

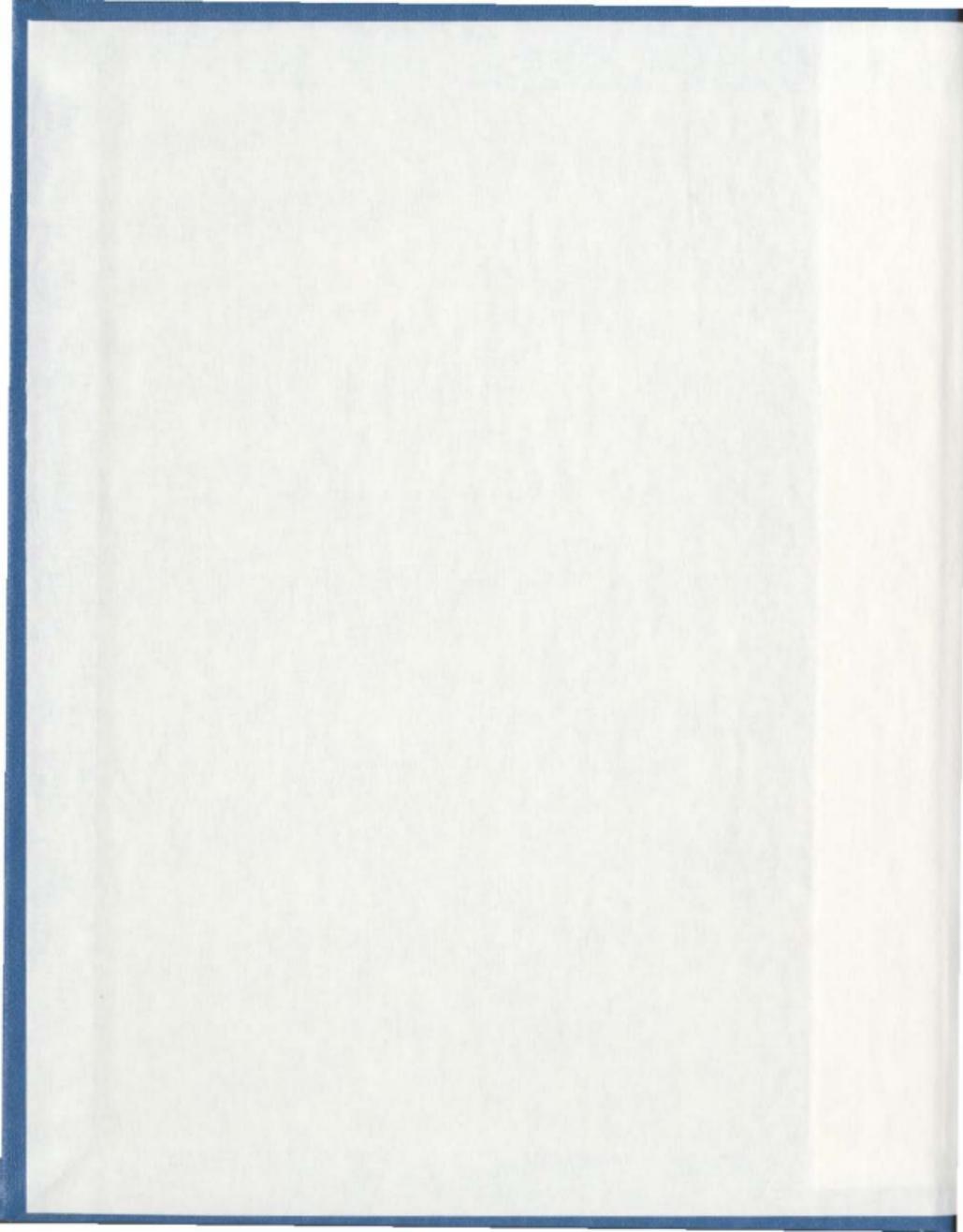
A CORRELATIONAL STUDY EXAMINING THE
RELATIONSHIPS AMONG MATERNAL BREASTFEEDING
SELF-EFFICACY, PROBLEM-SOLVING SKILLS,
SATISFACTION WITH BREASTFEEDING EXPERIENCE,
AND DURATION

CENTRE FOR NEWFOUNDLAND STUDIES

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MATERNAL BREASTFEEDING SELF-EFFICACY, PROBLEM-SOLVING
SKILLS, SATISFACTION WITH BREASTFEEDING EXPERIENCE, AND
DURATION

by
Marilyn L. White

A thesis submitted to the
School of Graduate Studies
in partial fulfilment of the
requirements for the degree of
Master of Nursing

School of Nursing
Memorial University of Newfoundland

September, 2002

St. John's

Newfoundland

Abstract

The breastfeeding initiation rate in Newfoundland and Labrador is well below national standards, and is further compromised by high attrition rates, despite evidence confirming the superiority of breast milk for infant health. It is becoming more apparent from the literature that breastfeeding confidence and problem-solving are factors affecting breastfeeding success. These factors were investigated in this study in relation to the outcome variables of breastfeeding satisfaction and duration. The study was guided by a conceptual framework based on Self-Efficacy Theory (Bandura, 1977) and the concept of Learned Resourcefulness (Rosenbaum, 1983).

A descriptive correlational design was used with a sample of 57 breastfeeding mothers to address the questions of differences in breastfeeding confidence over time, differences between experienced and first time breastfeeders in relation to breastfeeding confidence, problem-solving, satisfaction, and duration, as well as the relationships among these variables. Data were collected using the Breastfeeding Self-Efficacy Scale (BSES), the Problem-Solving Related to the Baby's Feeding Scale (PS-F), the Maternal Breastfeeding Evaluation Scale (MBFES), a Demographic Profile, and through telephone interviews at three time frames. Data were analysed using SPSS 9.0 for Windows.

The findings of this study indicated that the duration and exclusivity of breastfeeding were far below established breastfeeding standards. The major reason cited for discontinuing breastfeeding was perceived insufficient milk supply. All mothers scored relatively high on measures of breastfeeding confidence, problem-solving and satisfaction. No significant differences were

found between confidence scores over time. First time mothers scored lower than experienced mothers in breastfeeding confidence, problem-solving, satisfaction, and duration rates, although only confidence and satisfaction scores were significantly different. Numerous positive relationships existed among the study variables, often with significant differences being noted between experienced and first time breastfeeders. For the total group of mothers, and for experienced breastfeeders, breastfeeding confidence at 4 weeks postpartum accounted for the greatest amount of variance in the breastfeeding outcomes of satisfaction and duration. For first time breastfeeders, breastfeeding problem-solving at 4 weeks postpartum accounted for the most variance in satisfaction, while breastfeeding confidence at 4 weeks postpartum accounted for the most variance in duration. The findings lend support to the proposed theoretical framework.

Findings indicate that breastfeeding confidence and problem-solving are important variables for nurses to consider when planning interventions for promoting, protecting and supporting breastfeeding, as these variables are positively related to breastfeeding satisfaction and duration. Future research should focus on using the BSES and PS-F in different populations, exploring factors which facilitate or hinder breastfeeding confidence, examining the problem-solving process used by breastfeeding mothers, and further exploring factors which affect breastfeeding satisfaction.

Acknowledgements

I am sincerely grateful for the assistance, guidance, and support of a number of people who facilitated the completion of this thesis:

To my thesis co-supervisors, Dr. Sandra LeFort and Professor Edna McKim, for your guidance, patience, wisdom, and words of encouragement which helped me to believe in myself.

To the breastfeeding mothers who took time out of their busy lives to provide information for my study and to show your interest and support.

To the staff nurses on the obstetrical unit for supporting the study and acting as intermediaries in contacting patients.

To the staff and management of Western Health Care Corporation, Health and Community Services Western, and especially, Western Regional School of Nursing, for your support, encouragement, and assistance.

To my fellow colleagues in both the master's program and my workplace, for your endless patience, support, and words of encouragement.

To my family and friends for their interest, support, love, and encouragement. To my parents, Gwendolyn and Howard Hicks, and my mother-in-law, Marjorie White for their love and support, and for always being there when needed. To my husband Keith, and my three children, Steven, Jennifer and Sarah, a special thank you for your constant help, encouragement, patience, and love.

Finally, I would like to acknowledge the financial contribution of the Association of Registered Nurses of Newfoundland and Labrador Education and Research Trust, and the Newfoundland and Labrador Department of Health for assisting with expenses incurred throughout my program of study.

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Chapter 1

Introduction

Breastfeeding is accepted as the optimum method of infant feeding for the first year or more of infant life (Canadian Institute of Child Health, 1996). Extensive research confirms that there are many benefits to infants, mothers, families, and society from breastfeeding and the use of human milk for infant feeding. These include health, nutritional, immunological, developmental, psychological, social, economic, and environmental benefits (American Academy of Pediatrics, 1997). Increasing the initiation and duration of breastfeeding has become a very important goal for health care professionals, particularly in terms of improving long term health benefits for the infant and mother, and the subsequent saving of health care dollars.

Despite the proven benefits of breastfeeding, Newfoundland and Labrador has the lowest breastfeeding rate in Canada (Canadian Institute of Child Health, 1995). While the overall national breastfeeding rate in Canada was reported at 73% (Health Canada, 1999), the Newfoundland and Labrador breastfeeding rate was reported at only 54% (Goodridge, 1999). This was an increase from the previously recorded provincial rate of 42.9% reported by Matthews, Banoub-Baddour, Laryea, McKim, and Webber (1994), in their study of infant feeding practices in Newfoundland and Labrador. This increase reflects the efforts of many health care professionals, working in various organizations throughout the province, who have established mandates to increase breastfeeding initiation and duration rates.

Despite this rise in initiation rates, however, Newfoundland and Labrador's

breastfeeding continuation rates decline dramatically during the first 6 months after birth. Matthews et al. (1994) reported that the low breastfeeding rate in Newfoundland and Labrador further declined to 32.4% at 1 month, 22.9% at 4 months and 17.4% at 6 months. While no current data exists to compare current attrition rates, anecdotal reports from health care providers throughout the province would indicate that the trends are similar. High breastfeeding attrition rates are also in keeping with other breastfeeding studies in Canada and other industrialized countries (Bourgoin et al., 1997; Sheehan, Krueger, Watt, Sword, & Bridle, 2001; Vogel, Hutchison, & Mitchell, 1999). This attrition occurred despite recommendations by the Breastfeeding Committee for Canada (1996) and the World Health Organization (2001), that infants should be exclusively breastfed up to the age of 6 months, and should continue breastfeeding with the use of complimentary foods up to the age of 2 years or beyond.

A need to address the issue of breastfeeding attrition in Newfoundland and Labrador clearly exists. Present breastfeeding research indicates that multiple variables are associated with both the initiation and duration of breastfeeding (Scott & Binns, 1999). Many of these variables have not been extensively investigated, and, therefore, provide little insight into what interventions are necessary to improve breastfeeding outcomes. Maternal breastfeeding confidence and maternal breastfeeding problem-solving have emerged as factors which impact on maternal breastfeeding satisfaction and subsequent breastfeeding duration. Few studies have addressed these variables directly, or examined whether there are relationships among them.

Purpose of the Study

The major purpose of the current study was to examine the relationships among maternal breastfeeding confidence, maternal breastfeeding problem-solving, maternal breastfeeding satisfaction, and breastfeeding duration. Differences in breastfeeding confidence in the immediate postpartum period, compared with 4 weeks after delivery, were explored. Differences between first time and experienced breastfeeding mothers were also examined in relation to key study variables.

Background/Rationale

Although breastfeeding is recognized as a highly significant preventative health intervention in infancy, the benefits of this optimal method of infant feeding may be negligible or greatly reduced if breastfeeding is discontinued prematurely. Many studies have provided evidence of the benefits of breastfeeding in reducing infant morbidity. Cunningham (1979) found that protection against illness to infants from breastfeeding was evident in the early months of life, and increased in proportion to the duration and extent of breastfeeding. Dewey, Heinig, and Nommsen-Rivers (1995) showed that in the first year of life, the incidence of diarrhea among breastfed infants was half that of formula-fed infants and that the percentage of any otitis media was 19% lower, with prolonged episodes (> 10 days) being 80% lower in breastfed, compared to formula-fed infants ($p = .01$). A study by Beaudry, Dufour, and Marcoux (1995) found a protective effect of breastfeeding during the first 6 months of life against respiratory illnesses, gastrointestinal illnesses, and other illnesses including otitis media. Raisler, Alexander, and O'Campo (1999) found

that full breastfeeding (all breast milk - no other foods or fluids) was associated with the lowest illness rates. Infants fully breastfeeding had lower odds ratios of diarrhea, cough or wheeze, and vomiting, and lower mean ratios of illness months and sick baby medical visits ($p < .05$).

Other studies have specifically analysed the savings to the health care system related to breastfeeding. Riordan (1997) reported that in the United States, over \$1 billion of additional health care costs each year are incurred for treatment of four specific medical conditions in infants who were not breastfed. Drane (1997) reported that an estimated minimum of \$11.75 million could be saved each year in Australia if the prevalence of exclusive breastfeeding at 3 months was increased from 60% to 80%. Ball and Wright (1999), utilizing findings from two previous studies (Tucson Children's Respiratory Study, $n = 944$, and Dundee Community Study, $n = 644$), were able to determine the excess cost of health care services for three illnesses (lower respiratory tract infections, otitis media, and gastrointestinal illnesses) in formula-fed infants in the first year of life. After adjusting for confounders, they found that there were 2033 excess office visits, 212 excess days of hospitalization, and 609 excess prescriptions for the three illnesses per 1000 never-breastfed infants, compared with 1000 infants exclusively breastfed for at least 3 months. This resulted in an additional cost to the health care system of between \$331 and \$475 per non-breastfed infant in the first year of life.

Despite the proven benefits of breastfeeding in decreasing infant morbidity and decreasing health care costs, initiating and maintaining breastfeeding is often problematic for new mothers. Learning the art and science of breastfeeding is not always an easy task. Breastfeeding is not instinctual, but

rather consists of a complex set of psychomotor skills for which an infant or mother may need assistance (Keith, 1997). The social climate for breastfeeding has been erratic during the past century, and, as a result, many new breastfeeding mothers in Canada and the United States are being introduced to the breastfeeding experience without the advantage of social support or acceptance. These mothers often cannot avail of the knowledge and support once offered by family members with breastfeeding experience, and may begin their own breastfeeding experience lacking in knowledge, skills, or abilities. Uncertainties about one's abilities to nurse and about the whole breastfeeding process may affect a mother's confidence in breastfeeding (Bottorff, 1990).

Opportunities to learn about breastfeeding are not always utilized or adequate. While research shows that mothers who receive breastfeeding prenatal education have significantly ($p < .01$) higher breastfeeding duration rates (Cox & Turnbull, 1998), the percentage of mothers who attend prenatal classes in Newfoundland and Labrador is relatively low (Canadian Institute of Child Health, 1995). In addition, many barriers in the health care system affect mothers' opportunities to learn the skill of breastfeeding. Shorter hospital stays provide insufficient time for breastfeeding to become established or to teach breastfeeding skills, thus decreasing mothers' confidence for infant care at home. Insufficient breastfeeding knowledge of professionals (Anderson & Geden, 1991; Becker, 1992; Burtlehaus, Smith, Sheps, & Green, 1997; Coreil, Bryant, Westover, & Bailey, 1995; Lewinski, 1992), and nonsupportive behaviours and attitudes of professionals (Patton, Beamon, Csar, & Lewinski, 1996) compound the problem of mothers being adequately prepared for breastfeeding. These factors often undermine the confidence of mothers with

limited breastfeeding experience. Mazingo, Davis, Droppleman, and Merideth (2000) reported that mothers complained of inadequate, insensitive, and inappropriate nursing care as key elements affecting their decisions to discontinue breastfeeding within the first 2 weeks after birth.

The lack of a breastfeeding milieu often impacts on a mother's breastfeeding experience. Most women who choose breastfeeding for infant feeding do so because they have recognized that it is the best source of nutrition for their infants (Buxton, Gielen, Faden, Brown, Paige, & Chwalow, 1991; Chye, Zain, Lim, & Lim, 1997; Health Canada, 1999; Maclean, 1998). When mothers have difficulties with the breastfeeding process, however, they often lack the knowledge, skills, or abilities to cope with breastfeeding problems. Statistics from the National Population Health Survey and the National Longitudinal Survey of Children and Youth (Health Canada, 1999) revealed that between 31 to 35% of infants in Canada are weaned before breastfeeding can become established. Early weaning often occurred before the mother and baby had their first postpartum checkup, and without mothers consulting with their health care provider. Hogan (2001), in a study of barriers to breastfeeding in eastern Nova Scotia ($n = 70$), reported that a lack of knowledge about, and management skills required for breastfeeding, were among the major perceived barriers to breastfeeding generally, as well as to exclusive breastfeeding for 6 months. Research has also shown that breastfeeding intensity over the first 6 months postpartum is strongly correlated with breastfeeding duration ($p < .01$) (Piper & Parks, 2001), therefore identifying the need to advocate for high breastfeeding intensity in the early months of breastfeeding.

Matthews (1993) reported that the initiation period of breastfeeding is a

critical time for the establishment of successful breastfeeding. In her study of primiparous women ($n = 59$), she found that most mothers and babies had significant breastfeeding difficulties during the first 2 days after birth, and that 33% of the mother-baby pairs were still experiencing problems on discharge from the hospital. Of these mothers, 84% had given up breastfeeding by 8 weeks, with the majority discontinuing breastfeeding within 2 weeks following hospital discharge. Barber, Abernathy, Steinmetz, and Charlebois (1997) also reported that the greatest rate of decline in breastfeeding occurred during the first month, and was largely related to mothers' concerns about adequacy of milk supply and the breastfeeding process.

While reasons for the termination of breastfeeding vary, many studies indicate that mothers who wean before 3 months are most likely to do so because of problems with the process of breastfeeding (Health Canada, 1999). Matthews et al. (1994) reported that the two major reasons cited for the cessation of breastfeeding in Newfoundland and Labrador were because of mothers' perceptions of the baby not being satisfied on the breastmilk, and of breastfeeding being too hard. Matthews (1991) stated that breastfeeding difficulty may create anxieties that undermine a mother's self-confidence and ultimately decrease her motivation to breastfeed.

Research indicates that mothers who discontinued breastfeeding prematurely experienced feelings of failure, guilt, or shame, had lingering self-doubts about not continuing with breastfeeding, and felt that breastfeeding failure compromised their maternal role (Mozingo et al., 2000). A major theme emerging from a qualitative study by Leff, Gagne, and Jefferis, (1994) revealed that breastfeeding was an important part of the maternal or nurturing role, and

facilitated maternal-infant attachment. These findings may have implications for future maternal/child relationships.

Problem Statement

There is ample evidence in the literature to substantiate the fact that breastfeeding is the optimal choice for infant feeding for the first 6 months and beyond. There is also ample evidence to show that mothers have problems with the breastfeeding process which ultimately affects their choice of infant feeding. A mother's breastfeeding experience has a major impact on how she perceives breastfeeding, whether she is satisfied with breastfeeding, the duration of her breastfeeding experience, whether she will promote breastfeeding to others, and possibly affect her decision to breastfeed subsequent children. All of these factors may act to decrease the incidence and duration of breastfeeding, not only for the mother, but possibly for others whom she influences in her social milieu. This negates the benefits of this optimal method of infant feeding for newborns, mothers, families, and society.

The province of Newfoundland and Labrador has a low breastfeeding initiation rate combined with a high breastfeeding attrition rate. This has the potential to affect the health of children in the province. This study examined some of the variables which affect breastfeeding duration. There is evidence to show that the modifiable variables of breastfeeding confidence and problem-solving are important to breastfeeding success. These variables were examined in order to determine if there is a relationship between them and whether they were related to two measurable outcomes of the breastfeeding experience - breastfeeding satisfaction and duration. Maternal breastfeeding satisfaction was

chosen as an outcome measure for this study as it represents a positive outcome of mothering and has been shown to significantly affect duration of breastfeeding. Breastfeeding duration was chosen as an outcome variable as it reflects a positive health promotion behaviour which has a significant impact on decreasing infant morbidity.

Research Questions

The study will address the following research questions:

1. What is the difference between maternal breastfeeding confidence in hospital and at 4 weeks postpartum?
2. What differences in breastfeeding confidence exist between first time and experienced breastfeeding mothers in hospital and at 4 weeks postpartum?
3. What differences in breastfeeding problem-solving, satisfaction, and duration exist between first time and experienced breastfeeding mothers?
4. What are the relationships among maternal breastfeeding confidence, problem-solving skills, satisfaction with breastfeeding experience, and duration?

Summary

The goal of increasing the initiation and duration of breastfeeding in Newfoundland and Labrador is important in improving the health of women and children in this province. Breastfeeding is a complex process involving the interplay of numerous variables. The variables of breastfeeding confidence and breastfeeding problem-solving have emerged as possible factors affecting

breastfeeding success. These variables were chosen for investigation in this study, in relation to the outcome variables of breastfeeding satisfaction and duration.

Chapter 2

Literature Review and Conceptual Framework

Literature Review

A review of breastfeeding literature suggests that successful breastfeeding is dependent on multiple factors relating to the mother, the infant, and supportive environments (Scott & Binns, 1999). Since the major focus of this study is the breastfeeding mother, the following literature review will address factors related to the mother, specifically examining maternal breastfeeding confidence, the nature of breastfeeding problems and maternal problem-solving skills, maternal breastfeeding satisfaction, and how these variables affect the duration of breastfeeding. The variable of breastfeeding duration will not be discussed separately, as it will be integrated throughout the other sections.

Breastfeeding Confidence

Although the direct measurement of maternal breastfeeding confidence has not been the major focus of most breastfeeding studies, it often emerges as a variable which impacts on breastfeeding. Many studies have shown that breastfeeding confidence is positively associated with, and predictive of, breastfeeding duration. Cox and Turnbull (1998) reported that women who attended prenatal breastfeeding workshops, have a significant increase ($p < .001$) in confidence levels associated with breastfeeding, and were more likely ($p < .01$) to breastfeed for an extended time, even though they experienced difficulties. It was suggested by the authors that the techniques taught at the workshop provided the mothers with the confidence and the knowledge to

overcome perceived problems.

Buxton et al. (1991) reported that among women ($n = 187$) who initiated breastfeeding, lower confidence in ability to breastfeed was identified as a significant predictor ($p < .001$) of failure to breastfeed for more than 7 days. They established that the probability of failure was approximately four to five times more likely among less confident women. Similar findings were reported by Ertem, Votto, and Leventhal (2001) in their study of less affluent mothers ($n = 64$) eligible for enrollment in the Women, Infants, and Children's Program in the United States. These researchers interviewed mothers within 48 hours after delivery, about their confidence to continue breastfeeding until the infant was 2 months of age. Those mothers who lacked confidence in their ability to still be breastfeeding at 2 months, were more likely to stop breastfeeding within the first 2 weeks postpartum (risk ratio: 2.38, 95% confidence interval: 1.82 - 6.18, $p < .05$). Likewise, Coreil and Murphy (1988), and Loughlin, Clapp-Channing, Gehlbach, Pollard, and McCutchen (1985), in their studies of more affluent women, found that confidence in ability to breastfeed emerged as a significant ($p < .01$ and $p < .001$ respectively) predictor of breastfeeding duration.

O'Campo, Faden, Gielen, and Wang (1992) identified maternal confidence as one of the most significant factors affecting anticipated length of breastfeeding. They found that somewhat confident women, compared with women who were very confident, had 3.06 the relative risk of stopping breastfeeding. Furthermore, Stamp and Crowther (1995) reported that in their study of postnatal women ($n = 235$), one of the main reasons given for stopping breastfeeding included mothers not feeling confident that their babies were receiving enough milk (44%).

Links were also established between mothers' feelings of breastfeeding confidence or control and future breastfeeding status during the testing of new instruments. A study by Dennis and Faux (1999) during psychometric testing of the Breastfeeding Self-Efficacy Scale, revealed that the higher the mother's score of breastfeeding confidence, the more likely she was to be exclusively breastfeeding at 6 weeks postpartum ($p < .001$). The authors of this tool recommended that future studies be carried out to further support validity of the tool and to support the theoretical perspective of the existence of relationships between breastfeeding self-efficacy and future breastfeeding behaviour. Lack of confidence in breastfeeding was also indicated in a study by Janke (1994), in her testing of the Breastfeeding Attrition Prediction Tool (BAPT), where she found that women who weaned prematurely tended to express less control over their ability to breastfeed and believed that breastfeeding was difficult. Again, authors of the tool recommended revisions of the tool and further testing.

Not all studies examined breastfeeding confidence directly, but rather focussed on confidence in a more social or broader context. Boettcher, Chezem, Roepke, and Whitaker (1999) reported that a significant low inverse relationship between lactation duration and lack of social self-confidence ($r = -.18, p = .03$) existed among all breastfeeding mothers. They suggested that, as a woman's certainty in her ability to breastfeed without help increases, she will breastfeed longer. Fahy and Holschier (1988) measured mothers' degree of confidence in ability to cope at time of discharge and at 6 weeks postpartum. They found that, at discharge 63% of all mothers reported a high perception of confidence in their ability to cope at home with the baby, but at 6 weeks postpartum, only 37% of those mothers who failed with breastfeeding reported a high degree of

confidence, compared with 54% of mothers who were successful. They suggested a relationship existed between a mother's failure with breastfeeding and a loss of confidence in her ability to cope with her baby.

