



Ethno-cultural Factors that Influence Infant Feeding Practices among Ethnically Diverse Women in Western Countries: A Rapid Review of the Evidence

Sharon DaCosta, Health Promoter
Melanie Gillespie, Analyst, Research and Policy

March 2012

Table of Contents

Key Take Home Messages	1
Executive Summary	2
1 Problem Statement	4
2 Context.....	5
3 Conceptual Model	9
4 Literature Review	9
5 Search Strategy.....	10
References.....	14
Appendices.....	16
Appendix A: Concept Model	17
Appendix B: Search Strategy.....	18
Appendix C: Literature Search Flowchart.....	26

Key Take Home Messages

The question: In western countries, what ethno-cultural factors influence infant feeding choices and practices among ethnically diverse women, during the first six months of life?

- Currently, there is no high quality synthesized evidence that provides information on ethno-cultural factors that influence infant feeding choices and practices.
- It is recommended that Peel Public Health:
 - Utilize the findings from the following internal reports to inform practice decisions:
 - *2009-2010 Breastfeeding Duration Survey*
 - *Ethno-cultural Factors that influence Infant Feeding among South Asians in the Region of Peel: Findings from Stakeholder Consultations*

Revisit the literature in three to five years to assess new research evidence.

Executive Summary

Issue

Personnel at local hospitals believe that ethno-cultural factors, especially among the South Asian community, were influencing women not to breastfeed. The perception is that ethno-cultural infant feeding beliefs and practices may be responsible for the high levels of formula supplementation at hospital discharge and low exclusive breastfeeding and breastfeeding duration in Peel (1-3).

Purpose

This review aims to increase knowledge of ethno-cultural factors that may influence infant feeding choices and practices and guide the development of culturally appropriate key messages, programs and policies to support exclusive breastfeeding.

Research Question

In western countries, what ethno-cultural factors influence infant feeding choices and practices among ethnically diverse women, during the first six months of life?

Context

Exclusive breastfeeding rates are low in Peel Region and pre-discharge formula supplementation of newborns as well as the distribution of take-home formula samples is prevalent at local hospitals (1-3). Hospital partners implicate the ethno-cultural diversity of Peel as a key contributing factor to this phenomenon. Peel Region is very diverse with approximately half of its population belonging to ethnic minority groups (4). Until recently, little or no data on ethnic variation in breastfeeding rates were available. However, preliminary findings from the 2009-2010 Breastfeeding Duration Survey show that recent immigrants (living in Canada for

less than 5 years) are significantly more likely to initiate breastfeeding than Canadian-born mothers and are also significantly more likely to breastfeed at six months compared to non-immigrants (2). Comparisons between South Asian, Caribbean and South American women show no variation in breastfeeding initiation, exclusivity or six month duration but East Asian women are more likely to breastfeed at six months relative to the rest of the population (2).

Methods

Searches were conducted in Ovid Medline, PsychInfo, CINAHL, Sociological Abstracts, Cochrane reviews, and websites of Centers for Disease Control and Prevention and the World Health Organization. Literature was included if it was in English and if the research was conducted in countries similar to Canada, including United States, United Kingdom, Australia, and New Zealand.

Search Results

Five potentially relevant reviews were found and relevance assessment eliminated three. Quality assessments were conducted for the remaining two reviews but yielded very weak ratings. These reviews were excluded due to poor quality.

Conclusion

Currently, there is no high quality synthesized evidence to identify ethno-cultural factors that influence infant feeding choices and practices.

1 Problem Statement

The low rate of exclusive breastfeeding is a public health concern in the Region of Peel. Exclusive breastfeeding for the first six months of life with continued breastfeeding up to two years and beyond is recommended by the World Health Organization (WHO), the Canadian Paediatric Society (CPS) and the Breastfeeding Committee for Canada (5-7). In Peel, the exclusive breastfeeding rate at six months postpartum was as low as 10 percent in 2005 but increased substantially to 23 percent in 2010 (1,2). Although this increase is promising, it is far from ideal. Feeding practices are established early after birth and Peel's low exclusive breastfeeding rate is influenced by early neonatal formula supplementation, high levels of pre-discharge formula supplementation of newborns and the distribution of formula samples at local hospitals (3).

