

PRENATAL BREASTFEEDING EDUCATION:  
AN INTERVENTION FOR PREGNANT IMMIGRANT HISPANIC WOMEN

By

Jane M. Schlickau

A DISSERTATION

Presented to the Faculty of  
The Graduate College in the University of Nebraska  
In Partial Fulfillment of the Requirements  
For the Degree of Doctor of Philosophy

College of Nursing

Under the Supervision of Professor Margaret E. Wilson

Medical Center  
Omaha, Nebraska

June, 2005

TITLE

Prenatal Breastfeeding Education:

An Intervention for Pregnant Immigrant Hispanic Women .

BY

Jane M. Schlickau .

APPROVED

DATE

<u>Dr. Margaret E. Wilson .</u>	<u>June 21, 2005 .</u>
<u>Dr. Bernice Yates .</u>	<u>June 21, 2005 .</u>
<u>Dr. James Anderson .</u>	<u>June 21, 2005 .</u>
<u>Dr. Martha Foxall .</u>	<u>June 21, 2005 .</u>
<u>Dr. Jan Riordan, ex officio .</u>	<u>June 21, 2005 .</u>

SUPERVISORY COMMITTEE

GRADUATE COLLEGE

UNIVERSITY OF NEBRASKA

PRENATAL BREASTFEEDING EDUCATION:  
AN INTERVENTION FOR PREGNANT IMMIGRANT HISPANIC WOMEN

Jane Schlickau, Ph.D.

University of Nebraska Medical Center, 2005

Advisor: Margaret E. (Peggy) Wilson, Ph.D., C.P.N.P.

This experimental study tested a one-to-one Prenatal Breastfeeding Education (PBE) intervention for primigravid immigrant Hispanic women who received prenatal care at a public health clinic. The study framework was derived from the Health Promotion Model. Specific aims were: (a) to test if the intervention increased breastfeeding initiation, (b) to test if the intervention increased breastfeeding duration and (c) to discover if breastfeeding self-efficacy mediates the effect of the intervention on breastfeeding initiation and duration.

Participants ( $n = 86$ ) were randomly assigned to receive either the PBE teaching session in addition to “standard of care” at the prenatal clinic (intervention group) or to receive “standard of care” only (control group). Measures were: breastfeeding self-efficacy (baseline, two weeks post-enrollment, and two weeks postpartum), breastfeeding initiation at two weeks postpartum, and breastfeeding duration at six weeks postpartum. Pre-post difference scores, Chi-square and Kaplan-Meier Log Rank were used.

Breastfeeding initiation rates were not significantly different between intervention and control groups. Estimated mean breastfeeding duration, assessed at 42 days, was significantly higher by 20 days ( $t [78] = 5.63, p = .00$ ) for those in the intervention group. Mean breastfeeding self-efficacy scores were 6 points higher in the intervention group than in the control ( $X^2 [26] = 38.77, p = .05$ ). By 42 days, an estimated 67% of those in the intervention group continued to breastfeed, while an estimated 13% of those in the control group continued to breastfeed. Results of the Kaplan-Meier Log Rank Test showed the difference between the estimated breastfeeding survival time (20 days) was significant ( $LR [1, N = 80] = 27.19, p = .00$ ).

Hispanic women are at risk for choosing to bottle-feed rather than breastfeed and have not previously been assessed for breastfeeding self-efficacy change. The intervention was qualitatively derived and provides culturally appropriate content. Self-efficacy and commitment to a plan of action were key aspects of the intervention.

## ACKNOWLEDGEMENTS

I would like to acknowledge my funding sources. Two Sigma Theta Tau Research Awards from the Epsilon Gamma Chapter-at-Large at Wichita State University provided financial assistance for Spanish language interpreters. I received a graduate student research award from the Transcultural Nursing Society which assisted with the purchase of teaching supplies. The Nancy Melvin Scholarship from University of Nebraska Medical Center College of Nursing provided financial assistance with supplies and translation services for the completion of the research intervention.

I am grateful to Dr. Margaret E. (Peggy) Wilson, my program advisor and doctoral committee chairperson. She has guided my doctoral study program with caring counsel and scientific expertise. I am thankful for the support and contribution from additional members of my doctoral committee: Dr. Bernice Yates, Dr. Martha Foxall, Dr. Jim Anderson, and Dr. Jan Riordan. These committee members were helpful at all times with technical expertise, referral to funding sources, evaluation of writing, interpretation of statistics, teaching and learning and guiding my plan of study. I am appreciative of their participation, mentoring and support throughout my doctoral studies.

The support of Southwestern College was extraordinary. Salary support (though release time for doctoral study) and tuition assistance made doctoral study feasible for me. Specifically I would like to thank Dr. Martha Butler, Director of the Nursing Department; Dr. David Nichols (retired) Dean of Faculty; and Dr. Andy Sheppard, Dean of Faculty. Ms. Jackie Berryman, Ms. Phyllis Shultz, Dr. Sharon Shetlar, Ms. Barbara Gilbert, and Ms. Melinda Wilson are faculty colleagues who have been remarkably supportive and I am thankful to them.

I would like to thank the staff and management of the Sedgwick County Department of Public Health for the opportunity to work with their prenatal clients in the administration of the intervention. Stacy Blankenship, Pamela Martin, Wines Mavia, Jeana Agwu, Norma Ozaeta, Erika Aguilar, Sandy Robinson and Laura Solorzano welcomed me into their clinic setting. I am especially grateful to Adela Rojas for her competence in providing Spanish language translation and interpretation.

Finally, I would like to recognize my husband, John for his love, patience, and support. My children and their spouses; Jessica and Chris, Gabe and Emily have also provided encouragement. I am grateful for our life together as a family.

List of Tables

TABLE	Page
1 Summary of Data Analysis of Preliminary Study 2.....	37
2 PBE Content Summary.....	48
3 Table 3. Means, Standard Deviations, t-tests, and Significance for Age, Highest Grade Completed, Years of U.S. Residency, by Group.....	53
4 Demographic Characteristics and $X^2$ Significance between Intervention and Control Groups.....	54
5 T-tests of BSES-SF scores by language by group.....	55
6 Cronbach alpha coefficients for BSES-SF by language and combined languages .....	56
7 Baseline BSES-SF(1) for Intervention and Control Groups.....	56
8 Initiation of Breastfeeding $X^2$ Significance by Group.....	58
9 Mean, Standard Deviations, and <i>t</i> -Tests of Significance for Independent and Dependent Variables by Group.....	58
10 Initiation rates for those with high 2 week post-enrollment (>57) BSES-SF(1) scores..	59
11 Kaplan-Meier Survival Analysis for Breastfeeding Duration by Group.....	60
12 $X^2$ Proportion of Participants with Other Scores or High BSES-SF(1) Scores (2 weeks post-enrollment) by Group.....	61
13 Kaplan-Meier analysis of Participants with High BSES-SF (1) Scores (2 weeks post- enrollment) by Group.....	61
14 Kaplan-Meier Survival Analysis of Duration by Group for Initiators .....	63
15 Estimated Survival Time for Initiators with High Baseline BSES-SF(1) Scores (>51) by Group.....	64
16 Cox Proportional Hazards Model of the Non-Intervention Factors Predictive of Breastfeeding Duration by Group.....	64
17 Cox Proportional Hazards Model of the Non-Intervention Factors Predictive of Breastfeeding Duration by Group.....	65

## List of Figures

FIGURE	Page
1 Conceptual Model for the PBE Intervention.....	3
2 Experimental design of randomized clinical trial.....	35
3 Experimental design of randomized clinical trial.....	40
4 Kaplan-Meier Survival Curve for Intervention and Control Groups.....	60
5 Kaplan-Meier Survival Curve for Intervention and Control Groups including only the cases which Initiated.....	62

## TABLE OF CONTENTS

	Page
LIST OF TABLES.....	v
LIST OF FIGURES.....	vi
CHAPTER 1 – INTRODUCTION TO THE STUDY.....	1
Conceptual Framework.....	3
Summary of Chapter 1.....	6
CHAPTER 2 – LITERATURE REVIEW AND CONCEPTUAL FRAMEWORK.....	7
Health Promotion Model.....	7
Review of Literature.....	8
Individual Characteristics and Experiences.....	8
Behavior Specific Cognitions and Affect.....	10
Behavioral Outcome.....	22
Critique of Literature Related to the Determinants of Breastfeeding within the HPM.....	22
Breastfeeding Self-Efficacy.....	24
Summary of Chapter 2.....	27
CHAPTER 3 – DESIGN AND METHODOLOGY.....	28
Preliminary Studies.....	28
Preliminary Study 1. An Ethnonursing Study of Breastfeeding Among Hispanic Women.....	28
Preliminary Study 2: A Prenatal Breastfeeding Education Intervention to Promote Breastfeeding Duration among Hispanic Women.....	34
Preliminary Study 3.....	38
Summary of Preliminary Studies.....	40
Design of the Dissertation Research.....	40
Participants and Setting.....	41
Measurement of Variables.....	42

Extraneous Variables.....	45
Summary of Design.....	46
Intervention.....	46
Prenatal Breastfeeding Education .....	46
Procedures.....	49
Data Analysis.....	50
Summary of Chapter 3.....	51
CHAPTER 4 – FINDINGS.....	52
Sample Characteristics.....	52
Instrument Equivalence.....	54
Tests of Hypotheses.....	57
Effects of Covariates.....	65
Summary of Findings.....	66
CHAPTER 5: SUMMARY, DISCUSSION, CONCLUSIONS, STRENGTHS AND LIMITATIONS, IMPLICATIONS AND RECOMMENDATIONS.....	67
Summary.....	67
Discussion.....	69
Conclusions.....	71
Strengths and Limitations.....	73
Implications for Practice.....	73
Recommendations for Further Study.....	74
APPENDICES.....	75
A Revised Health Promotion Model.....	75
B Literature support for breastfeeding among Hispanic women grouped by HPM Determinants.....	77
C Hispanic or Latina designation/or country of origin and research designs of Interventions.....	87
D Preliminary Study 2: Two Level PBE Content Summary.....	89

E	Breastfeeding Self-Efficacy Scale-Short Form.....	92
F	Demographic Data.....	95
G	For My Baby: My Infant Feeding Plan.....	97
H	PBE Content, Source of Self-Efficacy Information, Rationale, Relation to Conceptual Framework, and Assurance of Cultural Sensitivity.....	100
I	Handouts.....	105
J	Informed Consent.....	108
	REFERENCES.....	115

## CHAPTER 1

### INTRODUCTION TO THE STUDY

Breastfeeding gives an infant a good nutritional start to life. Breastmilk benefits the child by providing immunological protection against infections and iron deficiency (Giachello, 1994). Breastfeeding rarely causes allergic reactions; and, in areas where economic conditions are poor, it provides an uncontaminated source of nutrition (Hanson, Jahil, & Ashraf, 1991). Because breastfed infants have fewer respiratory infections, mortality rates and childhood medical costs for breastfed infants are lower (Giachello).

The American Academy of Pediatrics Work Group on Breastfeeding (2005) promotes breastfeeding as a normal part of daily life and recommends exclusive breastfeeding as ideal nutrition, sufficient to support optimal growth and development for approximately the first 6 months of life. Further conclusions that focus on the health of the breastfeeding mother include: (a) breastfeeding increases levels of oxytocin, resulting in less postpartum bleeding and more rapid involution; (b) lactating women have an earlier return to pre-pregnant weight; (c) breastfeeding delays resumption of ovulation resulting in increased child spacing; (d) lactation improves postpartum bone remineralization and reduces hip fractures in the postmenopausal period; and (e) lactation reduces the risk of ovarian cancer and pre-menopausal breast cancer.

In 1996, 60.5% of Hispanic women in the United States (U. S.) initiated breastfeeding and 19.5% continued to breastfeed for 6 months (Ryan, Wenjun, & Acosta, 2002). Breastfeeding rates had increased for Hispanic women by 2002 when 78% initiated breastfeeding and 40% continued for 6 months (Ruowei, Darling, Maurice, Barker and Grummer-Strawn, 2005). While the rates are rising, they fall short of Healthy People 2010 goals that 75% of women will initiate breastfeeding, and 50% will continue to breastfeed for 6 months (U. S. Department of Health and Human Services [USDHHS], January, 2000).

Hispanic populations are projected to increase from 12.5% of the U. S. population in 2000 to 17% in 2020 (U. S. Census Bureau, 2000). Persons of Hispanic origin experience an unequal share of poverty and poor health outcomes in the U. S. (Ramirez & De la Cruz, 2002). Therefore breastfeeding for the growing population of Hispanic families is vital to promoting a healthy start to life.

While breastfeeding promotes the health of both infant and mother, it has not been conceptualized in the literature as health-promoting behavior. Nor has Hispanic health been widely viewed within Pender's HPM (Pender, Murdaugh, & Parsons, 2002), even though variables shown to influence breastfeeding for Hispanic women closely parallel the HPM determinants of health-promoting behavior. The long-term objective of this program of research is to promote breastfeeding initiation and encourage breastfeeding duration among Hispanic women. The HPM, a suitable model for promoting breastfeeding, guided the development and implementation of a culturally appropriate prenatal breastfeeding education intervention for immigrant Hispanic women who received prenatal care in a public health clinic in Wichita, Kansas.

#### Significance of the Study

Women in Mexico are reported to initiate breastfeeding at a rate of 72% to 91% and to exclusively breastfeed for 4 to 6 months at reported rates of between 2% to 39% (Bergua, 2003; Gonzalez-Perez, Vega-Lopes, & Cabrera-Pivaral, 1998; Rassin et al., 1994). The generally strong custom of breastfeeding among Hispanic women decreases with acculturation to the U. S. Breastfeeding initiation for recent Mexican immigrants to the U. S. is 53% while the rate among the most acculturated is 36% (Rassin et al.). Because breastfeeding has been shown to be the best method of infant feeding (American Academy of Pediatrics Work Group on Breastfeeding, 2005), health care professionals must understand the factors that increase breastfeeding initiation and duration among Hispanic women.

Culturally appropriate health care is emphasized in the breastfeeding literature (Bottorff & Morse, 1990; Denman-Vitale & Murillo, 1999; Dettwyler & Fishman, 1992; Heinig & Dewey, 1996; Kannan, Carruth, & Skinner, 1999; Maclean, 1998; Obermeyer & Castle, 1997; Rassin et al., 1994). Only one research group (Perez & Valdes, 1991; Pugin, Valdes, Labbok, Perez, & Aravena, 1996) tested culturally appropriate interventions to increase breastfeeding rates for those of Hispanic origin, but it focused on women in Santiago, Chile rather than immigrant Hispanic women. This research is crucial because there is a scarcity of intervention studies to promote breastfeeding initiation and duration among immigrant Hispanic women in the U. S.

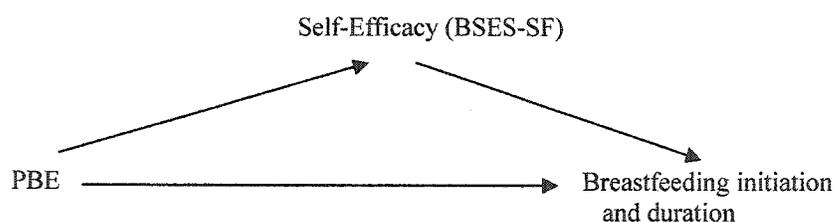
Breastfeeding promotion is a challenge for health care professionals due to the unique mix of persons who comprise the Hispanic population. Schwarzer and Fuchs (1995) emphasized the social stressors that accompany immigrants as they acculturate to differing ways of life and suggested that health-

promoting interventions should target self-efficacy among these groups. Bandura (1986) defined self-efficacy as “people’s judgments of their capabilities to organize and execute courses of action required to attain designated types of performance” (p. 391). Dennis (1999) further posited that one’s confidence in her ability to breastfeed successfully is vital to breastfeeding initiation and duration. Thus, increasing breastfeeding self-efficacy in pregnant Hispanic women may be an important health-promoting intervention.

### Conceptual Framework

Self-efficacy was considered in the development of the conceptual framework for this research study. Bandura (1986) refers to self-efficacy as a mediator mechanism. Pender et al. (2002) view self-efficacy as having direct or indirect effects in overcoming barriers to health-promoting behavior; however mediator and/or moderator influences of self-efficacy have not been studied within Pender’s model. Breastfeeding self-efficacy is hypothesized to mediate breastfeeding initiation and duration for Hispanic women. The HPM provides the structure for the investigation. Breastfeeding initiation and duration outcomes will be assessed following a Prenatal Breastfeeding Education (PBE) intervention that was designed to build breastfeeding self-efficacy in a culturally appropriate way. In the framework (Figure 1), the Prenatal Breastfeeding Education intervention has both direct and indirect effects on the outcome of breastfeeding initiation and duration.

Figure 1. *Conceptual Model for the PBE Intervention.*



### Specific Aims

The specific aims of the experiment were to:

1. Increase breastfeeding initiation and duration among immigrant Hispanic women.
2. Increase breastfeeding self-efficacy among immigrant Hispanic women.
3. Discover if breastfeeding self-efficacy mediates the effect of the intervention on breastfeeding initiation and duration.

Pregnant Hispanic women were randomly assigned to one of two groups: (a) an intervention group who received the PBE, a culturally appropriate one-to-one teaching session presented by the researcher or, (b) a control group who received standard-of-care information from providers. Breastfeeding self-efficacy scores were obtained from individuals in each group at enrollment (approximately 34-36 weeks gestation), approximately 2 weeks later, and approximately 2 weeks postpartum. Breastfeeding initiation rates were obtained at approximately 2 weeks postpartum for both groups. Breastfeeding duration was assessed at 6 weeks (42 days) for postpartum women in both groups who initiated breastfeeding.

### Hypotheses

Hypothesis 1: Women who receive the PBE have (a) higher rates of breastfeeding initiation and (b) longer duration than those who do not receive the intervention.

Hypothesis 2: Women who receive the PBE intervention have higher breastfeeding self-efficacy, measured both at (a) 2 weeks post-enrollment and (b) 2 weeks postpartum, than those who do not receive the intervention.

Hypothesis 3: The PBE intervention increases breastfeeding (a) initiation and (b) duration by increasing breastfeeding self-efficacy.

### Definition of Terms

#### *Breastfeeding*

In setting forth Healthy People 2010 Goals, the USDHHS (January, 2000) did not define breastfeeding or its frequency; but in this study, breastfeeding is defined as feeding the infant by breast either without supplement or allowing a maximum of one bottle of formula per day. This definition is based on the research of Cronenwett et al. (1992) who found no evidence that single daily bottle use in early postpartum is incompatible with prolonged breastfeeding among groups of women who are committed to

breastfeeding. A sample of 121 white, married, primigravid women were randomly assigned to either a planned one-bottle group that would offer one bottle daily between the second and sixth postpartal weeks or a total breastfeeding group that would avoid bottle-feeding during the same period. At 6 months postpartum, 59% of the planned bottle group and 69% of the total breastfeeding group were still breastfeeding, showing no overall significant difference between the groups (Cronenwett et al.).

#### *Prenatal Breastfeeding Education (PBE)*

Prenatal Breastfeeding Education is a culturally appropriate one-to-one teaching session provided by the researcher and a female Spanish language interpreter for immigrant Hispanic women who receive prenatal care at the Sedgwick County Health Department/Mother and Infant Clinic in Wichita, Kansas. PBE emphasizes the advantages of breastfeeding while encouraging commitment to breastfeed. Self-efficacy interventions include demonstrations in holding and positioning the infant to increase mastery, discussions of the participant's vicarious experience with breastfeeding role models, encouragement to breastfeed, and anticipatory guidance for the physiological state of breastfeeding in the hospital and in the postpartum period. Handouts, posters and models were used in the presentation.

#### *Breastfeeding Self-Efficacy*

Breastfeeding self-efficacy is a concept reflecting maternal confidence, which can influence a woman's judgment regarding her ability to initiate, persist in, and continue breastfeeding (Dennis, 1999). According to Dennis, breastfeeding self-efficacy is a mother's perceived ability to breastfeed her new infant. Breastfeeding self-efficacy predicts whether a mother chooses to breastfeed, how much effort she will expend, her thought patterns about breastfeeding, and how she will respond emotionally to breastfeeding difficulties.

Although breastfeeding self-efficacy has not been measured with Hispanic women of Mexican heritage, the BSES has been tested psychometrically with Canadian women (Dennis & Faux, 1999), Puerto Rican women (Torres, Torres, Rodriguez, & Dennis, 2003), and Australian women (Blyth et al., 2002) thus verifying breastfeeding self-efficacy as a universal construct among those populations. Schwarzer and Scholz (2000) confirmed that self-efficacy is a universal construct having verified its characteristics with participants in 22 countries, including the countries of Costa Rica and Spain.

### *Breastfeeding Initiation*

Breastfeeding initiation is defined as feeding the infant at breast in the postpartum days while in the hospital, either without supplement or allowing a maximum of one bottle-feeding of formula per day.

### *Breastfeeding Duration*

Breastfeeding duration is defined as the number of days the infant is fed at the breast, either without supplement or allowing a maximum of one bottle-feeding of formula per day for a length of time. Six weeks is set as criterion for breastfeeding duration for this study. Breastfeeding is well established within this 6 week period of time (Hall, 1978; Houston, 1981) and rates of discontinuation of breastfeeding are highest within the first 6 to 8 weeks (Cronenwett et al., 1992; Hill, 1987, 1988).

### Summary of Chapter 1

Breastfeeding is the ideal way of nourishing an infant because it promotes the health of both the mother and the baby. The HPM emphasizes self-efficacy as a key construct as does breastfeeding literature showing that breastfeeding self-efficacy promotes breastfeeding initiation and duration. A unique intervention was developed to promote breastfeeding initiation and duration for immigrant Hispanic women. Not only did the intervention provide breastfeeding information to increase knowledge, it also focused on enhancing the immigrant Hispanic woman's breastfeeding self-efficacy in a culturally appropriate way. This research tested a culturally appropriate Prenatal Breastfeeding Education (PBE) intervention for pregnant immigrant Hispanic women who received prenatal care at the Sedgwick County Department of Health/Mother and Infant Clinic. Outcomes were breastfeeding self-efficacy, breastfeeding initiation rates, and breastfeeding duration measured at 6 weeks postpartum.

## CHAPTER 2

### LITERATURE REVIEW AND CONCEPTUAL FRAMEWORK

A review of literature revealed that factors influencing breastfeeding initiation and duration for Hispanic women parallel the determinants of health-promoting behavior within HPM (Pender et al., 2002). Self-efficacy, a key construct within the HPM, was also found in the literature to be important in promoting breastfeeding initiation and duration. Recent literature with a focus on breastfeeding as it fits within the HPM is presented in this chapter. Finally, the state of the science related to breastfeeding promotion among Hispanic women will be summarized.

#### Health Promotion Model

Pender proposed the Health Promotion Model (HPM) in the early 1980s as a framework for integrating nursing and behavioral science perspectives to influence health behaviors (Pender et al., 2002). As people became more knowledgeable about health as a positive state, the HPM was revised in 1987 and 1996; and a number of studies were undertaken to determine the ability of HPM constructs to explain and predict health behaviors. Pender et al. (2002), in the HPM, consider the multidimensional nature of persons interacting with their environments as they pursue health. The HPM is derived from Feather's (1982) expectancy-value theory and Bandura's (1986) social cognitive theory. According to the expectancy-value theory, a person will invest effort and resources in working toward goals that are of value and are possible to achieve (Feather). Social cognitive theory is an interactional model that emphasizes self-direction, self-regulation, and perceptions of self-efficacy (Bandura). The concept of self-efficacy is central to both theories, thus it is important in the HPM, which assumes that the person takes an active role in shaping and maintaining health behaviors (Pender et al.). The revised HPM is shown in Appendix A.

Breastfeeding has long been considered health-promoting with positive effects on the health of the baby (Riordan & Auerbach, 1999). Breastfeeding has not previously been considered a health-promoting behavior, even though each of the HPM determinants has been reported in the literature to promote breastfeeding initiation and duration. Typically, *healthy lifestyle* or *health-promoting* behaviors have been understood as promoting health or preventing disease through specific patterns of physical exercise, nutrition and weight control, smoking cessation, sexual responsibility or use of protective devices in the workplace (Pender et al., 2002). Berger and Walker (1997) defined healthy lifestyle as a "continuing and

consistent long-term, but modifiable, pattern of behavior integrated into daily living as a way of life. Healthy lifestyle serves to prevent illness and maintain or enhance wellness” (p. 366). The American Academy of Pediatrics Work Group on Breastfeeding (2005) recommended promoting breastfeeding as a normal part of daily life and exclusive breastfeeding as ideal nutrition for approximately the first 6 months of life. Breastfeeding, because it promotes the health of both the mother and baby and is continuing and consistent, but modifiable; was considered a health-promoting behavior for this research.

### *Review of Literature*

The CINAHL and MEDLINE databases were searched using the terms “Hispanic” or “Latina”, “breastfeeding” and concepts specific to the HPM (interpersonal relationships, social support, acculturation, self-efficacy, barriers, benefits, and commitment). The reference lists of each paper were examined for additional empirical papers that linked any of the determinants of the HPM to breastfeeding among Hispanic women. Factors associated with breastfeeding for Hispanic women were found to relate to the mother, the infant, and/or to the environment. A consistent definition of breastfeeding was not apparent across all studies reviewed. Most considered breastfeeding intention, initiation, and/or differing levels of duration to define breastfeeding. Factors affecting breastfeeding were found to parallel the ten HPM determinates that are categorized within three categories: *Individual Characteristics and Experience*, *Behavior-Specific Cognitions and Affect*, and *Behavioral Outcomes* (Pender et al., 2002). Literature support for breastfeeding initiation and duration for Hispanic women as grouped by HPM determinants is discussed below and summarized in Appendix B.

#### *Individual Characteristics and Experiences*

*Prior related behavior.* Prior behavior has a direct effect on health-promoting behavior due to habit formation, which predisposes one to engage in the behavior (Pender et al., 2002). Habit strength increases each time the behavior occurs. Prior related behavior also has an indirect effect on health-promoting behavior through perceptions of benefits, barriers, self-efficacy and activity-related affect (Pender, 1996).

Humphreys, Thompson, and Miner (1998) reported breastfeeding experience was positively correlated with breastfeeding intention ( $r = .32, p = <0.01$ ) among predominantly low-income black or Hispanic pregnant women (14.2% Hispanic). Successfully breastfeeding a previous child is a prior related

behavior that significantly predicted initiation of breastfeeding with subsequent children (OR = 72.44, 95% CI = 14.7 - 370.3) among Latina women in an urban Connecticut city (Perez-Escamilla et al., 1998). These research reports show breastfeeding is influenced by the HPM construct of prior related behavior.

*Personal factors.* Personal factors include the biological conditions of age and gender; the psychological factors of self-esteem, self-motivation and personal competence; and the sociocultural factors of race/ethnicity, acculturation, education and socioeconomic status (Pender et al., 2002). Libbus (2000) used vignettes to explore attitudes of Hispanic women toward breastfeeding. Participants responded to questions concerning the outcomes of each case scenario. Positive attitudes toward breastfeeding were elicited from the 57 participants in Missouri Women Infant and Children (WIC) Clinics.

While psychological influences on breastfeeding were found in the literature, the bulk of the literature on personal factors affecting breastfeeding for Hispanic women focused on acculturation. Acculturation is defined as “the extent to which people from one culture adapt or accommodate their behavior and thoughts to their perceptions of the norms of a second culture” (Rassin et al., 1994, p. 740).

De Bocanegra (1998) assessed the influence of social support and acculturation on breastfeeding in 942 foreign or Puerto Rican (73%) born low-income immigrant women in New York City. She found that women who were more acculturated were two times less likely to decide to breastfeed than less acculturated women. De Bocanegra concluded acculturation does not influence breastfeeding, but decreasing access to breastfeeding support from family or friends corresponds to acculturation for Hispanic immigrant women, thus negatively influencing the decision to breastfeed.

De la Torre and Rush (1987) performed a probit analysis of variables that influence the decision to breastfeed by Mexican women in migrant camps in Texas. They found acculturation negatively affected the probability of breastfeeding (significance not reported). De la Torre and Rush also found that the use of non-traditional practices such as out-of-home childcare, birth control and alcohol use negatively affected breastfeeding initiation and duration.