Other studies have reported how maternal breastfeeding confidence increases over time. A grounded theory study by Locklin (1995), conducted with low income women ($n = 17$) about their breastfeeding experiences, described how mothers' breastfeeding confidence rose with each new assessment of their situation. They concluded that the longer a woman breastfeeds, the more confidence she develops. The researcher recognized that limitations of this study included threats to reliability based on participants' recollection of breastfeeding events, and possible barriers to understanding participants' stories due to lack of shared cultural norms.

Only one study ($n = 78$) was found that did not support the relationship between breastfeeding confidence and breastfeeding duration (Lawson & Tulloch, 1995). A moderate, but significant relationship ($p < .01$) was found between total confidence scores and intended duration of breastfeeding, and was interpreted as meaning that the more confident a mother felt about coping with breastfeeding problems, the longer she intended to breastfeed. However, Lawson and Tulloch did not find a significant relationship between breastfeeding confidence scores and actual duration of breastfeeding. This study was carried out with first time mothers, and may indicate the uniqueness of this special group of mothers.

Summary.

There is a paucity of research literature which directly examines the

variable of breastfeeding confidence. The variable often emerges, however, as a result of study questionnaires which illicit the reasons for discontinuation of breastfeeding. Evidence in these studies suggests that there is a positive relationship between breastfeeding confidence and breastfeeding duration. Attendance at prenatal breastfeeding workshops have shown significant correlations with increased breastfeeding confidence and subsequent breastfeeding duration (Cox & Turnbull, 1998). Various studies have shown that breastfeeding confidence was significantly linked to breastfeeding duration and often predicted length of breastfeeding (Buxton et al., 1991; Coreil & Murphy, 1988; Dennis & Faux, 1999; Ertem et al., 2001; Loughlin et al, 1985; O'Campo et al, 1992). Other studies of mothers' confidence not specifically related to breastfeeding (Boettcher et al. 1999; Fahy & Holshier, 1988), also revealed a relationship between mothers' confidence and their duration of breastfeeding, possibly suggesting that overall maternal confidence scores may be significant in a mother's success with breastfeeding. Only one study (Lawson & Tulloch, 1995), utilizing a primiparous population, failed to show a significant relationship between breastfeeding confidence and actual duration of breastfeeding.

Breastfeeding Problems

The complex nature of breastfeeding lends itself to a multitude of potential problems. Numerous studies on the success and duration of breastfeeding have linked these variables to the presence of breastfeeding problems, which occur in the early postpartum period. This section of the literature review will focus on the nature of problems experienced by breastfeeding mothers.

Scott, Landers, Hughes, and Binns (2001), in their study of women who

discontinued breastfeeding prior to hospital discharge, found that some of the major reasons given for discontinuing breastfeeding included problems with breastfeeding being painful or uncomfortable mainly due to sore nipples, infants refusing or not interested in feeding, mothers having concerns about milk supply, and mothers citing problems with attachment. Mazingo et al. (2000) carried out a phenomenological study ($n = 9$), which investigated the lived experiences of women who initiate breastfeeding, but stopped within the first 2 weeks after birth. They reported that women described incongruity between highly idealized expectations and early breastfeeding problems, leading to incremental disillusionment and cessation of breastfeeding.

A survey of 350 breastfeeding mothers in Ontario, revealed that the two most common reasons cited for early weaning included perceived insufficient milk supply and breast problems (Bourgoin et al., 1997). The majority of these problems began in the first 3 weeks after delivery. Similarly, Sheehan et al. (2001) studied the breastfeeding outcomes of 875 women in the Ontario Mother and Infant Survey, and reported that breastfeeding continuation rates rapidly declined within the first 4 weeks after birth (with the majority of mothers discontinuing within the first 7 days), and that the major reasons given for discontinuing breastfeeding included perceived inadequate milk supply, difficulty with breastfeeding techniques, and sore nipples.

Quarles, Williams, Hoyle, Brimeyer, and Williams (1994) reported that 62% of mothers who stopped breastfeeding within 1 month after discharge, cited breastfeeding problems as reasons for cessation of breastfeeding. Reasons included insufficient milk/fussy baby, engorged painful breasts, and nipple problems. Isabella and Isabella (1994), in their study of social and personal

factors which affect breastfeeding success, found that the major breastfeeding-related problem reported by 62% of participants during the first month after delivery, was uncertainty regarding an adequate milk supply. The other major areas of concern included breast problems (41%) and baby refusing or being uninterested in breastfeeding (41%).

Grieve, Howarth, Swallow, and Greig (1997) reported that the breastfeeding counselling service of the Nursing Mothers' Association of Australia, found that 30.7% of their calls were regarding infants less than 1 month of age, and that the major areas of need identified included reassurance, positioning and attachment of the infant at the breast, feeding frequency, let-down reflex, and low milk supply. Kim (1997) also reported that the most common reasons new mothers called a breastfeeding support telephone counselling service in Korea, was because of breast milk insufficiency.

Brandt, Andrews, and Kvale (1998) reported "not enough milk/newborn losing weight" as the major reason for terminating breastfeeding prior to 6 weeks. Evers, Doran, and Schellenberg (1998) reported that the most frequently cited reason for stopping breastfeeding prior to 3 months was "not enough milk" (13%), "baby rejected it" (13%), and "baby seemed hungry" (10%). Likewise, the most common reasons cited by Barber et al. (1997) for terminating breastfeeding during the first 4 months included perceived inadequacy of milk supply and/or perceived hunger of the infant, followed by difficulties in the feeding process, such as baby crying, poor sucking, sore nipples, and breast infection.

Chye et al. (1997) reported that 39% of mothers in their study experienced breastfeeding difficulties, and of these, 71% cited insufficient milk supply as the most common problem, followed by problems related to the breast and nipples

(11%). They performed a multivariate logistic regression analysis and found that mothers with breastfeeding difficulties had decreased odds of exclusively breastfeeding (odds ratio: 0.21, 95% confidence interval: 0.13 - 0.34, $p = .000$) and a greater chance of discontinuing breastfeeding (odds ratio: 2.79, 95% confidence interval: 2.11 - 3.69, $p = .000$).

The number of studies which report "insufficient milk" as a major reason for discontinuing breastfeeding warrants further comments. Hill and Humenick (1989) conceptualized insufficient milk supply (IMS) as a state in which a mother has, or perceives that she has, an inadequate supply of breast milk to either satisfy her infant's hunger, and/or support adequate weight gain for the infant. They suggested that determinants of IMS can be biological, behavioural, or social in nature. Maclean (1998) suggested that the category of insufficient milk is probably a convenient "catchall" for those elements of women's experiences that are too complex to be captured in response to a structured survey or single interview. Likewise, Dykes and Williams (1999) concluded that "perceived breastmilk inadequacy is underpinned by a complex and synergistic interaction between socio-cultural influences, feeding management, the baby's behaviour, lactation physiology, and the women's psychological state" (p.232). They discussed the difficulties encountered in trying to determine the relationship between a culturally induced lack of confidence in mother's ability to nourish her baby, and the physiological milk inadequacy created by incorrect feeding practices.

The insufficient milk supply framework (IMS) was used by Hill and Humenick (1996) in testing the psychometric properties of the H & H Lactation Scale. They found that the scale's predictive validity suggested that a mother's

perception of IMS is most closely tied to her perception of infant satiety, although maternal confidence/commitment to breastfeeding and maternal-infant satisfaction play a significant role in sustained breastfeeding. They reported that mothers who decrease their level of breastfeeding tend to report low maternal confidence/commitment to breastfeeding, low maternal perceived infant breastfeeding satiety, and low maternal-infant breastfeeding satisfaction, compared with mothers who breastfeed exclusively (Hill & Humenick, 1996). This research suggests that links may exist between maternal perceived problems with breastfeeding, and breastfeeding confidence and satisfaction.

McCarter-Spaulding and Kearney (2001) also found a significant correlation ($r = .49$, $p < .01$) between perceived insufficient milk scores and self-efficacy (confidence), with 23% of the variance in perceived insufficient milk being explained by parenting self-efficacy. While this study did not specifically address breastfeeding self-efficacy, the authors speculated that if low confidence in a mother's parenting ability led a new mother to perceive she had insufficient milk, then the perception may be enough to cause her to supplement breast milk with formula, and experience a real milk supply decline possibly leading to weaning.

Only a few studies specifically reported direct relationships between breastfeeding problems and mothers' levels of self-confidence. O'Leary Quinn, Koepsell, and Haller (1997) reported that the most commonly cited reason for discontinuing breastfeeding was the perception that the infant was not getting enough milk, suggesting a lack of knowledge or confidence on the part of the mother. Segura-Millan, Dewey, and Perez-Escamilla (1994) in their study of factors associated with perceived insufficient milk in a low income urban

population in Mexico ($n = 165$), found that maternal lack of confidence in breastfeeding was significantly associated with perceived insufficient milk ($p < .05$). Likewise, Cox and Turnbull (1994) concluded from their study of infant feeding practices in Tasmania ($n = 268$) that a predominant psychological or psychosomatic reason for suppressing lactation continues to be lack of confidence in producing sufficient milk.

The idea of breastfeeding confidence being correlated with solving breastfeeding problems can be considered further when analysing studies in which breastfeeding problems do not emerge as significant predictors of breastfeeding duration. Lawson and Tulloch (1995) and Ertem et al., (2001), found that the number of breastfeeding problems was not related to the duration of breastfeeding. Likewise, Fahy and Holschier (1988) reported that the number of breastfeeding problems in hospital was not a significant factor in early termination of breastfeeding, and that those mothers who persisted with breastfeeding often encountered more difficulties. They suggested that successful breastfeeding was not so much the result of a problem free postnatal period, but the mother's ability to accept and deal with the problems as they arose. These studies indicate that the presence of breastfeeding problems in themselves may not be the major predictor of breastfeeding duration, but are closely linked with other variables such as a mother's breastfeeding confidence and ability to solve problems as they occur.

While numerous studies addressed breastfeeding problems, very few studies examined either mothers' perception of, or actual problem-solving skills in relation to these breastfeeding problems. A study by Pridham and Chang (1985) ($n = 49$), supported the hypothesis that the greater a mother's sense of

satisfaction and success as a parent, the higher her appraisal of her problem-solving skills ($p < .05$, r ranging from .44 to .49 at 1 and 3 months). Likewise, Pridham and Chang (1991) reported that mothers ($n = 87$) perceived themselves to be relatively competent on all items in the "How I Deal With Problems Regarding Care of My Baby" instrument, with scores increasing over time. Pridham and Chang (1991) suggested that the way in which mothers of new infants view their problem-solving competence is clinically important. They believed that mothers' perceived skills in dealing with phases of problem-solving would help determine how they dealt with practical problems or everyday tasks. Neither of the above studies, however, specifically addressed mothers' perceptions of their abilities to problem-solve regarding breastfeeding, but rather examined mothers' perception of problem-solving infant feeding issues generally. It is possible that examination of mothers' perception of problem-solving regarding breastfeeding concerns could yield different results, as breastfeeding is a complex phenomena with different issues than other methods of infant feeding.

Summary.

An analysis of the research literature in this section revealed that large numbers of mothers discontinued breastfeeding in the early weeks after birth (Mozingo et al., 2000; Scott et al., 2001; Sheehan et al., 2001). While the reasons for these decisions varied, the major themes which emerged included mothers' perceived/actual perception of insufficient milk, problems with the actual process of breastfeeding, and maternal/infant concerns or problems (Barber et al., 1997; Bourgoin et al., 1997; Brandt et al., 1998; Evers et al., 1998;

Quarles et al., 1994; Scott et al., 2001; Sheehan et al., 2001). A few studies, however, showed no relationship between breastfeeding problems and the duration of breastfeeding (Ertem et al., 2001; Fahy & Holschier, 1988; Lawson & Tulloch, 1995). This raises the question of whether it is the breastfeeding problems, or a mother's ability to deal with the problems, that results in breastfeeding cessation.

Some research has been done on mothers' general problem-solving related to infant care (Pridham & Chang, 1985, 1991), but to this author's knowledge, there have been no studies which specifically addressed problem-solving related to breastfeeding. A few researchers have found relationships between mothers' perception of milk supply and mothers' parenting self-efficacy (confidence) (McCarter-Spaulding & Kearney, 2001), as well as mothers' breastfeeding confidence (Cox & Turnbull, 1994; Hill & Humenick, 1996; O'Leary Quinn et al. 1997; & Segura-Millan et al., 1994), thus indicating that breastfeeding problems such as perceived insufficient milk, may occur as a result of a mother's lack of confidence. These relationships need to be explored further, as there is ample evidence in general breastfeeding literature to support the fact that most or all breastfeeding problems/concerns can be negated if proper education, support, and resources are available for breastfeeding mothers.

Maternal Breastfeeding Satisfaction

A wide range of factors influencing maternal breastfeeding satisfaction has been reported in the literature. Some studies have focussed on the behaviour of the mother-infant dyad, finding that baby satisfaction was very

important in breastfeeding success, directly affecting maternal satisfaction and subsequent breastfeeding duration (Lothian, 1995). A criticism of this phenomenological study, however, was the small sample size ($n = 5$) with one mother only breastfeeding for two days. Another study, (Matthews, 1991), also indicated that breastfeeding competence of neonates was related to mothers' satisfaction scores with breastfeeding, but did not study how maternal satisfaction correlated with breastfeeding duration. While Matthew's study had a larger sample size ($n = 56$), data was collected using a new instrument developed by the researcher, which at the time of the study needed further testing to establish reliability and validity.

Other studies examined breastfeeding solely from the mother's perspective. Leff, Gagne, et al. (1994) carried out a phenomenological study of breastfeeding mothers ($n = 26$) to explore mothers' perceptions of successful breastfeeding. Constant comparative analytic techniques were used in data analysis and resulted in the identification of five major aspects of successful breastfeeding. The researchers found that maternal enjoyment and attainment of a desired maternal role were the most important categories identified by mothers who felt they were most successful in breastfeeding. Some mothers described their feelings of being the baby's only source of nutrition as emotionally satisfying and increasing their confidence in themselves as women, and in their maternal role. Limitations of this study included a small sample size and reliability of findings associated with mothers' recollections of breastfeeding events and associated feelings, as only nine of the 26 women were still breastfeeding at the time of interview.

Humenick, Hill, and Wilhelm (1997) reported that maternal perceived

satisfaction with breastfeeding correlated significantly with sustained breastfeeding (primiparas: ranged from $r = .25, p < .05$ to $r = .70, p < .001$; inexperienced multiparas: ranged from $r = .64, p < .05$ to $r = .91, p < .001$; experienced multiparas: ranged from $r = .35, p < .05$ to $r = .55, p < .001$). Schy, Maglaya, Mendelson, Race, and Ludwig-Beymer (1996) also reported that the level of maternal satisfaction with breastfeeding emerged as a significant variable related to the duration of breastfeeding (accounting for 29% of variance with $p < .0001$).

Leff, Jefferis, and Gagne (1994) reported that there was a positive relationship ($r = .48, p < .001$) between scores on the Maternal Breastfeeding Evaluation Scale (MBFES) and the duration of breastfeeding. Riordan, Woodley, and Heaton (1994) in their retesting of the MBFES, found as well, a positive relationship between maternal satisfaction with breastfeeding and duration of breastfeeding ($r = .39, p < .001$).

A study by Sheehan (1999) ($n = 154$), not only found a strong positive correlation between the total duration of breastfeeding and maternal perception of breastfeeding success, as measured by the Maternal Breastfeeding Evaluation Scale ($r = .83, p < .001$), but found a strong positive correlation between exclusivity of breastfeeding ($r = .63, p < .001$) and mothers' perceptions of satisfaction with breastfeeding.

Summary.

The majority of studies which examine breastfeeding satisfaction do so from the perspective of the mother's satisfaction, and show significant positive relationships between that variable and the duration of breastfeeding (Humenick

et al., 1997; Leff, Jefferis et al., 1994; Riordan et al., 1994; Schy et al., 1996; & Sheehan, 1999). One study also showed a significant positive relationship between maternal breastfeeding satisfaction and breastfeeding exclusivity (Sheehan, 1999).

Conceptual Framework

The complex nature of breastfeeding has not lent itself easily to a theoretical framework for explaining the relationships among the multiple variables which affect the breastfeeding process. Stemming from a review of the literature examining factors which affect breastfeeding, the concepts of self-efficacy and learned resourcefulness emerged as possible frameworks from which to view breastfeeding in relation to the outcomes of breastfeeding satisfaction and duration. The literature also revealed a link between these concepts in that self-efficacy is identified as a dimension of resourcefulness (Zauszneiwski, 1995b). Self-Efficacy Theory has been used by Dennis (1999) as a framework for examining breastfeeding confidence. To my knowledge, no studies have examined breastfeeding from a learned resourcefulness perspective. This current study is guided by a conceptual framework based on Self-Efficacy Theory (Bandura, 1977) and the concept of Learned Resourcefulness (Rosenbaum, 1983) (Figure 1).

Self-Efficacy Theory

The concept of self-efficacy is derived from Bandura's Social Learning Theory (1977) and is defined as the individual's belief in his/her competence to perform specific behaviours in particular situations (Bandura, 1997). Self-efficacy

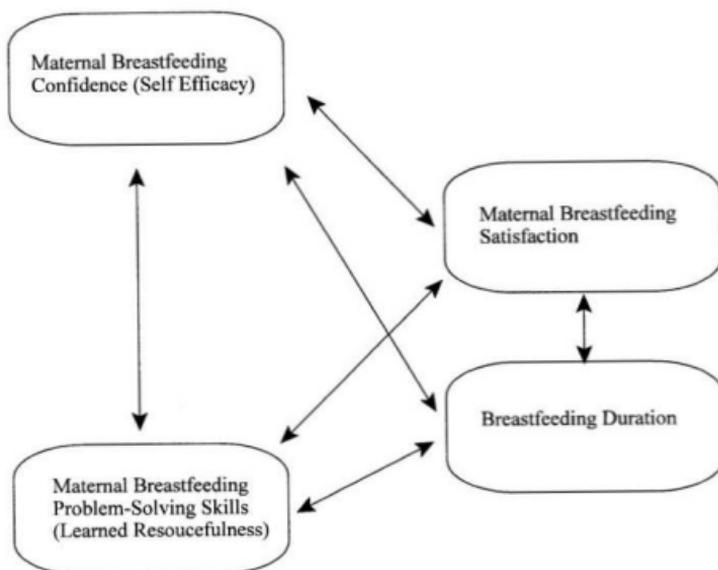


Figure 1 Conceptual Framework

is equated with a feeling of confidence and is described as a mediating link between cognitive preparation and task performance (Kapp, 1998). Self-efficacy consists of two components, "efficacy expectations" and "outcome expectations" (Bandura, 1977). Bandura believed that "outcome expectations" referred to a person's estimate that a given behaviour would lead to certain outcomes. Feelings of competency were called "efficacy expectations" and referred to the belief that one can successfully execute the behaviour required to produce the outcome. Self-efficacy influences a person's decision regarding their ability to initiate, persist in, and continue a particular behaviour in order to produce a certain outcome.

According to Self-Efficacy Theory, personal efficacy beliefs about a behaviour such as breastfeeding are likely to be critical to the performance of that behaviour. Breastfeeding mothers who have high self-efficacy, will likely believe that they can be successful at breastfeeding, will set breastfeeding goals, will be able to think rationally through breastfeeding problems, and will be motivated to find solutions to these problems. They will see the outcome of a well nourished and healthy baby (outcome expectancy) as the ultimate accomplishment of their breastfeeding endeavours, regardless of any personal discomforts or inconveniences.

These mothers will probably expend large amounts of energy to establish and maintain breastfeeding, and will likely persevere at breastfeeding despite problems they encounter. They will not give up easily in spite of difficulties or setbacks. Instead they will be more motivated to succeed. Mothers with high self-efficacy will more likely be able to relax while breastfeeding, thus promoting the let down reflex and increasing milk production. They will respond calmly to

problems that arise, and divert their energies into attempting to problem-solve regarding any difficulties they encounter, and use appropriate resources when they need assistance beyond their capabilities.

Breastfeeding mothers with low self-efficacy will likely have low aspirations regarding their breastfeeding success. They will attempt breastfeeding (often in response to persuasion from others, or out of a sense of moral obligation), because they know that breastfeeding is the best choice for infant feeding. However, they are more likely to have an attitude of "I'll try," instead of with the conviction that "I will succeed." They will probably have a weak commitment to breastfeeding, and will focus on self doubts instead of thinking about actions necessary to succeed. When problems arise with the breastfeeding process, they will dwell on obstacles and thoughts of failure stemming from their personal deficiencies. They will lose faith in their abilities and will likely not attempt to get help with their problems. They will probably choose to discontinue breastfeeding in the face of difficulties.

Bandura (1977) states that expectations of personal efficacy are based on four major sources of information: performance accomplishments, vicarious experiences, verbal persuasion, and physiological experiences. These may all affect the degree of self-efficacy felt by breastfeeding mothers and must be taken into consideration when examining this concept as a possible framework for promoting successful breastfeeding.

Learned Resourcefulness

Bandura (1977) stressed that efficacy expectations, alone, would not produce desired performances if the component capabilities were lacking.

Rosenbaum (1983) identified one of these capabilities as "learned resourcefulness." He conceptualized learned resourcefulness as a behavioural repertoire acquired through conditioning, modelling, experience, and instruction. He also believed that learned resourcefulness involved a repertoire of both verbal and nonverbal cognitive skills which include self-instructions to cope with emotional and physiological responses, problem-solving strategies, the ability to delay immediate gratification of needs, and a belief in one's ability to cope effectively with internal processes or stimuli. Rosenbaum delineated the consequences of learned resourcefulness as smooth execution of target behaviours and task performance.

Zauszneiski (1995b) reported that three dimensions of resourcefulness are constantly emerging in the literature: a) self-control which involves self-monitoring of internal events to prevent interference with task performance, b) self-direction which involves taking the initiative to employ problem-solving strategies when faced with stressful situations, and c) self-efficacy which involves having belief in one's ability to cope effectively when faced with adversity.

Zauszneiski (1995b) believes that the cognitive skills identified by Rosenbaum (1983) closely parallel the three conceptual dimensions of resourcefulness: the use of cognition and self-instruction reflects self-control; the application of problem-solving strategies reflects self-direction; and the belief in one's coping effectiveness represents self-efficacy. Rosenbaum (1990) stated that there is strong evidence to support learned resourcefulness as one of the major personality repertoires which enable the individual to acquire health promoting behaviours, provided the person believes that these behaviours are important for his well being and that he is capable of executing them.

The two major components stemming from the learned resourcefulness concept analysed in this study are the application of one's problem-solving strategies (self-direction) and the belief in one's coping effectiveness (self-efficacy). In order for mothers to be able to breastfeed successfully, it is theorized that they must have competence in problem-solving issues regarding infant feeding. They must be able to go through the various stages of problem-solving to recognize that there is a problem (scanning), to figure out what is happening (formulating), to determine whether or not to do something about the problem (appraising), to plan what to do about the problem (planning), to carry out the plan (implementing) and to consider how well the problem was dealt with (evaluating) (Pridham & Chang, 1991).

Research literature cited earlier, demonstrated a positive relationship between the presence of breastfeeding problems and the undesirable outcome of premature breastfeeding cessation. The emergence of studies which showed no relationship between the number of breastfeeding problems and the duration of breastfeeding, however, causes one to question whether there are other factors which influence mothers' ability to utilize self-direction in employing problem-solving strategies to deal with breastfeeding problems. Research evidence in the literature about the relationship between maternal breastfeeding confidence (self-efficacy) and the duration of breastfeeding, lends support to the idea that breastfeeding confidence may be an important variable to be considered when examining mothers' coping effectiveness at problem-solving breastfeeding concerns.

Summary

The concepts of self-efficacy (confidence) and learned resourcefulness (problem-solving) underlies the framework in this study. The theoretical underpinnings of these concepts show their intricate relationship to each other, and were examined in relation to the outcome variables of maternal breastfeeding satisfaction and breastfeeding duration.

Definition of Terms

Self-efficacy (confidence) was defined as the individuals' belief in their competence to perform specific behaviours in particular situations (Bandura, 1997), and was measured by the Breastfeeding Self-Efficacy Scale (BSES).

Learned resourcefulness was defined as an acquired repertoire of behavioural and cognitive skills, with which a person is able to regulate internal events such as emotions and cognitions, that might otherwise interfere with the smooth execution of a target behaviour (Rosenbaum, 1983). The "self-direction" dimension of resourcefulness, is concerned with taking the initiative to employ problem-solving strategies when faced with stressful situations, and was measured by the Problem-Solving Related to the Baby's Feeding Scale (PS-F), a subscale of the "How I Deal With Problems Regarding Care Of My Baby (PPS)" instrument (Pridham & Chang, 1986).

Maternal breastfeeding satisfaction was defined as a mother's evaluation of her breastfeeding experience considering both maternal and infant factors as measured by the MBFES (Leff, Jefferis, et al., 1994).

Breastfeeding duration referred to the number of weeks in which a mother breastfed her baby.

