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Breastfeeding Practices and Problems
During the Early Postpartum Weeks

by

Yelena M. Slinin

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requirements for the degree of

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Fall 1997

**This project is dedicated to
volunteer breastfeeding consultants
from WIC, who are supporting
women in need
in their attempts to breastfeed:
to Tina who through her presence and support
gave Sam and me the gift of breastfeeding.**

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INTRODUCTION

The benefits of breast feeding for mothers and their infants are now well established. The American Academy of Pediatrics recommends breast milk as the preferred method of infant feeding for the first 4-6 months of life (6). Although recent increases in both the initiation of breast feeding and continued breast feeding at 6 months of age have been reported (1), breast feeding rates are far from reaching the national goals for the year 2000. Breast feeding remains least prevalent among women who are historically less likely to breastfeed: specifically ethnic minorities, young, undereducated women, and those in the lowest income group (1). Currently available literature concentrates on breastfeeding rates during postpartum hospital stay. At the present time, when early discharge after an uncomplicated vaginal delivery has become a standard practice, women and infants go home before milk comes in and breastfeeding is established. An increased incidence of severe breastfeeding malnutrition with associated significant morbidity has been reported in the literature.(35) In addition, a precipitous drop in breastfeeding during the first two weeks postpartum has been described but not analyzed. (2, 31) Although the problems a breastfeeding mother faces during the first postdischarge weeks have been described, very little is known about their relative incidence in the population. The problems, if not timely addressed, might contribute to unnecessary morbidity and newborn rehospitalizations. This study addresses the problems most frequently encountered by breastfeeding mothers of healthy term newborns during the first two weeks postpartum. Our goal is to : describe breastfeeding practices and specific problems which occur during the first two weeks postpartum among a group of medically and socially low-risk mother/ infant dyads and to evaluate racial/ethnic differences in breastfeeding initiation, problems, and early discontinuation.

Background

Since the early 1970s, when the proportion of new mothers who chose to breastfeed hit the all time lowest at 22%(4), there has been an increase in awareness of many advantages of breast feeding. Currently, human breast milk is considered to provide all the nutrients that infants need in the early months of life. The American Academy of Pediatrics (6) and the American Public Health Association (7) recommend that infants be exclusively breast-fed for the first 4-6 months, and breast-fed with complementation of appropriate solid foods for the rest of the first year. Increasing breastfeeding rates and duration has become a national health objective for the United States. As published in Healthy People 2000: National Health Promotion and Disease Prevention Objectives, the goal is to increase to at least 75% the proportion of mothers who initiate breastfeeding and to increase to at least 50% the proportion who continue to breastfeed their infants until their infants are at least 6 months old.(5)

The Benefits of Breastfeeding

Benefits to the Infant

Human milk contains some unique factors that help an infant grow and mature. Some animal studies have indicated that hormones found in human milk facilitate maturation of a newborn infant.(8) Fatty acids found in human milk may play a role in infant development. For example, docosahexanoic acid (DHA) found in human milk, is concentrated in brain and retina and is believed to play a role in their function. (9) Breastfed infants have higher DHA levels than formula-fed infants.(10) It has also been

shown that children who have been breastfed have small but statistically significant advantage over those artificially fed on a variety of cognitive tests.(11)

Besides being a unique nutrient, breast milk directly and indirectly protects infants from a variety of illnesses. Because breast milk is transferred directly from the mother to her infant and does not require additional preparation, breastfed infants are less likely than artificially fed infants to be exposed to pathogens introduced through contaminated foods or fluids. Human milk is abundant in secretory IgA antibodies that are directed against specific pathogens encountered by both the mother and the infant.(12) IgA antibodies from mother's milk are found in infant's secretions and provide protection against pathogens that can enter infants' organism by penetrating mucous membranes.

It has been shown that breastfeeding protects infants against the development of diarrhea, respiratory infections, and otitis media. (13, 14, 15, 16) Breastfeeding does not have to be exclusive to confer benefits: protection is provided in dose-response manner. The more breast milk an infant receives in the first 6 months of life, the less likely that he or she will develop diarrhea or ear infection. (16) This fact shows that not only initiation of breastfeeding but also continuation for at least six months provides additional benefits for infants.

Breastfed infants are less susceptible to some chronic diseases. Exclusive breastfeeding for two months is associated with decreased risk for developing Type I insulin dependent diabetes mellitus (IDDM) in susceptible children. (17) In a meta-analysis of 19 studies examining the relationship between IDDM and the type of infant feeding, IDDM patients were more likely to be breastfed for shorter period of time than healthy controls.(17) Early exposure to a protein found in cow's milk has been implicated as a trigger for the autoimmune response that results in IDDM.(18)

During the period of exclusive breastfeeding, many infants are protected against food allergies: breastfeeding results in delayed exposure to allergenic compounds. In a recent study breastfeeding was found to be protective against allergies throughout childhood and adolescence.(19)

There is some suggestive evidence that breastfeeding may lower cholesterol level in adults who were breastfed as infants. One study that estimated effects of breast- and formula-feeding on cholesterol and bile acid metabolism for 1.5 years after weaning in newborn baboons found that although there was no difference during the first year of life, at 97 weeks baboons that were breast-fed until 15 weeks compared with those formula fed had a 44% higher hepatic LDL-receptor mRNA concentration(48). Greater expression of LDL receptors correlates with lower blood LDL levels. Lower LDL levels are protective against coronary artery disease - the leading cause of death in the developed countries.

Sudden infant death syndrome (SIDS) is the second leading cause of infant mortality in the United States. Lack of breastfeeding has been a significant risk factor for SIDS even after controlling for social and demographic factors.(20)

Benefits to the Mother

Breastfeeding immediately after delivery accelerates maternal recovery from childbirth. Infant suckling triggers oxytocin release that stimulates uterine contraction , facilitates shrinkage of the uterus, and decreases maternal blood loss. Breastfeeding also helps some mothers to lose weight. In a study comparing women who breastfed versus those who bottle-fed their infants throughout the first year of life, breastfeeding mothers returned to

their prepregnancy weight by 12 months, whereas bottle-feeding mothers were still above their prepregnancy weight 24 months postpartum.(21)

Breastfeeding has been reported to be protective against some chronic diseases such as osteoporosis and multiple sclerosis. In several studies, breastfeeding has been found to reduce the risk of breast cancer in premenopausal women. According to one study, prolonged breastfeeding reduced the risk of breast cancer in premenopausal women by 28%.(22) Breastfeeding is also associated with decreased risk of ovarian cancer. In a large study (23), a 20-25% decrease in risk of ovarian cancer was observed in women who breastfed for at least 2 months per pregnancy.

In addition to its physiologic benefits, breastfeeding can provide psychologic impact on new mothers. Evidence shows that breastfeeding can increase confidence and decrease anxiety in new mothers. In a study of first time mothers (24), women who breastfed their infants were found to have “less anxiety and more mother - infant harmony” at one month postpartum than those who bottle fed. In a study of breastfeeding experiences of a small group of low-income, minority women breastfeeding was found to be an empowering experience for this group of mothers. (25) Among low-income women, successful breastfeeding increased confidence in the new mothers (25).

Benefits to Society

There are many economic benefits of breastfeeding. The estimated cost of artificial feeding is \$885 in the first year. (26) The cost of breastfeeding is minimal : some women have to eat extra food to compensate for energy and nutrient spending required for breastfeeding. Also, since breastfeeding protects infants from infections, mothers of breastfed infants require less time off to care for sick children and have fewer visits to the pediatrician. It

has been estimated that 2-4 billion health care dollars could be saved annually in the US if all women breastfed their infants for at least 12 weeks.(26) Breastfeeding is also environmentally beneficial: it produces no solid waste and requires no fuel to manufacture or prepare.

Predictors of Breastfeeding Initiation and Success

As awareness of the benefits of breastfeeding increased over the last several years, the prevalence of initiation of breastfeeding increased since 1989.(1) Although this trend is encouraging, it is far from reaching the Healthy People 2000 initiative goals: only 59.7% of mothers initiated breastfeeding, and only 21.6% continued to breastfeed their infants at 6 months in 1995. Numbers are even lower among low income, minority women. Several predictors of infant feeding practices have been identified in the literature. Education has been consistently found to be an important factor; better educated women are more likely to breastfeed than less educated women. (27, 28, 29) Mothers who work outside the home are less likely to breastfeed, and they nurse for fewer months.(30) First children and those to married mothers are more likely to be breastfed.(31) Women with higher incomes are more likely to breastfeed their infants than low income mothers.(31) Ethnicity was found to be an independent predictor of the infant feeding type. After adjusting for maternal education and income, race and ethnicity remained an important predictor of breastfeeding with White mothers more likely to breastfeed their infants than either Hispanic or Black mothers.(29, 30, 31) Race was also found to be associated with early discontinuation of breastfeeding. In a large study of incidence and duration of breastfeeding of 668 black and 511 white mothers, a considerable number of black women stopped breastfeeding in the early postpartum weeks when lactation has not been fully established. (2)

While many women believe that breastfeeding is beneficial, many barriers stand on the way of breastfeeding becoming a standard way of infant feeding. The most frequently cited

reasons for not choosing breastfeeding are embarrassment, fear of pain or discomfort, limitations of freedom and social life, need to go to work, and concerns that the father will not be involved in the feeding process.(32) Hospital policies, such as early discharge and inadequate follow-up and support in the early days of breastfeeding can also shorten the duration of breastfeeding. Research in the area of breastfeeding has concentrated in the area of social and demographic predictors of breastfeeding decisions with very few studies looking at the duration of breastfeeding and the reasons for early discontinuation. Although in some studies the precipitous decrease in breastfeeding was reported in the first two weeks postpartum before lactation is fully established, investigators did not try to explain these findings.(2,33) The pattern of feeding observed in the United States with many women initiating breastfeeding but few continuing beyond a few weeks suggest that women may not be receiving adequate support in their efforts to breastfeed. Given the importance of infant feeding practices for infant health and development, appropriate interventions should be applied in order to help mothers to not only choose breastfeeding as the method of infant feeding, but also to have a successful and meaningful breastfeeding experience.

Significance of the Project

During the era of early postpartum discharge, among the concerns of care at home following delivery is breastfeeding. Mother and infant are usually discharged within 48 hours after an uncomplicated vaginal delivery (most frequently within 24 hours) while breast milk might not come in before the 2nd or 3d day postpartum, making it difficult to teach or support breast-feeding in the hospital. (34) When a new mother goes home, many potential problems that arise during the initiation of breastfeeding may impede successful breastfeeding experience, cause infant morbidity, and facilitate early discontinuation of breastfeeding. One study reported increased incidence of severe breastfeeding malnutrition and hypernatremia in south-west Ohio, and attributed it to

insufficient follow-up of breastfed newborns.(35) In the case series study, five newborn infants with severe breastfeeding malnutrition and hyponatremia were admitted to the hospital at the age of 5 to 14 days, three of them suffered serious complications. In this case, timely intervention could have prevented significant morbidity. Although some studies have shown weaning in the first few weeks after birth, few studies have concentrated on the problems encountered by mothers during these weeks. The problems most often mentioned are: mother's return to work, fatigue and lack of sleep, leaky breasts, sore nipples, flat nipples, perception of inadequate milk supply, infant's behavior at the breast such as latch-on difficulty, poor suck, sleepiness or fussiness, poor weight gain, and high frequency of feeding.(36, 37) The study focuses on problems encountered by mothers during the two weeks postpartum and of incidence of these problems in the study population. We also address severity of each problem as it is perceived and reported by the mothers. We perform an analysis of breastfeeding problems reported by mothers participating in the BABE (Birth and Beyond) study of early postpartum discharge with and without nurse follow-up. We describe the problems experienced by the mothers, reasons for discontinuation of breastfeeding during the first two weeks postpartum, and analyze the relationship between mothers' ethnicity and breastfeeding outcomes. Because race and ethnicity have been shown to predict breastfeeding initiation and duration by the mother, we hypothesize that mothers of different ethnicity will differ with respect to specific problems they encounter during initiation and continuation of breastfeeding. Knowing the difference in problems encountered by mothers of different ethnicities might help to explain the lower breastfeeding initiation and shorter duration rates practiced by minority women. It will also help to gear interventions towards specific problems and to prevent severe morbidity that can result from breastfeeding malnutrition. Individualized approach to breastfeeding support might help to facilitate a successful breastfeeding experience and bridge the gap between currently observed breastfeeding rates and the goals of the Healthy People 2000 initiative.

METHODS

Project Design

This cross-sectional study is nested in a randomized controlled trial which enrolled a total of 1,163 low-risk mother-infant pairs who were discharged from the hospital at or before 48 hours postpartum. Data collected during the first six months of enrollment from the first 531 enrollees and entered into the SAS database was analyzed.

Mothers were divided into classes according to whether they have or have not initiated breastfeeding, those mothers who have initiated breastfeeding were further subdivided according to their breastfeeding status at two weeks postpartum. Bivariate and multivariate analyses were conducted to identify predictors of breastfeeding initiation and discontinuation. We have also conducted frequency analysis of problems related to breastfeeding encountered by mothers enrolled into the BABE study in the hospital, at 3 days postpartum, and during the second week postpartum.

Study Population

The randomized control study in which the project was nested enrolled mothers and newborns who were medically and socially low risk and who were discharged at or earlier than 48 hours postpartum at Kaiser Permanente facility in Sacramento. This analysis is of a data subset enrolled during the first six months of the BABE study (7/10/96-1/9/97). For the criteria used for exclusions see Appendix A.

During the first six months, 1317 women have delivered at Sacramento facility of Kaiser Permanente, 680 (51.6%) of whom were eligible to participate in the BABE study. 531 (78% of all eligible) women were randomized to participate in the study. Eligible women who did not enroll in the study either refused to participate 121 (17.8% of eligible) or were

not approached 28 (4.2% of eligible). 98.9% of enrolled women completed the 2 week interview. 6 women were lost to follow-up and did not complete the 2 week interview. Data for these women was excluded from the analysis. For specific reasons for exclusion and refusal to participate see Table 1 and 2 in Appendix B.

Eligible mother/infants dyads who have agreed to participate in the study were randomized by using random number generator to either nurse home visit or clinic follow-up. For each patient in the study, three interviews consisting primarily of closed-ended questions were conducted.

