



Breastfeeding in Victoria: A Report

(part of The Victorian Breastfeeding Research Project)

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ABBREVIATIONS

ABA	Australian Breastfeeding Association
BF	Breastfeeding
BFHI	Baby Friendly Hospital Initiative (as of 2007 known as Baby Friendly Health Initiative)
CALD	Culturally and linguistically diverse
CHC	Community health centre
CHS	Community health service
COAG	Council of Australian Governments
DEECD	Department of Education and Early Childhood Development
DHS	Department of Human Services
EBF	Exclusive breastfeeding
EBM	Expressed breast milk
EHVN	Enhanced home visiting nurse
HP	Health professional
IBCLC	International Board Certified Lactation Consultant
KAS	Key ages and stages
LC	Lactation consultant
LGA	Local Government Area
MCHN	Maternal and Child Health Nurse
MCHS	Maternal and Child Health Service

NHS	National Health Survey
NICU	Neonatal intensive care unit
OR	Odds ratio
PC	Peer counsellor
RCT	Randomised controlled trial
RR	Relative risk
SCN	Special care nursery
SEIFA	Socio-Economic Indexes for Area
SES	Socio-economic status
UNICEF	United Nations Children's Fund
WHO	World Health Organization
WIC	Women, Infants, and Children (in full 'Supplemental Nutrition Program for Women, Infants, and Children').

TABLE OF CONTENTS

ACKNOWLEDGEMENTS	I
ABBREVIATIONS	II
TABLE OF CONTENTS	IV
LIST OF FIGURES	VI
LIST OF TABLES	VII
EXECUTIVE SUMMARY	1
BACKGROUND	5
The importance of breastfeeding	5
Frameworks to protect, promote and support breastfeeding	5
Aim of report	8
Monitoring breastfeeding in Australia	8
Defining and measuring breastfeeding	9
Breastfeeding rates in Australia	11
Breastfeeding rates in Victoria and the role of Maternal and Child Health Service	14
Breastfeeding in Victoria	18
Factors associated with breastfeeding	18
LITERATURE REVIEW	23
Background and aims	23
Methods and procedures	23
Initial review underpinning literature review	25
Overview of subsequent systematic reviews	26
Review of trials published since systematic reviews	30
Results	34
Increasing breastfeeding initiation	35
Increasing breastfeeding duration and exclusivity	37
Increasing breastfeeding in sub-populations assessed as at high risk of not breastfeeding	41
Evidence within the Australian context	45
Relevant evidence outside the scope of this review	49

Discussion	50
Increasing breastfeeding initiation	50
Increasing breastfeeding duration	51
Context and collaboration	51
Limitations	52
Agreement with previous bodies of evidence in use in Victoria	52
Conclusions	53
Implications for practice and research	54
CONSULTATION PROCESS	56
Aims of the consultation process	56
Methods	57
Targeted approach	57
Systematic approach	57
Results and Discussion	59
Participants	59
Breastfeeding services in the community	64
Evaluation of existing breastfeeding services	65
Practitioner views about breastfeeding initiatives	79
Conclusion	87
PROPOSED STRATEGIES AND RECOMMENDATIONS	89
Potential interventions	89
Key recommendations	90
APPENDICES	92
Appendix 1: Proportion of ‘any’ breastfeeding at discharge and three months (State, Regions and LGAs) – data from the Statewide and Regional MCHS Annual Reports 2008-2009	92
Appendix 2: Characteristics of included reviews	97
Appendix 3: Characteristics of excluded reviews	102
Appendix 4: Characteristics of included trials (published June 2004 to May 2010)	109
Appendix 5: Summary of excluded studies (published June 2004 to May 2010)	123
Appendix 6: Survey questions and responses	124
Appendix 7: Coding of free-text responses	134
REFERENCES	138

LIST OF FIGURES

Figure 1: A breastfeeding continuum	9
Figure 2: Breastfeeding in Australia	11
Figure 3: A conceptual framework of factors affecting breastfeeding practices	19
Figure 4: Proportion of babies receiving breastmilk by SEIFA quintile	20
Figure 5: Overview of methods for the literature review	25
Figure 6: Flow of email invitation to eligible MCHS employees.....	59
Figure 7: Number of respondents working in each metropolitan LGA.....	62
Figure 8: Number of respondents working in each regional LGA	63

LIST OF TABLES

Table 1: Proportion breastfeeding by country	13
Table 2: State-wide participation in key ages and stages appointments	15
Table 3: Frameworks for recording breastfeeding data collected at key ages and stages visits	16
Table 4: Proportion of ‘any’ breastfeeding at discharge and three months (State and Regions) – data from the MCHS Annual Report 2008-2009: Statewide	17
Table 5: Summary of included reviews	29
Table 6: Risk of bias assessment	32
Table 7: New trials (June 2004 to May 2010): risk of bias, effect, relevance	34
Table 8: Municipality/area of work for respondents.....	61
Table 9: Breastfeeding interventions described during the consultative process (targeted and systematic)	66
Table 10: Breastfeeding projects reported in LGAs with percentage of <i>any</i> breastfeeding at or below the state average at three months (the state average at three months = 60.5%).....	71

EXECUTIVE SUMMARY

Breastfeeding is an important public health issue. The World Health Organization (WHO) recommends exclusive breastfeeding for babies to six months of age, with breastfeeding continuing alongside suitable complementary foods for up to or beyond two years of age (World Health Organization, 2001). This recommendation is supported by Australian health advisory bodies (National Health and Medical Research Council, 2003). However, while breastfeeding initiation in Australia is high (88%), only 50% of infants receive *any* breast milk by six months, and Victorian breastfeeding rates are similar to these Australian rates (Donath & Amir, 2000).

The Australian Government has recently released the National Breastfeeding Strategy which aims to increase the proportion of infants who are fully breastfed from birth to six months of age, and who continue breastfeeding, with the introduction of complementary foods, beyond 12 months (Australian Health Ministers' Conference, 2009). This report, *Breastfeeding in Victoria: A Report*, contributes to the development of the Victorian Breastfeeding Action Plan which comprises Victoria's response to the National Breastfeeding Strategy. The aims of *Breastfeeding in Victoria: A Report* were:

- ⇒ To review existing literature in order to identify evidence-based interventions that might be suitable for implementation and evaluation in the Victorian context to improve the initiation and maintenance of breastfeeding;
- ⇒ To identify and document breastfeeding support services operating in Victoria;
- ⇒ To use the results of the literature review and consultation process to recommend an intervention/s that could be implemented and evaluated in Victoria to increase breastfeeding.

The review of existing literature describing interventions designed to improve the initiation and maintenance of breastfeeding found that in places where breastfeeding initiation is relatively high, it is difficult to increase breastfeeding duration, and that

very few strategies have been shown to be effective at increasing breastfeeding duration. In communities such as Victoria, strategies that may have some benefit, particularly among sub-groups with lower breastfeeding, include early skin-to skin-contact; peer/lay support (mixed evidence); professional support (mixed evidence); multi-strategy interventions (e.g. lay and professional support, antenatal and postnatal interventions, home visiting and hospital support) (increasing evidence); and telephone support by peers and/or professionals (mixed evidence).

In early 2010 a consultation process comprising informal interviews with relevant key stakeholders and an online survey of Maternal and Child Health Nurses (MCHNs) in Victoria revealed that a number of breastfeeding initiatives were operating at a local community (LGA) level. These are provided in addition to the usual MCHN service and appear to have generally arisen from community needs. This local/community model, while having many positive aspects, has meant that breastfeeding initiatives in Victoria are often operating in an *ad hoc* and isolated fashion without any broad strategic evaluation of the efficacy of the individual initiatives.

Survey respondents generally thought that breastfeeding services aimed at assisting women with breastfeeding were beneficial, particularly in the early weeks postpartum. Home visiting and breastfeeding support centres were thought of as the most effective, i.e. the MCHNs valued the extra help women received in both these options. The features of effective programs were thought to be: one-to-one support for mothers; giving mothers early and timely access to support; and providing follow-up for mothers participating in breastfeeding programs. A dominant theme to emerge was the *lack of time* practitioners had with clients to respond to and address mothers' breastfeeding concerns and needs. Respondents saw this as a significant barrier in providing effective breastfeeding support and assistance to women.

Findings from the literature review and consultation process have led to a number of proposed strategies, divided into potential interventions and key recommendations. These have been put forward as possible mechanisms to assist with increasing the maintenance of breastfeeding in the Victorian community, and, on a related issue, enhance the collection, recording and reporting of breastfeeding data.

The following potential interventions were identified:

- An intensive home visiting program involving home visits from a MCHN or lactation consultant early in the postpartum period, thus providing prompt assistance and support to mothers and infants experiencing difficulties with breastfeeding;
- A drop-in centre (i.e. no appointment required) providing mothers and infants assistance with breastfeeding through professional and peer support in a relaxed and friendly environment, that is easily accessible;
- The introduction of an advanced communication skills education program for MCHNs aimed at updating, or reinforcing, breastfeeding knowledge, and strengthening MCHN-to-client communication skills;
- A breastfeeding intervention aimed at Aboriginal and Torres Strait Islander women, which provides culturally appropriate breastfeeding support, information and encouragement to mothers. Its development would require extensive consultation with the Aboriginal and Torres Strait Islander community;
- A breastfeeding intervention which uses new technologies as the vehicle through which health professionals could provide advice, assistance and support to breastfeeding mothers and their families;
- An intervention designed around the expansion of the existing new mothers' groups whereby women are invited to attend a group prior to the commencement of the standard care package as offered in the existing new mothers program. During this early period a peer support person and/or breastfeeding specialist (MCHN or lactation consultant) would be available to provide breastfeeding information, advice and support.

A number of key recommendations also emerged, these being particularly relevant to the monitoring of breastfeeding in Victoria:

- That breastfeeding data be collected at each of the key ages and stages (KAS) appointments;

- In addition to the breastfeeding information collected at the key ages and stages visits, it is recommended that MCHNs record infant feeding (as reported by the mother) in the *24 hour period prior* to each of the scheduled visits;
- That data concerning *exclusive* breastfeeding be reported at four, not six, months;
- That the Maternal & Child Health Service Annual Reports (State-wide and for each Region) add another item to the reporting of breastfeeding – *any breastfeeding*; i.e. *any* being the combination of *fully breastfed* and *partially breastfed*.

BACKGROUND

THE IMPORTANCE OF BREASTFEEDING

A large body of evidence demonstrates that breastfeeding provides significant value to infants, mothers and society. Furthermore, there are a number of health risks and costs associated with *not* breastfeeding (Australian Health Ministers' Conference, 2009). Infants who are not breastfed have higher rates of gastrointestinal and respiratory illnesses requiring hospitalisation, are more likely to develop Type 1 diabetes in childhood, and have a higher risk of Sudden Infant Death Syndrome (SIDS), than breastfed infants (Ip et al., 2007). Longer term risks of not breastfeeding include higher mean blood pressure and total cholesterol, higher risk of Type 2 diabetes and lower performance on intelligence testing. Infants who do not breastfeed are also more likely to develop obesity later in life (Horta, Bahl, Martines, & Victora, 2007). Mothers who do not breastfeed have higher risks of breast and ovarian cancer compared to women who do breastfeed (Ip et al., 2007; Labbok, 2001). Breastfeeding is also a cost saving for the family and the community as it eliminates the need to buy alternative infant feeding products and reduces the burden on health services, a consequence of the better health outcomes associated with breastfeeding (Cattaneo et al., 2006; Smith, Thompson, & Ellwood, 2002). Therefore, it is important to protect, promote and support breastfeeding in Australia and elsewhere (Australian Health Ministers' Conference, 2009).

FRAMEWORKS TO PROTECT, PROMOTE AND SUPPORT BREASTFEEDING

The World Health Organization (WHO) recommends exclusive breastfeeding for infants for the first six months, with breastfeeding continuing alongside suitable complementary foods for up to or beyond two years of age (World Health Organization, 2001). This recommendation is supported by Australian health advisory bodies (National Health and Medical Research Council, 2003).

International recognition of the importance of breastfeeding is demonstrated through resolutions which relate to appropriate infant feeding practices, and infant and young child nutrition (Australian Health Ministers' Conference, 2009). These include: the 1990 and 2005 Innocenti Declarations (Innocenti Declaration, 1990, 2005), the WHO/UNICEF 'Global Strategy for Infant and Young Child Feeding' (2003), and the International 'Code of Marketing of Breast-milk Substitutes' (World Health Organization, 1981).

In 1991 WHO and UNICEF launched the Baby Friendly Hospital Initiative (BFHI) – *The Ten Steps to Successful Breastfeeding*, which was updated in 2009 (World Health Organization and UNICEF, 2009). This is a global accreditation program aimed at improving practice in maternity services in order to increase breastfeeding rates. Similarly, UNICEF UK's Baby Friendly Initiative (2009) describes a *Seven Point Plan for Sustaining Breastfeeding in the Community* which defines best practice for breastfeeding in community health settings. Accreditation is dependant on health services meeting these seven steps namely:

1. Have a written breastfeeding policy that is routinely communicated to all health-care 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 health-care staff, breastfeeding support groups and the local community (The UNICEF UK Baby Friendly Initiative, 2009, p 19).

Australia, a member state of the WHO, supports strategies that promote breastfeeding, and recognises that breastfeeding is an important public health issue. This is spelled out in the Dietary Guidelines for Australian Adults and the Dietary Guidelines for Children and Adolescents in Australia, incorporating the Infant Feeding Guidelines

for Health Workers (National Health and Medical Research Council, 2003), which the Australian Government supports. The guidelines also endorse WHO recommendations that infants should be exclusively breastfed to six months of age, and that breastfeeding beyond this age is of benefit to both the mother and child.

The WHO recommendations are also supported by the Australian Breastfeeding Association (ABA – formerly the Nursing Mothers Association of Australia), an organisation comprising people interested in promoting and protecting breastfeeding in the community. The ABA provides support to breastfeeding women, educates volunteer counsellors and community educators, plays a role in advocacy and research, and seeks to promote the importance of breastfeeding in the community (Australian Breastfeeding Association, 2010).

In Australia, the Federal, State and Territory governments are *all* committed to promoting the value of breastfeeding and improving breastfeeding rates (Australian Health Ministers' Conference, 2009). At a National level, this commitment was recently reaffirmed through the release of the National Breastfeeding Strategy which aims to increase the proportion of infants who are fully breastfed from birth to six months of age, and who continue breastfeeding, with the introduction of complementary foods, beyond 12 months (Australian Health Ministers' Conference, 2009). This strategy “provides a framework for priorities and actions for Australian governments at all levels to address the protection, promotion, monitoring and support of breastfeeding in the community” (Australian Health Ministers' Conference, 2009, p 33). It also recognises and supports the local and international frameworks and organisations that protect, promote, monitor and support breastfeeding. The development of a national breastfeeding strategy was one of the recommendations from the inquiry into the health benefits of breastfeeding, conducted by the House of Representatives Standing Committee on Health and Ageing (2007).

The Victorian Government is developing the Victorian Breastfeeding Action Plan which will include Victoria's implementation of the National Breastfeeding Strategy. In 2009, the Victorian Breastfeeding Working Group was created to oversee the development of the Action Plan, with members drawn from the Department of Education and Early Childhood Development, the Department of Health and

elsewhere. This report, *Breastfeeding in Victoria: A Report*, is part of the development of the Victorian Breastfeeding Action Plan. It provides the background evidence to help understand what strategies may be of benefit to increase breastfeeding in Victoria, which is a requirement of the National Partnership Agreement on Preventative Health (Council Of Australian Governments (COAG), 2008).

AIM OF REPORT

The aims of *Breastfeeding in Victoria: A Report* are:

- ⇒ To review existing literature in order to identify evidence-based interventions that might be suitable for implementation and evaluation in the Victorian context to improve the initiation and maintenance of breastfeeding;
- ⇒ To identify and document breastfeeding support services operating in Victoria;
- ⇒ To use the results of the literature review and consultation process to recommend an intervention/s that could be implemented and evaluated in Victoria to increase breastfeeding.

MONITORING BREASTFEEDING IN AUSTRALIA

The National Breastfeeding Strategy recognises the importance of monitoring breastfeeding initiation and duration (Australian Health Ministers' Conference, 2009). Breastfeeding has been conceptualised along a continuum, as outlined in Figure 1 (Thornley, Waa, & Ball, 2007), and it is recognised that monitoring, research and evaluation are required at each stage of this continuum (Australian Health Ministers' Conference, 2009).

Figure 1: A breastfeeding continuum

Pre-natal	Immediate post-natal	Medium post-natal	Long post-natal	Beyond 6 months
	Birth to 4 days	4 days to 8 weeks	8 weeks to 6 months	

Source: from Thornley, Waa and Ball (2007, p 15).

Defining and measuring breastfeeding

Breastfeeding monitoring and research requires well defined and consistent terminology, yet despite this, inconsistencies prevail (Webb, Marks, Lund-Adams, Rutishauser, & Abraham, 2001).

Initiation of breastfeeding is defined as an infant *ever* having been to the breast or had breast milk; therefore, an alternative to assessing *initiation* is to measure *ever* breastfed as this indicates whether an infant has *ever* been breastfed or received breast milk, or whether mothers have attempted to breastfeed, without regard to whether breastfeeding is or was established (Webb et al., 2001, p 9). *Exclusive* breastfeeding is defined by WHO as a baby only receives breast milk, including from a wet nurse or as expressed breast milk, except for the administration drops or syrups consisting of vitamins, mineral supplements or medicines. *Predominant* breastfeeding refers to a baby receiving breast milk, including from a wet nurse or as expressed breast milk, as the main source of nutrition, with the infant also receiving other liquids (i.e. water, water-based drinks, fruit juice, oral rehydration solutions, ritual fluids and drops or syrups consisting of vitamins, mineral supplements or medicines), but nothing else, and in particular *not* non-human milk and food based fluids (Cattaneo, Davanzo, & Ronfani, 2000, p 89).

The measurement of breastfeeding behaviour, however, is not straightforward. The collection of *exclusive* breastfeeding data when infants are aged six months is

problematic because in Australia solids are often commenced around this time. In recognition of this, the Headline Indicators for Children's Health, Development and Wellbeing recommends that in Australia *exclusive* breastfeeding data be collected at *four* months (Department of Human Services (DHS), 2006, p 19).

Clear definitions of terms used are essential when comparing rates of breastfeeding between studies, particularly given the diversity of infant feeding practices. Forster et al. (2003) give eight possible infant feeding methods for Australian babies aged around two days: fully breastfeeding, breastfeeding and expressed breast milk, expressed breast milk only, breastfeeding and formula, breastfeeding and expressed breast milk and formula, expressed breast milk and formula, fully formula, baby not feeding yet. At six months any of these combinations, with the exception of 'not feeding yet', could also include solids and/or cow milk.

How the data are collected is also a consideration. An infant's feeding behaviour at a given time can be assessed by asking mothers to indicate their infants' *current feeding practice* by reporting how/what their baby has fed in the preceding 24 hours. This 24 hour recall technique is the methodology WHO proposes for use in assessing infant feeding practices via household surveys (World Health Organization, 1994). In contrast, *retrospective* data collection is where mothers are asked to recall how their infant was feeding at an earlier stage, for example one month or three months ago. Current practice data based on the previous 24 hours, as opposed to retrospective data, is considered more accurate in ascertaining information about the introduction of solids and liquids other than breast milk (Webb et al., 2001). However, it is also recommended that the indicator '*exclusive breastfeeding from birth*' be included when collecting infant feeding data in order to facilitate a more complete picture of breastfeeding practices (Aarts et al., 2000).

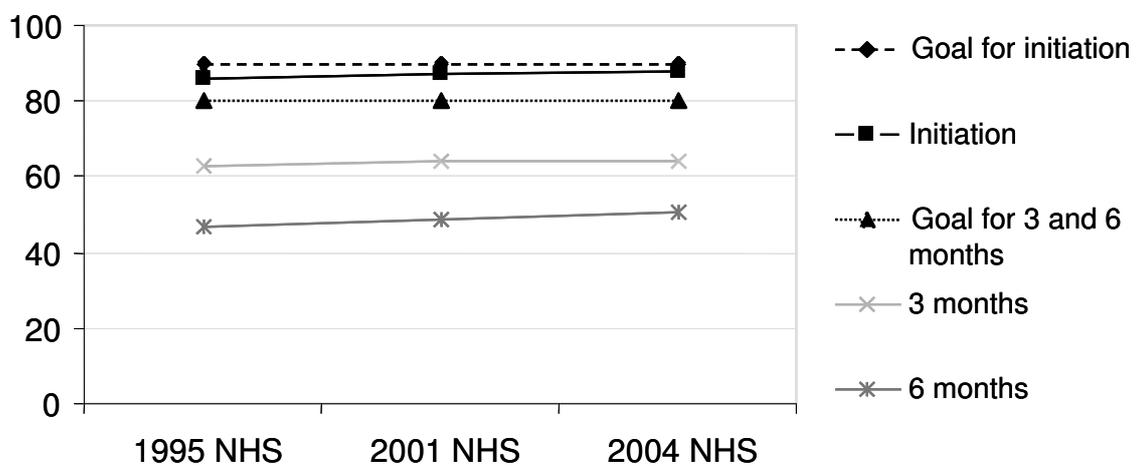
Collectively, these complexities present challenges to the gathering and assessment of breastfeeding rate data. In practice, reports often use 'any' breastfeeding as a main outcome measure.

BREASTFEEDING RATES IN AUSTRALIA

Only 50.4% of Australian infants are breastfed to six months (Amir & Donath, 2008), and far fewer infants receive *only* breast milk for the first six months (Department of Education and Early Childhood Development, 2010), despite exclusive breastfeeding to six months being recommended by the World Health Organization and Australian health bodies (National Health and Medical Research Council, 2003; World Health Organization, 2001). In a randomised controlled trial (RCT) in Melbourne, Victoria, Forster et al (2004) found only eight percent of included infants received exclusively breast milk (no solids and no other fluids) to six months.

These figures contrast with targets set by the Australian Government in 1990 aiming for 80% of all infants to be at least partially breastfed at six months by the year 2000 (Nutbeam, Wise, Bauman, & Harris, 1993). More recently, Australian dietary guidelines suggest that a target of 50% of infants exclusively breastfed to six months is realistic (National Health and Medical Research Council, 2004). Rates of breastfeeding initiation (88%) and duration of any breastfeeding (50% or less at six months) in Australia have remained static between the 1995 and 2004/2005 National Health Surveys (NHSs) (Amir & Donath, 2008), and in the 2004/2005 NHS only 23% of children were breastfeeding at 12 months (Amir & Donath, 2008). Figure 2 displays the breastfeeding rates at three and six months, compared to the goals set in 1993.

Figure 2: Breastfeeding in Australia



Source: from Amir & Donath (2008) and Nutbeam et al. (1993).

However, these figures may not reflect women's own breastfeeding goals – many women do not reach their intended breastfeeding duration (Forster, McLachlan, & Lumley, 2006). In a Victorian RCT evaluating the effect of two antenatal education interventions to increase breastfeeding, 54% of participating mothers who had ceased breastfeeding prior to six months were unhappy with their length of feeding (Forster, 2005). Similarly, the United Kingdom *Infant Feeding 2000* study found 87% of women who ceased breastfeeding when their babies were aged between two and six weeks would have liked to continue longer (Hamlyn, Brooker, Oleinikova, & Wands, 2002).

To demonstrate how Australian breastfeeding rates compare with those in other *developed* countries, Table 1 presents figures for a range of countries. As an indication of breastfeeding in *developing* countries, a recent review of breastfeeding patterns in these countries found that although at least 95% of women commence breastfeeding and 86% are continuing to breastfeed at six months, the prevalence of exclusive breastfeeding in babies aged six months or less is only 39% (Lauer, Betran, Victora, de Onis, & Barros, 2004). That is, the issues around breastfeeding are different in developed and developing countries, hence different strategies to increase breastfeeding are likely to be needed.

Table 1: Proportion breastfeeding by country

Country	Year Pub.	Sample Size	Initiation (%)	Duration of 'any' breastfeeding		Reference
				%	Stage	
Denmark	2004	471	99%	-	-	Kronborg & Vaeth
Norway	2003	2838	99%	80%	26 weeks	Lande et al.
Thailand	2003	WHO data	99%	-	-	World Health Organization
Sweden	2002	Population based	98%	72%	26 weeks	Centre for Epidemiology
New Zealand	1999	350	97%	30%	52 weeks	Vogel et al.
Italy	2003	2450	91%	47%	26weeks	Giovannini et al.
Canada	2010	National survey	90%	54%	6+ months	Al-Sahab et al.
Australia	2008	National survey	88%	50%	6 months	Amir & Donath
USA	2008	National survey	83%	50%	6 months	Grummer-Strawn et al.
Netherlands	2001	4438	76%	33%	13 weeks	Bulk-Bunschoten
United Kingdom	2007	National survey	76%	25%	6 months	Bolling et al.
<i>England</i>			78%			
<i>Scotland</i>			70%			
<i>Wales</i>			67%			
<i>Northern Ireland</i>			63%			
France	2001	353	70%	12%	26 weeks	Labarere et al.