Hispanic persons of Mexican-American origin identified cultural practices related to successful breastfeeding (Gill, Reifsnider, Mann, Villarreal, & Tinkle, 2004). Practices included eating nutritious foods and avoiding smoking and alcohol. The groups of WIC participants in Texas also related it was important to avoid stress in order to produce enough milk (Gill et al.).

Humphreys et al. (1998), in a study of low-income women in Atlanta, Georgia (14.2% Hispanic), found Hispanic ethnicity was positively correlated with intention to breastfeed ( $r = 0.26, p < 0.01$ ). John and Martorell (1989) used data from the Mexican-American component of the Hispanic Health and Nutrition Examination Survey (HHNES-MA) to analyze breastfeeding duration of infants born between 1970 and 1982. Using preference for interviews to be held in Spanish or English as an indicator of acculturation, they concluded those who preferred Spanish breastfed at a higher rate than those who preferred to speak English (45.46% and 36.25% respectively). A significantly strong association was found between low acculturation and initiation of breastfeeding ( $\chi^2 [2, N = 1226] = 14.57, p = .00$ ) in a sample of Mexican women in a Texas/Mexico border city (Rassin et al., 1994).

Pachon and Olson (1999) found that Hispanic women who were not born in the U. S. were 5.83 times more likely (95% CI: 1.043-32.619) to exclusively breastfeed than Hispanic women born in the U. S. Romero-Gwynn and Carias (1989) studied breastfeeding intentions, breastfeeding in the hospital and breastfeeding at home with a sample of 132 Hispanic women in California. Through stepwise logistic regression, they identified the likelihood for intending to breastfeed is greater for mothers who migrated from Mexico than for those born in the U. S. (OR = 4.75; 95% CI: 1.80-12.50). These findings confirm an inhibiting effect of acculturation on breastfeeding.

Pender (1996) asserts personal factors, as determinants of health-promoting behavior, are not easily changed. While the personal factors discussed in this review cannot be changed by health care providers or researchers, acculturation does change for individuals over time. Therefore culturally appropriate methods must be considered in designing interventions to promote breastfeeding for women who may be at differing levels of acculturation.

#### *Behavior-Specific Cognitions and Affect*

The center of the HPM is occupied by critical determinants considered to be *Behavior Specific Cognitions and Affect* that can be affected by the actions of health care providers to promote health (Pender et al., 2002). Support was found in the literature for each of the six modifiable determinants within the model. The effects of the determinants on the behavioral outcome of breastfeeding as a health-promoting behavior are summarized below.

*Perceived benefits of action.* The HPM shows the anticipated benefit of a health-promoting behavior directly influences one to engage in that behavior. Intrinsic benefits may include the direct physical effects of performing the behavior. Extrinsic benefits may be monetary or social rewards (Pender et al., 2002).

Cohen, Brown, Rivera and Dewey (1999) collected prospective and retrospective data on maternal attitudes and obstacles to exclusive breastfeeding (EBF) from 222 Honduran resident mothers of low-birth weight (1500-2500 g) term infants. From this group of exclusively breastfeeding women, a random assignment to groups was made. The control group began adding solids at 4 months while the intervention group continued EBF until the infant reached 6 months. Exit interviews elicited these positive aspects of breastfeeding as perceived by the mothers in the intervention group: the baby was healthier (33%), the baby grew well (15%), and exclusive breastfeeding was easier (12%).

In focus group discussions with WIC participants and their male partners, themes which emerged identified breastfeeding benefits focusing on both infant and mother (Gill et al., 2004). Health, bonding, less sickness, and better nutrition were infant benefits. Maternal benefits included losing weight and faster shrinkage of the uterus (Gill et al.).

Scrimshaw, Engle, Arnold, and Haynes (1987), in interviews with 518 women of Mexican origin in Los Angeles, CA, found that 83% believed breastfeeding to be healthier and better for the baby. Wood, Sasonoff, and Beal (1998) also interviewed Latina women who resided in the U. S. less than 7 years. They discovered most of the women recognized breastfeeding as the superior method of feeding; therefore they successfully initiated breastfeeding (Wood et al.).

Perceived benefits of action are shown in the HPM as determinants of health-promoting behavior (Pender et al., 2002). The literature verifies that emphasizing the benefits of breastfeeding is associated with breastfeeding promotion. Culturally appropriate methods of demonstrating the benefits however have not been tested among Hispanic women.

*Perceived barriers to action.* Pender et al. (2002) state barriers to health-promoting behaviors affect one's intentions to engage in those behaviors. One's readiness to act on the behavior, whether high or low will influence success in achieving the health-promoting activity. Four studies focused on breastfeeding barriers for Hispanic women.

Cohen et al. (1999), in focus group sessions, discovered perceived barriers to exclusive breastfeeding for Honduran women included advice from others, the baby crying a great deal, breast engorgement and pain. Barriers identified by Gill et al. (2004) in focus groups were embarrassment, pain and inconvenience. Gorman, Byrd and VanDerslice (1995) interviewed Hispanic men and women in separate groups in southern Texas. While the men thought breastfeeding was best and wanted their partners to breastfeed, over half of the women perceived their partners did not like breastfeeding. Hannon, Willis, Bishop-Townsend, Martinez and Scrimshaw (2000) interviewed 35 pregnant Latina (40%) and black teenagers in Chicago, IL. Barriers to breastfeeding were perceived excessive attachment and pain. Scrimshaw et al. (1987) reported returning to work was a barrier to breastfeeding through interviews of Latina women in Los Angeles, CA. Findings from these qualitative studies attest to the effect of barriers to breastfeeding within the HPM.

*Perceived self-efficacy.* In Social Cognitive Theory, Bandura acknowledges the role of outcome expectations as well as self-referent expectations in behavior (1986). What one expects, in a given situation, depends heavily on that person's judgment of the type of performance he or she may be able to produce (Bandura). Self-efficacy results from diverse sources of information conveyed vicariously and through social evaluation, as well as through direct experience.

Pender considered Bandura's (1986) theory in developing the HPM and adopted self-efficacy as a key part of the model, seeing it as having a direct or indirect influence on the perceived barriers and benefits of health-promoting behavior (Pender et al., 2002). Efficacy information in health behavior is obtained from one or more of four principal sources: performance accomplishment (mastery learning), vicarious learning (role modeling), verbal persuasion, and physiological state (comfort) according to Bandura. Dennis (1999) further clarified self-efficacy as a cognitive process involving one's confidence in his or her ability to perform a specific behavior through motivation, thought processes, emotional states and social environment.

A review of the nursing and allied health literature revealed 17 recent and classic studies that focused on self-efficacy (and the related concepts of confidence and perception of success) and breastfeeding outcomes (Bryant, 1982; Boettcher, Chezem, Roepke, & Whitaker, 1999; Buxton et al., 1991; Campbell, 1996; Cleveland, 1999; Cohen et al., 1999; Coriel & Murphy, 1988; De Bocanegra, 1998;

Gorman et al., 1995; Higgins, 2000; Hill, 1991; Locklin & Naber, 1993; Obermeyer & Castle, 1997; Sheehan, 1999; Tarrka, Paunonen, & Laippala, 1999; Torres et al., 2003; Wood et al., 1998). Nine of the studies involved Hispanic/Latino/Central American populations (Bryant; Cohen et al.; De Bocanegra; Gorman et al.; Higgins; Hill; Locklin & Naber; Torres et al.; Wood et al.), and only two were experimental/quasi-experimental (Cohen et al.; Sheehan). Sheehan's research however, focused on an Australian rather than Hispanic population.

Only one intervention study addressing breastfeeding confidence focused on Hispanic women (Cohen et al., 1999). Outcomes were compared between Honduran women who were randomly assigned to exclusively breastfeed their low birth weight infants for either 4 months or 6 months. The percentage of women feeling confident in their ability to exclusively breastfeed increased from 87% at 2 weeks to 96-97% at 8 to 12 weeks. The authors concluded that once a mother experiences success, her confidence in her ability continues to increase.

De Bocanegra (1998) found 90% of migrant women (N = 942, 73% of Puerto Rican ethnicity, 43% in U.S. less than 5 years) supplemented with formula within the first week. The reason given by these mothers was the baby was not satisfied after breastfeeding or the mother perceived herself as not having enough milk. De Bocanegra concluded early supplementation is a result of the mother's lack of confidence in her ability to breastfeed. The belief that "big is healthy" leads to double-feeding (breast and bottle) of newborns. A thin baby reflects negatively on the mother (Bryant, 1982; Higgins, 2000).

Gorman et al. (1995), in a qualitative study of Hispanic women, established the most common reasons given for cessation of breastfeeding were insufficient milk and embarrassment. They concluded perceived insufficient breast milk may be due in part to fear or insufficient breastfeeding instruction and support. Strategies to increase maternal confidence and promote ease with breastfeeding in public will help increase duration according to Gorman et al.

Hill (1991) developed a questionnaire to measure maternal perceived breastfeeding success. In her sample of 200 Supplemental Nutritional Program for Women, Infants and Children (WIC) and 200 non-WIC mothers (2.5% Mexican), a significant inverse relationship was found between introduction of formula and duration of breastfeeding ( $r = -.5505, p = .00$ ). Maternal perceived breastfeeding success was positively correlated with breastfeeding duration ( $r = .447, p = .00$ ). Hill's findings reflected the results of

previous studies related to barriers to breastfeeding success (Gorman et al., 1995; Wood et al., 1998) citing introduction of formula as an indication of breastfeeding difficulty rather than a cause. Hill concluded informational support must be offered early in the postpartal period to positively affect perceived breastfeeding success and duration.

In a qualitative study by Locklin and Naber (1993) the theme, “telling the world”, emerged as a consequence of successful breastfeeding. Accounts of feeling much better about oneself were cited by a group of 8 black and 2 Hispanic women in Chicago, IL. Wood et al. (1998), in their convenience sample of 25 Latina mothers in Massachusetts, found although all intended to breastfeed only 88% initiated breastfeeding. At 2 weeks, 32% were exclusively breastfeeding; and at 1 month, 20% were exclusively breastfeeding. The most frequent reasons for stopping breastfeeding were discomfort with breastfeeding in public and lack of confidence as evidenced in the statements, “not enough milk” and “baby was hungry and needed formula” (p. 258).

Dennis (1999) studied self-efficacy in relation to breastfeeding, positing that breastfeeding self-efficacy plays an important role in achieving breastfeeding outcomes. The Breastfeeding Self-Efficacy Scale (BSES), developed by Dennis and Faux (1999), is based on the conceptual connection between breastfeeding confidence and self-efficacy theory. Breastfeeding self-efficacy as assessed by the BSES has been shown to be predictive of breastfeeding initiation and duration among Canadian (Dennis & Faux, 1999) and Australian women (Creedy et al., 2003). Torres et al. (2003) confirmed the predictive qualities of the BSES in research with Puerto Rican women.

Campbell (1996) developed a breastfeeding self-efficacy instrument (Campbell’s Breastfeeding Scale) which she used to measure outcomes of theoretically derived breastfeeding support interventions. Her experimental study involved a mostly Caucasian sample of white, middle class, highly educated participants in the Northeast U. S. Statistically significant differences in breastfeeding self-efficacy scores were found between the control and intervention groups. Campbell concluded her breastfeeding scale was a valid measure of breastfeeding self-efficacy. At 6 weeks postpartum differences in duration between groups were not significant. Mediating effects of breastfeeding self-efficacy were not measured.

Within the HPM, perceived self-efficacy is shown to motivate health-promoting behavior directly by increasing one’s expectation of success or indirectly by affecting one’s *perception of barriers* (Pender et

al., 2002). *Commitment to a plan of action* may also be positively influenced by one's positive self-efficacy related to the action (Pender et al.). Interventions to promote perceived self-efficacy for Hispanic women have not been found in the literature, nor have interventions to promote breastfeeding self-efficacy been tested.

*Activity-related affect.* The subjective feelings which occur prior to, during, and following an activity are likely to affect whether an individual will repeat or maintain the behavior (Pender et al., 2002). Activity-related affects may be act-related, self-related, or context-related and will be perceived as either positive or negative. Activity-related affects influence health-promoting behavior directly or indirectly through *self-efficacy* and *commitment to a plan of action* (Pender et al.).

Locklin and Naber (1993) discovered positive activity-related affects to breastfeeding in interviews with eight black and two Hispanic women. Women gave poignant definitions of attachment as a result of breastfeeding, demonstrating their deep satisfaction and emotional investments in their infants. Schmied and Barclay (1999), in a qualitative study of 25 Australian women, found breastfeeding was harmonious and pleasurable for some, but for others it was disruptive, unpleasant and violent.

Themes of qualitative studies related both positive and negative activity-related affects. The themes verified the HPM determinant of activity-related affect as an influence on breastfeeding outcomes. Quantitative research focusing on the activity related affects of breastfeeding is lacking.

*Interpersonal influences.* The HPM shows that *interpersonal influences* (family, peers, and health providers) affect health-promoting behavior directly or indirectly through social pressures or encouragement to *commit to a plan of action* (Pender et al., 2002). Interpersonal influence is a complex concept, therefore articles relating to breastfeeding support were reviewed from Matich and Sim's (1992) perspective that support can be informational (supplying guidance, advice, facts and knowledge), emotional (providing affection, love, empathy, or acceptance), and/or tangible (loaning money, time, skills and services).

Arlotti, Cottrell, Lee and Curtin (1998) studied the relationship between peer support and breastfeeding duration and exclusivity in a convenience sample of 36 prenatal and postpartum WIC participants (47.2% African American, 38.9% white, 5.6% Hispanic, acculturation not specified) in North Florida. The findings from the descriptive, longitudinal, quasi-experimental study showed peer counseling

was not significantly related to duration of breastfeeding. Attending a breastfeeding class, however, increased duration by 3.14 weeks ( $p < 0.02$ ). Knowing others who have breastfed was found to significantly increase duration by 3.24 weeks ( $p < .04$ ). The authors concluded peer support is one component of social support. Limitations to this study were that only 5.6% of the participants were of Hispanic heritage and the intervention was not fully described.

De Bocanegra (1998) reported 90% of migrant women ( $N = 942$ , 73% of Hispanic heritage in New York) supplemented with formula within the first week. These women, due to their migrant status, were not in stable home environments. De Bocanegra concluded their lack of support (tangible and emotional) for breastfeeding influenced the decision to offer formula.

The most important advisors for infant feeding practices for 73 Cuban, Puerto Rican and Anglo families in Florida were kin, friend and neighbor networks according to Bryant, in a classic exploratory study that did not document length of time in the U.S. (1982). These informational networks were found to significantly affect decisions surrounding breastfeeding, bottle-feeding, use of sucrose supplements and the time to introduce solid foods ( $X^2 = 12.32$ ,  $p = .00$ ). Kin and network members promoted early introduction of solids creating the view that food at an early age is a sign of achievement by the baby, thus a reflection on the mother's breastfeeding efficacy (Bryant).

Freed, Jones and Schanler (1992) surveyed prenatal participants' attitudes toward breastfeeding (30.8% Hispanic in Houston, TX). The most significant variable affecting attitude was lack of support for breastfeeding from a significant other (OR = 456.3, 95% CI: 45.2 - 4606.4). In a qualitative study, attitudes of partners of women in a Texas-Mexico border community were found to affect breastfeeding decisions (Gorman et al., 1995). Humphreys et al. (1998) also found attitudes and beliefs of support persons who promote formula feeding significantly negatively influenced infant breastfeeding decisions ( $r = -0.30$ ,  $p < 0.01$ ) in 1081 participants (14.2% Hispanic) in Atlanta, GA.

Higgins' (2000) qualitative study of 15 Puerto Rican informants (six born in the U.S.) concurred with Bryant's (1982) finding that the belief that "big is healthy" leads to double-feeding (breast and bottle) of newborns. A thin baby reflects negatively on the mother, therefore she overfeeds according to Higgins whose sample reported holding "traditional" health care beliefs. Higgins concluded that informational

support is needed, not only for the mother, but also for those family members who influence infant feeding decisions.

Balcazar, Trier and Cobas (1995) used data from the 1988 National Maternal and Infant Health Survey (NMIHS) to examine the effects of a series of predictors of intention to breastfeed. The survey's respondents were 11% Mexican-American and 89% non-Hispanic white women. Advice from health care providers to breastfeed during prenatal care was a significant predictor of exclusive breastfeeding vs. bottle-feeding and partial bottle-feeding (OR = 1.99, 95% CI: 1.30 - 3.08). Gill et al. (2004) found a lack of breastfeeding support from hospital staff was a reason for discontinuing breastfeeding.

Moreland, Lloyd, Braun, and Heins (2000) designed a culturally sensitive teaching model for Latina women based on findings in the literature and onsite ethnographic research in Utah. A randomized controlled trial is currently underway to assess the effectiveness of the supportive intervention (J. Moreland, personal communication, Sept. 22, 2004). DeCoster (2002) used the Moreland et al. model to provide workshops for breastfeeding counselors for the purpose of empowering Hispanic women to breastfeed. Qualitative findings from breastfeeding participants showed the success of empowerment teaching strategies.

Informational support for breastfeeding was part of an intervention study with 165 new mothers in two public hospitals in Hermosillo, Mexico (Perez-Escamilla, Segura-Millan, Pollitt, & Dewey, 1993). Individual breastfeeding guidance during the hospital stays of those in a "rooming in" hospital was shown to increase the likelihood to fully breastfeed at 2 months (OR: 12.3, 95% CI: 3.7 – 41.1) over those in the "nursery care" hospital. While self-reported support for breastfeeding from family members was assessed, it was not analyzed since very few close relatives promoted exclusive formula feeding.

Pugin et al. (1996) conducted a quasi-experimental study with pre and post-intervention measures to evaluate the duration of full lactation, lactational amenorrhea (LAM) and to determine the efficacy of the LAM method of family planning with women residing in Santiago, Chile. Historical and prospective data were gathered on 330 mother-infant pairs in the control group who received usual postpartum care. The intervention was then implemented with 422 women who delivered in the same hospital. The intervention included training the health team in breastfeeding, implementing learning activities at the prenatal clinic, implementing learning activities at hospital, creating an outpatient lactation clinic, and offering Lactational

Amenorrhea Method (LAM) as an initial form of family planning. A subgroup of the intervention group received prenatal breastfeeding skills group education as a sixth intervention. Chi-square analyses were used to show that in the control group, 32% were still breastfeeding at 6 months as compared to 67% in the intervention group ( $p = .00$ ). The subgroup who received the prenatal breastfeeding skills group education intervention had significantly higher percentage of full breastfeeding at 6 months as compared to those who did not receive that intervention (80% vs. 65% respectively,  $p = .00$ ). When analyzed by parity (1, 2, 3 +) the difference in breastfeeding duration between control and intervention group persisted. The authors concluded prenatal group education with "hands-on" skills reinforcement was a valuable component of breastfeeding support to increase duration of breastfeeding.

Reifsnider and Eckhart (1997) tested two teaching modules for prenatal WIC participants in rural Oklahoma ( $N = 31$ , one was Hispanic). Duration rates for the experimental group were 76.1 days vs. 29.5 days in the control group ( $p = 0.05$ ). Their study suggested professional support during the prenatal period can successfully influence breastfeeding duration.

Young and Kaufman (1988) implemented a WIC teaching project. During routine nutrition education encounters, the nutritionists and clerk invited prenatal women to attend a breastfeeding class (intervention group). The women were encouraged to bring relatives, friends, and the baby's father with them. Class content included breastmilk adequacy, demand feeding, avoiding supplementation, nipple care, and possible problems and solutions. Donated layettes were given as incentives to those who attended the classes. The intervention group consisted of 101 women (40 of Hispanic heritage) who attended the breastfeeding class often accompanied by female friends or relatives but rarely by the father of the expected child. Prenatal intention was compared with breastfeeding rates at hospital discharge for 158 women who participated in the WIC program during the experiment. The rate of prenatal intention to breastfeed for the entire group was 31%. Fifty-two percent of those in the intervention group were breastfeeding at hospital discharge. During the project year, the control group rate of breastfeeding remained at 31% indicating that the 52% rate of breastfeeding in the intervention group was a result of the classes. Conclusions were health professionals should provide convenient informational support for pregnant mothers, and incentives can be motivators for attendance. Only breastfeeding initiation was measured in this study. Because this was a

demonstration project rather than an experiment, participants were not randomly assigned and statistical analyses were not performed.

Langer, Campero, Garcia, and Reynoso (1998) considered the effect of emotional support by a doula (female birth attendant) on breastfeeding rates, duration of labor, medical interventions, mother's emotional conditions and the newborn's health in a randomized clinical trial in a public hospital in Mexico City. In the study, 724 primiparas with a single fetus, <6cm dilated, and no indications for Cesarean were randomly assigned to be accompanied by a doula (experimental group), or to receive routine care (control group). Interviewers obtained data from clinical records, during encounters with the women in the immediate postpartum period, and at their homes 40 days after birth. Frequency of exclusive breastfeeding one month after birth was significantly higher in the intervention group (OR = 1.64; 95% CI: 1.01 - 2.64) showing psychosocial support by a doula had a positive effect on breastfeeding initiation.

In summary, six interventions focused on the concept of interpersonal support for breastfeeding for Hispanic women (Arlotti et al., 1998; Langer et al., 1998; Perez-Escamilla, 1993; Pugin et al., 1996; Reifsnider & Eckhart, 1997; Young & Kaufman, 1988). Four measured outcomes of informational support as an intervention (Arlotti et al.; Pugin et al.; Reifsnider & Eckhart; Young & Kaufman); and two measured outcomes of emotional support (Langer et al.; Perez-Escamilla). Interpersonal support was found in the literature to promote breastfeeding among Hispanic women.

*Situational influences.* Perceptions of options available, demand characteristics or the aesthetic features of the environment where the behavior will take place will facilitate or impede the health-promoting behavior (Pender et al., 2002). Comfort and privacy are situational influences that make breastfeeding easy and convenient, especially for new mothers. Participants (8 black, 2 Hispanic) in a qualitative study by Locklin and Naber (1993) said one of the most frequent reasons for stopping breastfeeding was embarrassment with breastfeeding in public. Further research related to the situations that positively or negatively influence breastfeeding for Hispanic women was not found in the literature.

*Commitment to a plan of action.* An individual's underlying cognitive processes initiate the commitment to a plan of action by specifying a time and place or identifying strategies for carrying out the health-promoting behavior (Pender et al., 2002). Commitment goes beyond intentionality to further the likelihood that the plan of action will be successfully implemented. Choosing strategies which support

commitment to the behavior increase the likelihood of performing the behavior. In the HPM, commitment to a plan of action initiates the health-promoting behavior unless a competing demand or preference, which one cannot avoid or resist, transpires (Pender et al.).

Romero-Gwynn and Carias (1989) compared breastfeeding intentions and actual breastfeeding in the hospital and at home. They found mothers who migrated from Mexico were more likely to intend to exclusively breastfeed than those Hispanic women born in the U. S. (OR = 4.75, 95% CI: 1.80-12.50). However the 67.7% intention rate dropped to 19.7% initiation in the hospital and 17.2% when at home.

While research cited above refers only to intention to breastfeed rather than commitment (Romero-Gwynn & Carias, 1989), Pender et al. (2002) emphasized the need to set forth specific strategies for promoting the desired behavior. In a prospective study of women committed prenatally to breastfeed for at least 6 weeks, the mother's duration goal was the most important predictor of time to weaning (Cronenwett et al., 1992). Moreland et al. (2000) developed a teaching model where Latina participants prepared an infant feeding plan that encouraged commitment to breastfeed for a specific duration. Results from a randomized controlled trial to evaluate the class are pending (J. Moreland, personal communication, Sept. 22, 2003).

*Immediate competing demands.* Demands over which one has either low control or high control may impede the actions needed to carry out one's commitment to a plan for health-promoting behavior (Pender et al., 2002). Immediate competing demands result alternate behaviors that an individual must carry out instead of the planned health-promoting behavior (Pender et al.). Thus, immediate competing demands are different from perceived barriers that one may have high or low ability upon which to act. Strong commitment to a plan of action may overcome competing demands and preferences, directly affecting the performance of the health-promoting behavior. Immediate competing demands to breastfeeding initiation and duration include the unplanned need to work outside the home, lack of support at home and availability of formula at the hospital or through vouchers from WIC.

Scrimshaw et al. (1987) interviewed 518 Mexican women in California. Plans to work were the stated reason for not breastfeeding by 44% of women who did not nurse. While the Scrimshaw et al. study is dated, it points to the need for education and access to breast pumps for those who wish to continue to breastfeed while working.

De Bocanegra (1998) found 90% of immigrant women (N = 942, 73% of Hispanic ethnicity, 43% in U.S. less than 5 years) supplemented with formula within the first week. Those more highly acculturated received more social support to breastfeed than those of low acculturation (73% vs. 43%,  $p \leq 0.01$ ). Free formula samples were received by 80% of women in the hospital. Lack of support at home and availability of formula were identified as negative influences on the decision to exclusively breastfeed, thus shortening the duration of breastfeeding (De Bocanegra).

When considering immediate competing demands from the perspective of the HPM, availability of vouchers for formula through WIC may be seen as a deterrent to breastfeeding. WIC strives to promote breastfeeding through its program of education and incentives for attending nutrition classes. WIC has shown an increase in breastfeeding rates between 1990 and 1998 by 19% for women enrolled in WIC as compared to 13% of all women (*Mother's Survey*, 1999). WIC expanded from 63,000 participants to 1.9 million between 1988 and 1997, largely due to the receipt of monetary rebates from the companies that supplied formula to WIC (Walker, 2002). Walker asks, "has a vicious circle developed whereby the more pregnant women served by WIC, the more formula needs to be purchased, generating more money from formula rebates for more mothers to be enrolled who use formula?" (p.119). She attempts to answer her own question by justifying that WIC does not depend on formula rebates in her statement that women planning to breastfeed often do not use WIC, and that women entering WIC are self-selecting to use formula. However, she does not provide data to support her rationale. Perhaps the data related to WIC incentives as they relate to formula feeding rates do not exist, but research shows that many women participate in programs to receive the incentives offered (Sciacca, Phipps, Dube, & Ratliff, 1995; Young & Kaufman, 1988). Whether receiving formula vouchers from WIC is an immediate competing demand to breastfeeding promotion requires further study.

In summary, two quantitative studies focused on immediate competing demands that affect breastfeeding outcomes for Hispanic women (De Bocanegra, 1998; Scrimshaw et al., 1987). These reports showed immediate competing demands influence breastfeeding as a health-promoting behavior. Lack of support was also revealed as a competing demand (Freed et al., 1992; Gorman et al., 1995, Humphreys et al., 1998). Further research is needed to show how these demands affect breastfeeding outcomes.

### *Behavioral Outcome*

*Health-promoting Behavior.* Pender et al. (2002) state, “health-promoting behaviors, particularly when integrated into a healthy lifestyle that pervades all aspects of living, should result in improved health, enhanced functional ability, and better quality of life at all stages of development” (p. 74). Research documents that breastfeeding promotes the health of both infant and mother, providing lifelong health benefits for each (American Academy of Pediatrics Work Group on Breastfeeding, 2005; Giachello, 1994). The health-promoting behavior of breastfeeding is focused on attaining positive health outcomes, thus it is the behavioral outcome of the HPM.

In this review of the breastfeeding literature, support is shown for the HPM determinants as direct or indirect influences on breastfeeding. Most of the evidence on breastfeeding outcomes for Hispanic women was found in the areas of acculturation (a personal factor), perceived self-efficacy, support (an interpersonal influence), commitment to a plan of action, and immediate competing demands. Because evidence for the determinants of breastfeeding corresponds with the determinants of the HPM, it is an ideal framework for this research.

### *Critique of Literature Related to the Determinants of Breastfeeding within the HPM*

Twenty-nine studies were reviewed. Each of the ten determinants of health-promoting behavior was documented to influence breastfeeding outcomes (intention, initiation, and/or duration) for Hispanic women in some way. The research studies cited in the review are summarized in Appendix B. Research designs and countries of origin of participants are shown in Appendix C.