Data collection

Data collected during the first six months of the BABE study enrollment during the initial and two-week interviews was analyzed in the breastfeeding study. The research nurses collected information on eligibility, and, if eligible, abstracted clinical covariates from the mother's and infant's hospital chart into the chart review data collection form (Appendix C). For each of the 531 patient, three interviews consisting of mainly closed ended questions were conducted. The first face-to-face interview was conducted by the research nurse in the hospital at the time of enrollment (Appendix D). The second was a telephone interview at 2 weeks postpartum, conducted by trained interviewers (see questionnaire in Appendix E). Data from 525 subjects' chart review forms, initial and the 2 week interviews that has been collected, coded and entered into the SAS database as a part of the BABE study was used for analysis. Six of the enrolled women were lost to follow-up and did not complete the 2-week interview. Since most of the outcome variables of interest were collected during the 2-week interview, we excluded the six subjects from our analysis. Information on the sociodemographic and clinical variables was derived from the chart review form and the initial interview (for the sources of predictor variables see Appendix F, Table 2F). Variables related to previous mother's breastfeeding experience, feeding problems in the hospital, and current infant feeding plan were derived from the

initial interview. Information about the problems experienced by mothers on the third day postpartum and during the second week postpartum as well as mother's breastfeeding status at two weeks was obtained from the 2-week interview (see Appendix F, Table 1F).

Variables and Definitions

Outcome measures

Initiation of breastfeeding. Women who report feeding their infants breastmilk only or breastmilk and formula and women who are currently feeding formula only but report have tried to breastfeed during the 2-week interview are considered to have initiated breastfeeding. Women who reported feeding their infants formula only and denied having tried to breastfeed have not initiated breastfeeding.

Breastfeeding status at 2 weeks. Breastfeeding status at two weeks postpartum is reported in the 2-week interview as formula only, breastmilk and formula, and breastmilk only. Women who report feeding their infants breastmilk only, or breastmilk and formula with more than 50% of daily caloric requirement coming from breastmilk are considered to continue breastfeeding. Women who report feeding their infants formula only, or breastmilk and formula with 50% or more of daily calories coming from formula are not considered to be breastfeeding. Percent of calories provided as formula was calculated by using the following formula:

$$\% \text{ CALORIES} = ((\text{OZ_F_2} * 20) / (3.6 * 108)) * 100 \%$$

where :

- **OZ_F_2** - # of oz of formula fed to an infant per day as reported by the mother;
- **20 cal/oz**- calories/ oz of formula;
- **3.6kg** - average weight of a 2 week old newborn (38);

- **108 cal/day/kg** = caloric requirement per day per kg of a 2-week old infant's weight

According to this definition, 362 mothers were still breastfeeding their infants at 2 weeks postpartum, with 66 mothers supplementing breast milk with formula. 162 mothers were not considered breastfeeding their infants at two weeks postpartum, among whom 56 mothers have not initiated breastfeeding, and 67 women fed their infants both breastmilk and formula with more than 50% of daily calories coming from formula. It was not possible to define breastfeeding status of one woman because she stated that she fed her infant both breast milk and formula but did not provide the number of ounces of formula she fed her infant.

Reason for discontinuation of breastfeeding: The main reason for stopping breastfeeding is reported in the 2-week interview by mothers who have discontinued breastfeeding by the time of the interview. Not all mothers who are considered to have discontinued breastfeeding by the above definition have reported the main reason for discontinuation. Mothers who supplemented more than 50% of the daily calories as formula but also breastfed were not asked why they discontinued.

Breastfeeding problems: Are reported at the initial and the 2-week interview. In the initial interview, mothers who breastfed previously were asked if they had experienced any problems. All mothers were asked if they were currently experiencing any feeding problems in the hospital. In the 2-week interview, mothers retrospectively report problems that they have experienced at 3 days postpartum and also report the most important problem that they experienced during the second week postpartum. Age of infant at the onset of the problem is reported and is used to describe the problems. Severity of the problem is also reported by the mother as very serious, somewhat serious, not very serious, or not at all serious. The "very serious" and "somewhat serious" responses were grouped into a single

“serious problem” category; “not very serious” and “not at all serious” were grouped into a single “not serious problem” category for analysis and presentation.

Importance of Breastfeeding: Importance of breastfeeding was measured in the initial interview. Women could choose between 4 categories: “not very important”, “somewhat important”, “very important”, and “extremely important”. The three first categories were combined into one “not extremely important”, the second category included only “extremely important” responses for the purpose of the logistic regression analyses.

Predictor variables

Maternal Race / Ethnicity: Many demographic variables are associated with infant feeding practices. We used predictor variables related to sociodemographic characteristics, mother’s previous breastfeeding experience, and mother’s attitudes toward breastfeeding. The predictor variables were obtained from the chart review form, initial, and 2-week interviews.

Mothers’ race/ethnicity was derived from the initial interview conducted during postpartum hospitalization. Because the questionnaire allowed multiple answers for race/ethnicity, some decision had to be made in order to code this variable into a discrete number of meaningful groups. Respondents who marked only one race/ethnicity group were coded to their respective groups. However, for those with multiple answers the order of precedence was: Hispanic, Black, Asian/Pacific Islander, Native American, Other. Regardless of any other ethnic group that was marked, anyone who marked Hispanic was coded as Hispanic; anyone who reported being Black (but not Hispanic) was coded as Black; those who reported being Asian / Pacific Islander among other choices (but not Hispanic or Black) were coded as Asian / Pacific Islander; women who marked Native American or Native American and White were coded as Native American. With White taking the lowest precedence, anyone who marked White as well as any other category were coded as that

other category (See Appendix G). This system was designed and used by a Diabetes Survey conducted by the Division of Research at Kaiser Permanente, Oakland, CA. It was designed to mimic other data systems, for example, the United States Census, which typically code Hispanic first, followed by Black, and then other race/ethnic groups.

Maternal Age. Maternal age was calculated from the date of delivery and mother's date of birth obtained from the chart review form. SAS command or formula used:

$$\text{MA_AGE}=\text{ROUND} ((\text{H_ADM_DT} - \text{MA_DOB}) / 365.25)$$

Where

MA_AGE - mother's age at delivery;

H_ADM_DT - date of admission for delivery;

MA_DOB - mother's date of birth.

Mother's age was rounded to the nearest whole number. The variable "mother's age" was used as an ordinal variable, with categories <20, 21-25, 26-30, 31-35, 36-40, >40, in the bivariate analysis and as a continuous variable in the multivariate analysis.

Annual Household Income. During the initial interview women were asked which of the following categories best described their total household income in 1995, before taxes: "no income", "<\$10,000"; "\$10,001-\$12,500"; "\$12,501-\$15,000"; "\$15,000 - \$17,500"; "\$17,501-\$20,000"; "\$20,001-\$22,000"; "\$22,001-\$25,000"; "\$25,001-\$27,000"; "\$27,001-\$30,000"; "\$30,001-\$35,000"; "\$35,001-\$40,000"; "\$40,001-\$45,000"; "\$45,001-\$50,000"; "\$50,001-\$55,000"; ">\$55,000"; and "unknown". For analysis, categories were recoded into fewer response groups: "<\$10,000"; "\$10,000-\$20,000"; "\$20,000 - \$40,000"; and ">\$40,000", and "unknown". Annual income variable was used as an ordinal variable for bivariate and multivariate analysis.

Maternal Employment at 2 Weeks Postpartum. Questions about maternal employment status were asked during the 2-week interview. Mothers who were not employed and did not go to school were categorized as “not employed”; mothers who reported being employed part time (less than or equal to 20 hours a week) or reported being part time students were categorized as “employed part-time”; mothers who reported being occupied either at school or at work for more than 20 hours a week, or combining part time school and part time work, were classified as “employed full-time.” Maternal employment at 2 weeks postpartum variable was used as a categorical variable in the bivariate and multivariate analysis.

Presence of the Mother’s Partner in the Household . Participants of the BABE study were not asked about their marital status. Instead, in order to adjust for presence of a household member who was close to the mothers, we created a “mother’s partner in the household” variable. Questions about other adults living in the household with a mother and their relationship to the infant were asked during the initial interview. If a mother reported either infant’s father, stepfather, or her partner living in the household, the household was classified as “having mother’s partner “ in it. Otherwise, we categorized the household as the one without mother’s partner in it.

Previous Experience With Breastfeeding. The mothers were asked if they have ever tried to breastfeed before. Those who did, were asked if she or her baby had any problems breastfeeding. The mothers were also asked to rate their problems as being either very serious, somewhat serious, not very serious, or not at all serious. Mother’s previous breastfeeding experience was used in the bivariate analysis. New categories were created to account for mothers’ previous breastfeeding experience in the multivariate analysis. On the basis of the previous breastfeeding experience and parity the mothers were classified as primiparous, multiparous who have previously chosen not to breastfeed, multiparous who

have previously breastfed without problems, and multiparous who have previously breastfed with problems. Primiparous mothers made up a reference group.

Prenatal Breastfeeding Information. During the initial interview, the mothers were asked whether they have received any advice or information about feeding their baby from Kaiser doctors, nurses, or other medical personnel or if they have taken breastfeeding classes prenatally. Mothers who have either taken breastfeeding classes or have received infant feeding information from health care provider, or both, during pregnancy were considered to have received breastfeeding information prenatally. Mothers who have done neither, are considered to not have received any breastfeeding information prenatally.

Breastfeeding Information in the Hospital. During the 2-week interview mothers were asked if they have received any feeding advice from the medical personnel during their postpartum hospital stay. Mothers who answered “yes” were classified as those who “received breastfeeding information in the hospital.” Mothers who answered “no” were classified as those who “have not received breastfeeding information in the hospital.”

Statistical methods

Maternal characteristics within different breastfeeding decision - initiation vs not initiation - and outcome - breastfeeding continuation vs discontinuation at 2 weeks postpartum - groups were evaluated by using SAS 6.01 statistical analyses system. Bivariate analyses were conducted using the following tests: Wilcoxon rank sum test was used for comparison of ordinal variable (such as maternal age group, parity, maternal education, number of maternal and infant ER visits) measurements between different classes of breastfeeding outcomes (40). T-test was used for comparison of means of continuous variables (such as mothers age and length of labor) measurements between the groups(40). Maternal characteristics, such as race, employment, presence of partner at home, language spoken at home, breastfeeding experience, and exposure to information about

breastfeeding, that are described by categorical variables were evaluated by chi-square analyses (40).

We have conducted frequency analysis of problems related to breastfeeding as reported by participating mothers during the two week postpartum telephone interview. We identified the most frequent problems encountered by mothers in the hospital, at 3 days postpartum, and during the second week postpartum. We also analyzed reasons for quitting breastfeeding during the first two weeks postpartum.

We have constructed logistic regression models that attempted to predict breastfeeding initiation and discontinuation while adjusting for a variety of sociodemographic and experiential variables that were found to be associated with the outcomes of interests during the preliminary bivariate analyses. Initially, we introduced all of the predictor variables that appeared to be associated with an outcome of interest in the bivariate analysis into the model and used forward selection mode. In the future models, we kept the predictor variables that were significantly associated with the outcome of interest in the stepwise models and forced in some of the additional sociodemographic variables.

In the logistic regression models that were used to predict non-initiation and early discontinuation of breastfeeding we looked at several predictor variables. Predictor variables describing maternal previous breastfeeding decisions and experiences, maternal education, and maternal race were forced into the model. Other variables, such as maternal age, household income, maternal employment status at 2 weeks postpartum, presence of mother's partner in the household, maternal exposure to information about breastfeeding prenatally and in the hospital, breastfeeding problems in the hospital, importance of breastfeeding to the mother, and delivery type were entered into the model and forward selection mode was used. When breastfeeding initiation and discontinuation were predicted for racial/ethnic groups all of the predictor variables were forced into the model.

All predictor variables were forced into the logistic regression model that attempted to predict maternal attitude toward breastfeeding.

RESULTS

Characteristics of the Study Population.

Description of the project population

Of 525 women for whom analysis of breastfeeding outcomes was performed as part of the project, 469 (89.3%) report to have initiated breastfeeding. 106 (22.7%) of 468 women for whom breastfeeding status at two weeks postpartum could be estimated have discontinued breastfeeding by the time of the 2-week interview. 362 (69.0%) of women reported feeding their infants more than 50% of daily calories in the form of breast milk during the 2-week interview.

Overall, the study population can be described as predominantly white, English speaking, middle class, and well educated group (see Table 1). Specifically, 344 (65.5%) of 525 mothers were between 21 and 35 years old at the time of delivery, with only 11.4% of mothers in 16-20 year-old group, and 2.7% of mothers older than 40. For 39.4% of all mothers the current birth was the first one, with the rest of women reporting having one or more (up to 13) children prior to the current pregnancy. The study population represents a well educated group of women: 332 (63.2%) of mothers have education beyond the high school diploma, with 17.8% of women with postgraduate (greater than 4-year college) level of education. Only 5.7% of women reported their annual household income being below \$10,000, while almost 50% of women reported their annual household income being greater than \$40,000. The group is predominantly white (59.1%), the next largest group (16.6%) is represented by Hispanic women. Because of the algorithm that was used to create maternal race/ethnicity categories, the project's Native American group is predominantly made up of women with mixed White and Native American heritage. Because the 2-week follow -up interview was conducted in the early postpartum period, very few mothers reported being employed or going to school at the time of the two-week

interview: 11 (2.1%) reported being employed full time and 21 (4.0%) of mothers reported being occupied part time outside their homes. At the time of the initial interview, mother's partner was not living in the household with the mother and the newborn in 70 (13.3%) of cases. 92.2% of all women reported English as being their language of choice at home.

Because the project was nested in the randomized controlled trial where women were randomly assigned to receive either home nurse visit at 3 days postpartum or a scheduled pediatric clinic visit, we suspected that the follow-up type might have an effect on our outcomes of interest. 256 women from the project study population were randomized to receive home nurse visit; 269 women were randomized to receive a regular pediatric clinic visit. We conducted a bivariate analysis of breastfeeding initiation and discontinuation by two weeks postpartum by follow-up type. No statistically significant difference was found between the outcomes of interest in the two groups. 231(90.2%) of women from the treatment group and 238(88.5%) of women from the control group initiated breastfeeding. Of those women who have initiated breastfeeding, 49 (21.3%) women from the home nurse visit group and 57 (23.9%) of women from the pediatric clinic follow-up group discontinued breastfeeding by two weeks postpartum. For the purpose of the project, we combined all the study participants and treated the group of women without further reference to the type of postpartum follow-up they have received.

Table 1. Breastfeeding Initiation by Maternal Sociodemographic Characteristics and Factors Related to Maternal Experience With Breastfeeding.