BREASTFEEDING RATES IN VICTORIA AND THE ROLE OF MATERNAL AND CHILD HEALTH SERVICE

Breastfeeding rates in Victoria are similar to Australian rates (Donath & Amir, 2000). In this state, however, data collection from the Maternal and Child Health Service (MCHS) provides a rich source of information concerning breastfeeding rates in Regions and Local Government Areas (LGAs).

Victoria's MCHS provides universal primary care to families with children from birth to school age. Conducted in partnership between the Department of Education and Early Childhood Development (Victoria), local government, and the Municipal Association of Victoria (Department of Education and Early Childhood Development, 2006b), the MCHS has "a focus on the prevention, promotion, early detection and intervention of health and wellbeing concerns of children" (Department of Education and Early Childhood Development, 2004, p vi).

The MCHS offers families 10 consultations with a Maternal and Child Health Nurse (MCHN) at key ages and stages (KAS) of an infant's life as outlined in Table 2. Within this structure advice, encouragement and assistance can be given to women regarding breastfeeding (amongst other things); in addition breastfeeding is monitored (along with other measures) with data providing extensive information about breastfeeding rates (Department of Education and Early Childhood Development, 2009b).

Table 2: State-wide participation in key ages and stages appointments

KAS Visit	State-wide participation rates for KAS visits (%)
Home visit	98.9%
2 week	96.2%
4 weeks	95.0%
8 weeks	94.7%
4 months	91.5%
8 months	83.9%
12 months	81.5%
18 months	71.6%
2 years	67.6%
3.5 years	58.3%

Source: from Maternal and Child Health Services Annual Report 2008-2009 (Department of Education and Early Childhood Development, 2010, p. 10).

The success of the MCHS is demonstrated in two ways. Firstly, attendance at the key ages and stages visits is very high, particularly up to and including the twelve month visit – this is demonstrated in Table 2, which shows the state-wide participation rates for each of the scheduled key ages and stages visits. In 2006 the Department of Human Services Office for Children released a commissioned report titled *Evaluation of Victorian Maternal and Child Health Services* (Department of Education and Early Childhood Development, 2006a). This report stated that “MCHS services are effective at registering their target client population” (Department of Education and Early Childhood Development, 2006a, p 36), although it found that MCHS have limited success at engaging with, or responding to needs within, particular groups, notably single and young people, Indigenous and CALD families. Secondly, the *Evaluation of Victorian Maternal and Child Health Services* conducted a client survey amongst 2,168 non-Indigenous and 128 Indigenous clients and found that client satisfaction of the MCHS is very high, including amongst Indigenous families (Department of Education and Early Childhood Development, 2006a).

Breastfeeding data are collected at many of the key ages and stages visits and entered into two report frameworks: the Key Ages and Stages Framework and the MCHS

Annual Report. Details of these are outlined in Table 3, which also includes a description as to how breastfeeding is categorised.

Table 3: Frameworks for recording breastfeeding data collected at key ages and stages visits

	Frameworks			
	KAS Framework		M(a)CHs Annual Report	
KAS Visit	Feeding data recorded for:		Feeding data recorded for:	
Home visit	Discharge from hospital (mothers' recollection/self reported)		Discharge from hospital (mothers' recollection/self reported)	
2 week	2 week data		2 week data	
4 weeks	–		–	
8 weeks	–		–	
4 months	3 month data (mothers' recollection)		3 month data (mothers' recollection)	
	4 month data ("headline indicator"*; exclusive BF)		–	
8 months	6 month data (mothers' recollection)		6 month data (mothers' recollection)	
	8 month data		–	
12 months	12 month data		12 month data	
18-21 month	–		–	
2 year	–		–	
3.5 – 4 year	–		–	
Breastfeeding categories	Exclusively BF**	Full BF**	BF	Fully BF
	Predominantly BF**		BF/ EBM	
	Partially BF**	EBM		
	Artificially feeding		Part BF	Partly BF
			BF/EBF/AF comp	
			BF/AF comp	
			EBM/AF	
			BF/AF	
			BF/EBM/AF	
			Artificial	Artificial
		Unknown	Unknown	
		Weaned	Weaned	

* DHS 2006, p. 19.

** Definitions provided in M&CH Service Practice Guidelines 2009 (Department of Education and Early Childhood Development, 2009b p. 10).

Source: confirmation from Toni Ormston (personal correspondence, 25 June 2010).

State-wide and Regional averages of *any* breastfeeding (defined here as the combination of *fully* and *partially* breastfeeding) at discharge and three months, as provided in the Maternal and Child Health Service Annual Report 2008-2009 (Department of Education and Early Childhood Development, 2010), are displayed in Table 4. This table is expanded in Appendix 1 where figures for LGAs are presented, and LGAs with *any* breastfeeding rates at or below the state average at any of the measurement time points are highlighted.

Table 4: Proportion of ‘any’ breastfeeding at discharge and three months (State and Regions) – data from the MCHS Annual Report 2008-2009: Statewide

Region (total number of infant records [*])	Any breastfeeding at discharge ^{**}		Any breastfeeding at 3 months ^{**}	
	Number	%	Number	%
State-wide (72,182)	61,953	85.8%	43,694	60.5%
Barwon South Western Region (4,718)	3,910	82.9%	2,747	58.2%
Eastern region (11,926)	10,737	90.0%	8,176	68.6%
Gippsland region (3,173)	2,684	84.6%	1,782	56.2%
Grampians Region (2,778)	2,259	81.3%	1,508	54.3%
Hume Region (3,444)	2,683	84.7%	1,957	56.8%
Loddon Mallee (4,051)	3,339	82.4%	2,224	55.9%
Northern Region (12,297)	10,744	87.3%	7,616	61.9%
Southern Region (17,947)	15,628	87.1%	11,161	62.2%
Western Region (11,848)	9,734	82.1%	6,538	55.2%

Source: Maternal & Child Health Services Annual Report 2008-2009: Statewide (Department of Education and Early Childhood Development, 2010).

^{*} The MCHS Annual Report 2008-2009: Statewide (Department of Education and Early Childhood Development, 2010) presents breastfeeding rate data as it pertains to the total number of infant records for babies born in the 2007-2008 financial year.

^{**} Percentage of ‘any’ breastfeeding is the percentage of reported (therefore known) breastfeeding infants amongst the total number of infant records.



Indicates area breastfeeding rate (%) is below the state average at discharge.



Indicates area breastfeeding rate (%) is below the state average at three months.

Breastfeeding in Victoria

In summary, Victoria, like Australia, faces two significant issues pertaining to breastfeeding:

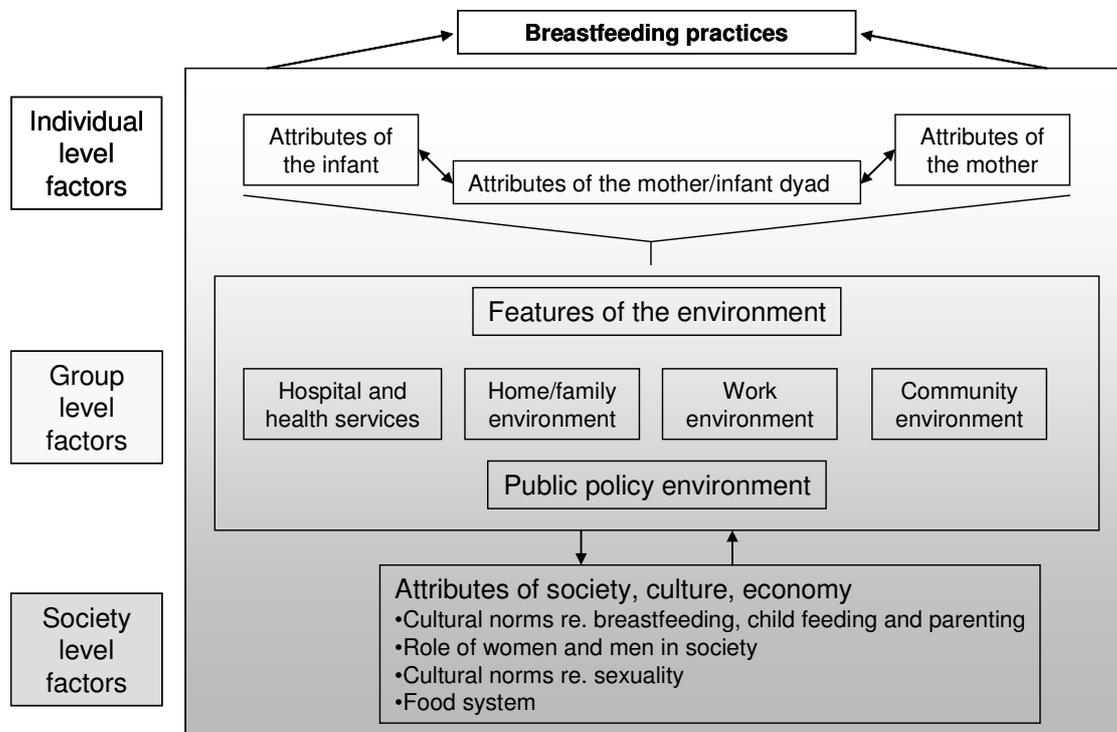
- Whilst breastfeeding initiation is relatively high, the proportion of infants breastfeeding decreases such that less than half of all infants receive any breast milk by six months of age;
- Breastfeeding rates vary across the State and are lower amongst women from lower socioeconomic groups, those with lower education and incomes, and those from specific cultural groups.

FACTORS ASSOCIATED WITH BREASTFEEDING

In order to appreciate what underlies women's infant feeding choices, and to develop strategies to increase breastfeeding initiation and duration, it is important to understand what factors are associated with breastfeeding, and hence which women are at risk of discontinuing breastfeeding early.

The influences on breastfeeding practices are multifactorial and encompass both enablers and barriers (Australian Health Ministers' Conference, 2009; Forster, 2005, p 28). Hector, King and Webb (2005) conceptualised these as operating at three levels (individual, group and societal), which are expanded in their conceptual framework as outlined in Figure 3.

Figure 3: A conceptual framework of factors affecting breastfeeding practices

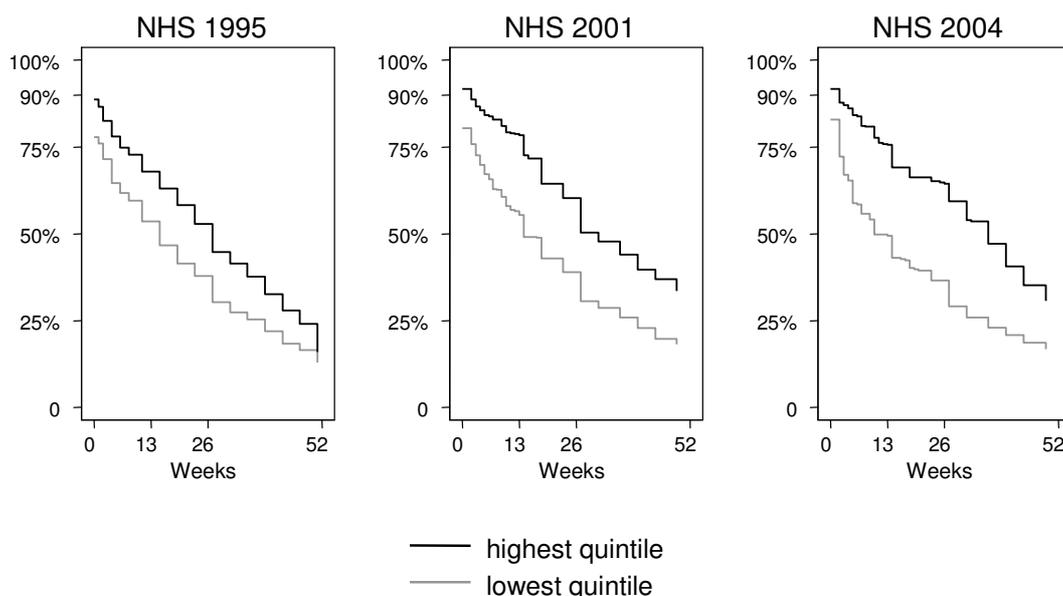


Source: Figure 1 'A conceptual framework of factors affecting breastfeeding practices' in Hector et al. (2005, p. 53).

Breastfeeding initiation rates are closely associated with social class, income and education levels in all countries (Dyson, McCormick, & Renfrew, 2005) including Australia, where breastfeeding rates are lower among socially disadvantaged women, and those with lower education (Amir & Donath, 2008). Although breastfeeding initiation is relatively high overall in Australia, it is 10% lower in more disadvantaged women (initiation in lowest Socio-Economic Index for Area (SEIFA) quintile was 81% compared to 91% in highest quintile in 2004/2005) (Amir & Donath, 2008). In terms of breastfeeding duration, *the difference in the rates of breastfeeding between more and less advantaged Australian women has increased, with six month rates*

found to be 37% in the lowest SEIFA quintile and 66% in the highest in the 2004/2005 NHS – see Figure 4 (Amir & Donath, 2008).

Figure 4: Proportion of babies receiving breastmilk by SEIFA quintile



Source: from Table 2: ‘Breastfeeding duration: weighted estimates of proportions of infants breastfeeding at 0-52 weeks in the 1995, 2001 and 2004-05 National Health Surveys (NHSs) in the lowest and highest SEIFA quintiles’ in Amir & Donath (2008, p. 255).

Data from Victorian LGAs also demonstrate the wide differences in breastfeeding practices, even within metropolitan Melbourne. Only 27% of infants born in Melton receive any breast milk at six months, compared with 66% in the City of Melbourne and 59% in Port Phillip (Department of Education and Early Childhood Development, 2010).

Rates of breastfeeding in Indigenous populations have been noted to decrease with increasing proximity to urban areas, and to be similar to rates in women with lower socio-economic status (SES) in these population groups (House of Representatives Standing Committee on Health and Ageing, 2007). Women who have been born in other countries vary in their breastfeeding practices. McLachlan's study in Melbourne,

found that women born in Turkey had higher rates of breastfeeding initiation than Australian-born women, whereas women born in Vietnam were significantly less likely to commence breastfeeding (McLachlan & Forster, 2006).

Considering 'group level factors' (Hector et al., 2005):

- women giving birth in maternity services following BFHI's Ten Steps are more likely to continue breastfeeding (Kramer et al., 2001);
- women who return to paid work, even part-time, are more likely to cease breastfeeding than women who are not in paid employment (Cooklin, Donath, & Amir, 2008);
- Clifford and McIntyre's review (2008) of qualitative and quantitative studies concluded that fathers are the most influential person to the mother with regards to breastfeeding.

'Individual level' determinants of breastfeeding include infant attributes, for instance infants born at less than 40 weeks gestation are likely to breastfeed for a shorter duration than infants born at 40 weeks or later (Donath & Amir, 2008a). Maternal attributes associated with shorter duration include:

- smoking (Amir, 2001; Amir & Donath, 2002);
- overweight and obesity (Amir & Donath, 2007; Donath & Amir, 2008b);
- and – most importantly – maternal infant feeding intention (Donath & Amir, 2008a).

Many of the factors associated with breastfeeding are relatively consistent across the literature. In a Victorian study of 981 primiparous women, Forster, McLachlan and Lumley (2006) found that the factors positively associated with any breastfeeding at six months were: having a strong desire to breastfeed, being breastfed oneself, being an older mother, and being born in an Asian country. A negative association was found between any breastfeeding at six months and: having no plan to breastfeed for

six months or more, pre-pregnancy smoking at a rate of 20 or more cigarettes per day, not attending an antenatal childbirth education program, maternal obesity, self-reported depression in the infant's first six month of life, and the introduction of infant formula during the hospital stay (Forster et al., 2006).

It is also important to understand why women stop breastfeeding, and again the reasons women give are relatively consistent across the literature. Using Forster's analysis of 407 Victorian women who had ceased breastfeeding before their babies were six months of age as an example, the reasons for ceasing breastfeeding (and frequency with which these reasons are given) were reported as: not enough milk (33%), attachment problems (11%), employment/study (8%), nipple trauma/pain (7%), baby lost interest (7%), maternal health (5%), mother did not want to keep breastfeeding (4%), and maternal exhaustion (4%) (Forster, 2005 pp. 175-78).

The following chapters of this report include a description of the methods and findings of the literature review and the state-wide consultation process, followed by a discussion of the findings and recommendations.

LITERATURE REVIEW

BACKGROUND AND AIMS

There is an extensive body of evidence regarding interventions which promote the initiation and/or duration of breastfeeding. This review builds on previous reviews conducted within Victoria and internationally and specifically aims to identify what interventions are likely to be most effective in improving the initiation and/or duration of breastfeeding in Victoria. This evidence, along with the results of the concurrent exploration of the patterns of breastfeeding initiation and continuation throughout the state, and the outcomes of the systematic consultation exploring current local strategies, will be used to inform the development of a strategy designed to increase breastfeeding maintenance.

The key questions used to undertake this review were:

- ⇒ What is the evidence for effective interventions internationally?
- ⇒ What interventions have been evaluated as effective within the national and/or local context?
- ⇒ What is the effectiveness in sub-populations with low rates of breastfeeding (e.g. women in poorer social circumstances, women who smoke, young mothers, women from ethnic groups without a breastfeeding culture)?

Additionally, the review explored any promising new strategies for increasing breastfeeding.

METHODS AND PROCEDURES

The literature review was conducted as a three-part process, to take advantage of previously published breastfeeding reviews. One of the authors (DF) had previously conducted a major systematic review of all RCTs up to 2004 (as part of a PhD thesis) (Forster, 2005), thus this review was used as a basis for the current review. Systematic

reviews published since this time were then identified (the second part of the strategy), then a systematic search for RCTs published since the most recent systematic review/s was conducted (third component). In summary, this literature review comprises:

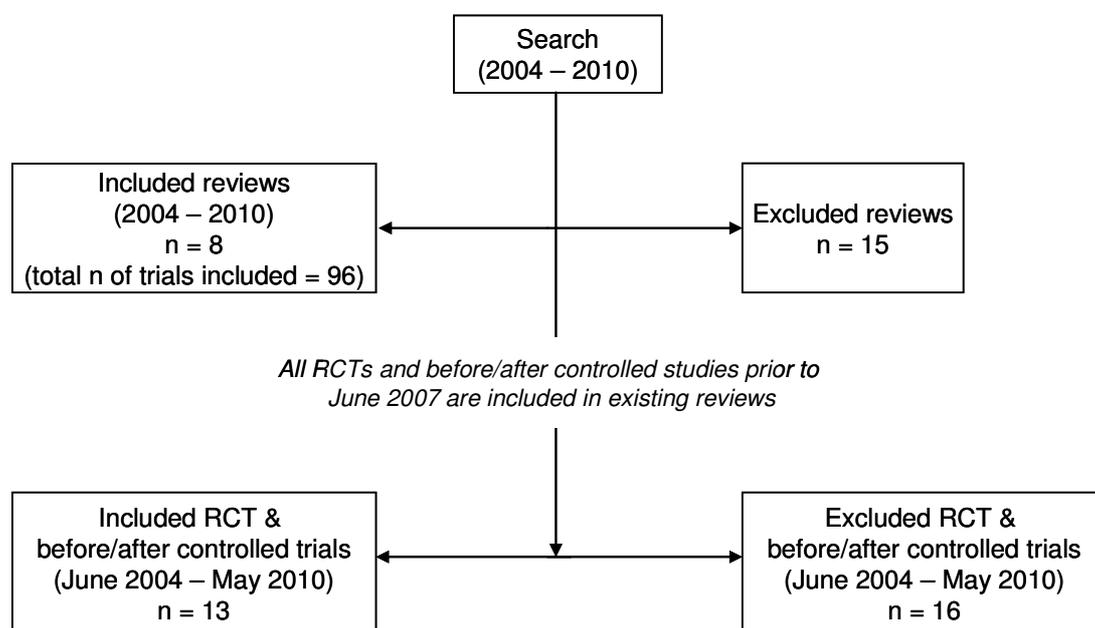
- *Part one:* a comprehensive review of eligible interventions aimed to increase breastfeeding published up until mid 2004 (DF thesis – included trials published from 1977 to 2004) (Forster, 2005);
- *Part two:* existing systematic reviews published from 2004 to May 2010 were identified and appraised (including initial review by DF);
- *Part three:* a review of trials published between mid 2004 and May 2010 which were a) published since the last search dates of the various reviews (e.g. support for breastfeeding duration (Nov 2005) (Britton, McCormick, Renfrew, Wade, & King, 2007); lay support (Feb 2009) (Lewin et al., 2010)) or b) which were otherwise identified by hand searching reference lists of included reviews and trials.

Although only systematic reviews of randomised controlled trials (RCTs), RCTs, and controlled before-after studies were eligible for inclusion in this review, excluded reviews and trials which address key questions are discussed later in the review where relevant. Likewise, non-experimental evaluations of local initiatives to increase breastfeeding are presented separately.

Education strategies targeted only at health professionals, policy interventions, and ‘whole of service’ strategies such as the Baby Friendly Hospital Initiative (BFHI) are not included in this review.

An overview of the methods is illustrated in Figure 5.

Figure 5: Overview of methods for the literature review



The methods used for each component that has contributed to this literature review will now be described and the outcomes of each literature search detailed, then the combined results presented.

Initial review underpinning literature review

The initial review by Forster (2005) included 124 trials from 1977 to 2004. Of these, 49 met the inclusion criteria to be included in meta-analyses. Only 15 of the 49 trials met the inclusion criteria *and* were also powered to detect what was pre-determined as a clinically important difference (10%). Therefore, the narrative synthesis of evidence included only those 15 trials.

Search strategy for original review

Participants: Pregnant women and postnatal women, with a focus on women in first year postpartum, and living in developed countries

Interventions: Antenatal and postnatal breastfeeding education, breastfeeding support by health professionals and/or peers

Comparison groups: 'Standard' care for women allocated to control groups

Outcomes: Self-reported breastfeeding status including breastfeeding initiation, duration and exclusivity

Overview of subsequent systematic reviews

The review of the subsequent systematic reviews of trials of interventions which promote the initiation and/or duration of breastfeeding (published between 2004 and May 2010) was then conducted. The aim of this step was to summarise the evidence from the existing systematic reviews for promoting breastfeeding, prior to then searching for any further trials published since all relevant and eligible systematic reviews.

Methods

Inclusion criteria for existing systematic reviews

A predetermined search strategy was used that was likely to identify all relevant reviews. The aim was to include only those systematic reviews published up to May 2010 that themselves had strict search criteria, i.e. which included only studies which had a low risk of bias (RCTs, cluster RCTs or controlled before-after designs); and where the 'last search' date was no earlier than mid 2004.

Search strategy for existing systematic reviews

Participants: Systematic reviews that included pregnant women and women in first year postpartum

Interventions: Systematic reviews that included the following interventions: breastfeeding, lactation, infant feeding, interventions, promotion, education, support

Comparison: Systematic reviews which include trials at low risk of bias (RCTs, cluster RCTs, controlled before-after studies) where intervention groups were compared with groups receiving usual care or some alternative

Outcomes: Systematic reviews that looked at the following outcomes: breastfeeding initiation, breastfeeding duration, breastfeeding exclusivity, breastfeeding attitudes and intentions, reasons for ceasing breastfeeding

Search terms

Breastfeeding or lactation or infant feeding

Interventions or promotion or education or support

Restrictions

English language only, 2004-2010

Databases searched

Cochrane Library, Campbell Collaboration, CENTRAL, CINAHL, MEDLINE, EMBASE, Informat

Selection criteria

Search lists were evaluated by four reviewers for relevant systematic reviews (CC/AM/LA/DF). Reference lists of included reviews were searched for additional reviews and trials.

Data collection and analysis

Selection of reviews

All systematic reviews identified in the search were evaluated by three reviewers to assess whether the review met the inclusion criteria (CC/AM/DF). Where there was not consensus another opinion was sought (LA).

Data extraction and quality assessment

A data extraction form was developed which included an assessment of review quality using the Critical Appraisal Skills Program (CASP) format.

Data synthesis

This review of systematic reviews was summarised using narrative synthesis, although all the included reviews present results that were based on meta-analyses. The key findings are presented, with discussion of variation between systematic reviews. The main outcomes of effects of interventions on breastfeeding initiation and duration are reported directly from the various reviews, i.e. if a finding was presented as a relative risk (RR) with 95% confidence intervals, then we have reported it here that way with its citation. Where available, the heterogeneity, i.e. the degree of inconsistency between included trials (I^2), within a systematic review is also reported. Heterogeneity (I^2) > 50% represents significant heterogeneity, therefore denotes a high degree of inconsistency between the results of the included trials (hence an I^2 >50% reduces the confidence that interventions will work, despite the significance of the overall effect) (Higgins & Green, 2008).