Breastfeeding was defined according to the schema described by Labbok and Krasovec (1990) (Appendix A), which originated from work done by the Interagency Group for Action on Breastfeeding in 1988. This schema has been further supported by Armstrong (1991), Burgin (1996), and Coffin, Labbok, and Belsey (1997).

Chapter Summary

The majority of current research indicates that maternal breastfeeding confidence and maternal breastfeeding satisfaction are positively associated with breastfeeding duration. Research also indicates that a major reason given for the discontinuation of breastfeeding relates to mothers' perceived or actual problems with the breastfeeding process. A few breastfeeding studies, however, indicate that there is no relationship between the number of breastfeeding problems and breastfeeding duration. This raises the question of whether other variables influence mothers' success with breastfeeding in the midst of breastfeeding problems. This author suggests that maternal breastfeeding confidence and maternal breastfeeding problem-solving skills may play major roles in helping mothers have a successful breastfeeding experience, leading to breastfeeding satisfaction and increased duration of breastfeeding. A major gap exists in the literature in relation to mothers' breastfeeding problem-solving skills and how these skills relate to maternal breastfeeding confidence, maternal breastfeeding satisfaction, and breastfeeding duration. A lack of research also exists in examining the relationship between maternal breastfeeding confidence and maternal breastfeeding satisfaction. The proposed research will help address these gaps.

The conceptual framework chosen for this study was guided by Self-Efficacy Theory and the concept of Learned Resourcefulness, as it is believed that the concepts in this framework provide a reasonable theoretical base for examining confidence and problem-solving related to breastfeeding.

Chapter 3

Methodology

A descriptive correlational study was used to investigate the relationships among maternal breastfeeding confidence, problem-solving skills, satisfaction with breastfeeding experience, and duration. The study also examined the differences in maternal breastfeeding confidence scores over time. Differences between experienced and first time breastfeeding mothers were explored in relation to key study variables. This chapter provides an overview of the methodology used in the study.

Population and Sample

The target population consisted of breastfeeding mothers who delivered at a regional hospital in the western portion of the island of Newfoundland. A statistical profile of residents in this region revealed that the majority of residents were Caucasian (97.2%), while statistics for the 20-34 year old female age group revealed that 53.6% have greater than high school education, and 54.8% have their income adequacy ranked as lower middle class or higher (Segovia, Edwards, & Bartlett, 1996).

In order to be considered for eligibility in the study, breastfeeding mothers had to meet the following criteria: (a) be 19 years of age or older, (b) be fluent in written and spoken English, (c) had initiated breastfeeding in hospital, (d) were able to be contacted by telephone, (e) had no evident physical, mental, or cognitive impairment that impeded ability to complete questionnaires or give consent, (f) had delivered without complications which might impact on mother's

or baby's ability to breastfeed, (g) had delivered an infant of at least 37 weeks gestation and greater than 2500 grams, (h) had a singleton infant free from birth defects which may impede breastfeeding.

A consecutive sample of breastfeeding postpartum mothers meeting inclusion criteria, was obtained from the target population. During the time frame of initial data collection from June 18th to September 17th, 2001, 142 deliveries occurred at the hospital, and approximately 67 mothers met the inclusion criteria. Of this number, three mothers were discharged from hospital before the researcher had the opportunity to visit them for an interview, and seven mothers did not wish to participate (10.9% refusal rate).

The calculation of sample size was based on previous studies. It had been estimated that correlations between study variables would be low to moderate. In a study by Riordan et al. (1994), a correlation of $r = .49$ was found between breastfeeding satisfaction and duration. Based on a 2-tailed alpha set at .05 and beta of .20 to achieve 80% power and an expected correlation of $r = .40$, estimated required sample size for the study was set at 47 (Hulley & Cummings, 1988). To account for a possible attrition rate of 20%, an additional 10 participants were recruited into the study for a total sample of 57 participants.

Setting

Participants were initially interviewed during hospitalization, generally around 24 to 48 hours after delivery. Interviews took place in the mothers' rooms on the obstetrical unit. One mother was discharged early and agreed to be interviewed in her home.

Follow-up data collection questionnaires on breastfeeding confidence,

problem-solving, and satisfaction were completed by participants in the privacy of their homes at approximately 4 weeks postpartum and forwarded to the researcher. Follow-up interviews regarding breastfeeding status and duration were conducted by telephone at approximately 6 weeks, 16 weeks, and 24 weeks postpartum. Mothers who could not be reached by telephone were sent the telephone survey by mail.

Procedure

Data collection was initiated on June 18, 2001. All initial interviews were completed by September 17, 2001. Six week follow-up phone calls were completed by October 29, 2001, 16 week follow-up calls were completed by January 15, 2002, and 24 week calls were completed by March 15, 2002.

The procedure for data collection was carried out as described herein. A letter (Appendix B) was sent to the Patient Care Coordinator of the obstetrical unit informing her of the study and asking her assistance in informing her staff about the study. She distributed letters (Appendix C) to the staff nurses in the area and suggested that the researcher visit the staff nurses to more fully explain the study. The researcher made several visits to the unit over a period of about 2 weeks, covering several shifts. The proposed research was explained, and staff nurses were asked to be intermediaries for initial contact with potential participants. The nurses were asked to identify potential participants who met inclusion criteria for the study and to give these participants an information package about the study. The package contained a short description of the study (Appendix D), a copy of a form to indicate whether the potential participant was interested in learning more about the study (Appendix E), and a consent form

(Appendix F). If mothers were interested in learning more about the study or participating in the study, they were asked to complete the appropriate form and return it to a staff nurse who then notified the researcher. These mothers were then seen by the researcher, who provided further explanations of the study and answered any questions that the mother had. If the mother agreed to participate, a consent form was signed at this time.

After consent had been obtained, the following protocol occurred:

1. The Breastfeeding Self-Efficacy Scale (BSES) (Appendix G) was completed by the mother.
2. A demographic data form (Appendix H) was completed by the mother.
3. At approximately 3½ to 4 weeks after delivery, mothers were mailed a package containing copies of the BSES, the Problem-Solving Related to the Baby's Feeding Scale (PS-F) (Appendix I), and the Maternal Breastfeeding Evaluation Scale (MBFES) (Appendix J) for completion at home. Stamped addressed envelopes for return of the completed instruments were included.
4. After approximately 7 days, mothers were called to confirm whether they had received the questionnaires. If they had, but had not yet filled them out, mothers were asked if they would like assistance in filling them out by telephone.
5. If the researcher had not received the completed instruments within 2 weeks, another reminder telephone call was carried out.
6. Mothers were contacted by telephone at approximately 6 weeks to assess breastfeeding status using a designated script (Appendix K).
7. If mothers were still breastfeeding at 6 weeks, they were contacted again by telephone at approximately 16 weeks to assess breastfeeding status.
8. If mothers were still breastfeeding at 16 weeks, they were contacted again by

telephone at approximately 24 weeks to assess breastfeeding status.

Prior to the start of data collection, a small pilot study (involving five mothers) was conducted to verify that the study instruments were clear and understandable. The demographic profile of pilot participants was similar to that of the sample population. Based on this pilot study, minor revisions were made in both the questions and directions found in the Demographic Profile, and in the font size in the sub directions of the PS-F questionnaire. A few mothers asked specifically what was meant by certain questions in each questionnaire. To maintain consistency, mothers were told to answer questions as best they could, and troublesome questions were noted, so that the instrument developers could be notified. It was determined that each questionnaire took approximately 3.8 to 5.2 minutes to complete.

Data Collection Instruments

Data were collected by the use of four instruments and a prepared script for follow-up phone calls. Three of the instruments were developed by other researchers, and were discovered through a review of the literature. Permission to use these instruments was requested and received from the instrument developers (Appendix L). The demographic instrument, as well as the telephone script, was developed by the researcher for use in the present study.

Breastfeeding Self-Efficacy Scale (BSES)

The BSES, a 33-item self-report instrument developed by Dennis (1999), was used to measure breastfeeding self-efficacy (confidence) in breastfeeding mothers (Appendix G). Item generation for this instrument was directed by

extensive literature reviews focussing on the concept of self-efficacy, as well as breastfeeding problems and factors related to breastfeeding duration. Content was validated by a panel of measurement and content experts, as well as experienced breastfeeding mothers. Overall content validity index of the experts was 86%. The instrument was pilot tested ($n = 23$) and revisions made. The instrument was then assessed ($n = 130$) and was found to have an initial Cronbach's alpha coefficient of .96, and to have predictive validity with positive correlations between BSES scores and infant feeding patterns at 6 weeks postpartum. Principal component factor analysis suggested that the instrument is bidimensional with both technical and interpersonal scales. The "technique" subscale was defined as "physical action a mother should perform and represents certain tasks necessary for successful breastfeeding", while the "intrapersonal thoughts" subscale was defined as "a mother's perceptions of breastfeeding and includes attitudes and beliefs related to a successful breastfeeding experience" (Dennis & Faux, 1999, p.401).

Problem-Solving Related to the Baby's Feeding (PS-F) - a subscale of How I Deal With Problems Regarding Care Of My Baby (PPS)

The PS-F, a 14-item subscale of the PPS, is a self-report instrument developed by Pridham and Chang (1986) (Appendix I). The PPS was designed to measure mothers' perceived competence in problem-solving regarding infant care. It is composed of three subscales: (a) perceived competence in solving infant issues in general (PS-G) (b) perceived competence in solving infant feeding problems (PS-F), and (c) perceived competence in solving illness and physical problems (PS-I). Each scale contains items to measure mother's

perceived competence in seven phases of problem-solving. The original instrument was pilot tested ($n = 22$) and slight revisions made, and then tested with a sample of 67 breastfeeding mothers. Cronbach's alpha was reported at .85. Construct validity was validated by comparing the mean total of certain items on the scale to a question measuring overall perception of how things were going, and by comparing responses to another instrument believed to measure a similar construct (The Degree of Bother Inventory). Convergent validity was assessed by comparing clinician's ratings of the mother's problem-solving competence (Pridham & Chang, 1986). Further utilization of the scale revealed Cronbach's alpha of all three subscales to be .90 (Pridham & Chang, 1991). The current study utilized the PS-F subscale to measure mothers' perceived competence in problem-solving skills related to breastfeeding. Although the scale was generic enough to be used with both formula-feeding and breastfeeding, mothers were instructed to use the scale applied to their breastfeeding experiences only. Permission was granted by Dr. Pridham to change the wording in the questions from feeding to breastfeeding.

Maternal Breastfeeding Evaluation Scale (MBFES)

The MBFES, a 30-item self-report instrument developed by Leff, Jefferis, et al., (1994), was used to measure maternal satisfaction with breastfeeding (Appendix J). The MBFES was designed to measure maternal evaluation of breastfeeding. Instrument items were generated based on the authors' previous qualitative study ($n = 26$) on maternal descriptions of successful breastfeeding. The instrument was validated by two expert panels, pilot tested ($n = 25$) and revised, tested on a random sample of 442 breastfeeding women, retested with

a random sample ($n = 28$), and further revised. The revised scale had three subscales, based on factors emerging from an exploratory factor analysis (maternal enjoyment/role attainment, infant satisfaction/growth, and lifestyle/body image). Cronbach's alpha for the revised scale and subscales were .93, .93, .88, and .80, while test-retest correlations were .93, .93, .94, and .82 at a significance of $p < .001$ (Leff, Jefferis, et al., 1994). The instrument was retested by Riordan et al. (1994) with a sample of 73 women, and was found to have Cronbach's alpha of .94, .91, .83, and .84 for total scale and subscales. MBFES scores were significantly correlated with the length of time mothers intended to breastfeed ($r = .31$) and the length of time they breastfed ($r = .49$), supporting predictive validity. Validity was also strengthened when the correlation of the MBFES subscales with sustained breastfeeding was comparable with the subscales of the H & H Lactation Scale (a similar breastfeeding tool) (Hill & Humenick, 1996).

Demographic Profile of Breastfeeding Mother

A data form for collecting demographic characteristics of the study population was developed by the researcher based on similar demographic findings in the breastfeeding research literature (Appendix H). The data collected included characteristics which give a typical profile of a breastfeeding mother, as well as data which has been linked in other research studies to mothers' breastfeeding outcomes.

Interview Guide: Follow-up Phone Call

In order to assess breastfeeding status, a specific script was designed to collect data during follow-up telephone calls (Appendix K). Mothers were asked if

they were still breastfeeding and depending on their answers, specific questions were asked. For mothers still breastfeeding, the extent of breastfeeding was determined according to the breastfeeding schema by Labbok and Krasovec (1990) (Appendix A). For mothers no longer breastfeeding, the reasons for changing their method of infant feeding were assessed.

Data Analysis

Data were analysed using the Statistical Package for Social Sciences (SPSS 9.0 for Windows) software program. Initially all data were coded and entered into a data file. Data were then cleaned to detect any errors in data entry and to identify any outliers prior to running data analysis. Up to three scores on each of three major variables (breastfeeding confidence-time 2, breastfeeding problem-solving, and breastfeeding satisfaction) were found to be outliers, leading to severe skewness for these variables on the distribution curve. A decision was made not to transform or eliminate these scores as they were clinically important to keep in the sample. As these variables did not meet the normality assumption for parametric tests, a more conservative nonparametric approach to data analysis was used with these variables.

Descriptive statistics were run to generate a sociodemographic profile of participants. The Wilcoxon signed ranks test was used to examine test of differences between breastfeeding confidence scores in hospital and at 4 weeks postpartum for the total sample of mothers as well as for the subgroups of experienced and first time breastfeeders. Independent samples *t* tests were used to examine differences between the confidence of first time breastfeeding mothers and experienced breastfeeding mothers in hospital, as well as to

examine the differences in these groups for breastfeeding duration. The Mann-Whitney U test was used to examine differences between first time breastfeeding mothers and experienced breastfeeding mothers with respect to breastfeeding confidence, breastfeeding problem-solving, and breastfeeding satisfaction at 4 weeks postpartum. Either Pearson's product moment correlation coefficient (r) or the Spearman rank order correlation coefficient (r_s) was used to investigate relationships between variables. Alpha levels for tests of association and difference were set at .05. The internal consistency of the BSES, PS-F, and MBFES was assessed using Cronbach's alpha.

Ethical Considerations

Approval to conduct this study was granted from The Human Investigation Committee, Memorial University of Newfoundland, and from the Ethics Committee, Western Health Care Corporation, prior to the implementation of the study (Appendix M). Letters of support for the study were received from Mrs. Bernice Blake-Dibblee, then Vice President - Operations, Western Health Care Corporation, Mrs. Lesley French and Mrs. Kimberly Hancock, Co-Chairs, Regional Breastfeeding Promotion Committee, and Mrs. Marilyn Flemming, Assistant Executive Director, Community Health Division, Health and Community Services Western (Appendix N).

All participants were initially contacted by a staff nurse from the obstetrical unit who acted as an intermediary and introduced the study to potential participants by providing them with a written explanation of the study and contact information for the researcher. To allow the mother sufficient rest time to recover after her delivery experience, intermediaries delayed approaching mothers until

approximately 12 hours after the time of delivery. When mothers expressed an interest in the study, they were visited by the researcher who provided further explanations. Opportunities were given for the mothers to ask questions. Participants were informed that their participation in the study was voluntary, and that their care in hospital would not be compromised in any way by their decision not to participate. They were informed that there were no immediate benefits to participating in the study. Confidentiality protocol was explained. An informed written consent was obtained from the participants by the researcher. Mothers were given a copy of the consent form which included the researcher's name and telephone number, and were encouraged to call if they had any further concerns or questions about the study. Concerns which were expressed by mothers about their breastfeeding during data collection, were referred to obstetrical staff if the mother was still in hospital, and on one occasion, a mother needing specific information was referred to a Lactation Consultant working with the breastfeeding toll free hot line.

Anonymity was maintained by coding all forms and questionnaires. A master list of participant names and code numbers, as well as consent forms, were secured in a locked filing cabinet in the researcher's office, separate from raw data.

Limitations of the Study

The use of a nonprobability consecutive sample limits the extent to which findings of the study were generalizable to other breastfeeding mothers. Attrition rates for the study were possibly affected by the trend for mothers to discontinue breastfeeding early in the postpartum period, which may have influenced their

decision to complete questionnaires at the 4 week time frame. The possibility of response bias was considered as participants completed questionnaires related to their caregiving abilities in relation to infant breastfeeding. It was recognized that participants may tend to give favourable responses so that they will be perceived as competent mothers.

Chapter 4

Results

This chapter presents study findings arranged in three sections. The first section presents a descriptive profile of study participants. Section two presents descriptive statistics for key study variables, as well as relevant tests of differences. Section three discusses relationships among key variables. Internal consistency of research instruments in the study sample is discussed.

Descriptive Profile

This section presents an overview of demographic characteristics of the sample population including sociodemographic characteristics, select mother/child characteristics, and breastfeeding characteristics.

Sociodemographic Characteristics

Mothers ranged in age from 19 to 37 years, with a mean age of 28.32 ($SD = 4.71$) years. The majority of mothers were either married or living in a common law relationship with their partner (82.5%). While three mothers had less than high school education, 35 mothers (61.4%) either had completed postsecondary education or obtained a university degree. Thirty-six mothers (63.2%) reported that they either were employed full time ($n = 31$) or part time ($n = 5$), while 21 mothers (36.8%) reported that they were unemployed. Over half of mothers (56.1%) reported an average yearly family income of more than \$40,000, with 17.5% ($n = 10$) reporting their income as less than \$20,000. Results are presented in Table 1.

Table 1
Sociodemographic Characteristics (N = 57)

Variable	<i>n</i>	%
Age		
< 20 years	2	3.5
20 - 24 years	11	19.3
25 - 29 years	17	29.8
30 - 34 years	22	38.6
35 - 37 years	5	8.8
Marital status		
Single	8	14.0
Married	36	63.2
Common law	11	19.3
Other (separated)	2	3.5
Education		
Less than high school	3	5.3
Completed high school	7	12.3
Some post secondary education ^a	5	8.8
Completed post secondary education	22	38.6
Some university education	7	12.3
Completion of university degree	13	22.8
Employment		
Working full time	31	54.4
Working part time	5	8.8
Unemployed	21	36.8
Yearly family income		
Less than \$10,000	4	7.0
\$10,000 - \$19,999	6	10.5
\$20,000 - \$29,999	6	10.5
\$30,000 - \$39,999	9	15.8
\$40,000 - \$49,999	13	22.8
\$50,000 and over	19	33.3

^a Post secondary education includes programs at recognized educational institutions other than a university

Mother/Child Characteristics

Table 2 summarizes select characteristics of study participants ($N = 57$), and their children. The number of children per mother (including present baby) ranged from one to four with a median of two children. Twenty-one mothers (36.8%) were first time mothers, while 36 mothers (63.2%) had previous children ranging in age from 1 to 15 years. Thirty of the multiparous mothers (83.3%) reported their next oldest child as 5 years of age or younger, while three of eight mothers with a third child (37.5%) reported that child as 5 years of age or younger. One mother (1.8%) had four children, with the oldest child being 15 years of age. The majority of mothers delivered by spontaneous vaginal delivery (66.7%) with the majority of newborns being female (57.9%, $n = 33$).

Breastfeeding Characteristics

Table 3 describes key maternal variables related to breastfeeding. Over half of mothers had previously breastfed (54.4%) with 26 mothers (45.6%) having breastfed at least once and five mothers (8.8%) having breastfed twice. For mothers who had previously breastfed, the mean duration of breastfeeding the first time was 24 weeks ($SD = 18$ weeks) with a range of 1 to 78 weeks. For mothers who breastfed a second time, mean duration of breastfeeding was 32 weeks ($SD = 28.5$ weeks) with a range from 6 to 78 weeks. Five multiparous mothers (8.8%) were now breastfeeding for the first time.

Almost all mothers (96.5%) had made the decision to breastfeed their baby prior to delivery. While a small number of mothers (8.8%) were undecided about their anticipated length of breastfeeding, the vast majority of mothers (84.3%) intended to breastfeed for at least 24 weeks or longer. Almost half of

the mothers ($n = 28$) initiated breastfeeding within 1 hour after birth, with another 38.6% of mothers initiating breastfeeding within 2-4 hours after birth. Six mothers (10.5%) had a delayed initiation of breastfeeding until 5-8 hours after birth, and one mother could not recall the time frame in which she had initiated breastfeeding

Table 2
Mother/Child Characteristics

Variable	<i>n</i>	%
Number of children (including present baby) ($N = 57$)		
1 child	21	36.8
2 children	28	49.1
3 children	7	12.3
4 children	1	1.8
Age of child next to newborn ($N = 36$)		
< 3 years of age	13	36.1
3 - 5 years of age	17	47.2
6 - 8 years of age	5	14.0
> 8 years of age	1	2.8
Age of child second from newborn ($N = 8$)		
< 6 years of age	3	37.5
6 - 9 years of age	3	37.5
> 9 years of age	2	25.0
Type of delivery ($N = 57$)		
Spontaneous vaginal delivery	38	66.7
Cesarean section	14	24.6
Forceps delivery	4	7.0
Vacuum extraction	1	1.8

Table 3
Breastfeeding Characteristics (N = 57)

Variable	<i>n</i>	%
Previous breastfeeding		
Yes	31	54.4
Once	26	45.6
Twice	5	8.8
No	26	45.6
Decision to breastfeed		
Prior to pregnancy	38	66.7
During pregnancy	17	29.8
After delivery	2	3.5
Intention to breastfeed		
Undecided	5	8.8
At least 6 weeks	1	1.8
At least 12 weeks	1	1.8
At least 16 weeks	2	3.5
At least 24 weeks	14	24.6
At least 32 weeks	3	5.3
At least 40 weeks	2	3.5
At least 52 weeks	11	19.3
Indefinite (as long as possible)	18	31.6
Initiation of breastfeeding (N = 56 ^a)		
Within 1 hour after birth	28	49.1
Within 2-4 hours after birth	22	38.6
Within 5-8 hours after birth	6	10.5

^a One mother could not remember when she initiated breastfeeding

Table 4 describes mothers' sources of breastfeeding information and help. Mothers' main sources of breastfeeding information included family and friends (77.2%), reading materials (75.4%) and prenatal classes (66.7%). Three quarters of mothers (*n* = 43) reported that they had someone to help them with

breastfeeding when they left the hospital, while 14 mothers (24.6%) reported they had no one to help them.

Table 4

Sources of Breastfeeding Information and Help (N = 57)

Variable	n	%
Sources of breastfeeding information ^a		
Family/friends	44	77.2
Reading materials	43	75.4
Prenatal classes	38	66.7
Hospital	28	49.1
Doctor	18	31.6
Health care professionals	15	26.3
Other ^b	5	8.8
Breastfeeding help upon hospital discharge		
Yes	43	75.4
No	14	24.6
Sources of breastfeeding help ^a		
Public health nurses/nurses	29	50.9
Breastfeeding hotline	19	33.3
Family	14	24.6
Reading materials/video/internet	12	21.1
Healthy Baby Club/Family Resource Centre	10	17.5
Friends	9	15.8
Doctor	7	12.2
Midwives/other health care professionals	3	5.3
Breastfeeding support group	3	5.3
Hospital/breastfeeding clinic	3	5.3
Personal experience	1	1.8

^a Mothers could state more than one answer

^b Other sources included Healthy Baby Club (2), videos, general knowledge, and participant occupation (R.N.)

The main sources of breastfeeding help identified included public health nurses/nurses (50.9%), breastfeeding hotline at the regional hospital (33.3%), and family (24.6%). Three mothers (7.0%) who had responded positively when asked if they had anyone to help them with breastfeeding at home, could not name any sources of breastfeeding help. Of the 14 mothers who stated they had no sources of help with breastfeeding after leaving hospital, 13 mothers (92.9%) were able to identify sources of breastfeeding help, while one mother (7.1%) could not identify any sources of breastfeeding help.

Summary

The majority of mothers in this study were older, well educated, were either married or living with a partner, and were from a higher socioeconomic background. Over half of mothers had previous children, with a large majority having children under the age of 5 years. Two thirds of newborns were delivered by spontaneous vertex delivery and approximately three fifths were female. Over half of mothers had previously breastfed with a mean breastfeeding duration rate of 24 weeks for first baby, and 32 weeks for second baby. Almost all mothers had made their decision to breastfeed prior to delivery and a large majority intended to breastfeed for at least 24 weeks.

Descriptive Statistics and Tests of Differences

This section presents descriptive statistics for the key study variables of maternal breastfeeding confidence, problem-solving, satisfaction, and duration. It also explores differences between maternal breastfeeding confidence for the total sample at two points in time. Differences between first time and

experienced breastfeeders in relation to breastfeeding confidence at two points in time, breastfeeding problem-solving, breastfeeding satisfaction, and breastfeeding duration are examined.

Fifty-seven mothers (100%) completed the demographic questionnaire and the initial study instrument on breastfeeding confidence. Fifty-four mothers (94.7%) completed the study instruments measuring confidence, problem-solving, and satisfaction at 4 weeks postpartum. Fifty-six mothers (98.2%) were able to be contacted for follow-up information regarding breastfeeding duration. Reliability of research instruments was examined for the study population.