Maternal Characteristic	N(% of all women) N=525	Mothers Who Initiated Breastfeeding N(%) N=469(89.33)	Mothers Who Did Not Initiate Breastfeeding N(%) N=56(10.67)	P value <.05
Maternal Age:				NS
16-20	60 (11.4)	55 (11.7)	5 (8.9)	
21-25	127(24.2)1	110 (23.5)	17 (30.4)	
26-30	41(26.9)12	129 (27.5)	12 (21.4)	
31-35	2(23.2)61	106 (22.6)	16 (28.6)	
36-40	(11.6) 14	55 (11.7)	6 (10.7)	
>40	(2.7)	14 (3.0)	0 (0)	
Parity:				NS
1	207 (39.4)	191 (40.7)	16 (28.6)	
2	180 (34.3)	162 (34.5)	18 (32.1)	
3	99 (18.9)	84 (17.9)	15 (26.8)	
>3	39 (7.4)	32 (6.8)	7 (12.5)	
Maternal Education:				NS
<High School	50 (9.5)	41 (8.7)	9 (16.1)	
High School	143(27.2)1	123 (26.3)	20 (35.7)	
Some College	96(37.3) 91	176 (37.5)	20 (35.7)	
College Grad	(17.3) 45	86 (18.3)	5 (8.9)	
Post Grad	(8.6)	43 (9.2)	2 (3.6)	
Household Income:				NS
<10K				
10K-20K	30 (5.7)	24 (5.1)	6 (10.7)	
20K-40K	58 (11.1)	49 (10.5)	9 (16.1)	
>40K	163(31.1)	149 (31.8)	14 (25.0)	
Unknown	256(48.9)	231 (49.4)	25 (44.6)	
	15 (3.2)	2 (0.43)	2 (3.6)	
Maternal Race:				NS
White	310(59.1)	280 (59.7)	30 (53.6)	
Black	39 (7.43)	34 (7.3)	5 (8.9)	
Hispanic	87 (16.6)	80 (17.1)	7 (12.5)	
Asian	38 (7.2)	33 (7.0)	5 (8.9)	
Native American	48 (9.1)	40 (8.5)	8 (14.3)	
Other	3 (0.6)	2 (0.4)	1 (1.8)	

Maternal Characteristic	N(% of all women) N=525	Mothers Who Initiated Breastfeeding N(%) N=469(89.33)	Mothers Who Did Not Initiate Breastfeeding N(%) N=56(10.67)	P value <.05
Employment at 2 Weeks Postpartum:				NS
not employed	493 (93.9)	442 (94.2)	51 (91.1)	
part-time	21 (4.0)	20 (4.3)	1 (1.8)	
full-time	11 (2.1)	7 (1.5)	4 (7.1)	
Mother's Partner in the Household:				NS
yes	455 (86.7)	407(86.8)	48 (85.7)	
no	70 (13.3)	62 (13.2)	8 (14.3)	
Language Spoken at Home:				NS
English	484 (92.2)	434 (92.5)	50 (89.3)	
Other	41 (7.8)	35 (7.5)	6 (10.7)	
Mother Got Breastfeeding Info Prenatally:				NS
Yes	317 (60.4)	286 (61.0)	31 (55.4)	
No	208 (39.6)	183 (39.0)	25 (44.6)	
Mother Got Breastfeeding Info In the Hospital *:				.003
Yes	404 (77.1)	370 (79.1)	34 (60.7)	
No	115 (22.9)	93 (19.9)	22 (39.3)	
Mother Breastfed Before **: 				<.000
Yes	270 (84.6)	254 (90.4)	16 (42.1)	
No	49 (15.6)	27 (9.6)	22 (57.9)	
History of Previous Breastfeeding Problem ***:				<.000
Yes	118 (43.7)	104 (40.9)	14 (87.5)	
No	152 (56.3)	150 (59.1)	2 (12.5)	

Note: *Numbers do not add up to 100% because of the missing information

**only multiparous mothers answered the question: N=319.

***only mothers with a previous breastfeeding experience answered the question: N=270.

Differences between mothers who have and have not initiated breastfeeding were evaluated with Wilcoxon rank-sum tests (maternal age, parity, education, and income) and chi-square test (maternal race, employment at 2 weeks postpartum, presence of the mother's partner at home, language spoken at home, exposure to breastfeeding information prenatally and in the hospital, and history of breastfeeding and breastfeeding problems).

Comparison of Characteristics Between Breastfeeding Initiation Groups

Significantly more women who initiated breastfeeding (370 (79.1%)) than women who did not initiate breastfeeding (34 (60.1%)) report to have received breastfeeding information in the hospital. Women who have chosen not to breastfeed previously and those who had history of breastfeeding problems were significantly more likely to not initiate breastfeeding. 94.1% of mothers who have chosen to breastfeed previously and only 55.1% of mothers who have chosen not to breastfeed previously initiated breastfeeding of the current infant. Comparable number of mothers who have initiated breastfeeding to the mothers who did not initiate breastfeeding had received breastfeeding information prenatally. Women who initiated breastfeeding were comparable to women who did not initiate breastfeeding with respect to all sociodemographic variables: age, parity, education, household income, race, employment at 2 weeks, presence of the mother's partner in the household, and language spoken at home.

Comparisons of Characteristics Between Breastfeeding Discontinuation Groups

Women who discontinued breastfeeding were on average less educated with only 16% of women who have graduated from college, compared to 31% of women who continue breastfeeding at the time of the two week interview being college graduates or beyond (see Table 2). Women with smaller household income tended to discontinue breastfeeding early: 10.4% of women who discontinued breastfeeding by two weeks postpartum and only 3.6% of breastfeeding women reported their annual household income of less than \$10,000. 45.8% of women with an annual household income less than \$10K and only 19.6% of women with an annual household income that exceeds \$40K discontinued breastfeeding. Minority women tended to discontinue breastfeeding more often than white women: numbers of Black and Asian women who discontinued breastfeeding by two weeks were greater than expected. Black women constituted 12.3% and Asian women constituted 11.3% of the quitters, while they constituted only 5.8% each of successful breastfeeders. Only 18.6% of White vs. 38.2% of Black, 25% of Hispanic, 36.4% of Asian women have discontinued breastfeeding by 2 weeks postpartum. Absence of mother's partner at home was positively associated with early discontinuation of breastfeeding: 11.6% of women who continued breastfeeding and 18.9% who discontinued breastfeeding reported absence of their partner from the household. Women who have discontinued breastfeeding by two weeks postpartum were comparable to women who continued to feed their infants more than 50% of daily calories as breast milk at the time of the 2-week interview with respect to maternal age, parity, employment status, and language spoken at home. Significantly more mothers with a history of previous breastfeeding problems were likely to discontinue breastfeeding by 2 weeks postpartum than mothers without the history. Among mothers who have previous breastfeeding experience who were breastfeeding their infants at 2 weeks postpartum, 36.7% of mothers had a history of a previous breastfeeding problem, where as 59.6% of mothers who quit breastfeeding by two weeks reported a previous breastfeeding problem. Mothers who

have discontinued breastfeeding by two weeks postpartum are comparable to mothers who continued to breastfeed with respect to their exposure to breastfeeding information prenatally and in the hospital and their previous breastfeeding preferences.

Table 2. Breastfeeding Status at Two Weeks Postpartum by Sociodemographic Characteristics and Factors Related to Maternal Experience with Breastfeeding.

	Mothers Who Have Initiated Breastfeeding N=469 (100%)		
Maternal Characteristic	Breastfeed at Two Weeks N(%) N=362(77.3%)*	Do not Breastfeed at Two Weeks N(%) N=106(22.7%)*	P value <.05
Maternal Age:			NS
16-20	38 (10.5)	17 (16.0)	
21-25	78 (21.6)	32 (30.2)	
26-30	100 (27.6)	28 (26.4)	
31-35	91 (25.1)	15 (14.2)	
36-40	44 (12.2)	11 (10.4)	
>40	11 (3.0)	3 (2.8)	
Parity:			NS
1	140 (38.7)	50 (47.2)	
2	128 (35.4)	34 (32.1)	
3	64 (17.7)	20 (18.9)	
>3	30 (8.3)	2 (1.9)	
Maternal Education:			0.046
<High School	30 (8.3)	11 (10.4)	
High School	90 (24.9)	32 (30.2)	
Some College	130 (35.9)	46 (43.4)	
College Grad	73 (20.2)	13 (12.3)	
Post Grad	39 (10.8)	4 (3.8)	
Household Income:			0.056
<10K	13 (3.6)	11 (10.4)	
10K-20K	35 (9.7)	14 (13.2)	
20K-40K	117 (32.4)	32 (30.2)	
>40K	185 (51.3)	45 (42.5)	
Unknown	11 (3.0)	4 (3.8)	

Maternal Race:	227 (62.7)	52 (49.1)	0.034
White	21 (5.8)	13 (12.3)	
Black	60 (16.6)	20 (18.9)	
Hispanic	21 (5.8)	12 (11.3)	
Asian	32 (8.8)	8 (7.6)	
Native American	1 (0.3)	1 (.9)	
Other			
Employment at 2 Weeks Postpartum:			NS
not employed	343 (94.8)	98 (92.5)	
part-time	15 (4.1)	5 (4.7)	
full-time	4 (1.1)	3 (2.8)	
Mother's Partner in the Household:			0.052
yes			
no	320 (88.4)	86 (81.1)	
	42 (11.6)	20 (18.9)	
Language Spoken at Home:			NS
English	338 (93.4)	95 (89.6)	
Other	24 (6.6)	11 (10.4)	
Mother Got Breastfeeding Info Prenatally:			NS
Yes	221 (61.1)	64 (60.4)	
No	141 (38.9)	42 (39.6)	
Mother Got Breastfeeding Info In the Hospital** :			NS
Yes	286 (79.0)	83 (79.1)	
No	71 (19.6)	22 (20.9)	
Mother Breastfed Before ***:			NS
Yes	207 (92.0)	47 (83.9)	
No	18 (8.0)	9 (16.1)	
History of Previous Breastfeeding Problem ****:			0.004
Yes	76 (36.7)	28 (59.6)	
No	131(63.3)	19 (40.4)	

Note: * Breastfeeding status of one woman at two weeks could not be determined because of the missing information.

**Numbers do not add up to 100% because of the missing information

***only multiparous mothers answered the question: N=319.

****only mothers with a previous breastfeeding experience answered the question: N=270. Among mothers who have initiated breastfeeding, differences between mothers who discontinue breastfeeding by 2 weeks postpartum and mothers who continue to breastfeed beyond 2 weeks were evaluated with Wilcoxon rank-sum and chi-square tests.

Prediction of Breastfeeding Outcomes With Logistic Regression Modeling

Logistic regression analysis was used to determine the effect of different sociodemographic and experiential variables on initiation versus noninitiation of breastfeeding. When all other predictor variables were adjusted, only previous noninitiation and previous breastfeeding experience without problems remained significantly associated with mother's decision not to initiate breastfeeding (see Table 3).

Table 3. Factors Associated With Non-Initiation of Breastfeeding.

Characteristic	Odds Ratio	95% CI	P
Previous Breastfeeding Experience:			
Primipara	1	NA	NA
Multipara , No History of Breastfeeding	9.5	4.4-20.6	0.0001
Multipara, Previously Breastfed Without Problem	0.15	0.03-0.65	0.01
Multipara, Previous History of Breastfeeding Problem	1.43	0.68-3.02	NS
<hr/>			
Maternal Education	0.73	0.53-0.99	0.045
<hr/>			
Maternal Race:			
White	1.0	NA	NA
Black	0.97	0.311-3.04	NS
Hispanic	0.56	0.22-1.4	NS
Asian / Pacific Islander	1.27	0.4-4.0	NS
Native American	1.6	0.65-4.18	NS

Logistic regression was used to predict non-initiation of breastfeeding by looking at several predictor variables. Predictor variables describing maternal previous breastfeeding decisions and experiences, maternal education, and maternal race were forced into the model. Other variables, such as maternal age, household income, maternal employment status at 2 weeks postpartum, presence of mother's partner in the household, maternal exposure to information about breastfeeding prenatally and in the hospital, and delivery type were entered into the model but did not fit the selection criteria for entering and staying in the model when forward selection mode was used.

Mothers who did not breastfeed their previous children were 9.5 times more likely (95% confidence limit 4.4-20.6) not to initiate breastfeeding during the current pregnancy. Mothers who have previously breastfed an infant without problems were 0.15 times less likely (95% CI 0.03-0.65) not to initiate breastfeeding of the new child. Maternal education remained independently associated with initiation of breastfeeding: increase in one level of education was associated with 27% decrease in non-initiation of breastfeeding (95% CI: 0.53-0.99). After adjusting for other factors, maternal race was not independently associated with breastfeeding initiation practices.

Table 4. Factors Associated With Discontinuation of Breastfeeding by Two Weeks Postpartum.

Characteristic	Odds Ratio	95% CI	P
Previous Breastfeeding Experience:			
Primipara	1	NA	NA
Multipara , No History of Breastfeeding	0.79	0.25-2.47	NS
Multipara, Previously Breastfed Without Problem	0.44	0.23-0.84	0.01
Multipara, Previous History of Breastfeeding Problem	0.86	0.46-1.6	NS
Maternal Education	0.73	0.57-0.92	0.012
Maternal Race:			
White	1.0	NA	NA
Black	1.57	0.59-4.17	NS
Hispanic	1.14	0.58-2.25	NS
Asian / Pacific Islander	2.81	1.15 -6.87	0.023
Native American	0.90	0.35-2.24	NS

Breastfeeding Problem in the Hospital	3.06	1.79-5.22	0.0001
Breastfeeding Is Important to the Mother^a	0.165	0.06-0.42	0.0002

Note: ^a Response categories included not very important, somewhat important, very important and extremely important. For the purpose of this analyses, “not extremely important “ combined not very important, somewhat important, and very important; “extremely important” referred to the extremely important choice. Odds of breastfeeding discontinuation among mothers who reported breastfeeding as being important to them as compared to mothers who reported breastfeeding as not being important was calculated while adjusting for other variables.

Logistic regression was used to predict discontinuation of breastfeeding by two weeks postpartum by looking at several predictor variables. Predictor variables describing maternal previous breastfeeding decisions and experiences, maternal education, and maternal race were forced into the model. Other variables, such as maternal age, household income, maternal employment status at 2 weeks postpartum, presence of mother’s partner in the household, maternal exposure to information about breastfeeding prenatally and in the hospital, and maternal confidence in feeding her infant as reported in the hospital were entered into the model but did not fit the selection criteria for entering and staying in the model when forward selection mode was used (see Table 4).

