

**The Influence of Adolescent Mothers' Breastfeeding Confidence and Attitudes on
Breastfeeding Initiation and Duration**

By

Marion A. Mossman

A Thesis

Submitted to the Faculty of Graduate Studies

**In Partial Fulfillment of the Requirement for the Degree of
Master of Nursing**

Faculty of Nursing

University of Manitoba

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**A Thesis/Practicum submitted to the Faculty of Graduate Studies of The University of
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ABSTRACT

National nutrition guidelines outline the important health benefits of breastfeeding and recommend that mothers breastfeed their infants for the first six months postpartum. However, adolescent mothers frequently choose not to initiate breastfeeding or cease breastfeeding shortly after their infant's birth.

Guided by the Breastfeeding Self-Efficacy Theory (Dennis, 1999), a prospective correlational study was conducted to determine the influence of adolescent mothers' breastfeeding attitudes and confidence on their initiation and duration of breastfeeding. A convenience sample of expectant adolescent mothers (n=100) completed the Breastfeeding Self-Efficacy Scale - Short Form (BSES-SF) and the Breastfeeding Attitude Questionnaire (BAQ). The BSES-SF was re-administered during the first week postpartum. Mothers who were still breastfeeding received an additional follow-up contact at 28-days postpartum. Comparisons were made between those adolescent mothers who initiated breastfeeding (n=69) and those who did not (n=31). A significantly greater proportion of mothers with high prenatal breastfeeding attitude and confidence scores and high postnatal breastfeeding confidence scores initiated breastfeeding.

Adolescent mothers who attempted breastfeeding (n=84) were divided into groups with high and low breastfeeding attitudes and confidence. Significantly more mothers in the higher prenatal attitude, prenatal confidence, and higher postnatal breastfeeding confidence groups maintained breastfeeding to the 28-day follow-up contact. Study findings encourage health professionals in both clinical and community settings to develop strategies to enhance breastfeeding attitudes and confidence among adolescent mothers.

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Chapter 1: Introduction

Problem Statement

Manitoba has the third highest teen pregnancy rate in Canada, with 60.1 pregnancies per 1000 girls aged 15 to 19 years (Manitoba Health, 2001). More than nine out of every 100 live births recorded in this province are to young mothers less than 19 years of age (Health Canada, 2003). The social and economic disadvantages experienced by many adolescent mothers place their infants at a significantly greater risk for infant mortality, morbidity and developmental delays (Health Canada, 2001). The importance of breastfeeding in reducing infant morbidity and enhancing an infant's growth and development are widely documented in the literature on infant nutrition (Wambach & Cole, 1999; Volpe and Bear, 2000). Some of the benefits of breastfeeding for infants include reduced rates of gastrointestinal and respiratory infections, decreased risk of otitis media, the prevention of SIDS, and a protective effect in the development of allergies and asthma (Gordon, 1995; Piovanetti, 2001). More recent studies suggest that breastfeeding also reduces the incidence of insulin-dependent (Type 1) and non-insulin dependent (Type 2) diabetes mellitus and obesity (American Academy of Pediatrics, 2005). A collaborative statement on infant nutrition by the Canadian Pediatric Society, Dietitians of Canada, and Health Canada (2004) also emphasizes the health benefits of breast milk. This report strongly recommends exclusive breastfeeding for at least the first six months of an infant's life.

Research studies on infant feeding practices have found that adolescent mothers often choose not to breastfeed, or discontinue breastfeeding within the first few weeks postpartum (Volpe & Bear, 2000; Scot & Binns, 1999; Wambach & Cole, 1999;

Williams, Innis, Vogel, & Stephen, 1999). The decision to initiate and to continue breastfeeding is influenced by a number of modifiable and non-modifiable factors (Dennis & Faux, 1999) and is often made prior to an infant's birth (Ineichen, Pierce & Lawrenson, 1997).

Maternal confidence is one important modifiable factor that has exerted a significant influence on the initiation and duration of breastfeeding in adult women (Dennis & Faux, 1999; Blyth et al. 2002). However, the influence of maternal confidence on breastfeeding outcomes for adolescent mothers requires further exploration.

An adolescent mother's attitude toward breastfeeding is also an influential modifiable factor that may have a significant effect on breastfeeding outcomes (Baisch, Fox & Goldberg, 1989; Robinson, Hunt, Pope & Garner, 1993). The literature does not identify studies that describe the relationship between breastfeeding attitudes and breastfeeding confidence. Attitudes may affect breastfeeding outcomes through their influence on breastfeeding confidence. Both breastfeeding attitudes and confidence may also have an independent influence on the initiation and duration of breastfeeding.

Study Purpose

The purpose of this study was to determine the influence of adolescent mothers' breastfeeding confidence and attitudes on their initiation and duration of breastfeeding. Specifically, it was hypothesized that adolescent mothers, who had higher prenatal breastfeeding attitude and confidence scores and higher postnatal breastfeeding confidence scores, would be more likely to initiate breastfeeding and continue longer than those mothers with lower breastfeeding confidence and attitude scores. The

relationship between attitudes and breastfeeding confidence was explored, as well as the combined and independent influences of both confidence and attitudes on breastfeeding outcomes.

This study also provides information on adolescent mothers' infant feeding practices, and describes factors that have influenced their infant feeding decisions. The study results will assist health care professionals, in both community and clinical settings, in designing and implementing effective breastfeeding attitude and confidence enhancing strategies specifically targeted for this population.

Chapter 2: Review of the Literature

The literature associated specifically with adolescent mothers' choice of infant feeding is very sparse (Hoyer, 1998). A limited number of descriptive studies identify developmental maturation, socio-demographic factors, obstetric experience, social influences, health professionals' support, attitudinal factors, breastfeeding knowledge, breastfeeding experiences, the timing of the decision to breastfeed, and health promotion programs as influencing adolescent mothers' breastfeeding decisions and outcomes (Wambach & Cole, 1999). Several of these influencing factors have also been determined to be either modifiable by health care professionals or non-modifiable (Dennis & Faux, 2002). The following literature review, which spans the last two decades, examines these influences on adolescent mothers' initiation and duration of breastfeeding.

Developmental Maturation

Adolescent mothers' decision to breastfeed their infants is influenced by their developmental maturation (Yoos, 1985). Adolescence (12 to 19 years) refers to a developmental period in an individual's lifespan that is marked by significant changes, both physically, and psychosocially. Rapid physical growth and maturation, accompanied by the need to develop a separate identity apart from one's family of origin make this a particularly challenging developmental stage. Socially, the period of adolescence can be characterized as involving a decreasing connectedness to parents and an increasing connectedness to peers (Schuster & Ashburn, 1986).

Female adolescents in particular have a heightened sense of awareness concerning their body image. Perceptions of physical attractiveness and weight preoccupation affect feelings of self-esteem and self-confidence (Schuster & Ashburn, 1986). According to

Piaget (as cited in Schuster & Ashburn, 1986), adolescence is also a period of “egocentrism”, a time when adolescents demonstrate a form of intellectual superiority in believing that their ideas are better than those of others, and are therefore more likely to be correct. Social maturation, and a decline in egocentrism, occurs when adolescents take the perspective of another person, and become aware of the way others are thinking and feeling.

The psychoanalyst Erik Erikson (as cited in Schuster & Ashburn, 1986) proposed that adolescence is a developmental stage defined by the conflict between identity and role confusion. The adolescent’s developmental task is to establish a clear sense of uniqueness and separateness of self. Confusion, indecisiveness, and the inability to find an occupational identity prevent healthy maturation and contribute to negative views of the self (Schuster & Ashburn, 1986). Havighurst (as cited in Schuster & Ashburn, 1986), described growth and development as occurring during six stages throughout life. Each stage is associated with a number of developmental tasks. Failure to complete these tasks leads to unhappiness in the individual, disapproval by society, and difficulty with later tasks. For adolescents, these tasks include: achieving new and more mature relations with age-mates of both sexes, achieving a masculine or feminine social role, accepting one’s physique and using the body effectively, achieving emotional independence from parents and other adults, achieving assurance of economic independence, selecting and preparing for an occupation and preparing for marriage and family life (Kozier & Erb, 1987). In summary, the period of adolescence is one of rapid growth and maturation on a number of different levels that prepares the adolescent to approach decisions, responsibilities, and the social relationships of adulthood.

An adolescent pregnancy interrupts education and changes the life goals and direction of many young women. Additional stressors that confront pregnant adolescents include: possible ambivalent feelings concerning the pregnancy, modesty issues and accepting physical changes to body image, lifestyle issues, coping with relationship issues involving the infant's father, and the desire to return to school (Purtell, 1994; Alexy & Martin, 1994). These stressors, along with the developmental tasks unique to this age group, influence adolescent mothers' infant feeding choices (Riordan & Auerbach, 1999).

Non-modifiable Factors

Non-modifiable factors that influence an adolescent mother's breastfeeding initiation and duration are developmental characteristics and demographic attributes. Although health care professionals are less able to modify or change these factors, an understanding of how they impact infant feeding decisions is essential in the planning of effective intervention strategies.

Socio-Demographic Factors

A number of studies have examined demographic factors associated with the choice of infant feeding. Maternal age, education, income, marital status, ethnicity, smoking, obstetric experiences, and the way the mother herself was fed, are correlated with breastfeeding initiation and duration (Williams et al., 1999; Dennis, 2000).

Maternal age. Older mothers (more than 25 years) are more likely to choose breastfeeding and breastfeed longer than younger mothers (Scott & Binns, 1999; Wambach & Cole, 1999; Dennis, 2002; Yang et al., 2004). In relation to adolescents,

older adolescents (more than 16 years) are more inclined to choose breastfeeding than are younger adolescents (Ineichen et al. 1997; Wambach & Cole, 1999).

Education, income and marital status. The higher the education level attained by the mother, the more likely she is to breastfeed, and the longer the duration of breastfeeding (Scott & Binns, 1999). Women in higher socio-economic groups are more likely to initiate breastfeeding and to do so longer than women in lower socio-economic groups (Matthews, Webber, McKim, Banoub-Baddour, Laryea, 1998). Studies have also found that that married women were significantly more likely to initiate breastfeeding than single women. McGowan et al. (as cited in Scott & Binns, 1999) suggested that the father's support of breastfeeding may explain the differences observed between married and unmarried women. However, more recent studies have not found any association between marital status and breastfeeding duration (Scott & Binns, 1999).

Ethnicity. Ethnic/racial differences influence infant feeding decisions among adult childbearing women (Dennis, 2002). However, information on the influences of these differences in the adolescent population is very limited. Neifert, Gray, Gary, and Camp (1988) found that adult Caucasian women were significantly more likely to choose breastfeeding than were adult women from minority groups. Other studies determined that urban aboriginal women did not sustain breastfeeding for as long as mothers from the general population (Scott & Binns, 1999; Matthews et al., 1995). A Manitoba Centre for Health Policy Report (2001) identified the provincial breastfeeding initiation rates of newborn infants for Registered First Nations women to be 57.9% compared to 82.2 % for all other Manitoba women. A Canadian study by Williams et al. (1999) found that initiation rates are strikingly lower among non-Caucasian women. In contrast, a study by

Baisch, Fox, Whitten and Pajewski (1989) found that adult Caucasian women had more positive attitudes toward breastfeeding than did adult Black women, but that breastfeeding attitude scores for adolescents did not differ by ethnicity.

Obstetric experience. A mother's childbirth experience may influence her persistence with breastfeeding (Scott & Binns, 1999). Some studies have found that women who delivered by Caesarean section were less likely to initiate breastfeeding (Scott & Binns, 1999). Immediate postpartum initiation of breastfeeding and prolonged infant- mother contact may be more difficult in Caesarean section deliveries. However, once breastfeeding was initiated, no differences were found in breastfeeding duration among those mothers who had a vaginal delivery and those who had a Caesarean section (Nolan & Gowel, 1995). Kearney, Cronenwett, and Reinhardt (1990) discuss the importance of maternal commitment to breastfeed and a supportive hospital environment in overcoming the impact of a Caesarean section on delayed first breastfeeding.

How the mother herself was fed. An American study by Lizarraga, Maehr, Wingard and Felice (1992) interviewed primiparous adolescent females within 48 hours postpartum ($n = 64$) on their infant feeding decisions. Adolescent mothers were more likely to choose breastfeeding if they themselves had been breastfed ($p \leq 0.001$). Additionally, those mothers who intended to breastfeed had observed a greater number of women breastfeeding (an average of 4.2 nursing women) than those who intended to formula feed (an average of 1.4 nursing women) ($p < 0.05$). In contrast, an earlier study by Joffe and Radius (1987), in which pregnant adolescents ($n = 254$) were asked to complete a questionnaire on their attitudes toward and knowledge about breastfeeding, found that observing someone else breastfeed an infant did not influence their infant

feeding choices. However, those who stated that they knew someone who had breastfed, had been breastfed themselves, or had previously breastfed an infant, were more likely to state their intention to breastfeed their current infant ($p = .001$).

Modifiable Factors

Modifiable factors, which influence adolescent mothers' infant feeding decisions, are those that are more amenable to change by health care professionals. These factors include social influences, support from health care professionals, breastfeeding experiences, timing of the decision to breastfeed, breastfeeding knowledge, smoking, attitudinal factors and breastfeeding confidence. Intervention strategies which directly address these variables may have a significant influence on adolescent mothers' initiation and duration of breastfeeding.

Social Influences

Social influences on the decision to initiate and continue breastfeeding have been widely documented in the adult infant feeding literature (Scott & Binns, 1999). In many of the studies, the influence of others in the social network was found to be important in the duration of breastfeeding (Wambach & Cole, 1999). Many adolescent mothers' decisions regarding infant feeding are also influenced more by social attitudes and family than by the benefits that breastfeeding offers (Volpe & Bear, 2000). An American study by Robinson, Hunt, Pope and Garner (1993) interviewed adolescent mothers ages 14 to 19 years ($n = 84$) post delivery. The adolescent's mother or infant's father had the most influence on the mother's chosen feeding method for 30 mothers in the sample. The results of this study are similar to those of Ineichen et al. (1997) whereby the adolescent's mother or infant's father were reported as being most influential in the adolescent

mother's decision to breastfeed, and their approval was associated with breastfeeding initiation.

Support from Health Professionals

Health care professionals are cited in the literature as a source of encouragement and positive influence in adult mothers' decisions to breastfeed (Williams et al., 1999; Volpe & Bear, 2000; Buckell & Thompson, 1995). Buckell and Thompson (1995) conducted a survey with 252 British women who had delivered infants in 1992. Over 50% of the sample described support from health professionals as poor or fair. Support from family and friends appeared to have less influence on infant feeding decisions when the required professional support was available.

A descriptive study by Spear (2004) examined the attitudes, knowledge and beliefs of maternal child nurses (n=151) related to the promotion of breastfeeding among adolescent mothers. Generally, the nurses were both knowledgeable and supportive of breastfeeding by adolescent mothers. However, some nurses did not know that there are nutritional differences between breast milk and infant formula, continued the practice of imposing time limits for feedings at the breast, and indicated that they were skeptical about young mothers' potential for success with breastfeeding because of immaturity and lack of commitment.

Breastfeeding mothers, regardless of education and age, were also found to be more influenced by health professionals than those mothers who chose not to breastfeed (Matthews et al., 1998). Primiparous mothers and those not living with a partner were significantly more likely to be influenced by health professionals than multiparous mothers (Matthews et al. 1998). In contrast, an Italian study by DiNapoli et al. (2004)

used a randomized control trial to assess the effectiveness of a home visit intervention delivered by a midwife from the maternity ward of the hospital to increase the rate and duration of breastfeeding with adult mothers (n=605). The effect on the duration of breastfeeding was estimated by the Kaplan-Meier method and by the Cox multivariate regression model. After controlling for confounding factors, there was no significant difference in breastfeeding duration between the intervention and the control group. Similarly, a randomized controlled trial study by Quinlivan, Box and Evans (2003) which involved adolescent mothers (n=124), also found that postnatal home-visiting services by nurse-midwives did not affect breastfeeding outcomes. However, further studies on the influence of health professionals on the initiation and duration of breastfeeding with adolescent mothers are needed.

Breastfeeding Experiences

Researchers noted that adolescent mothers' reasons for weaning were very similar to those for adult women. These reasons included nipple and breast pain, inaccurate advice, frequent mastitis, and perceptions of insufficient milk supply (Benson, 1996). An American study by Lipsman, Dewey, and Lonnerdal (1995) in which breastfeeding adolescent mothers (n = 25) were visited monthly during the first 10 months of lactation to measure infant growth, maternal dietary intake and to collect samples of breastmilk, found that the most common reasons given by the adolescent mothers (n =9) for terminating breastfeeding were "insufficient milk" with "baby too demanding" and "baby rejected breast"(p.428). A descriptive study conducted by Benson (1996) with adolescent mothers (n= 18) in Australia outlined breastfeeding difficulties, which were more unique

to adolescent mothers. These difficulties included modesty problems, challenges expressing breast milk when separated from their infant, and sleep interruptions.

Timing of the Decision to Breastfeed

Breastfeeding duration is strongly associated with the timing of the decision to breastfeed (Scott & Binns, 1999). In a comparison study of adult and adolescent mothers (n=48) Maehr, Lizarraga, Wingard, and Felice (1993) found that more adults (n= 23) than teens (n=13) made the decision to breastfeed before they became pregnant. In general, the study by Maehr et al. (1993) found that the earlier the decision was made to breastfeed, the longer the mother breastfed. Similarly, a strong and consistent association has been found between intended duration of breastfeeding and actual duration (Wambach & Cole, 1999). A descriptive USA study by Ineichen et al. (1997) found that in their sample of young and expectant mothers (n = 55) only 25 % of the mothers who decided to breastfeed their infants (n= 21) had made their decision at or near the time they discovered they were pregnant.

Breastfeeding Knowledge

A lack of breastfeeding knowledge was also positively related to attitudes concerning the benefits of breastfeeding (Cusson, 1985). An American descriptive study by Robinson, Hunt, Pope, and Garner (1993) interviewed adolescent mothers (n = 84) between the ages of 14 and 19 years during the postpartum period. Approximately 33% of the participants stated that they did not know enough about breastfeeding. Baisch et al. (1989) reported that 51% of their sample (N=128) of expectant teens believed they did not know enough about breastfeeding.

An American study by Brownell, Hutton, Hartman and Dabrow (2002), which explored the barriers to breastfeeding in a population of inner city African American adolescent mothers (n= 25), found that these young mothers do possess adequate knowledge about the benefits of breastmilk but are still choosing not to act on this information. Most of the mothers agreed that breastfeeding increases bonding, results in less illness in the baby and that breastmilk provides optimal nutrition. The greatest barriers to breastfeeding in this study were identified as including pain, embarrassment, and lack of interest. In contrast, a study by Dewan, Wood, Maxwell, Cooper and Brabin (2002) which used a questionnaire survey to compared the knowledge and attitudes of 40 primigravidae teenage mothers with 40 adult primigravidae found that the teenage mothers had poorer knowledge about breastfeeding than the adult mothers. The teenage mothers also had little knowledge about colostrum and exclusive breastfeeding, and were unsure as to how long to continue to breastfeed.

An American study by Volpe and Bear (2000) examined the influence of additional breastfeeding education classes on the initiation of breastfeeding in a sample of adolescent mothers (n = 43) between the ages of 14 and 19 years. The classes were facilitated by a lactation consultant and took place in a high school program designed for pregnant adolescents. The results were encouraging, as there was a significant increase in breastfeeding initiation rates among those adolescents who had received the specific breastfeeding education classes when compared to those (n = 48) who did not (65.1% to 14.6%). However, the study did not collect data that monitored the adolescent mothers' breastfeeding duration.

Smoking

Adult mothers who are non-smokers are more likely to choose breastfeeding and will breastfeed their infants longer than mothers who smoke (Dennis, 2002; Scott & Binns, 1999). A Canadian study by Yang et al.(2004) which explored the determinants of breastfeeding initiation and duration with a sample of 1113 Alberta women found that those women who smoked during pregnancy were less likely to breastfeed their infants for extended periods. Although research studies on the influence of smoking on adolescent mothers' infant feeding decisions is very sparse, a study by Yoos (1985) found that teens who chose to bottlefeed their infants reported that breastfeeding prevented them from smoking or taking the birth control pill. Another more recent American study by Park, Meier and Song (2003) explored factors that were significant independent predictors of breastfeeding initiation and duration among teenage mothers enrolled prenatally in the WIC program (special supplemental nutrition program for women, infants and children). The study reported that those mothers who had quit smoking between the discovery of pregnancy and the prenatal WIC visit were more likely to initiate breastfeeding than women who did not smoke at all. However, teenagers who did not smoke during pregnancy were still more likely to initiate breastfeeding than those who did smoke throughout their pregnancy.

Attitudinal Factors

A mother's attitudes concerning infant feeding methods arise from social and personal experiences, and these attitudes can affect breastfeeding confidence and persistence when breastfeeding challenges occur (Kearney, 1987). Adolescent mothers' views on the advantages and disadvantages of breastfeeding and their perceptions of

breastfeeding barriers all have an important influence on their infant feeding decisions (Wambach & Cole, 1999).

In a study by Yoos (1985), adolescent mothers aged 15 to 19 years ($n = 50$) were interviewed during their hospital postpartum stay. The interview questionnaire addressed personal background information, factual knowledge about breastfeeding, and attitudes toward breastfeeding. The study results found that the adolescent mothers who chose to breastfeed offered more "infant-oriented" reasons such as better health for the infant and greater infant attachment, whereas teens who chose bottle-feeding gave more "self-oriented" reasons for their choice, such as convenience factors and body image (p. 70). The survey study by Joffe and Radius (1987) also assessed inner-city expectant adolescents' perceptions of the benefits and barriers to breastfeeding. The adolescent mothers who intended to breastfeed cited more benefits and fewer barriers associated with breastfeeding than those who chose to bottle feed their infants.

Concerns over personal inconvenience, breast disfigurement and perceptions that no one else can feed the infant were commonly perceived breastfeeding barriers (Wambach & Cole, 1999). A majority of adolescents expressed embarrassment over breastfeeding (Ineichen et al. 1997). More than 70% of adolescents in the study by Joffe and Radius (1987) also voiced concerns over embarrassment. Yoos (1985) reported that adolescents perceived returning to school or work as a barrier to breastfeeding. In contrast, the study by Joffe and Radius (1987) found that adolescent mothers ($n = 254$) did not perceive breastfeeding as interfering with school or their social life. Breastfeeding was also not perceived as painful for the mother, nor did the adolescents feel that breastfeeding would result in any body image changes. Additionally, the adolescents who

intended to breastfeed their infants believed that breastfeeding makes them feel important ($r = .46, p < .001$), is the natural way to feed their infants ($r = .40, p < .001$) and allows mothers to have more sleep ($r = .36, p < .01$).

Another American study by Baisch, Fox and Goldberg (1989) used a questionnaire to determine the breastfeeding attitudes of low-income pregnant adolescents ($n = 128$) between the ages of 13 and 20 years. Total attitude scores could range between 18 (very negative attitude toward breastfeeding) to 90 (a very positive attitude). Their findings reported that adolescents who were breastfed as infants scored higher on the attitude scale (mean = 67.5) than bottle-fed infants (mean = 61.1; $t(90) = 3.2, p < 0.02$). Teens with previous children held more negative attitudes concerning breastfeeding (mean = 58.8) than primigravidas (mean = 62.3; $t(119) = 2.1, p < 0.02$). The absence of a positive role model also led to a neutral or negative attitude toward breastfeeding. In addition, mothers were influenced by attitudes of their own mother, partner, and the attitudes and support from their friends. However, no differences on the breastfeeding attitude scores were found for race or age.

A more recent study by Wambach and Koehn (2005) examined influencing factors in disadvantaged urban pregnant adolescents' decision-making about infant feeding choices. Focus group interviews with pregnant adolescents between 18 and 39 weeks gestation ($n=14$) revealed that the adolescent mothers were ambivalent and uncertain concerning infant feeding method. The young mothers had both negative and positive attitudes toward both breast and bottle feeding with many expressing their desire to combine breast and bottle feeding. Although the adolescents reported the health

benefits of breastfeeding, they also identified barriers of pain, public exposure and the complexity of breastfeeding. Social and family influences were also evident.

Maternal Breastfeeding Confidence

A number of research studies on adult mothers identified maternal breastfeeding confidence both prenatally and postnatally as an important modifiable variable in influencing breastfeeding outcomes (Dennis, 1999). In a U.S. study by Buxton et al. (1991) (n= 187) 27 % of women with low maternal confidence prenatally ceased breastfeeding during the first week postpartum as compared with only 5 % of the highly confident women.

Similarly, a descriptive study by O'Campo, Faden, Gielen, and Wang (1992) found that maternal confidence in expectant adult mothers (n = 198) was one of the most significant of 11 psychosocial and demographic factors influencing breastfeeding duration. Women with lower breastfeeding confidence were at three times the risk for prematurely discontinuing breastfeeding when compared to more confident breastfeeding women. However, the validity and reliability of the measure of confidence were not reported in either of the two above-mentioned studies (Dennis, 1999).