Results of search

In total, 23 systematic reviews were identified from the search.

Description of included reviews

Eight of the 23 identified systematic reviews met the eligibility criteria for inclusion (Table 5; see Appendix 2 for more detailed characteristics of included reviews). Forster (2005) included trials testing antenatal and postnatal breastfeeding education and/or support strategies which aimed to increase *initiation and/or duration* (15 studies included in narrative synthesis and 49 in meta-analyses (also in narrative synthesis)). Dyson et al. (2005) published a Cochrane review that included 11 trials of breastfeeding initiation (except in populations where women or infants had a specific health problem). Another Cochrane review by Britton et al. (2007) included 34 trials of extra support for breastfeeding mothers (compared to usual maternity care) which aimed to increase breastfeeding *duration*. A review by Chung et al. (2008) included 38 trials of primary care interventions to promote breastfeeding *initiation and/or duration*. A third Cochrane review (Moore, Anderson, & Bergman, 2007) included 30 trials testing the effect skin-to-skin contact after birth on breastfeeding *initiation and duration*. A review of telephone support for women during pregnancy and the early postpartum period included breastfeeding as one of its separate meta-analyses (three

trials) (Dennis & Kingston, 2008), as did a Cochrane review of the effect of lay or peer health worker interventions (Lewin et al., 2010). A final review explored the effectiveness of peer-based support for breastfeeding (Webel, Okonsky, Trompeta, & Holzemer, 2010). In total, 96 trials were included in the combined systematic reviews, although some were included in more than one review; 57 were included in a single review only. While most had a focus on either breastfeeding initiation, duration, or both, some also included a focus (and/or meta-analysis) on trials that aimed to increase breastfeeding exclusivity.

Table 5: Summary of included reviews

Author (date of publication)	Inclusion criteria (scope of review)	No. of included trials
Britton et al. (2007)	'Support' interventions to increase breastfeeding <i>duration</i>	n = 34 (2 in Australia)
Chung et al. (2008)	Interventions in primary care to increase breastfeeding <i>initiation</i> and/or <i>duration</i>	n = 38 (3 in Australia)
Dennis & Kingston (2008)	Telephone support to increase breastfeeding <i>duration</i>	n = 3* (0 in Australia)
Dyson et al. (2005)	Breastfeeding promotion interventions to increase breastfeeding <i>initiation</i>	n = 11 (0 in Australia)
Forster (2005)	Interventions to increase <i>initiation</i> and/or <i>duration</i>	n = 49 (7 in Australia)
Lewin et al. (2010)	Lay/peer support to increase <i>initiation</i> and/or <i>duration</i>	n = 10* (0 in Australia)
Moore et al. (2007)	Skin-to-skin contact interventions to increase breastfeeding <i>initiation</i> and/or <i>duration</i>	n = 14* (0 in Australia)
Webel et al. (2010)	Peer-based interventions to increase breastfeeding	n = 6* (0 in Australia)

* More trials than this in these reviews, but this number had a breastfeeding outcome.

All of the systematic reviews that were included presented one meta-analysis or more to summarise their findings; however, there was significant heterogeneity between the results of different trials included within many of the individual meta-analyses, which reduces the confidence that the strategies are likely to work in all circumstances. Many reviews had a specific focus for practical reasons (e.g. because a particular

group or intervention type was of interest), however, it is also likely to be a reflection of the large number of published trials testing interventions aimed to increase breastfeeding. Only eight of the trials in included reviews were conducted in Australia.

Description of excluded reviews

Fifteen reviews did not meet the inclusion criteria and were excluded from this overview. A summary of the reviews and the reasons for exclusion are provided in more detail in Appendix 3. The reference lists of all excluded reviews were scanned to check for trials that could be considered for inclusion in this review.

Five reviews were excluded as they included trials at high risk of bias (Hannula, Kaunonen, & Tarkka, 2008; Mushtaq, Skaggs, & Thompson, 2008; Pate, 2009; South Australia Breastfeeding Program, 2006; Thurman & Allen, 2008), two included only qualitative studies (McInnes & Chambers, 2008; Schmied, Beake, Sheehan, McCourt, & Dykes, 2009) and in six the focus of the review did not match the current criteria (Bhandari, Kabir, & Salam, 2008; Hall Moran, Edwards, Dykes, & Downe, 2007; Johnston & Esposito, 2007; O'Connor, Kawai, Siadaty, & Fern, 2009; Renfrew et al., 2009; Spiby et al., 2009). One review was excluded because the search was conducted prior to 2004, when the previous comprehensive search had been conducted (Renfrew et al., 2005). A review of workplace strategies to increase breastfeeding was excluded as there were no studies identified (Abdulwadud & Snow, 2007). The review that sought to specifically compare International Board Certified Lactation Consultants (IBCLC) with non-IBCLC support (or usual care) in primary care settings included only one RCT in the five included studies (Thurman & Allen, 2008); the RCT did increase breastfeeding at 20 weeks postpartum (Bonuck, Trombley, Freeman, & McKee, 2005).

Review of trials published since systematic reviews

Methods

Inclusion criteria

A predetermined search strategy was used to identify relevant studies. RCTs, cluster RCTs, quasi-randomised studies and controlled before-after studies were eligible for inclusion. Specific criteria included:

- primary aim of intervention to promote initiation and/or duration of breastfeeding;
- intervention not solely clinician training or hospital policy;
- individual or group interventions;
- published June 2004 to May 2010;
- not included in previous systematic reviews;
- English language.

Search strategy

<i>Participants:</i>	Pregnant women and women in first year postpartum
<i>Interventions:</i>	Breastfeeding, lactation, infant feeding, interventions, promotion, education, support
<i>Comparison:</i>	Usual care or a comparison intervention
<i>Outcomes:</i>	Breastfeeding initiation, breastfeeding duration, breastfeeding exclusivity, breastfeeding attitudes and intentions, reasons for ceasing breastfeeding

Search terms

Breastfeeding or lactation or infant feeding

Interventions or promotion or education or support

Databases

CINAHL, PsychLit, MEDLINE, EMBASE, Informat.

Reference lists of included reviews and trials were searched for additional trials.

Data collection and analysis

Selection of included studies

Studies identified in the search were assessed by two reviewers to determine whether they met the inclusion criteria (CC/AM or DF/LA). A third reviewer made a final assessment where there was a discrepancy (LA or HMc). The trials were then reviewed independently by two reviewers (CC/AM or DF/LA) and discrepancies checked by a third reviewer (LA or HMc).

Assessment of risk of bias in included trials

Results are reported according to the risk of bias assessment described in Table 6 (Higgins & Green, 2008).

Table 6: Risk of bias assessment

Risk of bias	Criteria
High	Inadequate randomisation (sequence generation and allocation concealment) + inadequate intention-to-treat analysis using criteria outlined in the Cochrane Handbook for Systematic Reviews (Higgins & Green, 2008)
Moderate	Inadequate randomisation only
Low	Adequate randomisation <ul style="list-style-type: none"> • Participants kept in the intervention group to which they were randomised, regardless of intervention received; • Outcome data on all participants measured; All randomised participants were included in the analysis

Source: Higgins & Green (2008).

Analysis and synthesis of findings

Data from individual studies are reported separately in the findings. More details of included studies are presented in Appendix 4.

Results of search

Description of included trials

Results of search

Sixty studies potentially eligible for inclusion published from June 2004 to May 2010 were identified. After review, 13 RCTs were included (Appendix 4) and 16 trials (see were excluded Appendix 5). The remaining papers were descriptive or opinion papers.

Included trials

Nine out of the 13 new trials were conducted in the USA, two in the United Kingdom, and one each in Brazil and Syria. No new trials from Australia were identified. A high quality non-randomised study from Victoria evaluating the *Best Start* program (Kelaher, Dunt, Feldman, Nolan, & Raban, 2009) is discussed later in the report. Table 7 shows the included trials by country, risk of bias, relevance to the Australian context, and whether or not there was a difference in breastfeeding outcomes. None of the trials were categorised as having high relevance to the Australian context.

Table 7: New trials (June 2004 to May 2010): risk of bias, effect, relevance

Risk of bias	Author (year)	Country	Significant effect	Relevance to Australia
Low	Bashour et al. (2008)	Syria	Yes (↑ exclusive only)	Low
	Cupples et al. (2010)	UK (N Ireland)	No*	Low/moderate
	Hoddinott et al. (2009)	UK (Scotland)	No	Moderate
	Hopkinson et al. (2009)	USA	Yes (↑ exclusive only)	Low
	Pugh et al. (2010)	USA	Yes (↑ duration)	Moderate
	Sandy et al. (2009)	USA	Yes* (↑ exclusive only)	Moderate
Moderate	Bunik et al. (2010)	USA	No*	Moderate
	De Oliveira et al. (2006)	Brazil	No	Moderate
	Di Meglio et al. (2010)	USA	No*	Moderate
	Ickovics et al. (2007)	USA	Yes (↑ initiation)	Moderate
	Petrova et al. (2009)	USA	No*	Moderate
High	Gill et al. (2007)	USA	Yes* (↑ duration)	Moderate
	Olson et al. (2010)	USA	Yes (↑ duration)	Moderate

* Trial not powered to find 10% difference (considered clinically relevant).

RESULTS

Summarising the available evidence is complex given the breadth of interventions and the various background populations in which the interventions have been tested. Overall, it is more difficult to increase breastfeeding duration than initiation (Britton et al., 2007; Forster, 2005), and this is consistent across all studies. Many interventions make a difference to short term breastfeeding, but do not increase the proportion of women who breastfeed for longer periods (and many studies do not follow women to six months).

Increasing breastfeeding initiation

Evidence from high quality systematic reviews demonstrate that interventions that increase breastfeeding initiation include antenatal education, peer support programs and early skin-to-skin contact.

Antenatal education ☺

There is evidence that antenatal breastfeeding education for women increases breastfeeding initiation, but not duration.

Individual or group antenatal education strategies have been shown to increase breastfeeding initiation. Forster (2005) found that breastfeeding initiation was increased by antenatal education and breastfeeding promotion (weighted OR 1.64; 95% CI 1.32, 2.07). Dyson (2005) reported an increase with health education interventions (RR 1.53; 95% CI 1.25, 1.88; $I^2 = 53\%$) and that repeated, informal breastfeeding education which was personalised to each woman's needs further increased this (RR 2.40; 95% CI 1.57, 3.66; $I^2 = 7\%$). Formal, single breastfeeding education sessions led to a positive, but non-statistically significant, increase in the number of women starting to breastfeed (RR 1.26; 95% CI 1.00, 1.60; $I^2 = 7\%$). Chung et al. (2008) found that breastfeeding 'promotion' interventions increased breastfeeding initiation (rate ratio 1.04; 95% CI 1.00, 1.08), however, when the two trials from developing countries were excluded, there was no effect, and an analysis of education interventions as a sub-group showed no effect.

One new trial found individual antenatal education by a lactation consultant increased initiation (Gill et al., 2007).

Including only Australian trials in a meta-analysis, Forster (2005) found that education interventions were effective in increasing initiation (OR 2.5; 95% CI 1.53, 4.37), although one of the trials was with a specific cultural group – Vietnamese women (Rossiter, 1994).

Antenatal peer support ☺

There is evidence that antenatal peer/lay support increases breastfeeding initiation in some groups.

Four of the systematic reviews found that antenatal peer/lay support increased breastfeeding initiation. The effect sizes reported were: Forster (2005), weighted OR 1.67 (95% CI 1.07, 2.69); Chung et al. (2008), RR 1.09 (95% CI 0.92, 1.28) for initiation, and 1.22 (95% CI 1.08, 1.37) for short term duration; Lewin et al. (2010), RR 1.36 (95% CI 1.14, 1.61); and Dyson et al. (2005), RR 4.02 (95% CI 2.63, 6.14).

Two of the new trials also support this evidence (Ickovics et al., 2007; Olson et al., 2010).

Early mother-infant contact ☺

There is strong evidence that early mother-infant contact increases both breastfeeding initiation and duration. This is a component of the BFHI.

A review of over 30 trials of early skin-to-skin contact showed a significant increase in breastfeeding initiation (OR 6.35; 95% CI 2.15, 18.71, $I^2=0\%$) (Moore et al., 2007). Forster (2005) also concluded that rooming-in and early contact could increase breastfeeding initiation.

Group antenatal care ☺

There is emerging evidence to support the use of antenatal care models provided to women as a consistent group with continuity of carer to increase breastfeeding initiation.

One trial conducted in the USA demonstrated a significant increase in breastfeeding initiation in young women receiving antenatal care as part of a group, with continuity of carer (Ickovics et al., 2007).

Breastfeeding promotion packs or written materials alone ☹

There is no evidence that the provision of breastfeeding promotion packs increases breastfeeding initiation.

Forster (2005) concluded that while breastfeeding promotion activities could increase breastfeeding initiation (if combined with education and support), commercial discharge packs or being given written materials alone had no effect. One trial of breastfeeding promotion packs conducted in the USA (within an included review)

showed no effect in increasing initiation (RR 0.93; 95% CI 0.80, 1.08) (Dyson et al., 2005).

Increasing breastfeeding duration and exclusivity

Some strategies do appear able to have an effect on increasing breastfeeding maintenance in certain groups of women; however, the results are inconsistent.

Breastfeeding education ☹

There is evidence that breastfeeding education for women increases initiation, but not duration, except for mothers of preterm infants.

Forster (2005) found that antenatal education alone did not demonstrate a significant effect on breastfeeding duration at three to four months (weighted OR 1.27; 95% CI 0.94, 1.71). Likewise Chung et al. (2008) found no effect of formal or structured education on breastfeeding duration.

One of the recent trials, which incorporated postnatal education in the intervention, demonstrated a significant positive effect on breastfeeding duration when combined with professional support and community outreach (Gill et al., 2007). Another new trial of one-to-one antenatal and postnatal education conducted in the USA (Petrova et al., 2009) found no significant effect; however, the study was underpowered to show a difference if one existed.

Lay peer support (mixed)

There is mixed evidence to support the use of lay/peer support to increase breastfeeding duration.

Meta-analyses of trials of peer/lay support for breastfeeding show mixed results – which may be largely a result of the very diverse settings in which the trials have been conducted. Additionally, those in developing countries have focused far more on breastfeeding *exclusivity* as opposed to increasing *any* breastfeeding.

Britton et al. (2007) found that trials using lay people to deliver interventions decreased breastfeeding cessation (RR 0.86; 95% CI 0.76, 0.98), although there is significant heterogeneity ($I^2=76%$). Likewise, they found that lay support reduced the cessation of exclusive breastfeeding in the first three months (RR 0.72, 95%CI 0.57,

0.90). Lewin et al. (2010) also reported an increase in *any* breastfeeding up to six months as a result of lay support (RR 1.24; 95% CI 1.10, 1.39; $I^2=69%$), as well an increase in *exclusive* breastfeeding (RR 2.78; 95% CI 1.74, 4.44; $I^2=87%$). Chung et al. (2008) report that lay support increased both *any* and *exclusive* breastfeeding in the short term by 22% (95% CI 8%, 48%).

A more recent review reported a non-significant increase in *any* breastfeeding with peer support (OR 2.86; 95% CI 0.77, 10.61) (Webel et al., 2010). Further, no effect was found by Forster (2005), except in two cluster randomised trials in developing countries that provided fairly intensive support by peers (and female support workers) across the antenatal and postnatal periods, which increased breastfeeding *exclusivity*.

The new trials also failed to find that lay support had an effect in increasing any breastfeeding. Hoddinott et al. (2009) did not demonstrate any significant difference from providing increased peer support groups for women in Scotland, UK; neither did Di Meglio et al. (2010) using peer support for adolescent mothers, or a trial in Northern Ireland (Cupples et al., 2010). One trial from the USA found peer support increased breastfeeding exclusivity (Hopkinson & Gallagher, 2009).

No trials of peer support have been conducted in Australia.

Extra postnatal professional support (mixed)

There is mixed evidence on the effect of professional support to increase breastfeeding duration.

Britton et al. (2007) found that providing additional professional support decreased breastfeeding cessation at four months but not by six months (RR 0.78; 95% CI 0.67, 0.91), as well as decreasing cessation of exclusive breastfeeding in the first few months (RR 0.91; 95% CI 0.84, 0.98). Two other reviews found no evidence of effect of individual level professional support on breastfeeding duration (Chung et al., 2008; Forster, 2005).

Of three recent trials that included antenatal and postnatal support (including IBCLC support), one increased breastfeeding duration (Gill et al., 2007), one increased exclusivity (Sandy et al., 2009) and the third found no effect (but was underpowered)

(Petrova et al., 2009). One that combined professional and peer support increased any breastfeeding at six weeks but not later (Pugh et al., 2010).

An Australian trial of extended midwifery support at home (in included existing reviews) (McDonald, Henderson, Faulkner, Evans, & Hagan, 2010) did not find a significant effect, nor did a similar earlier Australian trial providing fairly intensive antenatal and postnatal components including IBCLC support (Redman, Watkins, Evans, & Lloyd, 1995).

Early mother-infant contact ☺

There is good evidence that early mother-infant contact increases breastfeeding duration. This is a component of the BFHI.

The review by Moore et al. (2007) demonstrated that early skin-to-skin contact significantly increased breastfeeding duration 1 to 4 months postpartum (OR 1.82; 95% CI 1.08, 3.07; $I^2=41%$), and exclusive breastfeeding up to 4 months postpartum (OR 5.67; 95% CI 2.27, 14.16; I^2 =not applicable [1 trial]) (Moore et al., 2007).

Telephone support (mixed)

There is mixed evidence as to the value of telephone-based interventions to increase breastfeeding duration.

In one included review, interventions provided by telephone did not affect breastfeeding cessation (RR 0.92; 95% CI 0.78, 1.08), whereas interventions provided face-to-face decreased the rate of breastfeeding cessation (RR 0.85; 95% CI 0.79, 0.92; $I^2=57.4%$) (Britton et al., 2007). This review concluded that face-to face interventions may be more effective than those that rely on only telephone contact.

A more recent review found that breastfeeding support provided by telephone *did* increase breastfeeding duration to 12 weeks (RR 1.18; 95% CI 1.05, 1.33) and breastfeeding exclusivity to 12 weeks (RR 1.45; 95% CI 1.12, 1.87), but not as part of strategies where telephone support was only an adjunct intervention (Dennis & Kingston, 2008).

Two new trials conducted in the USA tested the use of telephone-based support and neither found an effect on breastfeeding duration. However, one of these (focused on

adolescent women and provided by peers) was underpowered to find any difference, so the result can not be considered conclusive (Di Meglio et al., 2010). The other used nurses to provide the intervention (Bunik et al., 2010).

Multi-strategy interventions ☺

It may be that in many instances the use of multi-strategy interventions are an appropriate method to increase breastfeeding duration.

Given that most single strategies have failed to achieve an increase in breastfeeding duration, many studies have explored the use of multi-strategy interventions. Three of the existing reviews investigated the effect of multi-strategy interventions on breastfeeding duration. In one review women receiving combined lay and professional support were less likely to cease breastfeeding by two months (RR 0.84; 95% CI 0.77, 0.92; $I^2=56%$) and less likely to cease exclusive breastfeeding (Britton et al., 2007), although this was only marginally more effective than non-combined support methods. Significant heterogeneity persisted amongst trials which included extra professional support, lay support and combining both professional and lay support (Britton et al., 2007).

Chung et al. (2008) concluded that combining “pre and postnatal interventions and inclusion of lay person support in a multicomponent intervention may be helpful” (p. 578) in increasing breastfeeding.

None of the meta-analyses conducted by Forster (2005) found any combined strategies that increased breastfeeding duration, although one of the reviews included in the Forster review did conclude that packages of interventions increased breastfeeding duration (de Oliveira, Camacho, & Tedstone, 2001).

Three of the recent trials investigated the effect of multi-strategy interventions. Two found an increase in breastfeeding duration (although both these studies had a high risk of bias) (Gill et al., 2007; Pugh et al., 2010), and one increased exclusivity only (Sandy et al., 2009).

Community outreach (inconclusive)

There is inconclusive evidence to support the use of community outreach programs which include professional and/or lay support in the community support to increase breastfeeding duration.

None of the included reviews specifically focused or reported on community outreach as a category. However, in a meta-analysis including professional and/or lay support strategies provided in the postnatal period (excluding trials in the US), Forster (Forster, 2005) reported increased breastfeeding at three months (weighted OR 1.26; 95% CI 1.05, 1.24), although this was not sustained at six months.

Of the new trials, Gill et al. (2007) and Pugh et al. (2010) demonstrated a significant effect on increasing breastfeeding duration, and Sandy et al. (2009) on breastfeeding exclusivity, from interventions which included formative evaluation, antenatal and postnatal professional support, with IBCLC home visits provided routinely (Pugh et al., 2010) or on request from the mother (Gill et al., 2007; Sandy et al., 2009).

Increasing breastfeeding in sub-populations assessed as at high risk of not breastfeeding

This review considered evidence of effect in sub-populations assessed as at high risk of not breastfeeding, however, not all reviews specifically report by sub-populations. Presented results should therefore be interpreted with caution.

The groups considered here include: women classified as having a low socioeconomic status (SES), young/adolescent mothers, women from culturally and linguistically diverse (CALD) backgrounds, Aboriginal and Torres Strait Islander women, mothers returning to work less than six months after giving birth, single mothers, and obese women.

Women classified as having a low socio-economic status

There is evidence to support inclusion of multi-strategy components (which include professional IBCLC support) in interventions to promote breastfeeding initiation and duration in women classified as having low SES.

In almost all settings, women of *lower* SES are *less* likely to commence and continue breastfeeding, and that is the case in Victoria. In the review by Dyson et al. (2005),

five studies of health education interventions in the USA in low income women (with varied breastfeeding intentions) did increase breastfeeding initiation (RR1.57; 95% CI 1.15, 2.15). Dyson et al. (2005) conclude that in groups of low-income women, needs-based, one-to-one, informal education in pregnancy, or the perinatal period, by professionals, or peers might be most effective at increasing breastfeeding initiation.

None of the reviews exploring breastfeeding duration presented meta-analyses specifically focused on low income women. Eight trials included in the systematic reviews of trials to support breastfeeding mothers (Britton et al., 2007) did not demonstrate any effect on breastfeeding duration in women categorised as low SES. Likewise Chung et al. (2008) included five trials (not included in previous reviews) amongst low income women which did not demonstrate a significant effect (Anderson, Damio, Young, Chapman, & Perez-Escamilla, 2005; Finch & Daniel, 2002; Forster et al., 2004; Lavender et al., 2005; Wolfberg et al., 2004).

Of the new trials, the majority were conducted among low income women, of which some found a significant effect in increasing initiation, duration or exclusivity of breastfeeding, (Gill et al., 2007; Hopkinson & Gallagher, 2009; Olson et al., 2010; Pugh et al., 2010; Sandy et al., 2009). Pugh et al. found a significant difference in breastfeeding from intensive home visiting and support at 6 weeks but not beyond, and concluded that “these findings demonstrate the effort it takes to effectively promote breastfeeding in low income mother’s lives . . . as mother’s lives get more complex after the early postpartum period, creative strategies for ways to sustain breastfeeding, perhaps through ambulatory clinic support, have yet to be determined” (Pugh et al., 2010, p. 20).

Young mothers

No reviews presented meta-analyses of interventions aimed specifically at young mothers, although this is a group who are less likely to commence and continue breastfeeding.

Two trials exploring strategies to increase breastfeeding in young mothers have not shown a difference. One tested postnatal midwifery home visits in Australia (Quinlivan, Box, & Evans, 2003) (included in two reviews: Britton et al. (2007) and

Chung et al. (2008), and the other tested peer support in the USA (Di Meglio et al., 2010); however, both were inadequately powered, so the results should be viewed with caution. A third trial demonstrated a significant increase in breastfeeding initiation amongst young women (aged 14-25 years) by providing greater continuity of antenatal care for women (as a small group) with greater participation in self care and structured education sessions (Ickovics et al., 2007).

One review conducted specifically about adolescent mothers (*excluded from this review as it included all study designs*) concluded that support provided by known and trusted individuals was important in this population group (Hall Moran et al., 2007). While this conclusion should not inform practice, it can provide guidance in terms of thinking about what strategies to explore in future research.

Women from culturally and linguistically diverse (CALD) backgrounds

There is a lack of evidence to recommend specific intervention components for women from CALD backgrounds.

Women from different cultural groups are not uniform in terms of their breastfeeding outcomes. That is, some groups are more likely to breastfeed than women born in Australia, and some are less likely to breastfeed. For those groups less likely to breastfeed, it is important to consider whether specific (different) strategies are required.

There were no reviews or studies identified which specifically addressed women from cultural backgrounds with low support for breastfeeding/without a breastfeeding culture. Within each review, however, there were trials aimed at specific cultural groups.