After adjusting for all the variables in the model, mother’s previous breastfeeding experience remained independently protective against breastfeeding discontinuation: compared to primiparas, women who had previous breastfeeding experience with no history of breastfeeding problems were .044 times less likely to discontinue breastfeeding by two weeks postpartum (95% CI: 0.23-0.84). Maternal education remained independently associated with breastfeeding continuation: with each increase in the level of

education attained by a mother she was 0.74 times less likely to discontinue breastfeeding by two weeks postpartum.

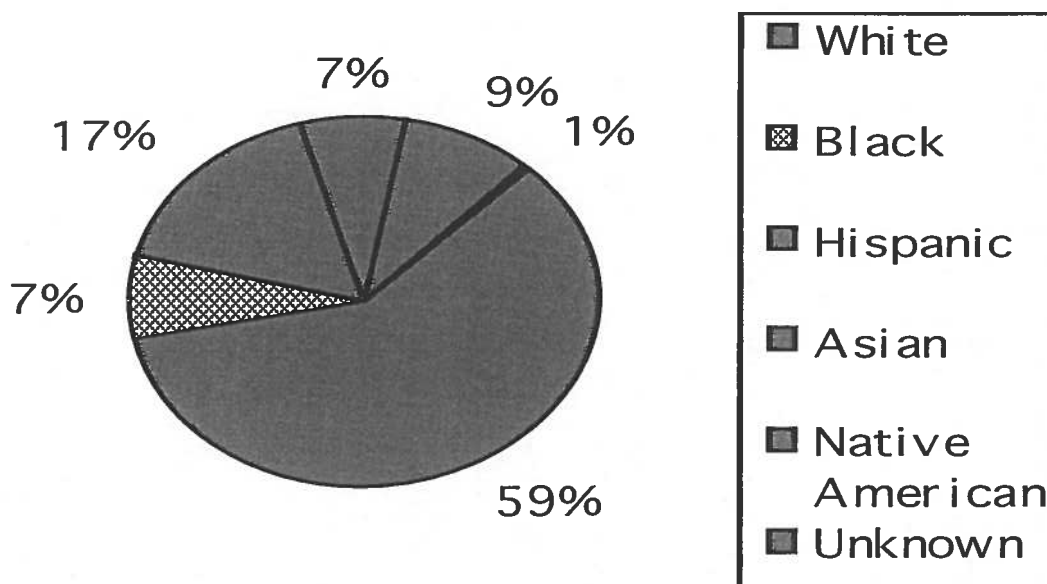
Belonging to some of the racial / ethnic group was associated with increased probability of breastfeeding discontinuation by two weeks postpartum. Being Asian or Pacific Islander was associated with early discontinuation of breastfeeding: compared to white women, Asian and Pacific Islander women were 2.81 times more likely to discontinue breastfeeding by the time of the second interview (95% CI: 1.15-6.87). Being Black was associated with significant increase in early discontinuation compared to white women until variable that described importance of breastfeeding to the mother was incorporated into the model. When the variable was introduced, positive association lost its statistical significance (OR=1.56, 95% CI: 0.59-4.2). Other racial and ethnic groups were not significantly associated with early discontinuation of breastfeeding.

Breastfeeding problem in the hospital remained predictive of breastfeeding discontinuation by 2 weeks postpartum when adjusting for other characteristics. Women who reported a feeding problem in the hospital were 3.06 times more likely to quit breastfeeding during the next two weeks than women who do not report a problem in the hospital (95% CI: 1.79-5.22). Maternal attitudes toward breastfeeding remain associated with early breastfeeding discontinuation after controlling for other variables. The likelihood of mothers who report breastfeeding as being "extremely important" to them quitting by two weeks postpartum are 0.17 that of the mothers who report breastfeeding as being either "not important at all", "somewhat important", or "very important" (95% CI: 0.06-0.42). Maternal attitude toward breastfeeding remains the strongest predictor of breastfeeding outcome.

Race as a Predictor of Breastfeeding Practices and Outcomes

Race and ethnicity is one of the most widely cited predictors of breastfeeding initiation and duration. In many studies race was found to be independently associated with breastfeeding decisions and outcomes even after controlling for other variables. According to bivariate analysis described earlier, race and ethnicity were not associated with maternal decision to initiate breastfeeding, but were associated with early discontinuation of breastfeeding by two weeks postpartum with more Black, and Asian than White mothers quitting breastfeeding during the early postpartum period, with Hispanic mothers in between, and native American mothers similar to White. In logistic regression analysis, being Asian was associated with statistically significant increase in risk of early discontinuation of breastfeeding. In some preliminary models, being Black was associated with early discontinuation of breastfeeding, but the trend lost its statistical significance after the odds ratio was adjusted for importance of breastfeeding to the mother. Here we provide the results of further analysis of association between maternal race and breastfeeding outcomes. As was stated earlier, the study population is predominantly white (59%), with 16.6 % of women being Hispanic, 9.1% - Native American, 7.4% - Black, and 7.2% - Asian or Pacific Islanders (see Table 9). Small number of cases in each racial / ethnic group made interpretation of the results difficult.

Figure 1. Frequencies of Different Maternal Races / Ethnicities in the Study Population



Because of the strong association of demographic variables with ethnicity, a logistic regression analysis for each for each ethnic group was used to determine which demographic variables affected early discontinuation of breastfeeding in each group (see Table 5). Because of the small group size, few of the observed associations are statistically significant. The trends observed during this analysis can be further evaluated when the analysis of the complete BABE dataset is performed.

Table 5. Factors Associated with Discontinuation of Breastfeeding by Two Weeks Postpartum for Different Race / Ethnicity Categories

Characteristic	Odds Ratio (95% CI)				
	White N ^d =52	Black N=13	Hispanic N=20	Asian N=12	Native American N=8
Maternal Age	0.99 (0.92-1.05)	0.81 (0.52-1.25)	1.06 (0.92-1.2)	1.04 (0.85-1.29)	0.98 (0.82-1.17)
Maternal Education	0.64 ^a (0.44-0.92)	6.4 (0.71-56.7)	0.71 (0.36-1.33)	0.87 (0.24-3.12)	1.23 (0.39-3.8)
Household Income	0.99 (0.96-1.01)	1.0 (0.97-1.04)	1.0 (0.97-1.05)	0.96 (0.87-1.05)	0.96 (0.75-1.22)
Mother's Partner In the Household	1.75 (0.61-4.97)	0.025 (0.0-5.6)	0.57 (0.06-5.25)	**** ^c	0.5 (0.02-10.1)
Previous Breastfeeding Experience:					
Multipara, Previously Breastfed Without Problem	0.33 ^a (0.13-0.81)	0.23 (0.0-14.4)	0.49 (0.09-2.7)	1.66 (0.18-15.8)	0.33 (0.03-3.8)
Breastfeeding Problem in the Hospital	2.41 ^a (1.17-4.99)	28.6 (0.2-999.0)	8.47 ^a (2.16-33.2)	0.72 (0.08-6.02)	6.69 (0.97-46.06)
Breastfeeding Is Important to the Mother ^a	0.27 ^a (0.13-0.57)	0.009 (0.0-0.53)	0.98 (0.27-3.63)	0.10 (0.01-0.75)	0.234 (0.033-1.66)

Note: ^a Significant at p<0.05 ^c Was not calculated.

^d N=number of women in each racial group who quit breastfeeding by two weeks

Maternal age was not found to be associated with breastfeeding discontinuation by two weeks postpartum for most of the race/ethnicity categories. Odds ratios were close to 1 for White, Hispanic, Asian, and Native American women, whereas increasing maternal age appeared to be protective for Black women. With increase in age, Black women were 19% less likely to discontinue breastfeeding prematurely compared to white women, but the trend was not statistically significant (95% CI: 0.52-1.25). Maternal education

appeared to be protective from early discontinuation of breastfeeding for White (OR=0.64, 95%CI: 0.44-0.92), Hispanic, and Asian women, although the association was statistically significant only for white mothers. Surprisingly, increased level of education was associated with increased risk for quitting during the first two weeks postpartum for Black (OR=6.4, 95%CI:0.71-56.7) and Native American (OR=1.23, 95%CI:0.39-3.8) women but the trends were not statistically significant. According to the logistic regression analysis, annual household income was not associated with discontinuation of breastfeeding after controlling for other variables within all of the racial / ethnic groups. Absence of the mother's partner from the household appears to be a risk factor for early discontinuation of breastfeeding for white women and a protective factor for women of four other racial groups, although both of those trends were not statistically significant. Women who had previously breastfed without problems were less likely to quit breastfeeding by two weeks postpartum across all racial groups, although the association was the strongest and statistically significant only for white women (OR=0.33; 95%CI:0.13-0.81).

Women who reported feeding problem in the hospital were more likely to discontinue breastfeeding in all racial groups except for Asian and Pacific Islander women. White women who reported a feeding problem in the hospital were 2.41 (95% CI:1.17-4.99) times more likely and Hispanic women 9.04 (95% CI:2.26-36.2) times more likely to discontinue breastfeeding than women from their corresponding racial / ethnic groups who did not report a problem. Asian women who reported a problem in the hospital appeared 0.72 times less likely to discontinue breastfeeding by two weeks postpartum than Asian women who did not report a problem in the hospital, but the association was not statistically significant (95% CI:0.08-6.02).

Importance of breastfeeding to the mother was protective against early breastfeeding discontinuation in all racial / ethnic groups. The association was significant for white

(OR=0.27, 95% CI: 0.13-0.57), Black (OR=0.009, 95% CI: 0-0.53), and Asian (OR=0.1, 95% CI: 0.01-0.75). Although many interesting trends in association between several sociodemographic characteristic and discontinuation of breastfeeding by two weeks postpartum within racial / ethnic groups were observed, small group sizes did not allow for statistically valid conclusions to be made. Performing similar analysis on the complete BABE dataset or performing a study of breastfeeding outcomes and decisions with larger racial / ethnic groups of comparable sizes might solve the problem.

Table 6. Mean Length Of Breastfeeding by Maternal Race

<i>Maternal Race</i>	<i>Day When A Significant Breastfeeding Problem First Appeared</i>	<i>Number of Days Breastfed</i>	<i>N = Number of Mothers</i>
White	2.55	4.85	52
Black	1.9	3.55	13
Hispanic	3.0	5.0	20
Asian or Pacific Islander	3.66	5.57	12
Native American	5.3	6.7	8

Note: The date of the problem onset and length of breastfeeding was determined for women who have discontinued breastfeeding by two weeks postpartum.

We compared the mean length of breastfeeding for the five racial and ethnic categories (see Table 6). We hypothesized that if racial groups differ in the date of a significant problem onset and the mean quit date, timing of interventions should take into account maternal race / ethnicity. Within the group of Black mothers, significant breastfeeding problem appeared on the average of 1.9 days after delivery and led to early discontinuation by an average of 3.55 days postpartum. White mothers reported an important breastfeeding problem arising around 2.55 days and leading to discontinuation of breastfeeding by 4.85 days postpartum. Both Asian and Hispanic mothers first encountered a problem on the third day postpartum

and stopped breastfeeding their infants at about 5 days of age. Native American mothers, who have quit breastfeeding by the 2-week interview, experienced an important problem on 5.3 days postpartum, somewhat later than mothers of other ethnicities, and stopped breastfeeding on the 6.7 days postpartum. This findings might suggest that an intervention such as a nurse home visit at 3 days postpartum is appropriate for the white, Hispanic, and Asian mothers, whereas Black mothers can benefit more from an earlier intervention or a longer hospital stay. Native American women can benefit from somewhat later intervention or a contact with a lactation specialist around one week postpartum.

Predictors of Maternal Attitudes Towards Breastfeeding

As was reported earlier, maternal attitudes toward breastfeeding is one of the greatest predictors of breastfeeding success. Mothers who report breastfeeding as “extremely important” 63.7% less likely to discontinue breastfeeding by 2 weeks postpartum compared to mothers who report breastfeeding as being either “not at all important”, “somewhat important,” or “very important.” As part of the analysis, a model that attempts to predict maternal attitudes toward breastfeeding by using logistic regression was constructed.

Table 7. Predictors of Maternal Attitudes Toward Breastfeeding

Characteristic	Odds Ratio	95% CI	P
Maternal Age	0.934	0.9-0.97	0.0008
Maternal Education	1.21	0.992-1.493	0.0596
Previous Breastfeeding Experience:			
Primipara	1	NA	NA
Multipara , No History of Breastfeeding	0.692	0.25-1.934	NS
Multipara, Previously Breastfed Without Problem	2.17	1.275-3.693	0.0043
Multipara, Previous History of Breastfeeding Problem	1.042	0.610-1.779	NS
Maternal Race:			
White	1.0		
Black	0.798	0.356-1.785	NS
Hispanic	0.687	0.399-1.183	NS
Asian / Pacific Islander	0.85	0.391-1.847	NS
Native American	1.65	0.794-3.438	NS
Mother Received Breastfeeding Information Prenatally	1.139	0.75-1.731	NS
Mother Received Breastfeeding Information In the Hospital	1.037	0.629-1.709	NS

After adjustment for several sociodemographic characteristics only maternal age and previous successful breastfeeding experience remained significantly associated with considering breastfeeding extremely important. Surprisingly, increase in maternal age was associated with small but significant decrease in odds of considering breastfeeding

extremely important. It may simply represent reluctance of older mothers to make radical statements, like reporting breastfeeding as being “extremely” important. With increase in a unit of age, older mothers are 6.6% less likely to report breastfeeding as being “extremely important” to them. Women who had a previous breastfeeding experience without a history of problem were 2.17 times more likely to call breastfeeding “extremely important.” Maternal education was also positively associated with very positive attitude towards breastfeeding: with each increase in the level of maternal education level, women who have attained higher level of education were 1.211 times more likely to consider breastfeeding extremely important. This relationship was not statistically significant at $\alpha=0.05$ (95% CI=0.992-1.493). No association between maternal exposure to breastfeeding information either prenatally or in the hospital and very positive attitudes toward breastfeeding was found with odds ratios approaching one.

The Most Important Breastfeeding Problems Encountered by Mothers During the First Two Weeks Postpartum and Reasons for Early Breastfeeding Discontinuation

Table 8. Description of the most important breastfeeding problems encountered by mothers in the hospital.