Breastfeeding Confidence

Breastfeeding confidence was measured using the Breastfeeding Self-Efficacy Scale (BSES) (Appendix G). This instrument uses a 33-item Likert scale which measures breastfeeding confidence on a scale ranging from 1 (not at all confident) to 5 (always confident). The possible range for the total score was 33-165, with the higher score indicating a higher level of confidence. With $N = 57$ cases, reliability analysis was run on all items of the BSES, and Cronbach's alpha was determined at .95. Since reliability coefficients should be at least .70 to be considered acceptable (Polit, 1996), this indicates that the Breastfeeding Self-Efficacy Scale is a reliable instrument for measuring breastfeeding confidence. The BSES was administered on two occasions: (a) in hospital after delivery (BSES1), and (b) at 4 weeks after delivery by mail (BSES2).

In hospital, the mean breastfeeding confidence score for the total sample was 134.47 ($SD = 19.86$), with a median of 136. Four weeks later, the mean confidence score was 137.63 ($SD = 22.01$), with a median of 141. Median

scores were not found to be statistically different ($z = -.933$, $p = .351$), using the Wilcoxon signed ranks test.

The total sample was subdivided into first time breastfeeding mothers ($n = 26$) and experienced breastfeeding mothers (those who had previously breastfed) ($n = 31$). When confidence scores were compared using the Wilcoxon signed ranks test, no significant differences were found in either group between median scores in hospital and median scores 4 weeks later (first time breastfeeding mothers: $z = -.014$, $p = .989$; experienced breastfeeding mothers: $z = -1.046$; $p = .296$). Table 5 presents descriptive statistics for breastfeeding confidence for the two administration times.

Table 5

**Breastfeeding Confidence:
(BSES1- in hospital; BSES2 - 4 weeks postpartum)**

Time	<i>N</i>	<i>Mdn</i>	<i>M</i>	<i>S D</i>	Range
<u>In Hospital (Total)</u>	57	136.00	134.47	19.86	80-165
1 st Time BF ^a	26	131.00	127.73	17.86	80-157
Experienced BF ^a	31	148.00	140.13	19.94	96-165
<u>4 Weeks (Total)</u>	54	141.00	137.63	22.01	57-165
1 st Time BF ^a	24	135.50	128.75	27.96	57-164
Experienced BF ^a	30	144.50	144.73	12.15	121-165

^a Breastfeeders

In hospital, first time breastfeeding mothers had a mean confidence score of 127.73 ($SD = 17.86$), with a median of 131, compared to experienced mothers who had a mean score of 140.13 ($SD = 19.94$), with a median of 148. Using independent samples t-test, first time mothers' mean scores were significantly lower than experienced mothers' scores ($t(55) = 2.45, p = .017$).

Four weeks later, first time mothers' confidence scores remained significantly lower ($M = 128.75, SD = 27.96, Mdn = 135.50$), compared to experienced mothers' scores ($M = 144.73, SD = 12.15, Mdn = 144.50$), using the Mann-Whitney U test ($z = -2.09, p = .037$).

Breastfeeding Problem-Solving

Breastfeeding problem-solving was measured using the Problem-Solving Related to the Baby's Feeding (PS-F) scale, (Appendix I). This instrument uses a 14-item Likert type scale which measures mothers' perceptions of breastfeeding problem-solving on a scale ranging from 1-9, with 1 representing the most negative response for the item and 9 representing the most positive response for the item. The possible range for the total score was 14-126, with higher scores indicating a higher degree of problem-solving related to breastfeeding. In order to examine mothers' problem-solving specifically related to breastfeeding, this scale was slightly revised from its original form prior to distribution to the study population (with the author's permission). With $N = 54$ cases, reliability analysis was run on all items of the revised PS-F Scale, and Cronbach's alpha was determined at .94. It can now be concluded that this scale is reliable in examining maternal problem-solving related to breastfeeding. The instrument was administered on one occasion (by mail), at approximately 4 weeks after

delivery.

The mean score for breastfeeding problem-solving for the total sample of mothers was 103.04 ($SD = 15.27$), with a median of 104.5. First time breastfeeding mothers had lower mean scores than experienced breastfeeding mothers ($M = 99.83$, $SD = 18.88$, $Mdn = 102.50$, for first time breastfeeders; $M = 105.60$, $SD = 11.32$, $Mdn = 106.00$, for experienced breastfeeders). However, median scores were not statistically different ($z = -.897$, $p = .37$) using the Mann-Whitney U test. Table 6 presents descriptive statistics for breastfeeding problem-solving.

Table 6
Breastfeeding Problem-Solving (PS-F Scores)

	<i>N</i>	<i>Mdn</i>	<i>M</i>	<i>SD</i>	Range
Total Sample	54	104.50	103.04	15.27	61-126
1 st Time BF ^a	24	102.50	99.83	18.88	61-126
Experienced BF ^a	30	106.00	105.60	11.32	76-124

^a Breastfeeders

Breastfeeding Satisfaction

Breastfeeding satisfaction was measured using the Maternal Breastfeeding Evaluation Scale (MBFES) (Appendix J). This instrument uses a

30-item Likert scale which measures breastfeeding satisfaction on a scale ranging from 1 (strongly disagree) to 5 (strongly agree). The possible range for the total score was 30-150, with higher scores indicating a higher degree of maternal breastfeeding satisfaction. With $N = 54$ cases, reliability analysis was run on all items of the MBFES, and Cronbach's alpha was determined at .91. This indicates that the Maternal Breastfeeding Evaluation Scale is a reliable instrument for measuring maternal breastfeeding satisfaction.

The instrument was administered on one occasion (by mail) at approximately 4 weeks after delivery. Table 7 presents descriptive statistics for breastfeeding satisfaction.

Table 7
Breastfeeding Satisfaction (MBFES Scores)

	<i>N</i>	<i>Mdn</i>	<i>M</i>	<i>SD</i>	Range
Total Sample	54	125.50	123.72	15.51	75-148
1 st Time BF ^a	24	123.00	118.33	18.59	75-148
Experienced BF ^a	30	129.50	128.03	11.07	106-146

^a Breastfeeders

The mean total sample score for breastfeeding satisfaction was 123.72 ($SD = 15.51$), with a median of 125.5. First time breastfeeding mothers had lower

satisfaction scores than experienced breastfeeding mothers ($M = 118.33$, $SD = 18.59$, $Mdn = 123.00$, for first time breastfeeders; $M = 128.03$, $SD = 11.07$, $Mdn = 129.50$ for experienced breastfeeders), and these differences were statistically significant ($z = -1.968$, $p = .049$) using the Mann Whitney U test.

Breastfeeding Duration

Breastfeeding duration was determined by follow-up telephone calls at three different points in time: (a) at approximately 6 weeks postpartum, (b) at approximately 16 weeks postpartum, and (c) at approximately 24 weeks postpartum. A designated script (Appendix K) was followed for each call in order to assess breastfeeding status. If mothers were still breastfeeding, their category of breastfeeding was determined according to the breastfeeding schema established by Labbok and Krasovec (1990) (Appendix A). If mothers had discontinued breastfeeding, the length of their breastfeeding experience was determined, as well as the reasons for changing their method of infant feeding. Table 8 summarizes breastfeeding status at the various times of measurement.

At 6 weeks postpartum, three quarters of mothers were still breastfeeding ($n = 42$), while 25% of mothers had discontinued breastfeeding. Almost half of the mothers (48.3%) were categorized as fully breastfeeding (exclusive or almost exclusive breastfeeding), while another 17.9% were categorized as having high partial breastfeeding status. Of the 14 mothers who discontinued breastfeeding by 6 weeks, 11 mothers (78.6%) had discontinued within 3 weeks and five mothers (35.7%), had discontinued within 1 week.

At 16 weeks postpartum, 58.9% ($n = 33$) of mothers were still breastfeeding, while 41.1% had discontinued breastfeeding. Of the mothers who

were still breastfeeding, 30.3% were fully breastfeeding, while 63.6% had high partial breastfeeding status.

At 24 weeks postpartum, 50% of mothers ($n = 28$) were still breastfeeding, while 50% of mothers ($n = 28$) had discontinued. Of the mothers who were still breastfeeding, 7.1% ($n = 2$) were fully breastfeeding, while 71.4% ($n = 20$) had high partial breastfeeding status. Most of these mothers still considered breastfeeding to be their baby's main source of nutrition, although they were at various stages of introducing small quantities of solid foods (cereals, fruits, and vegetables).

Table 8

Status of Breastfeeding at Data Collection Times (N = 56)

Time (Weeks)	Exclusive BF ^a		Almost Exclusive BF ^a		High Partial BF ^a		Medium Partial BF ^a		Low partial BF ^a		Not BF ^a	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
6	24	(42.9)	3	(5.4)	10	(17.9)	4	(7.1)	1	(1.8)	14	(25)
16	10	(17.9)	–		21	(37.5)	2	(3.6)	–		23	(41.1)
24	2	(3.6)	–		20	(35.7)	6	(10.7)	–		28	(50)

^a Breastfeeding

In summarizing the whole sample at 24 weeks ($N = 56$), 50% of mothers

were found to be still breastfeeding, with 3.6% of mothers exclusively breastfeeding, 35.7% of mothers having high partial breastfeeding status, and 10.7% of mothers having medium partial breastfeeding status. At the end of data collection, these mothers had no plans to discontinue breastfeeding in the near future.

The mean duration for breastfeeding for the total sample was 16.64 weeks ($SD = 9.77$). First time breastfeeding mothers had a mean breastfeeding duration of 15.56 weeks ($SD = 10.65$), compared to experienced breastfeeding mothers who had a mean breastfeeding duration of 17.52 weeks ($SD = 9.09$). The duration of breastfeeding ranged anywhere from less than 1 week (entered into the SPSS data file as zero) up to at least 25 weeks (which included all mothers still breastfeeding into their 25th week with no intention of discontinuing breastfeeding in the near future). Independent samples t-test showed that first time breastfeeding mothers' mean duration rates were lower, but not significantly different from experienced breastfeeding mothers' duration rates ($t(47) = .729$, $p = .47$). The large discrepancy between means and medians related to this variable can be explained by the fact that in all groups, approximately 50% of mothers were still breastfeeding at the last time of data collection, into the 25th week. Table 9 presents descriptive statistics for breastfeeding duration, while Table 10 summarizes mothers' reasons for discontinuing breastfeeding. For descriptive purposes, six categories were developed based on reasons with similar themes. Mothers' reasons for discontinuing breastfeeding varied.

Table 9
Breastfeeding Duration

	<i>N</i>	<i>Mdn</i>	<i>M</i>	<i>SD</i>	Range
Total Sample	56	24.00	16.64	9.77	0 - 25
1 st Time BF ^a	25	25.00	15.56	10.65	0 - 25
Experienced BF ^a	31	23.00	17.52	9.09	1 - 25

^a Breastfeeders

Table 10
Reasons for Discontinuing Breastfeeding Over 24 Weeks (N = 28)

Reason for Discontinuing Breastfeeding	<i>n</i>	%
Perceived insufficient milk	7	25.0
Maternal factors	6	21.4
Infant factors	6	21.4
Mother's medical problem	4	14.3
Breastfeeding management problems	3	10.7
Mother's return to work	2	7.1

The most common reason given for breastfeeding discontinuation was perceived insufficient milk ($n = 7$). Mothers made comments such as "my baby was starving," "my baby was not satisfied," "my baby was feeding too often and I starting supplementing," "I couldn't keep up with my baby's feeding demands." The next two common categories included maternal factors ($n = 6$) and infant factors ($n = 6$). Maternal factors included mothers not being committed, being inconvenienced, having to deal with the demands of other small children, having physical discomforts, not enjoying breastfeeding, and finding breastfeeding too stressful or difficult. Infant factors included baby losing weight, baby led weaning (refusing the breast), and incidents of gastrointestinal discomforts.

The next highest category ($n = 4$) relates to mothers' medical problems. One mother discontinued within the first week after delivery when she was admitted to hospital for a week with a spinal headache. Another mother discontinued because of depression, and two mothers discontinued because they were taking medications, one for exacerbation of a chronic illness. Three mothers discontinued because of breastfeeding management problems including problems with latch, positioning, and sore breasts. The last category identified, containing two mothers ($n = 2$), was mothers' return to work.

Sample data were further examined in order to determine the reasons stated for breastfeeding cessation in the first 6 weeks postpartum, as this time frame contained the largest number of mothers who discontinued breastfeeding ($n = 14$, 25% of total sample). The three most common problems cited, leading to breastfeeding cessation in this time frame, were perceived insufficient milk ($n = 4$), maternal factors ($n = 4$), and breastfeeding management problems ($n = 3$). These results are presented in Table 11.

Table 11**Reasons for Discontinuing Breastfeeding Within First Six Weeks ($n = 14$)**

Duration of Breastfeeding	<i>n</i>	Reasons for Discontinuing
< 1 week	2	Management problem (latch) Maternal factor (not enjoying/ too stressed)
1 week	3	Maternal factor (demands of other children) Maternal factor (too difficult) Medical reason (mother)
2 weeks	3	Maternal factor (not committed/discomfort) Management problem (positioning) Perceived insufficient milk
3 weeks	3	Perceived insufficient milk Medical reason (mother) Infant factor (losing weight)
5 weeks	1	Perceived insufficient milk
6 weeks	2	Perceived insufficient milk Management problems (sore breasts)

Summary

Cronbach's alpha completed on the research instruments, BSES, PS-F, and MBFES, all demonstrated acceptable instrument reliability. No statistical differences were found between confidence scores over time for the total group of mothers or for the subgroups of first time and experienced breastfeeders. First time breastfeeders had significantly lower confidence scores both in hospital and at 4 weeks, as well as significantly lower satisfaction scores at 4 weeks, than experienced breastfeeders. Although first time breastfeeders also had lower problem-solving scores and lower breastfeeding duration rates than experienced breastfeeders, these scores were not found to be statistically significant.

Breastfeeding duration rates declined over the duration of the study, with 50% of mothers still breastfeeding beyond 24 weeks. Only 3.6% of these mothers were exclusively breastfeeding. The most common reason for discontinuing breastfeeding was mothers' perception of insufficient milk, followed by maternal and infant factors. Reasons for early cessation of breastfeeding within the first 6 weeks after birth included perceived insufficient milk, maternal factors, and breastfeeding management problems.

Relationships Among Variables

This section discusses the relationship between maternal breastfeeding confidence at two points in time, as well as the relationships among the key study variables of maternal breastfeeding confidence, problem-solving, satisfaction, and duration. Relationships were examined with the total sample of mothers, as well as with the subgroups of first time and experienced breastfeeders. Tables 12, 13, and 14 present these relationships.

Table 12

Correlation Coefficients for BSES1, BSES2, PS-F, MBFES, and Breastfeeding Duration for Total Sample of Breastfeeding Mothers

	BSES1 ^a	BSES2 ^b	PS-F ^b	MBFES ^b	Duration ^c
BSES1 ^a	1				
BSES2 ^b	.47 $p = .000$	1			
PS-F ^b	.45 $p = .001$	.60 $p = .000$	1		
MBFES ^b	.40 $p = .003$	.74 $p = .000$	.58 $p = .000$	1	
Duration ^c	.19 $p = .157$	.56 $p = .000$	.24 $p = .084$	.33 $p = .016$	1

^a $N = 57$; ^b $N = 54$; ^c $N = 56$

Table 13

Correlation Coefficients for BSES1, BSES2, PS-F, MBFES, and Breastfeeding Duration for Experienced Breastfeeding Mothers

	BSES1 ^a	BSES2 ^b	PS-F ^b	MBFES ^b	Duration ^c
BSES1 ^a	1				
BSES2 ^b	.47 $p = .008$	1			
PS-F ^b	.53 $p = .002$	.38 $p = .040$	1		
MBFES ^b	.34 $p = .067$	.68 $p = .000$	.32 $p = .087$	1	
Duration ^c	.13 $p = .502$	.45 $p = .014$	.02 $p = .925$	.24 $p = .198$	1

^a $N = 31$; ^b $N = 30$; ^c $N = 31$

Table 14

Correlation Coefficients for BSES1, BSES2, PS-F, MBFES, and Breastfeeding Duration for First Time Breastfeeding Mothers

	BSES1 ^a	BSES2 ^b	PS-F ^b	MBFES ^b	Duration ^c
BSES1 ^a	1				
BSES2 ^b	.37 $p = .074$	1			
PS-F ^b	.37 $p = .076$	.75 $p = .000$	1		
MBFES ^b	.40 $p = .050$	.75 $p = .000$	.79 $p = .000$	1	
Duration ^c	.23 $p = .279$	.72 $p = .000$	.42 $p = .043$	.41 $p = .044$	1

^a $N = 26$; ^b $N = 24$; ^c $N = 25$

Interpretations of correlation values are in keeping with those described by Burns and Groves (2001).

Breastfeeding Confidence

Breastfeeding confidence was examined over time, as well as in relation to other key study variables. The Spearman rank-order correlation coefficient (r_s) was used to test most relationships. When the assumptions for parametric tests were met, Pearson's r was used to test relationships.

Breastfeeding confidence over time.

Breastfeeding confidence in hospital (BSES1) for the total group of mothers, was shown to have a positive significant correlation ($r_s = .47, p = .000$)

with breastfeeding confidence at 4 weeks postpartum (BSES2). These findings, however, indicate that while mothers' breastfeeding confidence scores at birth do positively correlate with confidence scores at 4 weeks postpartum, there is only a moderate degree of relationship between them. In order to determine the strength of the relationship, r_s^2 was calculated and determined to be .22. Pett (1997) states that the squared value of r_s is considered by some researchers to be a close nonparametric approximation of the coefficient of determination r^2 . A r_s^2 of .22 indicates that only 22% of the variance in mothers' breastfeeding confidence at 4 weeks postpartum could be explained by mothers' breastfeeding confidence in hospital.

When the sample was split into subgroups of experienced and first time breastfeeding mothers, a significant moderate relationship ($r_s = .47, p = .008$) was found between confidence scores over time with the experienced breastfeeding mothers, but no significant relationship was found with confidence scores over time in the first time breastfeeding mothers ($r_s = .37, p = .074$).

Breastfeeding confidence and problem-solving.

Maternal breastfeeding confidence, both in hospital and at 4 weeks postpartum, was found to have a positive significant correlation with maternal breastfeeding problem-solving ($r_s = .45, p = .001$ in hospital; $r_s = .60, p = .000$ at 4 weeks postpartum) for the total group of mothers. There is a difference, however, in the degree of the relationship, with breastfeeding confidence in hospital having a moderate relationship with problem-solving, and breastfeeding confidence at 4 weeks postpartum having a strong relationship. The coefficient of determination ($r_s^2 = .21$ in hospital; $r_s^2 = .36$ at 4 weeks postpartum) clearly

showed that breastfeeding confidence at 4 weeks postpartum accounted for more of the variance in maternal breastfeeding problem-solving (36% vs 21%) than did breastfeeding confidence in hospital.

Correlations between breastfeeding confidence and breastfeeding problem-solving varied when the group was split. The scores of experienced breastfeeding mothers demonstrated positive significant relationships ($r_s = .53$, $p = .002$ in hospital; $r_s = .38$, $p = .040$ at 4 weeks postpartum) between breastfeeding confidence at both points in time and breastfeeding problem-solving at 4 weeks postpartum. The scores of first time breastfeeding mothers did not demonstrate a significant relationship between breastfeeding confidence in hospital ($r_s = .37$, $p = .076$) and breastfeeding problem-solving at 4 weeks. The scores did demonstrate a significant, strong relationship ($r_s = .75$, $p = .000$) between breastfeeding confidence and breastfeeding problem-solving measured at 4 weeks. Using the coefficient of determination, it can be concluded that at 4 weeks postpartum breastfeeding confidence accounted for over half of the variance ($r_s^2 = .56$ or 56%) in breastfeeding problem-solving in first time breastfeeding mothers.

Breastfeeding confidence and satisfaction.

In the total sample, maternal breastfeeding confidence, both in hospital and at 4 weeks postpartum, was found to have a positive significant correlation with maternal breastfeeding satisfaction ($r_s = .40$, $p = .003$ in hospital; $r_s = .74$, $p = .000$ at 4 weeks postpartum). There is a difference, however, in the strength of the relationships, with breastfeeding confidence in hospital having a moderate relationship, in contrast to breastfeeding confidence at 4 weeks, which is strongly

correlated with maternal breastfeeding satisfaction. Using the coefficient of determination, it can be concluded that breastfeeding confidence in hospital accounted for only 16% ($r_s^2 = .16$) of the variance in breastfeeding satisfaction while breastfeeding confidence at 4 weeks postpartum accounted for over half ($r_s^2 = .54$ or 54%) of the variance in breastfeeding satisfaction.

When the groups of breastfeeding mothers were examined separately, differences occurred between the two groups in relation to breastfeeding confidence in hospital and breastfeeding satisfaction. While confidence and satisfaction scores of both groups demonstrated moderate relationships, only the correlation for first time breastfeeders was significant ($r_s = .40$, $p = .050$ for first time breastfeeders; $r_s = .34$, $p = .067$ for experienced breastfeeders). The scores of both groups, however, demonstrated significant, strong relationships between breastfeeding confidence at 4 weeks postpartum and breastfeeding satisfaction ($r_s = .68$, $p = .000$ for experienced breastfeeding mothers; $r_s = .75$, $p = .000$ for first time breastfeeding mothers). The coefficient of determination would allow us to conclude that breastfeeding confidence at 4 weeks postpartum accounted for 46% ($r_s^2 = .46$) of the variance in breastfeeding satisfaction for experienced breastfeeding mothers and 56% ($r_s^2 = .56$) of the variance in breastfeeding satisfaction for first time breastfeeding mothers.

Breastfeeding confidence and duration.

The relationship between breastfeeding confidence in hospital and duration of breastfeeding for the total sample was found to be positive, but low and not significant ($r = .19$; $p = .157$). There was, however, a significant, strong relationship between breastfeeding confidence at 4 weeks postpartum and

breastfeeding duration ($r_s = .56$; $p = .000$). According to the coefficient of determination, breastfeeding confidence at 4 weeks postpartum accounted for 32% ($r_s^2 = 0.32$) of the variance in breastfeeding duration for the total group of mothers.

No significant relationship was found between breastfeeding confidence in hospital and breastfeeding duration for both first time and experienced breastfeeders ($r = .23$, $p = .279$ for first time breastfeeding mothers; $r = .13$, $p = .502$ for experienced breastfeeding mothers). At 4 weeks postpartum, however, the scores of both groups demonstrated positive, significant relationships between breastfeeding confidence and breastfeeding duration ($r_s = .72$, $p = .000$ for first time breastfeeding mothers; $r_s = .45$, $p = .014$ for experienced breastfeeding mothers). The coefficient of determination clearly demonstrated that the confidence scores of first time breastfeeding mothers at 4 weeks postpartum, accounted for more of the variation in duration than did the scores of experienced mothers ($r_s^2 = .52$ (52%) for first time breastfeeding mothers; $r_s^2 = .20$ (20%) for experienced breastfeeding mothers).

Breastfeeding Problem-Solving

Breastfeeding problem-solving (as measured by the PS-F scale) was also examined in relation to breastfeeding satisfaction and duration. The Spearman rank-order correlation coefficient (r_s) was used to test relationships.

Breastfeeding problem-solving and satisfaction.

In the total sample of mothers, breastfeeding problem-solving was shown to have a positive, significant correlation with breastfeeding satisfaction ($r_s = .58$,

$p = .000$). This is considered a strong correlation in which the common variance between the two variables is calculated at 34% ($r_s^2 = .34$).

Large differences existed, however, between the subgroups of breastfeeding mothers when examining the relationships between breastfeeding problem-solving and breastfeeding satisfaction. A nonsignificant relationship ($r_s = .32, p = .087$) was found between the variables with experienced breastfeeding mothers, while a significant, strong relationship ($r_s = .79, p = .000$) was found between the variables with first time breastfeeding mothers. The coefficient of determination clearly demonstrated that breastfeeding problem-solving accounted for 63% ($r_s^2 = .63$) of the variance related to breastfeeding satisfaction in first time breastfeeding mothers.

Breastfeeding problem-solving and duration.

There was no significant correlation found between breastfeeding problem-solving and breastfeeding duration with the total sample of mothers ($r_s = .24, p = .084$) and with experienced breastfeeding mothers ($r_s = .02, p = .925$). A significant, moderate relationship ($r_s = .42, p = .043$) was found, however, between breastfeeding problem-solving and breastfeeding duration in first time breastfeeding mothers, where problem-solving was determined to account for 17% ($r_s^2 = .17$) of the variance in breastfeeding duration.

Breastfeeding Satisfaction

Breastfeeding satisfaction (as measured by the MBFES) was examined in relation to breastfeeding duration. The Spearman rank-order correlation coefficient (r_s) was used to test relationships.

Breastfeeding satisfaction and duration.

A significant, moderate relationship ($r_s = .33$, $p = .016$) was found between breastfeeding satisfaction and breastfeeding duration for the total sample of mothers. When the subgroups of mothers were examined separately, no significant correlation ($r_s = .24$, $p = .198$) was found between breastfeeding satisfaction and breastfeeding duration for the experienced breastfeeding mothers, while a significant, moderate relationship ($r_s = .41$, $p = .044$) was found between these variables for first time breastfeeding mothers. For all groups, it appears that breastfeeding satisfaction only accounted for a minimal amount of variance with breastfeeding duration.

Summary

For the total sample of breastfeeding mothers, significant relationships were found among all study variables, with the exception of two. Breastfeeding confidence in hospital and breastfeeding problem-solving were not significantly related to breastfeeding duration. The strongest relationship was found between breastfeeding confidence at 4 weeks and breastfeeding satisfaction.