The most relevant trial to this review is the Australian study that aimed to increase breastfeeding initiation among Vietnamese-born women living in Sydney using a cultural and language specific education program. Breastfeeding initiation increased (OR 3.87; 95% CI 1.97, 7.65) as did breastfeeding at four weeks postpartum, but the difference was not sustained by six months (Rossiter, 1994).

Aboriginal and Torres Strait Islander women

There is no evidence to support recommendations for any specific interventions amongst Aboriginal and Torres Strait Islander women.

There were no trials identified in this search which specifically focused on Aboriginal and Torres Strait Islander women. Rates of breastfeeding in Indigenous populations have been noted to decrease with increasing proximity to urban areas, and to be similar to rates in women with lower SES in these population groups (House of Representatives Standing Committee on Health and Ageing, 2007). *Aboriginal Best Start* evaluations were not included in the report.

Quinlivan (2003) included a high proportion of teenage Aboriginal women in a trial of midwifery home visit support which did not demonstrate a significant effect.

Women returning to work

There is no evidence to support the recommendation of any specific interventions to promote breastfeeding amongst women returning to work within six months of giving birth.

A Cochrane review of mothers returning to work after birth was considered for inclusion in this review but *excluded* as the Cochrane authors identified no trials (Abdulwadud & Snow, 2007). No relevant trials were identified in the current search. Mills (2009) outlines workplace practices and policies which might support women to breastfeed in the workplace, however, these are not based on trial evidence.

Single mothers

This group is at increased risk of not commencing or continuing breastfeeding, however, there were no trials identified in this search which specifically focused on single mothers.

Obese women

This group is at increased risk of not commencing or continuing breastfeeding, however, there were no trials identified in this search which specifically focused on obese women.

Evidence within the Australian context

There is evidence that antenatal breastfeeding education increases breastfeeding initiation, but no local evidence of how to increase breastfeeding duration in our community.

Trial evidence

Only eight high quality trials have been conducted within Australia. These include three trials of antenatal education – one each in Melbourne (Forster et al., 2004), Perth (Duffy, Percival, & Kershaw, 1997) and Sydney (this trial targeted Vietnamese women) (Rossiter, 1994); one trial that offered support and education across the antenatal/postnatal periods in Newcastle (Redman et al., 1995); and four trials tested postnatal strategies – one of extended midwifery support in Perth (McDonald et al., 2010), one of midwife home visits to teenage mothers in Perth (Quinlivan et al., 2003), one of extra breastfeeding education and support in the postnatal ward in Adelaide (Henderson, Stamp, & Pincombe, 2001) and another in Perth evaluating the value of sending postnatal women a booklet on breastfeeding (Hauck & Dimmock, 1994).

Of the eight, only two had a sufficient sample size to find a 10% difference in breastfeeding if one existed (Forster et al., 2004; McDonald et al., 2010).

Only one trial increased breastfeeding initiation (Rossiter, 1994) and one increased breastfeeding at six weeks (Duffy et al., 1997), although this result was not replicated in the Melbourne trial that retested the intervention (Forster et al., 2004). None of the postnatal interventions increased breastfeeding duration.

Including the Australian trials exploring antenatal education in meta-analyses demonstrated that the interventions were effective in increasing breastfeeding initiation (weighted OR 2.5; 95% CI 1.53, 4.37) but not duration (weighted OR 1.17; 95% CI 0.86, 1.59) (Forster, 2005). A meta-analysis of three of the postnatal trials (Hauck & Dimmock, 1994; Henderson et al., 2001; McDonald et al., 2010), also showed no effect (weighted OR 0.83; 95% CI 0.65, 1.07) (Forster, 2005).

In the Australian context, looking at only Australian data, antenatal education is likely to increase breastfeeding initiation, but nothing has been consistently shown to

increase breastfeeding duration. This is supported by an *excluded review* conducted in South Australia (South Australia Breastfeeding Program, 2006) that concluded that many programs had no measurable impact on breastfeeding duration.

Other local initiatives

Designing the interventions in collaboration with the community and enhancing partnerships may increase the likelihood of success.

A number of local breastfeeding initiatives have included an evaluation, however, most of these evaluations have not been randomised and most have not used comparison groups, therefore the information gained from them should be used with caution – and there can be no associations drawn in terms of the impact on breastfeeding. However, evaluations that include a comparison group that have demonstrated a significant effect in breastfeeding could be considered to be pilot work for more formal evaluations. Examples of these, as well as other local evaluations with no control group, are presented below.

Best Start programs

The principles of *Best Start* interventions are to enhance community partnerships and design locally tailored interventions to support women, rather than specifying a 'one size fits all' intervention design. Within *Best Start* sites there are a higher proportion of women who are classified as “at risk” of not continuing to breastfeed (Kelaher et al., 2009).

A comparison study of breastfeeding rates in *Best Start* Local Government Areas (LGAs) compared with the rest of Victoria, demonstrated a significant increase in breastfeeding rates in *Best Start* areas, despite targeting the most socially disadvantaged communities in Victoria, in the rates of women fully breastfeeding at three months (OR 1.30; 95% CI 1.14, 1.47) and six months (OR 1.33; 95% CI 1.1, 1.61) (Kelaher et al., 2009). However, this was not consistent across all *Best Start* areas. LGAs where interventions appear to have a significant positive effect include Shepparton (intervention: development of a breastfeeding friendly city), and Maribyrnong (intervention: community outreach combined with education) (Rabin et

al., 2006). These results need to be interpreted with caution as the lack of randomisation in the study designs poses a high risk of bias.

Other initiatives and local evaluations

A local evaluation of a community-based strategy to improve children's health in Brimbank LGA found an increase in the Brimbank cohort (n=59) (49% fully breastfeeding at six months of age) compared to the local Sunshine municipality (35% fully breastfeeding at six months of age) (Centre for Community Child Health, 2009). This multi-faceted program focused on maximising community partnerships to meet outcomes, but again cannot be used to draw any conclusions.

Coffield (2008) evaluated the effect of home visits and telephone support provided by a MCHN/IBCLC in Kingston, Melbourne; there was no control group used for this evaluation. The rate of women fully breastfeeding increased from 32% at first contact to 44% two weeks after contacting the service. There was also a high demand (long waiting lists) for the service which was provided for 16 hours per week.

A *qualitative* study of factors associated with early breastfeeding cessation in Frankston, Victoria, identified factors which were consistent with previous evidence published elsewhere. i.e. the important role of quality midwifery assistance; women's knowledge and expectations; the key role of social influences; and the role of other health professionals outside hospital (Gilmour, Hall, McIntyre, Gillies, & Harrison, 2009).

A survey of women attending an outpatient breastfeeding clinic in Melbourne demonstrated approximately 87% of women were satisfied with the service (Chin & Amir, 2008).

A peer support program has been developed to support Vietnamese women in the City of Yarra to breastfeed, in response to identified cultural barriers to breastfeeding within this community. No published evaluation was identified.

Emerging ideas (no evidence)

During this project a number of emerging practices have been identified via the literature review as well as the consultation process. These are presented here for

consideration and make some contribution to the formulation of ideas for strategies that may increase breastfeeding in Victoria.

Drop-in centres

In the UK, drop-in centres or *Baby Cafes* (Baby Cafe Charitable Trust, 2010) have begun to emerge as part of a strategy to support breastfeeding. Drop-in centres offer informal flexible support for breastfeeding mothers who are invited to 'drop-in' when they need to, without making an appointment. The environment offers women an opportunity to talk with other women; however, no published articles which attempt to measure the effect were identified.

An evaluation report of the successful *Best Start* initiatives Maribyrnong recommends “a drop-in breastfeeding clinic could provide an alternative model for families who require additional support. This approach could be trialled in the first instance to see if it is viable” (Maribyrnong City Council, 2010).

The City of Melbourne LGA has run a breastfeeding drop-in centre since 2005 and a satisfaction survey indicated a high degree of satisfaction with the service (City of Melbourne, 2006).

Partners/fathers

A trial of support for fathers is currently being conducted in Perth, WA. Tohotoa (2009) conducted the exploratory design for this project and the major theme emerging was that 'Dads do make a difference'. Currently another initiative, a 'cotside' manual for fathers, is being used in several locations across Australia, but this has not been evaluated (Edwards, 2010).

Video-conferencing

This area is an emerging one in health care, however, no trials were identified that measured the impact of teleconferencing on breastfeeding. Lindberg et al. (2007) describes midwives' experiences of a one year pilot study of video-conferencing to support parents who were discharged early after birth in Sweden. This study found that video-conferencing was easy to handle and useful for making assessments, a

valuable and functional complement to usual practice, and almost like a real-life encounter (Lindberg et al., 2007).

Internet based interventions

One of the excluded systematic reviews (Pate, 2009) points to the potential of using internet-based interventions as a component of interventions to increase breastfeeding. Two studies using a before and after design (Huang et al., 2007; Salonen, Kaunonen, Astedt-Kurki, Jarvenpaa, & Tarkka, 2008) showed an increase in breastfeeding in the groups that participated in an internet-based intervention. These results are not robust, but provide preliminary pilot data to suggest further research in this area.

Relevant evidence outside the scope of this review

Three areas outside the criteria of this review that do have evidence related to breastfeeding are the impact of hospital policies (e.g. the Baby Friendly initiative), the education of health professionals, and strategies specifically aimed at preterm or very ill infants. These are discussed briefly here.

Baby Friendly Hospital Initiative (BFHI)

Many of the hospital-based interventions included in this review are part of the BFHI, which has been shown to be effective at increasing breastfeeding (e.g. antenatal education, early mother-infant contact, health professional education, and extra professional support). Several literature reviews (Bartick, Stuebe, Shealy, Walker, & Grummer-Strawn, 2009; Cramton, Zain-UI-Abideen, & Whalen, 2009; Forster & McLachlan, 2007) outline the evidence base for the 'Ten Steps' of the BFHI. One trial identified in this review (but excluded as it addressed the impact of hospital policies) did show a significant effect of hospital policies on breastfeeding (Manganaro et al., 2008).

Health professional education

A core component of the midwifery education curriculum is breastfeeding education; breastfeeding education is also part of the BFHI initiative. The evidence suggests health professional education alone (i.e. in addition to this core education) has no effect on breastfeeding initiation or duration (Forster, 2005).

Mothers of preterm, low birth weight or sick infants

A review of all trials which aimed to support breastfeeding mothers found the most consistent evidence of effect (reduced heterogeneity) on breastfeeding *duration* is trials that support mothers of sick infants to breastfeed within two to three weeks of discharge from a healthcare facility (RR 8.32; 95% CI 4.94, 14.01, $I^2=0\%$) (Britton et al., 2007).

Renfrew et al. (2009) conducted a systematic review of mothers of infants who were admitted to neonatal units. Short periods of skin-to-skin contact (kangaroo care) were most effective in increasing the duration of breastfeeding in this group; there was a significant effect of early skin-to-skin contact on breastfeeding for more than six weeks in mothers of preterm infants (RR 1.95; 95% CI 1.03, 3.70). Renfrew et al. (2009) also concluded that peer support groups were effective in supporting breastfeeding for mothers of babies admitted to the neonatal intensive care unit (NICU).

DISCUSSION

Eight systematic reviews and thirteen new trials are included in this literature review. Many factors make summarising these difficult, and particularly when considering which interventions might be effective in increasing breastfeeding in Victoria. Many trials were conducted in countries that have little relevance to the Victorian context – either because of underlying differences in breastfeeding rates, very different populations, or quite different health care systems and settings.

Increasing breastfeeding initiation

In populations such as Victoria where breastfeeding initiation is already relatively high, an increase in initiation is most likely to be achieved if those groups with low breastfeeding initiation are targeted. Strategies likely to increase *breastfeeding initiation* in Victoria (depending on the local population and setting) are:

- antenatal breastfeeding education;
- antenatal peer support programs;
- early mother-infant contact.

One new trial found that group antenatal care increased breastfeeding initiation for young women (Ickovics et al., 2007), but this has not been tested in a community such as Victoria, nor substantiated by another study.

Increasing breastfeeding duration

Increasing breastfeeding duration in communities with relatively high initiation of breastfeeding such as Victoria is difficult, and there is very little evidence to guide potential strategies. No interventions tested in Australia have substantially increased breastfeeding duration. Strategies that have been shown to make a difference in other countries that have potential to increase breastfeeding among those groups with lower breastfeeding rates in our community are:

- early skin-to skin-contact;
- peer/lay support (mixed evidence);
- professional support (mixed evidence);
- multi-strategy interventions (e.g. lay and professional support, antenatal and postnatal interventions, home visiting and hospital support) (increasing evidence);
- telephone support (mixed evidence).

Context and collaboration

It may be that strategies to increase breastfeeding are influenced by the context in which they are introduced, how they are introduced and by whom. It is important to consider these aspects when planning, implementing and evaluating new strategies.

In a cluster trial of community based support programs, while there were no overall significant results, Hoddinott et al. (2010) found that breastfeeding rates declined where the 'base tiers' were problematic – that is, negative aspects of 'place' such as unsuitable premises and geographical barriers to inter-professional communication, staff shortages, high workload and poor morale. In contrast breastfeeding rates increased where there was more evidence of leadership, a focus on policy, multi-disciplinary partnerships, and reflective action cycles. Hoddinott et al. (2010) advocate for an ethnographic approach, which acknowledges and addresses factors within the ecological context, when designing and evaluating complex interventions.

Similarly, Hector et al. (2005) argues that a systematic approach to identifying ecological factors which may be modifiable for intervention planning may help to increase the likelihood of developing a successful program.

Limitations

This review used a pragmatic approach, i.e. using existing systematic reviews as a basis, then searching for new trial evidence published since the reviews. This approach in itself has not impacted on the quality of the literature search and study identification. The search strategy did not include all possible interventions for increasing breastfeeding e.g. education of health professionals and policy-based interventions were not included, nor was the very specific population group of preterm and very unwell infants. These interventions were considered to be outside the criteria of the current review.

The review combined previous review evidence with evidence from new trials using narrative synthesis. Given the lack of evidence directly relevant to the Victorian context, as well as the significant heterogeneity amongst published reports, it would be of value to conduct a series of meta-analyses including only studies highly relevant to this context. However, this was also outside the scope of the current review.

Agreement with previous bodies of evidence in use in Victoria

The evidence presented in this review is consistent with the previous bodies of evidence being used as a basis for developing interventions to promote breastfeeding in Victoria: *Giving Breastfeeding a Boost* (Currie, Day, Edwards, & Liu, 2005); and *A Catalogue of Evidence* (Department of Education and Early Childhood Development, 2009a).

Giving Breastfeeding a Boost (Currie et al., 2005) outlines the evidence for community based approaches to improving breastfeeding rates. The report concluded that interventions which were successful at extending duration of breastfeeding were:

- peer support with backup from health care providers;
- small, interactive discussion and knowledge sessions for breastfeeding women and significant others;

- early interventions assisting women with decision-making about their infant feeding options;
- consistent advice and information for women.

A Catalogue of Evidence (Department of Education and Early Childhood Development, 2009a) recommends five key strategies based on a review of evidence. These include:

- multi-strategy, community based interventions;
- community outreach;
- health professional education initiatives;
- Baby Friendly Hospital Initiative;
- peer support.

CONCLUSIONS

Strategies likely to increase breastfeeding *initiation* in Victoria (depending on the local population and setting) are:

- antenatal breastfeeding education;
- antenatal peer support programs; and
- early mother-infant contact.

Hospital-based interventions which are most likely to be effective are already included as components of the BFHI. Written information alone has not been shown to be effective in increasing breastfeeding initiation.

Strategies likely to increase breastfeeding *duration* in Victoria (depending on the local population and setting) are:

- early skin-to skin-contact;
- peer/lay support (mixed evidence);
- professional support (mixed evidence);

- multi-strategy interventions (e.g. lay and professional support, antenatal and postnatal interventions, home visiting and hospital support) (increasing evidence);
- telephone support (mixed evidence).

However, given the inconsistency in the evidence for increasing duration, developing interventions within a conceptual framework which recognises women's needs and the ecological context may increase the likelihood of success, particularly within low SES subpopulations.

IMPLICATIONS FOR PRACTICE AND RESEARCH

To increase breastfeeding at a population level it is likely that targeting those groups who are less likely to initiate and/or continue breastfeeding is the method most likely to have positive results.

Early mother-infant contact should be part of routine hospital care, as should antenatal breastfeeding education. Antenatal peer support programs could be considered for those groups who are less likely to commence breastfeeding (although this area needs further research in the local context).

Very few strategies that have been tested are relevant to the Victorian setting, and there are very few strategies that could be said to be effective in increasing breastfeeding maintenance. The few RCTs conducted within the Australian context have not increased breastfeeding duration. A number of evaluations of local breastfeeding projects (often incorporating partnership models) have been undertaken in Victoria, however, results of these need to be interpreted with caution as they have generally lacked concurrent comparison groups.

In view of the relatively high proportion of women commencing breastfeeding in Victoria, future studies aiming to increase breastfeeding initiation should focus on groups who are at increased risk of low initiation. Apart from these more vulnerable groups, research in Victoria should focus on increasing the proportion of women who continue to breastfeed for at least six months. Future studies should include adequate sample size; follow-up to at least six months; economic evaluation; clear breastfeeding definitions; and importantly, input from women (that is, potential

participants) about intervention design, particularly in light of the broad contexts in which breastfeeding takes place.

CONSULTATION PROCESS

Anecdotally, Victoria has a number of community based initiatives operating at both regional and local levels which are designed to assist mothers and infants to maintain breastfeeding. These initiatives exist over and above the standard care procedures, although some are linked with breastfeeding services operated by many Victorian maternity hospitals, and are frequently tailored to specific community needs and resources. Accordingly, community breastfeeding services are many and varied.

To date, information about existing community based initiatives has not been collated, nor has any information concerning the assessment (formal or informal) of individual interventions been assembled. This represents a gap in knowledge regarding what is happening in Victoria concerning the protection, promotion and support of breastfeeding in terms of the provision and effectiveness of interventions.

To address this knowledge gap, a consultative process with relevant stakeholders was undertaken as part of the Victorian Breastfeeding Research Project.

AIMS OF THE CONSULTATION PROCESS

The aim of the consultation process was to explore current breastfeeding initiatives operating in Victoria; the focus being to investigate those that exist in addition to standard care regimes, and operate outside the hospital based system. The specific goals were:

- ⇒ to document breastfeeding initiatives known to be operating in Victoria;
- ⇒ to investigate what assessment of these breastfeeding initiatives have been undertaken (formal or informal);
- ⇒ to explore the views of relevant key stakeholders concerning what initiatives they perceive as being most effective for mothers.

METHODS

A two-stage consultation process was undertaken to assess current breastfeeding initiatives in Victoria – one *targeted* and the other a *systematic* approach. This methodology was not able to deliver a complete list of all relevant programs; however, it was designed to provide significant background information about the operation of breastfeeding initiatives at the Regional and LGA level within a relatively short timeframe.

Targeted approach

During the targeted consultative process, representatives from known key projects and service providers (including relevant LGAs, ABA representatives, and MCHNs) were approached and invited to be interviewed, either in-person or via the telephone; some correspondence also occurred using email dialogue. Information was sought concerning: the nature of existing, or recently existing, interventions; what evaluation of these interventions had been undertaken (formal or informal); and participants' views about what interventions were considered to be most effective for mothers. Participants were also asked whether they were aware of other breastfeeding initiatives and/or other key stakeholders whose input would be beneficial. These 'leads' were followed up and further interviews conducted, hence recruitment comprised both 'networking' and 'snowballing' techniques. The interviews were voluntary, informal, and conducted by members of the research team (AM and CC) in April 2010. Although participants voluntarily identified themselves (to facilitate follow up and clarifications) identification details were not given to the DEECD, and results are reported in a de-identified manner.

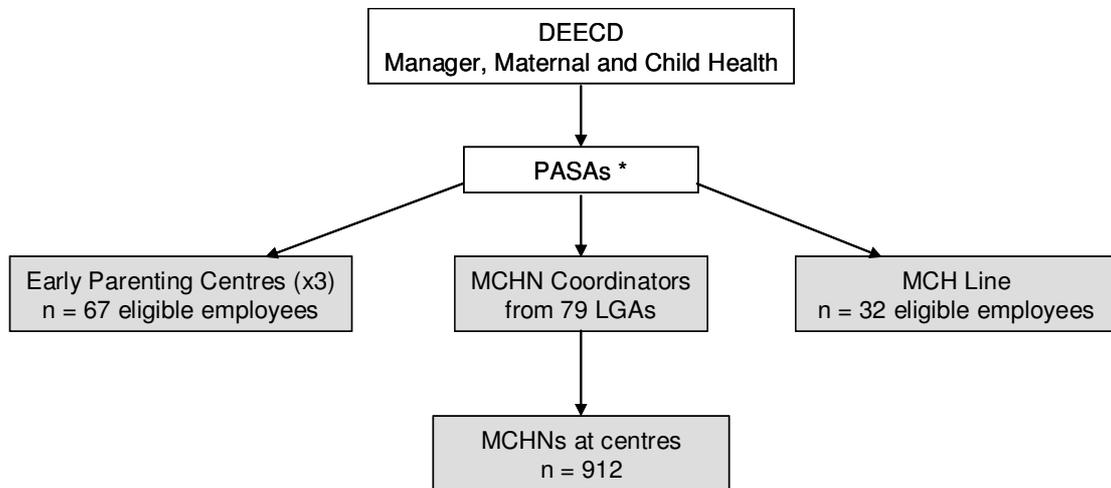
Systematic approach

All MCHNs, and other health professionals employed to work in the Victorian Maternal and Child Health Service, were eligible to complete an online survey as part of the systematic approach to data gathering. There are a total of 1,090 people who met these criteria – 912 MCHNs, 79 MCHN co-ordinators, 67 people employed in Early Parenting Centres and 32 people employed at the Victorian Maternal and Child Health Line (Toni Ormston, personal communication, April 2010).

The survey aimed: to investigate knowledge of, and experience with, any breastfeeding initiatives; to ascertain what assessments (formal or informal) of these initiatives had occurred; and explore practitioners' views concerning what initiatives might be of value to increase breastfeeding. It was designed for use as an online survey, and 'SurveyMonkey' (2010) was used; a mixture of fixed-choice and open-ended questions were included. The survey questions, and response frequencies for each question, are outlined in Appendix 6, with coding of the free-text responses described in Appendix 7.

Recruitment occurred via email invitation. On 14 April 2010 an email inviting recipients to participate in an online survey (a web link to the survey embedded in the email) was sent to the Manager, Maternal and Child Health DEECD, who then forwarded the invitation to the regional Program and Service Advisors (PASAs). The PASAs forwarded it to eligible employees in Early Parenting Centres and the Maternal and Child Health Line as well as MCHN coordinators, the later sending the email on to MCHNs in MCH centres. Flow of the email invitation is illustrated in Figure 6. Two follow-up reminders were emailed via this 'email tree' pathway, one week and two weeks after the initial invitation. The second (and final) reminder informed eligible recipients that the survey had been extended for 10 days; the web survey was closed on 3 May 2010.

Figure 6: Flow of email invitation to eligible MCHS employees.



* PASAs: Program and Service Advisors

** Shading indicates employees were eligible to participate in the survey.

Participation was voluntary and many respondents willingly identified themselves in the event that the research team might wish to contact them for further information about any identified projects. The identification details were held by the research team only; it was not available to the DEECD, and only de-identified data are presented in the report.

Approval to conduct the survey was received from the Manager, Maternal and Child Health, Department of Education & Early Childhood Development (Anne Colahan, personal correspondence, 14 April, 2010).

RESULTS AND DISCUSSION

Participants

Targeted approach

Around 27 people were contacted and participated in the targeted consultative process; some were contacted more than once (as required) and no one declined the invitation. Participants included clinicians, team leaders/supervisors, and people holding executive positions in relevant organisations. As well, both city and regional

areas were represented. In addition to the interviews, two site visits were conducted: the Melbourne City Council 'drop in' breastfeeding clinic and the Victorian Aboriginal Community Controlled Health Organisation.

From the targeted approach, only information pertaining to the existence of breastfeeding initiatives, and the evaluations of these programs, will be presented in this report.

Systematic approach

Overall 347 (32%) of an eligible 1,090 MCHS employees responded to the online survey; 30% were working full-time.

The respondents described various positions as their main area of work: 78% (n = 271) were MCHNs; 11% (n = 38) were MCHN coordinators, 5% (n = 17) were midwives, 3% (n = 9) were lactation consultants, 3% (n = 11) designated their main area of work as 'other' and one mothercraft nurse/early childhood worker responded.

As a group the participants held a breadth of qualifications, most participants having multiple qualifications – currently in Victoria the MCHN qualification is the Postgraduate Diploma of Nursing Science in Child, Family and Community and a prerequisite for this course is that an applicant must be currently registered as a Division 1 Nurse (or the equivalent), hold an unrestricted midwifery qualification (hospital-based midwifery training is acceptable), and recently have had at least one years clinical practice experience (La Trobe University, 2010).