Problem Description	N(%) of All Mothers Who Report a Problem	N(%) of Mothers who Report the Problem Consider It		N (%) of Mothers Reporting the Problem Quit by 2 Weeks ^c
		Serious ^a	Not Serious ^b	
	N=99 (100)			N=37 (37.4)
Sucking Problem	46 (46.5)	22 (47.8)	24 (52.2)	18 (39.1)
Breast Pain	20 (20.2)	8 (40.0)	12 (60.0)	7 (35.0)
Sleepy Baby	16 (16.2)	5 (31.3)	11 (68.7)	7 (43.8)
Baby Is Hungry After Feeding	10 (10.1)	3 (30.0)	7 (70.0)	4 (40.0)
Baby Vomiting	3 (3.0)	0	3 (100)	0
Feeding Is Too Long	1 (1.0)	0	1 (100)	0
Other	3 (3.0)	0	3 (100)	1 (33.3)

Note: ^{a,b} Response categories included very serious, somewhat serious, not very serious, and not serious at all. In this table, “not serious” combines not serious at all and not very serious; “serious” combines somewhat serious and very serious.

^c Reason for quitting breastfeeding by two weeks postpartum might not be the same as the problem reported in the hospital by any given woman.

During the initial interview that took place in the hospital mothers were asked to report the most important infant feeding problem they were experiencing. Each mother had an

opportunity to report only one problem. Mothers also characterized the problem as being not serious at all, not very serious, somewhat serious, and very serious. We combined these categories into serious and not serious (see Table 8).

99 (21.1%) of women who have initiated breastfeeding reported experiencing feeding problem in the hospital. The problems reported in the hospital included infant's problems with sucking, latching on, breast pain, sleepy baby, baby being still hungry after feeding, baby's vomiting, and too frequent feeding (see Table 8). The most frequent problem encountered by breastfeeding mothers in the hospital was problem with infant's sucking and latching on: it constituted up to 46(46.5 %) of all problems reported in the hospital. This category included such problems as inverted nipples, flat nipples, milk not coming right away, and nipple preference. 47.8 % of mothers who reported this problem described it as being serious. 20 (20.2%) percent of mothers who reported a problem complained of breast pain, with 40% of those mothers considering the problem serious. Another frequent problem reported by 16 (16.2%) of mothers is a "sleepy baby". This category includes such responses as "baby is lethargic", "baby does not have an interest in eating", "baby falls asleep when eating", "baby won't wake up to suck". Although this problem is only considered serious by 31.3% of mothers who report it, 43.8% of these mothers quit breastfeeding by 2 weeks postpartum. Although this problem might not be the reason for quitting, it might be the one to signal future serious breastfeeding problems and discourage mothers who understand it as infant's disinterest in breastfeeding. Another problem that constitutes 10.1% of all problem reported in the hospital is baby being still hungry after feeding or mother complaining of not enough milk. This problem was considered serious by 30% of the mothers who reported it. 4 out of 10 mothers who reported the problem discontinued breastfeeding by the 2-week interview.

Table 9. Description of the Most Important Breastfeeding Problems Encountered by Mothers at 3 Days Postpartum and Reported at the Two-Week Interview

Problem Description	N(%) of All Mothers Who Report a Problem	N(%) of Mothers who Report the Problem Consider It		N (%) of Mothers Reporting the Problem Quit by 2 Weeks ^c
		Serious ^a	Not Serious ^b	
	N=468 (100) ^d			N=106
Breast Pain	369 (78.8)	85 (23.0)	284 (77.0)	84 (22.9)
Baby Is Hungry After Feeding	184 (40.0)	65 (35.3)	118 (64.7)	67 (36.4)
Sucking Problem	90 (19.0)	35 (38.8)	55 (61.2)	32 (35.5)
Baby Lost Too Much Weight	21 (4.5)	18 (85.7)	3 (14.3)	5 (23.8)
Sleepy Baby	8 (10.1)	3 (37.5)	5 (62.5)	0
Other	13 (3.0)	0	3 (100)	7 (53.8)

Note: ^{a,b} Response categories included very serious, somewhat serious, not very serious, not serious at all, and don't know. In this table, "not serious" combines not serious at all and not very serious; "serious" combines somewhat serious and very serious.

^c Reason for quitting breastfeeding by two weeks postpartum might not be the same as the problem encountered at 3 days postpartum for any given woman.

^d Percentages do not add up to 100 because women could report more than one problem.

During the 2-week interview, mothers were asked to recall problems they had experienced when their infant was 3 days old (see Table 9). Mothers were asked a series of directed questions about breast pain, sucking problems, abnormal infant's weight loss at 3 days postpartum. Mothers were also asked to recall other breastfeeding problems they might

have experienced when the infant was 3 days old. Mothers could report more than one problem. 369 (78.8%) of mothers who had initiated breastfeeding reported having breast pain on the third day postpartum, only 23% of them considered the problem serious. 184 (40%) of breastfeeding women reported their 3-day old infant being still hungry after feeding and being concerned with their milk supply. 90 (19%) of all breastfeeding mothers reported their infant having difficulty with sucking or latching on. Although only 21 (4.5%) of all mothers reported their infant losing too much weight by 3 days of age, 85.7% of these mothers considered this problem serious or very serious. Among other problems at three days postpartum were sleepy baby, feeding being too long, mother being sick / on medication, infant vomiting, and milk intolerance.

Table 10. Description of the Most Important Breastfeeding Problems Encountered by Mothers During the Second Week Postpartum and Reported at the Two-Week Interview.

Problem Description	N(%) of All Mothers Who Report a Problem	N(%) of Mothers who Report the Problem Consider It		N (%) of Mothers Reporting the Problem Quit by 2 Weeks ^c
		Serious ^a	Not Serious ^b	
	N=102 (100)			N=19
Baby Is Hungry After Feeding	28 (26.9)	9 (33.3)	18 (66.7)	4 (14.3)
Breast Pain	16 (15.4)	9 (56.3)	7 (43.7)	1 (6.25)
Milk Intolerance	13 (12.5)	7 (58.3)	5 (41.7)	4 (30.7)
Sucking Problem	12 (11.5)	6 (50.0)	6 (50.0)	2 (16.7)
Baby is Vomiting	10 (9.6)	5 (50.0)	5 (50.0)	4 (40.0)
Other	27 (26.5)	NA	NA	4 (14.8)

Note: ^{a,b} Response categories included very serious, somewhat serious, not very serious, not serious at all, and don't know. In this table, "not serious" combines not serious at all and not very serious; "serious" combines somewhat serious and very serious.

^c Reason for quitting breastfeeding by two weeks postpartum might not be the same as the problem encountered during the second week postpartum for any given woman.

During the two-week interview mothers were asked to recall the main feeding problem they have experienced during the week preceding the interview (see Table 10) Problem reported during this period were: baby being hungry after feeding (26.9% of all problems), breast pain (15.4% of all problems), milk intolerance (12% of all problems), and sucking problem (11.5% of all problems). Other problems reported include mother's or infant's sickness, infant vomiting, and prolonged feeding. 58.3% of all mothers who reported their infants being intolerant to breastmilk reported the problem being serious, 30.7% of these mothers had quit breastfeeding by the 2-week interview.

Table 11. Reasons for Quitting Breastfeeding by Two Weeks Postpartum Reported at the Two-Week Interview.

Reason for Quitting	N(%) of Mothers Who Quit Reporting the Reason	Mean Day of Problem Onset	Mean Length of Breastfeeding
	N=71^a		
Sucking Problem	20 (27.8)	2.0	3.8
Baby Is Hungry After Feeding	13 (18.1)	2.9	5.1
Breast Pain	10 (13.9)	2.3	5.3
Mother is Ready to Stop/ Bottle is More Convenient	9 (12.5)	3.2	4.1
Mother Back to Work/ School	3 (4.2)	7.3	7.6
Mother Sick/ on Medication	3 (4.2)	7.3	12.0
Milk Intolerance	3 (4.2)	4.0	7.0
Baby did not Gain Weight	2 (2.8)	2.5	3.5
Feeding is Too Long	2 (2.8)	4.5	8.0
Postpartum Blues	2 (2.8)	1.5	3.5
Other	5 (7.0)	1	3.8

Note: ^a Because of different definitions of breastfeeding during the collection and analysis of the data, not all mothers who are considered to have discontinued breastfeeding by the analysis were asked for the main reason for discontinuation during the data collection.

71 mothers who reported feeding their infants formula only during the 2-week interview and also reported having tried to breastfeed were asked for the main reason for breastfeeding discontinuation. They were also asked about the day of the problem onset and the age of infant at breastfeeding discontinuation. 20 (27.8%) of mothers reporting a

reason for breastfeeding discontinuation, report infant's sucking problem as being the main reason for quitting. The mean day of the problem onset is 2 days postpartum, the mean length of breastfeeding duration is 3.8 days. Another reason for quitting reported by 13 (18.1%) of mothers is baby being hungry after feeding or mother not being sure about the infant getting enough milk. The problem usually appeared by on the average of 2.9 days postpartum and the mothers quit by about 5 days. Breast pain was reported as the reason for breastfeeding discontinuation by 10 of 77 mothers. The mean day of the problem onset is 2.3 days and the mothers quit by 5.3 days postpartum. 9 mothers felt that they were ready to stop breastfeeding by on average 3.2 day postpartum and stopped after about 4 days of breastfeeding their infants. Surprisingly, when mothers reporting this reason for quitting were stratified by the importance of breastfeeding to them, 57.1% of them reported breastfeeding as being either important or extremely important to them. Among the other reasons for quitting, maternal sickness, mother's return to school or work, milk intolerance, lack of weight gain by the infant, prolonged feedings, and postpartum blues were reported less frequently (see Table 11).

DISCUSSION

In our study population, we found high breastfeeding initiation rates. Our results indicate that 89.3% of all women enrolled in the BABE study during the first six months of enrollment have initiated breastfeeding. Of 525 women, 362 (68.9%) were feeding their infants more than 50% of calories as breast milk at two weeks postpartum. This number is above the National average of 59.7% of breastfeeding initiation for 1995 reported by Ryan (1) California is known to have higher breastfeeding rates than other states. Based on the data reported by the Breastfeeding Promotion Committee, 74 % of all California mothers and 80% of White mothers, choose either breastfeeding or breastfeeding combined with formula at the time of hospital discharge. We found that previous infant feeding choices and outcomes were associated with breastfeeding initiation.

Despite high rates of breastfeeding initiation, 23% of mothers who initiated breastfeeding discontinued during the first two weeks postpartum. We looked at the characteristics associated with early breastfeeding discontinuation. We also analyzed problems encountered by breastfeeding mothers during the first two weeks postpartum and reasons for early discontinuation. Because maternal attitudes toward breastfeeding were strongly associated with breastfeeding discontinuation by two weeks postpartum, we constructed a model that predict maternal attitudes toward breastfeeding. We also looked at race as a predictor of breastfeeding practices and outcomes. Below we will first discuss the most important breastfeeding problems encountered by mothers during the first two weeks postpartum, then we will analyze predictors of breastfeeding initiation and discontinuation, and factors that influence maternal attitudes toward breastfeeding.

Breastfeeding Problems During the First Two Weeks Postpartum

Although some investigators have already described maternal concerns and problems in the early postpartum period (44, 45), very little is known about the epidemiology of breastfeeding problems. We describe the prevalence of breastfeeding problems reported in the hospital, at three days postpartum, and during the second week postpartum, and the main reasons for breastfeeding discontinuation by two weeks postpartum.

We have analyzed problems encountered by breastfeeding mothers during the first two weeks postpartum. Although the incidence of breastfeeding in our study population were higher than average reported for California and the United States, problems and reasons for early discontinuation of breastfeeding reported by mothers in our project were similar to the ones described by other investigators. Mothers in our project were concerned with “infants’ sucking and latching on”, “babies being sleepy”, breast pain, and “baby being hungry after feeding” in the hospital and on the third day postpartum, and with insufficient milk supply and breast pain during the second week postpartum. “Getting the baby to latch on, stay awake, and suck” are similar concerns reported during the first 55-70 hours postpartum by mothers in another follow-up study of a 73 primiparous women (45). These mothers were also concerned about not having enough milk, or their milk being not “rich enough”, breast and nipple discomfort, fatigue, and the length of feeding during the two-week postpartum interview (45). The four problems described here were most frequently reported by breastfeeding mothers in our study population.

Sucking Problem

Among the problems reported in the hospital, sucking problem is the most frequent and constitutes 46.5% of all reported problems. Sucking problem at three days postpartum is also reported by 90 (19%) of breastfeeding mothers. Only 12 mothers report this problem persisting during the second week postpartum. The same problem is also the most frequently cited reason for breastfeeding discontinuation by two weeks postpartum: 20 (27.8%) of mothers who quit report this problem as the reason for discontinuation. The mean day of the problem onset is 2 days postpartum and the mothers who report the problem as the main reason for discontinuation quit on average on the fourth day postpartum.

Sucking is the most important of the newborn's feeding activities (42). To suck effectively, the newborn must first latch on correctly. Latching on can be defined as the ability of the baby to grasp the nipple and flange the lips against areola. To latch and to suck the baby has to be alert and arousable. During the early postpartum period, maternal analgesia received during labor might inhibit arousability in a neonate (42). Difficulty latching on can also be caused by anatomical specificity of the mother's breast: flat or inverted nipples; or structure of the infant's mouth and palate: cleft palate and/or lip, receding jaw. Sucking problems caused by infant's sleepiness due to analgesia usually disappear by 32-36 hours postpartum (42), but problems related to anatomical discrepancies, incorrect positioning of the infant at the breast, and lack of sucking and swallowing coordination may persist and require intervention by a lactation specialist. If not addressed, the problems may result in nipple pain, insufficient milk intake, frustration, and lead to the early discontinuation of breastfeeding. Since sucking problem is the most prevalent among breastfeeding mother/infant dyads in the hospital and the most frequently cited reason for early discontinuation, we suggest that mothers who suffer from this

problem might benefit from intervention before they leave the hospital, and should receive follow-up support until the problem is solved.