Critical examination of previous research on breastfeeding among Hispanic women revealed several limitations. Prior related behaviors were documented as influencing breastfeeding intention and initiation, but not duration. Acculturation was the only personal factor shown to affect breastfeeding intention, initiation and duration; however, the only studies applicable to Hispanic women were descriptive. While it is clear that acculturation and breastfeeding behavior are inversely related, it is less clear what factors are responsible. Research connecting perceived benefits and barriers to breastfeeding outcomes has also been descriptive rather than explanatory or predictive.

Breastfeeding self-efficacy and the related concepts of confidence and perceived success were addressed in qualitative and quantitative studies. Interventions to increase perceived self-efficacy or

breastfeeding self-efficacy in Hispanic women have not been tested. The only study relating positive breastfeeding activity-related affect was qualitative; quantitative research is lacking.

Interpersonal influences were found to promote breastfeeding among Hispanic women in fourteen studies. Six interventions focused on the concept of interpersonal support for breastfeeding for Hispanic women (Arlotti et al., 1998; Langer et al., 1998; Pugin et al., 1996; Perez-Escamilla et al., 1993; Reifsnider & Eckhart, 1997; Young & Kaufman, 1988). Four used informational support as an intervention (Arlotti et al.; Perez-Escamilla et al.; Pugin et al.; Reifsnider & Eckhart), and two used emotional support (Langer et al.; Young & Kaufman). Strategies that need further study include encouraging commitment to breastfeed and facilitating breastfeeding plans. Further research is also necessary to show how immediate competing demands affect breastfeeding outcomes.

Research findings that related to Hispanic women did not consistently describe the ethnicity or country of origin of the population (Appendix C). Several studies focused only on intention to breastfeed rather than initiation or duration. Furthermore, length of follow-up varied from 1 month to 1 year (Appendix B). Moreover, breastfeeding, in terms of exclusivity, was not clearly defined in most studies.

Specific socio-cultural indicators as they influence breastfeeding among Hispanic women were not discussed in the literature. Stress, postpartum depression, marital status, socioeconomic status, smoking, nutrition and exercise are absent in health promotion research with Hispanic women. Therefore, review of these concepts could not be included.

Six interpersonal support interventions to promote breastfeeding duration for Hispanic women took place in Mexico City (Langer et al., 1998), Hermosillo, Mexico (Perez-Escamilla et al., 1993), Santiago, Chile (Pugin et al., 1996), two small samples in the U. S. (Arlotti et al., 1998; Reifsnider & Eckhart, 1997), and a demonstration project without statistical analysis in the U. S. (Young & Kaufman, 1988). The applicability of the findings to Hispanic women in the U. S. is limited.

In summary, quantitative research on breastfeeding did not address consistent definitions or outcomes. Hispanic women's perspectives of breastfeeding were not uniformly addressed. While acculturation was assessed, culturally appropriate breastfeeding interventions for Hispanic women were not tested.

### *Breastfeeding Self-Efficacy*

Self-regulation of health behavior is achieved through the development of self-regulatory skills (Bandura, 1995). Once equipped with skills and confidence, one is better able to adopt behaviors that promote health. Health-promotion programs must address people's beliefs that they can control their own behavior in pursuing health, thus self-efficacy is key to promoting health as shown in the HPM (Pender et al., 2002).

Generalized self-efficacy is conceptualized as confidence in one's own coping skills and is evidenced in a wide range of challenging situations (Scholz, Dona, Sud, & Schwarzer, 2002). Schwarzer and Scholz (2000) confirmed self-efficacy as a universal construct verifying its characteristics with participants in 22 countries. Some researchers assert generalized self-efficacy seems to be a better predictor of performance than specific self-efficacy (Sherer et al., 1982). Others show the two types of self-efficacy (generalized and specific) are positively related and may complement each other (Jex & Bliese, 1999). Bandura (1986) contends it is necessary to develop measures of specific skills in specific situations.

Campbell (1996) and Dennis (1999) studied self-efficacy from the domain of breastfeeding, positing that breastfeeding self-efficacy plays an important role in achieving breastfeeding outcomes. Campbell's Breastfeeding Scale effectively demonstrated the conceptual connection between breastfeeding confidence and self-efficacy theory as does the Breastfeeding Self-Efficacy Scale (BSES), developed by Dennis and Faux (1999). Breastfeeding self-efficacy as assessed by the BSES was predictive of breastfeeding initiation and duration among Canadian (Creedy et al., 2003), Australian (Dennis & Faux), and Puerto Rican participants (Torres et al., 2003).

Blyth et al. (2004) assessed the relationship between antenatal breastfeeding self-efficacy and breastfeeding outcomes. Breastfeeding rates were compared between participants who scored high, medium and low on the BSES in the antenatal period. At 1 week postpartum, those with high scores were breastfeeding at a rate of 96%, significantly higher than the 83% of those with low BSES scores ( $p < 0.01$ ). At 4 months, 96% of those with high BSES scores were breastfeeding compared with 79% of those with low BSES scores ( $p = .00$ ).

Breastfeeding confidence was a predictor of infant feeding outcomes with Hispanic women (Buxton et al., 1991; Cohen et al., 1999; De Bocanegra, 1998; Gorman et al., 1995; Hill, 1991; Locklin &

Naber, 1993; Perez-Escamilla et al., 1998; Torres et al., 2003; Wood et al., 1998). Consistent measures of breastfeeding confidence were not found in the articles reviewed. Other than Campbell's (1996) intervention to promote breastfeeding self-efficacy among a population of Caucasian women, interventions to promote breastfeeding self-efficacy were absent in the nursing and allied health literature.

#### *Issues with Non-Hispanic Researchers Working with Hispanic Groups*

##### *Recruitment and Retention*

Naranjo and Dirksen (1998) reported their challenges in recruiting Hispanic women (Spanish and/or English language proficient) in a study of breast cancer survivors. Issues included a low response rate to telephone invitations to participate by the principal investigator who was non-Hispanic and refusal to participate for several reasons (fear of loss of health benefits, decision influenced by family members, fear of recurrence of emotional stress). Marin and Marin (1991) reported that bilingual and bicultural Hispanic females often can enhance the willingness of Hispanic women to participate in research studies. Naranjo and Dirksen changed their initial strategy by having a research assistant of Hispanic ethnicity telephone the participants for recruitment. The research assistant was able to dispel unrealistic fears about loss of benefits, thus increasing participation somewhat. Naranjo and Dirksen attributed the Hispanic value of "familialism" as detrimental to recruitment in several potential participants who were out-of-town caring for family members. To deal with reluctance, the research assistant emphasized the importance of the research results in helping others with breast cancer survivor issues. This increased participation was attributed to "altruism", a characteristic commonly noted among those of Hispanic origin.

Naranjo and Dirksen (1998) advised setting aside plenty of time to make several phone attempts. Lindenberg, Solorzano, Vilaro, and Westbrook (2001) concurred that telephone follow-up is well received by Hispanic participants, but may be difficult due to the mobility of the population. They suggested verifying phone numbers, addresses, and alternate phone numbers at *every* participant encounter.

Lindenberg et al. (2001) wrote about retention and attrition issues and suggested the use of personalized follow-up letters with little gifts, birthday cards, transportation incentives, t-shirts or mugs. They found their participants uncomfortable with monetary incentives, so the gifts were successful as enticement. Giving small incentive gifts was also a successful strategy for Sciacca et al. (1998). Bender,

Harbour, Thorp, and Morris (2001) proposed using small talk to build trust prior to beginning interventions with Hispanic populations.

#### *Definition of Hispanic Populations*

“Hispanic” is the term assigned by the U.S. Government for census purposes to persons of Latin American origin. Hispanic people may be native-born U. S. citizens, or they may have immigrated to the U. S. Their migration patterns and sociodemographic characteristics make them diverse, but they share basic cultural values. According to Marin and Marin (1991), it is the cultural values with which Hispanic persons self-identify, not particularly their country of origin. Individuals may call themselves Hispanic, Latino or Chicano depending on their geographic location in the U.S. They include persons from Mexico, Puerto Rico, Cuba, Central America or certain South American countries, all historically linked by the Spanish language.

Madeleine Leininger, nurse theorist and anthropologist, encourages nurse researchers to use country of origin rather than the term “Hispanic” when referring to the population under study (personal communication, Nov. 1, 1999). While it is important to recognize sociodemographic influences, the reality of accessing individuals or groups who identify with a certain country is encumbered by the U. S. health care system, which uses the term “Hispanic” to classify persons. Additionally, a literature review specific to persons from a certain Latin American country (Mexico, for instance) may overlook many important readings specific to Mexican populations because the “Hispanic” term is so widely used in health care research to identify Mexican persons.

In spite of her encouragement to use sociodemographic identification specific to country of origin, Leininger (1994) identified health maladies and folk practices common to persons of Latin American origin: *mal ojo* (evil eye), *empacho* (indigestion), *mal de susto* (bad luck), *maleficio* (witchcraft), *medico* (physician), *curandero* (healer). Leininger further emphasized that the sciences of anthropology and nursing can contribute to each other’s disciplines. The term “Hispanic” is a word used to classify persons from different geographic areas, but the science of anthropology will confirm the group shares common beliefs, attitudes, meanings and practices.

Expecting cultures to “melt together” within the U. S. has been replaced with the realization that tying cultural beliefs with professional care is a valuable way to care for persons of a culture different from

one's own. Spector (2000) emphasized that nurses must learn to work with persons of other cultures. Luna (2003) called attention to Hispanic health care beliefs that should be acknowledged and respected by health care givers. For example, Hispanic persons may seek a *curandera* (Hispanic folk healer) in addition to the professional care giver. Spiritual beliefs such as *suerte* (luck) and *susto* (spirit loss resulting from a traumatic event) may influence a Hispanic person's acceptance of professional recommendations (Luna).

#### Summary of Chapter 2

Breastfeeding for Hispanic women with a focus on the determinants of health-promoting behavior (Pender et al., 2002) was the subject of a comprehensive literature review. Each of the ten HPM determinants were found to promote breastfeeding intention, initiation and/or duration. Interventions to promote breastfeeding for Hispanic women were reported in only six studies (Arlotti et al., 1998; Langer et al., 1998; Perez-Escamilla et al., 1993; Pugin et al., 1996; Reifsnider & Eckhart, 1997; Young & Kaufman, 1988). These tested interpersonal support interventions to increase breastfeeding initiation and/or duration. Only three targeted Hispanic women in the U. S. (Arlotti et al.; Reifsnider & Eckhart; Young & Kaufman), one took place in Mexico City (Langer et al.), one in Hermosillo, Mexico, (Perez-Escamilla et al.) and one in Santiago, Chile (Pugin et al.).

While self-efficacy and the related concept of breastfeeding confidence have been shown in the literature to influence breastfeeding initiation and duration for Hispanic women (Bryant, 1982; Cohen et al., 1999; De Bocanegra, 1998; Gorman, et al., 1995; Higgins, 2000; Hill, 1991; Locklin & Naber, 1993; Torres et al., 2003; Wood et al., 1998), interventions to increase breastfeeding self-efficacy were not found. Acculturation was shown to affect breastfeeding outcomes for Hispanic women, but the literature does not document the consideration of acculturation in designing interventions. Encouraging commitment also lacked documentation as a strategy to promote breastfeeding outcomes. This research tested a culturally appropriate intervention that provided professional support for the purpose of increasing breastfeeding self-efficacy, initiation and duration among Hispanic women.

## CHAPTER 3

### DESIGN AND METHODOLOGY

Preliminary studies that informed the intervention, design and methodology are discussed. Participants, the setting, and the variables are described. Research instruments are detailed along with procedures for data collection and analysis.

#### Preliminary Studies

To inform design and methods, three preliminary studies were undertaken. To guide the development of the intervention, a qualitative study elicited themes pertinent to the cultural context of breastfeeding among Hispanic women. An intervention was then pilot tested to determine feasibility and to obtain effect size estimates. To confirm the suitability of the Breastfeeding Self-Efficacy-Short Form (BSES-SF), discrepancies in the translation of the instrument from English to Spanish were identified, revised and finalized with a focus group composed of Spanish-speaking women. Carrying out each of these studies helped the researcher build trust in the Hispanic community within which the research was set.

#### *Preliminary Study 1: An Ethnonursing Study of Breastfeeding among Hispanic Women*

##### *Purpose*

The purpose of this pilot study was to inform the researcher about breastfeeding beliefs, attitudes, meanings and practices among Hispanic women who receive prenatal care in the research setting.

##### *Specific Aims/Questions*

Four ethnonursing research questions guided the research:

1. What beliefs, attitudes, meanings and practices do Hispanic women hold concerning breastfeeding and its promotion of infant nutritional health?
2. What, in the acculturation process to the U. S., influences the Hispanic woman's infant feeding decision?
3. What generic (folk or home-based) practices positively influence breastfeeding duration among Hispanic women?
4. What professional (by nurse or health-care professional) interventions or practices positively influence breastfeeding duration among Hispanic women?

While these questions directed the course of the study, they did not limit the exploration of the domain of breastfeeding for Hispanic women.

### *Sample and Setting*

Informants were selected from a convenience sample of women who participated in “Moms and Mentors” (M & M), a peer-modeling program in the Planeview community of Wichita, Kansas. The researcher chose to select a mix of Hispanic participants from the Planeview community because the residents have recently relocated to the area from Mexico, Puerto Rico, Central American and certain countries in South America. While focusing exclusively on women from a certain country would lend specificity to cultural information, it would limit proposed interventions to certain groups. Because “Hispanic” is the term that this group of Planeview residents use to refer to themselves, and because women from several Latin American countries mix and socialize together; the selection of two key and six general informants was inclusive. Interviews took place at the Planeview community center and in homes.

One key informant (age 19, pregnant and planning to breastfeed) was from Mexico, and the other (a 25-year old breastfeeding mother of a 6-month-old infant) was from Guatemala. The two key informants had immigrated to the U. S. within the past year. Four general informants from Mexico were from the same family (a grandmother, aged 75 and her three daughters, ages 26 to 35, each with small children). One general informant (age 34, mother of small children) was from El Salvador and a 65 year-old grandmother (another general informant) was from Peru. The general informants had been in the U. S. from less than one year to seven years and included mothers of young children and two grandmothers whose diverse experiences enhanced the richness of the information, particularly concerning breastfeeding barriers and positive influences.

### *Method*

Ethnonursing was derived from ethnographic research that was developed by anthropologists as a means for studying other cultures. Leininger (1978) defines ethnonursing as “the study and analysis of the local or indigenous people’s viewpoints, beliefs, and practices about nursing care phenomena and process of designated cultures” (p. 15). The ethnonursing research process is aimed at documenting, describing, and explaining nursing phenomena using both *emic* (insider’s view) and *etic* (outsider’s view) interpretations (Leininger).

*Procedures.* After IRB approval for non-therapeutic research was received from the University of Nebraska Medical Center, the informants were interviewed with the assistance of a female Spanish speaking interpreter. Participants were recruited by the researcher who had worked with them as a volunteer in the M & M program. Each was asked to share breastfeeding information specific to her cultural beliefs with the researcher. Interviews held at a community center and in homes consisted of broad, general questions and open-ended statements that allowed follow-up elaboration and contrast questions. Lead-in phrases included, "Tell me about what it means to breastfeed your baby", "I would like to learn about the best way to feed a baby" or "What do you believe about breastfeeding?"

#### *Data Analysis*

QSR NUD.IST Software for Qualitative Data Analysis was used as a method of indexing and organizing categories along with Leininger's (1991) Phases of Ethnonursing Analysis. The first phase consisted of studying the raw emic data by reading and re-reading the descriptive observations and participatory data as they were entered into the software program management system. In the second phase, descriptors and components were identified, and similar or dissimilar statements were organized into categories within the computer program. The third phase involved scrutinizing, identifying and coding data to discover patterns of behavior while looking for evidence of saturation, consistencies, and credibility of data. The fourth phase entailed synthesis and abstraction of ideas from previous phases and discovering themes.

Journal entries proved valuable for recording observations and reflecting on perceptions. An example of a journal entry that began to describe the feeling of trust in the community was: *Elena makes me feel welcome in her home. Even though some men are working on plumbing in her kitchen, she seems comfortable talking to me about breastfeeding. The children are playing outside, it is quiet here, peaceful, clean. I am glad she is at ease, she helps me relax with my first interview.* A note from a second interview was: *While we talked, I asked Maria "Who cheers you up when you are down?" She answered, "Jesus" and laughed nervously. I indicate "me too!" Maria laughs and asks the interpreter if I am a Christian, the interpreter confirms to her that I am. Immediately, Maria makes eye contact and we share a bond of trust.* These journal entries documented "building trust", an important first step in beginning to work with persons of a culture different from one's own (Leininger, 1991).

Categorizing findings within the QSR NUD.IST Software for Qualitative Research provided a means of checking back on the findings in each phase. Findings were confirmed as descriptors, and codes were entered and organized within the software. Raw empiric data were analyzed to form descriptors, indicators, codes, patterns, and finally themes during the analysis of data.

Themes reflected findings that focused on the ethnonursing questions. Beliefs, attitudes, meanings and practices of Hispanic women about breastfeeding were elucidated and summarized. Acculturation was assessed by time in residency and language preference. Residency among the participants ranged from less than 1 year to 7 years. Of the eight informants, only two were bilingual (English and Spanish).

#### *Themes*

*Theme I. Breastfeeding is a natural choice among Hispanic women.* This theme was derived from informants' responses to questions about when one decides to breastfeed. Verbatim descriptors of key informants' beliefs are representative of this theme: *"I never doubted"*, *"you just know you will breastfeed"*, *"it's the way it's supposed to be"*, and *"it's a natural thing"*. These statements indicated there was no decision made about feeding method; each simply knew she would breastfeed. While fathers were reported to be supportive of breastfeeding, they had no input into the feeding method. Breastfeeding was described as *"easy, convenient, and makes sense"*.

*Theme II. Hispanic women strive to be strong, self-sufficient and self-assured.* Evidence of these attitudes was apparent the following comments in answer to the question about support, "Who cheers you up when you are down?": *"We hadn't heard of those things"*; *"I just start crying, and there is no one there"*; *"Jesus!" (laughs nervously)*; *"I never thought I needed cheering up. I just started crying but kept working"*; *"I knew that I could do it [breastfeed] even with no one there to help me."* These comments indicated that support persons were not always available for respondents; therefore they relied upon themselves and their faith.

Some statements about self-sufficiency related to families and the Hispanic tradition of *la cuarentena* (the 40 days after birth in which the mother rests, avoids housework, avoids intercourse, and eats a special diet): *"My mom was not like that, I am not like that"*, *"I had to take care of the children, I could not stay in bed"*, *"I was on the farm with the cows and the kids and could not stay in bed for 40 days. Those are antiquated ideas that are still followed among the poor [in Mexico]. You have to take care of*

*yourself, though, during that time*", *"My aunt and mother in Mexico were modern, they did not follow la cuarentena"*.

*Theme III. Hispanic women desire and seek current information related to breastfeeding and health.* Remarks related to the practice of attending classes and seeking information were: *"They have pamphlets about breastfeeding that I got at the church"*, *"When I have questions, I call the clinic"*, *"I went to a mother's class that they presented to me about pumps and everything because I was working full-time"*, *"There's La Leche League in California, so I made a couple of calls to them"*, *"I am not a typical taboo lady, I like to be informed"*.

Four women who previously lived in Mexico (all from the same family) spoke of government programs that require employers to give time off from work after delivery. The government in Mexico also provides medical insurance and promotes breastfeeding by requiring that hospitals do not offer formula. While breastfeeding classes were not offered by the Mexican government, the government's influence on breastfeeding was positive.

Each informant brought knowledge of how to keep healthy during pregnancy and breastfeeding as evidenced by these comments: *"You have to eat well because you are breastfeeding"*, *"You just understand to eat good"*, *"If you are healthy, the baby is healthy"*, *"You have to be healthy to have milk for the baby"*. When asked about what one should eat while breastfeeding, everyone spoke about eating a lot of vegetables (fruit was not mentioned), chicken and fish. One should not eat peppers or hot spices while breastfeeding because it will upset the baby's stomach. In addition, *atole* (rich oatmeal cooked with milk and sugar) was confirmed by six informants as important for making milk.

*Theme IV. Hispanic women express with pride that they have healthy children.* This theme was derived from statements by mothers in answer to questions about "how can you tell if your baby is healthy?" Comments included: *"if they are never sick"*, *"heavy"*, *"if skinny, they are poor"*, *"weight"*, *"no sickness"*, *"no problems, I am proud of myself that I did that"*, *"a child that doesn't eat well can't stay well"*, *"we had a lot of children in our family, but they were all healthy—we had a good mother"*. One informant was not able to breastfeed her baby because "he would not take it" and another bottle-fed two children because she worked outside the home. Both stated, however that they pumped their breasts to feed

colostrum for about seven days because they knew it gave a lot of protection and they wanted their babies to be healthy.

*Theme V. Suffering is an expected part of pregnancy, childbirth and motherhood.* Because the term, *suffering*, was frequently used by informants it was coded as a recurrent pattern for reflection. Three of the eight informants used the term in response to questions about husband support of breastfeeding. Examples include: “I was suffering with morning sickness, so I tell my husband he will help me with the baby, he bring him to me at night, I never have to get up”, “I cried when I had girls because I knew they would suffer more than boys”, “you suffer a lot for that period of time and [because] he was with me in labor and delivery...he say women they suffer a lot and I need to do something....”

#### *How Findings Informed the Design of Dissertation Research*

The results of this qualitative study confirmed Pearce’s (1998) findings that Hispanic women seek a healthy baby by caring for themselves, eating well, receiving support and advice, and accepting care from providers. The participants also expressed an understanding that breastfeeding is a natural and healthy way to feed their infants. In addition, they articulated their desire for healthy infants and openness to receiving breastfeeding information. Further conclusions suggested that Hispanic women with similar acculturation levels (as assessed by language preference and length of time in the U. S.) intended to breastfeed their infants despite having left supportive family members behind in their countries of origin. Each participant expressed knowledge of customary ways to stay healthy while pregnant and breastfeeding; however, most rejected traditional postpartum restrictions for the mother, due to lack of support for those restrictions.

With these considerations in mind, and with a desire to develop an appropriate intervention for Hispanic women that goes beyond “standard-of-care” (handouts and information on maternal nutrition); self-efficacy building strategies seem appropriate for building on the strong, self-sufficient, self-assured attitude of Hispanic women. While the participants sought to be “modern” and not bound by cultural traditions, they recognized traditional ways of staying healthy. Therefore a novel approach to the cultural practice of *la cuarentena*, involving a baby quarantine (restricting the infant to only breastfeeding) is feasible for promoting breastfeeding initiation and duration (Moreland et al., 2000).

*Preliminary Study 2: A Prenatal Breastfeeding Education Intervention to Promote Breastfeeding Duration among Hispanic Women*

*Purpose*

The primary purpose of this research was to pilot test a two-level prenatal intervention to promote breastfeeding among Hispanic women. A second objective was to determine effect sizes and feasibility of conducting intervention research with the selected population. Content focused on breastfeeding benefits, promoting infant health and encouraging commitment to breastfeed using *la cuarentena del bebe*, a culturally appropriate strategy that encourages exclusive breastfeeding (Moreland et al., 2000). The one-to-one intervention was conducted by the researcher and a female Spanish language interpreter.

*Hypotheses*

1. Women who receive PBE have a longer duration of breastfeeding than those who do not receive the intervention.
2. A subset of women who receive PBE and formulate a plan for breastfeeding have a longer duration of breastfeeding than those in the control group and those who do not formulate a plan.

*Research Variables*

Independent Variables: 1. Prenatal Breastfeeding Education (PBE), and 2. PBE with an added level, a commitment to breastfeed for a certain number of days.

Dependent Variable: Duration of breastfeeding at 6 to 7 weeks postpartum.

*Method*

The intervention was developed using information from Preliminary Study 1 as rationale for offering a two-level intervention. Prenatal Breastfeeding Education (PBE), a professional support intervention, is the first level. The second level of the intervention encouraged commitment to breastfeed (*cuarentena del bebe*) for a pre-determined period of time, specifically 40 days as a time in which nothing was introduced into the baby's mouth but the mother's breast (Moreland et al. 2000). The intervention is similar to the traditional "*la cuarentena*", the time after delivery in which nothing is inserted into the vagina for 40 days. The intervention is more fully described in Appendix D.

### *Research Design*

An experimental study was performed to determine changes in duration of breastfeeding.

Participants were randomly assigned to one of three groups (Figure 2).

Figure 2: *Experimental design of randomized clinical trial.*

N1			O1
N2	X1	O1	
N3	X1	X2	O1

N1: Control group

N2: First Level intervention group

N3: Second Level intervention group

X1: First Level Intervention

X2: Second Level Intervention

O1: Breastfeeding duration self-report at 42 days postpartum

### *Sample*

Thirty low-risk, primigravid women who received prenatal care at the Sedgwick County Department of Health, Mother and Infant Clinic (M&I) were enrolled. Choosing low-risk women controlled for maternal variables that may have affected the childbirth outcome. Selecting primigravid women controlled for previous breastfeeding experience. Each participant had a normal breast and nipple exam as recorded on her prenatal assessment, came from a stable family, and was not planning to work outside the home for 6 months. All participants were of Hispanic heritage, between 16 and 45 years of age. Eighty-five percent of the participants had emigrated from Mexico within the last 7 years. All participants preferred to speak Spanish rather than English.

### *Procedures*

*IRB.* IRB approval was received through the University of Nebraska Medical Center (UNMC) for therapeutic research. A research contract was negotiated between UNMC and the Board of Commissioners of Sedgwick County, Kansas. After IRB approval, the informed consent form was translated into Spanish.

*Recruitment at clinic.* After initial prenatal assessments, each potential participant was referred to the researcher by M & I Clinic staff. Each potential participant was then asked by the researcher, through

the interpreter if necessary, if she would be interested in participating in a breastfeeding study while she waited to see the physician.

*Random assignment.* Because this study required three groups, random assignment occurred in the following manner: After informed consent, each participant was asked to draw an envelope from a manila packet which contained 30 envelopes. The envelopes were prepared ahead of time, 10 of which contained a piece of paper indicating LEVEL 1, 10 contained a piece of paper indicating LEVEL 1/ LEVEL 2, and 10 contained a piece of paper indicating CONTROL. Each participant drew an envelope that indicated her placement in the group that received only LEVEL 1 of the intervention, the group that received both LEVEL 1 and LEVEL 2 of the intervention or the CONTROL group.

*Intervention.* The two-level Prenatal Breastfeeding Education intervention is fully described in Appendix D. This researcher endeavored to use a culturally appropriate approach for Hispanic women. The intervention lasted less than one hour and was administered while participants waited to receive prenatal care at the M & I Clinic

*Data collection.* Demographic data were collected at enrollment. Breastfeeding duration data were obtained by telephone on the feeding status of members of each group (control vs. first level intervention and control vs. first level vs. second level) at 6 to 7 weeks postpartum. Mothers were asked to self-report, a practice appropriate for research projects because it is assumed that mothers are honest in disclosing their breastfeeding status (Jan Riordan, personal communication, May 13, 2002). Each mother was asked the status of infant feeding, whether breast only, partially breastfeeding, or bottle only. Those who were partially breastfeeding were asked how many bottles were added per day and were counted as breastfeeding. If the mother was not breastfeeding, she was asked the number of days she breastfed before weaning. Weaning was defined as not breastfeeding in the last 48 hours and not intending to breastfeed this child again (Cronenwett et al., 1992).

#### *Data Analysis*

Data were analyzed using SPSS 11.0. Three sections of the analysis were: 1. A comparison of the duration of breastfeeding between the control and first level intervention group, 2. A comparison of the duration of breastfeeding between the control group, the first level intervention group, and the second level intervention subgroup who committed to breastfeed for a predetermined length of time, and 3. a

comparison of the duration of breastfeeding between the first level intervention group and the second level intervention subgroup who committed to breastfeed for a predetermined length of time.

### *Results*

Differences in duration between groups were not significant ( $F [2] = 1.47, p = .252$ ) Results are summarized in Table 1.