Studies that explored postnatal breastfeeding confidence on breastfeeding duration also support the significant influence of maternal confidence on breastfeeding outcomes. Papinczak and Turner (2000) found that adult mothers who could not establish breastfeeding had significantly lower levels of breastfeeding confidence when compared with mothers who breastfed for more than six months. A phenomenological study by Dykes and Williams (1999) found that decreasing levels in breastfeeding confidence during the early postpartum period was a major factor in terminating breastfeeding.

Breastfeeding confidence has also been found to be related to maternal perceptions of insufficient milk supply, one of the most frequently cited reasons for the premature discontinuation of breastfeeding (Dennis, 1999). Hill and Humenick (1996) used the H&H Lactation scale to measure perceptions of insufficient milk supply and found that mothers who had lower scores on the maternal confidence/commitment subscale also had lower breastfeeding levels at six weeks postpartum.

A Canadian study by Dennis (1999) used the Breastfeeding Self Efficacy Scale (BSES) to determine the influence of breastfeeding confidence on the duration of breastfeeding (n=130). Mothers with higher breastfeeding confidence scores during their postpartum hospital stay were more likely to be breastfeeding their infants at six weeks postpartum than mothers with lower BSES confidence scores. A more recent study by Blyth et al (2002) also explored the effect of maternal confidence (breastfeeding self-efficacy) on breastfeeding duration. A sample of adult mothers (n = 300) completed the BSES during their last trimester of pregnancy, at one week postpartum and again at 4 months postpartum. The study results indicated that mothers with high breastfeeding self-efficacy were significantly more likely to be breastfeeding exclusively at one week and four months than mothers with low breastfeeding self-efficacy. Studies which measure the influence of adolescent mothers' breastfeeding confidence levels during the prenatal and early postpartum period on breastfeeding outcomes are lacking.

Breastfeeding Intervention Strategies

The following section describes studies on programs designed specifically for low-income and adolescent mothers and on breastfeeding peer support. Both of these interventions show promise in encouraging young mothers to breastfeed their infants.

Programs for Adolescent Mothers

A study on low-income adult women by Arlotti, Hansen, Hughes, and Curtin (1998) found that attendance at a breastfeeding class was significantly correlated with a longer duration of breastfeeding. Other studies have also reported that young mothers who participate in prenatal classes are more likely to initiate breastfeeding than those who do not attend, even when controlling for potentially confounding factors such as age, level of education and parity (Volpe & Bear, 2000; Scott & Binns, 1999). The results of a study on infant feeding practices of mothers in Newfoundland and Labrador by Matthews et al. (1995) suggested that educational programs should focus on attitudinal change, and specifically target the younger, less educated mothers.

Adolescent prenatal programs that were deemed most effective at changing maternal or fetal outcomes, regardless of sample size, were comprehensive community-based programs that addressed total lifestyle issues (Hoyer, 1998). One of the longest running programs, the Johns Hopkins Centre for Teenage Mothers and Their Infants, has been described as the "blueprint for the comprehensive approach" (Hoyer, 1998, p. 229). Comprehensive educational programs for adolescents are designed to address the unique needs of adolescent mothers and have included a non-judgmental approach, an interactive format, and a "fun" learning environment. These programs have also encouraged participation and support from family and peers (Volpe & Bear, 2000). However, program evaluations have encountered difficulties due to the selection of non-equivalent comparison groups, and a lack of control of extraneous influences (Hoyer, 1998).

An Australian study by Greenwood and Littlejohn (2002) explored the breastfeeding intentions and outcomes of adolescents (n=42) attending a Starting Out

Program of Uniting Care Connections, a comprehensive community-based program for pregnant and parenting young women up to the age of 25 years. Mothers who were involved in the antenatal classes, which included breastfeeding information and used young breastfeeding mothers as role models, had positive breastfeeding outcomes.

Peer Support

Several studies have evaluated the effect of peer (mother to mother) support on breastfeeding duration among adult mothers (Arlotti, Cottrell, Lee, & Curtin, 1998; Dennis, Hodnett, Gallop, & Chalmers, 2002; Martens, 2002; Volpe & Bear, 2000; Dennis, 2002). The results of these studies suggest that breastfeeding peer support programs in conjunction with professional health services may be effective strategies to promote breastfeeding, especially among socially disadvantaged women (Volpe & Bear, 2000). An American study by Pugh, Milligan, Frick, Spatz and Bronner (2002) evaluated a community health nurse and peer counsellor intervention to increase the duration of breastfeeding among low-income, predominantly minority women (n= 41) during the first six months of their infants' lives. The intervention comprised of hospital and daily postpartum home visits during weeks one, two and four and at the teams' discretion. The community health/nurse peer counsellor team and peer counsellors provided telephone support twice weekly through week eight and then weekly through to the sixth month postpartum. Study results showed that women receiving the intervention breastfed longer than the women receiving usual care. This study notes that repeated contact with supportive persons, such as nurses and peer counsellors affects the duration and exclusivity of breastfeeding practice after the immediate postpartum period. Community health nurses are described as an important source of breastfeeding support. Similarly, a

randomized controlled trial study by Chapman, Damio, Young and Perez-Escamilla (2004) evaluated the effectiveness of an existing breastfeeding peer counselling program. Expectant mothers were recruited from a hospitals' prenatal clinic (n=107) and randomly assigned to receive either routine breastfeeding education or routine breastfeeding education plus peer counselling. The proportion of mothers not initiating breastfeeding was significantly lower in the intervention group than among the control group (9% vs. 23%). The probability of terminating breastfeeding also tended to be lower in the intervention group at one month (36% vs. 49%) and at three months (56% vs. 71%). Peer counsellors were found to improve both breastfeeding initiation and had an impact on breastfeeding rates at one and three months postpartum.

The study involving additional breastfeeding education sessions for expectant adolescents by Volpe and Bear (2002) also included a peer counsellor component. Those adolescent mothers who chose to breastfeed were teamed with a peer counsellor who provided weekly in-person support and telephone counselling on an as-needed basis. Although the study did not specifically explore the effects of peer counselling on breastfeeding initiation and duration, the value of peer counsellors in assisting and supporting adolescent mothers appears promising and requires further investigation.

Summary of the Literature

In summary, the literature on adolescent mothers' infant feeding decisions and practices is very limited. Although there appear to be many similarities in the influences on infant feeding decisions between adult and adolescent mothers, those factors unique to adolescent mothers require further exploration (Matthews et al., 1998). There is encouraging support that the modifiable variables, maternal confidence and attitudes

toward breastfeeding, may have a significant effect on breastfeeding outcomes with adolescent mothers. Adult mothers' breastfeeding attitudes affect their confidence and persistence in breastfeeding (Kearney, 1987), yet the relationship between breastfeeding attitudes and confidence has not been studied with adolescent mothers. There are also no Canadian studies conducted within the last decade to determine changing trends in adolescent mothers' attitudes toward breastfeeding. Furthermore, there is a gap in the existing literature related to the influence of breastfeeding confidence on breastfeeding outcomes specifically with adolescent mothers.

Study Purpose

The number of infants born to adolescent mothers in Manitoba is cause for concern among health care professionals. The Canadian Nutrition guidelines (2004) emphasize the health benefits of breastfeeding and recommend all mothers to breastfeed their infants for at least the first six months of an infant's life. However, adolescent mothers frequently choose not to breastfeed or discontinue breastfeeding within the first weeks postpartum. Adolescent mothers' breastfeeding attitudes and confidence are two modifiable factors that may have a significant influence on their decision to initiate and continue breastfeeding to the recommended age of six months. The purpose of this study was to examine the relationship of breastfeeding confidence and attitudes on the initiation and duration of breastfeeding in the adolescent population. The relationship between breastfeeding confidence and attitudes toward breastfeeding was also explored.

Research Questions

The following research questions concerning adolescent mothers' breastfeeding initiation and duration were addressed in this study.

Breastfeeding Initiation

Research Question # 1: Do more adolescent mothers with higher prenatal breastfeeding attitude scores initiate breastfeeding when compared to mothers with lower prenatal breastfeeding attitude scores?

Research Question # 2: Do more adolescent mothers with higher prenatal and postnatal breastfeeding confidence scores initiate breastfeeding when compared to mothers with lower confidence scores?

Research Question # 3: Do adolescent mothers who initiate breastfeeding have different demographic characteristics and childbirth histories than mothers who did not initiate breastfeeding? Are there additional significant factors that influence breastfeeding initiation?

Breastfeeding Duration

Research Question # 4: Do adolescent mothers who attempted to breastfeed their infants and had higher prenatal breastfeeding attitude scores breastfeed for more days postpartum than mothers with lower attitude scores?

Research Question # 5: Do adolescent mothers who attempted to breastfeed their infants and had higher prenatal breastfeeding confidence scores breastfeed for more days postpartum than mothers with lower prenatal confidence scores?

Research Question # 6: Do adolescent mothers who attempted to breastfeed their

infants and had higher postnatal breastfeeding confidence scores breastfeed for more days postpartum than mothers with lower postnatal confidence scores?

Research Question # 7: What is combined influence of breastfeeding attitudes and breastfeeding confidence on breastfeeding duration? Which additional factors influence breastfeeding initiation and duration?

Relationships

Research Question # 8: What is the relationship between prenatal breastfeeding attitudes and prenatal breastfeeding confidence?

Research Question # 9: What is the relationship between prenatal breastfeeding attitudes and postnatal breastfeeding confidence?

Research Question # 10: What is the relationship between prenatal breastfeeding confidence and postnatal breastfeeding confidence?

Chapter Summary

This chapter has presented a review of the literature on adolescent mothers' infant feeding decisions and practices. Factors that are modifiable and non-modifiable by health care professionals were discussed. Breastfeeding attitudes and confidence are two modifiable factors that may significantly influence breastfeeding initiation and duration.

The chapter concluded with a presentation of the study purpose and the research questions that were addressed in this study. The results of this study will add to health professionals' understanding of adolescent mothers' infant feeding decisions and practices. This understanding will assist in the designing, implementing and evaluation of effective strategies to enhance breastfeeding attitudes and confidence, specifically targeted for this population of young mothers.

Chapter 3: Conceptual Framework

The Breastfeeding Self-Efficacy Theory, developed by Dennis (1999), provided the organizing conceptual framework for this study on breastfeeding confidence and attitudes in adolescents. This theory is based on self-efficacy theory, which is derived from Bandura's Social Learning Theory (1986).

Self-efficacy is defined as "a cognitive process of an individual's confidence in their perceived ability to regulate their motivation, thought processes, emotional states, and social environment in performing a specific behaviour in particular situations" (Dennis, 1999 p. 196).

Bandura (1977) emphasizes that self-efficacy or confidence focuses on one's belief in the ability to enact a desired behaviour. Self-efficacy determines "whether coping behavior will be initiated, how much effort will be expended, and how long it will be sustained in the face of obstacles and aversive experiences" (1977, p.191). Notably, actual ability or the result of the action is secondary to the perceived ability to effect the behaviour. An individual may believe that a certain behaviour is beneficial, but may lack self-efficacy to perform the desired behaviour. Specific behaviours are chosen, performed and maintained when an individual expects a certain outcome as a result of engaging in the behaviour (outcome expectations) and when the individual has confidence in his/her ability to execute the behaviour (efficacy expectations) (Dennis, 1999).

Breastfeeding self-efficacy refers to a mother's perceived ability to breastfeed her infant and is a critical factor in determining: whether she decides to initiate breastfeeding, how much effort and persistence she will devote toward breastfeeding her

infant, whether she will have positive thoughts about her breastfeeding experience, and finally, how she will respond emotionally when confronted with breastfeeding challenges (Blyth et al., 2002). Breastfeeding self-efficacy therefore may have a significant influence on both the initiation and duration of breastfeeding.

Sources of Breastfeeding Self-efficacy

According to the breastfeeding self-efficacy theory, breastfeeding confidence is influenced by four main sources of information: performance accomplishments, vicarious experiences, verbal persuasion and physiological responses (Dennis, 1999). Performance accomplishments refers to past breastfeeding experiences. Successful performances increase self-efficacy whereas unsuccessful performances decrease self-efficacy (Blyth et al. 2002). According to Bandura (1977), strong efficacy expectations are developed through repeated successes, and even occasional hardships that are overcome by determined effort can strengthen self-motivated persistence.

Vicarious experiences, observing other mothers breastfeeding their infants, can have an important impact on perceived self-efficacy. Of importance is the credibility of the role models as well as the manner in which they demonstrate their ability to breastfeed their infants (Blyth et al. 2002). The literature on peer support has also identified that effective role models are both demographically and psychologically similar to their target population (Dennis, 1999).

Verbal Persuasion includes encouragement and support from friends, family, and health professionals. These aspects of verbal support exert a significant influence on a mother's perceptions of breastfeeding self-efficacy (Volpe & Bear, 2000; Buckell, 1995).

Psychological and affective states refers to a mother's physical and emotional feelings while breastfeeding, or while considering breastfeeding. Pain, fear, fatigue, stress, feelings of embarrassment or anxiety have a negative effect on breastfeeding self-efficacy. Conversely, feelings of satisfaction and pleasure enhance self-efficacy levels (Dennis, 1999).

The following schematization of the breastfeeding self-efficacy theory by Dennis (1999) outlines the effect of the four modifiable sources of breastfeeding information on perceived breastfeeding self-efficacy. The resultant level of self-efficacy influences a mother's decision to breastfeed, and her decision to continue breastfeeding when challenges occur. These individual responses to perceived breastfeeding self-efficacy have been shown to be strong predictors of breastfeeding initiation and duration (Dennis, 1999).

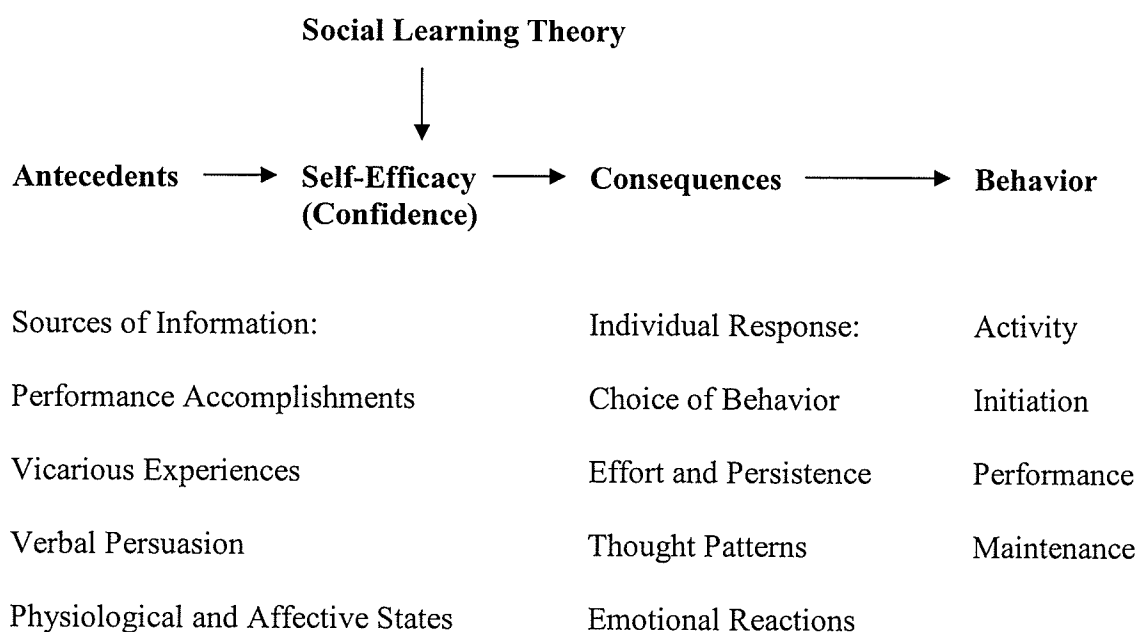


Figure 1. Breastfeeding Self-Efficacy Model reproduced with permission of Sage Publications. (Dennis, 1999)

The breastfeeding self-efficacy theory provides a very useful framework for this study on adolescent mothers' breastfeeding confidence, attitudes, and outcomes. The adolescent mothers' attitudes toward breastfeeding have been identified in the literature as having a significant influence on their infant feeding decisions. The sources of information (antecedents) described in the Breastfeeding Self-Efficacy Model include those factors which influence an adolescent mothers' breastfeeding attitudes. These include past breastfeeding experiences, having observed significant others, encouragement from significant others and personal feelings and thoughts about breastfeeding and its effect on body image.

Adolescent mothers' attitudes may either have a direct influence on breastfeeding outcomes, or may have a moderating effect on breastfeeding confidence. As a moderator breastfeeding attitudes may affect the strength or direction of the association between breastfeeding confidence and breastfeeding initiation and duration (Bennet, 2000; Polit & Beck, 2004). For example, the more positive the attitude toward breastfeeding the greater the breastfeeding confidence. The association of the independent variable (breastfeeding confidence) with the dependent variables (breastfeeding initiation and duration) may depend on the value of the moderating variable (attitudes) (see Figure 2).

The literature on factors influencing the initiation and duration of breastfeeding found many similarities between the breastfeeding experiences of adult women and adolescents. However, the unique developmental stage of adolescence is a non-modifiable variable that may influence both the way in which information concerning breastfeeding is processed, and the adolescent mothers' thought patterns and emotional reactions to breastfeeding challenges. Egocentrism may interfere with the adolescent

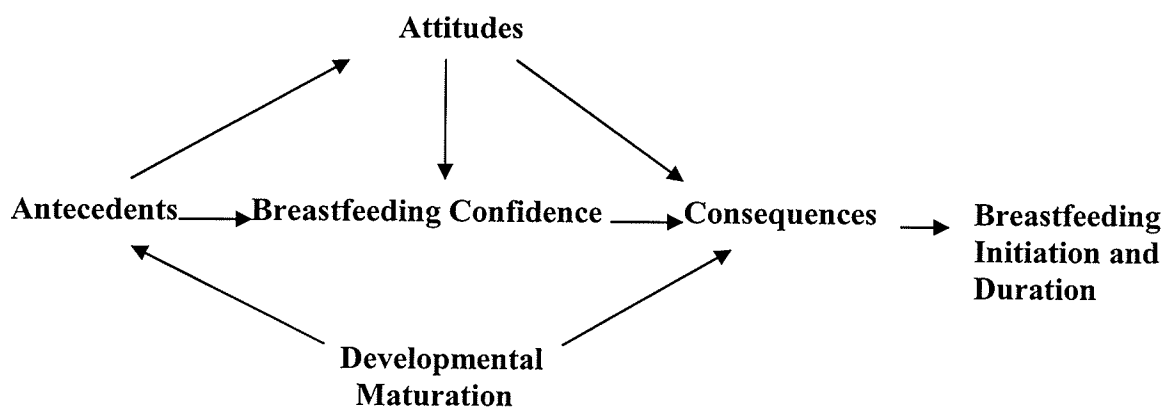
mother's ability to recognize the needs of her infant and to understand the importance of breastfeeding for the infant's growth and development. When breastfeeding challenges or difficulties occur there may not be sufficient effort and persistence to continue. One has to "grow beyond a self-centered focus to an other-centered focus" to consider breastfeeding (Wambach & Cole, 1999, p. 286). The rapid physical growth that occurs during adolescence requires additional energy and rest. Adolescents may find the frequent sleep interruptions when breastfeeding a newborn infant very fatiguing. Also, modesty issues and preoccupation with body image may deter adolescents from breastfeeding in public places, around their peers or other adults. Similarly, assisting adolescent mothers with breastfeeding skills such as how to latch an infant onto the breast, or how to perform breast compressions and breast milk expression may be met with some resistance by those adolescents who are still coping with body image issues.

Younger adolescents who are searching for their own identity, separate from their parents may have difficulty assuming an adult parenting role with their own infant. Being responsible for the care and feeding of a newborn infant may feel very overwhelming. Finally, establishing and maintaining social relationships with peers is an important developmental task for adolescents. The demands of infant care and breastfeeding may compete with those of the adolescent mother's social group.

The Breastfeeding Self-efficacy Model for Adolescents (Figure 2) depicts how these developmental maturation issues affects both breastfeeding attitudes and breastfeeding confidence levels by influencing both the sources of breastfeeding information (antecedents) and individual responses. These individual responses include: the adolescent mother's decision to initiate breastfeeding, her ability to persist when

breastfeeding challenges occur, and her thoughts and feelings about continuing to breastfeed her infant. Breastfeeding confidence enhancing strategies also need to consider these developmental maturation issues to be effective with adolescent mothers.

A schematization of the breastfeeding self-efficacy theory as it relates to adolescent mothers is depicted below. This model also includes the additional factors identified in the literature which may influence an adolescent mothers' breastfeeding initiation and duration. Only the factors related to the sources of information (antecedents), breastfeeding attitudes, confidence and breastfeeding initiation and duration will be tested in this study.



<u>Sources of Information</u>	<u>Developmental Issues</u>	<u>Responses</u>	<u>Behavior</u>
Performance Accomplishments	<i>Egocentrism vs. Social Maturation</i>	Choice of behavior	Initiation
<i>Lack of previous breastfeeding experiences</i>	<i>Rapid physical growth and maturation</i>	Effort & Persistence	Performance
Vicarious Experiences	<i>Identity vs. Role Confusion</i>	<i>Perceived benefits and barriers to breastfeeding</i>	Maintenance
<i>Lack of role models</i>	<i>Strengthening social relations with peers</i>	Emotional Reactions	
Verbal Persuasion		<i>Infant orientation vs. self orientation</i>	
<i>Teen's mother</i>			
<i>Infant's father</i>			
<i>Peers</i>			
Physiological & Affective States			
<i>Pain</i>			
<i>Modesty issues</i>			
<i>Sleep interruptions</i>			

Figure 2. Breastfeeding Self-Efficacy Model Applied to Adolescent Mothers

Note: Italicized categories denote influences on breastfeeding self-efficacy which are identified in the literature as being more unique to adolescent mothers.

Conceptual and Operational Definitions

The independent variables in this study were breastfeeding confidence and breastfeeding attitudes. The dependent variables were breastfeeding initiation and duration. The following section defines each of these variables and describes how they will be operationalized.

Breastfeeding Confidence

Breastfeeding confidence or self-efficacy refers to a mother's perceived ability to breastfeed her infant (Martens & Young, 1997; Blyth et al., 2002). Although a mother may believe that breastmilk is the most desired form of infant nutrition, she may not feel that she is capable of breastfeeding. Sources of breastfeeding confidence, described in the conceptual framework, include previous breastfeeding experiences, observing other mothers breastfeeding their infants, encouragement and support from significant others, and a mother's physical and emotional feelings when breastfeeding (Dennis, 1999). A mother's breastfeeding confidence level will determine whether she decides to breastfeed her infant, her persistence in breastfeeding when difficulties arise, whether she will have positive thoughts about her breastfeeding experience, and how she will respond emotionally when confronted with breastfeeding challenges (Blyth et al., 2002). Breastfeeding confidence was operationalized in this study using the Breastfeeding Self-Efficacy Scale - Short Form (BSES-SF) (Dennis, 2003). Higher scores on this scale are indicative of higher breastfeeding confidence levels.

Breastfeeding Attitudes

Breastfeeding attitude is defined as a general feeling of favourableness or unfavourableness about breastfeeding (Martens & Young, 1997). Similar to the sources

of information which influence breastfeeding confidence, breastfeeding attitudes are also influenced by personal breastfeeding experiences, exposure to positive role models, the attitude of and support from significant others, and personal feelings of embarrassment or importance when breastfeeding (Baisch, Fox, & Goldberg, 1989). A lack of breastfeeding knowledge also affects breastfeeding attitudes (Cusson, 1985). Breastfeeding attitudes influence a mother's decision to initiate and continue breastfeeding, her breastfeeding confidence and her persistence when breastfeeding challenges occur (Kearney, 1987). Breastfeeding attitudes were operationalized using the Breastfeeding Attitude Questionnaire (Berger & Winter, 1980). Higher scores on this scale indicate more positive breastfeeding attitudes.

Breastfeeding Initiation and Duration

For the purpose of this study, breastfeeding initiation was defined as any breastfeeding one or more times daily for at least three days postpartum. This definition of breastfeeding initiation was also used in the study by Volpe and Bear (2000) that examined breastfeeding initiation in adolescent mothers following attendance at additional breastfeeding education sessions.

Similar to the study by Blyth et al. (2002) breastfeeding duration was considered as the length of time measured in days from the initiation of breastfeeding to the time of weaning, or to the time of questionnaire completion for those mothers who continue to breastfeed their infants. In order to measure breastfeeding duration, breastfeeding was classified into the following categories: exclusive (breast milk only); high breastfeeding (less than one bottle of formula per day); partial breastfeeding (one or more bottles of

formula per day); token breastfeeding (breast is used to comfort infant, but not for feeding) (Blyth et al., 2002) (Appendix M).