When the total group of mothers was split, relationships varied. For experienced breastfeeding mothers, significant correlations were found among the three variables, breastfeeding confidence in hospital, breastfeeding confidence at 4 weeks, and breastfeeding problem-solving. Both breastfeeding satisfaction and breastfeeding duration were found to be significantly correlated with breastfeeding confidence at 4 weeks. The strongest relationship was found between breastfeeding confidence at 4 weeks and breastfeeding satisfaction.

For first time breastfeeding mothers, breastfeeding confidence in hospital

was significantly related to breastfeeding satisfaction. Breastfeeding confidence at 4 weeks, however, was significantly related to the three variables of breastfeeding problem-solving, breastfeeding satisfaction, and breastfeeding duration, with high degrees of variance for each relationship. Breastfeeding problem-solving was also found to be related to breastfeeding satisfaction, and both these variables were significantly related to breastfeeding duration. The highest correlation for this group was between breastfeeding problem-solving and breastfeeding satisfaction.

Chapter Summary

The mothers in this study were demographically typical of other breastfeeding mothers in the country, specifically in relation to age, education, partner relationships, and socioeconomics. Data indicated that the majority of mothers were motivated to breastfeed, in that they planned ahead in relation to initiating breastfeeding, had considered how long they would breastfeed, and if they were a previous breastfeeder, had a relatively long mean breastfeeding duration rate.

No statistical differences were found between breastfeeding confidence scores over time in any groups. First time breastfeeders had lower breastfeeding confidence, problem-solving and satisfaction scores, as well as lower mean breastfeeding duration rates than experienced breastfeeders, although only confidence and satisfaction scores were significantly lower. Overall, mothers scored relatively high on measures of confidence, problem-solving, and satisfaction. All research instruments had an acceptable Cronbach's alpha indicating their reliability within the research sample. Breastfeeding duration and

exclusivity rates of mothers in this study did not meet the standards put forth by credible health organizations for optimizing the health and welfare of infants. The most common reason for discontinuing breastfeeding was mothers' perception of insufficient milk.

Study of correlations among the variables of breastfeeding confidence, problem-solving, satisfaction, and duration revealed that numerous, positive, significant relationships existed among these variables. These relationships differed, however, between first time and experienced breastfeeders. For the total group of breastfeeders, and for experienced breastfeeders, the strongest relationship existed between breastfeeding confidence at 4 weeks and breastfeeding satisfaction. For first time breastfeeders, several strong relationships existed, with breastfeeding confidence at 4 weeks being significantly correlated with breastfeeding problem-solving, satisfaction and duration. The strongest relationship for this group existed between problem-solving and satisfaction.

Chapter 5

Discussion

The Theory of Self-Efficacy (Bandura, 1977) and the concept of Learned Resourcefulness (Rosenbaum, 1983) provided the framework for studying the variables of breastfeeding confidence and problem-solving in relation to breastfeeding satisfaction and duration.

This chapter presents a discussion of study findings organized according to the identified research questions with application of the underlying conceptual framework, where applicable. The research addressed the questions of differences in breastfeeding confidence over time, differences between experienced and first time breastfeeding mothers in relation to breastfeeding confidence, problem-solving, satisfaction and duration, as well as the relationships among those variables. All findings were compared to existing literature where applicable. Strengths and limitations of the study are also discussed.

Differences Between Maternal Breastfeeding Confidence Over Time

The first question in this study centred around differences between maternal breastfeeding confidence in hospital compared with breastfeeding confidence 4 weeks after delivery. Analysis of confidence scores for the total group of breastfeeding mothers, as well as for the subgroups of first time and experienced breastfeeders, showed that while scores were slightly higher at 4 weeks postpartum, this difference was not statistically significant.

Very few studies have examined breastfeeding confidence over time.

Locklin (1995) reported that breastfeeding confidence rose with each new assessment of a breastfeeding situation, and that the longer a mother breastfed, the more confident she became. The women ($n = 17$) in Locklin's study, however, were supported by trained peer counsellors on a regular basis. According to participants, the peer counsellors' availability and ability to give clear instructions and guidance enabled mothers to grasp the mechanics of breastfeeding. Mothers stated that once they were knowledgeable, they were able to trust their own intuitive powers. The length of breastfeeding for the women in Locklin's study, at the time of data collection, ranged from 3 months to 2 years. Since these mothers were already well established in their breastfeeding, their increased confidence levels likely reflected their actual success in their breastfeeding experience.

In the current study, 96.5% of mothers had made the decision to breastfeed prior to delivery, with two thirds of mothers deciding prior to pregnancy. This implies that these mothers had thought about their choice of infant feeding and considered themselves confident enough to initiate breastfeeding. The excitement of becoming a mother, coupled with the knowledge that breastfeeding was the best feeding method for their baby, may have been motivators to increase mothers' confidence in their breastfeeding abilities. While in hospital, mothers had the opportunity to have support from nursing staff in dealing with breastfeeding concerns. When faced with problems, they were not alone in finding solutions and had available resources which they could utilize. Also, they were not yet faced with the problems which often occur in the first few weeks following breastfeeding. Issues such as the "coming in of the milk", breast engorgement, sore nipples and breasts, regulating milk supply,

determining whether baby is getting enough milk, baby's growth spurts, etc. are often not encountered in the first few days after birth when mothers are still in hospital. All of these factors may have contributed to mothers having a high degree of confidence while in the hospital environment.

At 4 weeks postpartum, however, mothers had experienced the reality of being at home with a new baby. By this time many of the issues and concerns common to the first month of breastfeeding and parenting would have surfaced. Mothers now had to deal with their concerns without the advantage of immediate professional support. They would have been required to assess their breastfeeding situation on their own, to problem-solve, and to seek outside help if warranted. Mothers' abilities to deal with breastfeeding problems varied (as seen on the Problem-Solving Related to the Baby's Feeding Scale) and were significantly correlated with confidence in breastfeeding at this time. It is interesting to note that of the 11 mothers who discontinued breastfeeding by 4 weeks, nine of these mothers had a lower confidence score, by an average of 24 points, at 4 weeks postpartum, compared to their in-hospital confidence scores. The explanation for these findings may be comparable to those of Mozingo et al. (2000) who reported women's feelings of incongruity between highly idealized expectations and early breastfeeding problems, which led to incremental disillusionment and early cessation of breastfeeding.

The nonsignificant differences between confidence scores in hospital and at 4 weeks postpartum, may be attributed to the combination of mothers' initial high levels of breastfeeding confidence balanced with the realities of mothers' confidence in their breastfeeding experiences at 4 weeks postpartum.

***Differences Between First Time and Experienced Breastfeeding
Mothers in Relation to Key Study Variables***

The second and third research questions investigated in this study centred around the differences between first time breastfeeding mothers and experienced breastfeeding mothers in relation to breastfeeding confidence at two points in time, and breastfeeding problem-solving, satisfaction, and duration.

Breastfeeding Confidence

Breastfeeding confidence scores for first time breastfeeders were found to be significantly lower than confidence scores for experienced mothers, both in hospital, and at 4 weeks postpartum. This is not surprising, given the fact that experienced mothers have previously gone through the experience of breastfeeding for varying lengths of time and, therefore, have gained knowledge in the process of breastfeeding. First time mothers may feel inadequately prepared for motherhood, particularly in areas such as infant feeding. This is reflected in a study by Hoddinott and Pill (1999) who explored the infant feeding decision-making process of first time mothers. One mother's breastfeeding insecurity was reflected in the following comment "I thought the baby would just get on with it. I don't know why, I just thought the baby would know what to do" (p. 560). According to the Self-Efficacy Theory, previous performance accomplishments and vicarious experiences lead to higher levels of self-efficacy or confidence in performing a desired act. This would explain why experienced breastfeeders would have higher confidence scores than first time breastfeeders.

Although this finding is consistent with the Self-Efficacy Theory, it is not well documented in the breastfeeding research literature, as very few studies

have examined differences in confidence between experienced and first time breastfeeding mothers. This may possibly be due to the scarcity of specific tools to measure the concept of breastfeeding confidence. The one study that was found which corroborated the present findings was carried out by Dennis and Faux (1999), in their testing of the Breastfeeding Self-Efficacy Scale. They found that first time breastfeeding mothers had lower confidence scores than experienced breastfeeding mothers ($t = 4.9, p < .001$). A somewhat related study by Janke (1994) found that first time breastfeeders had significantly lower scores ($t = 9.39, p = .000$) than experienced breastfeeding mothers on the breastfeeding control scale of the Breast-Feeding Attrition Prediction Tool (BAPT). This scale measures perceptions of having control over internal constraints believed to interfere with performing a behaviour under limited volitional control. This may be somewhat related to the concepts measured in the Breastfeeding Self-Efficacy Scale in that one of the questions asked in the BAPT is concerned with mothers' confidence regarding breastfeeding.

Breastfeeding Problem-Solving

Perceived breastfeeding problem-solving scores for first time breastfeeding mothers were found to be slightly lower than perceived problem-solving scores for experienced mothers at 4 weeks postpartum, but these scores were not significantly different. Very little is known about the process of problem-solving specifically related to breastfeeding. Following the premise of the Self-Efficacy Theory, one would expect that experienced breastfeeding mothers would have likely encountered breastfeeding problems with previous children and would have learned to solve these problems in order to continue to

breastfeed successfully. One would also expect that mothers who are new at breastfeeding might not know how to deal with problem-solving situations which they have never encountered. This premise helps to explain the slightly higher scores in experienced breastfeeders, but does not offer an explanation to account for the nonsignificant differences in scores.

When examining the lack of significant differences between the perceived problem-solving scores of first time and experienced breastfeeders, a number of factors need to be considered. Some of these factors are specific to experienced breastfeeders. A study by McKim (1993) found that multiparous mothers of preterm infants had less support with their new babies at home. It may have been assumed that these mothers needed less help from others, because of previous experiences with children. In reality, however, each new baby creates a new learning experience for the mother, and often brings new challenges for which she may not be prepared. A study by Kenner et al. (as cited in McKim, Kenner, Flandermeyer, Spangler, Darling-Thornburg, & Spiering, 1995) found that mothers did not always retain the information given to them in hospital, and often needed teaching repeated. The multiparous mothers in the study had often forgotten about the first few months with a baby, and, therefore, asked questions about routine baby care.

Experienced breastfeeding mothers' challenges are compounded when they have to fit a new family member into an already established family structure, which includes another child/children. Pridham, Egan, Chang, and Hansen (1986), in their study of maternal experiences in dealing with a new baby, found that multiparous mothers are more likely to report activities and plans as stressors, and this may reflect the difficulty that having several children presents

in engaging in activities outside of routine, day-to-day tasks. Kenner et al. (as cited in McKim et al. 1995), also reported how multiparous mothers were concerned with how to incorporate a new baby into an existing family and how to divide their time between children. All of these challenges can increase a mother's stress and workload at a time when everyone assumes she has things under control because of previous experiences. Experienced mothers may, therefore, not judge their problem-solving abilities as highly as expected, making their problem-solving scores similar to those of first time mothers.

Another aspect of the theoretical framework underlying this study, the concept of learned resourcefulness, may also help to shed some light on the relatively small differences seen in the perceived problem-solving scores of experienced versus first time breastfeeders. Learned resourcefulness is conceptualized as a behavioural repertoire acquired through conditioning, modelling, experience, and instruction (Rosenbaum, 1983). It is a personal characteristic acquired through interaction with others and demonstrated in one's abilities to independently manage daily activities (Zauszneiwski, 1995a).

In trying to relate this conceptualization to the breastfeeding experience, several characteristics of the study sample need to be considered. First, most of the mothers in this study were well educated, with over 60% having completed postsecondary education/university. Their advanced education may have presented them with numerous challenges and opportunities to cognitively think through problems, use problem-solving strategies to arrive at solutions, or learn how to access various sources of help. It is likely that mothers were able to transfer some of these skills to their breastfeeding experiences. A second factor may be age. Since the mothers in this sample were older, with a mean age of

28.32 years, they were more likely to have learned from life experiences how to deal with the various problems encountered in life, in general, and with motherhood, in particular. Their maturity may have made them more confident in seeking the advice of others and in discussing problems and concerns related to a specific situation such as breastfeeding. A large proportion of mothers stated they had learned about breastfeeding from reading materials, and two thirds of mothers reported that they had learned about breastfeeding in prenatal classes, thus showing their motivation to be well informed about breastfeeding prior to delivery. Therefore, even though the two groups of mothers were different in their experiences with the breastfeeding process, they had similar sociodemographic characteristics and increased levels of motivation, both of which may be consistent with a high desire and ability to problem-solve.

Lastly, another factor which might help to explain the nonsignificant difference in scores, relates to the time factor involved in collecting data on mothers' perceptions of their ability to problem-solve infant care issues. Pridham and Chang (1991), in their study of mothers' perceptions of problem-solving competence for infant care, found that all mothers considered themselves to be relatively competent in problem-solving in all items related to infant care (including infant feeding), and that their competency increased over time. They collected data at 2 months postpartum because they believed that by this time mothers should have had enough experience with solving infant care issues to assess their competence in solving feeding issues. They found that at 2 months, multiparous mothers had higher perceived problem-solving competencies for feeding problems than did primiparous mothers. These results differ from findings in the present study, in which data on perceived problem-solving was

collected at approximately 4 weeks postpartum. It is possible that assessing mothers' perception of their competence in breastfeeding problem-solving at this earlier time frame may not have allowed mothers sufficient time to accurately assess their competence in this skill. Mothers may need more time to experience breastfeeding and determine their abilities to deal with breastfeeding problems.

Breastfeeding Satisfaction

Breastfeeding satisfaction scores for first time breastfeeding mothers were found to be significantly lower than satisfaction scores for experienced breastfeeding mothers at 4 weeks postpartum. While no studies were found that differentiated between first time and experienced breastfeeders in relation to maternal breastfeeding satisfaction, Matthews (1991) did discuss differences between satisfaction scores for primiparous mothers and multiparous mothers, of whom approximately 87% had previously breastfed. She found that the primiparous mothers had a significantly higher percentage of feedings at which the mothers experienced some dissatisfaction with the neonate's feeding behaviours, than did multiparous mothers.

Many factors can contribute to a mother's satisfaction with the breastfeeding process. Leff, Gagne, et al. (1994) in their phenomenological study of maternal perceptions of successful breastfeeding, reported that mothers described successful breastfeeding as a complex interactive process resulting in mutual satisfaction of maternal and infant needs. Five major categories of successful breastfeeding were identified and included infant health, infant satisfaction, maternal enjoyment, desired maternal role attainment, and lifestyle compatibility. A comparison of first time and experienced breastfeeders can be

carried out in respect to these themes. In terms of infant health, it can be assumed that experienced breastfeeding mothers will have more knowledge and experience in assessing their infants' health and be more familiar with the indicators of normal growth and development and infant well being. Experienced mothers will be more familiar with the indicators of infant satisfaction with breastfeeding, such as falling asleep after feedings, staying contented between feedings, settling down on the breast when fussy, having appropriate urinary and bowel output, gaining weight, etc. Experienced mothers may feel an increased sense of maternal enjoyment as they are not faced with as many uncertainties with the mothering process, and the breastfeeding process, as they were with their first baby. Mathews (1991) reports that the multiparous mothers in her study frequently commented that breastfeeding was "much easier this time" (p. 53). Experienced mothers may feel more confident in their maternal role, knowing that they have successfully cared for and nurtured previous children. Previous successful breastfeeding tends to heighten the mother's sense of motherhood, as described by Leff, Gagne, et al. (1994) where many mothers described breastfeeding as "increasing their confidence in themselves in the maternal role" (p. 102). Lastly, experienced breastfeeders will more likely have established a lifestyle compatible with breastfeeding, having learned how to adapt in their previous experiences. These facts all lend support to the finding that experienced breastfeeders feel more satisfaction with their breastfeeding experience than first time breastfeeders.

Breastfeeding Duration

The mean duration of breastfeeding for first time breastfeeding mothers

was found to be lower than mean duration of breastfeeding for experienced mothers at 6 months postpartum, but these scores were not significantly different. Few studies have addressed the differences in breastfeeding duration rates between first time and experienced breastfeeding mothers. An American study by Boettcher et al. (1999) found that the actual duration of breastfeeding was significantly longer ($p = .001$) in mothers with previous breastfeeding experience compared to those with no breastfeeding experience. Likewise, a Canadian study by Bourgoin et al. (1997) found that mothers with breastfeeding experience breastfed longer than mothers without breastfeeding experience ($p = .002$). Both of these studies examined breastfeeding at 6 months, and thus are comparable to the present study. One other Canadian study by Barber et al. (1997) measured breastfeeding duration at 4 months and found very little difference in breastfeeding duration between experienced and first time breastfeeding mothers.

The comparable duration rates of breastfeeding for the two groups of mothers in this study may be attributable to many factors. First of all, the sociodemographic makeup of the breastfeeding sample is consistent with the typical picture of a breastfeeding mother in terms of initiation and perseverance in breastfeeding. Mothers' higher age, education, and socioeconomic status have all been cited as predictors of success in breastfeeding. The fact that there were no significant differences in mothers' abilities to problem-solve regarding breastfeeding would also lead one to think that both groups of mothers have equal ability to problem-solve breastfeeding issues which might impact on breastfeeding duration.

Another important point of consideration in this study is the actual rate of

breastfeeding duration. The duration rate in the present study was longer than in previous known breastfeeding studies, both in Newfoundland and Labrador, and in other parts of Canada. Fifty percent of mothers in the current study were still breastfeeding at 6 months, while only 17.4% of mothers in the Matthews et al. (1994) Newfoundland and Labrador study were still breastfeeding at that time frame. Health Canada (1999) reported that in the National Population Health Survey (1994-1995), only 31% of mothers were breastfeeding at 6 months, while in the National Longitudinal Survey of Children and Youth (1994-1995), only 23% of mothers were still breastfeeding at 6 months. It was difficult to compare more recent breastfeeding duration rates in various parts of the country, as many studies did not progress in data collection up to the time frame of 6 months. One other Canadian study in Sudbury, Ontario ($n = 154$), did report a breastfeeding duration rate of 40% at 6 months postpartum (Bourgoin et al., 1997).

There are several factors which may help to explain the longer breastfeeding duration rates in this study, and which may help to account for the lack of a significant difference found between experienced and first time breastfeeding mothers. One factor which may be of significant importance is the change in maternal/parental leave employment benefits outlined by Bill C-32 (Human Resources Development Canada, 2002), which states that mothers are now entitled to maternity employment benefits up to a period of 15 weeks, as well as parental employment benefits up to a period of 35 weeks. These changes came into effect on December 31, 2000, and, therefore, were in place at the time of this study. The changes increased the period of paid employment benefits for new mothers from 25 weeks up to 50 weeks. This financial benefit may have allowed many mothers the opportunity to stay at home longer with

their babies, rather than returning to the paid work force.

Many studies have shown that return to work is often cited as a reason by mothers for discontinuing breastfeeding. According to Health Canada (1999), the National Population Health Survey (1994/95) reported that out of 330,000 mothers who breastfed for a duration of 3 to 6 months, 32% gave "returning to work" as a reason for discontinuing breastfeeding. In the Newfoundland and Labrador study by Matthews et al. (1994), 43.9% of mothers had given this reason by 6 months. A Canadian study by Bourgoin et al. (1997) reported that while returning to work was the major reason for discontinuing breastfeeding at 6 months, it was not the major reason prior to this time. A study by Fein and Roe (1998) showed that working full-time at 3 months postpartum decreased breastfeeding duration by an average of 8.6 weeks ($p < .001$), relative to not working. While many studies did not cite returning to work as a major reason for discontinuing breastfeeding, it is important to realize that many studies did not follow mothers for an extended period of time and, therefore, were not capturing data related to this event in mothers' lives.

Mothers who do attempt to return to work while breastfeeding are often faced with many challenges and obstacles (McKim, 2002; Thompson & Bell, 1997). If mothers anticipate that their work place environment will not be breastfeeding friendly, then this may influence their decisions about whether maternal employment is compatible with breastfeeding, and may result in breastfeeding cessation. The new government regulations extending maternal and parental employment leave benefits may be positively affecting mothers' breastfeeding decisions in Newfoundland and Labrador.

Another possible explanation for the increased duration rates in this study

may be related to the numerous efforts in the western region of the province to increase the initiation and duration of breastfeeding. Since 1994, a multidisciplinary breastfeeding action group (Breastfeeding Action Group - Western Region) has been in existence in the region, with a mandate of protecting, promoting and supporting breastfeeding. The group has established linkages with the provincial Breastfeeding Coalition, provincial and local Healthy Baby Club Advisory Teams, and the National Breastfeeding Committee for Canada. Since the inception of the group, breastfeeding initiation rates have risen from 36% in 1993 to 56% in 2000 (French & Hancock, 2001).

While there have been no data collected on the actual duration of breastfeeding in the region, the activities of the group have been varied and widespread, and may possibly be affecting duration rates. Some of the activities of the group have included: (a) offering guidance in the initiation of, and support for, breastfeeding support groups in the community, (b) establishing a 24-hour 1- 888 line to the maternity unit of the regional hospital, (c) publicly celebrating World Breastfeeding Week through extensive media campaigns and other community activities, (d) facilitating continuing education for health care professionals or others interested in learning about breastfeeding (i.e., Resource Moms for local Health Baby Clubs), (e) establishing a physician education campaign, and presenting breastfeeding information at medical rounds, (f) successfully lobbying for breastfeeding lounges in malls, (g) successfully applying pressure to have formula displays discontinued at local stores (Infact Canada, 2000), (h) developing a lactation consultant position proposal for the region, (i) initiating church and restaurant campaigns to promote breastfeeding, (j) developing and distributing breastfeeding resource kits to health care

professionals, (k) developing breastfeeding education binders for local school curriculums, (l) taking actions against violations of the World Health Organization (WHO) International Code of Marketing of Breastmilk Substitutes, and (m) providing children's literature, which promotes breastfeeding, to schools and libraries (French & Hancock, 2001). These activities were all aimed at protecting, promoting, and supporting breastfeeding and, therefore, may have impacted on mothers, either directly or indirectly, and ultimately influenced their decisions regarding breastfeeding.

A third factor which may have contributed to the increased duration of breastfeeding in this study, may be the fact that these women were part of a research study, and had contact with the researcher on a number of occasions during the 6 month period of the study. The mothers may have felt encouraged that someone was interested in their breastfeeding experience. Several mothers expressed their delight that someone was doing breastfeeding research in the region, which had the potential to help future breastfeeding mothers. Two mothers actually asked for copies of the results of the study. Despite the researcher's attempt to stay within a defined script during follow-up telephone calls, mothers often talked about their breastfeeding experiences and concerns. Some talked about their accomplishments with, and feelings about breastfeeding, while others discussed concerns or problems and asked for advice. On one occasion, a mother was referred to a lactation consultant at a local breastfeeding hotline. When one mother was called, she stated, "you're going to be really upset with me, because I had to give up breastfeeding." This statement raises the possibility that, in at least some cases, mothers' feelings about being in a research study may influence the outcome of their

breastfeeding experiences. Some mothers may feel that continuing with at least some degree of breastfeeding, may show their competence in the mothering role of being able to provide optimal nutrition for their infants.

Both experienced and first time breastfeeding mothers were part of the socioeconomic, cultural, and research milieus described above, and therefore had equal opportunities to be influenced in their decisions regarding their length of breastfeeding. The slight differences that did occur between the groups may have been due to other variables.

Relationships Among Maternal Breastfeeding Confidence, Problem-Solving, Satisfaction, and Duration

The fourth research question investigated in this study concerned the nature of the relationships among the variables of maternal breastfeeding confidence, problem-solving skills, satisfaction with breastfeeding experience, and breastfeeding duration. These relationships were explored in the total sample of breastfeeding mothers, as well as in the subgroups of first time and experienced breastfeeders.

Breastfeeding Confidence

Relationships were examined between breastfeeding confidence scores at two points in time, as well as with breastfeeding confidence scores in relation to breastfeeding problem-solving, satisfaction, and duration.

Breastfeeding confidence over time.

A significant, positive relationship was found between breastfeeding

confidence in hospital and breastfeeding confidence at 4 weeks postpartum for the total sample of breastfeeding mothers and for the subsample of experienced breastfeeding mothers. While a positive relationship was also found for first time breastfeeding mothers at these time frames, it was not found to be statistically significant. The mean confidence scores for mothers in this study were fairly high for all groups at both points in time. This indicates that most mothers started their breastfeeding experiences feeling confident that they could nourish their babies by this method of infant feeding. Breastfeeding has been described as a complex task and mothers often go into this experience anticipating that they may be faced with significant challenges. Mothers' confidence levels may be related to how well they have prepared themselves for the experience and whether past breastfeeding experiences were successful. First time breastfeeders would not have had previous experiences to learn from, and would not likely have been aware of the extent of breastfeeding knowledge and skills needed to succeed.