Table 1

*Summary of Data Analysis of Preliminary Study 2*

Group	N	Mean	Std. Dev.	95% Confidence Interval		Minimum	Maximum
				Lower	Upper		
Control	7	17 days	18.24	-.01	33.73	2	42
Level I	9	23 days	15.90	10.89	35	5	42
Level II	9	31 days	16.22	18.64	43	2	42
Total	25	24 days	17.01	17.22	31	2	42

### *How Findings Informed the Design of Dissertation Research*

The two-level PBE intervention was pilot tested with a sample of Hispanic women who received prenatal care at the same clinic in which the dissertation research would take place. Thirty women were recruited and randomly assigned to control or intervention groups, only five were unavailable for follow-up data collection. This 17% attrition rate showed the participants were receptive to involvement in a research study. Telephone follow-up required an average of 2.3 attempts per participant.

The failure to achieve statistical significance was not surprising given the small sample size and the large variances in duration. The data from this study were used to calculate an effect size for Level II intervention group (two-level PBE) vs. the control group based on breastfeeding duration. The effect size was found to be .82 using G\*Power (Buchner, Franz, & Erdfelder, 2003), a figure used to calculate sample size for the dissertation research.

Breastfeeding self-efficacy and the related concepts of confidence and perception of success have literature support for promoting breastfeeding initiation and duration (Blyth et al., 2002; Boettcher et al.,

1999; Cleveland, 1999; Cohen et al., 1999; Coriel & Murphy, 1988; De Bocanegra, 1998; Dennis, 1999; Dennis & Faux, 1999; Gorman et al., 1995; Hill, 1991; Locklin & Naber, 1993; Obermeyer & Castle, 1997; Sheehan, 1999; Tarrka et al., 1999; Torres et al., 2003; Wood et al., 1998). The means by which the PBE intervention achieved the breastfeeding outcome needs to be better understood. To develop the proposed intervention, it seemed appropriate to combine the two-level intervention into a session that promoted breastfeeding self-efficacy for Hispanic women who may have lacked traditional support networks for breastfeeding. In this way, breastfeeding self-efficacy could be tested as a mediator mechanism, thus clarifying the theoretical connection proposed by Pender et al. (2002) between the self-efficacy and health-promoting behavior.

### *Preliminary Study 3*

The Breastfeeding Self-Efficacy Scale (BSES) is a 33-item instrument which has been published and psychometrically tested with women in Canada (Dennis & Faux, 1999) and Australia (Blyth et al., 2002; Creedy et al., 2003, Dennis et al., 2003). It was translated into Spanish and pilot tested with Puerto Rican women (Torres et al., 2003). The 33-item BSES was subsequently shortened to the 14-item Breastfeeding Self Efficacy-Short Form (BSES-SF) (Dennis, 2003). Because the Hispanic women at the M & I Clinic are largely of Mexican descent, it was necessary to translate the BSES-SF into Spanish for those Mexican women who preferred to speak Spanish. The procedure is discussed below.

In translating measurement instruments, Brislin (1970) suggests back-translation as a means of ensuring equal meaning in both languages. The process involves having questions in the source language translated to the target language by a bilingual person from the target culture. Then, a second bilingual person translates the items back to the source language. To finalize instrument equivalence, the two source language versions are compared.

Following Brislin's (1990) suggestions for back-translating, the English version of the BSES-SF was administered to a nulligravid bilingual Mexican woman of childbearing age. She completed the instrument in approximately five minutes, confirming she understood the questions and none were offensive to her. She then translated the BSES-SF (English) into Spanish. A second nulligravid bilingual Mexican woman of childbearing age, who had not seen the instrument before, then translated the Spanish

version back into English. Finally, the pair met together with the researcher to compare the original English items with the back-translated items and to resolve any discrepancies in the wording of the instrument.

To accomplish content equivalence and guard against language not commonly understood by monolingual Spanish-speaking women of Mexican origin, the researcher held a focus group discussion about the instrument with a convenience sample of three monolingual Spanish-speaking pregnant women who had emigrated from Mexico within the last year. An interpreter was present for the taped conversation. The researcher informed the women, through the interpreter, that their advice was needed about a breastfeeding questionnaire that had been translated from English into Spanish. Each woman completed the inventory within approximately 20 minutes. All were able to understand the statements. When asked if there were any statements that used confusing words, they spoke of the translation of the word “cope” in the second item, “I can always successfully cope with breastfeeding like I have with other challenging tasks.” After a lengthy discussion, the statement was translated to read, “*Yo siempre puedo exitosamente terminar de amamantar así como lo hago con otras tareas difíciles*”. Item number ten was changed from, “*Yo siempre batallo con amamantar porque pierdo mucho tiempo*” to read, “*Yo siempre puedo manejar la situación de que amamantar quita mucho tiempo*” to be more equivalent to the statement, “I can always deal with the fact that breastfeeding can be time consuming”. After these changes, the researcher and interpreter verified with the focus group that the women understood the items and the instrument was pertinent to breastfeeding. To finalize the instrument, another female bilingual interpreter of Mexican heritage compared the newly translated instrument to the original English (Dennis, 2003) and the original Spanish translated items (Torres et al., 2003). She confirmed that the content of the newly translated instrument was equivalent to both.

#### *How Study Findings Informed Dissertation*

Translating the BSES-SF items for Spanish speaking women from Mexico, and the process used in validating the content of the instrument showed the items were appropriate. The focus group of relevant community members verified the relevancy of the measure. Therefore the instrument was used to measure breastfeeding self-efficacy in the dissertation study.

### *Summary of Preliminary Studies*

Three pilot studies informed the content of the intervention and the design of this research making it culturally appropriate and acceptable to Hispanic participants of Mexican heritage. Findings from Preliminary Study 1 assured Hispanic women are open to learning about breastfeeding and they believe breastfeeding is a natural way to nourish a healthy child. Participants made clear that traditional beliefs are important but sometimes impractical. These findings led to the development of the PBE intervention which used unique strategies to promote breastfeeding for Hispanic women. Preliminary Study 2 tested a one and two-level PBE intervention. Support was shown for emphasizing breastfeeding as a healthy means of providing infant nutrition while preserving the attitude of strength and self-assuredness in Hispanic women. To make the Spanish translated version of the BSES-SF culturally acceptable and readable for women of Mexican heritage, a focus group confirmed its usability and content in Preliminary Study 3.

### Design of the Dissertation Research

An experimental study was conducted to determine the effect of a prenatal education intervention to increase breastfeeding self-efficacy, initiation and duration among primigravid Hispanic women. The design is shown in Figure 3.

Figure 3: *Experimental design of randomized clinical trial.*

N1	O1		O2	O3	O4	O5
N2	O1	X1	O2	O3	O4	O5

N1: Control group (primigravid Hispanic women, 32-36 weeks gestation)

N2: Intervention group (primigravid Hispanic women, 32-36 weeks gestation)

X1: PBE intervention

O1: BSES-SF(1) baseline score

O2: BSES-SF(1) score at approximately 2 weeks post-intervention

O3: BSES-SF score at 2 weeks postpartum

O4: Breastfeeding initiation self-report at 2 weeks postpartum

O5: Breastfeeding duration self-report at 6 weeks (42 days) postpartum

## *Participants and Setting*

### *Inclusion Criteria*

Because this research targeted breastfeeding among Hispanic women, only Hispanic women aged 15 to 45 were enrolled as participants. In the state of Kansas, a person under age 18 (age of majority) is considered emancipated if she no longer lives with her parent/guardian and assumes complete financial responsibility for herself and her child. Persons 16 or 17 years of age who are married or have been married are considered to be the age of majority in Kansas. Therefore, participants aged 15 to 18 who qualified for the status of emancipation or aged 16 or 17 who were married or have been married were eligible to enroll and required to sign the adult consent form.

Primigravid Hispanic women were recruited for the study. Those included were assessed by the investigator to be 32 to 36 weeks gestation at enrollment. Each was in a stable family situation, had a work situation compatible with breastfeeding for 6 weeks, and had a normal breast/nipple assessment as documented on the prenatal intake assessment by the prenatal caregiver. A “stable family situation” meant the expectant mother lived together in residence with a significant other or supportive family member (parent/sibling). She could not be “homeless” at the time of enrollment. The residence was with other family members, not in a temporary community agency or shelter.

### *Exclusion Criteria*

Situations that excluded participants included high risk pregnancy as assessed in the prenatal period, serious illness of the newborn or mother that precluded breastfeeding during some or all of the 6 week period, stillbirth, or unforeseen family situations.

### *Sample Size*

G\*Power (Buchner et al., 2003) was used to calculate the sample size necessary to show the intervention was effective in promoting breastfeeding duration for 42 days. A total sample of 74 was needed to achieve Power at 0.81 at a significance level of 0.01. To allow for a 17% attrition rate (as estimated from the pilot study), 95 participants were sought.

The original proposed sample size of 95 total participants was later revised down to 70 based on estimates of the variability seen in the outcome data for the initial subjects. Final sample size was 86, which provided 81% power to detect an effect size of .822 based on duration of breastfeeding. It was originally

proposed that participants would include primigravid women and women expecting their second baby who had not breastfed before. However, each potential participant expecting her second baby reported having tried to breastfeed with her first baby. Therefore, only primigravidas were enrolled.

#### *Random assignment process*

A manila packet was prepared in which 95 sealed envelopes were placed. Each envelope contained a card upon which is written "1" or "2", to indicate placement in the either the control or intervention group. To obtain random assignment while reducing the potential for systematic bias and chance skewing, each participant drew an envelope from the manila packet to indicate her group placement. In this way, groups comparable in size and distribution were achieved.

#### *Setting*

The M & I Clinic provides maternal and infant care for women in an urban public health clinic in Wichita, Kansas. Approximately 90% of M & I clients are Hispanic, and 75% are monolingual Spanish speaking women recently emigrated to the U. S. from Mexico. The clinic is staffed by Advanced Practice Nurse Practitioners who provide prenatal and postpartal care. Resident physicians from the University of Kansas Medical Center who deliver babies in the nearby tertiary care hospital provide prenatal obstetric assessments on a weekly basis. Spanish speaking interpreters are available.

Women at the M & I Clinic received "standard-of-care" breastfeeding information that consisted of handouts relating to supply and demand, mother's nutrition, and how often to feed. Women did not have access to the specific information included in the PBE intervention during the prenatal period; therefore, its implementation was appropriate. One-to-one teaching sessions were held with participants in a small classroom that had been designated for use by this researcher by the M & I staff. Women typically waited ½ to 1 hour to see the resident physician for routine prenatal care; it was during that time the intervention was conducted.

#### *Measurement of Variables*

##### *Operational Definitions*

*Breastfeeding.* Breastfeeding was defined as feeding the infant by breast either without supplement or allowing a maximum of one bottle of formula per day.

*Breastfeeding Self-Efficacy.* Breastfeeding self-efficacy was defined as the maternal confidence score on the Breastfeeding Self-Efficacy Scale-Short Form (BSES-SF) (Dennis, 2003, used with permission). See Appendix E.

*Breastfeeding Initiation.* Breastfeeding initiation was defined as feeding the infant at breast in the postpartum days while in the hospital, either without supplement or allowing a maximum of one bottle-feeding of formula per day.

*Breastfeeding Duration.* Breastfeeding duration was defined as the number of days the infant was fed at the breast, either without supplement or allowing a maximum of one bottle-feeding of formula per day.

#### *Breastfeeding Self-Efficacy Scale*

The Breastfeeding Self-Efficacy Scale (BSES) was first developed and psychometrically tested with a Canadian population (Dennis & Faux, 1999) then with an Australian population (Creedy et al., 2003). It was translated into Spanish and tested with a sample of Puerto Rican women (Torres et al., 2003). After further evaluation of the BSES, the Breastfeeding Self-Efficacy Short Form (BSES-SF) was developed (Dennis, 2003). The development and testing of the BSES and BSES-SF are described below.

*Conceptual basis.* Bandura (1998), in the Social Cognitive Theory, emphasizes self-efficacy as a cognitive process by which one evaluates his or her capability to perform a specific behavior. Dennis (1999) developed the BSES based on the conceptual connection between breastfeeding confidence and self-efficacy theory. Breastfeeding confidence has been shown to improve breastfeeding outcomes for Hispanic women (Boettcher et al., 1999; Cohen et al., 1999; Coriel & Murphy, 1988; O'Campo, Faden, Geilen, & Wang, 1992), thus measuring the concept among Hispanic women is appropriate.

*Measurement of Breastfeeding Self-Efficacy.* The BSES has 33 items that measure technique and intrapersonal thoughts which are subdimensions of breastfeeding success found in the literature (Dennis & Faux, 1999). Scale items are stated in present tense, for example, "I can always focus on getting through one feed at a time". Respondents indicate their degree of confidence between 1 (not at all confident) and 5 (always confident) to randomly distributed items. The higher scores indicate higher levels of breastfeeding self-efficacy. The reading level was found to be grade seven.

*Reliability and Validity of the BSES.* Dennis and Faux (1999) reported the internal consistency reliability of the BSES as a Cronbach alpha coefficient of .95. Test-retest reliability was not reported. Face validity and construct validity were determined with a pretest sample of 23 mothers. Scores on the BSES predicted infant feeding method at 6 weeks. Dennis and Faux suggested the concept of breastfeeding self-efficacy should be validated through further research at different time points in pregnancy and postpartum periods.

Sensitivity to change was reported by Blyth et al. (2002) and Creedy et al. (2003) in reports on the same study that tested the BSES antenatally and at 1 week and 4 months postpartum in a sample of 300 Australian women. A consistent increase in breastfeeding self-efficacy over time was shown by comparing mean antenatal BSES scores (126.16,  $\pm$ 23.85) and 1 week postnatal mean scores (139.86,  $\pm$ 23.87) and 4 month postpartum mean scores (140.88,  $\pm$ 24.3). The authors concurred that breastfeeding self-efficacy is a significant predictor of breastfeeding level and duration, however sensitivity to self-efficacy interventions were not tested.

#### *BSES-SF*

Dennis (2003) reported consistently high Cronbach alpha coefficients indicating item redundancy with the original BSES and used standard criteria to reduce the number of items from 33 to 14. Dennis tested the new 14-item short form with 491 breastfeeding mothers in British Columbia. The Cronbach alpha coefficient for the shorter scale (BSES-SF) was .94, and the BSES-SF and the original BSES were highly correlated at all three time periods ( $r = .99$ ).

Validity of the BSES-SF was assessed with factor analysis, contrasted groups analysis, correlations with related concepts, and prediction of breastfeeding status at 4 and 8 weeks postpartum. Statistically significant differences in 1, 4, and 8 week BSES-SF scores between women with no breastfeeding experience and women with such experience supported the construct validity of the scale. BSES-SF scores were significantly ( $p = .00$ ) positively correlated with self-esteem at 1 week ( $r = .28$ ), 4 weeks ( $r = .40$ ) and 8 weeks ( $r = .51$ ) and negatively correlated with maternal mood ( $r = -.25, -.33, -.50$ ) and perceived stress ( $r = -.28, -.40, -.50$ ) at 1, 4 and 8 weeks respectively. These correlations further supported the construct validity of the scale (Dennis).

*Summary and critique of the BSES-SF.* Dennis' (2003) reported the psychometric analysis of the BSES-SF showed support for the predictive properties of the instrument in a sample of primarily married, Caucasian women of varied socioeconomic status, age and educational level. The tool's predictive ability with other cultural groups, particularly Hispanic women of Mexican heritage and low socioeconomic status, was not shown in the literature. Because many Hispanic persons in the U. S. are illiterate or have completed only elementary grades, the 7<sup>th</sup> grade reading level of the scale may too high for the target sample. Even though the Likert scale format is positively stated (as suggested by Bandura, 1986; Naranjo & Dirksen, 1998), Likert scale formats are sometimes confusing to persons with low reading ability due to difficulty associating numbers with words (Brislin, 1970).

For this dissertation research, the instrument was administered at three different time points in this study: prenatally at baseline, prenatally at 2 weeks post-enrollment, and at 2 weeks postpartum. To measure changes in prenatal breastfeeding self-efficacy from baseline to post-enrollment and then to postpartum; it was reasonable to change the stem statements to future-tense. "I will always..." rather than "I can always..." stem statements were used on the prenatal instrument only.

#### *Extraneous Variables*

To minimize situational contaminants, the researcher must control extraneous variables by striving to achieve constancy of conditions (Polit, Beck, & Hungler, 2001). One extraneous variable is the reality that some of those in the control group may receive breastfeeding information from other sources. All participants however could receive breastfeeding information from other sources; therefore this environmental condition was constant.

Acculturation was defined for this study as "the extent to which people from one culture adapt or accommodate their behavior and thoughts to their perceptions of the norms of a second culture" (Rassin et al., 1994, p. 740). Acculturation was assessed by language preference (English or Spanish), educational level, employment status of the head of the household, and length of time in the U. S. (in years). Each participant's acculturation data were documented on her demographic data form and tested for normality. Demographic data were obtained using the document found in Appendix F.

The BSES-SF was translated from English into Spanish prior to the study. Each participant used the translation of her preference. As no testing has been conducted to confirm the equivalency of these two

language versions, prior to hypothesis testing, *t*-tests for differences between scores on the two versions within intervention groups were conducted. Internal consistency within each language group was also assessed.

Several extraneous variables for this research were controlled by using random assignment where each participant had an equal chance of receiving the intervention or not receiving it. These included the possibility that some participants may have had more support for breastfeeding than others. Other extraneous variables that may influence breastfeeding success include the availability of supportive nurses and lactation consultants during hospitalization in the postpartum period. Also, the availability of formula vouchers through the WIC program may have been seen by some participants as incentive to bottle-feed. While the researcher had no control over these potentially confounding variables, the random assignment process is believed to have equalized these characteristics across the groups.

#### *Summary of Design*

Participants in this research were pregnant Hispanic women who received prenatal care at the M & I Clinic of the public health department in Wichita, Kansas. Most were Spanish-speaking and recently emigrated from Mexico. The effectiveness of the PBE intervention was evaluated by comparing prenatal baseline, prenatal post-enrollment, and postpartal scores on the BSES-SF; and breastfeeding initiation rates and breastfeeding duration between control and interventions groups. Extraneous variables were controlled at intake into the study and through random assignment.

#### *Intervention*

This researcher developed the PBE intervention using portions of Pender's HPM (Pender et al., 2002) as framework. While the outcome of the HPM is health-promoting behavior, the outcome of the PBE intervention was the health-promoting behavior of breastfeeding. Those in the control group received "standard-of-care" information regarding breastfeeding from staff at the prenatal clinic (research site). "Standard-of-care" consisted of informational handouts about the benefits of breastfeeding, how to get started and how to maintain nutritional health while breastfeeding.

#### *Prenatal Breastfeeding Education*

Prenatal Breastfeeding Education content was based on factors important to successful breastfeeding outcomes for Hispanic women as documented in the HPM literature and as discovered in

Preliminary Study 1. A key concept in the HPM is self-efficacy which is viewed as having a direct and indirect influence on perceived barriers and benefits of health-promoting behavior (Pender et al., 2002). Breastfeeding self-efficacy has been shown to be predictive of breastfeeding success among Caucasian participants (Dennis & Faux, 1999; Blyth et al., 2002; Blyth et al., 2004) and Puerto Rican women (Torres et al., 2003), but it has not been tested with Hispanic women of Mexican origin.

A qualitative study by this researcher showed Hispanic women seek information to nourish a healthy infant and value cultural traditions if they are attainable. The PBE intervention focused on the healthy baby by providing information to promote breastfeeding self-efficacy. A modern slant was applied to a traditional method of care through the implementation of *la cuarentena del bebe* (baby quarantine), a time in which nothing was introduced into the baby's mouth but the mother's breast (Moreland et al., 2000). No bottles, pacifiers, or food were offered for this period of time for the purpose of establishing breastmilk and feeding patterns conducive to exclusive breastfeeding. It reinforced the benefits of avoiding bottles, pacifiers, and supplementation to promote establishment of milk for successful breastfeeding (Hill, Humenick, Brennan, & Woolley, 1997) while highlighting cultural traditions (Moreland et al.). Each participant was asked to complete the "For My Baby" infant feeding plan (adapted from Moreland et al.) for the purpose of encouraging commitment to breastfeed (Appendix G). Each mother kept a copy of the plan for future reference.

Prenatal Breastfeeding Education content, sources of self-efficacy information, rationale, relation to the conceptual framework, and assurance of cultural appropriateness are summarized in Table 2. The complete PBE teaching table is found in Appendix H. Handouts are included in Appendix I.

Table 2. *PBE Content Summary*


---

Content/Self-efficacy source	Cultural Appropriateness
Advice to breastfeed/ Verbal persuasion	Hispanic women are open to receive information (Preliminary Study One). Effectiveness of this intervention was shown by Balcazar et.al, 1995; Bryant, 1982; Gorman et al., 1995; Perez-Escamilla et al., 1998).
Assessment of previous knowledge/ Vicarious learning	Role modeling is part of vicarious experience cited by Bandura (1986) as one influence on self-efficacy. Acknowledgement of previous knowledge will build on feelings of self-sufficiency (Preliminary Study One).
What to expect at hospital/Physiologic state	This intervention was found successful with Chilean women (Pugin et al., 1996); Mexican migrant women (Romero-Gwynn & Carias, 1989); and Mexican-American women (Young & Kaufman). Hispanic women are strong and self-sufficient; they will use this knowledge to prepare for the experience (Preliminary Study One).
Holding and positioning/Performance accomplishment	Hispanic women are open to receive information (Preliminary Study One). Demonstration and practice was found effective (Kokinos & Dewey, 1986; Pugin et al., 1996).

---

### *Procedures*

Approval for the study was received from the Institutional Review Board for the Protection of Human Subjects of the University of Nebraska Medical Center. Each potential participant was referred to the researcher by clinic staff. Interactions with participants began with “small talk” to build trust and establish integrity as suggested by Bender et al., (2001). Without this “small talk” among Hispanic persons, answers to questions may be guarded (Bender et al.). For this reason, each interaction began with friendly questions about the participant’s health and family. A bilingual (Spanish/English) woman interpreted for those who preferred to speak Spanish. Consent forms were available in English or Spanish (Appendix J). Informed consent was obtained and random assignment was carried out. Demographic data (Appendix G) were collected.

### *Intervention Group*

Participants randomly assigned to the intervention group completed either the English or Spanish translation of the future-tense adapted BSES-SF (Dennis, 2003). The future-tense adapted instrument is designated in this document as BSES-SF(1). After completion of the preferred language version of the future-tense adapted BSES-SF(1), the PBE teaching plan (Appendix H) was implemented beginning with the open-ended statement, “Have you thought about how you will feed your baby?” Each item on the teaching plan was then addressed. The initial assessment and intervention lasted approximately one hour.

The same BSES-SF(1) instrument was re-administered at another clinic visit approximately 2 weeks after the first session. Then at approximately 2 weeks postpartum, each mother was telephoned and asked if she initiated breastfeeding while in the hospital and her current method of infant feeding, whether breastfeeding (allowing a maximum of one bottle of formula per day), or bottle only. Those who were breastfeeding at 2 weeks were asked to complete the present-tense BSES-SF orally over the telephone. If the mother was not breastfeeding, she was asked the number of days she breastfed before weaning. At approximately 6 weeks (42 days) postpartum, each of those who were breastfeeding at 2 weeks postpartum was asked her current method of infant feeding. If she was breastfeeding, she was asked the number of bottles (formula) she was giving per day. If she was not breastfeeding, she was asked the number of days she breastfed before weaning.

### *Control Group*

Participants randomly assigned to the control group completed either the English or Spanish translation of the future-tense adapted BSES-SF (1) (Dennis, 2003). The procedure was the same as described above except the PBE intervention was not administered. The initial assessment took approximately 15 minutes.

### *Data Analysis*

Demographic data including age, gravidity and parity, language preference, marital status, years of residence in the U. S. , employment status of the head of the household, support at home, place of birth, highest grade completed in school, and intended breastfeeding duration were summarized with descriptive statistics. The two groups were compared on relevant baseline demographic data. Baseline BSES-SF(1), 2 week post-enrollment BSES-SF(1), and 2 week postpartum BSES-SF scores of those in the control group were compared with baseline BSES-SF(1), 2 week post-intervention BSES-SF(1), and 2 week postpartum BSES-SF scores of those in the intervention group.

Breastfeeding initiation rates between the control and intervention groups were compared using a Chi-square test. Breastfeeding duration between birth and 6 weeks (42 days) after delivery were analyzed by examining the distribution breastfeeding survival time using the Kaplan-Meier curve and log-rank test. In addition, the Chi-square test was used to compare the intervention and control groups on breastfeeding duration at 6 weeks (42 days).

Breastfeeding self-efficacy scores on the BSES-SF(1) were compared at each time point (baseline, 2 weeks after enrollment), and BSES-SF scores were compared at 2 weeks after delivery using a two sample *t*-test.

To ascertain whether breastfeeding duration at 6 weeks (42 days) was the result of post-intervention breastfeeding self-efficacy, the 2 week post-enrollment BSES-SF scores of those breastfeeding in each group were grouped into high scores and other scores. The proportion of women in the intervention group with high scores was compared to the proportion in the control group with intermediate or high scores by Chi-square test. Differences in scores determined if breastfeeding self-efficacy was a mediator of breastfeeding duration.

### Summary of Chapter 3

Not only do many Hispanic women leave extended family when they immigrate to the U. S., but also they leave their traditional ways of maintaining and promoting health. This dissertation research is important because there is a paucity of interventions to promote breastfeeding among Hispanic women. The Health-Promotion Model provides structure for the research that tested a culturally appropriate Prenatal Breastfeeding Education (PBE) intervention for pregnant Hispanic women. Outcomes were breastfeeding self-efficacy, breastfeeding initiation rates, and breastfeeding duration measured to 42 days postpartum.

Ninety five pregnant Hispanic women originally were sought to be randomly assigned to either (a) a PBE group where a culturally appropriate one-to-one teaching session was presented by the researcher or, (b) a control group which received standard-of-care information from providers. Breastfeeding self-efficacy (BSES-SF) scores were obtained on individuals in both groups at enrollment, approximately 2 weeks later, and approximately 2 weeks after delivery. Breastfeeding initiation rates were obtained at approximately 2 weeks after delivery for both groups. Breastfeeding duration was assessed at approximately 42 days after delivery for both groups.

PBE content was based on themes about the breastfeeding beliefs, attitudes, meanings and practices of Hispanic women. Culturally appropriate methods as found in the literature were used to impart the information. Bandura's (1998) four sources of self-efficacy information were utilized to increase breastfeeding self-efficacy during the PBE sessions.

## CHAPTER 4

### FINDINGS

Sample and demographic characteristics of the participants are described in this chapter. Instrument reliability is explained. Results of hypotheses testing are reported, and analyses of data are summarized. Continuous variables were analyzed using the *t*-test, and discrete variables were analyzed by the Chi-Square test, Kaplan-Meier analysis, the Log Rank test, and Cox proportional hazard methods. Data were analyzed with SPSS 11.0 software (2001).

#### Sample Characteristics

Participants were primigravid Hispanic women who received prenatal care at the M & I Clinic of the Sedgwick County Department of Health in Wichita, Kansas. Recruitment of the target sample of 86 participants was reached over a seventeen month period. Complete data sets were acquired for 78 participants. Although no participants dropped out of the study, some did not return for prenatal visits at 2 weeks post-enrollment, therefore 8 assessments of BSES-SF(1) are missing (4 in the intervention group and 4 in the control group). Six participants were unavailable by telephone at 2 weeks postpartum, therefore initiation status and BSES-SF assessments were not obtainable (2 in the intervention group and 4 in the control group). Seven participants (4 in the intervention group and 3 in the control group) were unavailable for telephone assessment of duration at 6 weeks postpartum.

Tabachnik and Fidell (2001) suggest patterns in missing data are more serious than the amount of missing data. To test for patterns of missing data, dummy variables were constructed for cases with missing and non-missing values on the BSES-SF(1), the BSES-SF, breastfeeding initiation and breastfeeding duration. Tests of mean differences in the DVs by using dummy variables were not significant therefore the researcher assumed the missing data were randomly scattered. Cases with missing values were retained rather than deleted in order to avoid loss of data.

#### *Normality of Distributions*

Each variable met the assumptions of normality. Participants were randomly assigned to either an intervention or control group. Characteristics of the participants in each group are depicted in Tables 3, 4, and 5.