Summary

The Breastfeeding Self-Efficacy Theory developed by Dennis (1999) provided the organizing conceptual framework for this study. Following a discussion on the sources of breastfeeding self-efficacy, the chapter presented the Breastfeeding Self-Efficacy Model for adolescent mothers. This model includes those influences on breastfeeding self-efficacy, which are identified in the literature on breastfeeding and adolescents, as being more unique to adolescent mothers. The chapter concluded with both conceptual and operational definitions of breastfeeding confidence and breastfeeding attitudes.

Chapter 4: Method

Design

This study used a prospective correlational research design. A prospective approach begins with an examination of presumed causes and then goes forward in time to observe presumed effects. A correlational research design explores the interrelationships among specific variables without any active intervention by the researcher (Polit & Beck, 2004). The strength of a correlational study lies in its attempt to provide an understanding of relationships as they have already naturally occurred, as many issues identified in the health field occur in natural settings and are not amenable to experimentation (Polit & Beck, 2004).

A correlational design was chosen for this study because of its ability to uncover relationships among the variables, as they exist within the population of interest, namely adolescent mothers. This study examined the relationship of existing breastfeeding attitudes and confidence on breastfeeding outcomes. The study is also prospective as it examined breastfeeding confidence in both the prenatal and postnatal periods.

The limitations of this non-experimental research design are in interpreting study findings. When compared to experimental or quasi-experimental research, causal relationships in a correlational study are far more tenuous in nature. This is due largely to the fact that preexisting differences in the study subjects may provide alternate explanations for the outcomes in the dependent variables. "This situation arises because the researcher works with preexisting groups that were not formed at random, but rather

by a self-selecting process” (Polit and Beck, 2003, p.193). All expectant adolescents who met the study criteria were accepted as study participants.

Sample Criteria

Inclusion Criteria

To control for the effects of intervening extraneous variables, a convenience sample of English speaking expectant adolescents between the ages of 15 and 19 years and who were more than 34 weeks pregnant were considered eligible for the study. The adolescent mothers would have indicated that they planned to breastfeed their infant or were still undecided concerning their infant feeding method. The mothers also required a telephone contact number.

Exclusion Criteria

Adolescents who indicated that they intended to exclusively formula feed their infants were excluded from the study. Adolescent mothers who had a high-risk pregnancy such as: the presence of a chronic or serious health condition, Pregnancy Induced Hypertension, Insulin Dependent Gestational Diabetes, and a multiple pregnancy, which could interfere with breastfeeding, were also excluded from the study. Additionally, those adolescent mothers who planned to place their infant for adoption, had been given a “Birth Alert” notice, or whose infant was apprehended by Child and Family Services were not included in this study. Delivery of a preterm infant (less than 37 weeks gestation) or of an infant who was admitted to the NICU, or who had congenital abnormalities (birth defects) also precluded further participation in this study. Eligibility criteria for this study is outlined in Appendix B.

Sample Size

Initially, a power analysis identified that it would be necessary to recruit a non-probability convenience sample of approximately 126 adolescents for this study. This number was considered sufficient to achieve a significance level of alpha 0.05, a power equal to 0.80 and an effect size of .50 for a difference of two means, or an effect size of .25 for Pearson's product moment correlation (Pearson's r) (determine the strength of relationships between variables) (Polit & Beck, 2004, p. 497). Larger samples also reduce the possibility of sampling error, provide an opportunity to counterbalance atypical values and account for attrition from the study (Polit & Beck, 2004). It was anticipated that a sample size of approximately 140 would be needed to account for attrition among study participants at one month postpartum. However, after 12 months of study participant recruitment (October 2004 to October 2005), only 103 adolescents had been recruited and a decision was made to terminate recruitment. This decision was influenced by the high retention rate, with 100 adolescent mothers (97%) remaining for the study's postpartum follow-up contacts.

Setting

Study participants were recruited from an adolescent prenatal clinic, an adult prenatal clinic and a community-based nutrition program for low-income prenatal mothers. The two prenatal clinics are located at a tertiary care teaching hospital in Winnipeg, Manitoba, Canada. This teaching hospital is situated in a heterogeneous inner-city community which is known for its social, economic and cultural diversity. It is also a major obstetrical referral centre for physicians in Manitoba, Northern Ontario and Nunavut.

The adolescent prenatal clinic provides comprehensive, age appropriate prenatal and postnatal care in a non-threatening environment for adolescents less than 18 years of age. Clinic staff include an obstetrician/gynecologist, two nurses, a social worker, and a dietician. The obstetrician at the prenatal clinic specializes in working with expectant adolescents. The adolescent prenatal clinic is held two half days a week, and approximately 30 to 35 expectant adolescents attend the clinic each week. Many physicians in the city of Winnipeg refer their expectant adolescents to this clinic for their obstetrical care. Approximately 50 to 60% of the teens who attend this clinic are Aboriginal. Approximately 30 to 40 adolescent mothers between the ages of 15 to 19 years give birth each month at this hospital.

Older adolescents, those who are 18 and 19 years old, were recruited from an adult prenatal clinic at the same hospital. The adult clinic is held at the same times as the adolescent prenatal clinic. Approximately 35 mothers aged 18 and 19 years attend this clinic every week.

Approval to recruit additional study participants from the Healthy Start for Mom and Me program (a prenatal and postnatal nutrition program, similar to the Women, Infant and Child (WIC) program in the U.S.) was also obtained (Appendix D). However, only three adolescent mothers were recruited from this site.

Instruments

Breastfeeding Self-Efficacy Scale - Short Form (BSES-SF)

Based on Bandura's Self-Efficacy theory, the Breastfeeding Self-Efficacy Scale-Short Form (BSES-SF) was developed by Dennis (2000) to measure a mother's confidence in her ability to breastfeed. The original BSES is a 33 item, self-report

instrument which uses a 5 – point Likert rating system (not at all confident, not very confident, sometimes confident, confident, and very confident) where study participants circle the answer which best expresses their belief about the particular statement. All items are presented positively and scores range from 33 to 165, with higher scores indicating higher levels of breastfeeding self-efficacy.

This scale was initially psychometrically tested with a convenience sample of 130 Canadian breastfeeding women. The women completed the BSES in hospital during their postpartum stay, and again at six weeks postpartum. The overall content validity index for the BSES was 88% (Dennis, 1999). Cronbach's alpha coefficient for the scale was 0.96 (Blyth, et al. 2002). Support for predictive validity was demonstrated through positive correlations between breastfeeding self- efficacy scores and infant feeding method at six weeks postpartum. In a more recent study conducted in Brisbane Australia (N=300) the scale was administered during the last trimester of pregnancy, and at one week and 4 months postpartum. Cronbach's alpha coefficients were 0.97, 0.96 and 0.96 respectively (Blyth et al. 2002).

A shortened version of the BSES (BSES-SF) consisting of 14 items was also developed by Dennis (2003) and has reliability and validity measures similar to the original scale (Dennis, 2003). This shortened version was used with the adolescent mothers in this study, and the items on the scale were read to the adolescents by the researcher. A copy of this tool is found in Appendix F. The shorter version was viewed to be appropriate for the adolescent population as it was felt that they might lose interest with a version that takes longer to complete. Additionally, having the items read to the adolescents reduced possible concerns regarding reading ability and level. Scores on the

BSES- SF range from 14 to 70, again with the higher scores indicative of greater breastfeeding self-efficacy. The antenatal administration of the BSES-SF was read to the adolescent mothers with a minor change to the stem of each question from “I can” to “I think I can” to compensate for any confusion or misunderstanding that may have occurred. This was not felt to effect the psychometric properties of the instrument (Personal Communication, Dennis, 2003).

Breastfeeding Attitude Questionnaire

This questionnaire was adapted from an instrument developed by Berger and Winter (1980) that was found useful in assessing breastfeeding attitudes in high school girls 15 to 18 years of age. The original scale included 20 items, used a multiple choice format, and included relatively complicated items (Do you know the body changes in a woman leading to lactation?). The present adaptation of this scale by Baisch, Fox and Goldberg (1989) reduced the number of items to 18 and revised the item format to allow the use of a Likert rating system (ranging from strongly disagree to strongly agree). Total attitude scores range from 18 (very negative attitude toward breast-feeding) to 90 (very positive attitude) (Baisch, Fox, & Goldberg, 1989). Items on this questionnaire are both positive (breast feeding is the healthiest feeding for the baby) and negative (breastfeeding is old fashioned). Those items which require reverse scoring are indicated in Appendix K.

Baisch et al. (1989) used this 18-item questionnaire with low-income adolescents between 13 and 20 years of age to determine their attitudes toward breastfeeding. Cronbach's alpha coefficient for the study was 0.74, suggesting good internal consistency.

Procedure

This proposal was submitted to the Education/Nursing Research Ethics Board at the University of Manitoba and received approval (Appendix A and B). Approval for access from the participating hospital (Appendix C) and from the director of the Healthy Start for Mom and Me program (Appendix D) was obtained prior to data collection.

In the hospital clinical setting, the primary investigator met with the unit manager, nurses, and physicians at each of the prenatal clinics to explain the research project, answer questions and to request assistance with identifying potential participants. They were also provided with an outline of the study (Appendix E).

In each clinic setting the primary investigator or research assistant requested nursing staff to approach potential participants who met the inclusion criteria for the study and to provide a brief explanation of the study (Appendix G). The names of potential subjects were forwarded to the primary investigator or research assistant who met with the adolescent mothers during their prenatal appointments. At this meeting, details of the study were explained to the potential subjects by the primary investigator or research assistant (Appendix H), a gift of a free movie pass was offered and informed consent was obtained. The adolescent mothers were also asked to provide alternate telephone contact numbers to facilitate postpartum study follow-up. The use of incentives and the provision of additional contact phone numbers address the frequently cited difficulty in enrolling and retaining socially disadvantaged women (adolescent mothers) in research studies (Heaman, 2001). After obtaining the informed consents, and clarifying any questions that arose, the three questionnaires were administered orally to

the adolescent mothers (Appendix J, Appendix K, Appendix L). Response cards were used to assist the mothers (Appendix O).

The perinatal discharge clinician at the teaching hospital was given the names of study participants, and notified the researcher when the study participants had delivered their infants. The researcher or research assistant contacted the adolescent mothers by phone during the first week postpartum to ask questions concerning breastfeeding and the delivery (Appendix M). The Breastfeeding Self-Efficacy Scale – Short Form (BSES-SF) (Appendix J) was readministered to those mothers who had attempted to breastfeed their infants. Mothers who were still breastfeeding their infants at the first telephone contact received a second follow-up phone contact by the researcher or research assistant at four weeks postpartum to determine whether they were still breastfeeding, and their reasons for terminating breastfeeding if they were no longer breastfeeding their infants (Appendix N).

In order to recruit additional study participants from the Healthy Start for Mom and Me program, the researcher met with the program staff to explain the research study. Outreach workers and dieticians were requested to approach prenatal adolescent mothers, who met the study inclusion criteria, to determine their interest in participating in the study. The names and contact numbers of those mothers who were interested in participating in the study were forwarded to the researcher. The researcher then contacted the mothers and arranged to meet them at a convenient time and place in order to obtain informed consent and administer the questionnaires. Postpartum follow-up was similar to the follow-up with the study participants recruited from the clinic setting.

Data Analysis

The Statistical Package for the Social Sciences (SPSS) Version 13 for Windows was used for data analysis. A statistician and research associate from the Manitoba Nursing Research Institute (MNRI) and a statistician from the Biostatistical Consulting Unit, Department of Community Health Sciences, University of Manitoba, provided consultation regarding the data analysis. Interval and ratio data were analyzed using descriptive statistics to provide information on frequency distributions, the means (M), standard deviations (SD) and ranges. Nominal and ordinal data were analyzed using descriptive frequencies for the total sample.

The Shapiro – Wilks test of normality was conducted to determine the appropriate use of parametric versus non- parametric testing. When parametric assumptions were met, the independent two- tailed t-test was used. When assumptions of parametric approaches were not met, the non-parametric alternative (Mann Whitney U-test) was used.

The Chi –Square test was used to test for significant differences in distribution of categorical variables between the groups of breastfeeding adolescents. Pearson's product-moment correlation coefficients (Pearson's r) and Spearman's rho were computed to examine the relationships between breastfeeding attitudes and breastfeeding confidence. Two-tailed analyses were performed using a significance level of $p < 0.05$ for all correlational and t-tests.

A backwards stepwise logistic regression method was used to identify the influence of confounding factors that may influence breastfeeding initiation. The Kaplan-Meier survival analysis was conducted to analyze the influence of breastfeeding attitudes

and confidence on the duration of breastfeeding. Finally, a Cox regression analysis was used to determine the effects of confounding variables that may influence breastfeeding duration for adolescent mothers. The following section describes the data analysis for each of the study's research questions.

Measurement of Research Questions

Breastfeeding Initiation

Breastfeeding initiation was defined as any breastfeeding one or more times daily for the first three days postpartum. Based on the mean breastfeeding attitude scores and confidence scores, the adolescent mothers were also divided into two groups: high and low breastfeeding attitude scores, and high and low breastfeeding confidence scores. The first three research questions examined the influence of breastfeeding attitudes, breastfeeding confidence and additional factors on breastfeeding initiation.

Research Question # 1: Do more adolescent mothers with higher prenatal breastfeeding attitude scores initiate breastfeeding when compared to mothers with lower prenatal breastfeeding attitude scores?

T-tests or the Mann Whitney U-test were used (as appropriate) to determine if significant differences existed between the mean prenatal attitude scores of those mothers who initiated breastfeeding and those who did not initiate breastfeeding. Chi-square Tests were used to determine if there was any difference in the proportion of mothers with a high prenatal attitude score who initiated breastfeeding compared to those who did not initiate breastfeeding.

Research Question # 2: Do more adolescent mothers with higher prenatal and postnatal breastfeeding confidence scores initiate breastfeeding when compared to mothers with lower confidence scores?

Similar to research question # 1, T-tests determined whether significant differences existed between the mean prenatal confidence scores and the mean postnatal confidence scores between those mothers who initiated breastfeeding and those who did not initiate breastfeeding. Chi-square Tests were also used to determine if there was any difference in the proportion of mothers with high prenatal and postnatal confidence scores who initiated breastfeeding compared to those who did not initiate breastfeeding.

Research Question # 3: Do adolescent mothers who initiated breastfeeding have different demographic and childbirth histories than mothers who did not initiate breastfeeding? Are there additional significant factors that influence breastfeeding initiation?

Adolescent mothers who initiated breastfeeding and mothers who did not initiate breastfeeding were compared using the data from their demographic and obstetrical histories. Independent 2-tailed t-tests were conducted to test for differences between the two groups of adolescent mothers. The Mann-Whitney U test was used to compare the two groups of mothers on those continuous variables that were not normally distributed.

Chi-square tests were used to compare the two groups of mothers on categorical variables. Whenever a cell's expected frequency was less than five, the Fisher's exact test was used. Additionally, in the comparison of the two groups of adolescent mothers, a backward, stepwise multiple logistic regression method was used to determine which prenatal predictor variables had the greatest influence on breastfeeding initiation. With this logistic regression method, all known predictor variables were entered into the

equation and the least significant variable was dropped at every step (Polit & Beck, 2004).

Breastfeeding Duration

Breastfeeding duration was defined as the length of time measured in days from the first day the adolescent mother attempted to breastfeed her infant to the time of weaning or until the 28-day follow-up contact. Research questions 4, 5, and 6 are concerned with the influence of breastfeeding attitudes, confidence and additional confounding factors on the duration of breastfeeding.

Research Question # 4: Do adolescent mothers who attempted to breastfeed their infants and had higher prenatal breastfeeding attitude scores breastfeed their infants for more days postpartum than mothers with lower attitude scores?

Based on their mean attitude scores, the mothers were divided into two groups: those who had lower prenatal breastfeeding attitude scores, and those who had higher prenatal attitude scores. A Kaplan Meier Survival Curve, which tests for the equality of survival distributions, was used to depict the breastfeeding “survival” times of the two groups of mothers. The Kaplan-Meier procedure uses a method that estimates the survival or hazard function at the time of each observational event (Cox & Oakes, 1984). Recent studies on breastfeeding duration use survival curves to examine and report results on breastfeeding duration (Giovanna et al. 2003). A Hazard Ratio determined whether the difference in breastfeeding survival times between the two groups of mothers was statistically significant.

Research Question # 5: Do adolescent mothers who attempted to breastfeed their infants and had higher prenatal breastfeeding confidence scores breastfeed their infants for more days postpartum than mothers with lower prenatal confidence scores?

Based on their mean confidence scores, the mothers were divided into two groups: those who had lower prenatal breastfeeding confidence scores, and those who had higher prenatal breastfeeding confidence scores. Similar to research question # 4, a Kaplan Meier Survival Curve was used to depict the breastfeeding survival times of the two groups of mothers. A Hazard Ratio also determined if the difference in breastfeeding survival times between the two groups of mothers was significant.

Research Question # 6: Do adolescent mothers who attempted to breastfeed their infants and had higher postnatal breastfeeding confidence scores breastfeed their infants for more days postpartum than mothers with lower postnatal confidence scores?

The adolescent mothers were divided into two groups: those who had lower postnatal breastfeeding confidence scores, and those who had higher postnatal breastfeeding confidence scores. A Kaplan Meier Survival Curve was used to depict the breastfeeding survival times of the two groups of mothers. A Hazard Ratio determined if the difference in breastfeeding survival times between these two groups of mothers was statistically significant.

Research Question # 7: What is combined influence of breastfeeding attitudes and breastfeeding confidence on breastfeeding duration? Which additional factors influence breastfeeding initiation and duration?

A univariate analysis of those factors associated with breastfeeding duration was conducted. Those factors found to be statistically significant in this study, and additional

factors found to be statistically significant in previous studies on breastfeeding duration and adolescent mothers, were entered into a Cox multivariate regression. Similar to the backward stepwise logistic regression method, the Cox multivariate regression method involves entering all significant predictor variables into the equation with the least significant variable being dropped at every step (Polit & Beck, 2004).

Relationships

The last three research questions examined the relationship between prenatal breastfeeding attitudes and both prenatal and postnatal breastfeeding confidence.

Research Question # 8: What is the relationship between prenatal breastfeeding attitudes and prenatal breastfeeding confidence?

A Pearson's product moment correlation test was conducted to examine whether a significant positive relationship existed between prenatal breastfeeding attitudes and prenatal breastfeeding confidence for the total sample of adolescent mothers (n=100). The same test was used to determine if a significant positive relationship existed between the prenatal breastfeeding attitudes and confidence for those mothers who attempted to breastfeed their infants (n=84).

Research Question # 9: What is the relationship between prenatal breastfeeding attitudes and postnatal breastfeeding confidence?

Since the postnatal confidence scores were not normally distributed, the Spearman's rho correlation test determined whether there was a significant positive relationship between prenatal breastfeeding attitudes and postnatal breastfeeding confidence for those mothers who attempted to breastfeed their infants (n=84).

Research Question # 10: What is the relationship between prenatal breastfeeding confidence and postnatal breastfeeding confidence?

The Spearman's rho correlation test was also used to determine whether there was a significant positive relationship between prenatal breastfeeding confidence and postnatal breastfeeding confidence for those mothers who attempted to breastfeed their infants (n=84).

Ethical Considerations

Ethical approval to conduct this study with adolescent mothers was obtained from the Education/Nursing Research Ethics Board at the University of Manitoba (Appendix A; Appendix B). Approval from the participating hospital and the Healthy Start for Mom and Me program was obtained prior to subject recruitment and data collection (Appendix C; Appendix D).

The mothers in the study were provided with both written and verbal information concerning the purpose and nature of the study (Appendix H). Informed consent was obtained and each participant received a copy of the signed consent form. The participants were informed that they may request a summary of the study results if they wish to receive one. The voluntary nature of the study was emphasized, and subjects were informed that they could withdraw from the study at any time or decline to answer any question. They were also informed that their withdrawal from the study would not affect their prenatal and postnatal care or the receipt of the incentive (movie pass).

The confidentiality of the participants was protected by not including their names or contact numbers on any of the questionnaires. The questionnaires were identified by only using a subject number. The researcher maintained a master list of the participants'

names, addresses and phone numbers which will be destroyed at the completion of the study. The remaining data from the study will be stored in a locked filing cabinet for seven years, and then destroyed.

As the participants in this study were adolescent mothers aged 15 to 19 years the researcher acknowledged the special attention required in obtaining informed consent from minors. There may be unresolved issues concerning the pregnancy between the adolescent mothers and their parents. Therefore, to protect prospective participants' privacy and confidentiality, parental consent was waived. The adolescent mothers who agreed to participate in the study and had given their consent were viewed as "emancipated minors". Many of the mothers attended the antenatal clinics without their parents in attendance, and received medical care and treatment without requiring parental consent, and thus were considered competent to consent to participate. Similarly, adolescent mothers also attended the Healthy Start for Mom and Me program without their parents.

Participants were not exposed to any experimental conditions or treatment. There were no perceived negative or harmful emotional or physical effects on the participants. The researcher was available to the adolescent mothers to clarify any questions they may have had concerning the study and to assist in referring them to various resources.

Summary

This chapter outlined the research design that was used to examine the influence of adolescent mothers' breastfeeding attitudes and confidence on their breastfeeding initiation and duration. Following a description of the sample criteria, sample size and

setting, an explanation of the study instruments was provided. The study procedure at both the hospital clinic settings and at the community nutrition program sites was outlined. Data analysis provided a summary of all the statistical tests used in the study as well as more detailed description of the various statistical tests used to address each of the study's research questions. The final section of the chapter addressed ethical considerations of the study.

Chapter 5: Results

This study explored the influence of adolescent mothers' breastfeeding confidence and attitudes on breastfeeding initiation and duration. The results of the study were analyzed using the Statistical Package for the Social Sciences (SPSS) Version 13 for Windows. A statistician and research associate from the Manitoba Nursing Research Institute (MNRI) and a statistician from the Biostatistical Consulting Unit, Department of Community Health Sciences, University of Manitoba provided consultation regarding the data analysis. The results of the data analyses for this prospective correlational study are presented in the following chapter.

Study Participants

Between October 8, 2004 and September 27, 2005, approximately 139 adolescent mothers who were greater than 34 weeks pregnant were approached to determine their interest in participating in the study. However, 36 mothers were determined to be ineligible for the study, as they had decided to exclusively formula feed their infants. The remaining 103 adolescents agreed to participate (100% response rate). Of these 103 adolescent mothers recruited into the study, two mothers became ineligible for the study as one mother delivered her infant at less than 37 weeks gestation and another infant was apprehended at birth. One study participant was lost to postpartum follow-up contact. The final study sample of adolescent mothers in this study was 100. Ninety-eight study participants were recruited from the two antenatal clinics at a tertiary care teaching hospital in Winnipeg, Manitoba, Canada, while two additional participants were recruited from the Healthy Start for Mom & Me prenatal nutrition program.

Sample Characteristics

The following section describes the characteristics of the study sample. Frequency distributions of categorical variables are presented in Table 1. Descriptive statistics for additional sample characteristics are summarized in Table 2.

Age and Ethnicity

The 100 mothers who participated in the study ranged in age from 15 –19 years ($M=16.82$; $SD 1.18$). The majority of adolescent mothers ($n=62$; 62 %) reported a racial/ethnic background of First Nations. Fourteen of the mothers (14 %) were Metis, and 19 mothers were Caucasian (19 %).

Occupation and Education

Fifty mothers (50%) were attending school and 50 (50%) mothers stated they did not attend school. Sixty-eight percent ($n=68$) claimed to be students, even though some of them were not attending school at time of participation in the study. The highest school grade completed by the study participants ranged from grade 7 to grade 12, with a mean grade level of 9.38 ($SD =1.16$). Only 17 of the adolescent mothers (17 %) had completed grade 11 or grade 12.

Living Arrangements

The most frequent response to their current living arrangement was living with parents ($n= 37$), followed by alternate living arrangement such as a group home ($n= 18$) and living with parents and boyfriend ($n=16$). Ten adolescents lived alone and six stated they lived with their boyfriend's family.

Other Children and Breastfeeding Experience

Thirteen of the mothers had already had one child and one mother had two children. Eighty-six mothers (86 %) were primigravidas. Of the 14 adolescents who already had children, twelve mothers stated they had tried to breastfeed their infants. Seven (58.33%) mothers breastfed their infants less than two weeks, two mothers breastfed for two months, one mother breastfed her infant for 4 months and two other mothers breastfed their infants one year and two years respectively. Fifty-eight adolescents recall having been breastfed as an infant, 25 mothers stated they were not breastfed and 17 of the mothers did not recall whether they had been breastfed.