Self-Efficacy Theory may help to explain why confidence at an earlier point in time would be positively related to confidence at a later time. Bandura (1977) proposes that the expectations of personal efficacy are based on performance accomplishments, vicarious experiences, verbal persuasion, and physiological experiences. The experience of breastfeeding within the first 4 weeks of delivery would have provided opportunities for mothers to assess their performance at breastfeeding, possibly to have observed others breastfeed in a health related or social environment, received feedback from others about how they were doing with their breastfeeding, and established how they felt emotionally and physically with the breastfeeding experience. A positive self appraisal of their behaviours would likely have reinforced their confidence that

they could meet the challenges of breastfeeding. It is likely that first time breastfeeding mothers may need more time to assess their performance with breastfeeding, as it is only one of the many new tasks associated with having a first baby. Their confidence scores may not be as highly correlated over time as those of experienced mothers.

Breastfeeding confidence and problem-solving.

Moderate to high, significant, positive relationships were found between breastfeeding confidence and breastfeeding problem-solving, for both the total sample of breastfeeding mothers and for the subsample of experienced breastfeeders. These relationships were found with both confidence scores in hospital, and at 4 weeks postpartum. This was in contrast to first time breastfeeding mothers, whose confidence in hospital was not significantly related to breastfeeding problem-solving at 4 weeks, but whose confidence at 4 weeks had significant, strong correlations with breastfeeding problem-solving at that time period.

Very little research has been done on the relationship between breastfeeding confidence and breastfeeding problem-solving. Some research has demonstrated relationships between specific breastfeeding problems, and both parenting self-efficacy (confidence) (McCarter-Spaulding & Kearney, 2001), and mothers' breastfeeding confidence (Cox & Turnbull, 1994; Hill & Humenick, 1996; O'Leary Quinn et al., 1997; Segura-Millan et al., 1994). Other studies have shown no relationship between the number of breastfeeding problems experienced and the outcome of breastfeeding (Ertem et al., 2001; Fahy & Holschier, 1988; Lawson & Tulloch, 1995). This suggests that breastfeeding

outcomes are not always related to the number of breastfeeding problems, but to the mothers' ability to accept and deal with problems as they occur.

The present study has shown that all mothers scored fairly high on the variables of confidence and problem-solving. The conceptual framework underlying this study may offer some explanation for the relationships found between these variables. Bandura (1977) believed that persons with high self-efficacy would be able to think rationally through problems and would be motivated to find solutions. They would likely persevere at a task, despite problems they encountered. Instead of giving up when difficulties or setbacks occurred, they would be more motivated to succeed. Zauszneiwski (1995b), also, identified a link between confidence (self-efficacy) and a dimension of resourcefulness (self-direction) which involved taking the initiative to employ problem-solving strategies when faced with stressful situations. In applying this framework to breastfeeding, significant correlations between the variables of breastfeeding self-efficacy (confidence) and breastfeeding problem-solving would be expected.

Differences were found, however, in the relationships between these two variables with first time breastfeeding mothers at different points in time. The correlation between confidence in hospital and problem-solving was moderate, but nonsignificant, while the correlation between confidence at 4 weeks postpartum and problem-solving was significant, with confidence accounting for 56% of the variance in breastfeeding problem-solving ability at 4 weeks postpartum. As already discussed in a previous section, first time breastfeeding mothers may have elevated confidence scores in hospital because they have not yet faced the true realities of breastfeeding. They have not had to use their own

intuition and knowledge to problem-solve on their own and find solutions, using their own resources. By 4 weeks postpartum, these mothers have discovered the realities of breastfeeding and have recognized their capabilities in dealing with breastfeeding challenges. Their confidence in breastfeeding should be more stable, and is more likely to be reflected in how they perceive themselves in handling breastfeeding problems.

Breastfeeding confidence and satisfaction.

Major differences were noted in the relationships between maternal breastfeeding confidence over time and breastfeeding satisfaction. Breastfeeding confidence in hospital had moderate correlations with breastfeeding satisfaction for all groups at 4 weeks postpartum. The correlation for the total group of breastfeeding mothers and for first time breastfeeders was significant, but the correlation was not significant for experienced breastfeeders. In contrast, when confidence scores at 4 weeks postpartum were correlated with satisfaction scores, all groups demonstrated significant, strong relationships between the variables.

Only one research study was found which offered a connection between confidence and breastfeeding satisfaction. Leff, Gagne, et al. (1994) reported that some mothers described their feelings of being the baby's only source of nutrition as emotionally satisfying and increasing their confidence in themselves as women, and in their maternal role. In today's society, a measure of success in motherhood is often synonymous with being able to nurture infants so that they will achieve optimal development and optimal health. Breastfeeding is often seen as the first step to a healthier future for these infants. If a mother can accomplish

the complex task of breastfeeding, then she possibly sees herself as doing a good job at mothering. This will likely increase her confidence and her satisfaction with breastfeeding.

Correlations between breastfeeding confidence in hospital and breastfeeding satisfaction at 4 weeks, were moderate. The significant correlation for the total group and for first time breastfeeders suggests that the majority of mothers were confident in initiating their breastfeeding experience, and these feelings of anticipated success were related to how mothers actually perceived their satisfaction with the experience. The correlation was not significant, however, for the experienced breastfeeders. Breastfeeding confidence in hospital for this group may not be a good indicator of mothers' satisfaction with breastfeeding. Different factors may have contributed to these mothers' feelings. They may have recalled their previous breastfeeding experience, and the success or failure of this experience may have influenced their confidence in breastfeeding. Also, as experienced breastfeeders, mothers may not have received as much support from nursing staff or family members in their breastfeeding endeavours. They would also have had to deal with the responsibilities of other children, and this additional challenge along with breastfeeding, may have affected their level of confidence while in hospital.

At 4 weeks postpartum, however, confidence scores were significant and highly correlated with satisfaction scores for all groups. By this time, all mothers had a more realistic idea of how they were progressing with their breastfeeding, and with their adjustment to the family situation. They could more accurately describe their true confidence levels and have a sense of whether they were satisfied with their breastfeeding experience. The correlations tell us that the

more confident mothers felt in their breastfeeding experiences, the more satisfaction they felt. This may also be a reciprocal relationship, in that the more satisfaction mothers felt, the more confident they became in continuing their breastfeeding.

Breastfeeding confidence and duration.

Maternal breastfeeding confidence in hospital had little association with the duration of breastfeeding in this study. In contrast, however, breastfeeding confidence at 4 weeks postpartum was significantly related to breastfeeding duration, with the strength of the relationships varying among the groups. Scores of the total group of mothers indicated a strong relationship, scores of the experienced group of mothers indicated a moderate relationship, while scores of first time breastfeeding mothers indicated a very strong relationship, with 52% of the variance in duration being accounted for by maternal breastfeeding confidence at 4 weeks postpartum.

Although many studies have reported on the positive relationship between breastfeeding confidence and breastfeeding duration, these studies are not all comparable with the present study. While three studies related confidence to breastfeeding duration, their measure of confidence was not a specific measure of breastfeeding confidence (Boettcher et al., 1999; Fahy & Holshier, 1988; Janke, 1994). Other studies measured breastfeeding confidence in the prenatal period (Buxton et al., 1991; Lawson & Tulloch, 1995; O'Campo et al., 1992) when mothers were not yet experiencing the realities of breastfeeding. Several studies measured breastfeeding confidence simply by asking mothers about their confidence levels, without the use of a proven and reliable instrument for

measuring confidence (Coreil & Murphy, 1988; Cox & Turnbull, 1998; Ertem et al., 2001; Loughlin et al., 1985). A few studies found relationships between breastfeeding confidence and duration indirectly, while examining other aspects of breastfeeding (Locklin, 1995; Stamp & Crowther, 1995). Only one study was found which used the same measurement of breastfeeding confidence as the current study. Dennis and Faux (1999) measured mothers' breastfeeding confidence in hospital using the BSES.

Three of the above studies did examine breastfeeding confidence in hospital (Dennis & Faux, 1999; Ertem et al., 2001; Loughlin et al., 1985). All three reported positive significant relationships between mothers' perception of breastfeeding confidence and duration of breastfeeding. This is in contrast to the findings in the present study, in which all mothers had nonsignificant, almost negligible correlations between breastfeeding confidence in hospital and duration of breastfeeding. As discussed in earlier sections, the sociodemographic nature of the sample may help to explain this finding. Most mothers entered into the breastfeeding experience with relatively high confidence levels, possibly due to their maturity and level of education. According to the Self-Efficacy Theory, this could be interpreted as meaning that, initially, these mothers had the personal belief that they would be successful at breastfeeding. The four sources of information cited by Bandura (1977) as being relevant to personal efficacy can also be applied when discussing the relationship between breastfeeding confidence and breastfeeding duration. At the initial measuring of breastfeeding confidence, first time mothers may have had little exposure to performance accomplishments, vicarious experiences, verbal persuasion, and physiological experiences, and probably did not yet understand how these factors would

influence their confidence in continuing breastfeeding. While experienced mothers would have been influenced by these factors in the past, the memories of these factors may not have been consciously apparent in the excitement of the birthing experience, and the extra task of incorporating the new baby into an already established family, with other children who need attention.

At 4 weeks postpartum, all mothers would have had more opportunities to be influenced by these factors, and would probably have had a truer self-appraisal of their breastfeeding confidence. This would help to explain why the scores of all mothers demonstrated significant relationships between breastfeeding confidence at 4 weeks postpartum and breastfeeding duration. Scores of first time mothers had the highest correlation, probably because their previous lack of breastfeeding experiences allowed them to be more influenced by the factors outlined by Bandura (1977). Their performance accomplishments may have been more significant, as new mothers were more likely to see their performance with breastfeeding as indicative of their overall mothering skills. They probably would not have been as exposed to as many vicarious experiences as prior breastfeeding mothers and, therefore, may have been more influenced by the particular experiences they observed. They may have been more influenced by verbal persuasion from others, as they were novices at the maternal role and may have felt that advice from others was more credible than their own thoughts or feelings. Lastly, they may have had more difficulty in adjusting to the physiological experiences of breastfeeding, as they were experiencing these for the first time, and may have been uncertain about whether their responses were normal, or how long they would last.

Breastfeeding Problem-Solving

Relationships were examined between breastfeeding problem-solving and satisfaction, and breastfeeding problem-solving and duration.

Breastfeeding problem-solving and satisfaction.

Overall, breastfeeding problem-solving was shown to have a significant, strong relationship with breastfeeding satisfaction. There were major differences noted, however, between experienced and first time breastfeeding mothers. The scores of experienced breastfeeders demonstrated a nonsignificant, moderate relationship between problem-solving and satisfaction, while the scores of first time breastfeeders demonstrated a significant, very strong relationship between the two variables, with problem-solving accounting for almost 63% of the variance in breastfeeding satisfaction.

No research studies were found which directly addressed the relationship between breastfeeding problem-solving and breastfeeding satisfaction. One study did find a positive, significant relationship between a mother's sense of satisfaction and success as a parent and her appraisal of her problem-solving skills (Pridham & Chang, 1985). The concept of learned resourcefulness may offer some insight into the relationship between these variables. Rosenbaum (1990) believed that learned resourcefulness was one of the major personality repertoires which enabled persons to acquire health promoting behaviours provided they believed that these behaviours were important for their well being. One of the skills in learned resourcefulness involves using self-direction to take the initiative to employ problem-solving strategies when faced with stressful situations. It is well documented that mothers who choose to breastfeed do so

because they believe that it is the best method of infant feeding. They are dedicated to promoting the health of their infants. This means that they are more likely to persist in their breastfeeding endeavours despite difficulties. It would be reasonable to expect that mothers who are successful at solving breastfeeding problems would feel more satisfied with their breastfeeding experiences knowing that their actions are contributing to promoting their infant's health.

Experienced breastfeeding mothers had lower correlations between problem-solving and breastfeeding satisfaction, and these correlations were not significant. It is possible that success at problem-solving may not be as significant to the satisfaction of the experienced mother, because for these mothers, breastfeeding problem-solving is not a new phenomenon by which they judge their ability as a mother. First time breastfeeding mothers' attempts at problem-solving breastfeeding concerns may be more challenging. Bottorff (1990) has described breastfeeding as a journey into the unknown, in which "a mother does not know if she is capable of breastfeeding, and what her determination will be worth, until she begins to breastfeed" (p. 203). This may be especially true for first time breastfeeders. When a first time breastfeeding mother problem-solves successfully, her sense of motherhood may be highly validated leading to her increased sense of satisfaction with her breastfeeding experience. This may not be so highly valued by experienced breastfeeders, however, who may have learned a variety of criteria by which to judge their success and satisfaction with breastfeeding.

Breastfeeding problem-solving and duration.

No significant correlation was found between breastfeeding problem-

solving and breastfeeding duration for the total sample of breastfeeding mothers and for experienced breastfeeding mothers. A significant, moderate correlation was found between these variables with the sample of first time breastfeeders.

No literature was found that addressed the relationship between maternal breastfeeding problem-solving and duration of breastfeeding. Numerous studies have discussed the occurrence of breastfeeding problems and reported how these problems were cited as major reasons for mothers to discontinue breastfeeding prematurely (Barber et al., 1997; Bourgoin et al., 1997; Brandt et al., 1998; Evers et al., 1998; Matthews et al., 1994; Quarles et al., 1994; Scott et al., 2001; Sheehan et al., 2001). A few studies showed no relationships between the number of breastfeeding problems and the duration of breastfeeding (Ertem et al., 2001; Fahy & Holschier, 1988; Lawson & Tulloch, 1995). This may support the idea that breastfeeding problem-solving, in itself, may not be the only variable to affect breastfeeding duration.

In the current study, the majority of mothers scored relatively high on perceived problem-solving ability related to breastfeeding at 4 weeks postpartum, and while first time breastfeeding mothers scored slightly lower than experienced breastfeeding mothers, scores were not statistically different between the two groups. As discussed earlier, the higher mean age and educational status of mothers in this sample may have contributed to mothers' overall higher problem-solving ability, thereby decreasing mothers' concerns about breastfeeding problems.

The differences in relationships between breastfeeding problem-solving and duration for first time versus experienced mothers can be reasonably explained. Experienced mothers would have benefited from previous

breastfeeding experiences. They probably felt more confident in their abilities to handle whatever breastfeeding problems arose and, therefore, did not see problems with breastfeeding as being major obstacles which would affect their length of breastfeeding. Problem-solving might have been of more significance to first time breastfeeders, who may not have been able to perceive at 4 weeks postpartum how they would perform with breastfeeding problem-solving into the future, as there are many time-related aspects of breastfeeding which they have not yet encountered. The correlation between breastfeeding problem-solving and breastfeeding duration for the group was only moderate, however, with problem-solving accounting for 17% of the variance in breastfeeding duration. This may indicate that problem-solving is only one factor affecting breastfeeding duration in first time breastfeeders.

Breastfeeding Satisfaction

Relationships were examined between breastfeeding satisfaction and duration.

Breastfeeding satisfaction and duration.

Maternal breastfeeding satisfaction had a low to moderate correlation with breastfeeding duration. Scores of mothers in the total sample, and scores of first time breastfeeding mothers demonstrated a significant relationship, while scores of experienced breastfeeders did not. These results show that maternal breastfeeding satisfaction did not account for a high percentage of variance in breastfeeding duration in this study.

While other research studies show a positive relationship between these

two variables, there are differences between the strength of the relationships. Sheehan (1999) reports a very high correlation, while Schy et al. (1996) report a high correlation. Moderate correlations were reported by Leff, Jefferis, et al. (1994), and Riordan et al. (1994) when using the same instrument as this study. Humenick et al. (1997) report a variety of positive correlations from high to low, depending on the time frame for measurement of the variables.

The time frame for measurement of satisfaction may play a key role in determining the accuracy of a mother's perception of whether her breastfeeding was a satisfying experience. Riordan et al. (1994) in their testing of the Maternal Breastfeeding Evaluation Scale, chose the time frame of 4 months postpartum for their evaluation. They felt that this time frame allowed the mother sufficient time to be able to evaluate her breastfeeding experience. Mercer (1985) concluded that at 4 months, women felt more positive about their baby than at any other time during their first year. This may have been a more opportune time to elicit mothers' true feelings about their satisfaction with the breastfeeding experience. The time frame for evaluation of breastfeeding satisfaction in the current study was only 4 weeks postpartum. Since the establishment of breastfeeding varies from one mother to another, this time frame may not have allowed some mothers time to determine the success of their breastfeeding, and thus their level of satisfaction.

The lowest correlation was obtained with the experienced breastfeeding mothers, whose scores did not demonstrate a significant relationship between breastfeeding satisfaction and duration. All of these mothers had varying numbers of other children, with a high percentage being under the age of 5 years. These mothers may have been so busy with their other children, that they

did not take the time to think about breastfeeding as being a satisfying experience, but rather just as another necessary event in nurturing the new infant. First time breastfeeding mothers had the highest correlation, and perhaps this reflected their contentment with breastfeeding as being proof of their ability to achieve the mothering role. Humenick et al. (1997) also reported that first time breastfeeders had the highest correlations between breastfeeding satisfaction and breastfeeding duration.

Strengths and Limitations

This study had several strengths. The purpose of the study evolved from a literature review which clearly identified gaps in breastfeeding knowledge requiring further research, particularly in relation to examining maternal breastfeeding problem-solving, directly measuring breastfeeding confidence, and exploring how these variables relate to breastfeeding satisfaction and duration. The study was based on a conceptual framework derived from theory which had been previously utilized in health research. Research variables were operationally defined and evolved from the conceptual framework. Research instruments utilized had acceptable reliability prior to, and during, the study. In addition, participant response rates were very high, with at least 95% of mothers participating in all aspects of the study.

The study also had a number of limitations. The use of a small, nonprobability consecutive sample of breastfeeding mothers limits the generalizability of study findings. The use of a survey approach to collect data on breastfeeding confidence, breastfeeding problem-solving, and breastfeeding satisfaction, may have also posed limitations. Maclean (1990) explains that the

structured format of questionnaires tends to oversimplify complex processes such as breastfeeding and may channel respondent's thinking along certain lines, discouraging them from conceptualizing the factors they feel to be important. As well, the possibility of response bias needs to be considered as mothers may have responded more favourably so that they would be perceived as competent mothers. The extended follow-up of mothers over a 6 month period may also have influenced mothers' decisions to extend breastfeeding, at least partially, so that they would be perceived as being "good mothers". Lastly, the time frame for measurement of mothers' breastfeeding satisfaction and perceived problem-solving ability may have been too early to assess mothers' true feelings, as they were still in the phase of establishing breastfeeding.

Summary

This study explored the questions of differences in breastfeeding confidence over time, differences between experienced and first time breastfeeding mothers in relation to breastfeeding confidence, problem-solving, satisfaction, and duration, as well as the relationships among these variables. It was guided by a conceptual framework based on Self-Efficacy Theory and the concept of Learned Resourcefulness.

Analysis of findings for the first research question revealed that for all groups, while there were slight increases in mothers' breastfeeding confidence over time, these differences were not significant. The insignificant differences may be due to specific characteristics of the study sample, in which mothers were older, more educated, more socially economically advantaged (known predictors of breastfeeding success), and highly motivated to breastfeed.

Analysis of findings addressing the second and third questions revealed that while all first time breastfeeders had lower confidence, problem-solving, satisfaction, and duration scores than experienced breastfeeders, only confidence and satisfaction scores were significantly lower. The Self-Efficacy Theory may give credibility to this finding. Experienced breastfeeding mothers who have met their personal efficacy expectation through prior performance accomplishments of successful breastfeeding, probably feel more confident in their breastfeeding endeavours, and may feel more satisfaction with their accomplishments. The nonsignificant differences between the groups in relation to breastfeeding problem-solving may again reflect sample characteristics, and the unique situations of each group of mothers. Nonsignificant differences in duration of breastfeeding between the groups may indicate that factors affecting duration are more likely related to mothers' individual uniqueness, rather than whether they have had previous breastfeeding experience.

Analysis of findings addressing the fourth question revealed that numerous correlations existed between the variables of breastfeeding confidence, problem-solving, satisfaction, and duration. The varying strengths and significance of these relationships point to the complexity of the breastfeeding process. Some of the relationships differed when the group was split into experienced and first time breastfeeders, indicating that some variables may be more important than others in influencing breastfeeding outcomes in the two groups. For the total group of mothers, and for experienced breastfeeders, breastfeeding confidence at 4 weeks postpartum accounted for the greatest amount of variance in the breastfeeding outcomes of satisfaction and duration. For first time breastfeeders, breastfeeding problem-solving emerged as the

variable accounting for the most variance in satisfaction, while breastfeeding confidence at 4 weeks postpartum accounted for the most variance in duration. These findings indicate that both the variables of breastfeeding confidence and problem-solving are important to consider when working with breastfeeding mothers.

The finding of positive, significant relationships among the majority of variables in this study, lends some support to the conceptual framework premise that breastfeeding self-efficacy (confidence) and learned resourcefulness (problem-solving) may provide an acceptable theoretical framework for examining breastfeeding satisfaction and duration. This researcher acknowledges, however, that breastfeeding is a complex phenomena, and depending on what variables are investigated, there may be other ways to conceptualize the cognitive and psychological variables associated with favourable breastfeeding outcomes.

Chapter 6

Implications and Conclusion

Implications

This chapter will address the implications of study findings for nursing practice, education, research, and policy development.

Nursing Practice

The results of this study have several implications for nurses who work with breastfeeding mothers. Fifty percent of mothers in the study sample had discontinued breastfeeding by 6 months postpartum with only 3.6% of mothers exclusively breastfeeding at this time. These statistics are far removed from national and international recommendations for breastfeeding duration and exclusivity. Since nurses tend to work closely with breastfeeding mothers, they may have a substantial impact on mothers' decisions regarding these breastfeeding outcomes.

In order for nurses to facilitate optimal breastfeeding outcomes, they need to understand that breastfeeding is a complex phenomena and that there are many variables which may undermine mothers' abilities to succeed with this task. The present study examined both cognitive and psychological variables believed to have an impact on mothers' breastfeeding experiences. For all groups of mothers, breastfeeding confidence at 4 weeks postpartum was found to be significantly related to breastfeeding duration, while breastfeeding problem-solving was found to be significantly related to duration for first time breastfeeders. Breastfeeding satisfaction was found to be significantly related to

duration for the total group of mothers, as well as for first time breastfeeders. These findings suggest that nurses need to focus on providing interventions which increase mothers' breastfeeding confidence and satisfaction, and increase first time mothers' breastfeeding problem-solving skills.

In order to increase mothers' confidence in a task such as breastfeeding, mothers need to have knowledge of the task, and learn the mechanics of the task. Mothers need knowledge about the anatomy of the breast, the physiology of lactation, and how to assess the needs of both mother and baby. They also need to learn the mechanics of breastfeeding, including how to position the baby at the breast, how to obtain a proper latch, and how to remove the baby from the breast. Without knowledge of these basic elements mothers may not have the confidence or ability to proceed with breastfeeding.

While all mothers need to be taught realistically what breastfeeding is like, this is especially true for first time breastfeeders. Findings from the current study suggest that first time breastfeeders specifically need to be taught breastfeeding problem-solving skills. These mothers may need more guidance from nursing staff in making sure that they have a good understanding of the breastfeeding process and that they have been taught the skills for recognizing when there is a problem which needs attention, planning what to do about the problem, having the necessary skills to implement the plan, and evaluating the results of interventions. Mothers' ability to problem-solve may help to increase their confidence and satisfaction with breastfeeding.

Nurses should be particularly diligent in assessing mothers' understanding of the "supply and demand" concept of breastfeeding, as "perceived insufficient milk supply" was the most common reason cited for discontinuing breastfeeding

in the current study. Mothers need to know what factors can increase or inhibit milk supply. They need to be taught how to evaluate the adequacy of their milk supply by assessing infant behaviours such as hunger cues, crying, and fussiness, as well as infant elimination and growth patterns, particularly growth spurts. An understanding of this topic may help mothers feel confident that they have an adequate milk supply, and know what to do if they experience problems.

Nurses need to be aware of the specific maternal and infant factors which affect mothers' breastfeeding decisions. In the present study, maternal factors such as the physical discomforts of sore nipples, and psychological factors such as finding breastfeeding too difficult or stressful, as well as infant factors of baby losing weight and refusing the breast, were cited as the second most common reasons for discontinuing breastfeeding. These difficulties often reflect mothers' inability to solve breastfeeding problems or deal with the psychological issues which can lead to decreased levels of breastfeeding confidence.

All of these factors have implications for nurses. In dealing with the psychological issues, an important consideration involves all nurses giving consistent breastfeeding information, and supporting and encouraging mothers in their attempts to breastfeed, so that mothers' confidence is not undermined. Giving positive feedback about breastfeeding accomplishments and ensuring mothers that their feelings and concerns are normal (which is in keeping with the verbal persuasion aspect of Bandura's Self-Efficacy Theory), would help to increase maternal confidence in their breastfeeding abilities.

Mothers' actual breastfeeding performances need to be assessed to ensure that mothers are confident with the basics of breastfeeding. Mothers may need assistance with the mechanics of breastfeeding to correct problematic

areas. Nurses may increase mothers' confidence by establishing in-hospital breastfeeding groups, which would give mothers the experiences they need to learn different approaches to breastfeeding techniques, as well as providing an informal support group which mothers could later access. Mothers would also benefit from learning about the management of potential breast-related problems which they may experience in the future.