Breast Pain

The second most prevalent breastfeeding problem in the hospital is “breast pain”. 20 (20.2%) of mothers who report a problem in the hospital report feeling breast discomfort or pain. Breast pain is the most prevalent problem at three days postpartum with 369 (78.8%) of all mothers reporting the problem at three days postpartum, when milk comes in. Breast pain is the third most frequently cited reason for breastfeeding discontinuation during the first two weeks. Breast pain might encompass several different problems that might have different etiologies. Some mothers perceive “let down” reflex as painful. Nipple pain, cracking, or irritation as the result of incorrect latching on when an infant takes only the mother’s nipple and not the whole areola is probably the cause of breast pain reported in the hospital. This problem can be corrected by teaching the mother and the infant the correct way of latching on. Breast pain can also be caused by engorgement due to milk coming in and the breast not being emptied, which usually occurs around day 3 postpartum.

Engorgement can be related to problems mentioned above (poor latching on and sucking). Breast engorgement can further aggravate sucking problems since it interferes with latching on. Mothers complaining of breast pain in the hospital should receive a consultation with a breastfeeding specialist and their breastfeeding technique should be evaluated. Mother can also be told about the ways to relieve the pain and engorgement with warm shower or towels. Mothers should also be evaluated for the presence of mastitis, especially if they report localized erythema and fever. For the most part, breast pain is a result of incorrect nursing technique and can be corrected by timely intervention.

“Sleepy Baby”

The third most frequent problem reported in the hospital is the baby being sleepy and not interested in feeding. 16 (16.2%) of all mothers reporting a problem in the hospital complaining of having a “sleepy baby.” 8 mothers complained of this problem present on the third day postpartum. It becomes less prevalent by the second week postpartum with none of the mothers reporting the problem as the main reason for discontinuation. As was mentioned above, normal newborns can remain lethargic and uninterested in feeding for up to 32-36 hours after birth. This problem should usually disappear by 2 days postpartum. Some infants who are slightly premature (36-37 weeks gestation) can remain “sleepy” and weak for the first week postpartum and require extra help and patience for initiation of successful breastfeeding. Medical staff should give mothers of these infants extra support, encouragement, and attention. Mothers should be taught techniques to arouse an infant such as unswaddling the infant, bringing him or her into upright position, and physically stimulating the infant by stroking. Mothers attempting to breastfeed slightly preterm infants should receive additional follow-up and encouragement.

Insufficient Milk Supply (“Baby Still Hungry After Feeding”)

“Baby being still hungry after eating” is the fourth most frequently cited problem in the hospital. This problem becomes more prevalent on the third day postpartum with 184 (40.0%) of all breastfeeding mothers reporting not being sure about their milk supply. This problem becomes the most prevalent one by the second week postpartum with 28 (26.9%) of mothers who report a problem during the second week postpartum complaining of their infants still being hungry after feeding. This is also second most frequently named reason for breastfeeding discontinuation by two weeks postpartum. Insufficient milk supply is a major reason cited by several studies for breastfeeding failure during the early weeks following delivery (43). Literature suggests that the problem occurs most frequently during the first 6 weeks postpartum (44). The reasons that mothers have given for

perceiving inadequate milk supply was that their infant was fussy and not satisfied after feeding. According to other studies (44), mothers interpreted their infant's crying after breastfeeding as the sign of insufficient milk supply and introduced formula supplementation which decreased demand and further decreased milk supply and lead to discontinuation of breastfeeding. To address the problem, mothers should be taught about the law of supply and demand in breastfeeding and should be reassured that in most cases the more frequently the infant stimulates the breast, the more milk is produced to satisfy the demand. Mothers should also be taught to follow other cues to identify potential milk insufficiency: number of wet diapers and bowel movement a day, infant's activity status, appearance of the fontanelle. At the same time, mothers should be encouraged to feed their infants more frequently and to get more rest. Infant's weight measurements should be performed more often to follow the infant's pattern of weight gain and to reassure the mother. Since the mean day of the problem onset is 2.9 days after delivery and the mean day of breastfeeding discontinuation is 5.1 days postpartum for mothers who report "baby being hungry after feeding" as the main reason for quitting, the problem is not likely to be addressed during the hospital stay. Medical personnel in the hospital should provide mothers with information about ways to increase their milk production and to monitor hydration of their infants. Mothers should also be provided with easy access to help and guidance should they become concerned about inadequate milk supply.

Because problems reported by mothers in the hospital are the greatest predictors for early discontinuation of breastfeeding, strategies to help mothers and babies initiate and establish successful breastfeeding should start early in the hospital and should be based on a cooperative effort between the mother and the health care personnel involved in her care. In the hospital, breastfeeding techniques of mothers who complain of feeding problems should be assessed and necessary interventions and education should take place. In most cases, mothers should be reassured that any difficulties are temporary and that babies sometimes take several days to recover from birth. Due to the early discharge practice,

most of the problems are not solved in the hospital. If mother is leaving the hospital before lactation has been fully established, she should be instructed about possible problems that might arise during the first several days postpartum and taught the cues by which to estimate the infant's well being. Home follow-up should be insured for all mothers who complained of breastfeeding problem in the hospital until the problem is solved and the mother feels comfortable feeding her infant. Easy access to breastfeeding advice and support should be provided to all breastfeeding mothers.

Breastfeeding Initiation

As the result of the bivariate analysis, we found that women who initiated and did not initiate breastfeeding were comparable with respect to most of the sociodemographic characteristics and differed only in exposure to breastfeeding information in the hospital and their previous breastfeeding history. We have performed multivariate analysis of factors associated with non-initiation of breastfeeding while controlling for other variables. Previous breastfeeding experience was independently associated with both breastfeeding initiation and early discontinuation. Multiparous mothers who have previously chosen not to breastfeed their infants were 9.5 times more likely not to initiate breastfeeding of their infants than primiparas. Mothers who had previously breastfed their infants without problems were 0.15 times less likely not to initiate breastfeeding than primiparous mothers. Maternal education was found to be associated with breastfeeding initiation when adjusting for other variables: mothers who achieved higher level of education were 27% less likely to not initiate breastfeeding of their infants. Maternal race or ethnicity were not found to be associated with infant feeding decisions. Very few variables were found to be independently associated with decision to initiate breastfeeding in our study. Other investigators reported such variables as socioeconomic status, race or ethnicity, maternal age and other variables to be associated with breastfeeding initiation (2, 3, 27, 28, 29, 31).

One of the reasons our study did not report similar findings could be socioeconomic and racial homogeneity of our study population.

Breastfeeding Discontinuation by Two Weeks Postpartum

Several investigators have previously reported but have not explained precipitous drop in breastfeeding during the first two weeks postpartum before lactation is fully established (2). We have observed a similar trend: 22.6% of mothers who initiated breastfeeding were no longer breastfeeding or fed their infants less than 50% of daily calories in breast milk at two weeks postpartum. We performed bivariate and multivariate analyses in an attempt to determine factors associated with premature breastfeeding discontinuation. Mothers who discontinued breastfeeding by two weeks postpartum appeared to be less educated, have lower household incomes, be Black or Asian, not have a partner in the household, and have a history of a previous breastfeeding problem. The finding that breastfeeding discontinuation rather than initiation is associated with many sociodemographic characteristics may suggest that women who are traditionally viewed as being at risk for lower breastfeeding rates try to breastfeed but have higher rates of early failure. This finding might have important implications for the possible intervention programs: providing timely support, education, and easy access to help for breastfeeding mothers during the early postpartum period might be more effective than prenatal education.

We performed a multivariable analysis of factors associated with early discontinuation of breastfeeding while controlling for other variables.

Previous Breastfeeding Experience: Multiparous women who have previously breastfed their infants without problems were 0.44 times less likely to discontinue breastfeeding of their new infant prematurely. This means that women who decide to breastfeed their infants and succeed once are more likely to breastfeed successfully in the future. This finding might suggest that education and support of primiparous women might improve

not only the current but also future breastfeeding outcomes. Breastfeeding problems might be very discouraging and frustrating for the first time mothers who are learning to breastfeed. Frustrated mothers might switch to formula. Since formula feeding is not immediately hazardous to the infant's health and might give the mother more personal freedom, mothers who have a successful experience with formula feeding might not be willing to initiate breastfeeding of the future infants or quickly discontinue it when the first problems are encountered. Because it is important to prevent the first unsatisfactory breastfeeding experience, special attention must be paid to primiparous women attempting to breastfeed.

Maternal Education: Maternal education was also found to be independently protective against early breastfeeding failure. Our findings confirm findings reported previously by other investigators (1, 27, 28, 29).

Feeding Problem Reported by the Mother: Mothers who reported a feeding problem in the hospital were 3.06 times more likely to discontinue breastfeeding by two weeks postpartum than mothers who did not report a problem in the hospital ($p=0.0001$). Although the association is statistically significant, it is impossible to establish a causative relationship between a problem in the hospital and early discontinuation of breastfeeding. A problem reported in the hospital might be more serious and cause the mother to quit breastfeeding early. On the other hand, mothers who are less motivated to persevere might tend to complain about breastfeeding problems earlier in the course. Nevertheless, it stresses the importance of early identification of breastfeeding problems and timely intervention in order to prevent early breastfeeding discontinuation.

Maternal Race and Ethnicity: Race and ethnicity is one of the most widely cited predictors of breastfeeding initiation and duration. We found maternal race to be independently associated with breastfeeding discontinuation but not breastfeeding initiation. The relationship was statistically significant only for Asian mothers when adjustment for other

variables was performed: Asian and Pacific Islander mothers were 2.8 times more likely to quit breastfeeding by the 2-week interview than White mothers. Similar trends were observed for Black, Hispanic, and Native American mothers but they were not statistically significant. The relationship was significant for Black mothers before breastfeeding importance variable was introduced into the model (OR=2.55, 95% CI: 1.19-5.48). Black race has been previously found to be associated with low rates of breastfeeding by many investigators (2,27, 28, 29). This finding suggests strong association between Black race and maternal attitudes toward breastfeeding.

Very few studies have reported breastfeeding practices of Asian women. Studies that investigated the relationship between mother's race and breastfeeding practices looked mostly at Black and Hispanic mothers. Breastfeeding Promotion Committee of California Report, a document that addressed breastfeeding practices of Asian women in California, reported that mothers of Southeast Asian ethnicity have the lowest rates of breastfeeding initiation: under 40% of Southeast Asian mothers initiate breastfeeding and 15% of these mothers breastfeed their infants exclusively. Among the Asian mothers of other ethnicities, over 70% initiate breastfeeding but only little over 40% exclusively breastfeed in the hospital (26). Because few Asian mothers, especially those of Southeast Asian ethnicity breastfeed at all in the hospital and most of those who do supplement with artificial baby milk, Asian women are at higher risk for early discontinuation of breastfeeding (41) since formula supplementation is an independent predictor for early discontinuation (2). Although the association between Asian race and early breastfeeding discontinuation is statistically significant, there were few Asian women in our study population. It might be interesting to conduct a similar study at San Francisco and other Bay Area facilities of Kaiser Permanente: this facilities are likely to have a larger population of Asian women of all ethnicities. Because of the large Asian population in California, our findings signal the need for further research in this area.

Independent Predictors of Breastfeeding Discontinuation for Racial and Ethnic Groups:

We performed multivariate analysis within racial groups to see which factors were predictive for breastfeeding discontinuation for different races and ethnicities. We found that increased maternal education is protective from early breastfeeding discontinuation by two weeks postpartum for white women, but is a risk factor (although not statistically significant) for early discontinuation for Black and Native American women. Similar trends of maternal education not being significantly associated with breastfeeding outcomes for Black and Hispanic mothers have been previously reported in the literature (3, 31). Another interesting trend was that the absence of a maternal partner in the household increased the risk for early breastfeeding discontinuation for white women but was protective against early discontinuation by women of all other races and ethnicities although none of the trends were statistically significant. This finding might be explained by the previously published findings that the male partner is the single most important source of support of promoting breastfeeding for White women, whereas for Black mothers only best friend is predictive of breastfeeding, and a women's mother is the primary source of support for breastfeeding among Mexican-American women (27). Because none of the trends for minority women are statistically significant, a study with bigger populations of Black, Asian, Hispanic, and Native American mothers is warranted for further investigation of these relationships.

Timing of Quitting by Race: As part of the analysis, we calculated the mean day of problem onset and the average number of days breastfed for mothers of different races who quit breastfeeding by the two week interview. We observed that Black mothers, on average, encounter an important breastfeeding problem during the second day postpartum and discontinued breastfeeding by the fourth day postpartum - earlier than mothers of other races (see Table 12). Although the numbers are small, the trend might have important practical implications: Black women might benefit from an early intervention. Black

mothers might be hospitalized for an extra day to establish successful breastfeeding or might receive follow-up on the second day postpartum. Mothers of other races and ethnicities can benefit from a breastfeeding follow-up on the third day postpartum.

Maternal Attitude as the Predictor of Breastfeeding Outcome

Another factor strongly associated with breastfeeding discontinuation is mother's attitude toward breastfeeding. Mothers who report breastfeeding being "extremely important" to them are 83.5 % less likely to quit breastfeeding during the first two weeks postpartum than mothers who report breastfeeding as "not important", "somewhat important", or "very important". Maternal attitude appears to be the strongest independent predictor of breastfeeding success and the relationship remains strong across all racial and ethnic groups. Studies of demographic variables appear more frequently than do studies of mothers attitudes and behaviors, although attitudes and behaviors might be more important determinants of infant feeding behavior than demographic characteristics (32). Some investigators argue that behavioral intentions are the most important predictors of behavior, whereas demographic factors are indirect determinants (32). Sociodemographic factors represent indirect predictors of breastfeeding practices that may help identify the groups that have more positive attitudes toward breastfeeding as well as those that are more vulnerable.