In discussions with hospital personnel, the ethno-cultural beliefs of residents have been implicated as a key factor in the low levels of exclusive breastfeeding in general and in the high levels of in-hospital formula supplementation of infants specifically. Hospital staff expressed the belief that mothers from visible minority groups tend to opt for formula feeding during their hospital stay. The challenge facing the Family Health Division is to determine if, or how, the ethno-cultural diversity of Peel's population influences infant feeding choices, decisions and practices and to develop culturally appropriate key messages, programs, policies, and initiatives to support exclusive breastfeeding.

2 Context

Breastfeeding plays an important role in healthy child development. The Family Health Division actively promotes exclusive breastfeeding for the first six months of life with continued breastfeeding up to two years as per international and national recommendations (5-7).

Exclusive breastfeeding is defined as feeding only breast milk, with no other foods or drinks, except vitamin and mineral supplements or medicines (5). Research links breastfeeding to numerous infant and maternal health benefits. For instance, a review prepared for the Agency for Healthcare Research and Quality, identified that for infants, breastfeeding is associated with a reduction in obesity in later life, ear, lower respiratory and diarrheal infections, and sudden infant death syndrome (8). As well, for mothers, associations between breastfeeding and uterine healing, weight loss, and reduced risk of certain types of cancers have been reported (8, 9).

2.1 Diversity and Growth in Peel

Culturally, Peel is very diverse, with immigrants comprising 49 percent of the population (4). The three main visible minority groups in the region are South Asians (23.6%), Blacks (8.3%), and Chinese (4.7%) while the top three minority ethnic groups for women of child bearing age (15-49 years) are South Asians (26.3%), East/Southeast Asian (10.9%), and Blacks (9.5%) (10). The region has experienced rapid population growth due to both immigration and new births. Approximately 16,000 new babies are born each year in Peel. There has been a 59% increase in the number of live births between 1986 and 2006, compared to a 12% increase in the rest of the Greater Toronto Area (11). The increase in births combined with the ethno-cultural diversity of Peel's population underscores the importance of understanding the role of ethno-cultural factors in infant feeding practices and is a timely and important issue for the Family Health Department.

2.2 Breastfeeding Rates in Peel

Local epidemiologic data show that while breastfeeding initiation rates are high in the region, exclusive breastfeeding at 6 months post partum has been an ongoing source of concern. In 2005, approximately 94% of mothers in the region initiated breastfeeding, 58% breastfed (mixed and exclusive) until six months and 10% breastfed exclusively to 6 months (1). Preliminary findings from the 2009-2010 Breastfeeding Duration Survey reveal that breastfeeding initiation remained high at 97%, breastfeeding at six months (mixed and exclusive) is relatively unchanged at 58%, and exclusive breastfeeding at six months postpartum more than doubled to 23% (2). Although the increase in breastfeeding exclusivity is promising, there is much room for improvement.

2.3 Ethnic Variation in Breastfeeding

Until recently, there was no mechanism in place to measure ethnic variation in breastfeeding initiation, duration and exclusivity in Peel. In an attempt to fill the void, the 2009-2010 cycle of the Breastfeeding Duration Survey collected demographic data on ethnicity and immigration status. Preliminary findings reveal that most mothers in Peel initiate breastfeeding. However, mothers who reported their ethnic origin as Canadian are significantly less likely to initiate breastfeeding than mothers who are recent immigrants, defined as living in Canada for less than five years (96% versus 100%) (2). Recent immigrants are also significantly more likely to report breastfeeding at six months than non-immigrant mothers (66% versus 53%) (2). There is some indication that acculturation may influence breastfeeding exclusivity at six months for longer term immigrants, defined as living in Canada for 11 years or more. These were significantly less likely to exclusively breastfeed at six months (26% versus 14%) when compared to recent

immigrants or Canadian born mothers (2). These data do not support the perceived notion that immigrants, particularly recent ones, do not choose to breastfeed.