In preparation for hospital discharge, nurses can ensure that mothers know who to contact if they experience breastfeeding problems. Almost 25% of mothers in the current study cited that they had no one to help them with breastfeeding upon hospital discharge, and some mothers could not name any sources of help. Only 50.9% of mothers named public health nurses/nurses as sources of help, although all mothers had access to these resources. This may indicate that mothers either do not know about these sources of help or are hesitant to utilize these resources. It is recommended that public health nurses make contact with new mothers prior to delivery, leaving their name and phone number and clearly indicating their role, thus opening the door for further contact when needed.

It is important that all breastfeeding mothers be followed up after delivery. With shorter hospital stays becoming the norm, mothers often do not have time to learn all they need to know about breastfeeding while in hospital. They often feel overwhelmed with the amount of material they are presented with, and may feel too tired or uncomfortable to comprehend what they have been taught. They often leave the hospital not feeling confident in their abilities to breastfeed, especially since some of the information they were given may not yet be applicable. They often run into problems as breastfeeding becomes established

in the early weeks after delivery. In the present study, of the 28 mothers who had given up breastfeeding by 6 months, 14 mothers had done so in the first 6 weeks, with 5 discontinuing in the first week, and 11 having discontinued by 3 weeks postpartum. These findings suggest that mothers at home need visits from a knowledgeable professional such as a public health nurse, lactation consultant, or midwife, who can assess their breastfeeding situation and offer guidance and support in dealing with breastfeeding issues. Since breastfeeding is a round-the-clock activity, this necessitates the availability of breastfeeding help outside of structured hours. Resources such as 24 hour breastfeeding hotlines manned by nurses, can be very beneficial to mothers in instilling breastfeeding confidence, and helping with problem-solving, during times when no other resources are available.

In addition to directly assisting breastfeeding mothers, findings from this study indicate the need for nurses to address issues that indirectly affect breastfeeding outcomes, but may contribute to mothers' confidence and ability to problem-solve. Data suggests that the medium through which mothers learn about breastfeeding should be varied and widespread. In the present study, 77.2% of mothers cited family and friends as their most common source of breastfeeding information. This finding is very important, as most programs delivering breastfeeding information are available specifically to pregnant or new mothers, but not to family and friends. This is essentially an untapped resource to which breastfeeding information can be disseminated. Innovative ways to include these significant individuals in learning about breastfeeding needs to be explored so that they can be valuable resources for breastfeeding mothers.

Examples of innovative strategies which could be facilitated by nurses

include those currently being undertaken by the regional Breastfeeding Action Group. These involve a poster display and pamphlet on the "importance of grandparent support in successful breastfeeding" displayed at a lifestyle and leisure show for mature adults, as well as a "Boot Camp" for new dads of breastfeeding infants. These types of activities may help family and friends of new breastfeeding mothers to realize the important role they can play in increasing mothers' confidence and abilities in breastfeeding.

The second most common source of breastfeeding information cited by mothers in this study was reading materials (75.4%). A recent survey of library and bookstore resources in the region, conducted by the investigator, revealed very little in the way of breastfeeding literature. Nurses need to lobby these resource areas to increase their selection of reputable breastfeeding reading materials. In order to do this, nurses need to be current in their knowledge of what resources are available and know what to recommend. Nurses also need to embrace new ways of disseminating breastfeeding information by developing reputable web sites on the Internet. Mothers are more likely to be confident in breastfeeding if they are knowledgeable about the task.

The third most common source of breastfeeding information cited by mothers in this study was prenatal classes (66.7%). Creativity by public health nurses may help mothers not only learn the mechanics of breastfeeding, but, may also empower them to feel confident in breastfeeding decision making. Strategies such as the use of live models and problem-solving scenarios may be beneficial in helping mothers develop skill and confidence in the realities of breastfeeding. Nurses also need to be creative in finding innovative ways to educate mothers who do not attend classes, so they will start their breastfeeding

experience with the confidence, knowledge, and abilities needed to succeed. Collaboration with other health professionals and consumer groups working with breastfeeding mothers may be very beneficial in accomplishing this task.

Nursing Education

The success of a mother's breastfeeding experience can be greatly influenced by nursing personnel that she encounters. In order to assist mothers with breastfeeding, nurses must be knowledgeable about the breastfeeding process. Basic nursing education programs must ensure that learning about breastfeeding is a major topic included in the curriculum related to maternal-child health, as well as threaded through other aspects of nursing curricula such as in nutrition, research, or issues courses.

Findings from the current study suggest that nurses need to focus on interventions to promote maternal breastfeeding confidence and satisfaction, as well as teaching problem-solving skills. These findings have implications for nursing education. Students need to be taught about the factors which undermine breastfeeding confidence and what interventions they can utilize to promote mothers' confidence in breastfeeding. They need to be taught how to help mothers use problem-solving skills in dealing with breastfeeding concerns. They also need to have an awareness of the factors which increase breastfeeding satisfaction, so that they will be able to promote these factors.

Although teaching strategies which may be beneficial in helping students learn about breastfeeding are varied, one of the most important strategies might be to expose students to clinical role models with breastfeeding expertise, who are actually working with "real" breastfeeding mothers (whether it be in a

laboratory setting or in a clinical or home environment). This strategy would help students realize the knowledge they need to have about breastfeeding, understand the interventions they need to utilize in order to increase mothers' breastfeeding confidence and satisfaction, as well as learn how to facilitate mothers' use of a problem-solving approach in dealing with breastfeeding issues.

In a broader sense, students need to be taught to base their nursing interventions related to confidence, problem-solving, and satisfaction on current research literature, so that their practice is evidence based. They also need to be taught to become more politically active in reducing some of the barriers which can lead to decreased breastfeeding confidence and satisfaction, and to the development of breastfeeding problems.

Students must be taught that continuing education is essential in keeping their breastfeeding knowledge and skills up to date. Stemming from the current study, nurses and other health professionals, may need further education on confidence building with breastfeeding mothers, on assessing breastfeeding confidence and satisfaction, and on teaching mothers how to problem-solve in different breastfeeding situations. Mothers can be better supported in their breastfeeding endeavours, if nurses have the knowledge and ability to do so.

Nursing Research

The present study gives preliminary findings on the relationships among the variables of breastfeeding confidence, problem-solving, satisfaction, and duration, using a small, non-random, fairly homogenous population. The study should be replicated with a larger sample size, with comparison groups of first time and experienced breastfeeders, with a more diversified sociodemographic

population, and with a random sample of breastfeeding mothers. This would increase the external validity of the study, thus allowing generalization of study findings to other breastfeeding populations.

Since minimal research had been previously carried out on some of the study variables, they warrant further investigation. Breastfeeding confidence needs to be examined using a reliable instrument such as the BSES, as past research indicates that this variable often emerged indirectly when other aspects of breastfeeding were examined. Nursing interventions aimed at promoting breastfeeding confidence should be examined as to their effectiveness in increasing mothers' breastfeeding self-efficacy. Mothers' problem-solving ability related to breastfeeding should be explored, since no studies were found which specifically examined this variable. The present study modified the PS-F scale to apply to breastfeeding situations, and the modified instrument was found reliable in examining mothers' perceived breastfeeding problem-solving skills. The scale needs to be tested with other populations to validate reliability in different groups, and be administered at different time frames in order to determine mothers' perceptions of problem-solving ability as she gains more experience in breastfeeding. Breastfeeding satisfaction needs to be explored further as data revealed that major differences existed between experienced and first time breastfeeders when satisfaction was correlated with problem-solving and duration. This variable also needs to be examined at different time frames, as there is some question in the literature about the best time to administer a satisfaction survey for breastfeeding mothers.

Given the complex nature of a topic such as breastfeeding, research in this area would probably benefit from other types of research methodologies in

addition to a survey approach, so that richer data could be collected on the specific variables of breastfeeding confidence, satisfaction, and problem-solving. The use of methodological triangulation may be an appropriate choice for measuring these variables, using a combination of quantitative and qualitative data. Important qualitative data to investigate might include the following: (a) factors which affect breastfeeding confidence, (b) the nature of breastfeeding problems, (c) the type of problem-solving skills mothers possess, (d) the type of problem-solving strategies mothers use, (e) the type of resources mothers use, and (f) the factors which contribute to mothers' feelings of satisfaction.

Policy Implications

In order for nurses to assist mothers in improving their breastfeeding confidence, satisfaction, and problem-solving skills, it is important that they examine breastfeeding in a broader social context. Mothers in the current sample were not living in an era where breastfeeding was considered to be the cultural norm, and this reality probably negatively influenced mothers' confidence and satisfaction in breastfeeding, as well as their skill in dealing with breastfeeding problems. Nurses need to be instrumental in promoting breastfeeding as the cultural norm, and in removing obstacles which interfere with breastfeeding success. Lobbying for baby-friendly environments needs to become a priority in achieving this task. Actions can range from a mega project such as challenging governments to uphold the WHO Code of Marketing of Breastmilk Substitutes, or to smaller, but equally important tasks, such as establishing specific policies to protect breastfeeding in hospitals, mothers' workplaces, or other public areas. Policies would need to focus on removing breastfeeding inhibitors and increasing

practices which facilitate breastfeeding confidence. An example might be the development and implementation of a breastfeeding quality assurance program in hospital. The implications arising from such a strategy would help to instill confidence in mothers' choices about breastfeeding, and may remove barriers leading to breastfeeding problems. As breastfeeding becomes the norm, mothers would learn from the experiences of others, and would benefit from peer support. This would help mothers to increase their breastfeeding confidence, learn problem-solving skills, and ultimately increase their breastfeeding satisfaction and duration.

Conclusion

This study may be unique in that it is one of the few studies which has examined the relationships among breastfeeding confidence, problem-solving, satisfaction, and duration. Numerous positive relationships were found among these variables, often with significant differences noted between experienced and first time breastfeeders. For the total group of mothers, and for experienced breastfeeders, breastfeeding confidence at 4 weeks postpartum accounted for the greatest amount of variance in breastfeeding satisfaction and duration. For first time breastfeeders, breastfeeding problem-solving accounted for the most variance in satisfaction, while breastfeeding confidence at 4 weeks postpartum accounted for the most variance in duration. Since breastfeeding duration and exclusivity practices of mothers in this study are far less than those proposed by leading authorities on breastfeeding, then study findings which validate the presence of relationships among the variables of breastfeeding confidence, problem-solving, satisfaction and duration are significant and warrant further

investigation. Study findings lend support to the proposed theoretical framework of self-efficacy and learned resourcefulness. Although the findings from this study cannot be generalized, they provide new insight and support existing literature into some of the complexities surrounding the breastfeeding process.

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Appendix A
Breastfeeding Schema

Breastfeeding Schema (Labbok & Krasovec, 1990)

The schema divides breastfeeding into two main categories, "full" and "partial", and also includes a category of "token" breastfeeding.

Full breastfeeding - is further divided into exclusive and almost exclusive breastfeeding.

Exclusive breastfeeding - indicates that the infant receives no other liquid or solid

Almost exclusive breastfeeding - indicates that the infant can receive vitamins, minerals, water, juice or "ritualistic feeds" infrequently in addition to breastfeeds.

Partial breastfeeding - is further subdivided into "high", "medium" and "low" breastfeeding depending upon what percentage of the baby's feeds are breastfeeds. In keeping with the suggestion made by Labbok and Krasovec (1990), this study will define these categories as follows:

High partial breastfeeding - indicates that the infant receives more than 80% of feeds as breastfeeds.

Medium partial breastfeeding - indicates that the infant receives 20-80% of feeds as breastfeeds.

Low partial breastfeeding - indicates that the infant receives less than 20% of feeds as breastfeeds.

Token breastfeeding - refers to a breastfeed which is given primarily for infant or child comfort and consolation, and not for nutritive purposes.

Appendix B
Letter to Patient Care Coordinator

142 Country Rd.
Corner Brook, NF.
A2H 4M6

January 15, 2001.

Mrs Mildred Pungtilan
Patient Care Coordinator, Maternal Child
Western Health Care Corporation
P. O Box 2005
Corner Brook, NF
A2H 6J7

Dear Ms. Pungtilan,

I am seeking your assistance in working with obstetrical staff in identifying and acting as a point of contact with breastfeeding mothers who meet the inclusion criteria for a research study being conducted on your obstetrical unit.

The proposed study "The Effect of Maternal Breastfeeding Confidence and Problem-Solving Skills on Mother's Perception of Breastfeeding Success/Satisfaction and Breastfeeding Duration" fulfils the thesis requirement for my Master's degree in Nursing. The study is under the supervision of Dr Sandra LeFort and Professor Edna McKim, Memorial University of Newfoundland School of Nursing.

The purpose of the proposed study is to investigate maternal breastfeeding self-efficacy (confidence) and problem-solving skills and their effect on mother's perception of breastfeeding success/satisfaction and breastfeeding duration. It is hoped that the findings of the study will help health care professionals develop breastfeeding education programs and supportive services that will enhance mother's breastfeeding confidence and problem-solving skills leading to increased maternal perceptions of breastfeeding success/satisfaction and increased duration of breastfeeding.

Obstetrical nurses will be asked to identify breastfeeding mothers who meet the inclusion criteria for the study. Once mothers have been identified, the nurses will be required to give the mothers an information package explaining the study. The package will contain a form where mothers can indicate if they are interested in learning more about the study. If mothers express an interest in learning more about or participating in the study, the completed form can then be forwarded to me. I will then personally meet with the mother to address concerns or questions and will obtain consent if mothers agree to participate. I will then make arrangement with the mother for the collection of data.

Your major role will be to inform staff about the study and the protocol which they will need to follow to identify participants and to act as intermediaries in the study. I would be happy to meet with you to discuss the most appropriate way to inform your obstetrical staff about the study. I

can be reached at 637-5573 (work), 639-7860 (home), or by email - mwhite@swgc.mun.ca

Thanking you in advance for your consideration of my request, and I look forward to your earliest reply.

Sincerely,

Marilyn White, RN. BN.

cc. Ms. Donna Luther, Nurse Manager

Appendix C**Letter to Obstetrical Nurses**

142 Country Rd.
Corner Brook, NF.
A2H 4M6

June 18, 2001.

Obstetrical Nurses
Postpartum Unit
Western Health Care Corporation
P. O Box 2005
Corner Brook, NF
A2H 6J7

Dear Colleagues,

I am seeking your assistance in identifying and acting as a point of contact with breastfeeding mothers who meet the inclusion criteria for a research study being conducted on your obstetrical unit.

The proposed study "The Effect of Maternal Breastfeeding Confidence and Problem Solving Skills on Mother's Perception of Breastfeeding Success/Satisfaction and Breastfeeding Duration" fulfills the thesis requirement for my Master's degree in Nursing. The study is under the supervision of Dr Sandra LeFort and Professor Edna McKim, Memorial University of Newfoundland School of Nursing.

The purpose of the proposed study is to investigate maternal breastfeeding self-efficacy (confidence) and problem solving skills and their effect on mother's perception of breastfeeding success/satisfaction and breastfeeding duration. It is hoped that the findings of the study will help health care professionals develop breastfeeding education programs and supportive services that will enhance mother's breastfeeding confidence and problem solving skills leading to increased maternal perceptions of breastfeeding success/satisfaction and increased duration of breastfeeding.

You will be asked to identify breastfeeding mothers who meet the inclusion criteria for the study. Once mothers have been identified, you will be required to give the mothers an information package explaining the study. The package will contain a form where mothers can indicate if they are interested in learning more about the study. If mothers express an interest in learning more about or participating in the study, the completed form can then be forwarded to me. I will then personally meet with the mother to address concerns or questions and will obtain consent if mothers agree to participate. I will then make arrangement with the mother for the collection of data.

Your major roles in the study will include:

- (a) identifying mothers who meet inclusion criteria for the study following specific guidelines (see attached)

- (b) acting as an intermediary in the study by making contact with the mothers and informing them of the study
- (c) providing mothers with an information package regarding the study
- (d) informing the researcher about which mothers are interested in learning more about the study or who have indicated that they will be a participant in the study.

I would be happy to meet with you to discuss any concerns that you may have about your role in the study. You may direct your concerns to Ms Mildred Pungtilan, your Patient Care Coordinator, or contact me directly. I can be reached at 637-5573 (work), 639-7860 (home), or by email - mwhite@swgc.mun.ca

Thanking you in advance for your consideration of my request, and I look forward to working with you soon.

Sincerely,

Marilyn White, RN. BN.

BREASTFEEDING RESEARCH STUDY

INCLUSION CRITERIA

Please place a check mark by each of the following inclusion criteria to indicate whether the patient is eligible for the study:

- 19 years of age or older
- fluent in written and spoken English
- initiated breastfeeding in hospital
- able to be contacted by telephone
- have no evident physical, mental, or cognitive impairment which would impede ability to complete questionnaires or give consent
- have delivered without complications which might impact on mother's or baby's ability to breastfeed
- have delivered an infant of at least 37 weeks gestation and greater than 2500 grams
- have a singleton infant free from birth defects which may impede breastfeeding
- at least 12 hours has passed since the time of delivery and initial contact made with the patient about the research study

*** If all inclusion criteria are met, the breastfeeding study information package can be given and explained to the patient.

Appendix D**Letter of Introduction to Study (for Potential Participants)**

Letter of Introduction to Study

Dear Mother,

Mrs. Marilyn White, a registered nurse working in Western Regional School of Nursing is carrying out a research study with breastfeeding mothers in the region. This study has been approved by the Human Investigations Committee, Memorial University of Newfoundland, and is under the direction of Dr. Sandra LeFort, and Professor Edna McKim, Memorial University School of Nursing.

Mrs. White has asked me to assist her in obtaining breastfeeding mothers as participants in her study. She would like to interview you and obtain information through questionnaires and follow-up phone calls about certain aspects of your breastfeeding experience. The findings of the study will hopefully help health care professionals develop breastfeeding education programs and supportive services that will increase mother's confidence and problem solving skills related to breastfeeding. The enclosed **Informed Consent Form** will provide more details on the study.

Participation in the study is entirely voluntary. You may decide not to participate or you may withdraw from the study at any time. Your decision to participate or not to participate will not affect your care in any way.

A second form, labelled **Consent/Refusal Form For Consideration of Participation in Breastfeeding Research Study** is also enclosed. I am requesting that you complete this form and return it to me in the envelope provided as soon as possible. If you agree to be contacted to further discuss the study, then Mrs. White will meet with you briefly prior to your discharge to address any questions or concerns you may have. If you then agree to be in the study, your written consent will be obtained, and you will be required to complete two short questionnaires before discharge. Follow up will be as indicated on the consent form.

On behalf of Mrs. White, I would like to thank you for considering this request.

Sincerely,

Staff Nurse, Obstetrics

Appendix E
Consent/Refusal Form for Consideration of Participation
in Breastfeeding Research Study

Consent/Refusal Form
For Consideration of Participation
In Breastfeeding Research Study

Please indicate in the appropriate space below whether or not you agree to be contacted to determine your interest in participating in a study about breastfeeding.

_____ I am willing to be contacted by Mrs. Marilyn White to have the above study explained more fully to me.

_____ I am NOT willing to be contacted by Mrs. Marilyn White to have the above study explained to me.

Name (Please Print)

Signature

Date

Appendix F

Consent To Participate in Biomedical Research

FACULTY OF MEDICINE - MEMORIAL UNIVERSITY OF NEWFOUNDLAND
AND
HEALTH CARE CORPORATION OF ST. JOHN'S

Consent To Participate In Bio-medical Research

TITLE: The Effect of Maternal Breastfeeding Confidence and Problem Solving Skills on Maternal Breastfeeding Satisfaction and Breastfeeding Duration

INVESTIGATOR(S): Marilyn White, B. N., R. N.

SPONSOR: N/A

You have been asked to participate in a research study. Participation in this study is entirely voluntary. You may decide not to participate or may withdraw from the study at any time without affecting your normal treatment.

Information obtained from you or about you during this study, which could identify you, will be kept confidential by the investigator. The investigator will be available during the study at all times should you have any problems or questions about the study.

1. Purpose of study:

The purpose of this study is to look at your breastfeeding confidence and how you solve any problems with breastfeeding. It will also look at your satisfaction with your breastfeeding experience and the length of time you have continued with breastfeeding your baby. It is hoped that the findings of this study will help health care professionals develop breastfeeding education programs and supportive services that will help mothers have a more satisfying breastfeeding experience

2. Description of procedures and tests:

You will be interviewed in hospital where you will be asked to provide some information about yourself and to complete a short questionnaire about your confidence in breastfeeding. About one month after discharge from hospital, you will be sent three other short questionnaires to complete at home and mail back to the researcher (postage paid). These questionnaires will once again look at how confident you feel with breastfeeding, and will also look at how you deal with problems about breastfeeding, and how you feel about your breastfeeding experience. Finally, you will be called by telephone about 6 weeks after your baby's birth to see if you are still breastfeeding your baby. If you are still breastfeeding at this time, you will be called again at 4 months and possibly at 6 months depending on your breastfeeding status. The purpose of the phone calls will simply be to ask if you are still breastfeeding, how long you continued to breastfeed, and if you are no longer breastfeeding, the reason why you changed your method of infant feeding.

3. Duration of participant's involvement:

The maximum length of your involvement will be six months, but may be less depending on the length of time you breastfeed. You will have only one visit with the researcher in hospital, and will complete questionnaires at home at approximately one month after discharge. Brief follow up telephone calls will be made at six weeks and possibly four and

six months to assess breastfeeding status.

4. Possible risks, discomforts, or inconveniences:

There should not be any risks or discomforts from participating in this study. However, if you should have any concerns or questions that I am not able to answer, you can be referred to an appropriate health care provider such as a public health nurse or physician if you wish. The only inconvenience will be the time needed for the initial interview, for completing questionnaires at home and for providing information during follow up phone call(s).

5. Benefits which the participant may receive:

There are no immediate benefits for the participants. However, health care professionals may use the results of the study to plan educational and supportive services for future breastfeeding mothers.

6. Alternative procedures or treatment for those not entering the study:

N/A

7. Liability statement.

Your signature indicates your consent and that you have understood the information regarding the research study. In no way does this waive your legal rights nor release the investigators or involved agencies from their legal and professional responsibilities

Signature Page

Title of Project: **The Effect of Maternal Breastfeeding Confidence and Problem Solving Skills on Maternal Breastfeeding Satisfaction and Breastfeeding Duration**

Name of Principal Investigator: **Marilyn White**

To be signed by participant

I, _____, the undersigned, agree to my participation or to the participation of _____ (my child, ward, relative) in the research study described above.

Any questions have been answered and I understand what is involved in the study. I realise that participation is voluntary and that there is no guarantee that I will benefit from my involvement.

I acknowledge that a copy of this form has been given to me.

(Signature of Participant)

(Date)

(Signature of Witness)

(Date)

To be signed by investigator

To the best of my ability I have fully explained the nature of this research study. I have invited questions and provided answers. I believe that the participant fully understands the implications and voluntary nature of the study.

(Signature of Investigator)

(Date)

Phone Number

Appendix G

Breastfeeding Self-Efficacy Scale (BSES)

Code _____

Date _____

Breastfeeding Self-Efficacy Scale (BSES)

For each of the following statements, please choose the answer that best describes how confident you are with breastfeeding your new baby. Please mark your answer by circling the number that is closest to how you feel. There is no right or wrong answer.

- 1 = not at all confident
 2 = not very confident
 3 = half the time confident
 4 = usually confident
 5 = always confident

	Not at all confident				Always confident
1. I can always hold my baby comfortably during breastfeeding.	1	2	3	4	5
2. I can always position my baby correctly at my breast.	1	2	3	4	5
3. I can always focus on getting through one feed at a time.	1	2	3	4	5
4. I can always recognize the signs of a latch.	1	2	3	4	5
5. I can always take my baby off the breast without pain to myself.	1	2	3	4	5
6. I can always determine that my baby is getting enough breast milk.	1	2	3	4	5
7. I can always successfully cope with breastfeeding like I have with other challenging tasks.	1	2	3	4	5
8. I can always depend on my family to support my decision to breastfeed.	1	2	3	4	5

Code _____

Date _____

- 1 = not at all confident
 2 = not very confident
 3 = half the time confident
 4 = usually confident
 5 = always confident

	Not at all confident				Always confident
9. I can always motivate myself to breastfeed successfully.	1	2	3	4	5
10. I can always monitor how much breast milk my baby is getting by keeping track of my baby's urine and bowel movements.	1	2	3	4	5
11. I can always breastfeed my baby without using formula as a supplement.	1	2	3	4	5
12. I can always ensure that my baby is properly latched for the whole feeding.	1	2	3	4	5
13. I can always manage the breastfeeding situation to my satisfaction.	1	2	3	4	5
14. I can always manage to breastfeed even if my baby is crying.	1	2	3	4	5
15. I can always keep my baby awake at my breast during a feeding.	1	2	3	4	5
16. I can always maintain my milk supply by using the "supply and demand" rule.	1	2	3	4	5
17. I can always refrain from bottle feeding for the first 4 weeks.	1	2	3	4	5

Code _____

Date _____

- 1 = not at all confident
 2 = not very confident
 3 = half the time confident
 4 = usually confident
 5 = always confident

	Not at all confident			Always confident		
18. I can always feed my baby with breast milk only.	1	2	3	4	5	
19. I can always stay motivated to breastfeed my baby.	1	2	3	4	5	
20. I can always count on my friends to support my breastfeeding.	1	2	3	4	5	
21. I can always keep wanting to breastfeed.	1	2	3	4	5	
22. I can always feed my baby every 2-3 hours.	1	2	3	4	5	
23. I can always keep feeling that I really want to breastfeed my baby for at least 6 weeks.	1	2	3	4	5	
24. I can always comfortably breastfeed with my family members present.	1	2	3	4	5	
25. I can always be satisfied with my breastfeeding experience.	1	2	3	4	5	
26. I can always comfortably breastfeed in public places.	1	2	3	4	5	
27. I can always deal with the fact that breastfeeding is time consuming.	1	2	3	4	5	

Code _____

Date _____

- 1 = not at all confident
 2 = not very confident
 3 = half the time confident
 4 = usually confident
 5 = always confident

	Not at all confident				Always confident
28. I can always finish feeding my baby on one breast before switching to the other breast.	1	2	3	4	5
29. I can always continue to breastfeed my baby for every feeding.	1	2	3	4	5
30. I can always feel if my baby is sucking properly at my breast.	1	2	3	4	5
31. I can always accept the fact that breastfeeding temporarily limits my freedom.	1	2	3	4	5
32. I can always manage to keep up with my baby's breastfeeding demands.	1	2	3	4	5
33. I can always tell when my baby is finished breastfeeding.	1	2	3	4	5

Appendix H
Demographic Profile of Breastfeeding Mother

CODE _____

DATE _____

DEMOGRAPHIC PROFILE OF BREASTFEEDING MOTHER

Please take a few minutes to complete this information about yourself. It will provide background information about breastfeeding mothers who participate in the study. Confidentiality will be maintained at all times.