In total 95% (n = 330) of respondents held a MCHN qualification, 87% were qualified midwives and 74% were nurses (note: it is possible that not all MCHN listed *all* their additional qualifications). In addition, 29% (n = 102) were qualified as a lactation consultant (IBCLC), and a further 2% (n = 8) indicated their IBCLC certification had lapsed. The other common qualification amongst the group was that of Nurse Immuniser – 5% (n = 18).

Most respondents (76.3%, n = 264) worked in a Maternal and Child Health Centre. When asked what municipality they worked in, 331 (95% of all participants)

responded, ‘municipality’ being interpreted as area of work by some participants. There results are summarised in Table 8.

Table 8: Municipality/area of work for respondents

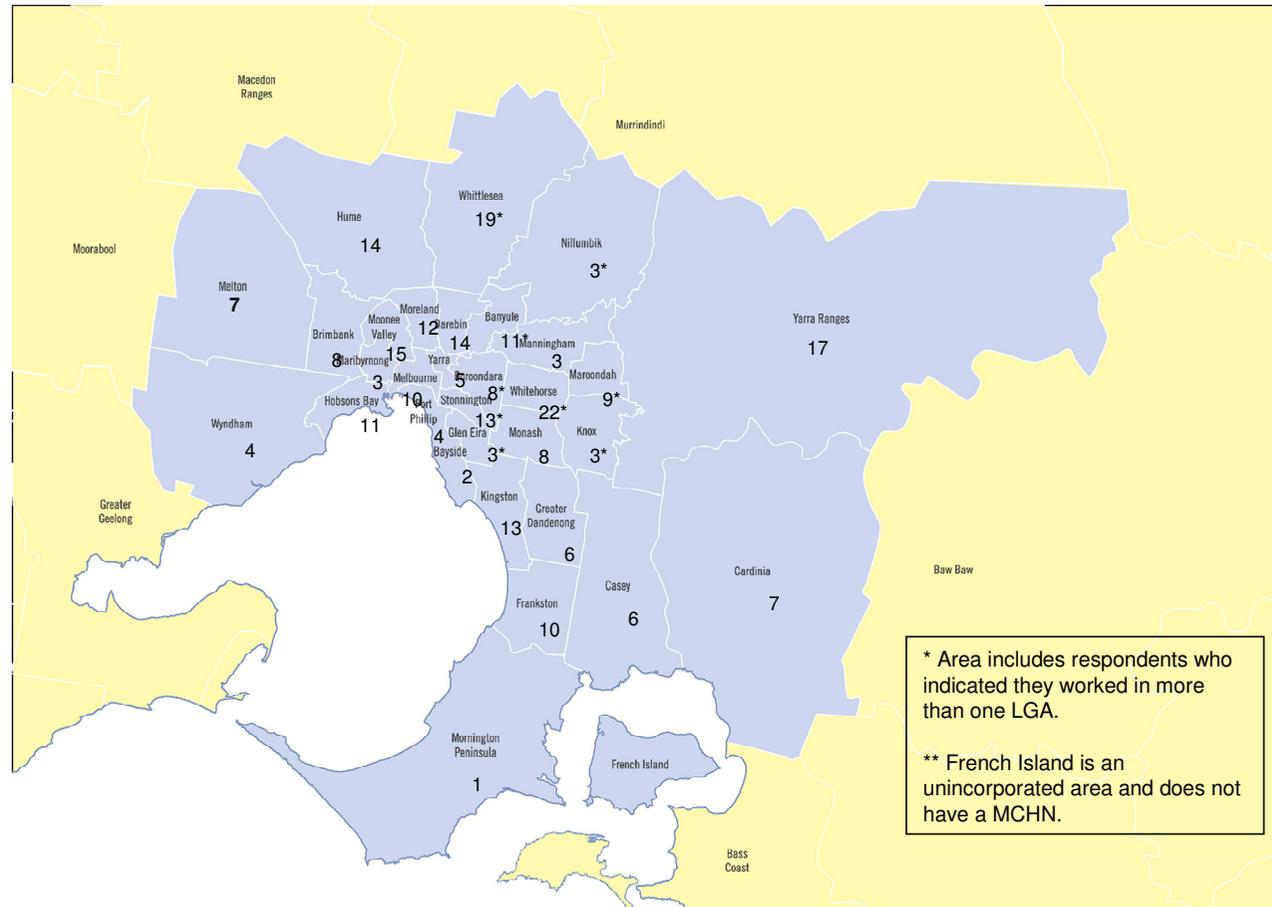
Area	Number of respondents
LGA	326
Maternal and Child Health Line	3
DEECD	2
COM*	1
Eastern metropolitan	1
Local Government	1
State-wide	1
State-wide west	1

*COM not specified, presumably City of Melbourne.

Response rate for question = 95%, 24 participants indicated they worked in two or more municipalities/area of work (the maximum number given was four).

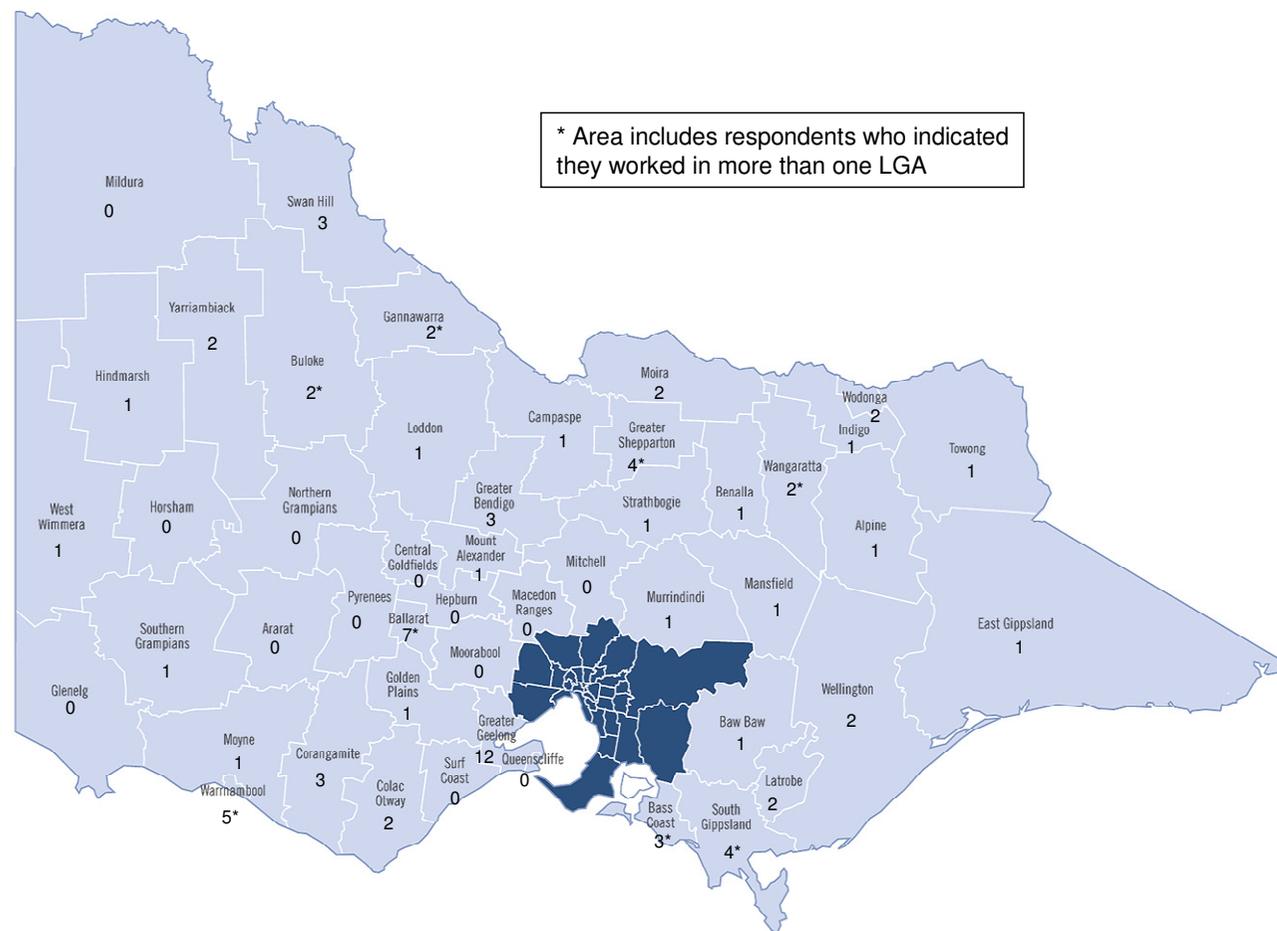
Maps illustrating how many responses were received from each metropolitan and regional and rural LGA (where identifiable) are shown in Figure 7 and Figure 8. All 31 Melbourne metropolitan LGAs were represented, and 35 of the 48 regional and rural LGAs were represented. This left a corridor across the central west of the state where responses were limited.

Figure 7: Number of respondents working in each metropolitan LGA



Source: Map from Municipal Association of Victoria (2010a).

Figure 8: Number of respondents working in each regional LGA



Source: Map from Municipal Association of Victoria (2010b).

Breastfeeding services in the community

The breastfeeding support services (in addition to the usual MHCN service) that were identified through the systematic consultative process were:

- hospital based breastfeeding services;
- MCHN enhanced home visiting service;
- MCHN dedicated breastfeeding services;
- community health centre breastfeeding services;
- ABA special projects.

In addition, some respondents also indicated that there were 'other' non-specified breastfeeding support services available. Collectively, services were administered by MCHNs, midwives, lactation consultants, ABA counsellors, trained peer support people and other mothers as appropriate for the particular service.

The survey also revealed that current breastfeeding services operate using a range of service delivery styles. These comprise: drop-in services, booked short appointments lasting one to two hours, day stay appointments and in-home visiting from an appropriate health professional.

Specific examples of *service* and *delivery style* combinations which were frequently referred to by participants included: home visiting through the EHVN Enhanced home visiting nurse (EHVN) program; short appointments for mothers in a dedicated MCHN breastfeeding service; and day stay visits for mothers and babies in a hospital based breastfeeding service.

It is not uncommon to find that particular breastfeeding services are only available to certain groups of women, and this was confirmed by survey participants. For example, respondents reported that initiatives offered by the MCHN service, such as the EHVN service and the dedicated MHCN breastfeeding service, were predominantly for the women of that municipality. Hospital-based services, on the other hand, were identified as being for babies of a certain ages (for example up to three months of age) or for babies born at that hospital.

Respondents also described a limited number of specialised initiatives targeting women with additional needs. Of particular note were those designed to assist young mothers, women with special needs, women from culturally and linguistically diverse backgrounds, and Aboriginal and Torres Strait Islander women. For each of these target groups there were reports of MCHN dedicated breastfeeding services, MCHN enhanced home visiting, community health centre breastfeeding services, hospital based services, and ABA special projects.

Findings from the systematic consultative approach were combined with results from the targeted approach and collectively they revealed that many breastfeeding services are operating in Victoria. These are summarised in Table 9.

The LGAs with ‘any’ breastfeeding rates at or below the state average at three months (the state average at three months being 60.5%) were of particular interest and a more detailed examination of the services offered in these areas is outlined in Table 10.

Evaluation of existing breastfeeding services

In around one third of the LGAs where breastfeeding services were operating evaluation of the services had been undertaken (see Table 9). In the majority of cases this was a customer evaluation, formal evaluation of the effect of the services was not carried out.

Local evaluations of existing breastfeeding services and/or initiatives (including evaluations of Best Start programs) are described in the literature review.

Table 9: Breastfeeding interventions described during the consultative process (targeted and systematic)

Local Government Area	Extra Health Professional support		Other BF support			BF education			Other		Written evaluation	Best Start site
	Extra HP: home based	Extra HP: centre based	Peer support	Drop in centre	Telephone support	Women	Health professional	Community	Social campaign	CALD, Aboriginal or young mothers		
METROPOLITAN												
Banyule City	✓	✓	✓	.	.
Bayside City
Boroondara City	✓	✓	✓	.	.
Brimbank City	✓	✓	.	.	.	✓	✓	.	.	✓	✓	✓
Casey City	✓	✓	✓	.	.
Darebin City	✓	✓	✓	.	.	✓	.	.
Frankston City	✓	✓	✓	.	✓	.	✓
Glen Eira City	.	✓
Greater Dandenong City	✓	✓	✓	✓	.	.	.	✓	.	✓	.	✓
Hobsons Bay City	✓	✓	✓	✓	.	.
Hume City	✓	✓	✓	.	.
Kingston City	✓	✓	.	✓	✓	✓	✓	✓	.	✓	✓	.
Knox City Council	✓	✓	✓	.	.
Manningham City	✓	✓	.	.
Maribyrnong City	✓	✓	✓	✓	.
Maroondah City	✓	✓	✓	.	.
Melbourne City	✓	✓	.	✓	✓	✓	.
Melton Shire	✓	✓	✓		✓
Monash City	✓	✓	✓	.	.

Local Government Area	Extra Health Professional support		Other BF support			BF education			Other		Written evaluation	Best Start site
	Extra HP: home based	Extra HP: centre based	Peer support	Drop in centre	Telephone support	Women	Health professional	Community	Social campaign	CALD, Aboriginal or young mothers		
Moonee Valley City	✓	✓	✓	.	.
Moreland City	✓	✓	✓	.	.
Mornington Peninsula Shire	.	✓	✓		✓
Nillumbik Shire	✓	✓	✓	.	.
Port Phillip City	✓	✓
Stonnington City	✓	✓	✓	.	.
Whitehorse City	✓	✓	✓	.	.
Whittlesea City	✓	✓	✓	.	✓
Wyndham City	✓	✓	.	.	.	✓	✓	✓	.	✓	✓	✓
Yarra City	.	.	✓	.	.	✓	.	.	.	✓	✓	.
Yarra Ranges Shire	.	✓	✓	✓	.
REGIONAL												
Alpine Shire	✓	✓
Ararat Rural City
Ballarat City	✓	✓	.	.	.	✓	✓	✓	✓	✓	✓	✓
Bass Coast Shire Council	✓	✓	.	✓
Benalla Rural City	.	✓
Buloke Shire
Campaspe Shire
Central Goldfields Shire
Colac Otway Shire	✓	✓	✓	.	.
Corangamite Shire	✓	✓	✓	.	.

Local Government Area	Extra Health Professional support		Other BF support			BF education			Other		Written evaluation	Best Start site
	Extra HP: home based	Extra HP: centre based	Peer support	Drop in centre	Telephone support	Women	Health professional	Community	Social campaign	CALD, Aboriginal or young mothers		
East Gippsland Shire	✓	✓	.	✓
Golden Plains Shire	✓	✓	.	.
Greater Geelong City inc Barwon Health	✓	✓	.	.	.	✓	.	.	.	✓	.	✓
Latrobe City Council	.	✓	✓	.	✓
Mitchell Shire
Northern Grampians Shire
Pyrenees Shire
Southern Grampians	✓	✓	✓	.	.
Strathbogie Shire	✓	✓	✓	.	.
Swan Hill Rural City	✓	✓	.	.	.	✓	.	.	.	✓	.	.
Wangaratta Rural City	.	✓	✓	.	.
Warrnambool City	✓	✓	✓	.	.
Wellington Shire	✓	✓	✓	.	.
Wodonga Rural City	.	✓	✓	.	.	✓	.	.
Baw Baw Shire	✓	✓	✓	.	.
Cardinia Shire	✓	✓	✓	.	✓
Greater Bendigo City	.	✓	✓	.	.
Indigo Shire	✓	✓	.	.
Queenscliffe Borough
South Gippsland Shire	✓	✓	.	.
Surf Coast Shire

Local Government Area	Extra Health Professional support		Other BF support			BF education			Other		Written evaluation	Best Start site
	Extra HP: home based	Extra HP: centre based	Peer support	Drop in centre	Telephone support	Women	Health professional	Community	Social campaign	CALD, Aboriginal or young mothers		
Towong Shire
West Wimmera Shire
Yarriambiack Shire	.	✓	✓	.	.
Glenelg Shire
Greater Shepparton City inc Goulburn Valley Health	✓	✓	✓	.	.	✓	.	.	.	✓	.	✓
Hindmarsh Shire	✓	✓
Horsham Rural City
Loddon Shire	✓	✓	.	.
Macedon Ranges Shire
Mildura Rural City	✓	.	✓	✓	✓	.	.
Moorabool Shire
Gannawarra Shire
Hepburn Shire
Mansfield Shire	✓
Moira Shire	✓	✓	✓	.	.
Mount Alexander Shire
Moyne Shire	✓	✓	✓	.	.
Murrindindi Shire	.	✓	✓	.	.

Note: these initiatives are in addition to any in-patient hospital based breastfeeding service and the universal KAS visits with MCHN or EHVN.

HP: Health professional.

Extra HP home based – LC or dedicated MCHN visiting women in their home for the purposes of a breastfeeding consultation.

Extra HP: centre based – a dedicated MCHN or LC breastfeeding session at a service.

Peer support – trained peer support.

Drop-in centre – centre based session (no appointment necessary) for women to seek BF advice from HPs or trained peers (ABA).

Telephone support – HP delivered.

Breastfeeding education for women either in the antenatal or postnatal period.

Health professional education – education for doctors, midwives, MCHNs specifically on breastfeeding (in addition to routine training).

Community education – education that is directed at broader community not just pregnant or breastfeeding women.

Social campaign – locally based advertising and marketing of the benefits etc of breastfeeding – multi- modal.

Evaluated – any evaluation of the initiative available.

Best Start site – Best Start is a Victorian government initiative which aims “to improve the health, development, learning and wellbeing of all Victorian children supporting communities, parents and service providers to improve universal early years services so they are responsive to local needs.” (Department of Human Services, , p 1). One of the Best Start Indicators is “increased rate of breastfeeding.” (Department of Human Services, , p 4).

Table 10: Breastfeeding projects reported in LGAs with percentage of *any* breastfeeding at or below the state average at three months (the state average at three months = 60.5%)

Local Government Area	'Any breastfeeding' Number at discharge 2008-2009	'Any breastfeeding' Rate (%) at three 3 months 2008-2009	Breastfeeding initiatives identified by the research team – informed by the <i>targeted</i> consultative process. <i>Breastfeeding initiative identified from systematic consultative process (survey of MCHNs 2010).</i>
State-wide n = 72,182	61,953	60.5%	
Hume	2,067	48.6%	Lactation consultant home visiting. Partnership with Tweddle. Currently ongoing with Tweddle and Communities for Children funding. <i>Breastfeeding services at Craigieburn Health Service & The Northern Health, hospital based BF service, EHVN, MCHN dedicated BF service, ABA project.</i>
Whittlesea	1,829	50.7%	Best Start. <i>EHVN, ABA special project, hospital and CHC breastfeeding service, Tweddle at Craigieburn.</i>

Local Government Area	'Any breastfeeding' Number at discharge 2008-2009	'Any breastfeeding' Rate (%) at three 3 months 2008-2009	Breastfeeding initiatives identified by the research team – informed by the <i>targeted</i> consultative process. <i>Breastfeeding initiative identified from systematic consultative process (survey of MCHNs 2010).</i>
Brimbank	2,088	48.6%	<p>Best Start (BS) with ABA representation on BS committee. In home breastfeeding IBCLC support, antenatal support, multilingual breastfeeding resources, education for health professionals.</p> <p><i>Hospital based breastfeeding service, EHVN, MCHN dedicated BF service, ABA special project, Communities for Children, Brimbank Best Start plus ISIS Primary Care provide in-home breastfeeding support. Tweddle Child and Family Health Service also provides residential and day stay programs where families can receive support and assistance with breastfeeding.</i></p>
Wyndham	2,035	48.6%	<p>Best Start. Health professional's seminar day Feb 2010. Breastfeeding books to libraries, needs survey (not analysed) of women in community – current.</p> <p><i>Hospital based BF service, EHV MCHN.</i></p>
Melton	1,350	39.9%	<p>Best Start – with ABA representation.</p> <p><i>Home visiting lactation consultant service, MCHN lactation consultant service, Tweddle feeding and settling service, EHVN.</i></p>

Local Government Area	'Any breastfeeding' Number at discharge 2008-2009	'Any breastfeeding' Rate (%) at three 3 months 2008-2009	Breastfeeding initiatives identified by the research team – informed by the <i>targeted</i> consultative process. <i>Breastfeeding initiative identified from systematic consultative process (survey of MCHNs 2010).</i>
Cardinia	823	54.0%	Best Start <i>Hospital based breastfeeding service, EHVN, MCHN dedicated breastfeeding service, ABA support group, hospital based service outside the shire.</i>
Casey	3,487	55.6%	— <i>Enhanced home visiting MCHN, Hospital based breastfeeding service, Community breastfeeding service, MCH dedicated breastfeeding service, lactation consultation employed by LGA</i>
Frankston	1,504	49.1%	— <i>Hospital based breastfeeding service, community breastfeeding service, local ABA, enhanced home visiting MCHN, local research project, distribution of breastfeeding friendly map.</i>
Mornington Peninsula	1455	56.0%	Best Start <i>Hospital based breastfeeding service.</i>

Local Government Area	'Any breastfeeding' Number at discharge 2008-2009	'Any breastfeeding' Rate (%) at three 3 months 2008-2009	Breastfeeding initiatives identified by the research team – informed by the <i>targeted</i> consultative process. ----- <i>Breastfeeding initiative identified from systematic consultative process (survey of MCHNs 2010).</i>
Greater Geelong	2,251	56.0%	<p>Best Start. Rosewall</p> <p>Barwon Health- 2 standard extended postnatal care visits then home referral service with options 1 or 2</p> <p>1. Refer to Barwon Health BF service. No charge</p> <p>2. Refer to private LC for 1m through home referral service funding. (Good for health and cultural confined and women with babies that are marginally preterm etc.)</p> <p>Also midwifery group practice 25% women. See women to 2 weeks. (Usual discharge time is 72hrs.)</p> <p>-----</p> <p><i>Hospital based breastfeeding service, EHVN MCHN, ABA project</i></p>
Warrnambool	349	57.2%	<p>—</p> <p>-----</p> <p><i>EHVN MCHN, hospital based, MCH dedicated breastfeeding service by midwife.</i></p>
Glenelg	176	56.7%	<p>—</p> <p>-----</p> <p><i>No responses from this LGA.</i></p>
Southern Grampians	179	57.5%	<p>—</p> <p>-----</p> <p><i>Hospital based BF service.</i></p>

Local Government Area	'Any breastfeeding' Number at discharge 2008-2009	'Any breastfeeding' Rate (%) at three 3 months 2008-2009	Breastfeeding initiatives identified by the research team – informed by the <i>targeted</i> consultative process. ----- <i>Breastfeeding initiative identified from systematic consultative process (survey of MCHNs 2010).</i>
La Trobe	830	48.0%	Best Start, Aboriginal Best Start. ----- <i>Hospital based BF service.</i>
Wellington – CGHS	398	54.7%	— ----- <i>EHVN MCHN, hospital based.</i>
Wellington – YDHS	32	51.3%	— ----- <i>No responses from this LGA.</i>
East Gippsland – GLCH	333	56.3%	Aboriginal Best Start. ----- <i>EHVN MCHN, ABA special project.</i>
Northern Grampians	122	54.0%	— ----- <i>No responses from this LGA.</i>
Ararat	115	55.0%	— ----- <i>No responses from this LGA.</i>
Hindmarsh	53	40.0%	— ----- <i>MCHN dedicated breastfeeding service, EHVN MCHN, hospital based BF service.</i>
Moorabool	287	53.3%	— ----- <i>No responses from this LGA.</i>
Golden Plains	178	56.7%	— ----- <i>EHVN MCHN.</i>
Hepburn	136	59.6%	— ----- <i>No responses from this LGA.</i>

Local Government Area	'Any breastfeeding' Number at discharge 2008-2009	'Any breastfeeding' Rate (%) at three 3 months 2008-2009	Breastfeeding initiatives identified by the research team – informed by the <i>targeted</i> consultative process. ----- <i>Breastfeeding initiative identified from systematic consultative process (survey of MCHNs 2010).</i>
Ballarat	1,025	50.6%	<p>Best Start. Breastfeeding advertising campaign, breastfeeding education for health professionals, community breastfeeding forums, feed/change tents at community events.</p> <p><i>Hospital based breastfeeding service, EHVN, CHC breastfeeding service, Body Wise Birth Services offer breastfeeding education and overnight in home support, private hospital with dedicated BF support service.</i></p>
Greater Shepparton –GVH	829	51.4	<p>Best Start- with ABA representation Arabic peer support. BF education classes with ABA.</p> <p>----- <i>Day-stay lactation support, next to Maternal & Child Health Centre, funded by Goulburn Valley Health EHVN</i></p>
Benalla	109	52.9	<p>—</p> <p>----- <i>Hospital based breastfeeding service (? accessing Wangaratta as respondent working in both areas).</i></p>
Strathbogie	59	57.3	<p>—</p> <p>----- <i>MCHN dedicated breastfeeding service, EHVN MCHN, hospital based BF service.</i></p>
Murrindindi	69	48.4	<p>—</p> <p>----- <i>CHC breastfeeding service.</i></p>

Local Government Area	'Any breastfeeding' Number at discharge 2008-2009	'Any breastfeeding' Rate (%) at three 3 months 2008-2009	Breastfeeding initiatives identified by the research team – informed by the <i>targeted</i> consultative process. <i>Breastfeeding initiative identified from systematic consultative process (survey of MCHNs 2010).</i>
Wodonga	424	54.3	Aiming for all MCHNs to be lactation consultants <i>Albury – Wodonga Parents and Babies Unit.(NSW) Wangaratta Vic.</i>
Mitchell	402	57.5	— <i>No responses from this LGA.</i>
Moira	365	59.3	— <i>EHVN MCH, CHC breastfeeding service, hospital based breastfeeding service.</i>
Wangaratta	270	57.2	— <i>Hospital based BF service.</i>
Swan Hill	298	56	Robinvale (5 years ago feasibility study, now ongoing) – antenatal care & antenatal classes, MHCN, and domiciliary service provided by two midwives/MCHN (cover each other), one day week obstetrician from Mildura. <i>EHVN MCHN, ABA.</i>
Central Goldfields	106	50.3	— <i>No responses from this LGA.</i>
Buloke	53	57.9	— <i>Respondent worked over 5 LGAs.</i>
Greater Bendigo	1,117	52.2	— <i>Hospital Based and ABA.</i>
Campaspe	377	46.9	— <i>No responses from this LGA.</i>

Local Government Area	'Any breastfeeding' Number at discharge 2008-2009	'Any breastfeeding' Rate (%) at three 3 months 2008-2009	Breastfeeding initiatives identified by the research team – informed by the <i>targeted</i> consultative process. <i>Breastfeeding initiative identified from systematic consultative process (survey of MCHNs 2010).</i>
Mildura	645	54.3	Best Start. Development of breastfeeding information for Aboriginal women. <i>No responses from this LGA.</i>
Gannawarra	112	55.7	— <i>Respondent worked over 5 LGAs.</i>

Note : The consultation process was not able to deliver a complete list of all breastfeeding initiatives.