Comparisons in breastfeeding initiation, exclusivity at six months and any breastfeeding at six months between East Asian, South Asian, Caribbean, and South American women with the rest of the population show no statistically significant differences with one exception; East Asian women are more likely to breastfeed at six months compared to the general population (2). These findings challenge the view that women of ethnic backgrounds are more likely than their Canadian counterparts to introduce formula to their babies.

Nationally, limited data are available on breastfeeding prevalence for minority groups. The 2007-2008 Canadian Community Health Survey (CCHS) reports that 96.2 percent of Asian women in Canada initiate breastfeeding but this is a broad category which includes women of Korean, Filipino, Japanese, Chinese, South Asian and South East Asian backgrounds (12). The survey does not provide breastfeeding duration and exclusivity data for this or other ethnic groups.

2.4 Formula Supplementation at Local Hospitals

The method of infant feeding at time of discharge from hospital is reported within the Integrated Services for Children Information System (ISCIS) database for mothers who consent to have their information forwarded to their local public health unit. A review of Peel data for the years 2004-2007 demonstrated an apparent decrease in percentage of mothers feeding infants breast milk only, and an increase in mixed feeding (breast milk plus formula) (4). Further exploration of this trend was requested by the Medical Officer of Health.

In response, Peel Public Health surveyed a sample of more than 1,100 new mothers in 2009 in order to estimate the proportion of mothers whose infants were supplemented with formula, the proportion given formula to take home, and mothers' perceptions of the reasons for giving formula to their newborns. The results displayed in table 1 show a range in hospital formula supplementation rates of 54 to 72% by local hospitals, and formula samples given to 24 to 44% of mothers surveyed (3).

Table 1: Exclusive Breastfeeding and Formula Supplementation at Hospital Discharge

Hospital	Exclusive Breastfeeding at Hospital Discharge	Formula Supplementation Prior to Hospital Discharge	Distribution of Formula Samples at Hospital Discharge
Brampton Civic Hospital	28%	72%	43%
Credit Valley Hospital	46%	54%	32%
Trillium Health Centre	46%	54%	24%

Peel Public Health hosted a series of meetings, in July and August of 2010, to discuss these findings with each of the three hospitals located within Peel. Representatives from the Office of the Medical Officer of Health and Family Health Division met with key hospital staff and administrators to discuss the report and its recommendations. A salient theme which emerged from these discussions is the belief that the findings were reflective of the ethno-cultural diversity of the population. Hospital personnel's perception was that mothers from visible minority ethnic backgrounds were reticent to breastfeed and often requested formula supplements for their newborns.

Peel Public Health uses an evidence-informed decision making framework to inform practice and it was decided to conduct a rapid review of the literature to assess empirical support for the argument raised by hospital staff. The findings will inform the development of culturally

appropriate key messages, programs, and policies, and collaboration with key partners to support exclusive breastfeeding.

3 Conceptual Model

A conceptual model of the variables associated with breastfeeding was developed by adapting a model from Lee, Elo, McCollum and Culhane, who expanded demographic and socioeconomic factors into cultural context, social and political environments, and maternal and infant characteristics (13). Input from Peel Public Health's breastfeeding staff was solicited and incorporated into the model to reflect the local context in Peel (Appendix A). While this conceptual model provides a broad overview of factors that influence infant feeding, the "cultural context" component, which addresses factors such as ethno-cultural theories of parenting, beliefs about breastfeeding, history of breastfeeding, and acculturation, is germane to this discussion.