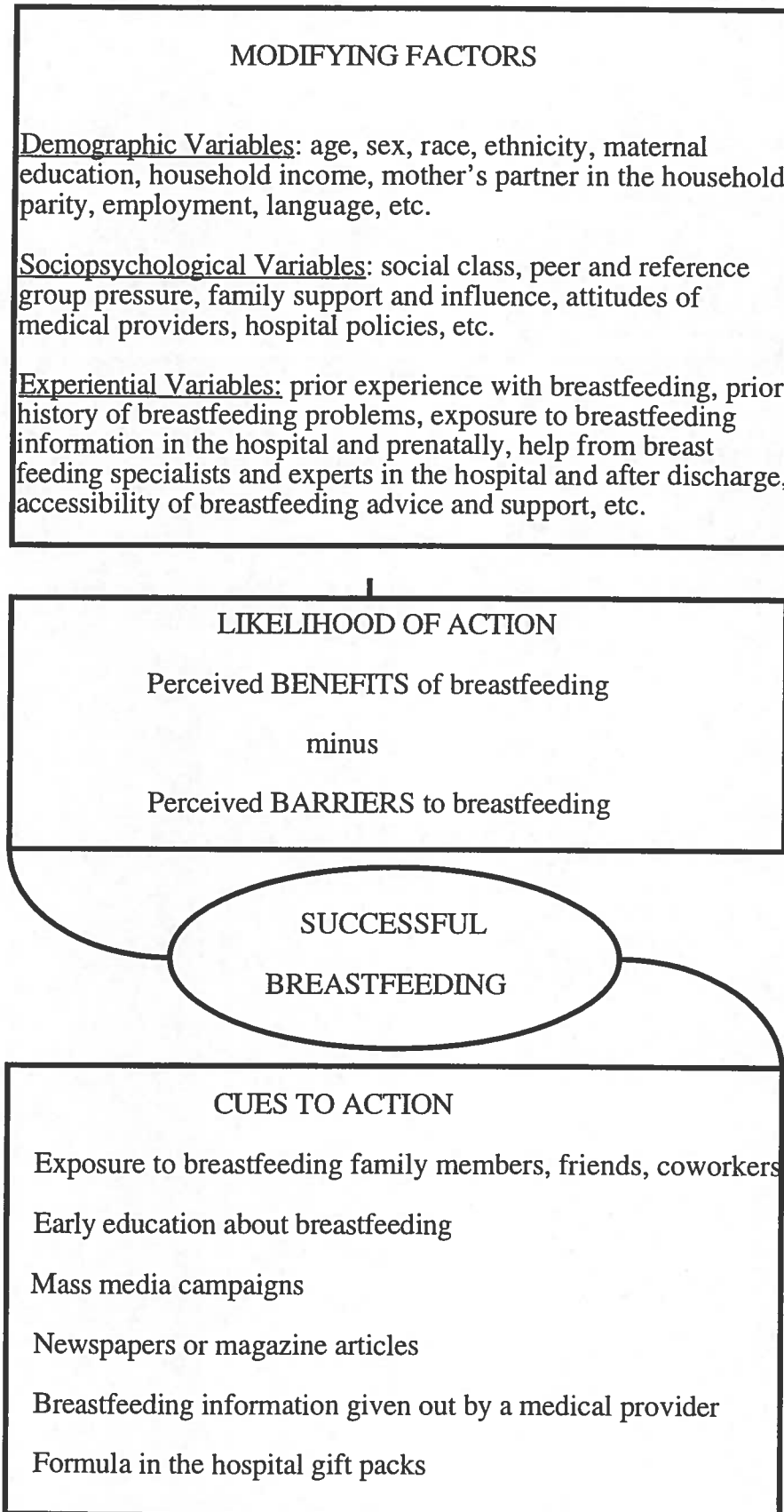
We have constructed logistic regression model that attempts to predict maternal attitudes toward breastfeeding while adjusting for several sociodemographic and experiential factors. Maternal age, education, and previous successful breastfeeding experience appeared to be independently associated with maternal attitudes. Mothers who previously breastfed infants without problems were 2.2 times more likely to report breastfeeding as being "extremely important" to them than primiparas. Surprisingly, neither prenatal breastfeeding information nor breastfeeding information in the hospital were associated with maternal attitudes toward breastfeeding. According to Losch et al., data indicate that a mother's

feeding decision is usually made early in pregnancy or in many cases, before she becomes pregnant (32). Therefore, prenatal breastfeeding information and classes that are usually not provided until later in pregnancy and breastfeeding information in the hospital are not likely to affect maternal attitudes toward breastfeeding and infant feeding practices.

“Health Belief Model” as Predictor of Breastfeeding Behavior

It has been known for a while that breastfeeding is the best source of nutrition for newborns, but not all mothers attempt to breastfeed and even fewer mothers succeed in breastfeeding. Most of the studies are looking at sociodemographic predictors of breastfeeding. There are several deficiencies of this approach. First, these environmental characteristics are enduring and hard to modify. Second, because background and sociodemographic characteristics are not directly related to attitudes, there are many women who are at high risk for poor breastfeeding outcomes and still breastfeed their infants successfully. A breastfeeding outcome model that includes modifiable factors might be more useful in targeting interventions than a list of unmodifiable sociodemographic risk factors. According to Knutson (47), “an enormous gap exists between knowing that health behavior is motivated and identifying the specific motivational components of any particular act.” Here we will hypothesize which potentially modifiable beliefs and motivations are likely to affect breastfeeding practices and incorporate them into a health belief model modified from Becker and Maiman (48), which attempts to predict breastfeeding decisions and practices.

Figure 2. Health Belief Model as a Predictor of Breastfeeding Practices



Although breastfeeding attitudes are harder to quantify than sociodemographic variables, they provide a greater potential for intervention. Our finding that maternal attitude is the strongest independent predictor of early discontinuation of breastfeeding supports earlier findings, and suggests that targeting breastfeeding attitudes even before a woman becomes pregnant might be more effective than providing prenatal and hospital information on breastfeeding. Factors that were reported in literature to influence breastfeeding attitudes are: early exposure to breastfeeding mothers, positive informational and emotional support for pregnant women, father's attitudes toward breastfeeding, physicians attitudes and support for breastfeeding, and hospital policies (32).

"Cues to action" listed in Figure 2 provide a list of possible intervention targets. Few women are exposed to breastfeeding community and family members before they have to make their infant feeding choice. The generation of young mothers who are having infants today was not exposed to breastfeeding in their own families because breastfeeding was not popular during the late 60's and early 70's, when most of today's mothers were growing up. As the prevalence of breastfeeding increases, exposure to breastfeeding within one's own family will hopefully become the rule rather than an exception and will contribute to formation of positive attitudes toward breastfeeding.

Health care providers are important sources of information and influence on mother-infant's feeding behavior. Including breastfeeding as a part of medical and nursing school curricula can increase providers' expertise in this area and help them to promote breastfeeding and successfully intervene when a mother needs help. If physicians are not comfortable discussing breastfeeding with their patients, it should be appropriate to refer a woman to a breastfeeding consultant or another expert. Physicians and hospitals should also refrain from supplying women in their care with formula samples and pro - formula advertisements.

Potential intervention might include promoting breastfeeding to high school students, both boys and girls. Teenagers who grow up receiving positive messages about breastfeeding will be more likely to choose to breastfeed their infants when time comes to make the choice. Intervention must target not only pregnant women, but also other members of the community. Fathers can be targeted during the first prenatal visit that they attend with their wives. Positive breastfeeding messages and images of breastfeeding mother / infant couples in the media will help to popularize breastfeeding. Breastfeeding campaigns similar to antismoking and antidrug campaigns can increase public awareness and create positive public attitudes.

Study Limitations

The fact that breastfeeding initiation rate in the project population are extraordinarily high might reflect the sociodemographic make-up of the study population: predominantly white, middle class, well educated, and medically insured, characteristics associated with higher breastfeeding rates. Selection criteria for the study might have also favored positive trends in breastfeeding initiation since only medically and socially low risk families were eligible to participate in the study. The results of the project are generalizable only to well educated middle class women representative of HMO patient population in California which usually include middle class population and excludes the poorest and the wealthiest strata. These individuals have sociodemographic characteristics and breastfeeding practices different from those of the general population . Breastfeeding practices of women who are not eligible to participate in the BABE study due to social or medical reasons are of a great interest since these women are also at a greater risk for non initiation and early discontinuation of breastfeeding, and can be a subject for further research.

One of the difficulties we faced during the analysis was creating race / ethnicity categories. Because the questionnaire allowed multiple answers for mother's race/ethnicity, some decision had to be made in order to code this variable into a discrete number of meaningful

groups. We have used an algorithm presented in Appendix G. The system has allowed us to deal with an issue of multiple ethnic subgroups and mixes in our study population but presented us with some problems. Women are forced into the race / ethnic groups by the algorithm and do not necessarily identify with the group culturally even though it is part of their heritage. The Native American group in our analysis consists primarily of women with a mixed white and Native American heritage (only one woman is purely Native American). It is possible that the study group is more similar to white than Native American population with respect to their cultural and breastfeeding practices. One of the strategies that can address the problem is using directed questionnaires where mothers are forced to pick one racial or ethnic group they identify with. Although this approach is not ideal, it forces mothers to pick a group they culturally identified with, rather than making investigators force mothers into groups artificially.

Another problem we encountered during our analysis was small racial / ethnic group sizes. Although we analyzed breastfeeding data for 525 women, 310 (59%) of them were white, leaving few women in other racial groups. Many interesting findings and observed trends were not statistically significant preventing us from drawing any meaningful conclusions. Originally we were planning to perform analysis of breastfeeding problems and reasons for early breastfeeding discontinuation by maternal race, but have abandoned the idea due to small number of women within each subgroup. Since it is very important to identify specific reasons for breastfeeding discontinuation for women of different races in order to suggest more specific interventions, similar analysis should be performed on a bigger sample of women where mothers are uniformly distributed between racial and ethnic groups. Analysis of the full BABE database that includes 1163 women might successfully address the issue.

Another problem that we encountered during the analysis of the relationship between reporting a breastfeeding problem and early discontinuation of breastfeeding is the

difficulty of establishing causality. On one hand, it is possible that women who report a problem are more likely to discontinue breastfeeding. On the other hand, women who intend to quit might be more willing to complain of breastfeeding problems. These limitations should be accounted for when any conclusions are drawn and recommendations are made.

CONCLUSION

We conclude that in the managed care population in California breastfeeding initiation rates exceed the national average but large proportion of women discontinue breastfeeding during the first two weeks postpartum. Few factors are independently associated with breastfeeding initiation in our population: maternal education and previous breastfeeding experience without a problem are protective from non - initiation of breastfeeding. Maternal education and previous breastfeeding experience without a problem are also protective against early discontinuation of breastfeeding. Among other factors independently associated with discontinuation of breastfeeding by two weeks postpartum are: maternal race, maternal attitude toward breastfeeding, and reporting a breastfeeding problem in the hospital. Maternal race is significantly associated with breastfeeding outcome: Asian mothers are at increased risk for early discontinuation of breastfeeding. Maternal attitude toward breastfeeding is very strongly associated with breastfeeding success: mothers who report breastfeeding being extremely important to them are less likely to discontinue breastfeeding by two weeks postpartum. We have adopted "health belief model" for prediction of breastfeeding decisions made by a women on the basis of her sociodemographic characteristics, prior experience, social support, and personal beliefs. Our model incorporates not only sociodemographic variables but also behavioral intentions and other modifiable characteristics that could serve as targets for potential interventions.

We have found that mothers who report a breastfeeding problem in the hospital are more likely to discontinue breastfeeding by two weeks postpartum. Because breastfeeding problems are strongly associated with early breastfeeding discontinuation, we performed a frequency analysis of the problems reported during the first two weeks postpartum. Problems reported by breastfeeding mothers in the hospital are similar to problems reported as main reasons for discontinuation of breastfeeding by two weeks postpartum. Most

frequent problems reported by the mothers in the hospital are: “sucking problem,” breast pain, “sleepy baby,” and “baby being still hungry after feeding.” Most frequent problems reported by mothers as main reasons for discontinuation are: “sucking problem,” mother’s perception of the infant” being still hungry after feeding,” and breast pain.

We suggest that interventions aimed at prevention of early breastfeeding discontinuation should address the modifiable variables found to be associated with early discontinuation of breastfeeding: maternal beliefs and attitudes toward breastfeeding and problems encountered by mothers in the hospital. Since importance of breastfeeding to a mother is strongly associated with successful breastfeeding, interventions should be aimed at increasing population awareness of the benefits of breastfeeding, exposing women to breastfeeding information even before they become pregnant, and providing them with necessary education and support during pregnancy and in the postpartum period.

Because problems encountered by mothers in the hospital are predictive of discontinuation of breastfeeding by two weeks postpartum, early identification of these problems during the postpartum hospitalization and timely support might prevent mothers from quitting breastfeeding early. Follow-up after discharge from the hospital should be provided to breastfeeding mothers who experience problems in the hospital. For all mothers, easy access to breastfeeding support and information during the early postpartum weeks should facilitate successful breastfeeding and prevent unnecessary anxiety during this vulnerable period.

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Appendix A

Exclusion Criteria For BABE Study

- The infant's gestational age was less than 36 weeks or more than 42 weeks according to the last estimate made by obstetrician-gynecologist.
- The infant's birth weight was <2500 grams or >4500 grams according to the first measurement taken. This criteria applies only to singleton pregnancies.
- The infant was admitted to ICN and observed for more than 4 hours.
- The mother was 14 years or younger at the time of delivery.
- The mother was 15-17 years of age and parents or legal guardians were not available for consent.
- The infant or mother had an anticipated length of hospital stay more than 48 hours after delivery for any other reason .
- The infant or mother had an abnormal discharge(i.e., death, transfer, or discharged against medical advice).
- The infant was not covered by Kaiser Permanente (including MediCal insurance via Kaiser Permanente).
- The infant had a neutrophil count of <7,000 signifying high risk for sepsis.
- The infant had a hematocrit of < 40 at any time prior to discharge signifying high risk for sepsis.
- The infant or mother has other medical problems that require clinic visit 1-2 days postdischarge.
- The mother had a positive toxicology screen at any time during pregnancy or delivery after admission to L&D.
- The family was judged to be at high social risk by social worker, necessitating a home visit.
- The mother and /or infant are not planning to use Kaiser Permanente for follow -up services.
- The mother does not have a telephone.

- The mother cannot be interviewed in English or Spanish.
- Infant adopted / foster care.
- The mother does not live within the zip code area covered by home health nurses.