There were no statistically significant differences between the groups with regard to age, highest grade completed, U. S. residency in years, preferred language, support, marital status, employment status of head of household, or place of birth. The majority of the sample had some high school in their countries of origin (Table 3).

Table 3. Means, Standard Deviations, *t*-tests, and Significance for Age, Highest Grade Completed, Years of U.S. Residency, by Group.

Variable	Groups				<i>t</i>	<i>p</i>
	Intervention		Control			
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		
	<i>N</i> = 44		<i>N</i> = 42			
Age	22.20	4.10	22.10	3.82	.13	.90
Highest grade completed	10.64	2.15	10.26	1.93	.85	.40
Years of U.S. residency	5.30	5.05	5.91	5.06	-.56	.58

The majority in both groups were married, with head of household employed, preferred to speak Spanish, and were monolingual (Spanish). Each participant had some source of support from a family member. Mothers were the source of support for most participants, followed by husband (Table 4).

Table 4. *Demographic Characteristics and  $X^2$  Significance between Intervention and Control Groups.*

Variable	Category	Intervention <i>n</i> = 44		Control <i>n</i> = 42		$X^2$	<i>p</i>
		Freq.	%	Freq.	%		
Marital Status	Married	33	75	37	88.1	2.43	.12
	Unmarried	11	25	5	11.9		
Employment Status of Head of Household	Employed	38	86.4	36	85.7	.01	.93
	Unemployed	6	13.6	6	14.3		
Place of Birth	Mexico	38	86.4	37	88.1	8.31	.40
	U.S.	1	2.3	2	4.8		
	Central America (El Salvador Guatemala, Honduras)	3	6.8	1	2.4		
	South America (Columbia, Ecuador, Paraguay, Peru)	2	4.6	2	4.8		
Preferred Language	Spanish	32	72.7	33	78.6	.40	.53
	English	12	27.3	9	21.4		
Bilingual (Spanish/English)		18	40.9	9	21.4	3.79	.07
Monolingual (Spanish)		26	59.1	33	78.6		
Support	Mom only	21	47.7	23	54.8	2.38	.50
	Husband only	14	31.8	15	35.7		
	Sister	5	11.4	3	7.1		
	Mom/Husb.	4	9.1	1	2.4		

#### Instrument Equivalence

Two versions of the Breastfeeding Self-Efficacy Scale-Short Form (Dennis, 2004) were used. The first version was the BSES-SF(1), administered both at baseline and at 2 weeks post-enrollment. The BSES-SF(1) asked the prenatal participant to respond to future tense statements regarding her confidence in

breastfeeding. The second version was the BSES-SF, administered at 2 weeks postpartum. Its present tense statements express postpartal breastfeeding confidence. Each version of the instrument was administered in either Spanish or English, according to the participants preferred language.

Before the two language versions were combined for hypothesis testing, the versions were compared to estimate equivalency. There were no significant differences in BSES-SF scores by language within experimental group at any time point as shown by *t*-test. See Table 5.

Table 5. *T*-tests of BSES-SF scores by language by group.

BSES Version	Intervention	Control	Total Sample
Mean BSES-SF(1) Score at Baseline			
Spanish	51.63, <i>n</i> = 32	51.27, <i>n</i> = 33	51.45, <i>n</i> = 65
English	54.67, <i>n</i> = 12	46.22, <i>n</i> = 9	51.04, <i>n</i> = 21
<i>t</i> -test	<i>t</i> (42) = .84, <i>p</i> = .40	<i>t</i> (40) = -1.81, <i>p</i> = .08	<i>t</i> (84) = .169, <i>p</i> = .87
Mean BSES-SF(1) at 2 weeks post-enrollment			
Spanish	60.44, <i>n</i> = 29	54.43, <i>n</i> = 30	57.39, <i>n</i> = 59
English	61.91, <i>n</i> = 11	55.13, <i>n</i> = 8	59.05, <i>n</i> = 19
<i>t</i> -test	<i>t</i> (38) = .70, <i>p</i> = .49	<i>t</i> (36) = .22, <i>p</i> = .82	<i>t</i> (76) = -.843, <i>p</i> = .40
BSES-SF at 2 weeks postpartum			
Spanish	64.12, <i>n</i> = 25	53.08, <i>n</i> = 13	60.34, <i>n</i> = 38
English	66.75, <i>n</i> = 8	54.50, <i>n</i> = 2	64.30, <i>n</i> = 10
<i>t</i> -test	<i>t</i> (31) = 1.19, <i>p</i> = .24	<i>t</i> (13) = .23, <i>p</i> = .82	<i>t</i> (46) = -1.36, <i>p</i> = .18

To test the internal consistency of the BSES-SF versions, scores were compared by Cronbach alpha between groups. At all three administration times there were no significant differences in BSES-SF scores by language by group (Table 6). Based on this testing, the data from the two language groups were analyzed together.

Table 6. Cronbach alpha coefficients for BSES-SF by language and combined languages.

BSES-SF version	Intervention	Control	Total Sample
BSES-SF(1)			
Spanish	.88 (n = 32)	.50 (n = 33)	.78 (n = 65)
English	.90 (n = 12)	.91 (n = 9)	.92 (n = 21)
Combined languages	.89 (n = 44)	.71 (n = 42)	.83 (n = 86)
BSES-SF 2 weeks postpartum			
Spanish	.83 (n = 29)	.80 (n = 9)	.83 (n = 38)
English	.50 (n = 8)	.49 (n = 2)	.86 (n = 10)
Combined languages	.70 (n = 37)	.69 (n = 11)	.80 (n = 48)

A *t*-test of the baseline BSES-SF(1) was conducted prior to tests of hypotheses to determine homogeneity of groups. Baseline breastfeeding self-efficacy scores were not statistically different between the intervention and control groups (Table 7).

Table 7. Baseline BSES-SF(1) for Intervention and Control Groups.

Group	<i>n</i>	Mean	SD	Std. Error Mean	<i>t</i> -test	<i>p</i>
Intervention	44	52.45	10.67	1.61	1.13 (84)	.26
Control	42	50.19	7.63	1.18		

### *Outliers*

Outliers were explored through the use of SPSS“Boxplots” (SPSS 11.0 for Windows, 2001). Two outliers each were observed for age and years of U.S. residency; four outliers for highest grade were noted. Three outliers were observed for baseline BSES-SF(1) while four outliers were noted for BSES-SF (2 weeks postpartum). Standard error for the skewness of each of these variables ranged from .260 to .363 while the standard error for kurtosis ranged from .514 to .674. Normality was assumed because standard errors did not exceed -2 or +2. Therefore the outliers were retained for data analysis.

### *Changes in Research Environment over Time*

There was no indication of a change in procedures in the study site over the seventeen month period of the study. Staff and procedures at the M & I Clinic remained the same, as did the researcher’s teaching methods. The same person provided English to Spanish interpretation of the teaching sessions throughout the duration of the study. Factors such as WIC teaching practices, home health visits and family support remain unknown and uncontrolled potential sources of variability. Random assignment of participants to intervention or control groups provides assurance that these environmental sources were the same for both groups.

## Tests of Hypotheses

### *Hypothesis 1*

Hypothesis 1: Women who receive the PBE have (a) higher rates of breastfeeding initiation and (b) longer duration than those who do not receive the intervention.

Observed initiation rates were 90% for the intervention group and 76% for the control group. The difference in the rate of breastfeeding initiation between groups was not statistically significant ( $\chi^2 [1, N = 80] = 2.94, p = .09$ ) (Table 8). Duration of breastfeeding in the intervention group was 20 days longer than the control group ( $t [78] = 5.63, p = .00$ ) (Table 9). When only initiators were included, the difference in duration (19 days) remained significant ( $t [65] = 5.44, p = .00$ ) (Table 9). Hypothesis 1(a) was not accepted. Hypothesis 1(b) was accepted.

Table 8. *Initiation of Breastfeeding  $X^2$  Significance by Group.*

Group	Initiated	% Initiated	Did not initiate	% did not initiate	$X^2$	$p$	Fisher's <i>exact</i>
Intervention	38	90%	4	10%	2.94 df = 1	.09	.13
Control	29	76%	9	24%			

### Hypothesis 2

Hypothesis 2: Women who receive the PBE intervention have higher breastfeeding self-efficacy, measured both at (a) 2 weeks post-enrollment and (b) 2 weeks postpartum, than those who do not receive the intervention.

The PBE intervention increased breastfeeding self-efficacy as shown by changes in BSES-SF scores. Women in the intervention group had higher BSES-SF scores at both 2 weeks post-enrollment ( $t [76] = 4.07, p = .00$ ) and at 2 weeks postpartum ( $t [46] = 5.84, p = .00$ ) (Table 9). Hypotheses 2(a) and 2(b) were accepted.

Table 9. *Mean, Standard Deviations, and  $t$ -Tests of Significance for Independent and Dependent Variables by Group.*

		Groups		$t$ -test	$p$
		Intervention $M$	control $M$		
Independent Variable	BSES-SF(1) Baseline	52.45 ( $n = 44$ )	50.19 ( $n = 42$ )	1.13	.26
Dependent Variables	BSES-SF(1) 2-wk. post- enrollment	60.85 ( $n = 40$ )	54.58 ( $n = 38$ )	4.07	.00
	BSES-SF 2-wk. post- partum	64.76 ( $n = 33$ )	53.27 ( $n = 15$ )	5.84	.00
	Duration	$m = 32$ days ( $n = 42$ )	$m = 12$ days ( $n = 38$ )	5.63	.00
	Duration for initiators only	$m = 35$ days ( $n = 38$ )	$m = 16$ days ( $n = 29$ )	5.44	.00

### Hypothesis 3

Hypothesis 3: The PBE intervention increases (a) breastfeeding initiation and (b) breastfeeding duration by increasing breastfeeding self-efficacy.

To test whether the PBE intervention increased breastfeeding initiation, initiation rates between those with high 2 week post-enrollment BSES-SF(1) scores (>57) in each group were compared by Chi-square test (Table 10). The difference was not significant. Hypothesis 3(a) was not accepted.

Table 10. *Initiation rates for those with high 2 week post-enrollment (>57) BSES-SF(1) scores:*

	Group		$X^2$	df	<i>p</i>
	Intervention	control			
Initiated	26 (90%)	8 (67%)	5.01	2	.08

The mediating effect of the intervention on duration was tested by Kaplan-Meier Survivorship Analysis and Log Rank test. Breastfeeding for 42 days was examined as a function of breastfeeding self-efficacy for the participants. Time to cessation of breastfeeding was used as the failure end point for this analysis. The analysis treats those who did not start breastfeeding as “failures” at time 0.

Figure 4 depicts the Kaplan-Meier Survival Curves for both groups estimating the distribution of survival time. By 42 days, an estimated 67% of those in the intervention group continued to breastfeed, while an estimated 13% of those in the control group continued to breastfeed (Table 11). Results of the Log Rank Test show the difference between the estimated breastfeeding survival time (20 days) was significant ( $LR [1, N = 80] = 27.19, p = .00$ ).

Figure 4. Kaplan-Meier Survival Curve for Intervention and Control Groups

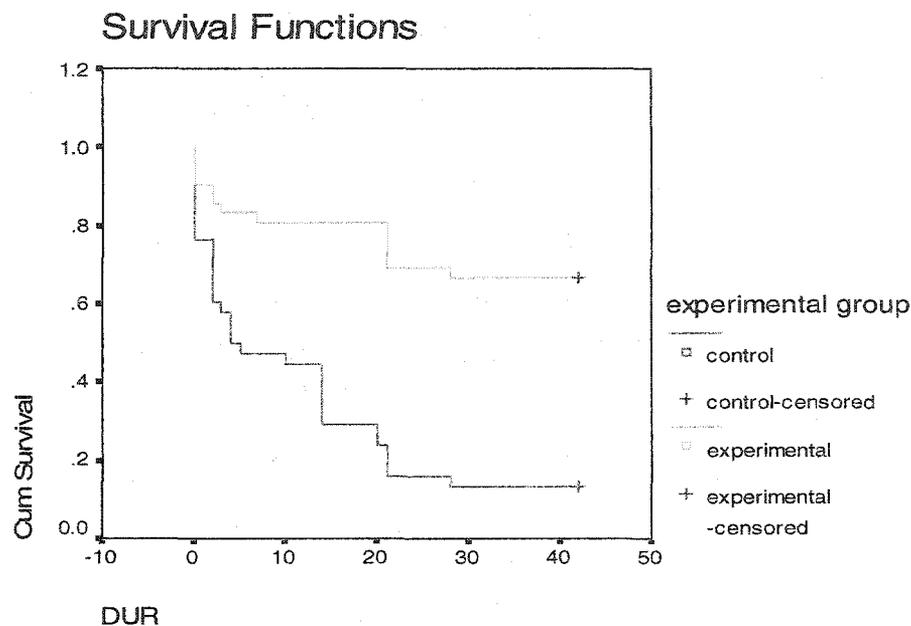


Table 11. Kaplan-Meier Survival Analysis for Breastfeeding Duration by Group:

<i>Intervention Group</i>		
Number of cases: 42	Censored: 28 (66.67%)	Events: 14
Estimated Survival Time: 32 days	Standard Error: 2	95% Confidence Interval (27, 36)
<i>Control Group</i>		
Number of cases: 38	Censored: 5 (13.16%)	Events: 33
Estimated Survival Time: 12 days	Standard Error: 2	95% Confidence Interval (8, 17)

*Mediating Effects of Post-Intervention Breastfeeding Self-Efficacy*

To ascertain whether breastfeeding duration at 42 days was a result of post-intervention breastfeeding self-efficacy, the 2 week post-intervention BSES-SF(1) scores of those breastfeeding in each group were grouped into high scores (> 57) and other scores ( $\leq$  57). The median BSES-SF score for the entire sample was 57 at 2 weeks post intervention. Therefore scores above 57 were considered high, and scores equal to or below 57 were considered low for this analysis. The proportion of women in the

intervention group with high scores was compared by Chi-square test to the proportion with high scores in the control group. The Chi-square analysis showed there were significantly more participants in the intervention group with high scores compared to the control group (Table 12). Kaplan-Meier analysis of survival time for those with high BSES-SF(1) scores at 2 weeks post-enrollment showed significant differences between groups (Table 13).

Table 12.  $X^2$  Proportion of Participants with Other Scores or High BSES-SF(1) Scores (2 weeks post-enrollment) by Group.

Group	Other Scores ( $\leq 57$ )	%	High Scores ( $> 57$ )	%	$X^2$	$p$
Intervention	11	25	29	66	13.09	.001
Control	26	62	12	29		
Total	37		41			

Table 13. Kaplan-Meier analysis of Participants with High BSES-SF (1) Scores (2 weeks post-enrollment) by Group.

Experimental Group	n	Censored Cases (still breastfeeding)	%	Estimated Survival Time	SE	95% Confidence Interval	LR	$p$
Intervention	28	18	64%	31 days	3	24 , 37	23.74	.00
Control	12	2	17%	10 days	4	2 , 19		

#### *Analysis of Treatment Differences for Initiators Only*

Although rates of breastfeeding initiation were not influenced significantly by the PBE intervention, there appeared to be a large difference between intervention and control groups in the proportion of initiators who continued to breastfeed through 42 days. Therefore a second analysis was completed after removing those cases that did not initiate breastfeeding. This analysis was completed to answer the question: Is there a difference in breastfeeding duration among those who started breastfeeding in each group? Of the 67 who initiated breastfeeding, the estimated duration for the intervention group ( $n =$

38) was 35 days, while for those in the control group ( $n = 29$ ) the estimated duration was 16 days. The estimated difference in duration between groups (19 days) was tested and found to be significant ( $t [65] = 5.44, p = .00$ ) (Table 14).

For those who initiated, the Kaplan-Meier survivorship analysis and Log Rank test were completed to determine the probability of breastfeeding for 42 days as a function of the breastfeeding self-efficacy. Figure 5 depicts the Kaplan-Meier Survival Curve after removing those cases that did not initiate. The proportion continuing to breastfeed through day 42 was estimated to be 73.68% for the intervention group and 17.24% for the control group.

Figure 5. Kaplan-Meier Survival Curve for Intervention and Control Groups including only the cases which Initiated Breastfeeding.

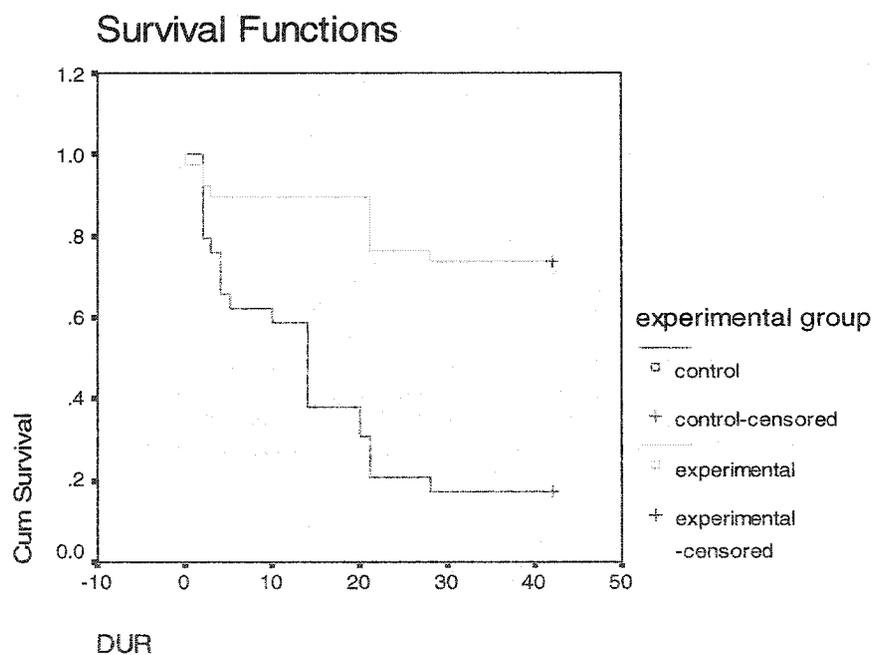


Table 14 shows the Kaplan-Meier analysis of estimated breastfeeding duration among Initiators by group. The estimated breastfeeding survival time for Initiators in the intervention group was 35 days, while the estimated breastfeeding survival time for the control group was 16 days. Differences between survival times for Initiators were significant:  $LR (1, N = 67) = 25.25, p = .00$ .

Table 14. *Kaplan-Meier Survival Analysis of Duration by Group for Initiators.*


---

<i>Intervention Group</i>		
Number of cases: 38	Censored: 28 (73.68%)	Events: 10
Mean Survival Time: 35 days	Standard Error: 2	95% Confidence Interval (30, 39)
<i>Control Group</i>		
Number of cases: 29	Censored: 5 (17.24%)	Events: 24
Mean Survival Time: 16 days	Standard Error: 3	95% Confidence Interval (11, 21)

---

*Mediating Effects of Post-Intervention Breastfeeding Self-Efficacy among Initiators*

To ascertain whether breastfeeding duration at 42 days was a result of post-intervention breastfeeding self-efficacy for those who initiated breastfeeding ( $n = 67$ ), the 2 week post-intervention BSES-SF(1) scores of those breastfeeding in each group were grouped into high scores ( $> 57$ ) and other scores ( $\leq 57$ ). The proportion of women in the intervention group with high scores was compared by Chi-square test to the proportion in the control group with high scores. Among those who initiated breastfeeding, there were 29 cases in the intervention group who had high BSES-SF(1) (2-week post-enrollment) and 8 in the control group. Findings were significant when the analysis was restricted to only those who initiated breastfeeding ( $\chi^2[2, N = 37] = 17.38, p = .00$ ).

To further analyze the mediating effect of breastfeeding self-efficacy, survival times for those with high ( $> 57$ ) 2 week post-enrollment BSES-SF(1) scores were compared between groups. This analysis was carried out to answer the question: Was it possible that high breastfeeding self-efficacy for initiators was a result of continuing to breastfeed rather than the PBE intervention? Table 15 shows the difference was significant, that is, in women with high breastfeeding self-efficacy 2 weeks post-enrollment, there was still a significant intervention effect.

Table 15. *Estimated Survival Time for Initiators with High 2-Week Post-Enrollment BSES-SF(1) Scores by Group.*

Experimental Group	n	Censored cases (still breastfeeding)	%	Estimated Survival Time	SE	95% Confidence Interval	LR	p
Intervention	28	20	71%	34 days	3	28 , 39	16.05	.00
Control	8	2	25%	15 days	6	4 , 26		

Further analysis was performed to ascertain whether innate breastfeeding self-efficacy, rather than the PBE intervention, mediated breastfeeding duration (Table 16). Survival times were estimated for participants with high baseline BSES-SF(1) scores (>51). Only initiators were included in the analysis. The estimated survival time for those in the intervention group (n = 26) was 32 days and in the control group (n = 15) it was 14 days respectively.

Table 16. *Estimated Survival Time for Initiators with High Baseline BSES-SF(1) Scores (>51) by Group.*

Experimental Group	n	Censored cases (still breastfeeding)	%	Estimated Survival Time	SE	95% Confidence Interval	LR	p
Intervention	26	17	65%	32 days	3	26, 38	25.72	.00
Control	15	3	20%	14 days	4	7, 22		

### *Hypothesis 3: Summary*

Based on the above analyses, initiation for those with high BSES-SF(1) 2 week post-enrollment scores in the intervention and control groups were not significantly different. Breastfeeding self-efficacy did not mediate breastfeeding initiation. Therefore Hypothesis 3(a) was not accepted.

Among initiators with high baseline breastfeeding self-efficacy scores in the intervention and control groups, 65% and 20% respectively continued to breastfeed at 42 days. The effect of the intervention on duration was statistically significant even among those who had high breastfeeding self-efficacy at enrollment. Hypothesis 3(b) was accepted.

*Effects of Covariates*

*Non-Intervention Predictors of Breastfeeding Duration*

To find non-intervention factors predictive of breastfeeding duration by experimental group, the Cox Proportional Hazards Model was used. The relationship between survival time and the other covariates was significant ( $X^2 [8, N = 67] = 20.4, p \leq .01$ ). As a set, the covariates reliably predicted survival time ( $X^2 [8, N = 67] = 18.12, p = .02$ ).

The continuous variables of age, years of U. S. residency, and grades completed were changed to categorical variables to explore potential hazards of each covariate. There were no significant differences in breastfeeding duration by covariate; however differences by group membership were significant (Wald [1, N = 67] = 10.1,  $p = .00$ ) thus verifying the effect of the intervention (Table 17).

Table 16. *Cox Proportional Hazards Model of the Non-Intervention Factors Predictive of Breastfeeding Duration by Group*

Variables in the Equation	B	SE	Wald	df	<i>p</i>	Exp(B)
Age (15-34)			2.1	2	.34	
Age (15-19)	.49	.34	2.1	1	.14	1.63
Age (20-24)	.24	.33	.55	1	.46	1.27
Years in U. S. (0 - 22)			2.64	2	.27	
Years in U. S. (3 - 8)	-.17	.39	.19	1	.66	.84
Years in U. S. (9 - 22)	.31	.36	.75	1	.39	1.37
Grades completed (6 - 16)			.37	2	.83	
Grades completed (6 - 9)	.22	.36	.38	1	.54	1.24
Grades completed (10 - 11)	.11	.31	.124	1	.73	1.12
Baseline BSES-SF	-.01	.02	.18	1	.67	.99
Experimental group	-.88	.28	10.10	1	.00	.41

### Summary of Findings

The mean age of participants was 22 years. Most were born in Mexico, were married, had attended some high school, and preferred to speak Spanish. All expected some support from family members. Each variable met the assumptions of normality.

Hypothesis 1(a) was not accepted. Observed initiation rates were 90% for the intervention group and 76% for the control group. While this is a 14% difference, its non-significance is probably due to sample size (86). To detect a true difference, 96 participants would be needed to have 80% power.

Breastfeeding duration for the intervention group was 17 days longer than the control group; therefore Hypothesis 1(b) was accepted.

Hypotheses 2(a) and 2(b) were accepted. The PBE intervention had a significant effect on breastfeeding self-efficacy scores. Mean two week post-enrollment BSES-SF(1) scores for those in the intervention group were 6.27 points higher than for those in the control group. Additionally, at 2 weeks postpartum, the mean BSES-SF scores for the intervention group were 11.49 points higher than those in the control group.

Hypothesis 3(a) was not accepted. Among those in each group with high BSES-SF(1) (2 week post-enrollment) scores, the difference in initiation between intervention (26 initiated) and control (8 initiated) groups was not statistically significant.

Hypothesis 3(b) was accepted. Duration between 2 weeks and 6 weeks (42 days) after delivery were compared. Estimated survival time for those in the intervention group was 32 days as compared to 12 days for those in the control group and found to be significantly higher. The proportion of women breastfeeding at 42 days was significantly higher in the intervention (67%) than the control group (13%). In the intervention group, 66% had high 2 week post-enrollment BSES-SF(1) scores, while 29% in the control group had high scores. In a second analysis of duration for initiators only ( $n = 67$ ) the estimated survival time was 35 days for the intervention group and 16 days for the control group. Among the initiators, 73% in the intervention group and 24% in the control group had high BSES-SF(1) (2 week post-enrollment) scores.

## CHAPTER 5

SUMMARY, DISCUSSION, CONCLUSIONS, STRENGTHS AND LIMITATIONS, IMPLICATIONS  
AND RECOMMENDATIONS

Current data show that Hispanic women breastfeed at rates lower than recommended by Healthy People 2010 (USDHHS, 2000). The purpose of this study was to test a culturally appropriate Prenatal Breastfeeding Education intervention among immigrant Hispanic women. Specific aims were to increase breastfeeding initiation rates, breastfeeding duration, and breastfeeding self-efficacy; and to discover if breastfeeding self-efficacy mediated the effect of the intervention on breastfeeding initiation and duration.

Although each of the constructs within the HPM (Pender et al., 2002) has been found to influence breastfeeding success for Hispanic women, breastfeeding promotion efforts have not typically used the HPM as a framework to guide interventions. Self-efficacy, a key component in the HPM, has been put forward as influencing breastfeeding success, but breastfeeding self-efficacy has not been tested as a mediator of breastfeeding outcomes among Hispanic women. Thus, an intervention using self-efficacy information sources was designed and tested. This chapter provides a summary of the study, discussion of the findings, conclusions, implications for practice and recommendations for further research.

## Summary

Prior to the current research, a qualitative study was undertaken to discover the breastfeeding beliefs, attitudes, meanings and practices of Hispanic women. A culturally appropriate intervention was then developed which combined the qualitative findings with strategies found in the literature to positively influence breastfeeding outcomes for Hispanic women. The intervention was pilot-tested with randomly assigned Hispanic women. Breastfeeding duration rates were increased for those who received the intervention, but the means by which the intervention increased duration remained unknown. After both pilot studies were completed, the researcher hypothesized breastfeeding self-efficacy as a mediator of duration rates, thus the current study took place.

Of the 86 participants, 44 were randomly assigned to the intervention group and 42 to the control group. The mean age was 22 years, and the mean education was 10 years. Although the participants' years of U. S. residency ranged from less than one year to 22 years, most (87%) were immigrant women from Mexico. If language preference is considered a proxy for acculturation (John & Martorell, 1989), the

sample could be considered at a low acculturation level because 76% preferred to speak Spanish. Most were married (81%) and reported the head of household was employed (86%). All participants expected support in some way, either from their mothers (51%), the baby's father (34%), both (6%), or a sister (9%).

The PBE intervention (Appendix H) was delivered by the researcher with the assistance of a female Spanish language interpreter. Participant enrollment continued for 17 months. One-to-one sessions used specific efficacy building strategies, and changes in breastfeeding self-efficacy were measured at two weeks post-enrollment. Two-week postpartum breastfeeding self-efficacy scores, initiation rates and duration were assessed by follow-up telephone calls. Table 17 shows the summary of outcomes for all participants vs. initiators by experimental group.