4 Literature Review

The purpose of this rapid review is to determine evidence of ethno-cultural factors which could influence infant feeding choices and patterns. Initially, the intent was to limit the search to breastfeeding behaviours among the South Asian population, but this yielded limited results. The search question was therefore broadened to examine infant feeding practices among all visible minority ethnic groups living in Westernized countries.¹

¹ Although the term originally had a literal geographic meaning, western world generally refers to Europe and the Americas. (Ovid MeSH Heading, retrieved on 2012-01-12. This review included a search for studies located in Europe, the U.S., Australia and Canada.

Specifically, the search question was: *In western countries, what ethno-cultural factors influence infant feeding choices and practices among ethnically diverse women, during the first six months of life?*

Because this research question did not focus on interventions, but instead focused on understanding infant feeding decision factors and descriptive situations, the PICO format used to generate search terms was modified as outlined below:

P (Population)	Mothers of diverse ethnic background living in westernized countries
E (Exposure or Situation)	Breastfeeding beliefs, values and practices that are culturally based
C (Comparison)	Not Applicable
O (Outcome)	Types and description of infant feeding behaviours (breastfeeding, formula feeding and mixed feeding, breastfeeding duration and exclusivity)
T (Time)	Birth to 6 months

5 Search Strategy

Literature searches were conducted in Ovid Medline, PsychInfo, CINAHL, Sociological Abstracts, and Cochrane reviews. Searches of the grey literature were done by searching websites for the Centers for Disease Control and Prevention and the World Health Organization.

The search terms were the same in each case and included:

Population: mothers, new mothers, post partum mothers

Exposure: ethnic groups, ethnicity, culture, immigrants, minority groups

Outcome: breastfeeding, infant feeding, bottle feeding, formula feeding, formula supplements, artificial baby milk, and breastmilk supplements

Search strategies for Ovid Medline, PsychInfo and CINAHL databases are included in Appendix B.

5.1 Inclusion and Exclusion Criteria

Studies were restricted to English Language only and limited to westernized countries such as Canada, United States, United Kingdom, Australia, and New Zealand. The inclusion criteria were kept sufficiently broad to capture all ethno-cultural groups, but restricted the infant feeding timeline to between birth and 6 months. Initially, study types were restricted to syntheses, systematic reviews and reviews but this was later extended to include single studies.

5.2 Search Results

The search strategies yielded a total of 249 articles. Of these, five potentially relevant reviews and 32 potentially relevant single studies were considered. However, for the purposes of this review, Family Health management decided to exclude the single studies due to limited internal capacity to undertake a synthesis of single studies. Relevance assessment of the five review articles eliminated three of the five, and quality assessment was completed for the final two. (Refer to Appendix C: Literature Search Flowchart for a detailed synopsis of this process.)

The first review selected for critical appraisal, completed by Thurlier and Mercer, provided evidence from an unspecified number of U.S. and international papers, published in English between 1998 and 2008, on factors associated with breastfeeding duration (14). Variables are grouped under four headings: biological, social, psychological and demographic. Included studies discussed race as a predictor of breastfeeding and longer lengths of stay in the United States of America (U.S.) as associated with reduced breastfeeding duration (14). However, the authors did not compare or combine results across studies or develop their own conclusions.

The second review selected for critical appraisal was completed by Gill and focused on immigrant Hispanic women living in the U.S (15). It described breastfeeding beliefs, attitudes and practices, and suggested interventions to increase breastfeeding exclusivity and duration among Hispanic women (15). This review drew on 38 studies conducted in the U.S. between 1998 and 2008. No description of the included studies is provided and the authors did not develop their own conclusions.

5.3 Critical Appraisal and Findings

Both reviews were critically appraised, independently, by two authors using the Quality Assessment Tool for Review Articles developed by Health-evidence.ca. The reviewers concurred in rating both reviews as “weak” (2 out of 10 for the Thurlier and Mercer and 1 out of 10 for Gill). Each review scored one point for search strategies that covered the minimum of 10 years (14,15). However, the Thurlier and Mercer review received an additional point for the use of appropriate inclusion criteria (14). Both reviews were excluded due to poor quality and it was concluded that currently, there is no high quality synthesized evidence available to identify ethno-cultural factors that influence infant feeding patterns.