Prenatal Class Attendance

Sixty-one of the adolescent mothers stated they had taken prenatal classes. The number of prenatal classes taken ranged from one class to 20 classes. Those adolescent mothers (n= 19) who stated that they had taken more than 10 prenatal classes were living in either a residential facility for pregnant and parenting teens or attending a school for adolescent mothers.

Smoking

Forty-seven mothers (47 %) reported themselves as smokers. The number of cigarettes smoked per day ranged from 1 to 15 cigarettes (M=4.53, SD=3.12).

Prenatal Support for Breastfeeding

Fifty-seven mothers (57%) reported their boyfriends as being very supportive of their decision to breastfeed. Additionally 82 of the 100 participants (82 %) stated their mothers were very supportive of their breastfeeding decision. The adolescent mothers' friends were viewed as being very supportive by 48 (48%) of the participants. Finally, 71

(71%) of the mothers felt that both their physician and the antenatal clinic nurses were very supportive of their decision to breastfeed their infant. Twenty-one of the mothers (21%) did not know how health professionals involved in their prenatal care felt about breastfeeding.

Intended Breastfeeding Duration and Timing of the Decision to Breastfeed

During the completion of the prenatal questionnaire, the adolescent mothers reported their intention to breastfeed their infant as ranging from less than one month (n=6) to three years (n=1) (M=7.47 months, SD= 5.86). Twenty-three adolescent mothers (23%) had decided to breastfeed their infants before they became pregnant. Fifty-three mothers had made their breastfeeding decision during their first and second trimester. Twelve mothers had made their decision in their third trimester, and twelve mothers were still undecided about their breastfeeding decision before delivery.

Reasons for Choosing to Breastfeed.

The majority of adolescent mothers (n=90) identified breastfeeding as being the best nutrition for their infants. Thirty-seven mothers mentioned the cost of formula as a reason for breastfeeding. Weight loss was mentioned by thirteen of the mothers. Eleven adolescent mothers described breastfeeding as increasing the bonding with their infants: "makes me feel closer to the baby". Additional reasons for choosing to breastfeed their infants included "easier to feed the baby" (n= 6), "helps the baby's development" (n= 5) and "the baby is less sick" (n=6). Only two mothers identified breastfeeding as being healthier for the mother.

Postnatal Characteristics of Total Sample

Obstetrical Data

The 100 study participants delivered a live singleton infant between 37 and 42 weeks gestation (M=39.92; SD=1.10). Duration of labour ranged from 1 hour to 48 hours (M=16.79 hours; SD=11.06). The majority of the mothers had a spontaneous vaginal delivery (n=95, 95%). One mother had an elective Caesarean section and three mothers had an emergency Caesarean section. Sixty-three mothers (63 %) had epidural anaesthesia. Of the 100 adolescent mothers in this study, 40 delivered a male infant and 60 delivered a female infant. Infant birth weights ranged from 2611 grams to 4876 grams (M=3499 grams; SD 475.14).

Reasons for Not Initiating Breastfeeding

Thirty-one adolescent mothers (31%) did not initiate breastfeeding (breastfed their infants for three days or less postpartum). Of these 31 mothers, sixteen mothers did not even attempt to breastfeed their infant (16%). Five mothers (5%) tried to breastfeed their infant for one day. Ten mothers (10%) breastfed their infants for two days postpartum. The reasons given for not attempting to breastfeed their infant, or discontinuing breastfeeding within the first three days postpartum included “time consuming” (n=2); “not enough milk” (n=4); “sore nipples” (n=7); “baby’s crying” (n=1); and “baby lost weight” (n=1). Other reasons for terminating breastfeeding included “the baby didn’t take to it” (n=1) and just deciding not to breastfeed (n=15). No mother identified returning to school or work as a reason for not initiating breastfeeding. This left 69 mothers who were designated in the current study as having initiated breastfeeding.

Four-Week Postpartum Breastfeeding Follow-up

Only forty-seven mothers (47 % of the total study sample) were still breastfeeding their infants at the 28 days postpartum follow-up contact. Twenty-nine of these mothers reported that they were exclusively breastfeeding, seven mothers stated that they were high breastfeeding and eleven mothers reported that they were partially breastfeeding their infants. The breastfeeding mothers reported that they planned to continue breastfeeding their infants anywhere from two more weeks to one year ($M=27.73$ weeks; $SD=16.62$). The most frequent response concerning intended breastfeeding duration was six months ($n=10$). The duration of breastfeeding for those mothers who initiated breastfeeding but were no longer breastfeeding at the four-week telephone follow-up contact ($n=22$) ranged from 4 to 25 days ($M=12.18$; $SD=1.39$).

Reasons for Terminating Breastfeeding After Initiating

Adolescent mothers who initiated breastfeeding and then terminated breastfeeding prior to the four weeks telephone follow-up contact identified the following reasons (a number of mothers identified more than one reason): breastfeeding was time consuming ($n=6$); some mothers felt they did not have enough milk ($n=7$); a few mothers mentioned the infant's crying as influencing their decision to formula feed ($n=3$); while other mothers referred to having sore nipples or breast infections ($n=13$). Baby's weight loss was identified by only two mothers and one mother stated she was returning to school and felt she could no longer breastfeed her infant.

Postnatal Breastfeeding Support at Four Weeks Postpartum

Thirty-nine of the 47 adolescent mothers (82.98%) who were still breastfeeding their infants at the four week telephone contact reported that their own mothers were still

supportive of their decision to breastfeed. Thirty-seven (78.73%) mothers stated that the infant's father continued to support their breastfeeding. The adolescent mothers' friends continued to be viewed as supportive by 41 (87.23%) of the mothers. All of the breastfeeding mothers claimed that both their physicians and their Public Health Nurses were supportive of their breastfeeding.

Table 1

Demographic and Pregnancy Characteristics (Categorical Variables) for Total Sample of Adolescents (n=100)

Characteristic	No.	%
Ethnic Background		
White	19	19.0
First Nations	62	62.0
Metis	14	14.0
Asian	1	1.0
Latino (Hispanic)	1	1.0
Black	2	2.0
Living Situation		
Living Alone	10	10.0
Living with Parents	37	37.0
Living with Boyfriend	13	13.0
Living with Parents and Boyfriend	16	16.0
Living with Boyfriend's Family	6	6.0
Other	18	18.0
Occupation		
Student	68	68.0
Clerical/Retail	2	2.0
Unemployed	9	9.0
Social Assistance	16	16.0
Other	5	5.0
Breastfed as Infant		
Yes	58	58.0
No	25	25.0
Do Not Know	17	17.0
Attended Prenatal Classes		
Yes	61	61.0
No	39	39.0
Timing of the Decision to Breastfeed		
Before Pregnancy	23	23.0
First Trimester	22	22.0
Second Trimester	31	31.0
Third Trimester	12	12.0
Undecided	12	12.0
Previous Children		
One Child	13	13.0
Two Children	1	1.0
Previous Breastfeeding Experience		
Yes	12	12.0
No	88	88.0

Table 2
Demographic and Pregnancy Characteristics (Continuous Variables) for Total Sample of Adolescents (n=100)*

Characteristic	Mean	Standard Deviation	Minimum	Maximum
Age (years)	16.82	1.18	15.00	19.00
Education (years)	9.38	1.16	7.00	12.00
No. of Prenatal Classes Attended (n=60)	6.65	4.13	1.00	20.00
No. of Cigarettes Smoked per Day (n=47)	4.53	3.12	1.00	15.00
Intended Duration of Breastfeeding (Prenatal) (months)	7.47	5.86	<1.00	36.00
Gestational Age at Delivery (weeks)	39.92	1.09	37.00	42.00
Duration of Labour (Hours)	16.79	11.06	1.00	48.00
Birth Weight of Infant (grams)	3499	475.14	2611	4876
Intended Duration of Breastfeeding (Postnatal) (weeks)(n=47)	27.73	16.62	2.00	52.00

* When n=<100, n is noted with variable

Instrument Scores

Breastfeeding Attitude Questionnaire (BAQ)

Prenatal attitude scores on the BAQ can range from 18 to 90. In this study the prenatal attitude scores ranged from 41 to 86 (M=67.30; SD=8.17). The mean prenatal attitude score was used as a guide to divide the total group of adolescent mothers (n=100) into two groups: those with high prenatal breastfeeding attitude (n=47) had scores ≥ 68 and those with lower attitudes towards breastfeeding (n=53) had scores < 68 .

The Shapiro-Wilk test of normality was used to determine that the BAQ scores for the study sample (n=100) were normally distributed (S-W = .988, df =100, p=.522) (Figure 3). The Cronbach's alpha coefficient, a statistical reliability measure which tests for the internal consistency of questionnaire items, was 0.765. This value suggests good internal consistency.

Breastfeeding Attitude Questionnaire

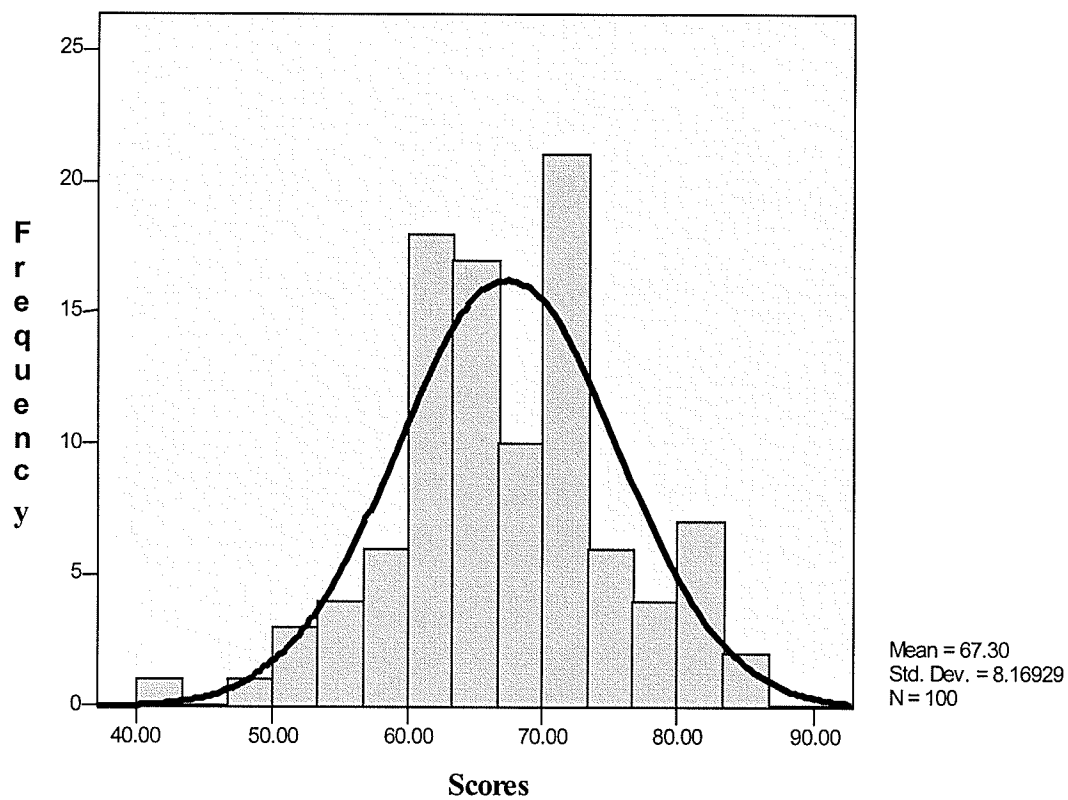


Figure 3

Histogram of the Prenatal Breastfeeding Attitude Questionnaire Showing Normal Distribution

Prenatal Breastfeeding Self-Efficacy Scale-SF (BSES 1-SF)

Prenatal confidence scores on the BSES- SF can range from 14 to 70. In this study the prenatal confidence scores ranged from 31 to 70 (M= 51.88; SD=7.66). The mean prenatal attitude score of 52 was also used as a guide to divide the adolescent mothers (n=100) into two groups: those with high prenatal breastfeeding confidence (n=54) had scores ≥ 52 and those with lower breastfeeding confidence (n=46) had scores <52 .

The Shapiro-Wilk test of normality determined that the Prenatal Breastfeeding Self-Efficacy Scale scores for the study sample (n=100) were also normally distributed (S-W=. 990, df =100, p=. 701) (Figure 4). The Cronbach's alpha coefficient for the prenatal questionnaire was 0.835. This value suggests good internal consistency of the test items.

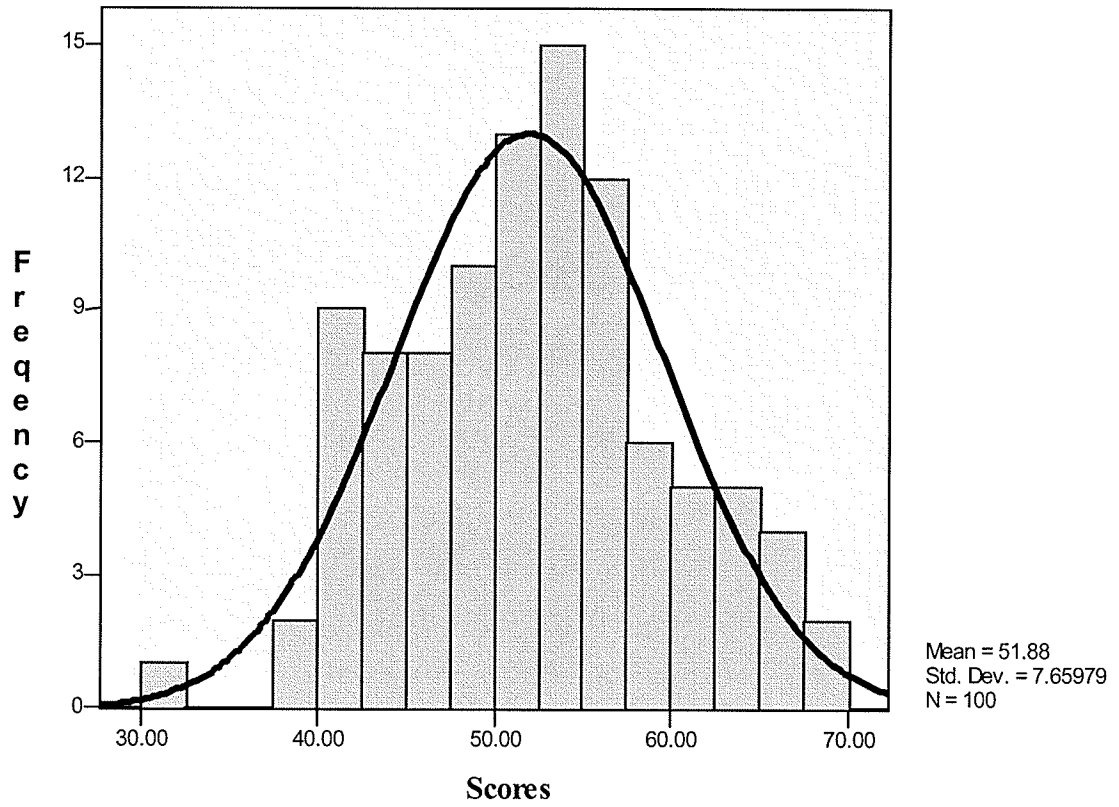
Prenatal Breastfeeding Self-Efficacy Scale-Short Form (BSES 1-SF)

Figure 4

Histogram of Prenatal Breastfeeding Self-Efficacy Scale (BSES 1-SF)
Showing Normal Distribution of Scores

Postnatal Breastfeeding Self-Efficacy Scale-SF (BSES 2-SF)

Postnatal confidence scores were not obtained for those adolescent mothers who did not attempt to breastfeed their infants at all in the postpartum period (n=16). In this study the postnatal confidence scores ranged from 17 to 70 (M= 56.24; SD=12.27). The mean prenatal attitude score of 52 was also used as a guide to divide the adolescent mothers (n=83) into two groups: those with high postnatal breastfeeding confidence (n=59) had scores ≥ 52 and those with lower breastfeeding confidence (n=24) had scores <52 . The Shapiro-Wilk test of normality found that the Postnatal Breastfeeding Self-Efficacy Scale scores for the study sample (n=84) were negatively skewed (S-W.884, df =84, p= .001) (Figure 5). The Cronbach's alpha coefficient for the postnatal confidence scale was .931. This value suggests a very positive internal consistency of the test items.

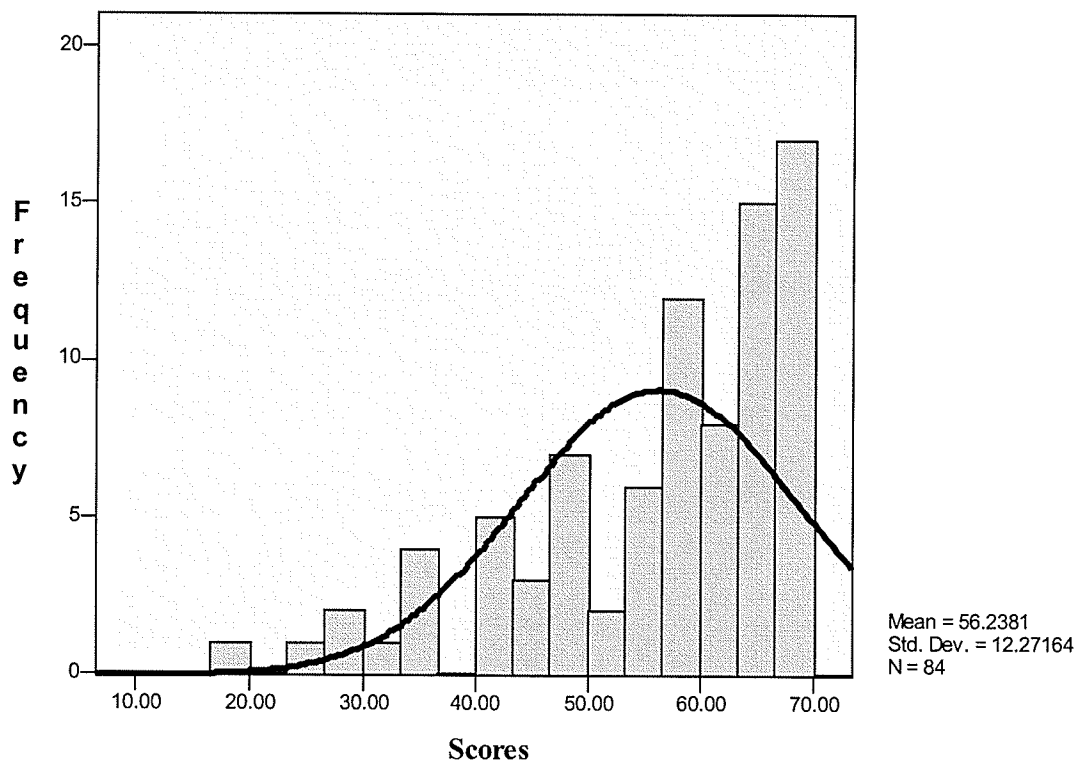
Postnatal Breastfeeding Self-Efficacy Scale-Short Form (BSES 2-SF)

Figure 5

Histogram of Postnatal Breastfeeding Self-Efficacy Scale-Short Form Showing Skewed Distribution of Scores

Breastfeeding Initiation

Breastfeeding initiation was defined in this study as any breastfeeding one or more times daily for at least three days postpartum. The two groups of adolescent mothers were: those who initiated breastfeeding (n=69) and those mothers who did not initiate breastfeeding (n=31).

Research Question 1: Prenatal Breastfeeding Attitude and Breastfeeding Initiation

Among those mothers who initiated breastfeeding (n=69), 41 (59.4%) had a high prenatal attitude score, while among those who did not initiate breastfeeding (n=31), only 6 (19.4%) mothers had a high attitude score. There was a statistically significant difference in the proportion of mothers with a high prenatal attitude score who initiated breastfeeding, as compared to those who did not initiate breastfeeding ($\chi^2 = 13.78$, $p = .001$). (Table 3).

An independent, 2-tailed t-test was carried out to test for differences between the mean attitude scores of those mothers who initiated breastfeeding (M=69.94; SD 7.15) and those who did not initiate breastfeeding (M= 61.42; SD 7.26). This difference was also statistically significant ($t = - 5.49$; $p = .001$). (Table 4).

Research Question 2: Prenatal Breastfeeding Confidence and Breastfeeding Initiation

Among those mothers who initiated breastfeeding (n=69), 42 (60.9%) had a high prenatal confidence score, while among those who did not initiate breastfeeding (n= 31), only 12 (38.7%) mothers had a high prenatal confidence score. There was a statistically significant difference in the proportion of mothers who initiated and did not initiate breastfeeding based on prenatal confidence scores ($\chi^2 = 4.23$, $p = .040$). (Table 3).

An independent, 2-tailed t-test was carried out to test for differences between the mean prenatal confidence scores of those mothers who initiated breastfeeding (n=69) and those who did not initiate breastfeeding (n=31). Testing determined that mean prenatal confidence scores for those mothers who initiated breastfeeding (M=53.29, SD=6.83) were significantly higher than mean prenatal confidence scores for those mothers who did not initiate breastfeeding (M=48.74, SD=8.54; $t = -2.84$, $p=0.005$). (Table 4).

Postnatal Breastfeeding Confidence and Breastfeeding Initiation

The prenatal confidence score mean of 52 was also used to group mothers with high and low postnatal confidence scores. Of those mothers who initiated breastfeeding (n=69), 55 (79.7%) had high confidence scores. Among mothers who did not initiate breastfeeding (n=15)* only 4(20%) had high confidence scores. There was a statistically significant difference in the proportion of mothers with a high postnatal confidence score who initiated breastfeeding, as compared to those adolescent mothers who did not initiate breastfeeding (Fisher's exact test, $p = .001$) (Table 3).

An independent, 2-tailed t-test was carried out to test for differences between the mean postnatal confidence scores of those mothers who initiated breastfeeding (n=69) and those who did not initiate breastfeeding (n=15)*. Statistical testing determined that the mean postnatal confidence scores for those mothers who initiated breastfeeding (M=59.70; SD=8.99) were significantly higher than the mean postnatal confidence scores of those mothers who did not initiate breastfeeding (M=40.33, SD=13.06; $t = -5.468$, $p=0.001$) (Table 4).

* Postnatal confidence scores are available for "non-initiators" who attempted to breastfeed, but breastfed for < 3 days (n=84).

Table 3
Comparison of Attitude and Confidence Scores Among Adolescents Who Initiated and Did Not Initiate Breastfeeding*

Variable	Group		χ^2	df	P value
	Initiators (n=69)	Non- Initiators (n=31)*			
High Prenatal Attitude (n=100)	41(59.4)	6(19.4)	13.78	1	.001
High Prenatal Confidence (n=100)	42(60.9)	12(38.7)	4.23	1	.040
High Postnatal Confidence (n=84)	55(79.7)	4(26.7)		1	.001**

* Postnatal Confidence Scores only available for "non-initiators" who attempted to breastfeed (n=15 out of 31), but breastfed for less than 3 days.

** Equal variances not assumed. Fisher's Exact Test used as an alternative to Pearson's Chi-square when expected frequencies are small (<5).

Table 4
 Mean Attitude and Confidence Scores
 For Adolescents Who Initiated and Did Not Initiate Breastfeeding*

Variable	Group		t	df	P value 2-tailed
	Initiators (n=69)	Non- Initiators (n=31)*			
Prenatal Attitude Score (n=100)	69.94(7.15)	61.42 (7.26)	-5.49	98	.001**
Prenatal Confidence Score (n=100)	53.29(6.83)	48.74 (8.54)	-2.84	98	.005**
Postnatal Confidence Score (n=84)	59.70(8.99)	40.33(13.06)	-5.47	82	.001***

* Postnatal Confidence Scores only available for “non-initiators” who attempted to breastfeed, but breastfed for less than 3 days.

** Equal Variances Assumed. *** Equal Variances Not Assumed (16 mothers did not breastfeed)

Research Question 3: Characteristics of Adolescent Mothers Who Did and Did Not Initiate Breastfeeding.

The two groups of mothers, those who initiated breastfeeding (n=69), and those who did not initiate breastfeeding (n=31), were compared using the data obtained from their demographic and obstetrical history. For those variables that were interval or continuous in nature, an independent 2-tailed, t-test was carried out to test for differences between the two groups of adolescent mothers. The non-parametric Mann-Whitney U test

was used to compare the two groups of adolescent mothers on those variables that were not normally distributed (Table 5). Chi-square tests were used to compare the two groups of mothers on categorical variables. Some of the variables were regrouped into dichotomous factors for the statistical analysis (Table 6). Additionally, in the comparison of the two groups of adolescent mothers, a multivariable logistic regression method determined those variables that had an independent effect on breastfeeding initiation after controlling for other factors.