Table 17. *Summary of Outcomes.*

Dependent Variables	All Participants			Initiators Only		
	Intervention Group ( <i>n</i> = 44)	Control Group ( <i>n</i> = 42)	Tests of Significance	Intervention Group ( <i>n</i> = 38)	Control Group ( <i>n</i> = 29)	Tests of Significance
Duration	<i>m</i> = 32 days	<i>m</i> = 12 days	<i>t</i> (78) = 5.63, <i>p</i> = .00	<i>m</i> = 35 days	<i>m</i> = 29 days	<i>t</i> (65) = 5.44, <i>p</i> = .00
Estimated Breastfeeding Time	<i>m</i> = 32 days	<i>m</i> = 12 days	<i>LR</i> (1) = 27.19, <i>p</i> = .00	<i>m</i> = 35 days	<i>m</i> = 16 days	<i>LR</i> (1) = 25.25, <i>p</i> = .00
Breastfeeding at 42 days	<i>n</i> = 28	<i>n</i> = 5	$\chi^2$ (1) = 23.57, <i>p</i> = .00	<i>n</i> = 28	<i>n</i> = 5	$\chi^2$ (1) = 20.96, <i>p</i> = .00
2 week post-enrollment BSES-SF(1) scores	<i>n</i> = 40	<i>n</i> = 38	$\chi^2$ (26) = 38.77 <i>p</i> = .05	<i>n</i> = 37	<i>n</i> = 29	$\chi^2$ (25) = 38.29 <i>p</i> = .04

## Discussion

### *Hypothesis 1: PBE and Breastfeeding Initiation and Duration*

Immigrant Hispanic women who received the PBE intervention had higher estimated breastfeeding duration (measured at 42 days) than those who did not receive the intervention (32 days vs. 12 days respectively). Proportions still breastfeeding at 6 weeks (42 days) were 67% in the intervention group and 13 % in the control group. These results are consistent with research that showed 57% of Mexican women who planned to breastfeed, continued to breastfeed for 4 months (Perez-Escamilla et al., 1993). Among Chilean women, Pugin et al., (1996) found 67% in the intervention group vs. 32% in the control group were still breastfeeding at 6 months following a prenatal intervention. Reifsnider and Eckhart (1997) showed a significantly higher duration (76 days vs. 30 days) for women who received a prenatal breastfeeding intervention in a sample that included one Hispanic participant. While these examples show the effectiveness of using prenatal interventions, none tested interventions for immigrant Hispanic women in the U. S.

In this study, immigrant Hispanic women who received the PBE intervention did not have higher rates of breastfeeding initiation. In the intervention group 90% initiated breastfeeding, and in the control group 76% initiated. The initiation rate was 78% for all participants. This study confirms the existing high rate of breastfeeding initiation in Hispanic women (78%) (Ruowei et al., 2005). Data from the current study did not corroborate Romero-Gwynn and Carias' (1989) findings which showed that 68% who intended to breastfeed actually initiated at a rate of 20%. DeBocanegra (1998) and Gorman et al. (1995) showed 55% and 45% initiation rates for respondents (prenatal intention was not assessed).

A reason the initiation rates for both groups remained high may have been the "standard-of-care" interventions at the M & I Clinic. "Standard-of-care" included advice to breastfeed and handouts during the initial prenatal visit, but further skill building and follow-up care related to breastfeeding were not included. Each participant stated a prenatal intent to breastfeed which may have been due to this standard advice received at a previous clinic appointment. Other reasons for non-significant differences in initiation rates may have included "standard-of-care" during the postpartal period. All participants delivered at the same tertiary care hospital where routine postpartal care included assistance with initiation while in the hospital, but information about possible breastfeeding care after discharge was not obtained.

*Hypothesis 2: PBE and Breastfeeding Self-Efficacy*

The hypothesis that immigrant Hispanic women who received the PBE intervention had higher breastfeeding self-efficacy was supported by significant differences in 2 week post-enrollment BSES-SF(1) scores between groups. The mean BSES-SF(1) scores at 2 weeks post-enrollment was 60.85 for the intervention group and 54.58 for the control group. To further support the second hypothesis, among those who initiated and continued to breastfeed for at least 2 weeks, the 2 week postpartum BSES-SF scores were significantly different between the intervention (mean score = 64.76) and control groups (mean score = 53.27).

Several researchers have hypothesized that breastfeeding self-efficacy has an influence on breastfeeding outcomes. Campbell (1996) used self-efficacy sources in a breastfeeding program to increase breastfeeding self-efficacy as measured by the Campbell Breastfeeding Scale but found no significant difference in duration rates. Other research documented the effect of self-efficacy on breastfeeding among Australian women (Blyth et al., 2004; Creedy et al., 2003), Canadian women (Dennis & Faux, 1999) and Puerto Rican women (Torres et al., 2003), but none tested the effect of efficacy building interventions. In contrast to these studies, the current research provides evidence that self-efficacy influences breastfeeding behavior for immigrant Hispanic women.

*Hypothesis 3: PBE and the Mediating Effect of Breastfeeding Self-Efficacy*

To test the mediating effect of breastfeeding self-efficacy on breastfeeding initiation and duration, survival of breastfeeding to 42 days and proportion of high (>57) BSES-SF(1) 2 week post-enrollment scores were compared between groups. The difference in initiation was not significant, but the estimated percentage who continued to breastfeed at 42 days was significantly higher in the intervention group (67%) as compared to the control group (13%). To assure post-intervention breastfeeding self-efficacy mediated duration, rather than innate breastfeeding self-efficacy, estimated time to cessation of breastfeeding for those with high baseline scores was compared between groups. The difference (19 days) was significant.

The PBE focused on self-efficacy, a key influence on health-promoting behavior (Pender et al., 2002) as set forth by Bandura (1986). In a review of seventeen studies of self-efficacy or the related concept of maternal confidence and breastfeeding (Bryant, 1982; Boettcher, Chezem et al., 1999; Buxton et al., 1991; Campbell, 1996; Cleveland, 1999; Cohen et al., 1999; Coriel & Murphy, 1988; De Bocanegra,

1998; Gorman et al., 1995; Higgins, 2000; Hill, 1991; Locklin & Naber, 1993; Obermeyer & Castle, 1997; Sheehan, 1999; Tarrka et al., 1999; Torres et al., 2003; Wood et al., 1998), none used experimental techniques to verify the effect of breastfeeding self-efficacy among women of Hispanic heritage. The current research presents evidence that culturally appropriate prenatal breastfeeding education not only increased breastfeeding self-efficacy scores on the BSES-SF(1), but also it mediated an increase in duration.

### Conclusions

Because this research was guided by the HPM and one of its key constructs, self-efficacy, the findings contribute uniquely to this model. Specifically, breastfeeding self-efficacy was measured along with initiation and duration, the results of which add to the breastfeeding self-efficacy literature and breastfeeding practice. Participants were Hispanic women, thus conclusions about providing culturally appropriate breastfeeding information are drawn. Conclusions related to the HPM, self-efficacy, breastfeeding self-efficacy, breastfeeding professional practice, and cultural appropriateness are summarized.

### *Health Promotion Model*

The success of the intervention may be attributed to its conceptualization within the HPM (Pender et al., 2002). Pender et al. considered perceived self-efficacy as having a direct or indirect influence on the perceived barriers and benefits of health-promoting behavior; however mediator and/or moderator influences of self-efficacy have not been tested within Pender's model. This research provides evidence of the mediator function of self-efficacy in promoting breastfeeding duration.

The PBE intervention successfully included both self-efficacy sources and encouragement to commit to breastfeed for 6 weeks through *la cuarentana del bebe*. The "baby quarantine" provided an action plan upon which participants could rely. This research, in addition to breastfeeding literature support for each of the health-promotion constructs, corroborates the HPM as a framework for promoting health in immigrant Hispanic women.

### *Self-Efficacy*

Bandura (1995) and Schwarzer and Fuchs (1995) documented instruments to evaluate changes in self-efficacy as they affect specific behaviors (flossing, breast self-exam, exercise, stress, education, and

others). Findings concur with Bandura's (1986) assertion that self-efficacy predicts behavior. Support for the manipulation of self-efficacy for health behaviors is verified as well. This research is important when considering the large influx of immigrants who may endure social distress. Schwarzer and Fuchs emphasize the need to build self-efficacy for the purpose of encouraging the adoption of healthy behaviors among immigrants.

#### *Breastfeeding Self-efficacy*

Past research has not shown breastfeeding change due to efficacy building interventions for any population. This research validates breastfeeding self-efficacy as a measurable attribute which increases duration among immigrant Hispanic women. These findings contribute to the concept of breastfeeding self-efficacy and specifically to the sensitivity to change of Dennis' (2003) breastfeeding self-efficacy instrument.

#### *Breastfeeding Professional Practice*

The literature shows the importance of prenatal breastfeeding interventions. The results reported here support the positive effect of prenatal breastfeeding interventions, specifically providing content that builds self-efficacy. The nurse's role is to promote these research findings among other health professionals and the public. Benefits of this intervention over "standard-of-care" for breastfeeding duration support the integration of focused teaching about breastfeeding into the standard of practice in antenatal clinics caring for immigrant Hispanic women.

#### *Cultural Appropriateness*

While culturally sensitive health care is emphasized in the breastfeeding literature (Bottorff & Morse, 1990; Denman-Vitale & Murillo, 1999; Dettwyler & Fishman, 1992; Heinig & Dewey, 1996; Kannan et al., 1999; Maclean, 1998; Obermeyer & Castle, 1997; Rassin et al., 1994), only one program of study (Perez & Valdes, 1991; Pugin et al., 1996) tested culturally competent interventions to increase breastfeeding rates, but it focused on women in Santiago, Chile. The current intervention used a qualitatively derived teaching plan that included *la cuarentena del bebe*, a cultural concept with a modern slant. The success of the intervention supports the use of culturally acceptable means to promote breastfeeding. For those who work with Hispanic women, interpreters will assist in assuring accurate information and technique.

### Strengths and Limitations

This study contributes uniquely to the literature on health-promotion, specifically the concept of self-efficacy as it influences health-promotion. It provides an intervention that is guided by the HPM focusing on the construct of self-efficacy. Measurement of specific breastfeeding self-efficacy outcomes adds to the breastfeeding knowledge base. The findings augment breastfeeding self-efficacy literature and validate breastfeeding self-efficacy as a mediator of breastfeeding duration.

Using culturally appropriate interventions is promoted and verified in the literature (DeBocanegra, 1998; De la Torre & Rush, 1987; Gill et al., 2004; Libbus, 2000). Traditional values were closely held by both groups as shown by years in the U.S. (mean = 5.6 years) and Spanish as the preferred language for 76% of participants. This research used not only culturally appropriate strategies and content, but also strategies that were qualitatively derived.

A limitation of the research is that postpartum support was not part of the intervention. It might be reasonable to provide support via the telephone at 2 and 6 weeks postpartum. The findings provide empirical support for prenatal interventions; postpartal interventions could complement those efforts.

Use of both Spanish and English translations of future-tense and present-tense versions of the BSES-SF was a limitation to this study. Blyth et al. (2004) documented the reliability of the present-tense version of the BSES with antenatal women. The current study converted the BSES-SF to future-tense for prenatal participants to discover if the intervention changed prenatal breastfeeding self-efficacy. Both versions were administered in the participant's preferred language (English or Spanish). Although there were no within group differences by language, the equivalence of the two versions cannot be assumed.

### Implications for Practice

Self-efficacy is seen as a key influence on health promoting behaviors (Pender et al., 2002). The current study shows self-efficacy also influences breastfeeding among Hispanic women. Therefore nurses can use specific efficacy building strategies. Based on the results of this study, the intervention demonstrated the importance of:

1. Using assessment of breastfeeding self-efficacy to guide interventions, in either the prenatal or postpartal period. In this way, women with low self-efficacy could be targeted for teaching.
2. Encouraging commitment to breastfeed as one means of increasing duration.

3. Promoting the use of efficacy building strategies in WIC agencies and other informal breastfeeding support groups as well as among families.
4. Recognizing breastfeeding as a natural choice among immigrant Hispanic women.
5. Acknowledging many Hispanic women are supported by family and significant others in their breastfeeding decision and seek current information to promote the health of their children.

#### Recommendations for Further Study

Cronenwett et al. (1992) found breastfeeding at 6 weeks a predictor of breastfeeding at 6 months, but Ruowei et al. (2005) found that breastfeeding rates dropped by almost one-third at 6 months for Hispanic women. The current research showed 19% of intervention group ceased breastfeeding by 7 days. Further research is needed to measure prediction of breastfeeding duration among differing populations.

To investigate 6 week duration as a predictor of 6 month duration among immigrant Hispanic women, another study could be planned in which the control group would receive the PBE intervention tested in this study. The intervention group would receive a “booster” intervention during the first postpartum week (based on findings that 19% ceased breastfeeding by 7 days). Breastfeeding self-efficacy scores would be assessed for initiators in both groups at 2 weeks, 6 weeks, and 6 months. Increases in breastfeeding duration as a result of the “booster” would be followed to 6 months.

The intervention needs to be tested in other settings because it may not be feasible in busy clinics due to short-staffing. Trained peer counselors could deliver the intervention as suggested by Arlotti et al. (1998) and Moreland et al. (2000). Participants could be recruited from community or church settings.

Only two components of the HPM were included in this study (breastfeeding self-efficacy and commitment to a plan of action). Breastfeeding self-efficacy was shown in this study to mediate breastfeeding duration. Instruments could be developed to assess other HPM constructs such as interpersonal support, immediate competing demands, and commitment to a plan of action. These HPM constructs may then be tested among Hispanic women as well as any population.

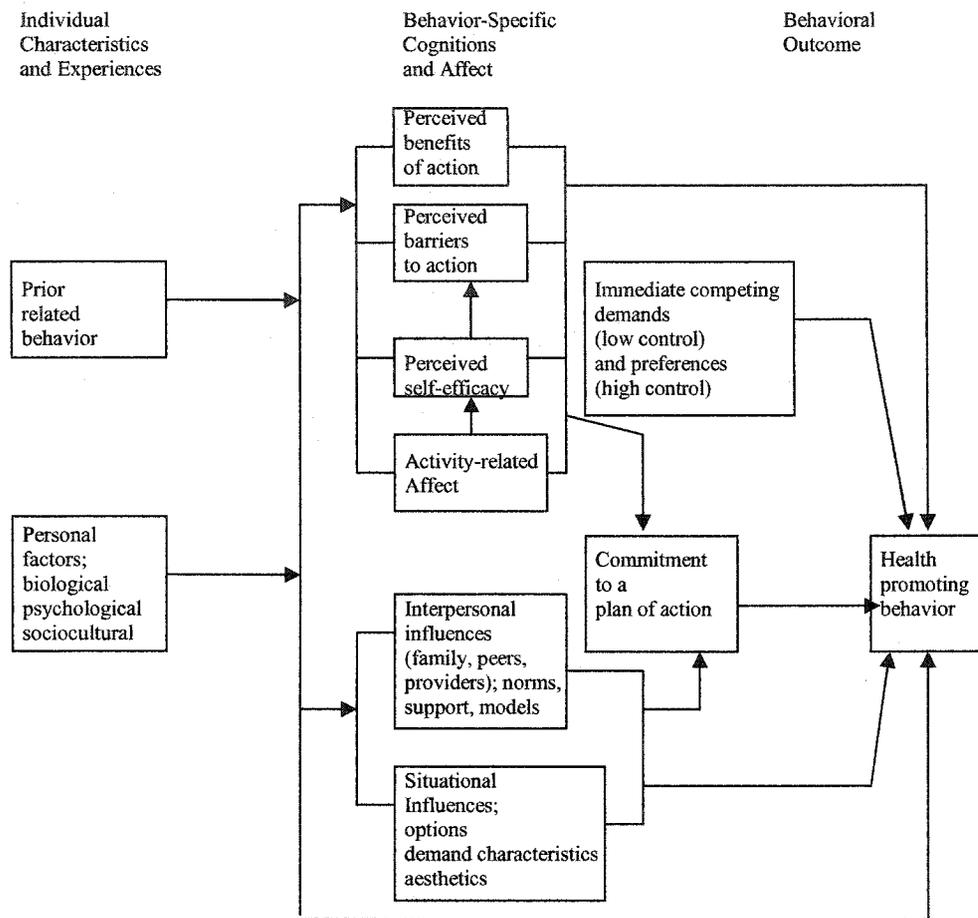
Outcomes of the research have been summarized in this chapter. Findings were discussed and conclusions were drawn. Strengths and limitations, implications for practice and recommendations for further study were set forth.

Appendix A.

Revised Health Promotion Model (Pender et al., 2002)



### Revised Health Promotion Model (Pender et al., 2002)



The HPM (Pender, 1996) shows the 10 determinants of health-promoting behavior within the categories of *Individual Characteristics and Experiences* (on the left), *Behavior-Specific Cognitions and Affect* (in the middle). The *Behavioral Outcome* is on the right of the Model. The arrows show the directions in which the determinants act to bring about health-promoting behaviors.

Appendix B.

Literature support for breastfeeding among Hispanic women grouped by Health Promotion Model (HPM) determinants

Literature support for breastfeeding among Hispanic women grouped by Health Promotion Model (HPM) determinants  
 ("X" indicates the breastfeeding outcome that was measured.)

HPM Determinant	Author	Breastfeeding Outcome			Sample/Population Group	Methods	Critique
		Intention	Initiation	Duration			
Prior Related Behavior	Humphreys et al. (1998)	X			N=982 in Atlanta, Georgia/14.2% Hispanic	Descriptive	Only 14.2% Hispanic. Assessed intention only.
	Perez-Escamilla, et al. (1998)		X		144 Latina women in Hartford, Connecticut	Descriptive	Assessed Initiation only.
Personal Factors (Acculturation)	De Bocanegra (1998)	X	X	X (not specified)	942 foreign or Puerto Rican born low income women in New York	Descriptive survey	Survey only.
	De la Torre & Rush (1987)		X		137 women of Mexican descent living in migrant camps in Texas	Descriptive probit analysis for model development	Descriptive only. Classic study.
	Gill et al. (2004)				39 Hispanic persons in Texas WIC Clinics	Focus group discussions	Qualitative. Assessed attitude only, not intention, initiation or duration.
	Humphreys et al. (1998)	X			N=982 in Atlanta, Georgia/14.2% Hispanic.	Descriptive	Only 14.2% Hispanic, Assessed intention only.

Literature support for breastfeeding among Hispanic women grouped by Health Promotion Model (HPM) determinants  
 ("X" indicates the breastfeeding outcome that was measured.)

HPM Determinant	Author	Breastfeeding Outcome			Sample/Population Group	Methods	Critique
		Intention	Initiation	Duration			
Personal Factors (Acculturation) <i>(continued)</i>	John & Martorell (1989)		X	X (12 months)	2402 Mexican-American women responded to the HHANES-MA (1970-1982)	Descriptive analysis of survey.	Survey only. Classic study.
	Libbus (2000)				57 Hispanic women in Missouri WIC Clinics	Descriptive analysis of responses to breastfeeding vignettes.	Surveyed attitude only, not intent, initiation or duration.
	Pachon & Olson (1999)		X	X (6 months)	136 Hispanic women in New York	Descriptive.	Descriptive only.
	Rassin et al. (1994)		X		906 Hispanic women living on Texas/Mexico border	Descriptive analysis of survey.	Descriptive only.
	Romero-Gwynn & Carias (1989)	X	X	X (up to 5 months)	132 Hispanic mothers in California	Survey of breastfeeding practices.	Descriptive only. Classic study.

Literature support for breastfeeding among Hispanic women grouped by Health Promotion Model (HPM) determinants  
 ("X" indicates the breastfeeding outcome that was measured.)

HPM Determinant	Author	Breastfeeding Outcome			Sample/Population Group	Methods	Critique
		Intention	Initiation	Duration			
Perceived Benefits of Action <i>(continued)</i>	Cohen et al. (1999)		X	X (4 or 6 months)	222 women in Honduras	Experimental/ random assignment to exclusively breastfeed for 4 or 6 months	Study took place in Honduras. Assigned length of time of exclusive breastfeeding is the only intervention.
	Scrimshaw et al. (1987)	X	X		518 women of Mexican origin or descent in Los Angeles, California	Descriptive/interviews	Classic study.
	Wood et al. (1998)		X	X (up to 4 months)	25 Latina (Mexico, Puerto Rico, Central Am., So. Am.) mothers in Massachusetts	Telephone interview	Descriptive only.
Perceived Barriers of Action	Cohen et al. (1999)		X	X (4 or 6 months)	222 women in Honduras	Experimental/ random assignment to exclusively breastfeed for 4 or 6 months	Study took place in Honduras. Assigned length of time of exclusive breastfeeding is the only intervention.
	Gorman et al. (1995)	X	X	X (> 1 yr.)	269 Hispanic women in southern Texas	Qualitative and survey	Exploratory only.

Literature support for breastfeeding among Hispanic women grouped by Health Promotion Model (HPM) determinants  
 ("X" indicates the breastfeeding outcome that was measured.)

HPM Determinant	Author	Breastfeeding Outcome			Sample/Population Group	Methods	Critique
		Intention	Initiation	Duration			
Perceived Barriers of Action <i>(continued)</i>	Hannon et al. (2000)	X	X	X (up to 3 months)	35 Latina and African Am. (40% Latina) adolescent mothers in Chicago, Illinois	Qualitative	Exploratory only.
	Gill et al. (2004)				39 Hispanic persons in Texas WIC Clinics	Focus group discussions	Qualitative. Assessed attitude only, not intention, initiation or duration.
	Scrimshaw et al. (1987)	X	X		518 women of Mexican origin or descent in Los Angeles, California	Descriptive/interviews.	Descriptive only. Classic study.
Perceived Self-Efficacy	Bryant (1982)		X	X (3 months)	73 (34% Puerto Rican, 43% Cuban, 23% non-Hispanic) in Florida	Qualitative	Descriptive only. Classic study.
	Cohen et al. (1999)		X	X (4 or 6 months)	222 women in Honduras	Experimental/ random assignment to exclusively breastfeed for 4 or 6 months	Study took place in Honduras. Assigned length of time of exclusive breastfeeding is the only intervention.

Literature support for breastfeeding among Hispanic women grouped by Health Promotion Model (HPM) determinants  
 ("X" indicates the breastfeeding outcome that was measured.)

HPM Determinant	Author	Breastfeeding Outcome			Sample/Population Group	Methods	Critique
		Intention	Initiation	Duration			
Perceived Self-Efficacy (continued)	De Bocanegra (1998)	X	X	X (not specified)	942 foreign or Puerto Rican born low income women in New York, USA	Descriptive survey.	Survey only.
	Gorman et al. (1995)	X	X	X (> 1 yr.)	269 Hispanic women in southern Texas	Qualitative and survey	Exploratory only.
	Higgins (2000)		X	X (4 to 6 mo.)	15 Puerto Rican families in western New York	Qualitative.	Qualitative/exploratory only.
	Hill (1991)			X (up to 8 wks.)	400 WIC mothers (3% Mexican)	Descriptive.	Descriptive. 3% Mexican.
	Locklin & Naber (1993)		X	X (not defined)	10 women (8 black, 2 Hispanic) in Illinois	Qualitative	Grounded theory only. Small sample of Hispanic women.
	Torres et al. (2003)		X		100 Puerto Rican women instrument.	Psychometric testing of BSES	Psychometric testing only.
	Wood et al. (1998)		X	X (up to 4 months)	25 Latina (Mexico, Puerto Rico, C. Am., So. Am.) in Massachusetts	Telephone interview	Descriptive only.

Literature support for breastfeeding among Hispanic women grouped by Health Promotion Model (HPM) determinants  
 ("X" indicates the breastfeeding outcome that was measured.)

HPM Determinant	Author	Breastfeeding Outcome			Sample/Population Group	Methods	Critique
		Intention	Initiation	Duration			
Activity Related Affect	Locklin & Naber (1993)		X	X (not defined)	10 women (8 black, 2 Hispanic) Illinois	Qualitative	Grounded theory only. Small sample of Hispanic women.
Interpersonal Influences	Arlotti et al. (1998)			X (up to 3 months)	36 women in northern Florida (5.6% Hispanic)	Quasi-experimental.	Only 5.6% Hispanic, intervention not fully described.
	Balcazar et al. (1995)	X	X		4089 respondents to the 1988 NMIHS Survey (11% Mexican-American)	Retrospective survey	Descriptive only.
	Bryant (1982)		X	X (3 months)	73 (34% Puerto Rican, 43% Cuban, 23% non-Hispanic) in Florida	Qualitative	Descriptive only. Classic study.
	De Bocanegra (1998)	X	X	X (not specified)	942 foreign or Puerto Rican born low income women in New York	Descriptive survey	Survey only.
	Freed et al. (1992)		X	(> 6 months)	307 women (30.8% Hispanic) in Houston, Texas	Survey	Survey only.

Literature support for breastfeeding among Hispanic women grouped by Health Promotion Model (HPM) determinants  
 ("X" indicates the breastfeeding outcome that was measured.)

HPM Determinant	Author	Breastfeeding Outcome			Sample/Population Group	Methods	Critique
		Intention	Initiation	Duration			
Interpersonal Influences (continued)	Gill et al. (2004)				39 Hispanic persons in Texas WIC Clinics	Focus group discussions	Qualitative. Assessed attitude only, not intention, initiation or duration.
	Gorman et al. (1995)	X	X	X (> 1 yr.)	269 Hispanic women in southern Texas	Qualitative and survey.	Exploratory only.
	Higgins (2000)		X	X (4 to 6 months)	15 Puerto Rican families in western New York, USA	Qualitative.	Qualitative/exploratory only.
	Humphreys et al. (1998)	X			N=982 in Atlanta, Georgia, USA/14.2% Hispanic	Descriptive	Only 14.2% Hispanic, Assessed intention only.
	Langer et al. (1998)		X	X (> 6 months)	724 women in Mexico City, Mexico	Randomized clinical trial	This study took place in a large hospital in Mexico City.
	Moreland et al. (2000)		X	X (40 days)	Latina women in Salt Lake City, Utah	Description of project	Demonstration project only. No statistical analysis.
	Perez-Escamilla et al. (1993)		X	X	165 mothers in Mexico	Intervention	Study took place in Mexico.

Literature support for breastfeeding among Hispanic women grouped by Health Promotion Model (HPM) determinants  
 ("X" indicates the breastfeeding outcome that was measured.)

HPM Determinant	Author	Breastfeeding Outcome			Sample/Population Group	Methods	Critique
		Intention	Initiation	Duration			
Interpersonal Influences <i>(continued)</i>	Pugin et al. (1996)			X (6 months)	752 women in Chile	Experimental	This study took place in Chile.
	Reifsnider & Eckhart (1997)		X	X	31 WIC clients in Oklahoma (one Hispanic)	Quasi-experimental	Small sample, only one Hispanic participant.
	Young & Kaufman (1988)	X	X		158 WIC clients in North Carolina (60% Mexican-American)	A teaching intervention using donated incentives to attend	Classic study. Demonstration project only. No statistical analyses.
Situational Influences	Locklin & Naber (1993)		X	X (not defined)	10 women (8 black, 2 Hispanic) in Illinois	Qualitative	Grounded theory only. Small sample of Hispanic women.
Commitment to a Plan of Action	Moreland et al. (2000)		X	X (40 days)	Latina women in Salt Lake City, Utah	Description of project	Demonstration project only. No statistical analysis.
	Romero-Gwynn & Carias (1989)	X	X	X (up to 5 months)	132 Hispanic mothers in California	Survey of breastfeeding practices	Descriptive only. Classic study.

Literature support for breastfeeding among Hispanic women grouped by Health Promotion Model (HPM) determinants  
 ("X" indicates the breastfeeding outcome that was measured.)

HPM Determinant	Author	Breastfeeding Outcome			Sample/Population Group	Methods	Critique
		Intention	Initiation	Duration			
Immediate Competing Demands <i>(continued)</i>	De Bocanegra (1998)	X	X	X (not specified)	942 foreign or Puerto Rican born low income women in New York	Descriptive survey	Survey only.
	Freed et al. (1992)		X	X (< 6 months)	307 women (30.8% Hispanic) in Houston, Texas	Survey	Survey only.
	Gorman et al. (1995)	X	X	X (> 1 yr.)	269 Hispanic women in southern Texas	Qualitative and survey	Exploratory only.
	Humphreys et al. (1998)	X			N=982 in Atlanta, Georgia/14.2% Hispanic	Descriptive	Only 14.2% Hispanic, Assessed intention only.
	Scrimshaw et al. (1987)	X	X		518 women of Mexican origin or descent in California	Descriptive	Classic study.