5.4 Decision

In spite of the dearth of synthesized evidence to answer this research question, Peel Public Health has collected local data that provide additional insight about ethno-cultural variations in breastfeeding that can inform program planning. The first, the 2009-2010 Breastfeeding Duration Survey, provides epidemiologic data on breastfeeding variation by immigration status and key visible minority groups. The second, a descriptive qualitative study, identifies and

discusses ethno-cultural factors that influence infant feeding patterns in the local South Asian community. The findings from these two sources provide valuable information that can be used to inform some practice decisions.

The following recommendations are suggested:

- Integrate the key findings and recommendations from the following internal reports to develop a conceptual map that will inform key messages, programs, policies, and initiatives to support exclusive breastfeeding and to educate stakeholders:
 - ◆ *Formula Supplementation for Newborns in Peel Region Hospitals*
 - ◆ *2009-2010 Breastfeeding Duration Survey*
 - ◆ *Ethno-cultural Factors that Influence Infant Feeding among South Asians in the Region of Peel: Findings from Stakeholder Consultations*
- Update search on this question in three to five years to assess new research evidence and to inform the feasibility of conducting a new rapid review based on search findings and program priorities.

References

1. Peel Public Health. *Breastfeeding Practices in the Region of Peel 2004/2005*. Available at peelregion.ca/health
2. Peel Public Health. *Breastfeeding Practices in the Region of Peel 2009/2010*. Unpublished.
3. Peel Public Health. *Formula Supplementation for Newborns in Peel Region Hospitals, A 2009 Survey of New Mothers*. 2010.
4. Peel Public Health. *A Picture of Health: A Comprehensive Report on Health in Peel, 2005*.
5. World Health Organization, *Nutrition Topics- Exclusive Breastfeeding*. Available at http://www.who.int/nutrition/topics/exclusive_breastfeeding/en/
6. Canadian Pediatric Society. *Paediatric Child Health 2005;10(3):148*. Available at <http://www.cps.ca/english/statements/n/breastfeedingmar05.htm>
7. Breastfeeding Statement of the Breastfeeding Committee for Canada. Available at: <http://breastfeedingcanada.ca/documents/webdoc5.pdf>
8. Ip S., Raman M., Chew P., Mangula N., Devine R., Trikalinos, T. *Breastfeeding and maternal and Infant Health Outcomes in developed countries*. Evidence Report/technology Assessment, 2007; 153, 1-186.
9. Heinig, M. Jane & Dewey, Kathryn G. Health Effects of breast feeding for mothers: a critical review. *Nutrition Research Reviews*, 1997, 10, 35-56.
10. Source: Canadian Community Health Survey Cycle 4.1 (2007/2008), Ontario Share File, distributed by the Ministry of Health and Long-Term Care
11. Region of Peel Public Health. *Born in Peel: Examining Maternal and Infant Health*, 2010.
12. Health Canada, *Breastfeeding Initiation in Canada: Key Statistics and Graphics (2007-* Available at: <http://www.hc-sc.gc.ca/fn-an/surveill/nutrition/commun/prenatal/initiation-eng.php>.
13. Lee, H.J, Elo, I.T., McCollum, K.J. & Coulhane, J.F. Racial/ethnic differences in breastfeeding initiation and duration among low-income, inner-city mothers. *Social Science Quarterly*, 2009 Dec 1;90(5):1251-1271.
14. Thurlier Diane & Mercer Judith. Variable associated with breastfeeding duration. *Journal of Obstetric, Gynecologic and Neonatal Nursing*, 2009; 38, 259-268.

15. Gill, S.L. Breastfeeding by Hispanic Women. *Journal of Obstetric, Gynecologic, and Neonatal Nursing*, 2009, 38, 244-252.