Demographic Characteristics

Mothers who initiated breastfeeding were similar in age to those who did not initiate breastfeeding ($n=69$, $M= 16.83$ years, $SD=1.16$; vs. $n=31$, $M= 16.81$ years, $SD=1.22$, $t=-.077$, $p=. 939$). Both initiators and non-initiators also had approximately the same amount of education ($M=9.37$ years, $SD 1.25$ vs. $M=9.38$ years, $SD=0.95$, $t=. 041$; $p=. 968$). More mothers who initiated breastfeeding were non First Nations. This was found to be statistically significant ($\chi^2 = 6.629$, $p=. 010$). No significant differences were found in the mothers' living arrangements, or in the average number of prenatal classes taken by both groups of mothers ($t=-.054$, $p=. 957$). Although more mothers who initiated breastfeeding reported to have attended prenatal classes, this was not found to be statistically significant ($\chi^2 = 3.04$, $p= 0.83$).

A significantly greater proportion of adolescent mothers who initiated breastfeeding were students, employed or were planning to return to school, compared to those who were unemployed or on social assistance (81.16% vs. 18.84%, $\chi^2 = 4.504$, $p=. 034$). A larger percentage of mothers in the initiation group reported themselves as

non- smokers (n=40; 57.97%) compared to those mothers in the non-initiation group (n=13; 41.94%), however, this was not statistically significant ($\chi^2=2.21$; $p=. 137$).

During the prenatal period, adolescent mothers who initiated breastfeeding planned to breastfeed their infants for significantly more months than those mothers who did not initiate breastfeeding (M=8.85, SD=6.18 vs. M=4.39, SD=3.51, $t=-3.75$, $p=. 001$). The mothers' planned duration of breastfeeding was also statistically significant using the Chi-Square analysis. A greater proportion of adolescents in the initiation group planned to breastfeed their infants for three months or longer when compared to the mothers in the non initiation group (88.84 % vs. 51.61%, $\chi^2 = 16.350$, $p= .001$). More mothers who initiated breastfeeding had also made their breastfeeding decision either before pregnancy or during the first trimester. This finding was also statistically significant (53.62% vs. 25.81%, $\chi^2 = 6.687$, $p=. 010$). A statistically significant difference was found between the two groups of mothers on whether they had been breastfed as infants. A greater proportion of those mothers who initiated breastfeeding reported having been breastfed (66.67% vs. 38.71%; $\chi^2 = 6.863$, $p= .009$).

Although mothers in the initiation group reported more often that health professionals were very supportive of their breastfeeding decision (76.81% vs. 58.06%), this was not statistically significant ($\chi^2=3.651$, $p=. 056$). A larger percentage of mothers who initiated breastfeeding reported that their own mothers were very supportive of their breastfeeding decision (85.5% vs. 74.2%). However, this finding was also not statistically significant ($\chi^2 =1.855$, $p=. 173$). There was no statistically significant difference between the two groups of mothers concerning their reports of having very supportive friends in the prenatal period A greater proportion of mothers in the initiation

group reported having a partner who was very supportive of the mothers' breastfeeding decision. This was found to be statistically significant (66.67% vs. 35.48%, $\chi^2 = 8, 486$, $p = .004$).

Childbirth Characteristics

No significant differences were found between the two groups of mothers concerning the type of delivery, the use of epidural anesthesia, the sex or the weight of the infant (Table 6). Data on postpartum support was only available for those mothers who attempted to breastfeed their infants ($n=84$). Although the numbers for the non-initiators are small ($n < 5$), statistical significance was found in the postpartum support from the mothers' friends ($p = .039$, Fisher's Exact Test) and from health professionals ($p = .002$, Fisher's Exact Test). More mothers in the initiation group reported that friends and health professionals supported their decision to breastfeed in the postpartum period. The support of the adolescents' mothers and partners after delivery was not found to be statistically significant between initiators and non-initiators.

In summary, there were no significant differences in age, education, living arrangements, participation in prenatal classes, smoking history and obstetrical experiences between the groups of adolescent mothers who initiated and did not initiate breastfeeding. However, adolescent mothers who initiated breastfeeding had a significantly longer planned duration of breastfeeding, and were more likely to be students, non First Nations, and to have been breastfed as infants. They were also more likely to make their decision to breastfeed either before pregnancy or during the first trimester. Mothers in the initiation group reported that they had more breastfeeding

support from their partners prenatally, and from their friends and health professionals in the postpartum period.

Table 5

Comparison of Demographic Characteristics and Childbirth History Among Adolescent Mothers Who Initiated and Did Not Initiate Breastfeeding (using t-test)

Variable	Group		t	Df	P value
	Initiators (n= 69) M (SD)	Non-Initiators (n=31) M (SD)			
Age (years)	16.83(1.16)	16.81(1.22)	-.077	98	.939*
Education (years)	9.37(1.25)	9.38 (0.95)	.041	98	.968*
Number of Prenatal Classes	6.66(4.18)	6.60(4.10)	-.054	58	.957*
Number of Cigarettes per Day	4.14 (3.08)	5.17((3.17)	1.10	45	.277*
Planned Duration of Breastfeeding (months) Prenatally	8.85(6.18)	4.39(3.51)	-3.75	98	.001**
Gestation in Weeks	39.87 (1.07)	40.03(1.17)	.683	98	.496*
Duration of Labour (Hours)	17.16(11.10)	17.71(12.05)	.205	81	.838*
Weight of Infant grams)	3483.17(432.23)	3535.45(565.32)	.507	98	.613*

*Equal variances assumed. **Equal variances not assumed.

Table 6
Comparison of Two Groups on Demographic Characteristics and Childbirth History
(Chi-square Test) (n=100)

Variable*	Group		χ^2	df	P value
	Initiators (n=69) n (%)	Non - Initiators (n=31) n (%)			
Living Situation*					
Living with Parents or Parents and boyfriend	33(47.83)	20(64.52)	2.392	1	.122
Other	36(52.17)	11(35.48)			
Occupation*					
Student/Employed	56(81.16)	19 (61.29)	4.504	1	.034
Unemployed/Social Assistance	13(18.84)	12 (38.71)			
Ethnicity*					
Non-First Nations	32(46.38)	6(19.35)	6.629	1	.010
First Nations	37(53.62)	25(80.65)			
Breastfed as an Infant					
Yes	46(66.67)	12(38.71)	6.863	1	.009
No/Do Not Know	23(33.33)	19(61.29)			
Prenatal Classes					
Yes	46(66.67)	15(48.39)	3.04	1	.083
No	23(33.33)	16(51.61)			
Smoking					
Yes	29(42.03)	18(58.06)	2.21	1	.137
No	40(57.97)	13(41.94)			
Prenatal Support					
Very Supportive Partner	46(66.67)	11(35.48)	8.486	1	.004
Very Supportive Friends	34(49.3)	14(45.2)	0.145	1	.703
Very Supportive Mother	59(85.5)	23(74.2)	1.855	1	.173
Very Supportive Health Professionals	53(76.81)	18(58.06)	3.651	1	.056

* Variables regrouped into dichotomous factors for the statistical analysis.

Table 6 (continued)

Comparison of Two Groups on Demographic Characteristics and Childbirth History
(Chi-square Test)(n=100, unless otherwise indicated).

Variable*	Group		χ^2	df	P Value
	Initiators (n=69) n (%)	Non Initiators (n=31) n (%)			
Breastfeeding Decision*					
Before Pregnancy/ During First Trimester	37(53.62)	8(25.81)	6.687	1	.010
After First Trimester	32(46.38)	23(74.19)			
Planned Duration of Breastfeeding*					
Less than three months	8(11.59)	15(48.39)	16.350	1	.001
More than three months	61(88.41)	16(51.61)			
Type of Delivery					
Vaginal (SVD)	66(95.65)	30(96.77)		3	.820***
Elective Cesarean	1(1.45)	1(3.23)			
Emergency Cesarean	2(2.90)	0(0.00)			
Sex of Infant					
Male	25(36.23)	15(48.39)	1.32	1	.251
Female	44(63.77)	16(51.61)			
Postpartum Support** (n=84)	n=69	n=15			
Partner	51(73.91)	4(26.66)		1	.241***
Mother	62(89.86)	4(26.66)		1	.143***
Friends	58(84.06)	4(26.66)		1	.039***
Health Professionals	49(71.01)	1(6.67)		1	.002***

*Variable regrouped into dichotomous factors for statistical analysis.

**Postpartum support information was not obtained for those mothers who did not attempt to breastfeed their infants (n=16).

***Fisher's Exact Test used as an alternative to Pearson's Chi-Square when expected frequencies are small (<5).

Accounting for Confounding Variables in Breastfeeding Initiation

A backward, stepwise multiple logistic regression method was used to determine which known prenatal predictor variables had the greatest influence on breastfeeding initiation. With this logistic regression method all known predictor variables are entered into the equation and the least significant variable is dropped at every step. Variables entered into the analysis included those found to be significant in the univariate analysis (Chi-square and T-tests): breastfeeding attitude, prenatal breastfeeding confidence, planned duration of breastfeeding, ethnicity, occupation, timing of the breastfeeding decision, breastfed as an infant, very supportive partner and health professionals prenatally.

The postnatal breastfeeding confidence variable and the postpartum support variables were excluded from the analysis, as the numbers became too small, resulting in very large confidence intervals. Prenatal class attendance was included in the analysis as it was close to statistical significance and found to be significant in previous literature on adolescent mothers and breastfeeding initiation.

Table 7 presents the fifth and final step in the logistic regression analysis for the total group of adolescent mothers (n =100). The following variables were significant predictors of breastfeeding initiation in adolescent mothers: ethnicity (non- First Nations), planned duration of breastfeeding for greater than three months, breastfed as an infant, very supportive partner prenatally, being a student or employed, and prenatal breastfeeding attitude. Adolescent mothers who were non First Nations, planned to breastfeed their infants for more than three months, had been breastfed as infants, had a

very supportive partner and had higher breastfeeding attitudes were more likely to initiate breastfeeding.

Table 7

Backward Stepwise Multiple Logistic Regression of Factors Influencing Breastfeeding

Variable	Group		Odds Ratio (OR)	95% Confidence Interval	P Value
	Initiators (n=69)	Non-Initiators (n=31)			
	n (%)	n (%)			
Ethnicity					
Non First Nations*	32(46.38)	6(19.35)	3.691	1.062, 12.834	.040
First Nations	37(53.62)	25(80.65)			
Occupation					
Student/Employed/Other*	56(81.16)	19(61.29)	3.209	.922, 11.162	.067
Unemployed/Social Assistance	13(18.84)	12(38.71)			
Planned Duration of Breastfeeding					
More than 3 months*	61(88.41)	16(51.61)	6.573	1.888, 22.880	.003
Less than 3 months	8(11.59)	15(48.39)			
Breastfed as Infant					
Yes*	46(66.67)	12(38.71)	3.863	1.246, 11.978	.019
No	23(33.33)	19(61.29)			
Very Supportive Partner Prenatally					
Yes*	46(66.67)	11(35.48)	3.782	1.166, 12.265	.027
No	23(33.33)	20(64.52)			
Prenatal Breastfeeding Attitude					
High*	41(59.42)	6(19.35)	4.086	1.174, 14.224	.027
Low	28(40.58)	25(80.65)			

Initiation: Final Model (n=100)

*Indicates the reference category.

**Variables entered into Step 1 of the logistic regression included: prenatal classes, breastfed as infant, very supportive partner prenatally, very supportive health professional prenatally, timing of the breastfeeding decision, occupation, ethnicity, planned duration of breastfeeding, prenatal breastfeeding confidence and prenatal breastfeeding attitude.

Breastfeeding Duration

In this study, breastfeeding duration is considered as the length of time measured in days from the first day the adolescent mother attempted to breastfeed her infant to the time of weaning or until the 28- day follow-up contact. Of the sample of 100 mothers, 16 mothers did not attempt to breastfeed their infants at all. The following statistical analysis on the duration of breastfeeding is presented on the 84 adolescent mothers who attempted to breastfeed their infants.

Research Question 4: Prenatal Attitude and Breastfeeding Duration

Among those mothers (n=84) who attempted to breastfeed their infant, 45 (53.5%) had higher breastfeeding attitude scores (≥ 68) and 39 (46.43%) had lower attitude scores (<68). In the lower attitude group, 16 (41.0%) mothers had breastfeeding duration of at least 28 days. In the higher attitude group 30 (66.7%) mothers had breastfeeding duration of at least 28 days.

A Kaplan Meier Survival Curve, which tests for the equality of survival distributions for the different levels of Breastfeeding Attitude (those mothers in the high attitude group are compared to those in the low attitude group) is presented in Figure 6. As depicted, more mothers in the higher attitude group maintained breastfeeding to the 28-day contact period. This difference in breastfeeding survival (Hazard Ratio) is statistically significant at $p=.020$ (Table 8).

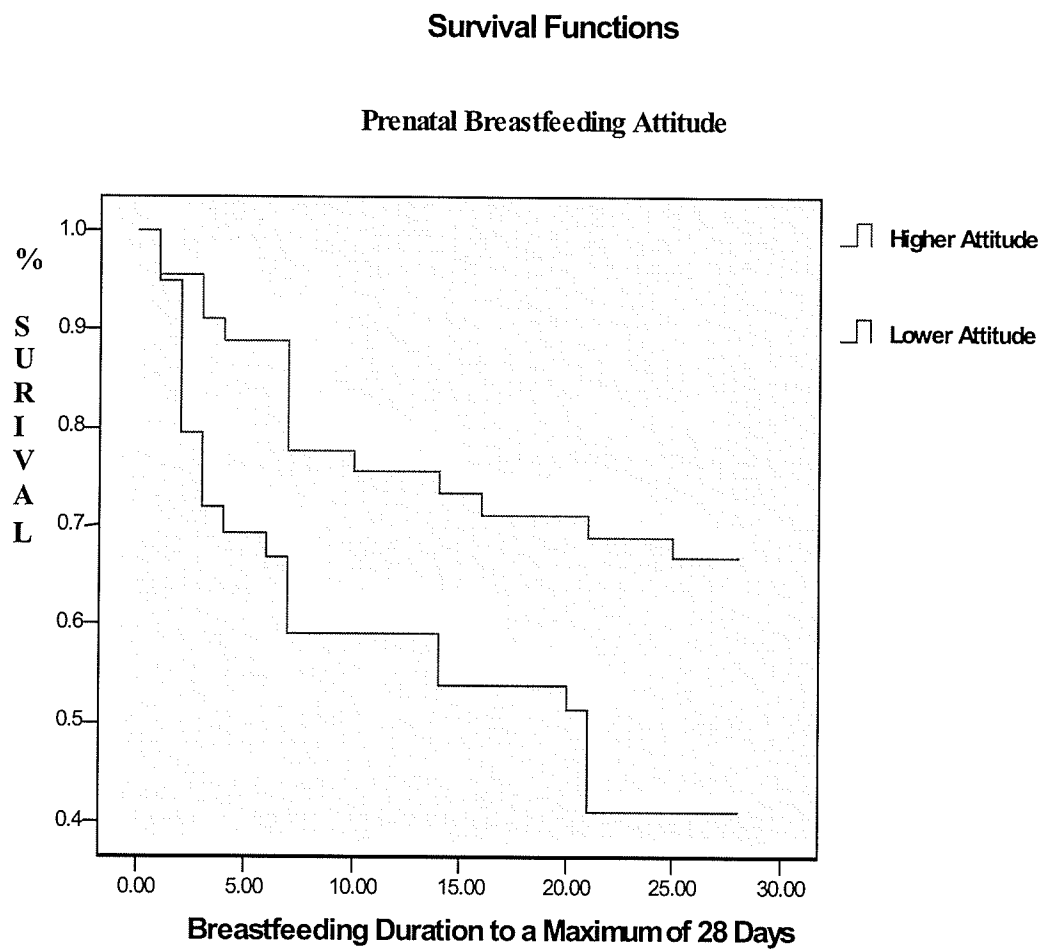


Figure 6

Kaplan Meier Survival Distribution of Sample (n=84) in Higher and Lower Breastfeeding Attitude Groups

Research Question 5: Prenatal Confidence and Breastfeeding Duration

Of the 84 adolescent mothers who attempted to breastfeed their infants, 36 (42.86%) mothers were in the lower prenatal confidence group and 48 (57.14%) were in the higher prenatal confidence group. Of those adolescent mothers in the higher prenatal confidence group, 32(66.67%) had breastfeeding duration of at least 28 days. Of those mothers in the lower prenatal confidence group, 14(38.89%) had breastfeeding duration of at least 28 days.

The Kaplan Meier Survival Curve for those mothers who attempted to breastfeed their infants (n=84) compares those in the higher prenatal confidence group with those in the lower prenatal confidence group. As presented in Figure 7, more mothers in the higher prenatal confidence group maintained breastfeeding to the 28-day contact period. This difference in breastfeeding survival (Hazard Ratio) based on prenatal breastfeeding confidence is statistically significant at $p = .016$ (Table 8).

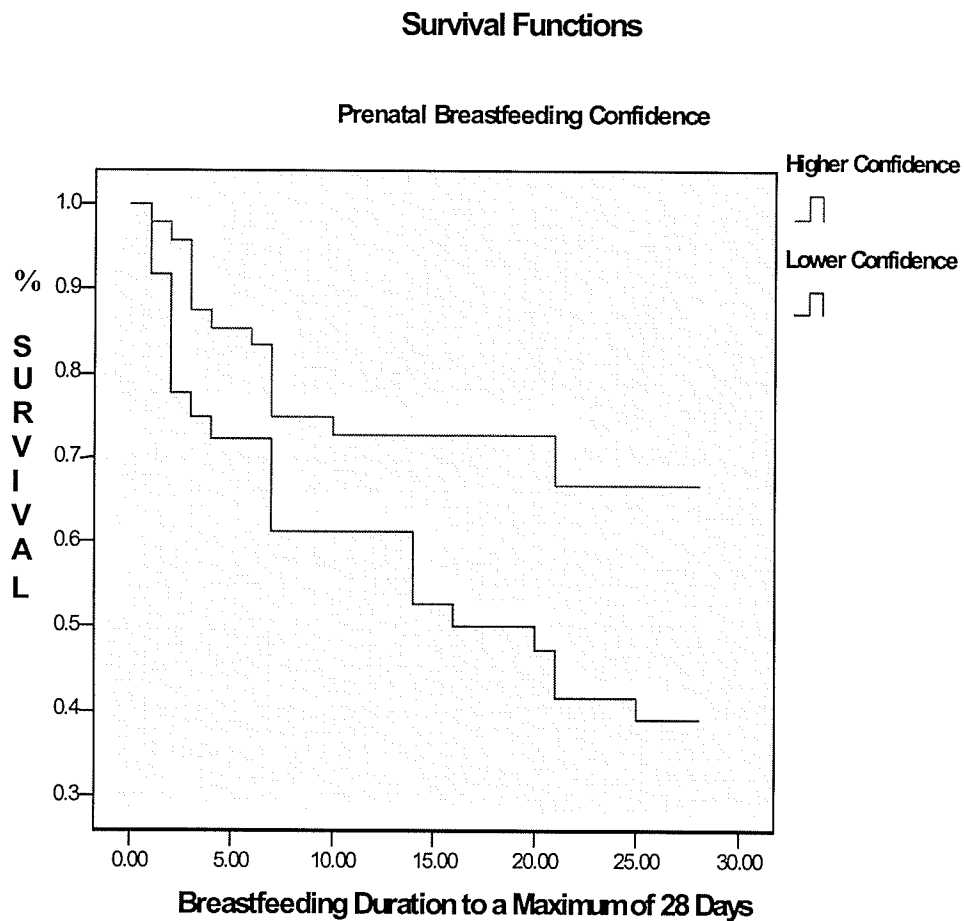


Figure 7

Kaplan Meier Survival Distribution of Sample (n=84) in Higher and Lower Prenatal Breastfeeding Confidence Groups

Research Question 6: Postnatal Confidence and Breastfeeding Duration

A comparison of postnatal breastfeeding confidence and duration is provided for those adolescent mothers who attempted to breastfeed their infants in Figure 7. Of the mothers in the low postnatal confidence group (n=24, 28.92%), 5(20.80%) had breastfeeding duration of at least 28 days. Of those mothers in the high postnatal confidence group (n=59, 71.08%), 41(69.5%) had breastfeeding duration of at least 28 days.

The Kaplan Meier Survival Curve for those mothers who attempted to breastfeed compares those in the high postnatal confidence group with those in the low confidence group. As presented in Figure 8, more mothers in the high postnatal confidence group maintained breastfeeding to the 28-day contact period. This difference in breastfeeding survival (Hazard Ratio) based on postnatal confidence scores is also statistically significant at $p=.001$ (Table 8).

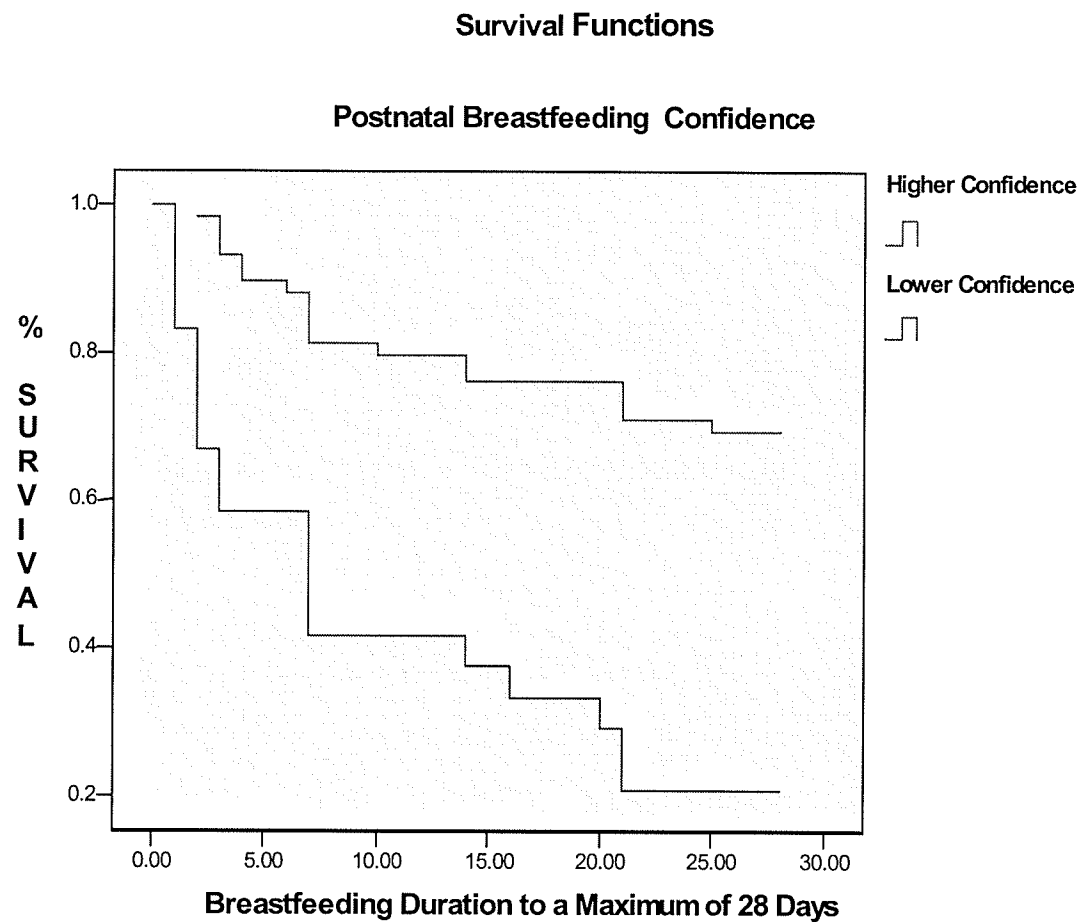


Figure 8

Kaplan Meier Survival Distribution of Sample (n=84) in Higher and Lower Postnatal Breastfeeding Confidence Groups

Research Question 7: The Influence of Breastfeeding Attitudes and Confidence on Breastfeeding Duration

Table 8 presents a univariate analysis of those factors associated with breastfeeding duration. The univariate analysis assisted in the selection of variables that were entered in the Cox Multivariate Regression method.

A Cox Multivariate Regression method was used to determine the influence of factors associated with breastfeeding duration. Similar to the backward stepwise multiple logistic regression method, variables that were found to be significant in influencing breastfeeding duration in this study and from previous studies on adolescent mothers and breastfeeding were entered into the equation. These variables included: prenatal classes, smoking, prenatal breastfeeding attitude, prenatal and postnatal breastfeeding confidence, living with parents, planned duration of breastfeeding, very supportive partner prenatally, very supportive health professional prenatally, timing of the breastfeeding decision. The least significant variable was dropped at every step.

Table 9 presents those variables remaining in the last step of the Cox multivariate regression (Step 8). Variables remaining included high postnatal breastfeeding confidence, non-smoking, and planned duration of breastfeeding for more than three months.