CHC: Community health centre.

(Best Start sites with an increased rate of breastfeeding indicator. Referenced from the Best Start indicators summary February 2010.)

Practitioner views about breastfeeding initiatives

Practitioner views about effective breastfeeding initiatives were canvassed in the systematic consultative process via open ended survey questions (written comments submitted as part of the online survey). Content analysis was conducted to identify emergent themes which are described below. Quotes have been used as illustrations and these are copied verbatim except for the correction of obvious spelling errors and some abbreviations.

Effective services

Practitioners (survey participants) generally thought breastfeeding services aimed at assisting women with breastfeeding were beneficial, particularly in the first weeks postpartum. However, a few respondents commented that the effectiveness of initiatives did depend on a mother's needs:

“All programs that support breastfeeding are useful.”

“I think they [breastfeeding programs or support services] all help to a degree.”

“Anything possibly better than nothing.”

“All are effective some more so than others depending the needs.”

In general, the services which were considered to be most effective were:

- ‘home visiting’ – dedicated home based visiting by a skilled breastfeeding practitioner for the purpose of supporting and enhancing breastfeeding. This can be part of MCHNs responsibility, or an additional service provided to at risk families through an EHVN (whose responsibilities go beyond breastfeeding support) or lactation consultant.
- ‘breastfeeding centres’ – including ‘day stay’ and ‘short appointment’ programs designed to help mothers and babies with breastfeeding. These can operate at a hospital level, a community level, or as a partnership between the two. However, recent changes to funding models for hospital day stay programs have seen some hospitals reviewing their model of service provision in this area, some no longer offering day stay appointments. Breastfeeding centres are not available in all

LGAs, nevertheless, it was clear from this study that many practitioners valued the breastfeeding assistance these services provide to mothers and babies.

These same two services, ‘home visiting’ and ‘breastfeeding centres’, were also regarded as being potentially effective breastfeeding interventions where they were not already operating in respondent’s locales.

The features that emerged as being important characteristics of effective breastfeeding programs included: the provision of one-to-one support for mothers, giving mothers early and quick access to support, providing follow-up to mothers who participated in breastfeeding programs, and being a local service.

Ineffective services

Participants’ responses as to what programs or services were *ineffective* were diverse and, at times, appeared to be contradictory. The two more frequently mentioned were ‘hospital based’ programs (referred to by 13/179 respondents) and services offering ‘short appointments’ to mothers and babies (referred to by 10/179 respondents). However, reorientating these responses may also provide insights into what participants thought were *effective* services. From this perspective, some respondents possibly regard breastfeeding programs that operate within a family’s local community and/or home as more effective than those situated in a hospital setting. Other participants potentially consider day stay programs more effective than services that only offer short appointments.

In keeping with the diversity of responses participants gave concerning what services were ineffective, views about why services were less than successful generally did not relate to flaws with particular breastfeeding programs, but rather to broader problems that existed across services. A lack of consistency in the information provided to women was identified as one problem area. However, it was not always clear whether this was what mothers were reporting to participating health professionals, whether this was participants own views, or both. When describing why services are not effective respondents stated:

“Lack of consistency.”

“Confusing information and lack of empowering.”

“Confusion, make women feel aren’t doing it right, get criticized.”

“Mothers comment about conflicting information given by midwives to them in hospital about breastfeeding practices.”

“Too many ways not standard practice in hospitals.”

“Fragmented – as in provided by staff with many different education backgrounds (e.g. child care workers do not have the same philosophy on breastfeeding as lactation consultants).”

Another perceived problem that emerged was the lack of *access* mothers have to breastfeeding services. Access difficulties were described in three ways. Firstly, there was concern that mothers are not able to *access* services early enough in the postpartum period:

“Mums need help in home and when just home from hospital.”

“Mums wean if not given appropriate advice early i.e. in [the] first 2-4 weeks of birth.”

“Need to concentrate on breastfeeding immediately after delivery – get it right at the start, so problems do not start.”

Secondly, respondents felt that mothers were unable to *access* services quickly enough when they experienced difficulties, and as a consequence women resorted to artificial feeding:

“App[oin]tmen]ts given are too late to deal with issues.”

“Help comes too late. The nature of establishing breastfeeding requires immediate help with feeds.”

“Not able to respond to problems as soon as issue arises.”

“Mother often weaned before access to program.”

“If a waiting list to access services is too long, mothers will wean. If ongoing support by telephone or access is not freely available mothers will wean. Some services which may be available at call are cost prohibitive”

Thirdly, *access* difficulties also were mentioned in terms of not having services close enough to where mothers live:

“Too far or no transport.”

“A stressed mother will not travel long distances for help.”

“Women are required to travel long distances.”

Another reason why services were seen to be ineffective concerned the view that services did not afford mothers enough time. To quote one respondent, mothers get “too little too late”.

However, not all the perceived problems with breastfeeding programs lay with the services provided. A number of respondents referred to the fact that mothers failing to present to prearranged appointments was an impediment to effective service delivery; presumably this limits service efficiency and reduces the coverage of a program.

There was also recognition of the fact that women’s lives, and the environment in which they live, are complex; yet this is the milieu within which decisions about breastfeeding are made. Breastfeeding specific programs are not necessarily designed, or able, to address these wider issues mothers confront:

“... not always a breastfeeding problem alone.”

“Language barriers, cult[ural] confinements, other children.”

“It’s difficult. Many women go back to work early, are busy in their lives, out of the house most the day in the car shopping or visiting others. Mothers often don't want to spend the time breastfeeding I have observed.”

“External influences driving mothers' choices.”

“Family barriers, body image, early return to work.”

“Lifestyle and pressures and demand of breastfeeding make it difficult for many women.”

Barriers that practitioners encounter

Respondents commented on the barriers they encountered in providing breastfeeding support to mothers. Amongst the practitioners surveyed the overwhelmingly dominant

theme to emerge was that they experienced insufficient time with clients. When specifically asked ‘What would help YOU to support women to breastfeed for longer’ over half of the respondents (143 of the 261 responses) spontaneously mentioned ‘more time’ (see Appendix 7, coding of free-text for Q19); but beyond this it was a theme that pervaded responses throughout the survey. Again and again practitioners mentioned that they wanted more time with their clients in order to respond to breastfeeding difficulties, and more time included being available to provide quick responses visits to clients when problems arose:

“Far too limited with time restraints.”

“More time with M[others] experiencing difficulties.”

“Time, ability to respond quickly to problems one week is too long in the early establishment of breastfeeding.”

There was also a sense that adhering to the ‘key ages and stages’ (KAS) regime of visits, important as these assessments are, limited MCHNs opportunities to provide additional support and advice that would help keep women breastfeeding for longer:

“KAS – makes it difficult to support breastfeeding.”

“We make appointment for Key Ages and Stages of Health check but no allocation of time to assist mothers who have breast feeding difficulties.”

“... KAS so focused, does not allow to spend more time with women.”

“More time for staff to spend with breastfeeding mothers as MCHNs are required to achieve KAS visits and so not able to offer the [breastfeeding] expertise many have.”

On a related theme, a number of respondents wrote about how large client numbers, and the corresponding volume of work, was a barrier in helping mothers and babies to breastfeed – again *time* was of the essence. This is illustrated in the following comments outlining the barriers respondents face in trying to assist mothers with breastfeeding:

“Time constraints due to over work load.”

“Time, volume of clients.”

“Too many women and not enough workers.”

Some respondents also referred to a lack of resources, which generally meant a lack of funding, and described this as a barrier to help:

“Lack of funding ... woman home at day 2 MCH home visiting about day 7 to 10 long gap at vulnerable time.”

“[There is a] high demand for breastfeeding services [and a] lack of resources.”

This seemed to be a particular issue in rural areas:

“Restriction of time and availability is major factor in country areas.”

“[Name of shire] shire please note rural shire, little resources”

Correspondingly, increased funding/resources to provide specialist breastfeeding programs were considered necessary to address this problem:

“Extra funding to allow all municipalities to have a dedicated service.”

“Resources to provide support to mothers in their homes and education programs for dads.”

“Funded breastfeeding support programs in local government MCH services.”

People also reflected on the barriers women encounter around continuing breastfeeding, which in turn become obstacles that practitioners have to help women overcome. These included mothers not being able to correctly position and attach their babies for feeding prior to leaving hospital, and mothers experiencing delayed access to breastfeeding services. This further supports practitioners’ views that in order to maintain breastfeeding mothers needed support early and quickly.

“It is less about supporting women breastfeeding on an ongoing basis but on trying to establish feeding when they are discharged from hospital without the necessary skills and knowledge! Our 10 visits in the universal system are unable to establish breastfeeding an appointment made for a couple of weeks after discharge is too late for a lot of these women, they need help at the start, it is easier to maintain and ensure ongoing breastfeeding if women know and feel confident in what they are doing.”

Practitioner views: what would help women to breastfeed for longer

Respondents to the survey were keen to share their ideas about what they thought would help mothers and babies breastfeed for longer. Three key areas emerged, and whilst these are described separately, the illustrative quotes used demonstrate that many respondents recognised the need for multiple approaches.

The first area concerned the provision of *health care* services. Some respondents felt there was a need for more hospital support of breastfeeding before mothers are discharged, and longer hospital stays after delivery were also mentioned. Aligning with respondents' beliefs about why breastfeeding services are ineffective, participants thought mothers would be assisted in breastfeeding for longer if they had timely access to appointments which support breastfeeding, and again stressed the importance of support/care that is given early in the postpartum period. Furthermore, some people saw greater access to MCHN visits, both in-home and centre based, along with access to the expertise provided by lactation consultants, as avenues for assisting and supporting mothers overcome some of the barriers to breastfeeding. To quote respondents own words when replying to the question 'What do you think would help women to breastfeed for longer':

"Longer hospital stay until lactation established."

"Hospital stays increased, more LC [lactation consultant] appt[ment]s available, less wait for appt[ment]s more capacity."

"For MCH nurses to assist with breastfeeding."

"Longer post partum hospital stay, to assist with attachment issues, support mothers in milk engorgement, emotional impact of breastfeeding."

"Early intervention when problems arise with feeding. Longer hospital stays!!!!"

The second key area that respondents thought would help mothers to breastfeed for longer concerned *education*, and this included the need for greater education for women in the antenatal period as well as wider community education – school students received particular mention:

"Antenatal and community education. Get the grandmothers and family members educated about breastfeeding."

“More antenatal education, community support.”

“Pre-natal support and education, lots of media and in schools about benefits to mother and baby, NORMALISE the idea.”

“Education from an early age i.e. school.”

The third area to emerge was the need to *support* breastfeeding. At a national and practical level, the provision of paid maternity leave was mentioned; mothers returning to work being seen as one of the barriers to breastfeeding:

“Paid maternity leave and tax breaks.”

“Paid maternity leave, longer hospital stay with breastfeeding aware midwives, facilities for women to breastfeed at work or express at work other than change rooms, do you want me to say more ... storage facilities for EBM.”

“Not having to return to work so early or if they do better work supports for breastfeeding mothers. Changing women’s attitudes to feeding, commencing bf education from secondary school i.e. Benefits.”

However, respondents also recognised that *support* from partners, family, friends, and the wider community was important, therefore, promoting this support was important:

“Communities that support women openly. Having breastfeeding stations in shopping strips. Welcoming bf in cafes with signs. Normalizing it. Encouraging a culture of breastfeeding by having posters and pictures and statements. Promoting it on TV.”

“Support to stay home longer before return to paid work, support from peer group eg mothers groups, family support.”

“Support from their partner and mother/mother in-laws.”

Overall, participant’s responses align with Hector et al’s (2005) conceptual framework of factors affecting breastfeeding practice (see Figure 3). The survey focused on hospital and health services, and respondents, health professionals working in the health services area, concentrated on this. However, there was recognition that home/family, workplace, community and public policy, which

intertwine with broader society level factors, were all important influences on breastfeeding practice, as described in this model (Hector et al., 2005).

“I think that improvement in breastfeeding rates goes beyond health service involvement, to public education from an early age, involvement of the media and changes in societal expectations and supports.”

CONCLUSION

This project was not able to provide an exhaustive list of all breastfeeding services offered; however, the consultation process did elicit comments from the vast majority of LGAs and from people working at different levels, different roles and different qualifications during the targeted and systematic phases of the process. This was the result of people’s willingness participate and share their knowledge and ideas, which culminated in a consultation process that was extensive and able to provide a very good picture about what breastfeeding projects/initiatives are operating in Victoria.

In Victoria, the framework within which many breastfeeding services operate is at a local level, i.e. at LGAs, and is very dependent on the MCHS. Much of the funding for these breastfeeding services is also a LGA responsibility, although it frequently happens in partnership with other organisations such as monies obtained through the Best Start initiative. This means local communities can take ownership of breastfeeding services and tailor them to address the specific needs of their community. It was clear from the consultation process undertaken that within this model there were many initiatives operating.

However, whilst this local/community model resulted in services that arose out of community needs and resources, breastfeeding initiatives were often operating in an *ad hoc* and isolated fashion, and frequently without any evaluation of the efficacy of the initiative. Consequently, there is reduced information about what breastfeeding services are operating in Victoria, how effective they have been, and what is the best way to build on past experience to provide efficient and effective breastfeeding services that sensitively meet the needs of mothers in particular communities.

Practitioners surveyed as part of this project generally thought breastfeeding services aimed at assisting women with breastfeeding were beneficial, particularly in the first weeks postpartum. They saw particular value in the extra help mothers received both through home visiting and breastfeeding support centres. The features of effective programs were seen to be: one-to-one support for mothers; giving mothers early and quick access to support; providing follow-up for mothers participating in breastfeeding programs; and being a local service. A dominant theme to emerge was the *lack of time* practitioners had with clients to respond to and address mothers' breastfeeding concerns and needs. Practitioners saw this as a significant barrier in providing effective help to women.

Survey respondents generally recognised that although they were most familiar with 'hospital and health services', and the role this sector plays in promoting and supporting breastfeeding, home/family, workplace, community and public policy, which intertwine with broader society level factors, are also important influences on breastfeeding practice.

PROPOSED STRATEGIES AND RECOMMENDATIONS

Breastfeeding in Victoria: A Report has reviewed existing literature in order to identify the best evidence-based interventions designed to improve the initiation and maintenance of breastfeeding rates, and investigated existing breastfeeding initiatives operating in the state of Victoria through a consultation process. The results of these undertakings have led to a number of proposed strategies which are divided into potential interventions and key recommendations.

POTENTIAL INTERVENTIONS

Breastfeeding initiatives that emerged as possible interventions were further assessed, regarding suitability for the Victorian setting, according to the following criteria: they focused on the maintenance of breastfeeding in the community; they could be trialled and implemented through the Maternal and Child Health Service (MCHS) (or in collaboration with the MCHS); and they had broad general application. In addition, consideration was also given to the time and cost of developing and implementing the intervention, the practicality of conducting a rigorous evaluation of the intervention, and whether the interventions could form more targeted strategies for at risk populations. As a result, a number of potential interventions were identified.

- An intensive home visiting program' involving home visits from a Maternal and Child Health Nurse (MCHN) , or lactation consultant, with the specific aim of providing information, support, and encouragement for mothers to maintain breastfeeding. Visitation would be on an as-needed basis early in the postpartum period and thus provide prompt assistance to mothers and infants experiencing difficulties with breastfeeding.
- A 'drop-in' centre (i.e. no appointment required) such that in a relaxed and friendly environment, that is easily accessible, mothers and infants could receive

assistance with breastfeeding through professional and peer support. A model of this intervention is the ‘Baby Café’ program operating in the United Kingdom (Baby Cafe Charitable Trust, 2010).

- The introduction of an advanced communication skills education program for MCHNs aimed at updating, or reinforcing, breastfeeding knowledge, and strengthening MCHN-to-client communication skills. This would better equip MCHNs to provide information, support and encouragement to women with new babies.
- A breastfeeding intervention aimed at Aboriginal and Torres Strait Islander women, which provides culturally appropriate breastfeeding support, information and encouragement to mothers. This could take the form of a mentoring program, but would need to be developed alongside extensive consultation with the Aboriginal and Torres Strait Islander community.
- A breastfeeding intervention which uses new technologies as the vehicle through which health professionals could provide advice, assistance and support to breastfeeding mothers and their families.
- An intervention designed around the expansion of the existing new mothers’ groups whereby women are invited, and proactively encouraged, to attend a group prior to the commencement of the standard care package as offered in the existing new mothers program. During this early period a peer support person and/or breastfeeding specialist (MCHN or lactation consultant) would be available to provide breastfeeding information, advice and support.

Given there is evidence that multi-strategy interventions (e.g. lay and professional support, antenatal and postnatal interventions, home visiting and hospital support) are likely to increase breastfeeding duration, a package of interventions (i.e. more than one) may be an appropriate approach in Victoria.

KEY RECOMMENDATIONS

A number of key recommendations also emerged, these being particularly relevant to the monitoring of breastfeeding in Victoria:

- That breastfeeding data be collected at each of the key ages and stages appointments. Currently no data are collected between the two week and four month visit (three month data being collected at the four month visit), and this represents a long period in an infant's early life. It is also a period within which the proportion of infants who are continuing to breastfeed drops significantly;
- In addition to the breastfeeding information collected at the key ages and stages visits, it is recommended that MCHNs record infant feeding (as reported by the mother) in the 24 hour period prior to each of the scheduled visits.
- That data concerning *exclusive* breastfeeding be reported at four, not six, months. This recommendation overcomes the difficulties associated with reporting on *exclusive* breastfeeding at six months given that six months is the age at which solids are often introduced. Furthermore, this also concurs with the recommendation in the Headline Indicators for Children's Health, Development and Wellbeing (Department of Human Services (DHS), 2006 p 19).
- That the Maternal & Child Health Service Annual Reports (State-wide and for each Region) add another item to the reporting of breastfeeding – *any breastfeeding*; i.e. *any* being the combination of *fully breastfed* and *partially breastfed*.

APPENDICES

APPENDIX 1: PROPORTION OF ‘ANY’ BREASTFEEDING AT DISCHARGE AND THREE MONTHS (STATE, REGIONS AND LGAS) – DATA FROM THE STATEWIDE AND REGIONAL MCHS ANNUAL REPORTS 2008-2009

Region (total number of infant records [*])	Frequency of ‘any’ breastfeeding infants at discharge ^{**}		Frequency of ‘any’ breastfeeding infants at 3 months ^{**}	
	number	%	number	%
State-wide (72,182)	61,953	85.8%	43,694	60.5%
Barwon South Western Region (4,718)	3,910	82.9%	2,747	58.2%
Colac-Otway (281)	234	83.2%	172	61.2%
Corangamite (240)	199	82.9%	148	61.7%
Glenelg (226)	176	77.9%	128	56.7%
Greater Geelong (2,695)	2,251	83.6%	1,209	56.0%
Moyne (214)	182	85.0%	136	63.5%
Queenscliffe (35)	27	77.1%	25	71.4%
Southern Grampians (212)	179	84.5%	122	57.5%
Surf Coast (350)	313	89.4%	241	68.9%
Warrnambool (465)	349	75.0%	266	57.2%
Eastern region (11,926)	10,737	90.0%	8,176	68.6%
Boroondara (1,742)	1,598	91.7%	1,318	75.7%
Knox (1,863)	1,638	87.9%	1,167	62.7%
Manningham (1,143)	1,048	91.6%	799	69.9%
Maroondah (1,412)	1,265	89.6%	958	67.8%
Monash (1,844)	1,675	90.8%	1,320	71.6%

Region (total number of infant records [*])	Frequency of 'any' breastfeeding infants at discharge ^{**}		Frequency of 'any' breastfeeding infants at 3 months ^{**}	
	number	%	number	%
Whitehorse (2,027)	1,843	90.9%	1,483	73.2%
Yarra Ranges (1,895)	1,670	88.2%	1,131	59.6%
Gippsland region (3,173)	2,684	84.6%	1,782	56.2%
Bass coast (334)	284	85.0%	205	61.4%
Baw Baw (536)	479	89.4%	352	65.7%
East Gippsland – GLCH (392)	333	85.0%	221	56.3%
East Gippsland – ORH (76)	64	84.2%	49	64.5%
La Trobe (1,002)	830	82.8%	481	48.0%
South Gippsland (302)	264	87.4%	185	61.3%
Wellington – CGHS (494)	398	80.6%	270	54.7%
Wellington – YDHS (37)	32	86.5%	19	51.3%
Grampians Region (2,778)	2,259	81.3%	1,508	54.3%
Ararat (140)	115	82.2%	77	55.0%
Ballarat (1,277)	1,025	80.3%	646	50.6%
Golden Plains (215)	178	82.8%	122	56.7%
Hepburn (161)	136	84.5%	96	59.6%
Hindmarsh (65)	53	81.6%	26	40.0%
Horsham (247)	196	79.3%	152	61.5%
Moorabool (351)	287	81.8%	187	53.3%
Northern Grampians (148)	122	82.5%	80	54.0%
Pyrenees (49)	40	81.7%	35	71.4%
West Wimmera (39)	35	89.7%	24	61.5%
Yarriambiack (86)	72	83.8%	63	73.3%

Region (total number of infant records *)	Frequency of 'any' breastfeeding infants at discharge **		Frequency of 'any' breastfeeding infants at 3 months **	
	number	%	number	%
Hume Region (3,444)	2,683	84.7%	1,957	56.8%
Alpine (144)	136	94.5%	103	71.6%
Benalla (140)	109	77.8%	74	52.9%
Greater Shepparton –GVH (945)	829	87.7%	486	51.4%
Indigo (145)	126	86.9%	94	64.8%
Mansfield (81)	80	98.8%	67	82.7%
Mitchell (483)	402	83.2%	278	57.5%
Moira (386)	365	94.5%	229	59.3%
Murrindindi (126)	69	54.8%	61	48.4%
Strathbogie (89)	59	66.3%	51	57.3%
Towong (55)	49	89.1%	43	78.2%
Wangaratta (327)	270	82.6%	187	57.2%
Wodonga (523)	424	81.1%	284	54.3%
Loddon Mallee (4,051)	3,339	82.4%	2,224	55.9%
Buloke (69)	53	76.8%	40	57.9%
Campaspe (476)	377	79.2%	223	46.9%
Central Goldfields (145)	106	73.1%	73	50.3%
Gannawarra (138)	112	81.2%	77	55.7%
Greater Bendigo (1,373)	1,117	81.3%	717	52.2%
Loddon (85)	65	76.4%	52	61.2%
Macedon Ranges (493)	426	86.4%	311	63.1%
Mildura (772)	645	83.5%	419	54.3%
Mount Alexander (164)	140	85.3%	109	66.4%

Region (total number of infant records *)	Frequency of 'any' breastfeeding infants at discharge **		Frequency of 'any' breastfeeding infants at 3 months **	
	number	%	number	%
Swan Hill (336)	298	88.7%	188	56.0%
Northern Region (12,297)	10,744	87.3%	7,616	61.9%
Banyule (1,631)	1,449	88.8%	1,092	67.0%
Darebin (2,037)	1,826	89.6%	1,365	67.1%
Hume (2,540)	2,067	81.4%	1,235	48.6%
Moreland (2,228)	1,998	89.6%	1,493	67.0%
Nilumbik (743)	694	93.4%	542	72.9%
Whittlesea (2,162)	1,829	84.6%	646	50.7%
Yarra (956)	881	92.2%	793	82.9%
Southern Region (17,947)	15,628	87.1%	11,161	62.2%
Bayside (1,170)	1,055	90.2%	864	73.8%
Cardinia (1,027)	823	80.1%	555	54.0%
Casey (4,020)	3,487	86.8%	2,233	55.6%
Frankston (1,850)	1,504	81.3%	908	49.1%
Glen Eira (1,785)	1,647	92.3%	1,288	72.2%
Greater Dandenong (2,165)	1,860	85.9%	1,313	60.6%
Kingston (1,913)	1,719	89.9%	1,326	69.4%
Mornington Peninsula (1,674)	1,455	84.2%	970	56.0%
Port Phillip (1,191)	1,081	90.8%	890	74.8%
Stonnington (1,096)	997	91.0%	814	64.3%
Western Region (11,848)	9,734	82.1%	6,538	55.2%
Brimbank (2,630)	2,088	79.4%	1,279	48.6%
Hobsons Bay (1,346)	1,199	89.1%	840	62.4%

Region (total number of infant records *)	Frequency of 'any' breastfeeding infants at discharge **		Frequency of 'any' breastfeeding infants at 3 months **	
	number	%	number	%
Maribyrnong (1,257)	1,119	89.0%	889	70.7%
Melbourne (755)	704	93.2%	596	89.0%
Melton (1,949)	1,350	69.2%	776	39.9%
Moonee Valley (1,421)	1,239	87.2%	922	64.9%
Wyndham (2,490)	2,035	81.7%	1,236	48.6%

Source: appropriate Statewide and Regional Maternal & Child Health Services Annual Reports for 2008-2009 (Department of Education and Early Childhood Development, 2010).