Appendices

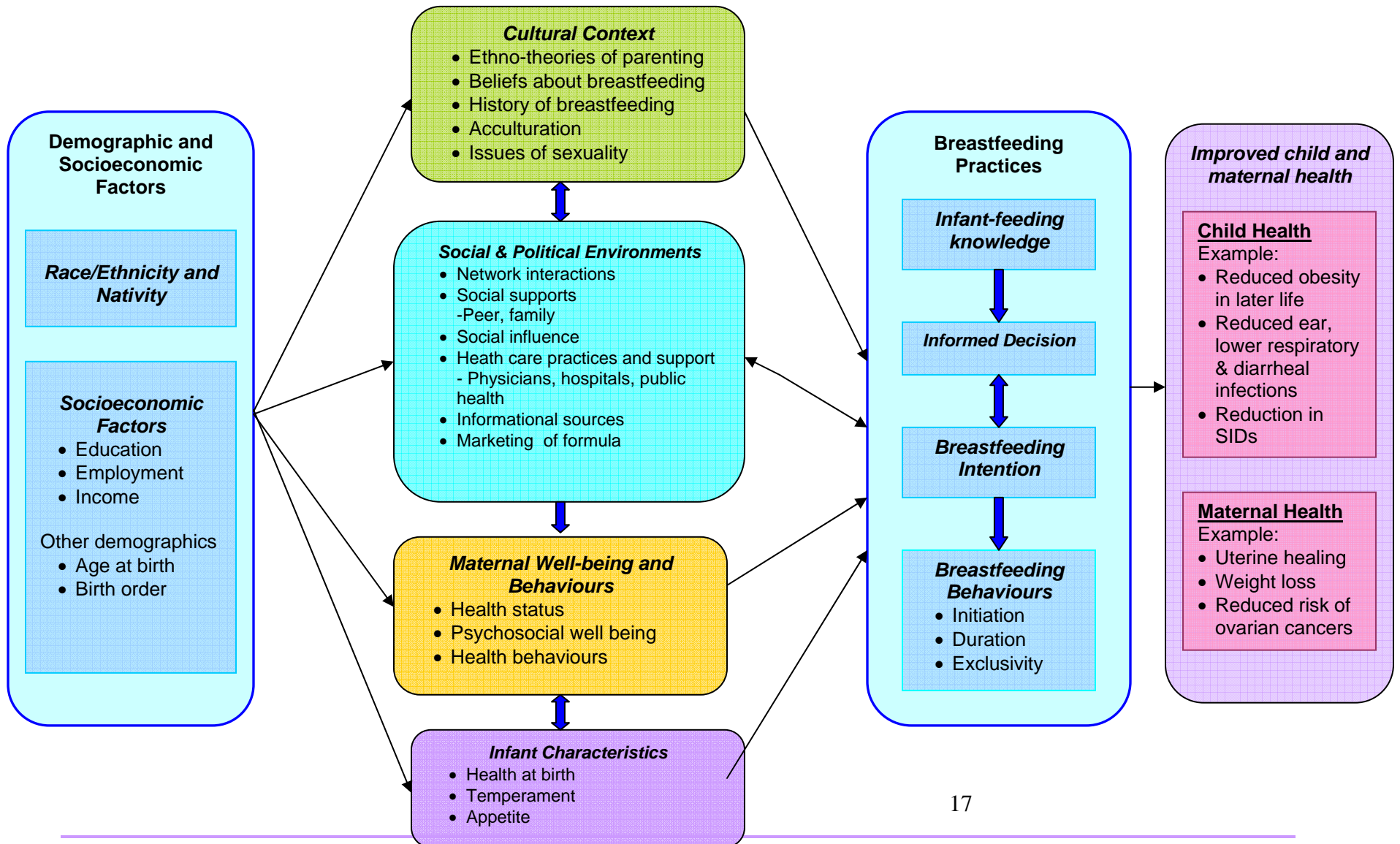
Appendix A: Concept Model

Appendix B: Search Strategy

Appendix C: Literature Search Flowchart

Appendix A: Concept Model – Factors that Influence Breastfeeding

(Adapted from Lee, Elo, McCollum & Culhane, 2009)