Appendix C.

Hispanic or Latina designation/or country of origin and research designs of interventions



Hispanic or Latina designation/or country of origin and research designs of interventions.

	Number of Studies	Percentage (%)
<i>Hispanic or Latina Designation/or country of residence</i>		
Hispanic or Latina (living in USA)	14	48.3
Cuban or Puerto Rican (living in Florida, USA)	1	03.5
Puerto Rican (living in continental USA)	3	10.3
Mexican (living in USA)	7	24.1
Chile (living in Chile)	1	03.5
Honduras (living in Honduras)	1	03.5
Mexico (living in Mexico)	2	06.8
Total	29	100

*Research designs and methods of the investigations*

Descriptive		
Quantitative	15	52
Qualitative	7	24
Combined	2	07
Experimental	5	17
Total	29	100

Appendix D.

Preliminary Study 2: Two Level PBE Content Summary

## Preliminary Study 2: Two Level PBE Content Summary

Level 1 Content	Teaching Strategy	Rationale
1. Advice to breastfeed based on health promotion of mother, infant, and family economics.	Charts illustrating nutritional qualities of breastmilk as compared to formula will be used; convenience of breastfeeding, handouts will be given.	Advice to breast-feed during prenatal care was a strong predictor of successful breast-feeding (Bryant, 1982; Gorman et al., 1995; Perez-Escamilla et al., 1993).
2. Anatomy and physiology of breast, supply and demand, prenatal breast preparation.		Knowledge about breastfeeding and its mechanics facilitates success (Pugin et al., 1996; Young & Kaufman, 1988).
3. What to expect at the hospital, importance of early and consistent breastfeeding, reinforcement of information about superiority of breast-milk over formula.		Preliminary Study 1, Theme 3 reflects that Hispanic women seek information related to breastfeeding and health and desire current information.
4. Holding and positioning infant for breastfeeding, qualities and appearance of breastmilk, how to pump and store milk.	Practice and return demonstration with a doll as model.	Preliminary Study 1, Theme 2 shows that Hispanic women strive to be strong, self-sufficient, and self-assured. These interventions preserve self-sufficiency and self-assuredness in the hospital
5. Avoiding embarrassment, breast-feeding discreetly.		Embarrassment was cited as a common cause for choosing to formula feed. Practice and return demonstration as interventions were found to increase breast-feeding initiation (Gorman et al., 1995; Perez-Escamilla et al., 1993).
6. Nutrition information and clarification of normal parameters for weight gain are offered.	Handouts and charts with discussion.	Embarrassment was cited as a common cause for choosing to formula feed (Gorman et al., 1995; Perez-Escamilla et al., 1993).
		Preliminary Study 1, Theme 4 reflects that Hispanic women express pride in their healthy children. These interventions restructure the belief that "heavy is healthy" and preserves importance of providing adequate nutrition through breastfeeding.

## Preliminary Study 2: Two-Level PBE Content Summary (continued)

Level 2 Content	Teaching Strategy	Rationale
<p>1. <i>La cuarentena del bebe</i>, as the second level of the two-level PBE, is a variation of the traditional 40 day quarantine for mothers, encourages that nothing goes into the infant's mouth but the mother's breast.</p>	<p>Discussion with question and answers.</p> <p>PBE utilizes a contract signed by the mother to reinforce her decision to breastfeed and let that decision be known at the hospital. The contract asks the mother to request consultation by a Lactation Consultant while in the hospital. Content for breastfeeding success requires demonstration/return demonstration.</p>	<p>Early and consistent breast-feeding promotes milk production and breastfeeding duration among Hispanics (O'Campo et al., 1992; Pugin et al., 1996; Righard &amp; Alade, 1990; Romero-Gwynn &amp; Carias, 1989; Young &amp; Kaufman, 1988).</p> <p>Preliminary Study 1, Theme 1 reflects that breastfeeding is a natural choice among Hispanic women. This intervention accommodates traditional beliefs and preserves the natural choice to breastfeed. (Moreland, et al., 2000).</p> <p>This intervention also preserves self-sufficiency and self-assuredness in the hospital and at home as well as the impracticality of some traditional practices (<i>la cuarentena</i>). However, the <i>la cuarentena del bebe</i> provides a modern "spin" to the traditional custom. (Preliminary Study 1, Theme 2).</p> <p>Preliminary Study 1, Theme 2 confirms the efficacy of Lactation consultants who have been shown to be successful in assisting with breastfeeding success (Auerbach, 1985).</p>

## Appendix E.

## Breastfeeding Self-Efficacy Scale – Short Form



### ¿Que confidente me siento al amamantar?

Por cada pregunta por favor elija la respuesta que mejor describa como amamanta a su bebe. Ponga un círculo en la respuesta que mejor describa su situación. No hay respuesta mala o buena.

1= no estoy segura

2= no muy segura

3= algunas veces segura

4= segura

5= muy segura

		No estoy Segura			Muy Segura	
1	Yo siempre puedo determinar que mi bebe esta bebiendo la cantidad suficiente de leche	1	2	3	4	5
2	Yo siempre puedo exitosamente terminar de amamantar así como lo hago con otras tareas dificiles	1	2	3	4	5
3	Yo siempre puedo amamantar a mi bebe sin usar una formula lacteal como suplemento	1	2	3	4	5
4	Yo siempre puedo estar segura que mi bebe esta siendo alimentado durante todo el proceso de amamantarlo	1	2	3	4	5
5	Yo siempre puedo manejar la situación de amamantar a mi hijo como mejor me convenga	1	2	3	4	5
6	Yo siempre puedo amamantar aunque mi hijo este llorando	1	2	3	4	5
7	Yo siempre tengo ganas de amamantar a mi hijo	1	2	3	4	5
8	Yo puedo amamantar a mi hijo comodamente enfrente de los miembros de mi familia	1	2	3	4	5
9	Yo siempre quedo satisfecha con la experiencia de amamantar	1	2	3	4	5
10	Yo siempre puedo manejar la situación de que amamantar quita mucho tiempo	1	2	3	4	5
11	Yo siempre puedo terminar de alimentar a mi bebe con un solo pecho antes de cambiar al otro pecho	1	2	3	4	5
12	Yo siempre puedo continuar amamantando a mi bebe cada vez que le toca comer	1	2	3	4	5
13	Yo siempre puedo satisfacer las demandas de mi bebe cuando lo amamanto	1	2	3	4	5
14	Yo siempre puedo saber cuando mi bebe ya ha terminado de mamar	1	2	3	4	5

Translated from English to Spanish (Dennis et al., 2003)

Appendix F.  
Demographic Data

## Demographic Data

Demographic Data questionnaire:

ID# \_\_\_\_\_ Date of enrollment: \_\_\_\_\_

Spanish preference \_\_\_\_\_ English preference \_\_\_\_\_

Age: \_\_\_\_\_ EDC: \_\_\_\_\_ Para/gravida: \_\_\_\_\_

Married? Yes \_\_\_\_\_, NO \_\_\_\_\_

Have you breastfed before?

How long do you plan to breastfeed?

Do you plan to add formula as supplement? \_\_\_\_\_ If so, how many bottles/day?

Who will care for you after the baby is born?

Who will help you with the baby?

How long have you lived in the US?

Where were you born?

What is the highest grade you have completed in school?

What type of work does the head of your household do?

Address:

Phone:

Appendix G.

For My Baby: My Infant Feeding Plan

### For My Baby: My Infant Feeding Plan

I am committed to the following healthy choices for my baby (check boxes):

- I will breastfeed for \_\_\_\_\_ months / years.
- I will begin breastfeeding within \_\_\_\_\_ minutes of delivery.
- I will commit to “Quarentina del bebe” (no bottle, formula, or pacifier) for \_\_\_\_\_ weeks/ months.
- I will not use a bottle for \_\_\_\_\_ weeks/ months/ years.
- I will not use a pacifier for \_\_\_\_\_ weeks/ months/ years.
- I will not give my baby any other liquids or foods other than breast milk for \_\_\_\_\_ weeks/ months.
- I will have my baby in the hospital room with me.
- At home, my baby will sleep in the same room with me for \_\_\_\_\_ weeks/ months.
- I will ask a nurse to help and watch me in breastfeeding at least twice.
- I, or my support person, will ask for a lactation consultant at the hospital.
- I will contact my WIC peer counselor, \_\_\_\_\_, within one week of giving birth.
- I will schedule a follow-up appointment with my baby’s pediatrician at \_\_\_\_\_ days/ weeks.
- If I need to break “Quarentina del bebe”, I will first talk with \_\_\_\_\_ for advice.

Name: \_\_\_\_\_ Personal signature: \_\_\_\_\_

Date: \_\_\_\_\_

(Adapted from Moreland et al., 2000)

For My Baby: My Infant Feeding Plan  
(Continued)

**Para Mi Bebé: Mi Niño el Plan que Alimenta**

Soy cometido a las elecciones saludables siguientes para mi bebé (cajas de cheque) :

- Hago breastfeed para \_\_\_\_\_ meses/años.
- Comenzaré breastfeeding dentro de \_\_\_\_\_ minutos de la entrega.
- Cometeré a “bebe de del de Quarentena” (no botella, la fórmula, ni el pacificador) para \_\_\_\_\_ las semanas/meses.
- Yo no usaré una botella para \_\_\_\_\_ las semanas/meses/años.
- Yo no usaré a un pacificador para \_\_\_\_\_ las semanas/meses/años.
- Yo no le daré a mi bebé cualquier otros líquidos ni los alimentos de otra manera que leche de seno para \_\_\_\_\_ las semanas/meses.
- Pediré a un enfermero para ayudar y mirarme en breastfeeding por lo menos dos veces.
- Yo, o mi persona de apoyo, pedirá a un especialista de lactancia en el hospital.
- Avisaré a mi consejero de igual de WIC, \_\_\_\_\_, dentro de una semana de dar a luz.
- Planificaré una cita de seguimiento con mi bebé’pediatra en \_\_\_\_\_ días/las semanas.
- Si necesito romper “bebe de del de Quarentina”, hago primero discurso con \_\_\_\_\_ para el consejo.

El nombre: \_\_\_\_\_ firma Personal: \_\_\_\_\_ la Fecha: \_\_\_\_\_

(Adapted from Moreland et al., 2000)

Appendix H.

PBE Content, Source of Self-Efficacy Information, Rationale, Relation to Conceptual Framework, and  
Assurance of Cultural Sensitivity

PBE Content, Source of Self-Efficacy Information, Rationale, Relation to Conceptual Framework, and Assurance of Cultural Sensitivity

PBE Content	Source of Self-Efficacy Information	Rationale	Relation to Health Promotion Model (Pender et al., 2002)	Assurance of Cultural Sensitivity
Assessment of previous experience or knowledge about breastfeeding (role models) will provide information upon which the learning sessions will build.	Vicarious learning (role modeling): Modeled success by similar others raises self-efficacy while modeled failures lower self-efficacy (Bandura, 1986).	Role modeling is part of vicarious experience cited by Bandura (1986) as one influence of self-efficacy. While the first time mother has not breastfed, she may perceive the benefits of breastfeeding as demonstrated by others (Pender et al, 2002).	Prior related behavior includes experienced benefits of the behavior.  Increases self-efficacy to decrease perceived barriers.  Activity related affect	Bandura sees this intervention as meeting a human need for social comparison with competent models.
Assessment of support for breastfeeding (has she talked this over with her husband/family?)		Individuals are sensitive to the wishes, examples, praise and expectations of others (Pender et al.).	Interpersonal influences (family, peers), expectations of significant others.	Pender et al. emphasize the need to involve family in health promotion activities across cultures.
Advice to breast-feed based upon health promotion of mother, infant, and family economics—charts illustrating nutritional qualities of breast-milk as compared to formula will be used; convenience of breast-feeding, handouts will be given.	Verbal persuasion: While Bandura states that mastery learning (obtaining competencies) is of benefit, more importantly, one's perception of the BENEFIT of the competent action will promote self-efficacy. Successful mastery results from personal experience (Bandura, 1986).	Advice to breast-feed during prenatal care was a strong predictor of successful breastfeeding (Balcazar et al, 1995; Bryant, 1982; Ferris, McCabe, Allen, & Pelto, 1987; Gorman, Byrd & VanDerslice, 1995; Perez-Escamilla, Himmellgreen, Segura-Millan, Gonzalez, Ferris, Damio & Bermudez-Vega, 1991).	Perceived benefits of action (breastfeeding benefits to infant and mother)	This intervention was shown effective with Mexican-American women (Balcazar et.al); Puerto Rican families (Bryant); Hispanic women (Gorman et al.); and Puerto Rican women (Perez-Escamilla et al.)

PBE Content, Source of Self-Efficacy Information, Rationale, Relation to Conceptual Framework, and Assurance of Cultural Sensitivity

PBE Content	Source of Self-Efficacy Information	Rationale	Relation to Health Promotion Model (Pender et al., 2002)	Assurance of Cultural Sensitivity
<p>Anatomy and physiology of breast, supply and demand, prenatal breast prep—charts and pictures will illustrate these concepts, handouts purchased through La Leche League will be given.</p>	<p>Verbal persuasion increases one's perception of the BENEFIT of the competent action will promote self-efficacy (Bandura, 1986).</p>	<p>Knowledge about breastfeeding and its mechanics facilitates success (O'Campo et al., 1992; Pugin et al., 1996; Young &amp; Kaufman, 1988.) Written material reinforces course content.</p>	<p>Understanding personal factors (breast physiology and ability of breastfeed, potential problems) increases perceived self-efficacy for breastfeeding.</p>	<p>Knowledge of breastfeeding and mechanics were found to facilitate success with Chilean women (Pugin et al.) and Mexican-American women (Young &amp; Kaufman).</p>
<p>What to expect at the hospital, importance of early and consistent breastfeeding, reinforcement of information about superiority of breastmilk over formula, anticipatory guidance, informational handouts.</p>	<p>Physiologic State (emotional comfort): "What to expect" (after childbirth and in hospital) is explained to ensure that participants do not misread or misinterpret postpartal physiologic/emotional cues such as hormonal imbalances, pain, exhaustion. (Bandura [1986] cites examples of the success of this strategy in assisting post-cardiac patients to resume active lifestyles.)</p>	<p>Knowledge about breast-feeding facilitates its success. Early and consistent breast-feeding promotes milk production (O'Campo et al., 1992; Pugin et al., 1996; Righard &amp; Alade, 1990; Romero-Gwynn &amp; Carias, 1989; Young &amp; Kaufman, 1988). Because the PBE teaching sessions are provided in the prenatal period, it is not possible to predict the individual's physiological or affective state when she begins breastfeeding. Anticipatory guidance and handouts will assist her in knowing what to expect.</p>	<p>Immediate competing demands and preferences (offers of formula samples at hospital, offers of formula at WIC vs. food supplements offered at WIC). Situational influences (including cues that trigger actions, how to ask for help from nursing staff).</p>	<p>This intervention was found successful with Chilean women (Pugin et al.); Mexican migrant women (Romero-Gwynn &amp; Carias); and Mexican-American women (Young &amp; Kaufman).</p>

PBE Content, Source of Self-Efficacy Information, Rationale, Relation to Conceptual Framework, and Assurance of Cultural Sensitivity

PBE Content	Source of Self-Efficacy Information	Rationale	Relation to Health Promotion Model (Pender et al., 2002)	Assurance of Cultural Sensitivity
<p>Holding and positioning infant for breast-feeding, qualities and appearance of breast-milk, how to pump and store milk. Specific techniques practiced (using a doll) were:</p> <ol style="list-style-type: none"> <li>1. positioning</li> <li>2. offering the breast</li> <li>3. evaluating effective sucking</li> <li>4. breaking suction</li> </ol>	<p>Performance Accomplishment (mastery learning): Social cognitive theory (Bandura, 1986) is concerned with the acquisition of cognitive and behavioral skills as well as with knowledge of what leads to what. Mastery of a task conveys new efficacy information, thus raising one's efficacy appraisal (Bandura).</p>	<p>Practicing promotes self-confidence. Understanding breast-milk qualities promotes acceptance of its appearance (Bottorff &amp; Morse, 1990; Gorman et al., 1995; Kokinos &amp; Dewey, 1986; O'Campo et al., 1992; Pugin et al, 1996).</p>	<p>Increasing perceived self-efficacy decreases perceived barriers (pumping for those working outside the home)</p>	<p>Demonstration and practice was found effective with Mexican-American women (Kokinos &amp; Dewey) and Chilean women (Pugin et al.)</p>
<p>Avoiding embarrassment, breast-feeding discreetly, practice will take place using a doll.</p>	<p>Performance Accomplishment (mastery learning): Social cognitive theory is concerned with the acquisition of cognitive and behavioral skills as well as with knowledge of what leads to what. Mastery of a task conveys new efficacy information, raising one's efficacy appraisal (Bandura, 1986).</p>	<p>Embarrassment was cited as a common cause for choosing to formula feed. Practice and return demonstration as interventions were found to increase breast-feeding initiation (Chateau, Holmberg &amp; Winberg, 1973; Gorman et al., 1995; Perez-Escamilla et al., 1998; Righard &amp; Alade, 1990).</p>	<p>Increasing perceived self-efficacy decreases perceived barriers (embarrassment)</p>	<p>This intervention was found successful with Hispanic women (Gorman et al.) and Mexican-American women (Perez-Escamilla et al.)</p>

PBE Content, Source of Self-Efficacy Information, Rationale, Relation to Conceptual Framework, and Assurance of Cultural Sensitivity

PBE Content	Source of Self-Efficacy Information	Rationale	Relation to Health Promotion Model (Pender et al., 2002)	Assurance of Cultural Sensitivity
<p>Personalized breastfeeding plan.</p> <p>Throughout the intervention, participants were encouraged to breastfeed “early and often” and to avoid the use of formula supplementation in order to facilitate establishment of breastmilk.</p>		<p>“Baby quarantine” modeled after the Hispanic tradition of “la cuarentena” where the mother introduces nothing into her vagina for 40 days after childbirth. The “baby quarantine” turns into the 40 days after birth in which nothing enters the baby’s mouth except the mother’s breast. It reinforces the benefits of avoiding bottles, pacifiers, and supplementation to promote establishment of milk for successful breastfeeding while reinforcing cultural traditions (DeCoster, 2002; Hill, Humenick, Brennan, &amp; Woolley, 1997; Moreland, et al., 2000).</p> <p>PBE utilizes a contract signed by the mother to reinforce her decision to breastfeed and let that decision be known at the hospital. The contract asks the mother to request consultation by a Lactation Consultant while in the hospital.</p>	<p>Commitment to a plan of action</p>	<p>Use of the personalized feeding plan has been piloted with Latina women by Moreland et al. with pending results. Hill et al. emphasize the importance of honoring the mother’s wishes to withhold supplement feedings. De Coster showed positive feedback from participants who used the personalized breastfeeding plan.</p>

Appendix I

Handouts

Thanks!

We appreciate your participation in this study about breastfeeding.

We will ask you to complete a questionnaire when you return to the clinic.

About 2 weeks after the arrival of your baby, we will phone you to ask if you are breastfeeding or bottle-feeding. At that time you will be asked to complete the questionnaire again.

When your baby is about 6 weeks old, we will call you again to ask you about the baby's feedings.

Thanks again and please call if you have questions.

Jane Schlickau



¡Gracias!

Apreciamos su participación en este estudio acerca de breastfeeding.

Le pediremos a usted completar un cuestionario cuando usted vuelva a la clínica.

Acerca de 2 semanas después de la llegada de su bebe, nosotros le aremos una llamada telefónica para preguntarle si usted esta da pecho o alimenta en botella. En aquel momento usted será pedido completar de nuevo el mismo cuestionario.

Cuando el bebe tenga 6 semanas de nacido, nosotros le llamaremos por teléfono de nuevo para ver como usted y su bebe se encuentran.

¡Gracias otra ves por favor llame si usted tiene preguntas.

Jane Schlickau



Appendix J.  
Informed Consent



---

College of Nursing  
NEBRASKA'S HEALTH SCIENCE CENTER  
A Partner with Nebraska Health System

## ADULT CONSENT FORM

### THERAPEUTIC RESEARCH

**TITLE OF THE RESEARCH STUDY:  
PRENATAL BREASTFEEDING EDUCATION**

You are invited to participate in this research study. The information in this consent form is provided to help you decide whether to participate. If you have any questions, please ask.

**WHY ARE YOU ELIGIBLE?** You can participate because you are a woman of Hispanic heritage who attends Sedgwick County Health Department/Maternal and Infant Clinic for care during and after pregnancy.

**WHAT IS THE PURPOSE OF THE STUDY?** The aim of the research is to test whether a breastfeeding class will increase breastfeeding self-efficacy, breastfeeding initiation and duration.

**WHAT DOES THE STUDY INVOLVE?** This will take 1 to 1½ hour of your time today. You will be randomly assigned to one of two groups. You have a 1 in 2 chance of receiving *no breastfeeding education from the research nurse* or *one session of prenatal breastfeeding education from the research nurse*.

You will be given a questionnaire of 14 questions (Breastfeeding Self-Efficacy Scale-Short Form) that asks about your beliefs about your ability to breastfeed. There are no right or wrong answers.

Then, if you are assigned to receive prenatal breastfeeding education, a registered nurse will present the education while you wait to see your physician.

You may be assigned to receive no education about breastfeeding from the research nurse.

Approximately 2 weeks from today, when you return to the clinic, you will be asked to re-take short check list. This will take about 10 minutes.

When your baby is approximately 2 weeks old, you will be asked (by phone) to re-take the short check list, and you will be asked how you are feeding your baby. This will take about 10 minutes.

When your baby is approximately 6 weeks old, you will be asked (by phone) how you are feeding your baby. This will take less than 5 minutes.

There are no right or wrong answers.

**WHAT ARE THE POSSIBLE RISKS AND DISCOMFORTS YOU COULD EXPERIENCE DURING THIS STUDY?** There are no known risks or discomforts connected with this research. You may experience feelings of guilt if you are unable to breastfeed.

**WHAT ARE THE POSSIBLE BENEFITS TO YOU?** By participating in the research, if you receive the prenatal breastfeeding education, you may obtain the benefit of increased breastfeeding duration.

**WHAT ARE THE POSSIBLE BENEFITS TO SOCIETY?** The knowledge gained may help us improve the care that we give to Hispanic mothers before and after their babies are born.

**WHAT ARE THE ALTERNATIVES TO PARTICIPATING?** You could choose not to participate in this research and to receive breastfeeding information from another source.

**WHAT ARE YOUR FINANCIAL OBLIGATIONS AS A PARTICIPANT?** You will have no financial obligations by participating in the study.

**WHAT SHOULD YOU DO IN CASE OF AN EMERGENCY?** If you are injured or have an adverse reaction because of this research, you should immediately contact one of the personnel listed at the end of this consent form.

**HOW WILL YOUR CONFIDENTIALITY BE PROTECTED?** You have rights regarding the privacy of your medical information collected prior to and in the course of this research. This medical information, called "protected health information" (PHI), includes demographic information, the results of physical exams, blood tests, X-rays and other diagnostic and medical procedures, as well as your medical history. You have the right to limit the use and sharing of your PHI, and you have the right to see your medical records and know who else is seeing them.

By signing this consent form, you are allowing the research team to have access to your PHI. The research team includes the investigators listed on this consent form and other personnel involved in this specific study at the Sedgwick County Health Department/Maternal and Infant Clinic.

Your PHI will be used only for the purpose(s) described in the section "What is the Purpose of this Study?"

Your PHI will be shared, as necessary, with the Institutional Review Board (IRB) and with any person or agency required by law. You are also allowing the research team to share your PHI with other people or groups specified below. All of these persons or groups are obligated to protect your PHI.

Your health insurance company;

You are authorizing us to use and disclose your PHI for as long as the research study is being conducted.

You may revoke this authorization to use and share your PHI at any time by contacting the principal investigator in writing. If you revoke this authorization, you may no longer participate in this research. If you revoke this authorization, use or sharing of future PHI will be stopped. The PHI that has already been collected may still be used.

The results this research may be included in your medical record. The information from this study may be published in scientific journals or presented at scientific meetings, but your identity will be kept strictly confidential.

**WHAT ARE YOUR RIGHTS AS A RESEARCH PARTICIPANT?** You have rights as a research participant. These rights are explained in *The Rights of Research Participants* which you have been given. If you have any questions concerning your rights, you may contact the Institutional Review Board (IRB), telephone 402-559-6463.

**WHAT WILL HAPPEN IF YOU DECIDE NOT TO PARTICIPATE?** You can decide not to participate in this study or you can withdraw from this study at any time. Your decision will not affect your care or your relationship with the investigator, the Sedgwick County Health Department/Maternal and Infant Clinic or University of Nebraska Medical Center (UNMC). Your decision will not result in any loss of benefits to which you are entitled. If any new information develops during the course of this study that may affect your willingness to continue participating, you will be informed immediately.

**YOU ARE VOLUNTARILY MAKING A DECISION WHETHER TO PARTICIPATE IN THIS RESEARCH. YOUR SIGNATURE MEANS THAT YOU HAVE READ AND UNDERSTOOD THE INFORMATION PRESENTED AND DECIDED TO PARTICIPATE. YOUR SIGNATURE ALSO MEANS THAT THE INFORMATION ON THIS CONSENT FORM HAS BEEN FULLY EXPLAINED TO YOU AND ALL YOUR QUESTIONS HAVE BEEN ANSWERED TO YOUR SATISFACTION. IF YOU THINK OF ANY ADDITIONAL QUESTIONS DURING THE STUDY, YOU SHOULD CONTACT THE INVESTIGATOR. YOU WILL BE GIVEN A COPY OF THIS CONSENT FORM.**

\_\_\_\_\_  
SIGNATURE OF PARTICIPANT

\_\_\_\_\_  
DATE

\_\_\_\_\_  
TIME

**I CERTIFY THAT ALL THE ELEMENTS OF INFORMED CONSENT DESCRIBED ON THIS CONSENT FORM HAVE BEEN EXPLAINED FULLY TO THE PARTICIPANT. IN MY JUDGEMENT, THE PARTICIPANT IS VOLUNTARILY AND KNOWINGLY GIVING INFORMED CONSENT AND POSSESSES THE LEGAL CAPACITY TO GIVE INFORMED CONSENT TO PARTICIPATE IN THIS RESEARCH.**

\_\_\_\_\_  
SIGNATURE OF INVESTIGATOR

\_\_\_\_\_  
DATE

**AUTHORIZED STUDY PERSONNEL**

Jane Schlickau, the Principal Investigator, is authorized to document consent.

Daytime phone number: [REDACTED]

Secondary Investigator: Margaret Wilson PhD, RN

Daytime phone number: [REDACTED]




---

College of Nursing  
NEBRASKA'S HEALTH SCIENCE CENTER  
A Partner with Nebraska Health System

## La FORMA ADULTA del CONSENTIMIENTO INVESTIGACION TERAPEUTICA

### EL TITULO DEL ESTUDIO de INVESTIGACION: La EDUCACION PRENATAL de BREASTFEEDING

Que Usted se invitan a tomar parte en este estudio de investigación. La información en esta forma del consentimiento se proporciona para ayudarlo a decidir si participe. Si usted tiene las preguntas de ane, preguntan por favor.

**¿POR QUE USTED TIENE DERECHO A?** Usted puede participar porque usted es una mujer de la herencia Hispana que asiste el Departamento de la Salud de Condado de Sedgwick/Maternal y Dispensario de Niño para el cuidado durante y después del embarazo.

**¿QUE ES EL PROPOSITO DEL ESTUDIO?** El punto de la investigación es para probar si clases de breastfeeding aumentarán la duración de breastfeeding. La seguridad en si mismo y un buen comienzo.

**¿QUE IMPLICA EL ESTUDIO?** Esto tomará de 1 a 1 1/2 horas de su tiempo hoy. Usted al azar será asignado a uno de dos grupos. Usted tiene un 1 a 2 oportunidad de recibir *ninguna educación de breastfeeding por la enfermera que hace esta investigación.*, o *una sesión de la educación de breastfeeding de prenatal por la enfermera que hace esta investigación.*

Le daremos un cuestionario con 14 preguntas que pregunta acerca de tu creyencia de habilidad para amamantar a tu bebe. No Habra respuestas correcta o incorrecta.