* The MCHS Annual Reports (Statewide and Regions) (Department of Education and Early Childhood Development, 2010) present breastfeeding rate data as it pertains to the total number of infant records for babies born in the 2007-2008 financial year.

** Percentage of 'any' breastfeeding equals the percentage of reported (therefore known) breastfeeding infants amongst total number of infant records.



Indicates area breastfeeding rate (%) is below the state average at discharge.



Indicates area breastfeeding rate (%) is below the state average at three months.

APPENDIX 2: CHARACTERISTICS OF INCLUDED REVIEWS

Reference (search dates)	Participants	Interventions	Comparison (Study designs)	Outcomes assessed	Databases	Main findings	Total number included trials (no. conducted in Australia)	Limitations
Britton et al. (2007) (search up to July 2009)	Pregnant women intending to BF, postpartum women intending to BF and women who are BF. Focus on low income groups.	Contact with individual (professional or volunteer) as an adjunct to usual care.	RCTs and quasi-controlled studies with minimum of 75% follow-up.	Duration of BF at specified time-points.	Cochrane Trials register, CENTRAL, MEDLINE, EMBASE, hand searching.	All forms of extra support analysed together showed a reduced risk of stopping BF for women in intervention arms of included trials (RR 0.91, 95% CI 0.86, 0.96) with the largest effect on exclusive BF (RR 0.81, 95% CI 0.74, 0.89). Combined lay and professional support significantly reduced the risk of women not having <i>any</i> BF prior to 4-6 weeks (RR 0.65, 95% CI 0.51, 0.82).	34 studies from 14 countries (2 conducted in Australia).	Solely educational interventions were excluded. Duration only (targets only BF women).

Reference (search dates)	Participants	Interventions	Comparison (Study designs)	Outcomes assessed	Databases	Main findings	Total number included trials (no. conducted in Australia)	Limitations
Chung et al. (2008) (search from 2001-2008)	Pregnant women, new mothers.	Multiple strategies used in primary care (education, support, staff training, postnatal and antenatal).	BF initiation and duration.	Any study design.	MEDLINE, CENTRAL, CINAHL.	Interventions significantly increased rates of short term exclusive BF (RR 1.28, 95% CI 1.11, 1.48) and long term exclusive BF (RR 1.44, 95% CI 1.13, 1.84). Combining pre- and postnatal interventions had a larger effect than either alone.	38 trials included. 36 conducted in developed countries (3 conducted in Australia).	Only includes primary care BF interventions initiatives.
Dennis & Kingston (2008) (search up to March 2006)	Pregnant and postpartum women.	Telephone interventions to support women.	RCTs.	BF initiation and duration, birthweight, preterm births, smoking.	MEDLINE, CINAHL, CENTRAL, EMBASE.	Proactive telephone support may increase BF duration and exclusivity. Increased BF duration to 12 weeks (RR 1.18; 95% CI 1.05, 1.33) as well as exclusivity (RR 1.45; 95% CI 1.12, 1.87).	14 trials (1 conducted in Australia) – but only 3 BF trials (0 in Australia).	Focus not only on BF, but BF is one of pre-specified outcomes of interest.

Reference (search dates)	Participants	Interventions	Comparison (Study designs)	Outcomes assessed	Databases	Main findings	Total number included trials (no. conducted in Australia)	Limitations
Dyson et al. (2005) (search up to July 2007)	All women exposed to interventions to promote BF (pregnant women, mothers, women who may decide to BF). Focus on low income groups.	Any intervention aiming to promote BF initiation.	BF initiation.	RCTs only.	Cochrane register, CENTRAL, MEDLINE.	Five studies of low income women in the US showed BF education had a significant effect on increasing initiation rates (RR 1.57, 95% CI 1.15, 2.15). One-to-one, needs based, informal repeat education sessions and generic, formal antenatal education sessions are effective in terms of an increase in BF rates among women on low incomes regardless of ethnicity and feeding intention.	11 trials (0 conducted in Australia).	Initiation focus only.

Reference (search dates)	Participants	Interventions	Comparison (Study designs)	Outcomes assessed	Databases	Main findings	Total number included trials (no. conducted in Australia)	Limitations
Forster (2005) (search up to Jan 2005)	Pregnant women, with a focus on low income women living in developed communities.	Antenatal and postnatal education and support by health professionals or peers.	RCTs, cluster RCTs and before-after controlled studies.	BF initiation and duration, BF exclusivity, attitudes and intentions, reasons for ceasing.	MEDLINE, CINAHL, Sociofile, PsychINFO, EMBASE, Cochrane.	Antenatal education increased initiation (OR 1.64, 95% CI 1.32, 2.07), but not duration. Combined antenatal and postnatal support increased initiation (OR 1.67, 95% CI 1.07, 2.69). Giving information alone is not effective in increasing BF. Teaching practical skills, attitudes and support appear important.	49 trials (7 conducted in Australia).	
Lewin et al. (2010) (search up to Feb 2009)	Different participants targeted in different groups of studies.	Lay health workers in community and primary care.	RCTs.	BF initiation and duration, BF exclusivity.	Cochrane Central Register of Controlled Trials, MEDLINE, MEDLINE In-Process, EMBASE, AMED, British Nursing Index and Archive, CINAHL,	Increased initiation of BF (RR 1.36, 95% CI 1.14, 1.61), duration to six months (RR 1.24; 95% CI 1.10, 1.39); and exclusivity (RR 2.78; 95% CI 1.74, 4.44).	82 in total – only 18 focusing on BF (0 conducted in Australia).	Focus not only on BF, but BF is one of pre-specified outcomes of interest.

Reference (search dates)	Participants	Interventions	Comparison (Study designs)	Outcomes assessed	Databases	Main findings	Total number included trials (no. conducted in Australia)	Limitations
					POPLINE, WHOLIS, Science Citation Index, Social Sciences Citation Index.			
Moore et al. (2007) (search up to 2006)	New mothers and babies.	Early skin-to-skin contact.	RCTs, quasi-randomised and controlled trials.	BF initiation and duration.	Cochrane Pregnancy and Childbirth register, MEDLINE.	Early skin-to-skin contact significantly increased BF at 1 to 4 months postpartum (OR 1.82, 95% CI 1.08, 3.07), and BF duration (weighted mean difference 42.55, 95% CI 1.69, 86.79).	30 studies (0 conducted in Australia).	Single intervention focus only.
Webel et al. (2010) (search up to Oct 2007)	Peer support interventions for pregnant and postpartum women.	Peer support interventions 1997-2007.	RCTs.	Increased BF – any or exclusive.	MEDLINE, CINAHL, PsychINFO, EMBASE, Cochrane.	High heterogeneity. Non-significant increase in <i>any</i> BF (OR 2.86, 95% CI 0.77, 10.61).	6 trials (0 conducted in Australia).	

APPENDIX 3: CHARACTERISTICS OF EXCLUDED REVIEWS

Reference	Participants	Interventions	Comparison (study designs)	Outcomes	Databases	Main findings	Total number of included trials/studies (no. conducted in Australia)	Reason for exclusion
Abdulwadud (2007)	Women in full-time or part-time employment returning to paid work after birth.	Workplace strategies (childcare etc).	RCTs and quasi-RCTs.	BF duration.	MEDLINE, CINAHL, EMBASE, Cochrane, Social Science.	No trials identified.	0 trials included.	No included trials.
Bhandari et al. (2008)	Large BF programs.	Scaling up of initiatives to improve rates of exclusive BF.	Not applicable.	Overview of program methods and assessment of success.	PubMed, Cochrane Controlled Trials Register, National Library of Medicine search service.	Main factors required are evidence based policy and science-driven guidelines and implementation strategies. Outlines success factors.	Unclear. Focussed on low income countries.	Policy overview only.
Hall Moran et al. (2007)	Adolescent mothers.	All types of support programs provided to adolescent women to promote BF.	All study designs which answer question about nature of support.	BF initiation and continuation, experiences, support needs, BF intention and correlates, differences in knowledge.	MEDLINE, CINAHL, The Cochrane Library, AMED, British Nursing Index, MIDIRS.	Support by known and trusted individuals important.	7 studies included (2 conducted in Australia).	Focus not BF outcomes – the nature of support was main outcome search based on.

Reference	Participants	Interventions	Comparison (study designs)	Outcomes	Databases	Main findings	Total number of included trials/studies (no. conducted in Australia)	Reason for exclusion
Hannula et al. (2008)	Healthy mothers and healthy infants in Europe, North America, Australia or New Zealand.	BF support interventions and education, professional support, peer support.	All study designs.	How BF was supported.	CINAHL, MEDLINE, Cochrane Central Register.	Interventions which are interactive, expand across continuum of care, are multifaceted and involve women were more effective. BFHI, practical hands-off teaching, home visits combined with telephone support rather than shorter interventions, combinations of methods more effective.	36 'articles' – all studies in high income countries (4 conducted in Australia).	Includes all study designs.
Johnston & Esposito (2007)	Women who work outside the home with child under 12 months of age.	Any aspect of BF continuation or weaning in the workplace environment.	All study designs.	Facilitators and barriers to BF.	CINAHL, ISI Web of Science, PsychINFO, ProQuest, PubMed, Sociological abstracts 1995-2006.	A range of ecological factors impact on BF.	20 included trials (countries not specified).	Focus on BF facilitators and barriers.

Reference	Participants	Interventions	Comparison (study designs)	Outcomes	Databases	Main findings	Total number of included trials/studies (no. conducted in Australia)	Reason for exclusion
McInnes & Chambers (2008)	Women who are pregnant or BF.	All interventions to support women to breastfeed.	Qualitative study designs.	BF initiation and duration.	MEDLINE, British Nursing Index, CINAHL, EMBASE, MWIC, PsychINFO, MIDIRS, CDSR, DARE, AMED 1990-2005.	Key themes associated with BF support include the mother-child relationship, skilled help, pressures of time, medicalisation of BF, and the ward as public space.	33 included studies (countries not specified).	Includes only qualitative studies.
Mushtaq et al. (2008)	Women who are pregnant or BF.	Educational and counselling interventions to improve initiation or duration.	All study designs.	BF initiation and duration.	PubMed and MEDLINE.	BF education and support programs (by service providers for women) are effective in improving initiation and duration.	16 included trials (countries not specified).	Includes all study designs.
O'Connor et al (2009)	Mothers of young infants.	Trials using pacifiers (dummies).	All study designs.	BF duration.	MEDLINE, CINAHL, The Cochrane Library, EMBASE, POPLINE.	No adverse relationship between pacifier use and BF duration or exclusivity.	29 included studies – 4 being RCTs (countries not specified).	Includes all study designs.

Reference	Participants	Interventions	Comparison (study designs)	Outcomes	Databases	Main findings	Total number of included trials/studies (no. conducted in Australia)	Reason for exclusion
Pate (2009)	Pregnant women and mothers of young children.	Comparative studies of trials using e-based (internet) or provider-based interventions.	All comparative study designs.	BF initiation and duration.	MEDLINE, CINAHL, Academic Search Elite, SOC INDEX, PsychINFO, Cochrane Library.	e-based interventions had a small but significant effect (OR 2.2, 95% CI 1.9, 2.7), compared to provider based interventions which had little or no effect (OR 1.1, 95% CI 1.0, 1.2).	21 included studies – 15 being RCTs (countries not specified).	Includes all study designs.
Renfrew et al. (2005)	Pregnant and postpartum women.	All public health and policy interventions, support, education.	RCTs (and other comparative designs in some sections).	Duration of BF, views, clinical outcomes, economic measures.	Not clear	Evidence gap relating to disadvantaged groups. Lists effective interventions at stages along the continuum of care.	80 included studies (not specified how many in Australia)	Search date prior to 2004 – all relevant trials included in Forster 2005 review.

Reference	Participants	Interventions	Comparison (study designs)	Outcomes	Databases	Main findings	Total number of included trials/studies (no. conducted in Australia)	Reason for exclusion
Renfrew et al. (2009)	Infants or mothers of infants in NICU units.	Any intervention which addressed BF within NICU.	Randomised crossover studies, concurrent comparisons, and before-after studies.	BF initiation and duration.	MEDLINE, EMBASE, CINAHL, Maternity and Infant Care, PsychINFO, British Nursing Index and Archive, Health management Information Consortium, Cochrane Central Register of Controlled Trials, Science Citation Index, Pascal, Latin American and Caribbean Health Sciences, MetaRegister of Controlled Trials, Cochrane Database of Systematic reviews, Database of Abstracts of Reviews of Effectiveness, Health Technology	Short periods of skin-to-skin contact (kangaroo care), support increased the duration of any BF 1 month after discharge (RR 4.76, 95% 1.19, 19.10), and for more than 6 weeks (RR 1.95, 95% CI 1.03, 3.07). Strong evidence for effectiveness of peer support in hospital and at home for mothers of infants in Special Care Units on any BF at 12 weeks (OR 2.81, 95% CI 1.11, 7.14). Limited evidence for effectiveness of skilled professional support and cup feeding (OR 2.0, 95% CI 1.2, 3.2). Expressing appears to have benefits in	48 included studies.	Focus on mothers of NICU babies only.

Reference	Participants	Interventions	Comparison (study designs)	Outcomes	Databases	Main findings	Total number of included trials/studies (no. conducted in Australia)	Reason for exclusion
					Assessment Database, National Research Register.	the first 2 weeks.		
Schmied et al. (2009)	BF mothers using BF support services.	BF support programs.	Qualitative studies.	Maternal views of BF support.	MEDLINE, CINAHL, The Cochrane Library, PubMed, Meditext, Nursing consult, MIDIRS, PsychINFO, Current contents, WHO Library database, Scopus, Science Citation index, EMBASE.	Importance of person-centred communication skills and of relationships in supporting a woman to breastfeed. Authentic presence is best supported by building a trusting relationship, demonstrating empathy, listening and being responsive to a woman's needs. Organisational systems which facilitate continuity of care or peer support models are more likely to facilitate an authentic presence.	38 included studies (country not specified).	Includes qualitative studies only.

Reference	Participants	Interventions	Comparison (study designs)	Outcomes	Databases	Main findings	Total number of included trials/studies (no. conducted in Australia)	Reason for exclusion
South Australia BF Program (2006)	Pregnant women and mothers of children under 6 months.	Any intervention aiming to increase BF.	All types of studies.	BF initiation and duration.	Cochrane, CINAHL, EMBASE, Informit, EBM Reviews, MEDLINE, MIDIRS, PsychINFO.	Majority of RCTs did not demonstrate any effect on increasing BF duration. Attributes of peer support programs are variable. BFHI promising, though many Australian hospitals have already adopted BFHI.	83 included studies (24 conducted in Australia or New Zealand).	Includes all study designs.
Spiby et al. (2009)	Health professionals and pregnant women.	Education for health professionals and lactation consultants.	All study designs.	BF duration.	MEDLINE, CINAHL, EMBASE, CENTRAL.	No single strategy consistently increases BF. Insufficient evidence to draw conclusions about educational interventions.	9 included trials (0 conducted in Australia).	Primary intervention of professionals receiving intervention not the main focus of the current review.
Thurman & Allen (2008)	Pregnant and postpartum women.	International Board Certified Lactation Consultants (IBCLCs).	All study designs.	BF initiation and duration.	CINAHL, National Library of Medicine, Ovid MEDLINE, PsychINFO, Google Scholar.	Positive correlation between IBCLC use and BF duration.	5 included studies (countries not specified).	Includes all study designs.

APPENDIX 4: CHARACTERISTICS OF INCLUDED TRIALS (PUBLISHED JUNE 2004 TO MAY 2010)

Author, Country	Methods, study setting and duration	Participants	Interventions (I) and Comparison (C)	Outcomes and main results	Risk of bias assessment	Comments ----- Relevance. to Victoria*
Bashour et al. (2008) Syria	RCT of midwife home visits . <i>Outcomes:</i> exclusivity. <i>Setting:</i> Maternity Teaching Hospital, Damascus. <i>Duration:</i> June – Dec 2004.	Women with healthy baby, living < 30km from hospital. <i>Exclusions:</i> preterm or low birth weight, congenital anomalies.	n = 876 <i>Intervention:</i> IA: one midwife home visits (n = 285); IB: four midwife home visits (n = 294). <i>Comparison (n = 297):</i> Standard care.	<i>Significant increase in duration of exclusive BF.</i> Exclusive BF at 4 months: IA=29%, IB=30%, C=20%.	<i>Low</i> risk of bias.	Women in Syria are discharged on day of birth with little/no postnatal care. ----- <i>Low</i> relevance to Victoria.

Author, Country	Methods, study setting and duration	Participants	Interventions (I) and Comparison (C)	Outcomes and main results	Risk of bias assessment	Comments Relevance. to Victoria*
Bunik et al. (2010) USA	RCT, 2 weeks of proactive telephone support . <i>Outcomes:</i> duration and exclusivity. <i>Setting:</i> urban safety net hospital in Denver, Colorado. <i>Duration:</i> Feb 2005-May 2006.	95% Mexican American women; healthy term baby; considering BF. <i>Exclusions:</i> did not speak English or Spanish; medical complications interfering with BF; hospital stay > 72 hours (normal birth) or 96 hours (caesarean birth); baby admitted to NICU/SCN > 72 hours.	n = 341 <i>Intervention</i> (n = 161): Daily telephone calls by trained bilingual nurses starting from day of discharge for 2 weeks postpartum. Nurses followed scripted protocols. Cultural issues incorporated into protocols. Included BF: benefits; problems; duration; normal infant behaviour; support; maternal health; pumping and milk storage; return to work or school. Referral for lactation issues or medical problems. <i>Comparison</i> (n = 180): All mothers received a bag with pamphlets in English and Spanish (USDHHS) which included illustrations of BF positions and latch, a hand pump, lanolin cream, and a water bottle; also usual discharge care, which included formula company discharge bag. All mothers were scheduled for health care visits at 3-5 days and 2 weeks of age in the CHC clinics.	No significant effect (but only powered to detect 15% difference). Any BF at 1 month: C=74%, I=74%. Any BF at 3 months: C=54%, I=49%. Any BF at 6 months: C=37%, I=28%.	Moderate risk of bias. More than 10% attrition by 1 month and over 25% attrition at 6 months. No intention to treat sensitivity analysis to assess impact of treating women who dropped out of study as 'not BF'.	No prenatal intervention and all women had used formula prior to recruitment. Authors recommend prenatal support would help to overcome obstacles in hospital. Comprehensive formative evaluation involving women's views in development of the intervention. Medium relevance to Victoria.

Author, Country	Methods, study setting and duration	Participants	Interventions (I) and Comparison (C)	Outcomes and main results	Risk of bias assessment	Comments Relevance. to Victoria*
Cupples et al. (2010) N. Ireland	RCT of peer mentoring . <i>Outcomes:</i> duration. <i>Setting:</i> Hospital antenatal clinic, Belfast. <i>Duration:</i> Nov 2003 – Feb 2005.	Primiparous women aged 16-30 years in low income areas.	n = 343 <i>Intervention (n = 172):</i> Home visit or telephone call from mentor, twice monthly during pregnancy, monthly until 12 months postpartum. <i>Comparison (n = 171):</i> Standard care.	<i>No significant effect</i> (but not powered to detect 10% difference). I=14.6% C=16.4%.	Low risk of bias.	High relevance to Victoria.
De Oliveira et al. (2006) Brazil	RCT of in-hospital BF education . <i>Outcomes:</i> exclusivity, duration. <i>Setting:</i> Hospital accredited as Baby Friendly in Porto Alegre. <i>Duration:</i> June – Nov 2003.	Healthy singletons, birth weight > 2500g.	n = 211 <i>Intervention (n = 74):</i> 30 min session on bf technique in hospital. <i>Comparison (n = 137):</i> Standard care.	<i>No significant effect</i> (but not powered to detect 10% difference). Exclusive BF at 7 days: I=79.7%, C=82.5%. Exclusive BF at 30 days: I=60.8%, C=53.3%.	Moderate risk of bias. Randomisation by selection of coloured ball.	Medium relevance to Victoria.

Author, Country	Methods, study setting and duration	Participants	Interventions (I) and Comparison (C)	Outcomes and main results	Risk of bias assessment	Comments Relevance. to Victoria*
Di Meglio et al. (2010). USA	RCT, telephone peer support . <i>Outcomes:</i> duration. <i>Setting:</i> two hospitals in Rochester, New York. <i>Duration:</i> Sep 1996-June 1997.	BF mothers under 20 years of age; healthy singleton infant over 36 weeks, > 2000g; no contraindications for BF; uncomplicated postpartum course; baby discharged home with mother.	n = 78 <i>Intervention (n = 38):</i> Peers were adolescent mothers who had breastfed for more than 4 weeks and attended 10x2hr training sessions developed by La Leche League. 'Graduates' received a \$50 gift certificate. Intensive support for peers provided and Principal Investigator available 24 hours a day by mobile to respond to queries. Peers phoned the new mothers at 2, 4, & 7 days post discharge and then at 2, 3, 4 & 5 weeks post discharge. No specific discussion topics were assigned. Referral as appropriate. <i>Comparison (n = 40):</i> No telephone support but had access to other support e.g. family, friends, paediatric care providers, hospital LCs.	<i>No significant effect</i> (but no power to find meaningful differences). Exclusive BF at discharge: I=31%, C=25% Partially BF at discharge: I=68%, C=75%	Moderate risk of bias. No sensitivity analysis to assess impact of drop-outs not continuing to breastfeed.	A higher proportion of Hispanic women refused participation in the study. Medium relevance to Victoria.