Appendix B: Search Strategy

Medline Search Strategy

- 1 Mothers/ (21450)
- 2 new mother\$.tw. (765)
- 3 post partum mother\$.tw. (31)
- 4 post-partum mother\$.tw. (31)
- 5 exp Ethnic Groups/ (95930)
- 6 ethni\$.tw. (63906)
- 7 cultur\$.tw. (712989)
- 8 cultur\$.tw. (712989)
- 9 "Emigrants and Immigrants"/ (3142)
- 10 immigrant\$.tw. (12418)
- 11 Minority Groups/ (8916)
- 12 visible minorit\$.tw. (73)
- 13 Breast Feeding/ (22710)
- 14 breastfeed\$.tw. (10009)
- 15 breast feed\$.tw. (10479)
- 16 Infant Formula/ (1787)
- 17 infant feed\$.tw. (2978)
- 18 Bottle Feeding/ (2985)
- 19 bottle feed\$.tw. (1209)
- 20 bottle fed.tw. (799)
- 21 formula fed.tw. (1345)
- 22 formula feed\$.tw. (940)
- 23 formula supplement\$.tw. (300)
- 24 artificial baby milk.tw. (14)
- 25 breast milk substitute\$.tw. (203)
- 26 feeding practice\$.tw. (2116)
- 27 1 or 2 or 3 or 4 (21974)
- 28 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 (848063)
- 29 13 or 14 or 15 or 16 or 17 or 18 or 19 or 20 or 21 or 22 or 23 or 24 or 25 or 26 (33775)
- 30 27 and 28 and 29 (341)
- 31 exp Infant/ (854731)
- 32 30 and 31 (220)
- 33 meta-analysis.mp.pt. (47776)
- 34 (search or systematic review or medline).tw. (149791)
- 35 cochrane database of systematic reviews.jn. (7763)
- 36 or/33-35 (179056)
- 37 exp guideline/ (21379)
- 38 (practice guideline or guideline).pt. (21379)
- 39 37 or 38 (21379)
- 40 36 or 39 (199427)
- 41 (comment or letter or editorial or note or erratum or short survey or news or newspaper article or patient education handout or case report or historical article).pt. (1485827)
- 42 40 not 41 (191056)

- 43 30 and 42 (10)
- 44 32 and 42 (9)
- 45 limit 32 to yr="2007 -Current" (102)

Psychinfo Search Strategy

Database: PsycINFO <2002 to August Week 4 2011>
 Search Strategy:

-
- 1 Mothers/ (10184)
 - 2 new mother\$.tw. (400)
 - 3 post partum mother\$.tw. (8)
 - 4 post-partum mother\$.tw. (8)
 - 5 ethni\$.tw. (30445)
 - 6 cultur\$.tw. (95983)
 - 7 cultur\$.tw. (95983)
 - 8 immigrant\$.tw. (8317)
 - 9 Minority Groups/ (4853)
 - 10 visible minorit\$.tw. (80)
 - 11 Breast Feeding/ (1104)
 - 12 breastfeed\$.tw. (1215)
 - 13 breast feed\$.tw. (512)
 - 14 infant feed\$.tw. (310)
 - 15 Bottle Feeding/ (69)
 - 16 bottle feed\$.tw. (80)
 - 17 bottle fed.tw. (28)
 - 18 formula fed.tw. (40)
 - 19 formula feed\$.tw. (87)
 - 20 formula supplement\$.tw. (13)
 - 21 artificial baby milk.tw. (0)
 - 22 breast milk substitute\$.tw. (4)
 - 23 feeding practice\$.tw. (241)
 - 24 1 or 2 or 3 or 4 (10335)
 - 25 exp Infant/ (0)
 - 26 meta-analysis.mp.pt. (6612)
 - 27 (search or systematic review or medline).tw. (25212)
 - 28 exp "Racial and Ethnic Groups"/ (36539)
 - 29 exp Immigration/ (7027)
 - 30 5 or 6 or 7 or 8 or 9 or 10 or 28 or 29 (139709)
 - 31 11 or 12 or 13 or 14 or 15 or 16 or 17 or 18 or 19 or 20 or 22 or 23 (1894)
 - 32 24 and 30 and 31 (107)
 - 33 26 or 27 (30309)
 - 34 32 and 33 (0)
 - 35 limit 32 to yr="2007 -Current" (75)