Table 8

Factors Associated with Duration of Breastfeeding of at least 28 days (n=84)
Univariate Analysis

Variable	Hazard Ratio (B)	95% Confidence Interval	P value
Breastfeeding Attitude			
High*	2.174	1.133, 4.171	.020
Low			
Prenatal Breastfeeding Confidence			
High*	2.215	1.162, 4.224	.016
Low			
Postnatal Breastfeeding Confidence (n=83)			
High*	4.189	2.182, 8.040	.001
Low			
Ethnicity			
Non First Nations*	1.505	.769, 2.945	.232
First Nations			
Planned Duration of Breastfeeding			
More than three months*	4.451	2.244, 8.828	.001
Less than three months			
Occupation			
Student/Employed/Other*	.614	.305, 1.240	.174
Unemployed/Social Assistance			
Breastfed as Infant			
Yes*	1.406	.733, 2.697	.305
No			
Living Situation			
Living with Parents* or Parents & Boyfriend	.466	.238, .913	.026
Other			

Table 8 (Continued)

Variable	Hazard Ratio (B)	95% Confidence Interval	P value
Very Supportive Partner Prenatal			
Yes*	1.803	.953, 3.413	.070
No			
Very Supportive Health Professional Prenatal			
Yes*	1.774	.907, 3.469	.094
No			
Very Supportive Mother Prenatal			
Yes*	1.638	.750, 3.575	.215
No			
Very Supportive Friends Prenatal			
Yes*	.740	.389, 1.409	.359
No			
Breastfeeding Decision Before Pregnancy/During First Trimester*	1.846	.962, 3.542	.065
After First Trimester			
Smoking			
No*	2.564	1.310, 5.017	.006
Yes			
Prenatal Classes			
Yes*	1.950	1.032, 3.685	.040
No			

* Indicates the Reference Category.

Table 9

Final Model for Cox Multivariate Regression of Factors Predicting Breastfeeding Duration to 28 days*

Variable	Hazard Ratio (B)	95% Confidence Interval (Lower, Upper)	P value
Planned Duration of Breastfeeding More than three Months	2.573	1.243, 5.328	.011
Non-Smoking	2.259	1.134, 4.499	.020
High Postnatal Confidence	3.630	1.849, 7.128	.001

Step 8 (Last Step in Cox Multivariate Regression, n=84)

* Variables entered into Step 1 were Breastfeeding Attitude, Prenatal Confidence, Postnatal Confidence, Smoking, Very Supportive Health Professional, Very Supportive Partner, Prenatal Classes, Timing of the Decision to Breastfeed and Planned Duration of Breastfeeding and Living with Parents.

In summary, a Cox Multivariate Regression analysis determined that high postnatal breastfeeding confidence, non-smoking and a planned duration of breastfeeding of more than three months were significant predictors of breastfeeding duration, after controlling for other factors. Interestingly, the variable, a very supportive health professional remained as a significant positive influence on breastfeeding duration in Step 7 but was not significant in the final step.

Relationship Between Breastfeeding Attitudes and Breastfeeding Confidence

Research Question 8: Relationship Between Prenatal Breastfeeding Attitudes and Prenatal Breastfeeding Confidence

A Pearson's product moment correlation test (n=100) showed that there was a significant positive relationship between measures of prenatal breastfeeding confidence and prenatal attitude (Pearson's $r = 0.404$, $p = 0.01$).

The Pearson's product moment correlation test for the association of prenatal breastfeeding attitude and confidence scores for those mothers who attempted to breastfeed their infants (n=84) also showed a significant positive relationship between the two measures (Pearson's $r = .359$; $p = 0.01$).

Research Question 9: Relationship Between Prenatal Breastfeeding Attitudes and Postnatal Breastfeeding Confidence for those Participants Who Attempted Breastfeeding (n=84).

Sixteen mothers did not attempt to breastfeed their infants. The Spearman's rho correlation test found a weaker but still significant relationship between prenatal breastfeeding attitude and postnatal confidence for those mothers who attempted to breastfeed their infant (n=84) (Spearman's $\rho = .224$, $p = 0.05$).

Research Question 10: Relationship Between Prenatal Breastfeeding Confidence and Postnatal Breastfeeding Confidence

The Spearman's rho correlation test on the sample of participants who attempted breastfeeding (n=84) found a significant positive relationship between prenatal and postnatal confidence scores (Spearman's $\rho = .526$, $p = 0.01$).

In summary, prenatal attitude scores are moderately correlated with prenatal confidence scores, but weakly correlated with the postnatal confidence scores. Prenatal and postnatal confidence scores are moderately correlated.

Chapter Summary

This chapter presented a summary of the demographic characteristics and childbirth histories of the adolescent mothers who participated in the study. Following a discussion on the instrument scores for the Breastfeeding Attitude Questionnaire, the Prenatal Breastfeeding Self-Efficacy Scale and the Postnatal Breastfeeding Self-Efficacy Scale, the chapter then addressed the study's ten research questions.

Breastfeeding Initiation

The first two research questions examined the influence of the adolescent mothers' breastfeeding attitudes and both prenatal and postnatal breastfeeding confidence on their initiation of breastfeeding. The mothers were grouped into those who initiated breastfeeding (n=69) and those who did not initiate breastfeeding (n=31). Chi-square tests determined that there was a statistically significant greater proportion of mothers with a high prenatal attitude score who initiated breastfeeding, as compared to those who did not initiate breastfeeding.

There was also a statistically significant difference in the proportion of mothers who initiated and did not initiate breastfeeding based on prenatal confidence scores. An independent 2-tailed t-test determined that the mean prenatal breastfeeding confidence scores for those mothers who initiated breastfeeding were significantly higher than the prenatal confidence scores of those mothers who did not initiate breastfeeding. A Fisher's exact test determined that there was a statistically significant difference in the proportion

of mothers with a high postnatal confidence score who initiated breastfeeding when compared to those adolescent mothers who did not initiate breastfeeding. The mean postnatal breastfeeding confidence score for mothers who initiated breastfeeding was also significantly higher than the postnatal confidence scores of those mothers who did not initiate breastfeeding.

The third research question explored whether the demographic characteristics and childbirth histories of mothers who initiated breastfeeding differed significantly from those who did not initiate breastfeeding. T-tests determined that only the mothers' planned duration of breastfeeding was significant between the two groups of mothers. Chi-square tests, however, found significant differences between the two groups of mothers on the following characteristics: breastfed as an infant, supportive partner in the prenatal period, planned duration of breastfeeding, timing of the decision to breastfeed, occupation (student), and ethnicity (non First Nations). Attendance at prenatal classes and a very supportive health professional prenatally were also close to statistical significance.

The final section on breastfeeding initiation provided the results of a backward, stepwise multiple logistic regression method. All variables found to be significant in this study and in previous studies in influencing the initiation of breastfeeding with adolescent mothers were placed in the logistic regression model. In this model, excluding the postnatal confidence variable, the following variables were found to be significant in positively influencing breastfeeding initiation: breastfed as an infant, very supportive partner prenatally, non First Nations, occupation (student), planned duration of breastfeeding more than three months, and high breastfeeding attitude.

Breastfeeding Duration

Research questions four, five and six examined the influence of prenatal attitude and both prenatal and postnatal confidence on breastfeeding duration. All mothers who attempted to breastfeed their infant were included in the analysis (n=84). Based on the means of the prenatal attitude score and the prenatal confidence score, the mothers were divided into two groups: those with high and low breastfeeding attitudes and confidence.

Kaplan Meier Survival Curves, which test for the equality of survival distributions for the different levels of breastfeeding attitudes and confidence determined significant statistical differences in the duration of breastfeeding. More mothers in the higher prenatal attitude group and in the higher prenatal and postnatal breastfeeding confidence groups maintained breastfeeding to the 28- day follow-up contact.

Research question seven examined the combined influence of breastfeeding attitudes and confidence on breastfeeding duration. A Cox multivariate regression method was used to determine the influence of breastfeeding attitude, prenatal breastfeeding confidence and postnatal breastfeeding confidence on breastfeeding duration. Additional variables found to be significant in the univariate analysis for this study and from other studies on adolescent mothers were included in the analysis. These variables were: prenatal classes, smoking, living with parents, planned duration of breastfeeding for more than three months, very supportive partner and very supportive health professional prenatally. The results of the Cox multivariate regression found that a planned duration of breastfeeding for more than three months, non- smoking and high postnatal breastfeeding confidence had statistically significant positive effect on breastfeeding duration to 28 days postpartum.

Relationships Between Breastfeeding Attitudes and Breastfeeding Confidence

Pearson's product moment correlation tests determined that there was a significant positive relationship between measures of prenatal breastfeeding confidence and prenatal attitude. The Spearman's rho correlation test found a weaker but still significant relationship between prenatal breastfeeding attitudes and postnatal breastfeeding confidence. The Spearman's rho correlation test also found a significant positive relationship between prenatal and postnatal confidence scores.

This chapter has provided a statistical analysis of the influence of breastfeeding attitudes, confidence and additional demographic factors on the initiation and duration of breastfeeding with adolescent mothers. The findings provided by this analysis will be discussed in further detail in the following discussion chapter.

Chapter 6: Discussion

This study examined the influence of adolescent mothers' breastfeeding confidence and attitudes on breastfeeding initiation and duration. The Breastfeeding Self-Efficacy Theory was used as the theoretical framework to guide this study.

Breastfeeding initiation was defined as any breastfeeding for more than three days postpartum. To examine the influences on breastfeeding initiation the 100 adolescent mothers who participated in this study were divided into two groups: those mothers who initiated breastfeeding (n=69) and those who did not initiate breastfeeding (n=31).

Breastfeeding duration was defined as any attempt to breastfeed up to the 28-day postpartum follow-up contact. As 15 adolescent mothers did not attempt to breastfeed their infants after delivery, information concerning the duration of breastfeeding is presented on 84 adolescent mothers.

Statistical analysis of the data addressed the research questions concerning breastfeeding initiation and duration and the relationships between breastfeeding attitudes and confidence. Additional factors which may have influenced both the initiation and duration of breastfeeding were also examined.

In this chapter, the results of the study are discussed in relation to previous research studies on adolescent mothers and breastfeeding. Study results are then examined in relation to the Breastfeeding Self-Efficacy theory. The chapter concludes with a discussion on the strengths and limitations of the study, implications for practice, and recommendations for future research.

Breastfeeding Initiation

This study explored whether there were significant differences in the demographic characteristics and childbirth histories between those adolescent mothers who initiated breastfeeding and those who did not initiate breastfeeding. Significant statistical differences between the two groups of mothers were found in their prenatal breastfeeding attitudes and prenatal and postnatal breastfeeding confidence scores. Additional significant differences were also found in their stated prenatal plan for duration of breastfeeding, whether the mothers had been breastfed as infants, the timing of their decision to breastfeed, the perceived support from the adolescent mother's partner, whether the mothers were students or employed and First Nations. A logistic regression method determined that mothers who were students or employed, non First Nations, planned to breastfeed their infants for more than three months, were breastfed as infants, had a very supportive partner prenatally and had high prenatal breastfeeding attitude scores were more likely to initiate breastfeeding.

The following section examines the current study's findings concerning prenatal breastfeeding attitudes and prenatal and postnatal breastfeeding confidence on breastfeeding initiation. Comparisons are made to previous research studies on adolescent mothers and breastfeeding.

Prenatal Breastfeeding Attitude and Initiation

Study results indicate that there was a statistically significant difference in the proportion of mothers with a high prenatal attitude score who initiated breastfeeding compared to those with a low prenatal attitude score. The difference between the mean attitude scores of those mothers who initiated breastfeeding and those who did not was

also found to be statistically significant. A high prenatal breastfeeding attitude was a significant variable in the initiation of breastfeeding. Adolescent mothers with a more favourable attitude toward breastfeeding were more likely to initiate breastfeeding.

The study by Baisch, Fox and Goldberg (1989) which used the same Breastfeeding Attitude Scale chosen for the current study, found that adolescents who were breastfed as infants, were primigravidas, and had positive breastfeeding role models scored higher on the breastfeeding attitude scale. However, the study did not examine whether more adolescents with higher attitude scores initiated breastfeeding.

The current study findings on prenatal breastfeeding attitudes support previous research by Yoos (1985) where adolescent mothers aged 15 to 19 years (n=50) were interviewed about their breastfeeding attitudes during their hospital stay. In the study by Yoos (1985), adolescent mothers who chose to breastfeed their infants offered more "infant-oriented" reasons such as better health for the infant and greater infant attachment. In the current study, most of the adolescent mothers (n=88) identified breastfeeding as being the best nutrition for their infant and seven mothers mentioned the increased bonding with their infant. Interestingly, 36 mothers also felt that the cost of formula influenced their breastfeeding decision. Other studies on adolescent mothers' breastfeeding decisions do not refer to formula costs as a deterrent to bottle-feeding. No barriers to breastfeeding were mentioned in this study, since no comparisons were made with adolescent mothers who chose to bottle feed their infants.

Studies by Yoos (1985), Ineichen et al. (1997) and Joffe and Radius (1987) describe adolescents' feelings of embarrassment concerning breastfeeding. These feelings were not reported by the current study participants. Similar to the study by Joffe and

Radius (1987), current study participants also did not perceive breastfeeding as interfering with school or their social life, nor was breastfeeding viewed as painful for the mother. Concerns regarding breastfeeding resulting in any body image changes were also not reported.

Prenatal Breastfeeding Confidence and Breastfeeding Initiation

There was a statistically significant difference in the proportion of mothers who initiated and did not initiate breastfeeding based on prenatal confidence scores. The mean prenatal confidence scores for those mothers who initiated breastfeeding were significantly higher than the mean prenatal confidence scores of those mothers who did not initiate breastfeeding. However, prenatal breastfeeding confidence was not found to be a significant predictor variable in breastfeeding initiation after controlling for the effect of other variables.

The study by Buxton et al. (1991) with adult women (n= 187) found that 27% of mothers with low prenatal confidence scores ceased breastfeeding during the first week postpartum as compared to only 5% of the very confident women. Studies on prenatal breastfeeding confidence and breastfeeding initiation with adolescent mothers have not been reported.

Study findings concerning the prenatal breastfeeding confidence scores may be related to the difficulty some of the adolescent mothers encountered in understanding several of the questions, e.g. "I think I can always determine that my baby is getting enough milk." Also, given their developmental stage of adolescence, they may have had difficulty imagining breastfeeding their unborn infant during a time in their late pregnancy when their focus is likely on labour and delivery issues.

Postnatal Breastfeeding Confidence and Breastfeeding Initiation

Postnatal confidence scores were collected on all mothers who attempted to breastfeed their infant, including those who breastfed their infant for less than three days postpartum (n=84). A greater proportion of mothers with high postnatal confidence initiated breastfeeding. The difference in mean postnatal confidence scores of those mothers who initiated breastfeeding and of those who did not initiate breastfeeding was also found to be statistically significant. Therefore adolescent mothers with higher postpartum confidence scores were more likely to initiate breastfeeding. Papinczak and Turner (2000) also found that adult mothers who could not establish breastfeeding had significantly lower levels of breastfeeding confidence when compared with mothers who breastfed for more than six months. Studies on adolescent mothers' breastfeeding confidence levels have not been reported.

Breastfeeding Duration

The following section provides a discussion of the influence of prenatal breastfeeding attitudes, prenatal confidence and postnatal breastfeeding confidence on breastfeeding duration.

Prenatal Attitude and Breastfeeding Duration

Significantly more adolescent mothers in the high breastfeeding attitude group maintained breastfeeding to the 28-day follow-up contact. However, a positive breastfeeding attitude was not found to be a significant predictor variable in determining breastfeeding duration, after controlling for the effect of other variables. A positive attitude toward breastfeeding may not be sufficient when young mothers are faced with

the many challenges of breastfeeding successfully. Research studies on adolescent mothers' breastfeeding attitudes and duration of breastfeeding have not been reported.

Prenatal Confidence and Breastfeeding Duration

Significantly more mothers in the high prenatal confidence group maintained breastfeeding to the 28-day contact period. However, prenatal breastfeeding confidence was also not found to be a significant predictor variable in breastfeeding duration, after controlling for the effect of other variables. Adolescent mothers may perceive themselves to be confident about their ability to breastfeed prenatally until they are faced with the realities of having to learn the art of breastfeeding in the immediate postpartum period.

Postnatal Confidence and Breastfeeding Duration

When postnatal confidence scores were compared between the two groups of mothers, significantly more mothers in the higher postnatal confidence group maintained breastfeeding to the 28-day telephone contact. These results are similar to the study by Dennis (1999), which used the Breastfeeding Self-Efficacy Scale on adult mothers (n=130). The study by Dennis (1999) found that mothers with higher breastfeeding confidence scores during the early postpartum period were more likely to be breastfeeding their infants at six weeks postpartum than those mothers with lower BSES confidence scores. The study by Blyth et al. (2002) also explored the effect of maternal confidence with adult mothers (n = 300) on breastfeeding duration. Mothers with high postnatal breastfeeding self-efficacy were significantly more likely to be breastfeeding exclusively at one week and four months than mothers with low breastfeeding confidence. This is the first study to date that specifically explored adolescent mothers' breastfeeding confidence and its influence on breastfeeding duration.

Relationship Between Breastfeeding Attitudes and Breastfeeding Confidence

Prenatal Attitudes and Prenatal Confidence

There was a statistically significant positive relationship between measures of prenatal breastfeeding confidence and prenatal attitude. Adolescent mothers who had more positive attitudes towards breastfeeding also had higher prenatal breastfeeding confidence scores. Items on the Breastfeeding Attitude Questionnaire address those issues which previous research studies on pregnant adolescent mothers have found to be significant concerning breastfeeding decisions and outcomes. These issues include body image and modesty or embarrassment, breastfeeding support from the teens' mother, boyfriend and friends, breastfeeding knowledge, and additional perceived barriers to breastfeeding. Mothers who felt more positive about all these issues were also more positive about their perceived ability to breastfeed their infants.

Prenatal Attitude and Postnatal Confidence

There was a significant but weaker relationship between prenatal breastfeeding attitude and postnatal confidence. Adolescent mothers may have a very positive attitude toward breastfeeding prenatally, but may lack confidence in their ability to breastfeed their infants in the immediate postpartum period. This has also has implications for nursing practice in the immediate postpartum period. Adolescent mothers who are very motivated to breastfeed their infants will need additional support and assistance in managing the skills involved in breastfeeding successfully.

Prenatal Confidence and Postnatal Confidence

There was also a significant positive relationship between prenatal breastfeeding confidence and postnatal breastfeeding confidence. Mothers who had higher prenatal confidence scores also had higher postnatal confidence scores. The results of this study are similar to the results of the studies on adult mothers by Dennis (1999) and Blyth et al. (2002), which also used the Breastfeeding Self-Efficacy Scale.

Additional Factors Influencing Breastfeeding Initiation and Duration

Socio-Demographic Factors and Childbirth History

Maternal Age and Education. Unlike previous research studies with adolescent mothers (Ineichen et al. 1997; Scott & Binns, 1999; Wambach & Cole, 1999), no statistically significant differences in age and educational level were found between those mothers who initiated breastfeeding and those who did not initiate breastfeeding. Mothers in both initiation and non-initiation groups were of similar age ($M= 16.82$ vs. 16.81) and school grade level ($M= 9.37$ vs. $M=9.38$).

Ethnicity. A large proportion of mothers in this study reported that they were First Nations (62 %). Significantly more mothers in the non-initiation group were First Nations (80.65 %) compared to the initiation group (53.62%). Non First Nations mothers were more likely to initiate breastfeeding than First Nations mothers, and this finding was statistically significant in the current study. Research on breastfeeding initiation rates specifically for First Nations adolescent mothers is sparse. Previous research studies on adult mothers found that adult Caucasian women were more likely to choose breastfeeding than were adult women from minority groups (Neifert, Gray, Gary & Camp, 1988). This study's findings are also consistent with the Manitoba Centre for

Health Policy Report (2001), which identified the provincial breastfeeding initiation rates of newborn infants for Registered First Nations women to be 57.9% compared to 82.2% for all other Manitoba women.

Smoking History. The study by Park, Meier and Song (2003) found that teenagers who did not smoke were more likely to initiate breastfeeding than those who did smoke. In this study, no statistically significant differences were found between the two groups of mothers concerning breastfeeding initiation based on their smoking history. However, mothers who smoked and who did not initiate breastfeeding smoked more cigarettes per day than those mothers who initiated breastfeeding ($M=5.24$ vs. $M= 3.60$). Approximately half (47%) of the study sample of adolescent mothers reported that they were smokers. Forty-two percent of those mothers who reported that they were smokers ($n=47$) initiated breastfeeding.

One possible explanation for the higher number of adolescent mothers who were smokers and still initiated breastfeeding may relate to study participation eligibility. Adolescent mothers who participated were only those who planned to breastfeed or were still undecided about their infant feeding method. Data was not collected on the smoking history of mothers who had definitely decided not to breastfeed. However, smoking was a statistically significant variable in the duration of breastfeeding.

Prenatal Class Attendance. Although more mothers in the breastfeeding initiation group had attended prenatal classes (66.67%) than those in the non-initiation group (48.39%), this was not found to be a statistically significant difference in the current study. The study did not support the findings of earlier studies by Volpe and Bear (2000) and Scott and Binns (1999) that young mothers who participated in prenatal classes are

more likely to initiate breastfeeding than those who do not attend prenatal classes. Interestingly, 26 adolescent mothers who initiated breastfeeding in the current study reported to have attended at least 10 or more prenatal classes at either at a school for adolescent mothers or a residential facility for pregnant and parenting teens. These young mothers reported that several of their prenatal classes had a breastfeeding focus. The prenatal classes at the school for adolescent mothers are delivered by a Public Health Nurse who is also a lactation consultant. The residential facility for adolescent mothers also has a lactation consultant available to promote and support breastfeeding.

Planned Duration of Breastfeeding. Statistically significant differences were found between the two groups of adolescent mothers in relation to their stated planned duration of breastfeeding. Mothers in the breastfeeding initiation group planned to breastfeed their infants for more months postpartum ($M=8.85$) than those mothers who did not initiate breastfeeding ($M= 4.39$). This difference in planned duration of breastfeeding between the two groups of mothers was also found to be a statistically significant predictor in logistic regression analyses of both breastfeeding initiation and duration. Research studies on adolescent mothers and intended breastfeeding duration have found a strong and consistent relationship between intended duration of breastfeeding and actual duration (Wambach & Cole, 1999). However, studies on the association between intended duration of breastfeeding and breastfeeding initiation with adolescent mothers have not been reported.

Breastfed as Infants. In this study, significantly more mothers who initiated breastfeeding were breastfed as infants (66.67%) when compared to those mothers in the non initiation group (38.71%). These findings are similar to those of the American study

by Lizarraga, Maehr, Wingard and Felice (1992), whereby adolescent mothers (n= 64) were found to choose breastfeeding if they themselves had been breastfed. Study findings identified that being breastfed as an infant was a significant independent variable in the initiation of breastfeeding. It is likely that adolescent mothers who were breastfed as infants received greater support, encouragement and more positive feedback from their own mothers about the benefits of breastfeeding.

Timing of the Decision to Breastfeed. In the current study, twenty adolescent mothers (20%) had decided to breastfeed their infants before they became pregnant. Fifty-three mothers had made their breastfeeding decision during their first and second trimester. Twelve mothers had made their decision in their third trimester, and thirteen mothers were still undecided about their breastfeeding decision. Significantly more adolescent mothers who initiated breastfeeding had made their decision to breastfeed their infants before pregnancy or during the first three months prenatal than those mothers who did not initiate breastfeeding. The findings of this study are similar to those of the descriptive American study by Ineichen et al. (1997), which found that in their sample of young and expectant mothers (n = 55), only 25 % who decided to breastfeed their infants had made their decision at or near the time they discovered they were pregnant. However, the timing of the breastfeeding decision was not found to be a significant predictor of breastfeeding initiation or duration, after controlling for the effect of other variables.

Prenatal partner support for breastfeeding. A significantly greater percentage of mothers who initiated breastfeeding reported the infant's father to be very supportive of their breastfeeding decision (66.67 % vs. 35.48%). In the current study, a very

supportive partner was a significant predictor variable of breastfeeding initiation but not for breastfeeding duration. These study findings are similar to those of Ineichen et al. (1997), in which the adolescent's mother or infant's father were reported as being most influential in the adolescent mother's decision to breastfeed, and their approval was associated with breastfeeding initiation.

Adolescents' mothers' support. Although a greater proportion of adolescent mothers who initiated breastfeeding reported that their own mothers were very supportive of their breastfeeding decision, this was not statistically significant. This study did not support the findings of the American study by Robinson, Hunt, Pope and Garner (1993) whereby adolescent mothers between the ages of 14 to 19 years ($n = 84$) were interviewed post delivery. The adolescent's mother or infant's father had the most influence on the mother's chosen feeding method for 30 mothers in the sample. As stated earlier, one possible explanation for the lack of statistical significance between the two groups of adolescent mothers relates to the participation eligibility for this study. In general, adolescents who choose to breastfeed their infants are more likely to have supportive mothers prenatally and in the postpartum period.