Author, Country	Methods, study setting and duration	Participants	Interventions (I) and Comparison (C)	Outcomes and main results	Risk of bias assessment	Comments Relevance. to Victoria*
Gill et al. (2007) USA	<p>Quasi-randomised trial of multiple strategies (IBCLC support, antenatal education and community outreach). <i>Outcomes:</i> initiation, duration <i>Setting:</i> two WIC clinics in Texas. <i>Duration:</i> year of study not stated.</p>	<p>Low-income Hispanic women in second trimester. <i>Exclusions:</i> premature birth; low birth weight infant; infant with major congenital abnormality.</p>	<p>n = 200 <i>Intervention (n = 100):</i> Formative program evaluation (focus groups). Prenatally research staff discussed issues identified as important to women. Pumps provided if necessary. Demonstration of correct attachment and discussion of feeding frequency and duration. Women met individually with an IBCLC during early prenatal visit to discuss breast changes and at 36 weeks to discuss BF in hospital. Telephone calls to ask how feeding was going days, 2, 3, 4 & 6 weeks postpartum. At the mother's request, or if the researcher deemed necessary, the IBCLC and/or lactation educator visited participants in their homes. At 3, 4, 5, & 6 months postpartum mothers again received telephone calls from a member of a research team and a home visit if requested. Information</p>	<p>Significant effect on initiation and duration (but not powered to find clinically important difference). BF initiation: I=82%, C=67%. Odds ratio for bf: day 30 – 1.84, day 60 – 2.24, day 90 – 2.53, day 120 – 2.77. day 150 – 2.97 day 180 – 3.15 Bayesian approach to analysis.</p>	<p>High risk of bias. No randomisation to group allocation (determined by clinic location); no sensitivity analysis to assess impact of dropouts ceasing to breastfeed; 21% attrition.</p>	<p>Formative evaluation with women used to develop program design. Authors identify strengths of the program as having bilingual support workers, home visits provided as required and close telephone support.</p> <hr/> <p>Medium relevance to Victoria.</p>

Author, Country	Methods, study setting and duration	Participants	Interventions (I) and Comparison (C)	Outcomes and main results	Risk of bias assessment	Comments Relevance. to Victoria*
			<p>provided at each telephone contact based on the participant's responses to a BF problem assessment tool designed by researchers. <i>Comparison (n = 100):</i> Standard BF education and access to BF classes through WIC clinic.</p>			
<p>Hoddinott et al. (2009) UK</p>	<p>Cluster RCT, of policy to provide BF peer support groups. <i>Outcomes:</i> initiation and duration. <i>Setting:</i> primary care Scotland. <i>Duration:</i> Feb 2005-Jan 2007.</p>	<p>Pregnant women, BF mothers and babies registered with 14 of 66 eligible clusters of general practices that routinely collect BF data.</p>	<p>n = 18,858 <i>Intervention (n = 9,747):</i> Each intervention locality was asked to at least double their number of BF groups, to set up a minimum of two new groups, and to provide population coverage. Variation between sites, but six main characteristics were consistent: Weekly group meetings; women only; a health professional group facilitator; pregnant women and BF women invited to attend; at least 50% of group meeting time to be social and interactive; and a woman centred approach. <i>Comparison (n = 9,111):</i> Some existing BF groups.</p>	<p>No significant difference (powered to detect a 6.4% difference). BF initiation: I=51%, C=53%. Any BF at 6-8 weeks declined from 27-26% in intervention localities and increased from 29-30% in control localities.</p>	<p>Low risk of bias.</p>	<p>Fewer rural women in intervention areas, fewer maternity units in intervention areas, intervention areas slightly less deprived Limited involvement of women in designing intervention.</p> <hr/> <p>High relevance to Victoria.</p>

Author, Country	Methods, study setting and duration	Participants	Interventions (I) and Comparison (C)	Outcomes and main results	Risk of bias assessment	Comments
						Relevance. to Victoria*
Hopkinson & Gallagher (2009) USA	RCT of universal appointment for BF clinic within first week postpartum. <i>Outcomes:</i> exclusivity, <i>Setting:</i> large metropolitan hospital, Houston, Texas. <i>Duration:</i> Jan – Dec 2004.	Infants with low-risk of hyperbilirubinemia, mixed feeding in hospital, had telephones and access to transportation. 85% were monolingual (Spanish- speaking) Hispanic, seem to be eligible for WIC.	n = 467 <i>Intervention (n = 226):</i> Randomised at 20-48 hrs postpartum to be given a visit to BF clinic at 3 to 7 days postpartum. <i>Comparison (n = 241):</i> Given phone number of BF clinic.	Significant increase in exclusive BF at 4 weeks. Exclusive BF at 4 weeks: I: 16.8%, C: 10.4%. High formula use in both groups.	Low risk of bias.	80% of intervention women received counselling within 3 weeks (including via telephone), compared to 10% in comparison group. At the clinic - staff were 'bf counselors': 3 day lactation management course, 20 hr PC counsellor course, > 1yr working in WIC clinic. 3 counsellors saw 7 women/day in the clinic. Administered by IBCLC/Registered Nurse.
						Medium relevance to Victoria.

Author, Country	Methods, study setting and duration	Participants	Interventions (I) and Comparison (C)	Outcomes and main results	Risk of bias assessment	Comments ----- Relevance. to Victoria*
Ickovics et al. (2007) USA	RCT, group prenatal care. <i>Outcomes:</i> a range of perinatal outcomes. <i>Setting:</i> 2 obstetrics clinics in 2 university affiliated hospitals in Atlanta (Connecticut) and New Haven (Georgia). <i>Duration:</i> Sep 2001 - Dec 2004.	Young women (aged 14-25 years), < 24 weeks gestation, not 'high risk pregnancy', English or Spanish language.	n = 993 <i>Intervention (n = 623):</i> Intervention women received care in groups of 8 with continuity of provider, structured education sessions, participation in self-care, 'one-stop shopping', which provided a community building opportunity. <i>Comparison (n = 370):</i> Individual model of care with no continuity of carer, less social interaction, less participation in care and longer waiting times.	<i>Significant increase in initiation</i> (powered on preterm birth not BF). 66.5% in intervention group compared with 54.6% in control group (p<0.001).	<i>Low</i> risk of bias. Intention to treat for exposure to intervention but no sensitivity analysis for dropouts (<5% attrition). No evidence of adjustment for clustering in the analysis.	Intervention women were more likely to be African-American, have a history of preterm birth and more likely to have high levels of prenatal distress. Analysis controlled for these variables. Limited involvement of women in designing the intervention. ----- <i>Medium</i> relevance to Victoria.

Author, Country	Methods, study setting and duration	Participants	Interventions (I) and Comparison (C)	Outcomes and main results	Risk of bias assessment	Comments Relevance. to Victoria*
Olsen et al. (2010) USA	Before-after controlled study of peer counselling support . <i>Outcomes:</i> initiation, duration. <i>Setting:</i> WIC clinics in 17 counties in Michigan. <i>Duration:</i> 2002-2004.	Low income pregnant women attending WIC clinics who requested services prenatally.	n = 1,090 <i>Intervention (n = 336):</i> PCs with a positive BF experience provided with training on 'providing BF support'. PCs provide at least 1 contact to mothers in person, subsequent contacts in person or by telephone based on the type of support needed. Subsequent contacts are at least monthly. On average, women received 3 home visits, 2 personal contacts and 6 telephone contacts during their participation (until they discontinue BF, baby is one year old or support services were no longer required). <i>Comparison (n = 654):</i> Not described.	Significant effect (adequate power). Initiation: I=72%, C=51% 3 months: I=25.9%, C=19.6% 6 months: I=15.8%, C=10.4%.	High risk of bias. Inadequate randomisation.	Control group made up of women not provided with service due to excess demand. Significant differences in groups. Limited involvement of women. Medium relevance to Victoria.

Author, Country	Methods, study setting and duration	Participants	Interventions (I) and Comparison (C)	Outcomes and main results	Risk of bias assessment	Comments Relevance. to Victoria*
Petrova et al. (2009) USA	RCT, one-to-one pre- and postnatal education and support from a LC . <i>Outcomes:</i> initiation, exclusivity. <i>Setting:</i> maternal and paediatric ambulatory care centre in New Jersey. <i>Duration:</i> Mar - Dec 2006.	WIC eligible pregnant women in 3 rd trimester of singleton pregnancy without HIV or illegal drug use.	n = 104 <i>Intervention (n = 52):</i> Extra BF education in pregnancy; post delivery support from a LC who delivered one-to-one educational sessions, including 2 prenatal education sessions at 2-4 week intervals about the health benefits of BF, and encouragement to exclusively breastfeed and delay introduction of formula. Educational material developed by the PI and IBCLC and translated into Spanish. Postpartum the IBCLC provided education and support at the hospital or by phone soon after hospital discharge and at end of first or second week as well as first and second month. <i>Comparison (n = 52):</i> Routine BF education and support during pregnancy and postpartum, including LC services for all postpartum women if BF problems arose.	Insignificant effect (but not powered to find relevant difference). BF at 3 months: I=77.8%, C=63.2%. Exclusive BF 1 week: OR 2.05, 95% CI 0.82, 5.13; 1 month: OR 1.40, 95% CI 0.52, 3.76; 2 months: OR 1.48, 95% CI 0.65, 6.26; 3 months: OR 1.37, 95% CI 0.73, 5.69.	Moderate risk of bias. Adequate randomisation but high drop out rate (16/52 women dropped out by 3 months). Sample size calculation conducted, but small sample.	Less previous BF experience and higher caesarean section rate in control group. Poor implementation (20-50%) – because of delayed notification of birth only 19 women received in-hospital education. No involvement of women in development of the intervention. Medium relevance to Victoria.

Author, Country	Methods, study setting and duration	Participants	Interventions (I) and Comparison (C)	Outcomes and main results	Risk of bias assessment	Comments Relevance. to Victoria*
Pugh et al. (2010) USA	RCT, community based professional and peer support and education program. <i>Outcomes:</i> duration. <i>Setting:</i> 2 urban (non BFHI) hospitals, low income women in Baltimore, Maryland. <i>Duration:</i> Oct 2003 - Dec 2005.	WIC eligible women recruited within 24 hours of vaginal birth and 48 hours of caesarean birth, singleton, term infant, intending to breastfeed, English speaking, telephone access. <i>Exclusions:</i> infant craniofacial abnormalities, positive drug screen for mother or infant, NICU admission, > 25 miles from hospital.	n = 328 <i>Intervention (n =168):</i> Strategies designed to increase maternal competence and commitment to BF, provide parental education, social support for BF, emphasize ways to decrease fatigue and breast discomfort, and foster linkages to community services and paediatric care to facilitate maintenance of BF. As a minimum, daily hospital visits from a 'BF Support Team' (community nurse and PC); 2 home visits in the first week and a 3 rd visit at 4 weeks postpartum; scheduled telephone calls (by a PC) at least every 2 weeks through to 24 weeks postpartum. Home visits lasted 45-60 mins; educational activities included BF, symptom management, and problem solving for psychosocial issues. Infants weighed, measured and assessed at every visit. Women could	<i>Significant effect on BF at 6 weeks.</i> I=66.7%, C=56.9% OR 1.71, 95% CI 1.07, 2.76. <i>No significant differences at 12 weeks (49.4% vs 40.6%) and 24 weeks (29.2% vs 28.1%).</i>	<i>Low</i> risk of bias. Adequate sample size.	Good implementation. No involvement of women in the design of the intervention. Authors suggest that the findings demonstrate the effort it takes to effectively promote BF in low-income mothers lives [in the USA]. <i>Medium</i> relevance to Victoria.

Author, Country	Methods, study setting and duration	Participants	Interventions (I) and Comparison (C)	Outcomes and main results	Risk of bias assessment	Comments Relevance. to Victoria*
			<p>reach nurse by pager at all times through to 24 weeks postpartum.</p> <p><i>Comparison (n = 160):</i> All BF mothers had access to an inpatient visit by a LC. After discharge a hospital-based LC was also available via a telephone 'warm-line' (answering machine checked at least every 24 hours). Once home the women could request an office visit with a LC.</p>			
Sandy et al. (2009) USA	<p>RCT, antenatal health education, family support and community outreach from IBCLC.</p> <p><i>Outcomes:</i> exclusive, any within first week.</p> <p><i>Setting:</i> 1 hospital in New York City.</p> <p><i>Duration:</i> year of study not stated.</p>	<p>Low income pregnant women, with psychosocial risk factors for care-giving difficulties on 2 screening instruments, living within 2 census tracts in Washington Heights. 281/588 of the above women met the following criteria: enrolled prenatally, did not drop out of study prior to baby's birth, singleton, 'well baby' nursery after birth.</p> <p>Data on current infant feeding within 1 week of</p>	<p>n = 238</p> <p><i>Intervention (n = 137):</i> Healthy Families America model with breast feeding promotion components added. Weekly visits from family support workers (FSW), included information about pregnancy care, infant feeding, and child health and safety. BF promotion included exploration of a mother's previous experience, explanation of mechanics, provision of pamphlets, manuals and handouts about BF and verbal discussion of</p>	<p><i>Significant increase in exclusive BF at one week.</i></p> <p>I=32%, C=20% (OR 1.92, 95% CI 1.05, 3.52).</p> <p><i>There was no significant difference in any BF at discharge.</i></p>	<p>Low risk of bias.</p> <p>No sample size calculation reported.</p>	<p>No involvement of women in developing the intervention.</p> <hr/> <p>Medium relevance to Victoria.</p>

Author, Country	Methods, study setting and duration	Participants	Interventions (I) and Comparison (C)	Outcomes and main results	Risk of bias assessment	Comments ----- Relevance. to Victoria*
		birth: 238/281.	<p>the benefits and challenges of BF. All materials were available in English and Spanish.</p> <p>After birth FSW visited mother in hospital and assisted with any problems initiating BF. Home support offered on a weekly basis, with referral to a LC if any problems. A paediatric resident visited the family shortly after birth at home, in part to motivate and support mothers in their efforts to breastfeed.</p> <p><i>Comparison (n 101):</i> 1 or 2 home visits during prenatal period (questionnaires were completed and needs assessed). Women were provided with information about community services and referrals to community agencies. Educational pamphlets and booklets were provided, but not discussed and BF was not actively promoted.</p>			

* Relevance to Victoria coding scale use: High = study conducted in Australia, Europe, NZ, Canada, Medium = study conducted in other high income country, Low = study conducted in low-middle income country.

CHC: community health centre.

NICU: Neonatal intensive care unit.

PC: peer counselor.

SCN: Special care nursery.

WIC: Women, Infants, and Children (in full 'Supplemental Nutrition Program for Women, Infants, and Children').

**APPENDIX 5: SUMMARY OF EXCLUDED STUDIES
(PUBLISHED JUNE 2004 TO MAY 2010)**

Reference	Reason for exclusion
Aidam et al. (2005)	Results only presented for exclusive breastfeeding.
Ahmed (2008)	Included preterm infants only.
Bottaro & Giugliani (2009)	Outcomes only include measurement of breastfeeding knowledge (no initiation or duration rates).
Grossman et al. (2009)	Before-after study with no control group; Clinician training.
Huang et al. (2007)	Historical control group only.
Kelagher et al. (2009)	Not randomised, clusters self selected to receive intervention.
Lin et al. (2008)	Matched controls to women who did NOT want to attend breastfeeding classes.
Law et al. (2007)	Measured effect of clinician training (exclusion criteria).
Manganaro et al. (2008)	Measure of effect of hospital policies and practices (exclusion criteria).
Merewood et al. (2006)	Included preterm infants only.
Reeve et al. (2004)	Not randomised or alternate allocation, not concurrent groups.
Salonen et al. (2008)	Before-after study without a control group.
Susin & Giugliani (2008)	Historical controls.
Thomson et al. (2009)	Breastfeeding self-efficacy and intention only measured (no initiation or duration rates).
Vari et al. (2000)	Not randomised, convenience sample, underpowered.
Wong et al. (2007)	Not randomised, not able to ascertain how much bias existed in intervention allocation.

APPENDIX 6: SURVEY QUESTIONS AND RESPONSES

1. What is your main area of work?			
If you have more than one job please describe other/s.			
Response options (fixed choice)	Frequency		
	Number	Percent (all responses)	Valid percent (missing data excluded)
Maternal & Child Health Nurse	271	78.1%	78.1%
Maternal & Child Health Nurse Coordinator	38	11.0%	11.0%
Midwife	17	4.9%	4.9%
Nurse	0	0.0%	0.0%
Lactation consultant	9	2.6%	2.6%
Mothercraft nurse/Early childhood worker	1	0.3%	0.3%
Other – please specify	11	3.2%	3.2%
No response	0	0.0%	

2. Do you work full-time in your main job?			
Response options (fixed choice)	Frequency		
	Number	Percent (all responses)	Valid percent (missing data excluded)
Yes	105	30.3%	30.3%
No	242	69.7%	69.7%
No response	0	0%	

3. Which of the following qualifications do you have?			
Response options (fixed choice)	Frequency		
	Number	Percent (all responses)	Valid percentage (missing data excluded)
Maternal & Child Health Nurse (MCHN)	330	95.1%	95.1%
Midwife	300	86.5%	86.5%
Nurse	255	73.5%	73.5%
Lactation consultant (IBCLC)	102	29.4%	29.4%
Mothercraft nurse	7	2.0%	2.0%
Early childhood worker	2	0.6%	0.6%
Other – please specify	74	21.3%	21.3%
No response	0	0.0%	

Note: respondents could specify more than one qualification hence percentages do not add to 100%.

4. Do you work in a Maternal & Child Health Centre?			
Response options (fixed choice)	Frequency		
	Number	Percent (all responses)	Valid percent (missing data excluded)
Yes	264	76.1%	76.3%
No	31	8.9%	9.0%
Other	51	14.7%	14.7%
No response	1	0.3%	

5. Which municipality do you work in?		
Please list all if more than one.		
Response provided	Frequency	
	Number	Percent
Yes	331	95.4%
No	16	4.6%
Detailed results are presented in Table 8 and Figure 7 & Figure 8.		

6. Are there breastfeeding support programs (other than the usual MCHN service) that you know of in your municipality (please tick all that apply)?

Response options (fixed choice)	Frequency		
	Number	Percentage of all responses	Percentage distribution of valid responses (missing data excluded)
MCHN dedicated breastfeeding service	131	37.8%	44.8%
MCHN Enhanced Home Visiting	179	51.6%	60.9%
Community Health Centre breastfeeding service	53	15.3%	18.0%
Hospital-based breastfeeding service	185	53.3%	62.9%
Australian Breastfeeding Association special project	45	13.0%	15.3%
None known	8	2.3%	2.7%
Other breastfeeding service	68	19.6%	23.1%
No response	53	15.3%	

7. Does your municipality have specific breastfeeding support services for women with additional needs (please tick any that apply)?					
	Young mothers (n)	Women from CALD backgrounds (n)	Aboriginal & Torres Strait Islander women (n)	Women with special needs (n)	Other (n)
MCHN service (dedicated breastfeeding service)	75	69	58	68	23
MCHN Enhanced Home Visiting	126	95	91	109	28
Community Health Centre breastfeeding service	23	20	19	21	6
Hospital-based breastfeeding service	89	71	69	75	32
Australian Breastfeeding Association special project	19	15	12	12	4
Other breastfeeding service	20	15	14	18	13

Completion rate for question = 205 / 347 = 59.1%

8. Who delivers this service (please tick all that apply)?						
	MCHN (n)	Midwife (n)	Lactation consultant (IBCLC) (n)	Australian Breastfeeding Association counsellor (n)	Trained peer supporter (n)	Mother to mother support (n)
MCHN service (dedicated breastfeeding service)	83	27	98	9	4	7
MCHN Enhanced Home Visiting	147	25	55	2	7	2
Community Health Centre breastfeeding service	15	13	31	1	2	1
Hospital- based breastfeeding service	17	76	105	3	2	0
Australian Breastfeeding Association special project	7	1	7	19	9	14
Other breastfeeding service	10	8	26	10	2	4

Completion rate for question = $242 / 347 = 69.7\%$

9. What types of appointments are available for women (tick all that apply)?				
	A drop-in service (n)	Booked short appointments (1-2 hrs) (n)	Day stay appointment (n)	Home visiting appointments (n)
MCHN service (dedicated breastfeeding service)	30	84	9	73
MCHN Enhanced Home Visiting	15	62	6	142
Community Health Centre breastfeeding service	10	27	23	4
Hospital-based breastfeeding service	12	87	88	8
Australian Breastfeeding Association special project	6	6	1	6
Other breastfeeding service	6	10	5	25

Completion rate for question = $278 / 347 = 80.1\%$

10. How often is the service available? (tick one option per row)					
	Daily (n)	2-4 times per week (n)	Weekly (n)	Less than weekly (n)	Unsure (n)
MCHN service (dedicated breastfeeding service)	11	43	77	3	5
MCHN Enhanced Home Visiting	39	60	41	6	19
Community Health Centre breastfeeding service	5	28	12	0	7
Hospital-based breastfeeding service	30	77	21	5	23
Australian Breastfeeding Association special project	9	2	4	2	14
Other breastfeeding service	18	9	8	1	14

Completion rate for question = $273 / 347 = 78.7\%$

11. Are there any restrictions on the service?						
	Mothers with babies of certain age* (n)	Only for mothers in your municipality (n)	First time mothers only (n)	Mothers from specific cultural group* (n)	Mothers with special needs eg multiple birth* (n)	Other* (n)
MCHN service (dedicated breastfeeding service)	7	95	3	4	3	7
MCHN Enhanced Home Visiting	8	103	2	4	10	8
Community Health Centre breastfeeding service	3	10	0	0	0	2
Hospital-based breastfeeding service	32	10	0	0	0	23
Australian Breastfeeding Association special project	0	1	0	1	0	2
Other breastfeeding service	0	8	0	0	0	5

*Please state in the comment field.

Completion rate for question = 195 / 347 = 56.2%

12. What breastfeeding programs or support services appear to be effective?		
Response provided	Frequency	
	Number	Percent
Yes	269	77.5%
No	78	22.5%
Results are discussed in consultation chapter of the report.		

13. Can you please comment on why you think those breastfeeding programs or support services were effective?

Response provided	Frequency	
	Number	Percent
Yes	262	75.5%
No	85	24.5%
Results are discussed in consultation chapter of the report.		

14. What sort of evidence do you have that the programs were effective eg breastfeeding statistics, quality surveys, etc?

Response provided	Frequency	
	Number	Percent
Yes	230	66.3%
No	117	33.7%
Results are discussed in consultation chapter of the report.		

15. What programs or support services do you think are not effective?

Response provided	Frequency	
	Number	Percent
Yes	179	51.6%
No	168	48.4%
Results are discussed in consultation chapter of the report.		

16. Why do you think those programs or services are not effective?

Response provided	Frequency	
	Number	Percent
Yes	146	42.1%
No	201	57.9%
Results are discussed in consultation chapter of the report.		

17. Can you please comment on other breastfeeding support programs or support services that you know of that you think might be effective in your setting?

Response provided	Frequency	
	Number	Percent
Yes	165	47.6%
No	182	52.5%
Results are discussed in consultation chapter of the report.		

18. What do you think would help women to breastfeed for longer?

Response provided	Frequency	
	Number	Percent
Yes	271	78.1%
No	76	21.9%
Results are discussed in consultation chapter of the report.		

19. What would help YOU to support women to breastfeed for longer e.g. what are the barriers that you encounter?

Response provided	Frequency	
	Number	Percent
Yes	261	75.2%
No	86	24.8%
Results are discussed in consultation chapter of the report.		

20. Any other comments you would like to make?

Response provided	Frequency	
	Number	Percent
Yes	103	29.7%
No	244	70.3%
Results are discussed in consultation chapter of the report.		

APPENDIX 7: CODING OF FREE-TEXT RESPONSES

Question 12: What breastfeeding programs or support services appear to be effective?

(Total number of free text responses to Question 12 = 269)

Theme: types of services	Number
Hospital BF services	106
Home visit	100
IBCLC/ experienced bf person	46
MCH dedicated bf service	28
ABA	20
Extra MCHN support	19
Drop in sessions	16
New mothers group	12
Telephone support	11
Enhanced MCHN	11
Peer support	7
Antenatal education/ partners	5
All	5
Out of hospital supports	1
Parenting centre	1
Any support if motivated	1
Different programs for different people	1

Theme: attributes of services	Number
Early and quick access	35
One-to-one support	32
Follow up	11
Local	10
Adequate time allocation	4
Free/low cost	3
Consistent advice	2
Listen to client	2
Hands on advice	2
Staff with interest in bf	2
Self referral	1
Longer hours	1
Self help	1

Theme: other comments	Number
Hospital bed availability	3
Longer postnatal stay	2
Partner/family support	2
Get primips bf together in hospital	1
Midwife and LC training	1
Community acceptance	1

Question 19: What would help YOU to support women to breastfeed for longer? E.g. what are the barriers that you encounter?

(Total number of free text responses to Question 19 = 261)

Theme: barriers	Number
Time	143
Delay in access to services	25
Lack of family/community support for bf	23
Not enough time/support in hospital	19
Structure of service/KAS visits	9
Breastfeeding problems (e.g. nipple damage)	9
Lack of understanding of infant behaviour (including feeding)	8
Normality of artificial feeding	7
Delay in first MCHN visit	7
Lack of resources	5
Formula in hospital	5
Mother's choice	4
CALD/language issues	4
Expressing in hospital	3
Lack of private rooms at MCH centre	3
Lack of continuity of MCHN	2
Cost of private LC	2
Unsupportive health professionals	2
Family financial constraints	2
Mothers exhausted	2
Mothers lack confidence in bf	2
Lack of support for IBCLC qualification	2
Body image	1
Travel (rural areas)	1

Theme: supportive	Number
Community/MCHN breastfeeding centre/drop-in centre	15
More LC support	9
LC/MCHN home visit	8
More breastfeeding education (for staff)	6
Family education	5
More teaching aids	5
Antenatal contact	1
Breast pumps to hire	1
Less emphasis on weights	1
To hand out samples	1

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