Y si usted es asignada para recibir educacion prenatal para breastfeeding, una enfermera registrada le presentara la educacion mientras usted espera par aver a su doctor.

Usted tambien podra ser asignada a no recibir esta educacion de breastfeeding por la enfermera que hace esta investigacion.

Aproximadamente 2 semanas de hoy, cuando usted vuelve al dispensario, usted será pedido volver a rodar la lista corta de cheque. Esto tomará acerca de 10 minutos.

Cuándo su bebé es aproximadamente 2 semanas viejas, usted será preguntado (por teléfono) volver a rodar la lista corta de cheque, y usted será preguntado cómo usted alimenta a su bebé. Esto tomará acerca de 10 minutos.

Cuándo su bebé es aproximadamente 6 semanas viejas, usted será preguntado (por teléfono) cómo usted alimenta a su bebé. Esto tomará menos de 5 minutos.

No hay las respuestas del derecho ni la injusticia.

**¿QUE ES LOS RIESGOS POSIBLES Y LO MOLESTA PODRIA EXPERIMENTAR DURANTE EST ESTUDIO?** Hay ningún riesgos ni as molestias conocidos conectados oninvestigación. Usted puede experimentar los sentimientos de la culpa si usted es incapaz al breastfeed.

**¿CUALES SON LOS BENEFICIOS POSIBLES PARA USTED?** Por tomar parte en la investigación, si usted recibe la educacion prenatal de breastfeeding puede obtener el bineficio de la duración de aumentada de breastfeeding.

**¿CAULES SON LOS BENEFICIOS POSIBLES A La SOCIEDAD?** El conocimiento ganó que se gane nos puede ayudar a mejorar el cuidado que damos a la madre Hispana antes y después que sus bebés nacen.

**¿QUE ES LAS ALTERNATIVAS A PARTICIPAR?** Usted podría escoger para tomar parte en no esta investigación y para recibir información de breastfeeding de otra fuente.

**¿QUE ES SU OBLIGACION FINANCIERA COMO UN PARTICIPANTE?** Usted tendrá no obligaciones financieras por tomar parte en el studio.

**¿QUE DEBE HACER USTED EN CASO DE UNA EMERGENCIA?** Si usted es herido o tiene una reacción adversa a causa de esta investigación, usted debe avisar inmediatamente uno del personal listó a fines de esta forma del consentimiento.

**¿COMO SE PROTEGERA SU CONFIDENCIALIDAD?** Usted tiene los derechos con respecto a la intimidad de su información médica completa antes de y en el curso de esta investigación. Esta información médica, llamó "información protegida de salud" (PI), incluye información demográfica, los resultados de los exámenes físicos, las pruebas de sangre, x-rays y otros procedimientos diagnósticos y médicos, así como también su historia médica. Usted tiene el derecho de limitar el uso y compartir de su PI, y usted tiene el derecho de ver sus registros médicos y saber quién más los ve.

Firmando esta forma del consentimiento, uste permite que el equipo de investigación para tenga acceso a su PI. El equipo de investigación incluye a los investigadores listaron en esta forma del consentimiento y otro personal implicados en este estudio especifico en el Departmamento de la Salud de Condado de Sedgwick/Maternal y Dispensario de niño.

Su PI se usará sólo para el propósito (s) descrito en la sección "Qué es el Propósito de este Estudio?"

Su PI se compartira, como sea necesario, con la Tabla (IRB) Institucional de la Revisión y con cualquier persona o la agencia requeridas por la ley. Usted permite también que el equipo de investigación comparta el equipo para compartir su PI con otro specified de gente o grupos abajo. Todas estas personas o los grupos se obligan para proteger su PI.

*Su compañía del seguro de la salud*

Usted es la autorización para usar y compartir su PI mientras el studio de investigación se conduce.

Usted puede revocar esta autorización para usar y compartir su PI en cualquier vez avisando al investigador del principio a escribir. Si usted revoca esta autorización, usted no puede más largo toma parte en esta investigación. Si usted revoca esta autorización, el uso o compartir de PIS sera futuro se pararán. El PI que se ha reunido ya se puede usar todavía.

Los resultados que esta investigación puede incluir en su registro médico. La información de este studio se puede publicar en diarios científicos o presentado en reuniones científicas, pero su identidad se mantendrá estrictamente confidencial.

**¿QUE ES SUS DERECHOS COMO UN PARTICIPANTE de INVESTIGACION?** Usted tiene los derechos como un participante de investigación. Estos derechos se explican en Los Derechos de Participantes de Investigación que usted ha sido dado. Si usted tiene cualquiera pregunta concerniendo sus derechos, usted puede avisar la Tabla (IRB) Institucional de la Revisión, telefónico 402-559-6463.

**¿QUE ACONTECERA SI USTED DECIDE no PARTICIPAR?** Usted puede decidir no tomar parte en este estudio ni usted puede retirar de este estudio en ninguna vez. Su decisión no realizará su cuidado ni su relación con el investigador, el Departamento de la /Salud de Condado de Sedgwick/Maternal y Dispensario de niño or Universidad de Nebraska el Centro (UNMC) Médico. Su decisión no tendrá como resultado ninguna pérdida de beneficios a que usted es permitido. Si información nueva desarrolla durante el curso de este estudio que puede realizar su consentimiento para seguir participando, usted será informado inmediatamente.

**USTED TOMANDOse UN DECISION VOLUNTARIAMENTE SI TOME PARTE EN ESTA INVESTIGACION. SU FIRMA SIGNIFICA QUE USTED HA LEIDO Y ENTENDIO LA INFORMACION PRESENTO Y DECIDIO PARTICIPAR. SU FIRMA SIGNIFICA TAMBIEN QUE LA INFORMACION EN ESTA FORMA del CONSENTIMIENTO se HA SIDO EXPLICADA COMPLETAMENTE la SATISFACCION. SI USTED PIENSA EN ALGUNA PREGUNTA ADICIONAL DURANTE EL ESTUDIO, USTED DEBE AVISAR a EL INVESTIGADOR. USTED SERA DADO UNA COPIA DE ESTA FORMA del CONSENTIMIENTO.**

\_\_\_\_\_  
FIRMA DE de PARTICIPANTE                      la FECHA                      el tiempo

**CERTIFICO QUE TODOS LOS ELEMENTOS DE el CONSENTIMIENTO INFORMADO DESCRIBIERON EN ESTA FORMA del CONSENTIMIENTO HA SIDO EXPLICADO COMPLETAMENTE AL PARTICIPANTE. EN MI JUICIO, EL PARTICIPANTE ES VOLUNTARIAMENTE Y ASTUTAMENTE DAR el CONSENTIMIENTO INFORMADO Y POSEE LA CAPACIDAD LEGAL DAR el CONSENTIMIENTO INFORMADO para TOMAR PARTE EN ESTA INVESTIGACION.**

\_\_\_\_\_  
FIRMA DE de INVESTIGADOR                      la FECHA                      el tiempo

**EI PERSONAL AUTORIZADO del ESTUDIO**  
el Investigador Principal: Jane Schlickau MN, RN, ARNP/CNS.  
El teléfono del día: [REDACTED]  
el Investigador Secundario: Margaret Wilson PhD, RN.  
El telefono del dia: [REDACTED]

## References

- American Academy of Pediatrics Work Group on Breastfeeding. (2005). Breastfeeding and the use of human milk. *Pediatrics*, *115*, 496-506.
- Arlotti, J. P., Cottrell, B. H., Lee, S. L., & Curtin, J. J. (1998). Breastfeeding among low-income women with and without peer support. *Journal of Community Health Nursing*, *15*, 163-178.
- Auerbach, K. G. (1985, September). The influence of Lactation Consultant contact on breastfeeding duration in a low-income population. *Nebraska Medical Journal*, 341-346.
- Balcazar, H., Trier, C. M., & Cobas, J. A. (1995). What predicts breast-feeding intention in Mexican-American and non-Hispanic white women? Evidence from a national survey. *Birth*, *22*, 74-80.
- Bandura, A. (1986). *Social foundations of thought and action*. Englewood Cliffs, NJ: Prentice-Hall.
- Bandura, A. (1995). Exercise of personal and collective efficacy in changing societies. In A. Bandura (Ed.), *Self-efficacy in changing societies* (pp. 1-45). Cambridge, UK: University Press.
- Bandura, A. (1998). Health promotion from the perspective of social cognitive theory. *Psychology and Health*, *13*, 623-649.
- Bender, D. E., Harbour, C., Thorp, J., & Morris, P. (2001). Tell me what you mean by "si": Perceptions of quality of prenatal care among immigrant Latina women. *Qualitative Health Research*, *11*(6), 780-794.
- Bergua, P. L. (2003, July). *Breastfeeding practices in Mexico: An overview*. Poster session presented at the 18<sup>th</sup> International Conference of the La Leche League, San Francisco, CA.
- Berger, A. M., & Walker, S. N. (1997). Measuring healthy lifestyles. In M. Frank-Stromberg, & S. J. Olsen (Eds.), *Instruments for clinical health-care research* (2<sup>nd</sup> ed., pp. 363-377). Sudbury, MA: Jones & Bartlett.
- Blyth, R., Creedy, D. K., Dennis, C.-L., Moyle, W., Pratt, J., & De Vries, S. M. (2002). Effect of maternal confidence on breastfeeding duration: An application of breastfeeding self-efficacy theory. *Birth*, *29*(4), 278-284.
- Blyth, R.J., Creedy, D. K., Dennis, C.-L., Moyle, W., Pratt, J., De Vries, S. M., & Healy, G. N. (2004). Breastfeeding duration in an Australian population: The influence of modifiable antenatal factors. *Journal of Human Lactation*, *20*(1), 30-38.

- Boettcher, J. P., Chezem, J. C., Roepke, J., & Whitaker, T.A. (1999). Interaction of factors related to lactation duration. *The Journal of Perinatal Education*, 8, 11-19.
- Bottoff, J. L., & Morse, J. M. (1990). Mothers' perceptions of breast milk. *Journal of Obstetric, Gynecologic and Neonatal Nursing*, 19, 518-527.
- Brislin, R. W. (1970). Back-translation for cross-cultural research. *Journal of Cross-Cultural Psychology*, 1(3), 185-216.
- Bryant, C. A. (1982). The impact of kin, friend and neighbor networks on infant feeding practices: Cuban, Puerto Rican & Anglo families in Florida. *Social Science and Medicine*, 16, 1757-1765.
- Buchner, A., Franz, P., & Erdfelder, E. (2003). Reference manual for G\*Power [Computer software and manual]. Retrieved from <http://www.psych.uni-duesseldorf.de/aap/projects.gpower>.
- Buxton, K. E., Gielen, A. C., Faden, R. R., Brown, C. H., Paige, D. M., & Chwalow, A.J., (1991). Women intending to breastfeed: Predictors of early infant feeding experiences. *American Journal of Preventive Medicine*, 7(2), 101-106.
- Campbell, S. H. (1996). Breastfeeding self-efficacy: *The effects of a breastfeeding promotion nursing intervention*. Unpublished doctoral dissertation, University of Rhode Island.
- Centers for Disease Control. (2004). *Data 2010 the healthy people 2010 database*. Retrieved November, 2003, from <http://wonder.cdc.gov/scripts/broker.exe>.
- Chateau, P. D., Holmberg, H., & Winberg, J. (1973). Relationship between feeding routines at the maternity ward, weight development and duration of breastfeeding. *Acta Paediatrica; Supplement* 236, 33, 589-600.
- Cleveland, A.P. (1999). Personal efficacy beliefs in breastfeeding. *International Journal of Childbirth Education*, 14, 30-35.
- Cohen, R. J., Brown, K. H., Rivera, L. L., & Dewey, K. G. (1999). Promoting exclusive breastfeeding for 4-6 months in Honduras: Attitudes of mothers and barriers to compliance. *Journal of Human Lactation*, 15, 9-18.
- Coriel, J., & Murphy, J.E. (1988). Maternal commitment, lactation practices, and breastfeeding duration. *Journal of Obstetrical, Gynecological and Neonatal Nursing*, 17, 273-278.

- Creedy, D. K., Dennis, C.-L., Blyth, R., Moyle, W., Pratt, J., De Vries, S. M. (2003). Psychometric characteristics of the breastfeeding self-efficacy scale: Data from an Australian sample. *Research in Nursing & Health, 26*(2), 143-152.
- Cronenwett, L., Stukel, T., Kearney, M., Barrett, J., Covington, C., Del Monte, K., Reinhardt, R., & Rippe, L. (1992). Single daily bottle use in the early weeks postpartum and breastfeeding outcomes. *Pediatrics, 90*, 760-766.
- De Bocanegra, H. T. (1998). Breast-feeding in immigrant women: The role of social support and acculturation. *Hispanic Journal of Behavioral Sciences, 20*, 448-467.
- DeCoster, M. E. (2002). *Empowerment education for promoting breastfeeding among Latinas: A pilot evaluation*. Unpublished Master's paper. University of North Carolina in Chapel Hill.
- De la Torre, A., & Rush, L. (1987). The determinants of breastfeeding for Mexican migrant women. *International Migration Review, 21*, 728-739.
- Denman-Vitale, S., & Murillo, E. K. (1999). Effective promotion of breast-feeding among Latin American women newly immigrated to the United States. *Holistic Nursing Practice, 13*(4), 51-60.
- Dennis, C.-L. (1999). Theoretical underpinnings of breastfeeding confidence: A self-efficacy framework. *Journal of Human Lactation, 15*, 195-201.
- Dennis, C.-L. (2003). The Breastfeeding Self-Efficacy Scale: Psychometric assessment of the short form. *Journal of Gynecological and Neonatal Nursing, 32*, 734-744.
- Dennis, C.-L., & Faux, S. (1999). Development and psychometric testing of the Breastfeeding Self-Efficacy Scale. *Research in Nursing & Health, 22*, 399-409.
- Dettwyler, K. A., & Fishman, C. (1992). Infant feeding practices and growth. *Annual Review of Anthropology, 21*, 171-203.
- Feather, N. T. (Ed.). (1982). *Expectations and actions: Expectancy-Value models in psychology*. Hillsdale, NJ: Lawrence Erlbaum Associates, Inc.
- Ferris, A. M., McCabe, L. T., Allen, L. H. & Pelto, G. H. (1987). Biological and sociocultural determinants of successful lactation among women in eastern Connecticut. *Journal of the American Dietetic Association, 87*, 316-321.

- Freed, G. L., Jones, T. M., & Schanler, R. J. (1992). Prenatal determination of demographic and attitudinal factors regarding feeding practice in an indigent population. *American Journal of Perinatology*, 9, 420-424.
- Giachello, A. L. M. (1994). Maternal/perinatal health. In C. W. Molina & M. Aguirre-Molina (Eds.), *Latino health in the US: A growing challenge* (pp. 135-187). Washington, DC: American Public Health Association.
- Gill, S. L., Reifsnider, E., Mann, A. R., Villarreal, P., & Tinkle, M. B. (2004). Assessing infant breastfeeding beliefs among low-income Mexican Americans. *Journal of Perinatal Education*, 13(3), 39-50.
- Gonzalez-Perez, G. J., Vega-Lopez, M. G., & Cabrera-Pivaral, C. (1998). Using logistic regression to describe the length of breastfeeding: A study in Guadalajara, Mexico. *Journal of Human Lactation*, 14(4), 297-303.
- Gorman, T., Byrd, T. L. & VanDerslice, J. (1995). Breast-feeding practices, attitudes, and beliefs among Hispanic women and men in a border community. *Family and Community Health*, 18, 17-27.
- Hall, J. M. (1978). Influencing breastfeeding success. *Journal of Obstetrical, Gynecological, and Neonatal Nursing*, 7, 28-32.
- Hannon, P. R., Willis, S. K., Bishop-Townsend, V., Martinez, I. M., & Scrimshaw, S. C. (2000). African-American and Latina adolescent mothers' infant feeding decisions and breastfeeding practices: A qualitative study. *Journal of Adolescent Health*, 26, 399-407.
- Hanson, L. A., Jahil, F., & Ashraf, R. (1991). Characteristics of human milk antibodies and their effect in relation to the epidemiology of breast-feeding and infections in a developing country. *Advances in Experimental Medicine and Biology*, 310, 1-15.
- Heinig, J. J., & Dewey, K. G. (1996). Health advantages of breast-feeding for infants: A critical review. *Nutrition Research Reviews*, 9, 89-110.
- Higgins, B. (2000). Puerto Rican cultural beliefs: Influence on infant feeding practices in Western New York. *Journal of Transcultural Nursing*, 11, 19-30.
- Hill, P. D. (1987). Effects of education on breastfeeding success. *Maternal Child Nursing Journal*, 16, 145-156.

- Hill, P. D. (1988). Maternal attitudes and infant feeding among low-income mothers. *Journal of Human Lactation*, 4, 7-11.
- Hill, P. D. (1991). Predictors of breast-feeding duration among WIC and non-WIC mothers. *Public Health Nursing*, 8, 46-52.
- Hill, P. D., Humenick, S. S., Brennan, M. L., & Woolley, D. (1997). Does early supplementation affect long-term breastfeeding? *Clinical Pediatrics* 36, 345-350.
- Houston, M. J. (1981). Breastfeeding success and failure. *Journal of Advanced Nursing*, 6, 447-454.
- Humphreys, A. S., Thompson, N. J., & Miner, K. R. (1998). Intention to breastfeed in low-income pregnant women: The role of social support and previous experience. *Birth*, 25, 169-174.
- Jex, S. M., & Bliese, P. D. (1999). Self-esteem as a moderator: A comparison of global and organization-based measures. *Journal of Occupational and Organizational Psychology*, 72, 71-81.
- John, A. M., & Martorell, R. (1989). Incidence and duration of breast-feeding in Mexican-American infants, 1970-1982. *American Journal of Clinical Nutrition*, 50, 868-874.
- Kannan, S., Carruth, B. R., & Skinner, J. (1999). Cultural influences on infant feeding beliefs of mothers. *Journal of the American Dietetic Association*, 99, 88-90.
- Kokinos, M., & Dewey, K. G. (1986). Infant feeding practices of migrant Mexican-American families in Northern California. *Ecology, Food and Nutrition*, 18, 209-220.
- Langer, A., Campero, L., Garcia, C., & Reynoso, S. (1998). Effects of psychosocial support during labour and childbirth on breastfeeding, medical interventions, and mothers' well-being in a Mexican public hospital: A randomized clinical trial. *British Journal of Obstetrics and Gynaecology*, 105, 1056-1063.
- Leininger, M. M. (1978). *Transcultural nursing: Concepts, theories, and practices*. New York: John Wiley and Sons.
- Leininger, M. M. (1991). The theory of culture care diversity and universality. In M. M. Leininger (Ed.), *Culture care diversity and universality: A theory of nursing*. (pp. 5-68). New York: National League for Nursing.
- Leininger, M. M. (1994). *Nursing and anthropology: Two worlds to blend*. Columbus, OH: Greyden Press.

- Libbus, M. K. (2000). Breastfeeding attitudes in a sample of Spanish-speaking Hispanic American Women. *Journal of Human Lactation* 16(3), 216-220.
- Lindenberg, C. S., Solorzano, R. M., Vilaro, F. M., & Westbrook, L. O. (2001). Challenges and strategies for conducting intervention research with culturally diverse populations. *Journal of Transcultural Nursing* 12(2), 132-139.
- Locklin, M. P., & Naber, S. J. (1993). Does breastfeeding empower women? Insights from a select group of educated, low-income, minority women. *Birth*, 21(1), 30-35.
- Luna, E. (2003). Las que curan at the heart of Hispanic culture. *Journal of Holistic Nursing*, 21(4), 326-342.
- Maclean, H. M. (1998). Breast-feeding in Canada: A demographic and experiential perspective. *Journal of the Canadian Dietetic Association*, 59, 15-24.
- Marin, B., & Marin, G. (1991). *Research with Hispanic populations*. Thousand Oaks: Sage Publications.
- Matich, J. R., & Sims, L. S. (1992). A comparison of social support variables between women who intend to breast or bottle-feed. *Social Science in Medicine*, 34, 919-927.
- Moreland, J. C., Lloyd, L., Braun, S. B., & Heins, J. N. (2000). A new teaching model to prolong breastfeeding among Latinos. *Journal of Human Lactation*, 16, 337-341.
- Mothers Survey*. (1999). Abbott Park, IL: Ross Products Division, Abbott Laboratories.
- Naranjo, L. E., & Dirksen, S. R. (1998). The recruitment and participation of Hispanic women in nursing research: A learning process. *Public Health Nursing*, 15(1), 25-29.
- Obermeyer, C. M., & Castle, S. (1997). Back to nature? Historical and cross-cultural perspectives on barriers to optimal breastfeeding. *Medical Anthropology*, 17, 39-63.
- O'Campo, P., Faden, R. R., Gielen, A. C. & Wang, M. C. (1992). Prenatal factors associated with breastfeeding duration: Recommendations for prenatal interventions. *Birth*, 19, 195-201.
- Pachon, H., & Olson, C. (1999). Retrospective analysis of exclusive breastfeeding practices among four Hispanic subgroups in New York's EFNEP. *Journal of Nutrition Education*, 21, 113-118.
- Pearce, W. W. (1998). Seeking a healthy baby: Hispanic women's views of pregnancy and prenatal care. *Clinical Excellence for Nurse Practitioners*, 2(6), 352-361.

- Pender, N. J. (1996). *Health promotion in nursing practice* (3<sup>rd</sup> ed.). Stamford, CT: Appleton & Lange.
- Pender, N. J., Murdaugh, C. L., & Parsons, M. A. (2002). *Health promotion in nursing practice* (4<sup>th</sup> ed.). Upper Saddle River, NJ: Prentice Hall.
- Perez-Escamilla, R., Himmelgreen, D., Segura-Millan, S., Gonzalez, A., Ferris, A. M., Damio, G., & Bermudez-Vega, A. (1998). Prenatal and perinatal factors associated with breast-feeding initiation among inner-city Puerto Rican women. *Journal of the American Dietetic Association*, 98, 657-663.
- Perez-Escamilla, R., Segura-Millan, S., Pollitt, E., & Dewey, K. G. (1993). Determinants of lactation performance across time in an urban population from Mexico. *Social Science in Medicine*, 37, 1069-1078.
- Perez, A., & Valdes, V. (1991). Santiago breast-feeding promotion program: Preliminary results of an intervention study. *American Journal of Obstetrics and Gynecology*, 6, 2039-2044.
- Polit, D. F., Beck, C. T., & Hungler, B. P. (2001). *Essentials of nursing research methods, appraisal, and utilization* (5<sup>th</sup> ed.). Philadelphia: Lippincott.
- Pugin, E., Valdes, V., Labbok, M. H., Perez, A., & Aravena, R. (1996). Does prenatal breastfeeding skills group education increase the effectiveness of a comprehensive breastfeeding promotion program? *Journal of Human Lactation*, 12, 15-19.
- Ramirez, R. R., & De la Cruz, G. P. (2002). The Hispanic population in the United States: March 2002, Current Population Reports, 20-545, U. S. Census Bureau, Washington, D. C.
- Rassin, D. K., Markides, K. S., Baranowski, T., Richardson, C. J., Mikrut, W. D., & Bee, D. E. (1994). Acculturation and the initiation of breast-feeding. *Journal of Clinical Epidemiology*, 47, 739-746.
- Reifsnider, E., & Eckhart, D. (1997). Prenatal breastfeeding education: Its effect on breastfeeding among WIC participants. *Journal of Human Lactation* 13(2), 121-125.
- Righard, L., & Alade, M. (1990). Effect of delivery room routines on success of first breast-feed. *Lancet*, 336, 1105-1107.
- Riordan, J., & Auerbach, K. G. (1999). *Breastfeeding and human lactation* (2<sup>nd</sup> ed.). Sudbury, MA: Jones & Bartlett.

- Romero-Gwynn, E., & Carias, L. (1989). Breast-feeding intentions and practice among Hispanic mothers in Southern California. *Pediatrics*, *84*, 626-632.
- Ruowei, L., Darling, N., Maurice, E., Barker, L., & Grummer-Strawn, L. M. (2005). Breastfeeding rates in the United States by characteristics of the child, mother, or family: The 2002 national immunization survey. *Pediatrics*, *114*, e31-e37.
- Ryan, A. S., Wenjun, Z., & Acosta, A. (2002). Breastfeeding continues to increase into the new millennium. *Pediatrics*, *110*(6), 1103-1109.
- Sable, M. R., & Patton, C. B. (1998). Prenatal lactation advice and intention to breastfeed: Selected maternal characteristics. *Journal of Human Lactation*, *14*(1), 35-40.
- Schmied, V., & Barclay, L. (1999). Connection and pleasure, disruption and distress: Women's experience of breastfeeding. *Journal of Human Lactation* *15*(4), 325-333.
- Scholz, U., Dona, B.G., Sud, S., & Schwarzer, R. (2002). Is general self-efficacy a universal construct? Psychometric findings from 25 countries. *European Journal of Psychological Assessment*, *18*(3), 242-251. Retrieved Sept. 25, 2003 from <http://userpage.fu-berlin.de/~health/lingua5.htm>
- Schwarzer R., & Fuchs, R. (1995). Changing risk behaviors and adopting health behaviors: The role of self-efficacy beliefs. In A. Bandura (Ed.), *Self-efficacy in changing societies* (pp. 259-288). Cambridge, U. K.: Cambridge University Press.
- Schwarzer, R., & Scholz, U. (2000). *Cross-cultural assessment of coping resources: The general perceived self-efficacy scale*. Retrieved September 25, 2003 from: <http://userpage.fuberlin.de/~health/lingua5.htm>
- Sciaccia, J. P., Phipps, B.L., Dube, D. A., & Ratliff, M. I. (1995). Influences on breastfeeding by lower-income women: An incentive-based, partner-supported educational program. *Journal of the American Dietetic Association*, *95*(3), 323-328.
- Scrimshaw, S. C. M., Engle, P. L., Arnold, L., & Haynes, K. (1987). Factors affecting breastfeeding among women of Mexican origin or descent in Los Angeles. *American Journal of Public Health*, *77*, 467-470.,
- Sheehan, A. (1999). A comparison of two methods of antenatal breast-feeding education. *Midwifery*, *15*, 274-282.

- Sherer, M., Maddux, J. E., Mercadante, B., Prentice-Dunn, S., Jacobs, B., & Rogers, R. W. (1982). The self-efficacy scale: Construction and validation. *Psychological Reports, 51*, 663-671.
- Spector, R. E. (2000). *Cultural diversity in health and illness* (5<sup>th</sup> ed.). Upper Saddle River, NJ: Prentice Hall.
- SPSS 11.0 for Windows (2001). Chicago, IL: Prentice Hall.
- Tabachnik, B. G., & Fidell, L. S. (2001). *Using multivariate statistics* (4<sup>th</sup> ed.). Needham Heights, MA: Allyn & Bacon.
- Tarrka, M., Paunonen, M., & Laippala, P. (1999). Factors related to successful breast-feeding by first-time mothers when the child is 3 months old. *Journal of Advanced Nursing, 29*(1), 113-118.
- Torres, M. M., Torres, R. R. D., Rodriguez, A. M. P., & Dennis, C.-L., C. (2003). Translation and validation of the breastfeeding self-efficacy scale into Spanish: Data from a Puerto Rican population. *Journal of Human Lactation, 19*(1), 35-42.
- U. S. Census Bureau (2000). National population projections. Retrieved October 18, 2003, from <http://www.census.gov/population/p/www/projections.natsum-T1.html>.
- U. S. Department of Health and Human Services (January 2000). *Healthy People 2010* (Conference Edition in Two Volumes). Washington, DC: U. S. Government Printing Office (Stock Number 017-001-00543-6).
- Walker, M. (2002). Expanding breastfeeding promotion and support in the Special Supplemental Nutritional Program for Women, Infants and Children (WIC). *Journal of Human Lactation, 18*(2), 115-124.
- Wood, S. P., Sasonoff, K. M., & Beal, J. A. (1998). Breast-feeding attitudes and practices of Latino women: A descriptive study. *Journal of the American Academy of Nurse Practitioners, 10*, 253-260.
- Young, S. A., & Kaufman, M. (1988). Promoting breastfeeding at a migrant health center. *American Journal of Public Health, 78*, 523-525.