Breastfeeding support from friends. The support of the adolescent mothers' friends was found to be statistically significant between the two groups of mothers in the prenatal period. More adolescent mothers in the breastfeeding initiation group reported having friends who were very supportive of their breastfeeding decision. Studies on the importance of the adolescent mothers' peer group on breastfeeding initiation have not been reported.

Health professionals support. Mothers in the initiation group also reported more often that the Health Professionals managing their prenatal care were very supportive of breastfeeding (76.81% vs. 58.06%). However, this was not found to be statistically significant in the prenatal period.

Postnatally, more adolescent mothers in the initiation group identified health professionals as being very supportive of their breastfeeding efforts. This was found to be statistically significant. This finding is similar to the study results by Matthew et al. (1998) in which breastfeeding mothers regardless of education and age were more influenced by health professionals than mothers who chose not to breastfeed. However, the logistic regression method did not identify the support from health professionals as being statistically significant, after controlling for the effect of other variables.

Interestingly, 21% of the adolescent mothers stated that they did not know how the health professionals involved in their prenatal care felt about breastfeeding. This percentage may even be higher as some of the adolescent mothers may have felt uncomfortable in the clinical recruitment setting admitting that they did not find health professionals supportive of their breastfeeding decision. This has implications for practice in both institutional and community health care settings.

Childbirth history. No statistically significant differences were found between the two groups of adolescent mothers concerning gestation in weeks, the type of delivery, the use of epidural anesthesia, the sex or weight of the infant. Study eligibility criteria determined that mothers who delivered preterm infants (less than 37 weeks gestation) would be excluded from the study. Only one adolescent mother delivered a preterm

infant, and therefore was ineligible. Ninety-six percent of all the mothers in the study sample had a spontaneous vaginal delivery.

Breastfeeding Experiences. Similar to studies on adult women, the most often reported reasons given for ceasing breastfeeding before three days postpartum included “not enough milk” and “sore nipples”. These reasons were also most reported in the studies involving adolescent mothers by Lipsman, Dewey and Lonnerdal (1995) and Benson (1996). Other reasons given by the adolescent mothers (n=18) in the study by Benson (1996), which were viewed as more adolescent specific, included modesty problems, expressing breastmilk and sleep interruptions. These reasons for not initiating breastfeeding were not reported by the adolescent mothers in this study.

Breastfeeding Knowledge. Thirty-nine percent of the study participants reported that they either strongly agreed or agreed with the statement that they did not know enough about breastfeeding. Thirty percent of the sample of young mothers was unsure whether they knew enough about breastfeeding. Only 28 percent of the sample felt they had enough breastfeeding knowledge. This finding is similar to the study by Dewan, Wood, Maxwell, Cooper and Brabin (2002) which compared the knowledge and attitudes of primigravidae teenage mothers (n=40) with adult primigravidae mothers (n=40) and also found that teenage mothers had poorer knowledge about breastfeeding than adult mothers.

Theoretical Framework

The Breastfeeding Self-Efficacy Theory by Dennis (1999) was the underlying theoretical framework for this study (Figure 1). The Breastfeeding Self-Efficacy Theory is based on self-efficacy theory, which is derived from Bandura’s Social Learning Theory

(1986). Bandura (1977) emphasized that self-efficacy or confidence focuses on one's belief in the ability to enact a desired behavior.

According to the Breastfeeding Self-Efficacy Theory, breastfeeding confidence will determine whether a mother will initiate breastfeeding, how much effort she will devote to breastfeeding, whether she will have positive thoughts about her breastfeeding experience, and how she will respond emotionally when confronted with breastfeeding challenges (Blyth et al. 2002). Individuals may believe that a certain behavior such as breastfeeding is beneficial, but they may lack the confidence to perform the desired behavior (initiate and continue to breastfeed their infant).

This study applied this theory to adolescent mothers in order to explore the influence of breastfeeding attitudes and confidence, as well as additional factors, that may influence their infant feeding decisions (Figure 2). The following discussion examined whether the results of the current study are consistent with the Breastfeeding Self-Efficacy Theory when applied to adolescent mothers.

Sources of Breastfeeding Information (Antecedents)

The prenatal breastfeeding attitude questionnaire and the demographic questionnaire given to the study participants addressed the antecedents or sources of information outlined in the Breastfeeding Self-Efficacy Model Applied to Adolescent Mothers (Figure 2). These antecedents included performance accomplishments (previous breastfeeding experiences), verbal persuasion (support from the teen's mother, the infant's father and the teens peers), vicarious experiences (expressed feelings of others in the teens' support network who have breastfed their infants), and physiological and affective states (pain, and modesty issues). Additional factors that the literature review

identified as being more unique to teen mothers, such as lack of breastfeeding knowledge and returning to school, were also addressed by the breastfeeding attitude questionnaire.

The sources of information which were found to be significant in breastfeeding initiation in this study, namely the stated planned duration of breastfeeding, whether the mother had been breastfed as an infant, the timing of the decision to breastfeed, and the perceived support from the mothers' partner, friends and health professionals were addressed in the demographic questionnaire. The Breastfeeding Self-Efficacy Model for Adolescent Mothers depicts how these sources of information (antecedents) influence both breastfeeding attitudes and breastfeeding confidence. The results of this study are consistent with this model. Mothers with more positive sources of breastfeeding information also had higher breastfeeding attitude and breastfeeding confidence scores.

Breastfeeding Initiation

A greater proportion of adolescent mothers with higher prenatal breastfeeding attitude scores initiated breastfeeding. These mothers were also more likely to continue breastfeeding their infants to the 28-day follow-up contact and beyond. There was also a significant positive relationship between measures of prenatal breastfeeding attitudes and prenatal breastfeeding confidence. Again, these findings are supportive of the Breastfeeding Self-Efficacy model applied to adolescent mothers. In this model, breastfeeding attitudes and breastfeeding confidence influence breastfeeding initiation and duration.

Interestingly, breastfeeding attitudes have a stronger relationship with prenatal breastfeeding confidence and a significant but weaker relationship with postnatal breastfeeding confidence. It is likely that developmental issues such as "over-

confidence” or “egocentrism” may result in the higher prenatal confidence scores for both initiators and non-initiators of breastfeeding. Lack of breastfeeding knowledge, and no previous breastfeeding experiences also may influence the prenatal breastfeeding confidence scores. The Self-Efficacy Model when applied to adolescent mothers does not differentiate between prenatal and postnatal confidence.

The logistic regression model found that prenatal breastfeeding attitude scores and not prenatal breastfeeding confidence scores are a significant predictor of breastfeeding initiation. However, postnatal confidence scores were a significant predictor in both the initiation and duration of breastfeeding. Adolescent mothers with higher postnatal confidence scores were more likely to initiate breastfeeding and continue breastfeeding to the 28-day follow –up contact and beyond. These findings are also consistent with the Breastfeeding Self-Efficacy Theory.

Breastfeeding Duration

As presented in the Breastfeeding Self-Efficacy Model (Figure 2) breastfeeding duration is influenced by breastfeeding attitudes and confidence. The study results support the significant influence of postnatal breastfeeding confidence on breastfeeding duration. Prenatal breastfeeding attitudes and prenatal breastfeeding confidence do not remain as significant factors in influencing breastfeeding duration, after controlling for the effect of other variables.

The adolescent mothers’ reported planned duration of breastfeeding was a significant predictor variable in influencing both breastfeeding initiation and duration. A possible explanation for this is that mothers who have decided to breastfeed their infants

for longer durations may have a more positive attitude toward breastfeeding and a greater feeling of confidence in their ability to breastfeed their infant.

Additionally, reasons given for not initiating breastfeeding, or discontinuing breastfeeding within the first three days postpartum included “not enough milk” and “sore nipples”. For those mothers who initiated breastfeeding, but had ceased breastfeeding before the 28- day postpartum telephone contact “not enough milk” and “sore nipples” were also the most often cited reasons for terminating breastfeeding. These reasons imply knowledge deficits concerning infant growth spurts, and breastmilk demand and supply issues. Correct positioning and latching of the infant at the breast are factors essential to both initiation and duration of breastfeeding. However, as the model indicates, mothers with high breastfeeding confidence will continue to persist with breastfeeding when difficulties occur.

In summary, the Breastfeeding Self-Efficacy Model when applied to Adolescent mothers is consistent with the Breastfeeding Self-Efficacy Theory by Dennis (1999). In this study, sources of breastfeeding information (antecedents) influenced both breastfeeding attitudes and breastfeeding confidence. Prenatal breastfeeding attitudes were significantly related to prenatal breastfeeding confidence. Prenatal breastfeeding attitudes were also a significant predictor of breastfeeding initiation. Although postnatal breastfeeding confidence was a significant predictor of both breastfeeding initiation and duration, the findings of this study suggest that the Breastfeeding Self-Efficacy Scale is a useful instrument to use in the postnatal period to predict breastfeeding duration.

Strengths and Limitations of the Study

Strengths of the Study

Guided by the Breastfeeding Self-Efficacy Theory, this study explored the influence of adolescent mothers' breastfeeding attitudes and confidence on breastfeeding initiation and duration. Although similar studies have been conducted on adult mothers, studies that have specifically examined adolescent mothers' breastfeeding attitudes and confidence on breastfeeding outcomes have not been reported. The study also provides additional information on both modifiable and non-modifiable factors that have influenced adolescent mothers' feeding decisions.

The purpose of this study addresses a very important issue concerning the health and well being of adolescent mothers and their infants. Breastfeeding provides many health benefits for both mothers and their infants, including a protective effect in the development of Type 2 Diabetes (Stuebe, 2005; American Academy of Pediatrics, 2005).

The high proportion of First Nations subjects in this study is another strength. The percentage of teenage pregnancies in First Nations adolescents living off reserve is significantly higher than non First nations adolescents (185 per 1000 pregnancies compared to 38 per 1000 pregnancies for non First Nations) (Statistics Canada, 2005). National and provincial studies on diabetes have found that First Nations people are at greater risk for developing Type 2 diabetes (Statistics Canada Report, 2002). It is essential then that the benefits of breastfeeding for both infant and mother be realized for all adolescent mothers and for First Nations teen mothers in particular.

The findings of this study will provide direction for health care providers in developing breastfeeding attitude and confidence enhancing strategies for adolescent

mothers and their infants. This study also offered adolescent mothers an opportunity to share their reasons for breastfeeding and their reasons for not initiating or ceasing breastfeeding during the first 28 days postpartum.

Additional study strengths included the oral administration of the study questionnaires, the use of the Likert Rating Scale and the use of the response cards to address any issues concerning the mothers' reading levels. The Attitude Questionnaire was developed specifically for use with adolescents by Baisch, Fox and Goldberg (1989) and was easily administered and understood by the study participants. All of the questionnaires took only 15 minutes to complete, and this was usually done while the mother waited for her medical appointment, or right after she had been seen by the physician. In either case, the timing of the questionnaire administration and the length of time to complete the questionnaires were most appropriate for this population.

Another strength of the study included the offer of a free movie pass as an incentive to participate. The movie pass assisted in the recruitment and retention of these young mothers. Additionally, the high study retention rate was facilitated by having the adolescent mothers provide at least two phone contact numbers. Due to the high mobility of these adolescents, the availability of additional contacts, who were likely to know the mothers whereabouts after delivery, assisted in locating the mothers for the postpartum follow-up contacts. Incentives and additional contact numbers are strategies that facilitate the recruitment and retention of socially and economically disadvantaged women (Heaman, 2001).

The antenatal clinic for adolescent mothers proved to be an excellent recruitment site for the majority of the study participants. The health care staff at this site is sensitive

to the needs of adolescent mothers and they have established a warm and caring professional working relationship with them. The researcher and research assistant, who are both nurses, also have extensive experience working with adolescent mothers.

This study was able to report a number of statistically significant findings concerning breastfeeding attitudes and confidence on breastfeeding initiation and duration. Similar prospective research studies on breastfeeding duration involving large sample sizes of adolescent mothers (n=100) have not been reported.

Limitations of the Study

This study used a prospective correlational research design to examine relationships among variables, as they exist within the population of interest, namely adolescent mothers. Correlational studies are weak in their ability to infer causal relationships (Polit & Beck, 2004). Unlike experimental or quasi-experimental designs, the researcher had no control over the independent variables in the study, namely, the adolescent mothers' attitudes and confidence in breastfeeding. Therefore, pre-existing differences in the study subjects may be plausible alternative explanations for the observed effects on the dependent variables.

Generalization of the findings of this study are also limited due to the use of a convenience sample of adolescent mothers and the use of a smaller sample size than was initially suggested by the power analysis. Therefore study findings may differ if a larger and a more heterogeneous sample of adolescent mothers had been recruited. Further, the predominant single recruitment site also limits the generalizability of the study findings beyond the recruitment facility.

Unlike the Breastfeeding Attitude Questionnaire, the Breastfeeding Self-Efficacy Scale, which was developed for adult mothers, included items that required greater explanation from the researcher. Some of the concepts were difficult for the young mothers to understand prenatally. Rewording of some of the questions and simplifying some of the language used in the BSES-SF would assist in the ease of its administration with adolescent mothers.

Implications for Practice

The findings of this study present several implications for health care practices that may enhance breastfeeding outcomes for adolescent mothers. The following discussion examines practice implications for both breastfeeding initiation and duration.

Strategies to Enhance Breastfeeding Initiation

The two groups of mothers in this study, those who initiated breastfeeding and those who did not, differed significantly in their prenatal breastfeeding attitude scores and their prenatal and postnatal confidence scores. Factors that were found to be significant predictors of breastfeeding initiation included: high prenatal breastfeeding attitude, planned duration of breastfeeding for more than three months, having been breastfed as an infant, being a student or employed, having a very supportive partner prenatally and being non First Nations. Strategies to enhance initiation rates in both the community and clinical settings are described below.

Clinical setting. In the current study, 21% of the adolescent mothers who were greater than 34 weeks pregnant admitted that they did not know how the health professionals in the adolescent clinic felt about breastfeeding. It is possible that this

percentage is fairly conservative as some of the adolescents may not have felt comfortable admitting this information about their health care provider.

Since the timing of the breastfeeding decision was a significant variable in breastfeeding initiation, adolescent mothers should be encouraged to consider the benefits of breastfeeding early in their pregnancy. It is therefore very important that health professionals who are providing care for adolescent mothers have the knowledge and training necessary to promote breastfeeding. This also complies with the second and third steps of the Ten Steps to Successful Breastfeeding outlined in the Baby Friendly Hospital Initiative (WHO/UNICEF, 1992).

Since breastfeeding attitudes were a significant predictor of breastfeeding initiation, health care professionals should consider routinely exploring expectant adolescents' attitudes toward breastfeeding and clarifying misconceptions. Negative breastfeeding attitudes or poor breastfeeding knowledge could be addressed promptly in a culturally sensitive manner.

The researcher is aware that time constraints will influence the amount of time and effort necessary for clinic staff to devote to breastfeeding support and education. An onsite lactation consultant who is experienced in addressing the unique needs of adolescent mothers, and First Nations adolescent mothers in particular, could provide both one on one breastfeeding counseling or education, or facilitate an on- site breastfeeding support group for adolescent mothers.

Given the significant influence of the adolescent mothers' partners and mothers in their infant feeding decision, this important supportive network should be encouraged to attend breastfeeding education and counseling sessions. The importance of the peer group

in adolescence has been discussed in the developmental maturation section of this thesis. Studies on the use of peer breastfeeding counselors with adult women have found that that peer counselors improved both breastfeeding initiation and duration rates (Chapman, Damio, Young & Perez-Escamilla, 2004; Pugh, Milligan, Frick, Spatz & Bonner, 2002). The study by Volpe and Bear (2002) also had a peer counselor component in the postpartum period. The findings of the current study on factors that influence breastfeeding initiation would encourage the use of breastfeeding peers during the adolescent mother's pregnancy and in the immediate postpartum period.

Community setting. Thirty-nine adolescent mothers who had decided to breastfeed, or were undecided about their breastfeeding decision, felt that they did not know enough about breastfeeding. Breastfeeding educational sessions provided by knowledgeable health professionals for young adolescents (both male and female) in schools, as described in the study by Martens (2001), may increase knowledge about breastfeeding and thereby influence breastfeeding attitudes. School and community – based educational sessions on the benefits of breastfeeding are urgently needed.

The importance of developing positive breastfeeding attitudes also encourages the early referral of expectant adolescents to community-based public health nurses for ongoing follow-up, support and breastfeeding education. Currently, efforts are being made to refer adolescent mothers to public health nurses after their first medical appointment instead of after the delivery of their infants. These early referral practices should be continued.

Strategies to Enhance Breastfeeding Duration

Mothers who smoke, have low postnatal confidence and plan to breastfeed for less than three months are less likely to breastfeed their infants to the 28-day follow-up contact. A very supportive health professional was also found to be a significant factor in breastfeeding duration. The following discussion examines intervention strategies in both community and institutional settings that may encourage the duration of breastfeeding for adolescent mothers.

Institutional setting. In the immediate postpartum, adolescent mothers will require expert breastfeeding information and support to promote breastfeeding confidence and to ensure that their infants are correctly positioned at the breast and have a proper latch at each breastfeeding session. As with adult mothers, sore nipples and perceptions of insufficient milk supply were the similar responses provided by the adolescent mothers for terminating breastfeeding. These young mothers and their supportive peers and family members may need additional breastfeeding support while still in the hospital setting.

Prior to hospital discharge, nursing staff are also encouraged to discuss the mothers' intended duration of breastfeeding, emphasize the benefits of breastfeeding for at least the first six months postpartum and problem solve with the mothers on how they can breastfeed their infants for the recommended duration.

Community setting. In order to provide continuous breastfeeding support to adolescent mothers after hospital discharge, strategies to promote very early public health nurse contact, perhaps even while the mother is still in the hospital, should be considered. This early postpartum contact will hopefully strengthen the relationship between the adolescent mother and the public health nurse and ensure that breastfeeding concerns are

addressed before these young mothers feel frustrated and discouraged with their breastfeeding efforts.

The Kaplan Meier curves on breastfeeding survival rates provide information on some critical periods when adolescent mothers are more likely to cease breastfeeding. An examination of these critical times (ie. two-week growth spurt) will assist public health nurses in developing intervention strategies to help the mothers cope with these perceived difficult situations.

The tenth step of the Baby Friendly Hospital Initiative encourages the establishment of breastfeeding support groups and the referral of all breastfeeding mothers to these support groups upon hospital discharge (WHO/UNICEF, 1992). Recently, community-based breastfeeding support groups and clinics have been established throughout the city of Winnipeg to enhance breastfeeding duration rates. However, these supports are frequently accessed by adult mothers who have the confidence and resources to seek assistance. The significant findings of the current research study lend support to the development of breastfeeding support groups which address the unique developmental stage of adolescent mothers. Culturally sensitive breastfeeding support groups which address the needs of First Nations mothers may also influence their breastfeeding duration rates.

Finally, health professionals cannot ignore the significant and detrimental influence of smoking on breastfeeding duration. In this study, smoking was found to be a significant negative influence on breastfeeding duration. Smoking cessation interventions that continue to target young people and adolescent mothers in particular are urgently needed. Additionally, interventions that prevent postpartum relapse among

those adolescent mothers who quit smoking during pregnancy are also required. Accurate information about smoking and breastfeeding also need to be provided to these young mothers. Prenatally, some of the adolescent mothers seemed surprised that they did not have to cease breastfeeding their infants if they were still smoking. Smoking was also given as a reason for the early cessation of breastfeeding at the 28-day follow-up contact.

In summary, the findings of this study on adolescent mothers' breastfeeding attitudes and confidence on breastfeeding initiation and duration lend support for enhancing breastfeeding intervention strategies in both the institutional and community settings. The early identification of mothers who have lower breastfeeding attitudes prenatally provides opportunities for clinic health professionals and community public health nurses to offer breastfeeding education and support. Similarly, adolescent mothers who are identified as having lower breastfeeding confidence in the immediate postpartum hospital stay should receive additional breastfeeding support from hospital nursing staff and lactation consultants.

Upon or even prior to hospital discharge, adolescent mothers should be referred to community public health nurses for prompt breastfeeding supportive interventions. Additionally, the study findings support the referral of adolescent mothers to community-based breastfeeding support groups that are both culturally sensitive and address the unique developmental stage of adolescent mothers.

Recommendations for Future Research

The findings of this study were based on questionnaire completion by adolescent mothers who had either decided to breastfeed their infants, or who were undecided about

their infant feeding method. Adolescent mothers who had chosen to formula feed their infants were not included in the study. Future research should explore the reasons these mothers had chosen not to breastfeed their infants. The results of such a study would greatly assist in the development of breastfeeding intervention strategies.

Additionally, this study followed breastfeeding adolescent mothers to 28-days postpartum. Future research should consider following adolescent mothers to the six months minimum recommendation for breastfeeding to obtain a more accurate breastfeeding duration rate for this population.

In this study, 62 percent of the adolescent mothers had identified themselves as being First Nations. A replication of this study with a larger sample size and with a more ethnically diverse sample of adolescent mothers may determine different or additional factors that influence breastfeeding initiation and duration. A comparison of “off reserve” and “on reserve” First Nations adolescent mothers would determine if there are differences in the results obtained from the First Nations mothers in this study.

Research studies on breastfeeding and adolescent mothers are relatively sparse compared to the numerous breastfeeding studies conducted on adult mothers. More qualitative research studies on adolescent mothers’ infant feeding decisions would provide a further understanding of the complexities of factors that influence their infant feeding decisions. In-depth interviews with mothers who initiated breastfeeding and then ceased before the 28-day follow-up contact would provide health professionals with some important insights when developing community-based intervention strategies.

Further research is needed to determine the influence of prenatal interventions on strengthening breastfeeding attitudes among adolescent mothers. Studies need to

determine whether interventions to modify breastfeeding attitudes will result in higher breastfeeding initiation and duration rates among adolescent mothers. Future research should also be conducted to evaluate the effect of educational sessions provided by health professionals and peers on breastfeeding outcomes among adolescent mothers.

Evaluation research of the intervention strategies suggested above would determine which strategies are most effective in influencing both breastfeeding initiation and duration with adolescent mothers. The use of peer supports, breastfeeding support groups specifically for adolescent mothers, involvement of supportive family and friends, and culturally sensitive interventions and supports to meet the needs of the First Nations mothers in this study need to be developed, implemented and evaluated to determine their effectiveness.

Conclusion

National nutritional guidelines outline the important health benefits of breastfeeding for both mothers and their infants. Although these guidelines recommend that mothers breastfeed their infants for at least the first six months of an infants' life, adolescent mothers frequently choose not initiate breastfeeding or cease breastfeeding in the first few weeks postpartum. Research studies on modifiable factors that influence adolescent mothers' infant feeding decisions will assist health professionals in developing breastfeeding enhancing strategies for this population of young mothers.

The purpose of this study was to examine the influence of the modifiable factors of breastfeeding attitudes and confidence on adolescent mothers' breastfeeding initiation and duration. Statistically significant findings were reported concerning the relationship between breastfeeding attitudes and confidence on both breastfeeding initiation and

duration. Additional significant factors influencing breastfeeding initiation and duration were also reported.

Significantly more adolescent mothers with higher prenatal breastfeeding attitude and both prenatal and postnatal confidence scores initiated breastfeeding. Adolescent mothers were also significantly more likely to initiate breastfeeding if they were non First Nations, students or employed, breastfed as infants, had a supportive partner and planned to breastfeed for more than three months

In terms of breastfeeding duration, mothers with higher prenatal breastfeeding attitude and higher prenatal and postnatal confidence scores were more likely to breastfeed their infants longer (up to the 28-day follow-up contact) than mothers with lower scores. Additional predictor factors that were found to be statistically significant in positively influencing breastfeeding duration were: having a high postnatal breastfeeding confidence, being a non-smoker, and having a planned duration of breastfeeding for more than three months.

The Breastfeeding Self-Efficacy Theory provided a very important organizing framework for this study. The study results are consistent with the theory, as the sources of breastfeeding information influence breastfeeding attitudes and breastfeeding confidence. Adolescent mothers with higher prenatal attitude scores and higher postnatal breastfeeding confidence scores are more likely to initiate breastfeeding and breastfeed their infants for a longer duration.

The study findings also have important implications for health professionals who provide prenatal and postnatal care for these young mothers and their infants. Health professionals are strongly encouraged to conduct further research studies on adolescent

mothers' infant feeding decisions. They are also encouraged to develop, implement and evaluate breastfeeding enhancing strategies for this population of young mothers in both clinical and community settings.

