).</p> <p>No significant demographic differences were found between the groups in the final study</p> <p>The peer support counsellor had personal successful breastfeeding experience.</p>	No information was available on the 98 drop-outs in the intervention group selection. This is a potential source of bias.

Key studies and study type and country	Target group	Intervention	Benchmarks	Outcome and strengths	Additional comment
(157) US Randomised control trial	<p>156 low-income first-time pregnant women were recruited from a hospital-based paediatric clinic.</p> <p>Block randomisation was used with a random number table in blocks of ten to allocated subjects.</p>	<p>The intervention consisted of antenatal paediatric visits to pregnant women by trained postgraduate year 2 residents. Topics covered child safety and health issues. Eighty-one mothers were randomised to the intervention group and 75 to the control group.</p> <p>From this sample, breastfeeding data was drawn from only those mothers who had given pre- and post-feeding information. This data was taken at birth when there were 74 in the intervention. Seventy in the control were not offered prenatal visits.</p> <p>Topics covered in the intervention group counselling included questions regarding the pregnancy, the woman and her social support, as well as information on feeding options and advantages of breastfeeding.</p>	<p>Feeding intention</p> <p>Feeding decision changes during pregnancy</p> <p>Breastfeeding initiation</p> <p>Breastfeeding duration to 30 and 60 days</p>	<p>Before the prenatal visit, 36% in the intervention intended to breastfeed compared to 45% of the control group.</p> <p>Of those who breastfed, 45% in the intervention group changed their feeding intention during pregnancy. This compared to 14% in the control group. The number committed to breastfeeding in the control group decreased during pregnancy.</p> <p>Forty-two per cent in the intervention group initiated breastfeeding at birth; 31% in the control group initiated.</p> <p>There were no significant differences between groups at 30 and 60 days.</p> <p>Part of the intent of the study was to establish a supportive relationship between the paediatrician and the pregnant woman.</p>	<p>Does not specify how long the breastfeeding component of the intervention was. From the context it is implied that such visits would usually be quite short.</p>

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