CINAHL Search Strategy

S44	s40 not s43	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	72	Edit S44
S43	s41 or s42	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	11184	Edit S43
S42	TI presentation*	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	4998	Edit S42
S41	TI abstract*	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	6558	Edit S41
S40	s38 and s31	Limiters - Published Date from: 20070101-20111231 Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	79	Edit S40
S39	s38 and s31	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	132	Edit S39
S38	s33 or s34 or s35 or s36 or s37	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	42003	Edit S38
S37	TX cochrane	Search modes -	Interface - EBSCOhost	23598	Edit

		Boolean/Phrase	Search Screen - Advanced Search Database - CINAHL with Full Text		S37
S36	TX medline	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	27267	Edit S36
S35	PT meta analysis	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	1317	Edit S35
S34	PT systematic review	Limiters - Published Date from: 20070101- 20111231; Exclude MEDLINE records Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	3233	Edit S34
S33	MW meta analysis	Limiters - Published Date from: 20070101- 20111231; Exclude MEDLINE records Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	1215	Edit S33
S32	s31	Limiters - Published Date from: 20070101- 20111231; Exclude MEDLINE records Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	167	Edit S32
S31	s5 and s13 and s30	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	1137	Edit S31

S30	s14 or s15 or s16 or s17 or s18 or s19 or s20 or s21 or s22 or s23 or s24 or s25 or s26 or s27 or s28 or s29	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	23826	Edit S30
S29	TX feeding practice*	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	1628	Edit S29
S28	MW breast feeding	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	10251	Edit S28
S27	MW breastfeeding	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	128	Edit S27
S26	TX breast milk substitute*	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	197	Edit S26
S25	TX artificial baby milk	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	36	Edit S25
S24	TX infant formula	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	2527	Edit S24
S23	TX formula supplement*	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search	337	Edit S23

			Database - CINAHL with Full Text		
S22	TX formula fed	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	744	Edit S22
S21	TX formula-feed*	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	812	Edit S21
S20	TX formula feed*	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	1040	Edit S20
S19	TX bottle fed*	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	510	Edit S19
S18	TX bottle-feed*	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	1985	Edit S18
S17	TX bottle feed*	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	2076	Edit S17
S16	TX breastfeed*	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	12559	Edit S16
S15	TX breast feed*	Search modes -	Interface - EBSCOhost	14096	Edit

		Boolean/Phrase	Search Screen - Advanced Search Database - CINAHL with Full Text		S15
S14	TX infant feed*	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	4787	Edit S14
S13	s6 or s7 or s8 or s9 or s10 or s11 or s12	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	201665	Edit S13
S12	MW minority groups	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	5276	Edit S12
S11	MW immigrants	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	4952	Edit S11
S10	MW ethnic groups	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	9134	Edit S10
S9	TX immigrant*	Search modes - Boolean/Phrase		13526	Edit S9
S8	TX cultur*	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	160502	Edit S8
S7	TX visible minorit*	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen -	193	Edit S7

			Advanced Search Database - CINAHL with Full Text		
S6	TX ethni*	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	62044	Edit S6
S5	s1 or s2 or s3 or s4	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	16128	Edit S5
S4	MW mothers	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	12805	Edit S4
S3	TX new mother*	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	3907	Edit S3
S2	TX post-partum mother*	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	198	Edit S2
S1	TX post partum mother*	Search modes - Boolean/Phrase	Interface - EBSCOhost Search Screen - Advanced Search Database - CINAHL with Full Text	198	

Appendix C: Literature Search Flowchart