Code _____

1. Age: _____
2. How many children do you have? _____
3. Please give the ages of your children:
1st child _____ 2nd child _____ 3rd child _____ 4th child _____ 5th child _____ 6th child _____
4. What is your baby's sex?
a) male _____ b) female _____
5. What type of delivery did you have with this present birth?
a) spontaneous vaginal delivery _____ b) Cesarean section _____
c) forceps delivery _____ d) vacuum extraction delivery _____
6. Have you ever breastfed before? Yes _____ No _____ (If No, proceed to question 9)
7. How many times? _____
8. How long did you breastfeed? (Please estimate in weeks)
1st child _____ 2nd child _____ 3rd child _____ 4th child _____ 5th child _____ 6th child _____
9. When did you decide to breastfeed your present baby?
a) prior to pregnancy _____ b) during pregnancy _____ c) after delivery _____
10. Where did you learn about breastfeeding? Check all that apply.
a) prenatal classes _____ b) doctor _____ c) other health care professionals _____
d) family/friends _____ e) reading materials _____ f) in hospital _____ g) other _____
If other, please explain _____
11. Within what time frame after your baby's birth, did you start breastfeeding?
a) 1 hour _____ b) two - four hours _____ c) five - eight hours _____
d) greater than eight hours _____
12. How long do you intend to breastfeed? _____
13. Do you have anyone to help you with breastfeeding when you leave the hospital?
Yes _____ No _____
14. Please list any sources of breastfeeding help which you are aware of: _____

15. **Mother's Employment Status prior to Delivery:**
a) working full time _____ b) working part time _____
c) unemployed _____ d) other _____
16. **If you are employed, when do you plan to return to work after your baby's birth ?**
a) within 1 month _____ b) within 2 months _____ c) within 3 months _____
d) within 4 months _____ e) within 5 months _____ f) within 6 months _____
g) greater than 6 months _____ h) do not plan to return to work _____
17. **Level of education:**
a) less than high school _____ b) completed high school _____
c) some post secondary education _____ d) completed post secondary education _____
e) some university education _____ f) completion of university degree _____
- * (Examples of post secondary education include programs at recognized educational institutions other than a university. Ex. Academy Canada, College of the North Atlantic, Keyin Technical College etc.)
18. **Marital Status:** a) single _____ b) married _____ c) common law _____
d) divorced _____ e) other _____
19. **Yearly Family Income:** a) less than \$10,000 _____ b) \$10,000-\$19,999 _____
c) \$20,000-\$29,999 _____ d) \$30,000-\$39,999 _____
e) \$40,000- \$49,999 _____ f) \$50,000 and over _____

Thank you for taking the time to complete this questionnaire.

Appendix I

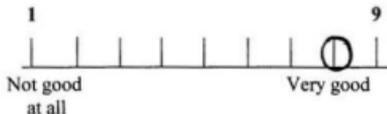
Problem Solving Related to the Baby's Feeding Scale (PS-F)

Code _____
Date _____

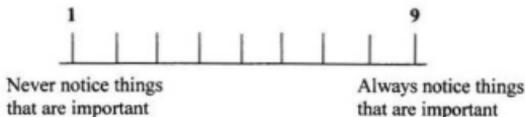
Problem Solving Related to the Baby's Feeding Scale (PS-F)

Please respond to the questions below keeping in mind the kinds of things related to your baby's breastfeeding that you had to deal with during the **past week**. On a scale of 1 - 9, circle the line which best represents your belief about how you dealt with the problem. If there weren't any problems this past week, think of the most recent problem and write the appropriate date that you dealt with it here _____

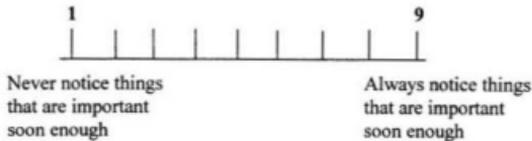
Example: How good are you at determining if your baby is getting enough milk?



1. How much do you notice things about your baby's breastfeeding that are likely to be important?



2. How much do you notice things about your baby's breastfeeding that are likely to be important soon enough?



When you notice something about your baby's breastfeeding:

3. How well do you figure out why your baby's breastfeeding is the way it is?



When you notice something about your baby's breastfeeding:

4. How good are you at figuring out the way your baby's breastfeeding should be like?



5. How good are you at deciding how important what you have noticed about your baby's breastfeeding is to his/her well-being?



6. How well do you figure out whether or not you should do something different to take some action regarding your baby's breastfeeding?



7. How well do you plan or think through how to deal with a breastfeeding concern?

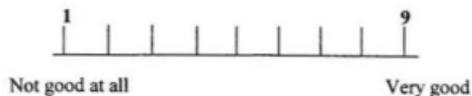


When you have a concern about your baby's breastfeeding:

8. How good are you at coming up with several ways of dealing with it?



9. How good are you at doing the things needed to take care of the concern?



10. How successful are you in carrying out your plans to deal with a breastfeeding concern?



Once you have done something about a concern about your baby's breastfeeding:

11. How good are you at thinking through how well you have dealt with it?

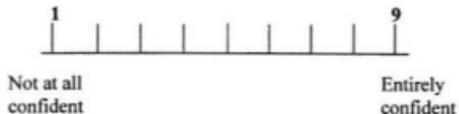


12. How good are you at figuring out whether or not what you did to take care of it was a good idea?

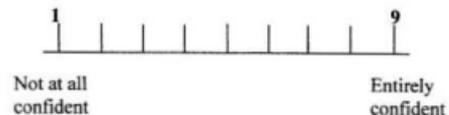


Your confidence:

13. How confident are you that you can figure out what your baby needs concerning breastfeeding?



14. When you make a plan, how confident are you that you can carry it out?



Appendix J

Maternal Breastfeeding Evaluation Scale (MBFES)

Maternal Breastfeeding Evaluation Scale (MBFES)*

If you breastfed more than one baby, base your answers on the most recent experience. Consider the overall breastfeeding experience, and please do not skip any questions.

Indicate your agreement or disagreement with each statement by circling the best answer:

SD = strongly disagree

D = disagree

N = no opinion or unsure

A = agree

SA = strongly agree

	Strongly Disagree				Strongly Agree
1. With breastfeeding I felt a sense of inner contentment.	SD	D	N	A	SA
2. Breastfeeding was a special time with my baby.	SD	D	N	A	SA
3. My baby wasn't interested in breastfeeding.	SD	D	N	A	SA
4. My baby loved to nurse.	SD	D	N	A	SA
5. It was a burden being my baby's main source of food.	SD	D	N	A	SA
6. I felt extremely close to my baby when I breastfed.	SD	D	N	A	SA
7. My baby was an eager breastfeeder.	SD	D	N	A	SA
8. Breastfeeding was physically draining.	SD	D	N	A	SA
9. It was important to me to be able to nurse.	SD	D	N	A	SA
10. While breastfeeding, my baby's growth was excellent.	SD	D	N	A	SA
11. My baby and I worked together to make breastfeeding go smoothly.	SD	D	N	A	SA

SD = strongly disagree
 D = disagree
 N = no opinion or unsure
 A = agree
 SA = strongly agree

Code _____
 Date _____

	Strongly Disagree				Strongly Agree
12. Breastfeeding was a very nurturing, maternal experience.	SD	D	N	A	SA
13. While breastfeeding, I felt self-conscious about my body.	SD	D	N	A	SA
14. With breastfeeding, I felt too tied down all the time.	SD	D	N	A	SA
15. While breastfeeding, I worried about my baby gaining enough weight.	SD	D	N	A	SA
16. Breastfeeding was soothing when my baby was upset or crying.	SD	D	N	A	SA
17. Breastfeeding was like a high of sorts.	SD	D	N	A	SA
18. The fact that I could produce the food to feed my own baby was very satisfying.	SD	D	N	A	SA
19. In the beginning, my baby had trouble breastfeeding.	SD	D	N	A	SA
20. Breastfeeding made me feel like a good mother.	SD	D	N	A	SA
21. I really enjoyed nursing.	SD	D	N	A	SA
22. While breastfeeding, I was anxious to have my body back.	SD	D	N	A	SA
23. Breastfeeding made me feel more confident as a mother.	SD	D	N	A	SA
24. My baby gained weight really well with breastmilk.	SD	D	N	A	SA

SD = strongly disagree
D = disagree
N = no opinion or unsure
A = agree
SA = strongly agree

Code _____
Date _____

	Strongly Disagree				Strongly Agree
25. Breastfeeding made my baby feel more secure.	SD	D	N	A	SA
26. I could easily fit my baby's breastfeeding with my other activities.	SD	D	N	A	SA
27. Breastfeeding made me feel like a cow.	SD	D	N	A	SA
28. My baby did not relax while nursing.	SD	D	N	A	SA
29. Breastfeeding was emotionally draining.	SD	D	N	A	SA
30. Breastfeeding felt wonderful to me.	SD	D	N	A	SA

Appendix K
Interview Guide

Code: _____

Interview Guide - Follow-up Phone Calls

Date: _____

"Hello Ms. (Mrs.) _____, this is Marilyn White, the nurse conducting the research study on breastfeeding. As you are aware, the last part of my study involves follow-up phone calls to assess whether you are still breastfeeding. I would like to ask you a few questions about your baby's feeding. Is this a convenient time for you? If not, when would you like me to call you? Date: _____ Time: _____

Are you still breastfeeding at the present time? Yes _____ No _____

Yes Answer:

Ok Ms. (Mrs.) _____, I will ask you a few questions about the extent of your breastfeeding.

Is your baby receiving just breastmilk or breastmilk in combination with other fluids/foods?

What other fluids/foods is your baby receiving?

(If the baby is receiving formula, ask the following):

How often does your baby receive formula?

(If the baby receives one bottle of formula/day or more, then ask the following):

Is the breast given only for baby's comfort?

"Well Ms. (Mrs.) _____, thank you very much for that information. I will telephone you again at 4 and possibly 6 months to further assess whether you are still breastfeeding. Goodbye until then."

Category of Breastfeeding: _____

Code: _____

No Answer:

“What is the total length of time you breastfed”? _____

What led you to change your method of infant feeding?

The final telephone script to all mothers will proceed as follows:

“Well Ms. (Mrs.) _____, your participation in the breastfeeding study is now over. Your contributions have been very valuable and very much appreciated. Thank you very much for your participation in my study. I wish you lots of luck with your baby.”

Appendix L
Permission to Use Instruments



F R A N K L I N C O U N T Y

Home Health Agency, Inc. August 4, 2000

3 Home Health Circle, Suite 1
St. Albans, Vermont 05478
Telephone: (802) 527-7531
Fax: (802) 527-7533

Marilyn White
142 Country Road
Corner Brook, NF
Canada
A2H 4M6

Dear Ms. White:

Thank you for your recent e-mail. You have permission to use the MBFES in your research. I would appreciate your sending me your research outcomes, if you use the tool.

The MBFES is appropriate for use after breastfeeding is completed or after the first two or three months of breastfeeding. It is intended to measure the mother's evaluation of breastfeeding, considering the breastfeeding experiences of both mother and infant.

The Maternal Enjoyment/Role Attainment Subscale consists of items 1,2,6,9,11,12,16,17,18,20,21,23,25, and 30. The Infant Satisfaction/Growth Subscale consists of items 3,4,7,10,15,19,24, and 28. The Lifestyle/Maternal Body Image Subscale consists of items 5,8,13,14,22,26,27, and 29. For analysis, I used a score of 1 for strongly disagree, up to 5 for strongly agree. Items worded negatively are reflected for scoring. These are items 3,5,8,13,14,15,19,22,27,28, and 29. To transform (reflect) the scores, subtract each participant's rating from 6 (i.e., 1 becomes 5, 2 becomes 4, etc.). Each participant's scores can be added for a total MBFES score as well as subscale totals. A copy of the tool is enclosed.

I am very interested in the results of your study. Please contact me if you have any questions about the MBFES or its development. I can be reached at this address or by e-mail at eleff@together.net.

Sincerely,

Ellen W. Leff, RN, MS

Director of Clinical Services

Marilyn White

From: "Karen Pridham" <kpridham@facstaff.wisc.edu>
To: <mwhite@SWGCMUN.CA>
Sent: Wednesday, August 23, 2000 9:03 AM
Subject: How I Deal with Problems Regarding Care of My Baby

Dear Ms. White,

Thanks for your inquiry concerning the instrument, "How I Deal With Problems Regarding Care of My Baby." I am sorry for not having responded before. I have been away for some time. I will send you a copy of the generic instrument and the PS-F scale today. Your study sounds very interesting and worthwhile, and I would be very happy if you should choose to use the instrument. I'll see if I can locate information that may be useful to you. The instrument is fairly straightforward, but you may have questions. Please feel free to contact me via e-mail or telephone (1-608-263-5282--office; 1-608-238-7536--home).

I am very interested in learning how you will assess maternal breast feeding self-efficacy.

Sincerely,

Karen Pridham, PhD, RN, FAAN
Professor Emerita

Marilyn White

From: "S LeFort" <slefort@morgan.ucs.mun.ca>
To: "Dennis, Cindy-Lee" <clidennis@cw.bc.ca>
Cc: <mwhite@swgc.mun.ca>
Sent: Monday, August 21, 2000 1:19 PM
Subject: RE: use of your Breast-feeding self-efficacy scale

Hi Cindy-Lee: Sounds great to me! I'll find out if we can have you as an 'external' committee member. a joint publication would be terrific...I'm sure Marilyn would agree.

I'll send your response (below) and my reply to Marilyn and she can correspond with you further.

We'll be in touch.

Regards, Sandy LeFort

At 10:28 AM 8/21/2000 -0700, you wrote:

>Hi Sandra.

>

>I welcome the opportunity for Marilyn to use the Breastfeeding Self-Efficacy

>Scale in her Master's thesis research project and will happily provide all

>the assistance required (maybe I could be an external reviewer?). I am in my

>office daily and foresee no difficulty in providing timely responses.

>Furthermore, it is completely understandable that the thesis committee has

>the final decision regarding the research project. I am interested in

>reviewing the proposal such that the data collected will be rigorous enough

>to provide me with an opportunity further psychometrically test the

>instrument with a different population. I would also like to review how the

>instrument is being used clinically (e.g. to evaluate nursing interventions

>etc.). I hope that the end result of this collaboration could be a joint

>publication of some sort.

>

>Let me know what you think.

>

>Cheers.

>C-L

>

>Cindy-Lee Dennis, MScN, PhD

>Post-doctoral Research Fellow

>Department of Health Care and Epidemiology

>Faculty of Medicine, University of British Columbia

>Centre for Community Health & Health Evaluation Research

>Phone: (604) 875-2000 ext.6535

>Fax: (604) 875-3569

>

>

>-----Original Message-----

>From: S LeFort [mailto:slefort@morgan.ucs.mun.ca]

>Sent: 2000/08/21 9:43 AM

>To: clidennis@cw.bc.ca

>Cc: mwhite@swgc.mun.ca; emckim@play.psych.mun.ca

>Subject: use of your Breast-feeding self-efficacy scale

Appendix M
Ethics Committee Approval



Memorial

University of Newfoundland

Human Investigation Committee
Research and Graduate Studies
Faculty of Medicine
The Health Sciences Centre

May 18, 2001

Reference #01.64

Ms. Marilyn White
142 Country Road
Corner Brook, NF A2H 4M6

Dear Ms. White:

This will acknowledge your correspondence dated May 14, 2001 wherein you provide a revised consent form for your research application **"The effect of maternal breastfeeding confidence and problem solving skills on maternal breast feeding satisfaction and breastfeeding duration"**.

At a meeting held on **May 17, 2001**, the Human Investigation Committee ratified the Chairs' decision to approve the revised consent form, as submitted and granted full approval of your research study.

We wish you success with your study.

Sincerely,

Sharon K. Buehler, PhD
Co-Chair
Human Investigation Committee

Catherine Popadiuk, M.D., F.R.C.S.(C)
Co-Chair
Human Investigation Committee

SKB\CP;jjm

C Dr. C. Loomis, Acting Vice-President (Research)
Dr. R. Williams, Vice-President, Medical Affairs, HCC



Memorial

University of Newfoundland

Human Investigation Committee
Research and Graduate Studies
Faculty of Medicine
The Health Sciences Centre

April 12, 2001

Reference #01.64

Ms. Marilyn White
School of Nursing
Memorial University of Newfoundland

Dear Ms. White:

Your application entitled "**The effect of maternal breastfeeding confidence and problem solving skills on maternal breastfeeding satisfaction and breastfeeding duration**". The Committee granted approval of the application.

A note was made to confirm that the original copy of the application has the signature of the supervisor.

With respect to the consent form, the Committee requested some specific modifications, which have been outlined on the attached. Before full approval of the application can be granted a copy of the final version of the consent form must be forwarded to the HIC Office.

Sincerely,

Sharon K. Buehler, PhD
Co-Chair
Human Investigation Committee

Catherine Popadiuk, M.D., F.R.C.S.(C)
Co-Chair
Human Investigation Committee

SKB:CP\jglc

- C Dr. C. Loomis, Acting Vice-President, Research
 Dr. R. Williams, Vice-President, Medical Affairs, HCC
 Dr. S. LeFort, Co-supervisor
 Prof. E. McKim, Co-supervisor

June 12, 2001

Minute No. 01-016 Meeting held on May 14, 2001.

Re: Marilyn White's Master's Nursing Degree Research Study

The Ethics Committee reviewed the change in the Master's Nursing Degree Research Study consent form. This was accepted and approved.

CARRIED

Dr. I. Simpson, MD.
Chair of Ethics Committee

01-03-28

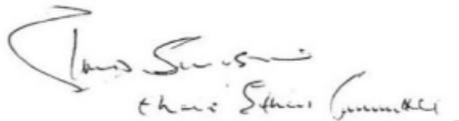
The Effect of Maternal Breastfeeding Confidence and Problem Solving Skills on Maternal Breastfeeding Satisfaction and Breastfeeding Duration

The subcommittee on research reviewed this proposal; there are 2 comments on the Consent Form:

1. The area titled SPONSOR near the beginning of the form is left blank; most likely N/A is the appropriate response, referring to item 20. on the application form; to remove any doubt from participants we recommend that it not be left blank.
2. Since participants must be 19 years of age or older we recommend that the last section of the consent form titled "Assent of minor participant" be removed if only to avoid unnecessary questioning.

With those suggestions we recommend that the Ethics Committee approve the proposal.

for research subcommittee



David S. Simon
Chair, Ethics Committee

Appendix N
Letters of Support

October 10, 2000

Ms. Marilyn White, RN, BN
142 Country Road
Corner Brook, NF
A2H 4M6



Dear Ms. White:

I am writing in response to your letter sent to me on September 19, 2000, and to advise you that Western Health Care Corporation will endorse your research project on "The relationship Between Maternal Breastfeeding Self-Efficacy and Problem Solving Skills and Their Effect on Maternal Perception of Breastfeeding Success/Satisfaction and Duration of Breastfeeding."

As you are aware, this research project will have to be submitted to Western Health Care Corporation's Ethics Committee prior to the commencement of this project.

Sincerest apologies for the delay in responding to your request. I trust that our support will be beneficial for you to proceed in your research project.

Yours truly

WESTERN HEALTH CARE CORPORATION

Bernice Blake-Dibblee
VP Operations ~ Corner Brook

BBD:cw

cc: Mr. J. Wolstenholme

**Corporate Office ♦ P.O. Box 2005 ♦ Corner Brook, NF ♦ A2H 6J7 ♦
Telephone: 709-637-5508 ♦ Facsimile: 709-637-5410 ♦**

Operating the following sites:

- Bay St. George Senior Citizens Home • Bonne Bay Health Centre • Calder Health Centre • Dr. Charles L. LeGraw Health Centre • Inter-Faith Home for Senior Citizens
- J.I. O'Connell Centre • Rufus Guinard Health Centre • Sir Thomas Roddick Hospital • Western Memorial Regional Hospital



P.O. Box 156
Corner Brook, NF, A2H 6C7

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2000-09-26

Marilyn White
142 Country Road
Corner Brook, NF
A2H 4M6

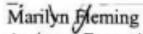
Dear Marilyn:

On behalf of Health and Community Services Western I strongly support your research topic "The Relationship Between Maternal Breastfeeding Self Efficacy and Problem Solving Skills and Their Effect on Maternal Perception of Breastfeeding Success/Satisfaction and Duration of Breastfeeding" for the thesis component of your Masters degree.

As you are aware Newfoundland has one of the lowest breastfeeding initiation and continuation rates among the Canadian provinces. This statistic, when research has clearly demonstrated the linkage between breastfeeding and short and long term health outcomes, is of great concern to Public Health practitioners in our region. We would welcome any insight into the relationship between maternal confidence and problem solving abilities and prolonged breastfeeding. This will contribute to the existing body of knowledge towards developing strategies that support mothers and families in their decision to breast feed.

Best wishes for continued success in your research and program completion.

Sincerely,


Assistant Executive Director
Community Health Division

MF/pmb

Regional Breastfeeding Promotion Committee

c/o Western Health Care Corporation
Health & Community Services Western
P.O. Box 2005
Corner Brook, NF A2H 6J7

December 7, 2000

Mrs. Marilyn White
142 Country Road
Corner Brook, NF
A2H 4M6

Dear Mrs. White,

We are writing on behalf of the Breastfeeding Promotion Committee to support your research project entitled "The Relationship Between Maternal Breastfeeding Self-Efficacy and Problem Solving Skills and Their Effects on Maternal Perception of Breastfeeding Success / Satisfaction and Duration of Breastfeeding."

The Breastfeeding Promotion Committee's Terms of Reference is to "promote, protect and support breastfeeding." The objectives (which are reviewed and revised yearly) are to increase both the initiation and duration rates of breastfeeding in our region.

Evidence from the literature suggests that many women discontinue breastfeeding prematurely and that only a minority of women in Canada are meeting the WHO / UNICEF recommendations for exclusive breastfeeding for the first six months of life and continued breastfeeding with complimentary foods for up to two years of age and beyond (Matthews, Banoub-Baddour, Laryea, McKim & Webber, 1994; Nova Scotia Department of health, 1998; Statistics Canada and Human Resources Development Canada, 1995; National Longitudinal Survey of Children and Youth (NLSCY), 1994/1995; Tambay & Catlin, 1995; National Population Health Survey (NPHS), 1994).

Janet Murphy Goodridge (1999) has stated in the recent "Breastfeeding in Newfoundland and Labrador: Moving Towards the New Millennium: A Strategic Plan (1999 - 2004)" that the education of health professionals on breastfeeding is essential to ensure that women are supported in hospital and community health care settings for their breastfeeding efforts. Unless health professionals have the knowledge and skills to give effective guidance and counseling throughout the breastfeeding experience, the results may be inaccurate or conflicting advice that ultimately undermines a mother's experience.

Research indicates that many health professionals are not prepared with the knowledge and skills to support breastfeeding mothers. There is an immediate need to enhance the knowledge and skills of hospital and community health nurses, as they are frequently the first contact with

Regional Breastfeeding Promotion Committee

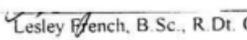
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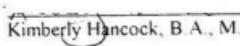
breastfeeding support (Anderson & Geden, 1990; Ellis, 1992; Freed, Clark, Harris & Lowdermilk, 1996; Lazzaro, Anderson & Auld, 1995).

The results of your research will help our Committee in our efforts to develop breastfeeding continuing education programs for staff by providing us with a clear understanding of the link between a woman's confidence in breastfeeding and duration rates. Your research will also enable us to help in the development of programming to provide adequate support, both prenatal and postnatal, to women who intend to breastfeed their infants.

We wish you every success in your research study.

Sincerely,


Lesley French, B.Sc., R.Dt. Co-chair


Kimberly Hancock, B.A., M.L.S. Co-Chair

Regional Breastfeeding Promotion Committee