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Appendix A

Ethics Approval Letter



UNIVERSITY
OF MANITOBA

RESEARCH SERVICES &
PROGRAMS
Office of the Vice-President (Research)

244 Engineering Bldg.
Winnipeg, MB R3T 5V6
Telephone: (204) 474-8418
Fax: (204) 261-0325
www.umanitoba.ca/research

APPROVAL CERTIFICATE

13 September 2004

TO: Marion Mossman
Principal Investigator

FROM: Stan Straw, Chair
Education/Nursing Research Ethics Board (ENREB)

Re: Protocol #E2004:072
**"The Influence of Adolescent Mothers' Breastfeeding Confidence
and Attitudes on Breastfeeding Initiation and Duration"**

Please be advised that your above-referenced protocol has received human ethics approval by the **Education/Nursing Research Ethics Board**, which is organized and operates according to the Tri-Council Policy Statement. This approval is valid for one year only.

Any significant changes of the protocol and/or informed consent form should be reported to the Human Ethics Secretariat in advance of implementation of such changes.

Please note that, if you have received multi-year funding for this research, responsibility lies with you to apply for and obtain Renewal Approval at the expiry of the initial one-year approval; otherwise the account will be locked.

Get to know Research ...at your University.

Appendix B

Ethics Extension Approval Letter



UNIVERSITY
OF MANITOBA

OFFICE OF RESEARCH
SERVICES
Office of the Vice-President (Research)

244 Engineering Building
Winnipeg, MB R3T 5V6
Telephone: (204) 474-8418
Fax: (204) 261-0325
www.umanitoba.ca/research

RENEWAL APPROVAL

02 September 2005

TO: Marion Mossman
Principal Investigator

FROM: Stan Straw, Chair
Education/Nursing Research Ethics Board (ENREB)

Re: Protocol #E2004:072
"The Influence of Adolescent Mothers' Breastfeeding Confidence
and Attitudes on Breastfeeding Initiation and Duration"

Please be advised that your above-referenced protocol has received approval for renewal by the **Education/Nursing Research Ethics Board**. This approval is valid for one year only.

Any significant changes of the protocol and/or informed consent form should be reported to the Human Ethics Secretariat in advance of implementation of such changes.

Appendix C

Hospital Access Approval Letter



OFFICE OF THE DIRECTOR OF RESEARCH

M57 - 820 SHERBROOK STREET
WINNIPEG, MANITOBA R3A 1R9DIAL DIRECT (204) 787-4514
FAX (204) 787-4547

October 1, 2004

Ms Marion Mossman

R.

Dear Ms Mossman

RE: THE INFLUENCE OF ADOLESCENT MOTHERS' BREASTFEEDING
CONFIDENCE AND ATTITUDES ON BREASTFEEDING INITIATION AND
DURATION.

ETHICS #: E2004:072 RIC #: RI04:139

The above-named protocol, has been evaluated and approved by the HSC Research Impact
Committee.

The Department of Research wishes you much success with your study.

Sincerely

Ms Karen Shaw
Research Protocol Officer
Health Sciences Centrecc: Director of Research
Ancillary Services, Finance Division

Appendix D

Healthy Start for Mom & Me Access Approval Letter

2nd Floor - 400 Edmonton St., Winnipeg, MB R3B 2M2



Phone (204) 949-5350 Fax (204) 949-4800

Marion Mossman
Winnipeg Regional Health Authority
601 Aikins St.
Winnipeg, MB R2W 4J5

April 25, 2005.

Dear Marion:

Healthy Start for Mom & Me is pleased to support your Masters thesis research study "The Influence of Adolescent Mothers' Breastfeeding Confidence and Attitudes on Breastfeeding Initiation and Duration" by recruiting pregnant teens who indicate interest in being contacted for this purpose. Our outreach workers have started letting girls now about it.

We wish you the best of luck in reaching the number of girls you hope to. We will be interested to receive a copy of your summary results. Thanks Marion!

Sincerely

Gail Wylie
Executive Director

Appendix E

Letter concerning outline of study
(University of Manitoba letterhead)

Obstetricians, Unit Manager, Nurses

Antenatal Clinic

Women's Hospital

Health Sciences Centre

My name is Marion Mossman. I am currently in the process of completing my thesis for the Master of Nursing program at the University of Manitoba. The working title of my thesis is "The influence of adolescent mothers' breastfeeding confidence and attitudes on breastfeeding initiation and duration". Manitoba has the third highest teen pregnancy rate in Canada. The social and economic disadvantages experienced by many adolescent mothers place their infants at a significantly greater risk for infant mortality, morbidity and developmental delays. The importance of breastfeeding in reducing infant morbidity and enhancing an infant's growth and development are widely documented in the literature on infant nutrition. Yet many adolescent mothers often choose not to breastfeed, or give up breastfeeding during the first few weeks postpartum.

The purpose of this study is to examine the influence of an adolescent mother's existing attitudes concerning breastfeeding and her breastfeeding confidence levels on the initiation and duration of breastfeeding. Research in this area will assist in identifying mothers who are at greatest risk for experiencing breastfeeding difficulties and prematurely discontinuing breastfeeding their infants. Study results may facilitate the development of breastfeeding promotion and enhancing strategies for the adolescent

population. The study will also increase health professionals' knowledge concerning the factors that influence an adolescent mother's infant feeding decisions.

Adolescent mothers between the ages of 15 and 19 years will be recruited at the Adolescent Prenatal Clinic and at an Adult Prenatal Clinic at Women's Hospital. The mothers who meet the inclusion criteria will be asked to complete three very brief questionnaires: The Breastfeeding Attitudes questionnaire, The Breastfeeding Self-Efficacy Scale – Short Form, and a Demographic Profile. The adolescent mothers will be contacted by phone within three to five days postpartum and the Breastfeeding Self-Efficacy Scale –Short Form will be readministered. Open ended questions concerning their breastfeeding experiences and reasons for continuing or ceasing breastfeeding will also be asked during this initial postpartum contact. Those mothers who are still breastfeeding their infants at the first telephone contact will receive a second follow-up phone contact by the researcher or research assistant at four weeks postpartum to determine whether they are still breastfeeding, and their reasons for continuing or terminating breastfeeding. Some of the adolescent mothers who have volunteered to participate in this study may be your patients.

This study has been approved by the Education and Nursing Research Ethics Board at the University of Manitoba. Approval for access from the Department of Research at Health Sciences Centre has also been received.

If you have any questions or wish to discuss this further, you may contact my research advisor Dr. Maureen Heaman at 474-6222 at the Faculty of Nursing, University of Manitoba or myself at . Marion Mossman BScN, MEd, IBCLC

Appendix F
Research Eligibility Criteria

Inclusion Criteria

To control for the effects of intervening extraneous variables, a convenience sample of English speaking expectant adolescents between the ages of 15 and 19 years and who are more than 34 weeks pregnant will be considered eligible for the study. The adolescent mothers will have indicated that they plan to breastfeed their infant or are still undecided concerning their infant feeding method. The mothers will also require a telephone contact number.

Exclusion Criteria

Adolescents who have indicated they intend to exclusively formula feed their infants will be excluded from the study. Adolescent mothers who have a high-risk pregnancy such as: the presence of a chronic or serious health condition, Pregnancy Induced Hypertension, Insulin Dependent Gestational Diabetes, and multiple pregnancy, which could interfere with breastfeeding, will also be excluded from the study. Additionally those adolescent mothers who are planning to place their infant for adoption, have been given a "Birth Alert" notice, or whose infant may be apprehended by Child and Family Services will not be included in this study. Delivery of a preterm infant (less than 37 weeks gestation) or of an infant who is admitted to the NICU, or has congenital abnormalities (birth defects) also precludes further participation in this study.

Appendix G

Invitation to Participate

Sample Script for Nursing Staff

Marion Mossman is a nurse and a Master of Nursing student at the University of Manitoba. She is doing a study on teen mothers' attitudes and confidence in breastfeeding. She is interested in learning about your thoughts and feelings about breastfeeding. Marion or her research assistant would like to talk to you about her study while you are waiting for your doctor's appointment in the clinic. After she explains the study, you can then decide whether you might be interested in participating.

Appendix H

Explanation of the Study

Page 1

My name is Marion Mossman. I am a Master of Nursing student at the University of Manitoba, Faculty of Nursing. I have a special interest in learning more about teen mothers' thoughts and feelings about breastfeeding. My study is about teen mothers' breastfeeding attitudes and breastfeeding confidence. Teen mothers between the ages of 15 and 19 years, who are attending prenatal clinics at Women's Hospital are being asked to participate in the study.

If you agree to participate in this study, it will involve filling out three very short questionnaires. If you wish, I, or my research assistant can help by reading the questions to you. This should take no more than about 15 minutes of your time. There are no right or wrong answers to any of the questions. Two of the questionnaires will help me learn more about your thoughts, feelings and confidence in breastfeeding your baby. The third questionnaire will provide information about your background such as: age, education, family support and breastfeeding experiences. A few days after your baby's birth I, or my research assistant will phone you and ask you the same questions on the breastfeeding confidence questionnaire again, along with some other questions about your baby's delivery and your personal breastfeeding experience. This will take about ten minutes. If you are still breastfeeding your baby, I, or my research assistant will phone you four weeks later to ask you how well the breastfeeding is going.

Please remember that your name will not be on any of the questionnaires, and the information you provide will be kept in strict confidence. Only I, as the researcher, and my research assistant, will have your name and information that may identify you. All the

unnamed questionnaires will be kept in a locked filing cabinet and will only be available to myself, my research assistant, a statistician and my research supervisor: Dr. Maureen Heaman, professor at the Faculty of Nursing University of Manitoba. The results of this study will be published as a master's thesis and possibly in a journal article.

Although all information you provide is confidential, if you reveal issues related to child abuse I am required by law to report the abuse. I do not believe that there is any risk to you for participating in this study, since you can choose to not answer any question which may cause you discomfort. Should you have any questions or concerns about breastfeeding I will refer you to the appropriate resource. You will receive a small gift (movie pass) in appreciation for your time.

Your participation in this study is completely voluntary. You may choose to withdraw at any time during the study. Once you decide to participate in the study, even if you agree to answer the questionnaires prenatally you may choose to decline answering the questions during the postnatal contacts. Your withdrawal from the study or your decision to decline from answering any of the questions at any time will not affect your prenatal or postnatal care or the receipt of the gift. The information you provide for this study will help health professionals understand more about how teen mothers think and feel about breastfeeding. They can then be better prepared to help young mothers breastfeed their babies.

You may also benefit from this study by having an opportunity to share your own personal thoughts and feelings about how you plan to feed your baby. You may contact me at . You may ask me questions about the study at any time. Thank you very much for your time and co-operation. Marion Mossman BScN, MEd. IBCLC

Appendix I

Consent to Participate

Page 1

(To be typed on University of Manitoba letterhead)

Research Project Title: The Influence of Adolescent Mothers' Breastfeeding Confidence
and Attitudes on Breastfeeding Initiation and Duration.

Researcher: Marion Mossman

Purpose

I, _____ agree to participate in a study by Marion Mossman, a Master of Nursing student at the University of Manitoba, that looks at teen mothers' breastfeeding confidence and their attitudes toward breastfeeding. My answers to the questions will contribute to a greater understanding of how teen mothers think and feel about breastfeeding.

Procedure

I will be asked to provide my answers to three short questionnaires which will take about 15 minutes to complete. I understand that I will be asked questions about how I think and feel about breastfeeding, and how confident I feel about breastfeeding my baby. I understand that Marion Mossman or her research assistant will be notified when I have delivered my baby and that I will be contacted by Marion Mossman or her research assistant during the first week after my baby's birth to answer questions about breastfeeding confidence again. Marion Mossman or her research assistant may also contact me when my baby is four weeks old to see how I am managing with breastfeeding my baby.

Risks and Benefits

I do not believe there is any risk to me in participating in this study. I understand that if I am not comfortable with any question, I may choose not to answer it. My name will not be written on the questionnaires, and only Marion Mossman or her research assistant will be able to contact me. The list of names, addresses and telephone numbers of study participants will be kept separate from the questionnaires, and this list will be destroyed after completion of the study.

Marion Mossman, her research assistant, her advisor Dr. Maureen Heaman and a statistician who are directly involved in this study will have access to the information provided in the questionnaires. All the completed questionnaires will be analyzed collectively and stored in a locked drawer, so that both my identity and confidentiality are maintained. However, I am aware that if child abuse is disclosed, Marion Mossman or her research assistant is obligated by law to report the abuse.

I understand that the study may benefit me, by giving me the opportunity to share how I think and feel about breastfeeding my baby. The information I provide will help those who work with teen mothers understand more about how to help teen mothers breastfeed their babies. I am aware that the information from the data analysis will be used in presentations, or may be published in journals. I also understand that I will receive a small gift (movie pass) in appreciation for my time in participating in this study.

Questions and Concerns

I understand that this research study has been approved by the Education/Nursing Research Ethics Board. I have received a copy of this consent form and a written explanation of the study. However, if I have other questions, Marion Mossman may be contacted _____ at any point in the study. I may also contact her advisor Dr. Maureen Heaman (204) 474-6222 at the University of Manitoba. I understand that I may report any concerns about a procedure in this study to the Human Ethics Secretariat (474-7122).

Rights

I have read the description of the study, and my questions have been satisfactorily answered. My signature on this form indicates that I am informed and that I agree to participate as a volunteer subject in this study. I understand that my decision to participate is voluntary and that I may withdraw from the study or decline to answer any question at any time. Even though I agree to answer questions during the prenatal period, I may choose to decline to answer questions during the postnatal contacts. My decision to withdraw from the study at any time, or to decline to respond to any questions on the questionnaires either prenatally or postnatally will not have any effect on my prenatal care, my postpartum care or on receiving the movie pass.

Participant's Signature

Date

Researcher's Signature

Date

I would like a summary of the results of this study: Yes No

If you have circled "yes", please mail to:

Name: _____

Address: _____

Postal Code: _____

Appendix J

Breastfeeding Self-Efficacy Scale - Short-Form

Breastfeeding Self-Efficacy Scale - Short-Form Participant Identification # _____

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 = sometimes confident
 4 = confident
 5 = very confident

		Not at all Confident			Very Confident	
1	I can always determine that my baby is getting enough milk	1	2	3	4	5
2.	I can always successfully cope with breastfeeding like I have other challenging tasks	1	2	3	4	5
3.	I can always breastfeed my baby without using formula as a supplement.	1	2	3	4	5
4.	I can always ensure that my baby is properly latched on for the whole feeding	1	2	3	4	5
5.	I can always manage the breastfeeding situation to my satisfaction	1	2	3	4	5
6.	I can always manage to breastfeed even if my baby is crying.	1	2	3	4	5
7.	I can always keep wanting to breastfeed.	1	2	3	4	5
8.	I can always comfortably breastfeed with my family members present	1	2	3	4	5
9.	I can always be satisfied with my breastfeeding experience.	1	2	3	4	5
10.	I can always deal with the fact that breastfeeding can be time consuming.	1	2	3	4	5
11.	I can always finish feeding my baby on one breast before switching to the other breast.	1	2	3	4	5
12.	I can always continue to breastfeed my baby for every feeding.	1	2	3	4	5
13.	I can always manage to keep up with my baby's breastfeeding demands.	1	2	3	4	5
14.	I can always tell when my baby is finished breastfeeding.	1	2	3	4	5

Appendix K
Breastfeeding Attitude Questionnaire

Breastfeeding Attitude Questionnaire

Participant Identification # _____

Please indicate to what extent you agree or disagree with the following statements. Circle the number.

1 = Strongly Disagree 4 = Agree
 2 = Disagree 5 = Strongly Agree
 3 = Unsure

Items	Strongly Disagree	Disagree	Unsure	Agree	Strongly Agree
1. Breastfeeding is old-fashioned.*	1	2	3	4	5
2. Breastfeeding is the healthiest feeding for the baby.	1	2	3	4	5
3. Breastfeeding means that no one else can feed the baby. *	1	2	3	4	5
4. Breastfeeding means that I have to eat differently. *	1	2	3	4	5
5. I think breastfeeding is good for my baby.	1	2	3	4	5
6. I would feel embarrassed if someone saw me breastfeed. *	1	2	3	4	5
7. Breastfeeding makes your breasts sag. *	1	2	3	4	5
8. Breastfeeding makes the baby too close to me. *	1	2	3	4	5
9. Breastfeeding means I can never give the baby a bottle. *	1	2	3	4	5
10. I think breastfeeding is nasty. *	1	2	3	4	5
11. I have heard from someone who breastfed that breastfeeding is good.	1	2	3	4	5
12. I have heard from someone who breastfed that breastfeeding hurts.*	1	2	3	4	5
13. I don't think I know enough about breastfeeding. *	1	2	3	4	5
14. My boyfriend wants me to breastfeed.	1	2	3	4	5
15. My mother wants me to bottle feed.*	1	2	3	4	5
16. My friends think breastfeeding is embarrassing. *	1	2	3	4	5
17. I am tired of hearing about breastfeeding. *	1	2	3	4	5
18. Breastfeeding means I can't go back to school or work *	1	2	3	4	5

© Society for Adolescent Medicine * Indicates items that are reverse scored.

Appendix L
Demographic and Breastfeeding Information

Date: _____ Participant Identification # _____ Page 1

Demographic and Breastfeeding Information

1. How old are you in years? _____
2. Which statement applies to your current living situation?
 1. Living alone _____
 2. Living with parent(s) _____
 3. Living with boyfriend _____
 4. Living with parent(s) and boyfriend _____
 5. Living with boyfriend's family _____
 6. Other (specify) _____
3. Are you attending school?
 1. Yes _____
 2. No _____
4. What is the highest grade you have completed at school?

1 2 3 4 5 6 7 8 9 10 11 12

Years of post secondary education: 1 2
5. What is your racial/ethnic background?
 1. White _____
 2. First Nations _____
 3. Metis _____
 4. Asian _____
 5. Black _____
 6. Latino (Hispanic) _____
 6. Other (specify) _____

Date: _____ Participant Identification # _____ Page 2

Demographic and Breastfeeding Information

6. What is your occupation?

1. Student _____
2. Clerical _____
3. Retail _____
4. Unemployed (EI) _____
5. Social Assistance _____
6. Other _____

7. How many children do you have?

0. None _____ 1. One _____ 2. Two _____ 3. Three _____

1. Were you breastfed as an infant?

1. Yes _____ 2. No _____ 3. Do Not Know _____

2. Have you breastfed before?

1. Yes _____ 2. No _____

If yes, please indicate how long you breastfed each child in days, weeks, or months.

1st child _____ 2nd Child _____ 3rd Child _____

3. Have you taken any prenatal classes?

1. Yes _____ (How many: _____) 2. No _____

11. Do you smoke?

1. Yes _____ (How many cigarettes per day?) _____ 2. No _____

Date: _____ Participant Identification # _____ Page 3

Demographic and Breastfeeding Information

12. How supportive are they of your decision to breastfeed?

Partner: 1. Very Supportive ___ 2. Somewhat Supportive ___ 3. Not Supportive ___
4. Not Applicable ___

Mother: 1. Very Supportive ___ 2. Somewhat Supportive ___ 3. Not Supportive ___
4. Not Applicable ___

Friends: 1. Very Supportive ___ 2. Somewhat Supportive ___ 3. Not Supportive ___
4. Not Applicable ___

Health

Professionals: 1. Very Supportive ___ 2. Somewhat Supportive ___
3. Not Supportive ___ 4. Not Applicable ___

13. How long do you plan to breastfeed your baby?

___ Weeks ___ Months ___ Years

14. When did you decide to breastfeed your baby?

1. Before Pregnancy ___

2. First Trimester ___

3. Second Trimester ___

4. Third Trimester ___

5. Still Undecided ___

15. Please share your reason(s) for deciding or thinking about breastfeeding your baby.

Appendix M

Postnatal Contact (3 to 5 days Postpartum)

Date: _____

Participant Identification # _____

Postnatal Contact (3 to 5 days Postpartum)

Obstetrical Data:

1. Date of delivery. _____ (year, month, day)
2. Gestation _____ (weeks)
3. Duration of Labour. _____ (hours)
4. Type of Delivery: Circle:
 1.SVD 2. Forceps 3. Vacuum 4. Elective C/S 5. Emergency C/S
5. Epidural Anesthesia: 1. Yes _____ 2. No _____

Data on Infant:

1. Sex of infant: 1. Male _____ 2. Female _____
2. Birthweight: _____ lbs. _____ oz. (grams _____)

Data on Breastfeeding Initiation and Duration

1. Did you try to breastfeed your baby the first three days after delivery?

1. Yes _____ 2. No _____

2. How many days did you or have you been breastfeeding?

1. One _____ 2. Two _____ 3. Three _____ 4. Four _____ 5. Five _____

3. Which situation applies to you?

1. Exclusive breastfeeding _____
2. High breastfeeding _____
3. Partial breastfeeding _____
4. Token breastfeeding _____

4. Who is supporting your decision to breastfeed? (Choose as many as apply)

1. Mother _____
2. Baby's Father _____
3. Boyfriend _____
4. Friends _____
5. Public Health Nurse _____
6. Doctor _____
7. Other (specify) _____

5. If you are no longer breastfeeding, please share your reasons for quitting.

Appendix N

Follow-up Contact at Four Weeks Postpartum

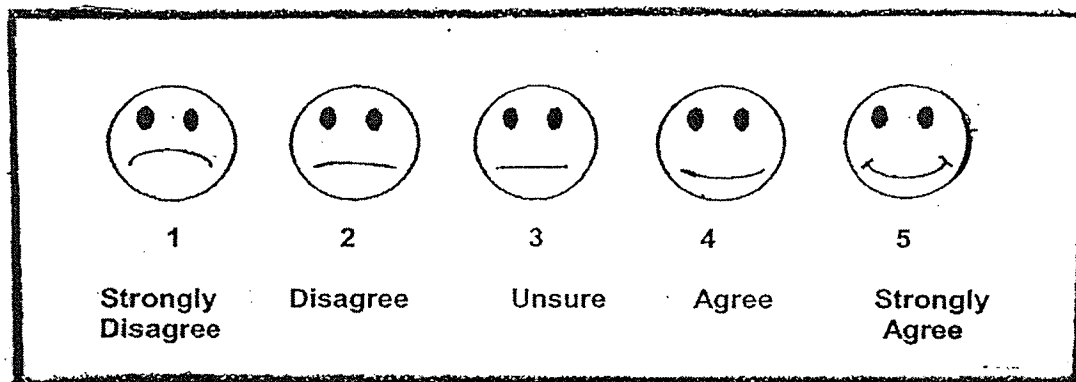
Date: _____

Participant Identification #

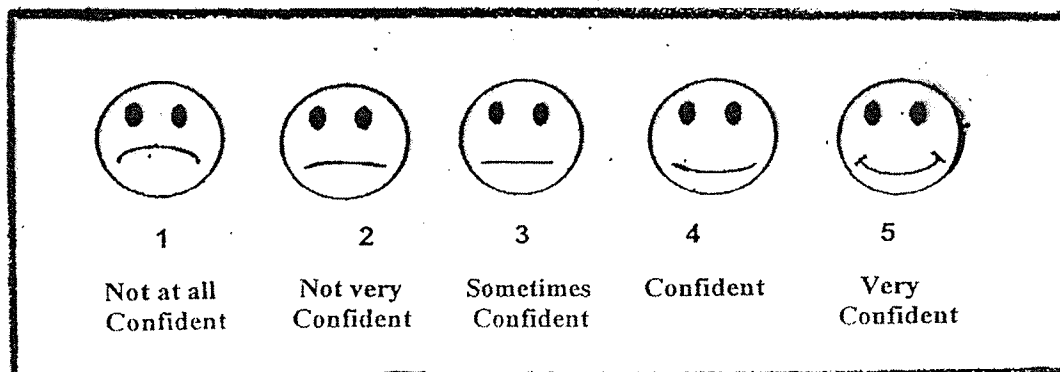
Follow-up Contact at Four Weeks Postpartum

1. Are you still breastfeeding your baby? 1. Yes ____ 2. No ____
2. If you are no longer breastfeeding, how long did you breastfeed your baby?
_____ Days
3. If you are breastfeeding, which situation applies to you?
 1. Exclusive breastfeeding _____
 2. High breastfeeding _____
 3. Partial breastfeeding _____
 4. Token breastfeeding _____
4. If you are breastfeeding, how long do you plan to breastfeed your baby?
____ Days ____ Weeks ____ Months ____ Years ____ Unsure
5. Who is supporting your decision to breastfeed? (Choose as many as apply)
 1. Mother _____
 2. Infant's Father _____
 3. Boyfriend _____
 4. Friends _____
 5. Public Health Nurse _____
 6. Doctor _____
 7. No one _____
 8. Other _____
6. If you are no longer breastfeeding, please share your reasons for quitting.

Appendix O

Response Cards for Breastfeeding Attitude Questionnaire
and Breastfeeding Self-Efficacy Scale – Short Form

Breastfeeding Attitude Questionnaire



Breastfeeding Self-Efficacy Scale