Appendix B

Specific Reasons for Exclusion and Refusal to Participate

Table 1D. Reasons for Refusal to Participate in the Study

Reasons For Refusal	Number of Mothers Reporting the Reason
Mother does not want to be in the study	18
Mother wants her own MD/NP	20
Mother wants to go to clinic	40
Mother does not want a visit at home	12
No reason given / Other	4
Too busy / tired	27

Appendix B

Table 2B. Reasons for Exclusion from the Study

Reason for Exclusion	Number of Mother/ Infant Dyads Excluded Due to the Reason
Gestational Age	103
Birth Weight	33
Infant in ICN	48
HCT < 40 or ANC < 7,000	2
Mother Teenager	10
Baby or Mother Has a Medical Problem	29
Baby Death / Transfer	1
Length of Stay > 48 hrs	153
Positive Tox Screen	10
Social Services Follow-Up	17
Zip Code Outside Study Area	52
Language Barrier	16
Rancho Cordova	120
Out of Town During Study	9
No KP Coverage	26
Other	8

Appendix C

Mother's MRN:

SECTION 2. ELIGIBILITY WORKSHEET		(circle one)		
		Yes	No	Not Done/ Unknown
11	Is the mother ineligible because of her age? If yes, specify reason: 1 <input type="checkbox"/> Mother was less than 15 years of age at delivery 2 <input type="checkbox"/> Mother is 15, 16 or 17 and her parent/legal guardian is not available for informed consent	1	2	
08	Is the anticipated length of stay for the mother more than 48 hours? If yes, specify reason: 1 <input type="checkbox"/> C-section ___ <input type="checkbox"/> Other: _____	1	2	
01	Is the gestational age of the baby (the last OB estimate) less than 36 weeks or more than 42 weeks?	1	2	
12	Did the mother have a positive toxicology screen after admission to L&D?	1	2	9
13	Does the mother have any other social reasons requiring a home visit in the next one or two days? If yes, specify reason: ___ <input type="checkbox"/> Reason: _____	1	2	
09	Does the mother have any medical problems that require a clinic visit in the next one or two days? If yes, specify reason: ___ <input type="checkbox"/> Reason: _____	1	2	
14	Is mother's zip code outside of the home health agency service area?	1	2	
10	Was mother's discharge a death, transfer, or against medical advice?	1	2	
16	Does the mother speak a language other than English or Spanish? If yes, specify language: ___ <input type="checkbox"/> _____	1	2	9
03	Was the baby admitted to ICN or observed for more than 4 hours in ICN?	1	2	
02	Was the first birth weight less than 2500 grams or greater than 4500 grams?	1	2	
15	Was the baby never covered by Kaiser, or will coverage terminate after delivery?	1	2	9
04	Did the baby have a hematocrit less than 40 at any time after delivery?	1	2	9
05	Did the baby have an ANC less than < 7,000 at any time after delivery? (ANC = WBC x (% Bands + % Segmented Neutrophils) x 1,000)	1	2	9
06	Does the baby have any other medical problems that require a clinic visit in one or two days? If yes, specify reason: ___ <input type="checkbox"/> Reason: _____	1	2	
17	Is the baby a Rancho Cordova patient?	1	2	9
07	Was baby's discharge a death, transfer or against medical advice?	1	2	

Appendix C

Mother's MRN:

Baby's MRN:

SECTION 3. COMPLETE FROM MOTHER'S MEDICAL CHART FOR ELIGIBLE BIRTHS

Mother's highest temperature during 24 hours prior to delivery (F): .
(999.9 = missing)

Date of onset
of active labor:
m m d d y y

Time of onset
of active labor: :
h h m m

Date of membrane
rupture:
m m d d y y

Time of membrane
rupture: :
h h m m

Amniotic fluid at delivery (*check one*):

- 1 Meconium (thin or thick)
- 2 Clear
- 9 Unknown / Not charted

APGAR (1 minute):

APGAR (5 minute):

(99 = missing)

Type of delivery (*check one*):

- 1 Vaginal, non-assisted
- 2 Vaginal, assisted (forceps/suction)
- 3 C-section

Vaginal tears / episiotomy (*check all that apply*):

- No tear
- 1st degree
- 2nd degree
- 3rd degree
- 4th degree
- Episiotomy

Mother given IV antibiotics during 12 hours prior to delivery (*check one*):

- 1 Yes
- 2 No

Appendix D

**THE BIRTH AND BEYOND EXPERIENCES STUDY
INITIAL INTERVIEW**

★ Mother's Medical Record Number:

★ Baby's Medical Record Number:

Nurse initials:

Date:
m m d d y y

Time: : (24 hr clock)
h h m m

★ 1a. Summary Outcome (Complete for every patient)	
1 <input type="checkbox"/> Enrolled	
2 <input type="checkbox"/> Refused ==>	1b. Reason for refusal: (Check one) 1 <input type="checkbox"/> Doesn't want to be in a study 2 <input type="checkbox"/> Wants to see own M.D. or N.P. 3 <input type="checkbox"/> Wants to go to clinic 4 <input type="checkbox"/> Doesn't want a visit at home 5 <input type="checkbox"/> No reason offered 6 <input type="checkbox"/> Too busy/tired ___ <input type="checkbox"/> Other, specify: _____ _____
3 <input type="checkbox"/> Not approached ==>	1c. Reason for not being approached: (Check one) 1 <input type="checkbox"/> Unable to contact mother before discharge 2 <input type="checkbox"/> Translation services unavailable (specify language): _____ ___ <input type="checkbox"/> Other, specify: _____ _____
4 <input type="checkbox"/> Not eligible ==>	1d. Reason for ineligibility: (Check one) 31 <input type="checkbox"/> Pays out-of-pocket 32 <input type="checkbox"/> Rancho Cordova 33 <input type="checkbox"/> Non-Kaiser 34 <input type="checkbox"/> No phone ___ <input type="checkbox"/> Other, specify: _____ _____

Appendix D

★ Mother's MRN:

INTRODUCTION:

Hello, my name is (----), and I'm a Kaiser research nurse working on the Birth And Beyond Experiences (or B.A.B.E.) Study. You may have heard of this study in your prenatal classes or from your doctor or OB/GYN clinic. The purpose of this study is to find out what kinds of follow-up services are best for mothers and babies with uncomplicated deliveries. I'd like to begin by asking you a few questions.

2. Where will you be taking your baby for check-ups? (Check one)	
1 [] Kaiser clinics (Roseville, Davis, Sacramento, or South Sacramento)	OB/GYN: _____ PEDIATRICIAN: _____
2 [] Kaiser clinic, Rancho Cordova (INELIGIBLE)	Kaiser Permanente is offering a different program for newborns at the Rancho Cordova clinic. Rancho Cordova patients won't be participating in the B.A.B.E. study. Here is a flyer describing the new program at Rancho Cordova. (Hand mother a Rancho Cordova flyer.) Thank you for your time. (End interview and fill in Q 1.)
3 [] Non-Kaiser health care (INELIGIBLE)	The purpose of this study is to evaluate Kaiser's newborn services. Only ongoing Kaiser members will be involved in the B.A.B.E. study. Thank you for your time. (End interview and fill in Q 1.)
9 [] Undecided /Unknown	

3. (If payor code = 08: Do you have the kind of Kaiser insurance where you pay a certain amount each month, or do you pay fully for each clinic visit? (Check one)	
1 [] Pays a premium each month	
2 [] Pays for each visit individually (INELIGIBLE)	The purpose of this study is to evaluate Kaiser's newborn services. Only ongoing Kaiser members will be involved in the B.A.B.E. study. Thank you for your time. (End interview and fill in Q 1.)

Appendix D

★ Mother's MRN:

<p>4. Do you have a phone where we can reach you for an interview in two weeks? (Check one)</p>	
<p>1 <input type="checkbox"/> Yes</p>	
<p>2 <input type="checkbox"/> No (INELIGIBLE)</p>	<p>We need to interview mothers by phone at two weeks and twelve weeks. Only mothers who are reachable by phone will be included in the study. Thank you very much for your time and your willingness to participate. The unit assistant will contact you to schedule your first clinic visit. (End interview and fill in Q 1.)</p>

IF ELIGIBLE:

I'd like to briefly describe the study to you. (Hand mother a copy of the informed consent form.) Mothers who have had healthy babies at Kaiser Permanente here in Sacramento are usually asked to bring their newborns back to pediatric clinic for a follow-up visit the first or second day after going home. At some other Kaiser hospitals, instead of a clinic visit, a home health nurse goes to the family's home to check both the newborn and the mother. Kaiser wants to evaluate the effectiveness of these different follow-up services.

You are being invited to participate because you have just delivered a baby at this hospital. If you join the project, you will be assigned to one of two follow-up services by random chance: either (a) a follow-up visit at pediatric clinic, or (b) a home visit, where a Kaiser nurse will come to your home. The clinic or home visit will happen the 1st or 2nd day after you go home. You will be interviewed by telephone when your baby is 2 weeks and 12 weeks old on your opinions of the care you received.

There is no extra cost to you if you join this project. There are no known physical risks. It is your choice about whether to participate. If you decide not to participate, your family's medical care will not be affected in any way. Any information you may give will be kept confidential and will not go to your doctor or medical chart.

Would you like to participate?

(If patient is interested, have mother (and parent/guardian if 17 or younger) sign informed consent form and continue with interview.)

An interviewer will be calling you in 2 weeks and in 12 weeks. I would like to make sure we have your correct phone numbers and address for the next three months.

10/9/96 initial.int

Appendix D

★ Mother's MRN:

Now I'd like to ask you a few questions about your baby.

- ★ 8. Please tell me your baby's first and last name. (Use capital letters only; no spaces, suffixes, or prefixes; hyphens are o.k. Use baby's name during interview. If baby is not named yet, write in mother's last name and male or female as first name.)

Last First

9. Including (-----), how many babies have you had?
(Write in correct number, use a leading zero. Do not include stillbirths or abortions.)

Baby(ies)

Next, I have some questions about your prenatal care, labor and delivery.

10a. Did you begin your prenatal care at Kaiser? (Check one)	10b. In what month of pregnancy did you make your first prenatal visit? (Use a leading zero. If doesn't remember, enter 99.)
1 <input type="checkbox"/> Yes	(Skip to Q 11a)
2 <input type="checkbox"/> No	<input type="text"/> Month

11a. Did you receive any information from Kaiser doctors, nurses or clinics about labor and delivery? (Check one)	11b. How would you rate the AMOUNT of information you received about labor and delivery? Would you say it was: (Read choices, check one)	11c. How would you rate the QUALITY of advice you received about labor and delivery? Would you say it was: (Read choices, check one)
1 <input type="checkbox"/> Yes	1 <input type="checkbox"/> Much too little 2 <input type="checkbox"/> Too little 3 <input type="checkbox"/> About right 4 <input type="checkbox"/> Too much 5 <input type="checkbox"/> Much too much	1 <input type="checkbox"/> Poor 2 <input type="checkbox"/> Fair 3 <input type="checkbox"/> Good 4 <input type="checkbox"/> Very good 5 <input type="checkbox"/> Excellent
2 <input type="checkbox"/> No	(Skip to Q 12a)	(Skip to Q 12a)
9 <input type="checkbox"/> Don't know/Don't remember	(Skip to Q 12a)	(Skip to Q 12a)

Appendix D

★ Mother's MRN:

We are interested in classes that you may have taken while you were pregnant. Did you take a class that covered: <i>(Read each class. Include Kaiser and non-Kaiser classes.)</i>	
12a. Childbirth Preparation (such as LAMAZE or Bradley)	1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No
12b. Breastfeeding	1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No
12c. Baby Care	1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No
12d. Any other class related to feeding or caring for your baby? <i>(specify:)</i> _____	1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No

13a. While you were pregnant, did Kaiser doctors, nurses, or clinics give you any advice or information about feeding your baby? <i>(Check one)</i>	13b. How would you rate the AMOUNT of advice you received about feeding? Would you say it was: <i>(Read choices, check one)</i>	13c. How would you rate the QUALITY of advice you received about feeding? Would you say it was: <i>(Read choices, check one)</i>
1 <input type="checkbox"/> Yes	1 <input type="checkbox"/> Much too little 2 <input type="checkbox"/> Too little 3 <input type="checkbox"/> About right 4 <input type="checkbox"/> Too much 5 <input type="checkbox"/> Much too much	1 <input type="checkbox"/> Poor 2 <input type="checkbox"/> Fair 3 <input type="checkbox"/> Good 4 <input type="checkbox"/> Very good 5 <input type="checkbox"/> Excellent
2 <input type="checkbox"/> No		<i>(Skip to Q 14a)</i>
9 <input type="checkbox"/> Don't know/Don't remember		<i>(Skip to Q 14a)</i>

Appendix D

★ Mother's MRN:

14a. During (----)'s first month, do you plan to feed (----) breastmilk, formula, or both? (Check one)	14b. How important is it to you to breastfeed? Would you say it is: (Read choices, check one)
1 <input type="checkbox"/> Breastmilk only	1 <input type="checkbox"/> Not very important
2 <input type="checkbox"/> Both breastmilk and formula	2 <input type="checkbox"/> Somewhat important
	3 <input type="checkbox"/> Very important
	4 <input type="checkbox"/> Extremely important
3 <input type="checkbox"/> Formula only	(Skip to Q 15a)
9 <input type="checkbox"/> Don't know/Haven't decided	(Skip to Q 15a)

15a. Are you or (----) having any problems feeding now? (Check one)	15b. How serious would you say those problems are? Would you say they are: (Read choices, check one)	15c. What is the most important problem you or (----) are having with feeding? (Do not read choices, check one)
1 <input type="checkbox"/> Yes	1 <input type="checkbox"/> Very serious 2 <input type="checkbox"/> Somewhat serious 3 <input type="checkbox"/> Not very serious 4 <input type="checkbox"/> Not serious at all 9 <input type="checkbox"/> (Don't read) Don't know	01 <input type="checkbox"/> Breast pain/soreness 02 <input type="checkbox"/> Baby still hungry/not enough milk 03 <input type="checkbox"/> Problems sucking/latching on 04 <input type="checkbox"/> Feeding too frequent/baby wants to suck all the time 05 <input type="checkbox"/> Baby not gaining enough weight 06 <input type="checkbox"/> Mother sick/on medication 07 <input type="checkbox"/> Baby sick 08 <input type="checkbox"/> Spitting up/vomiting 09 <input type="checkbox"/> Formula/breastmilk intolerance 10 <input type="checkbox"/> Feeding is too tiring/draining -- <input type="checkbox"/> Other (specify): _____
2 <input type="checkbox"/> No		(Skip to Q 16a)
9 <input type="checkbox"/> Don't know		(Skip to Q 16a)

10/9/96 initial.int

Appendix D

★ Mother's MRN:

(Refer to Q 9. If first baby: do not ask Q 16a-d & skip to Q 17)

16a. Have you ever tried to breast-feed before? (Check one)	16b. Did you or your baby have any problems breast-feeding last time? (Check one)	16c. How serious would you say those problems were? Would you say they were: (Read choices, check one)
1 <input type="checkbox"/> Yes	1 <input type="checkbox"/> Yes	1 <input type="checkbox"/> Very serious 2 <input type="checkbox"/> Somewhat serious 3 <input type="checkbox"/> Not very serious 4 <input type="checkbox"/> Not serious at all 9 <input type="checkbox"/> (Don't read) Don't know
	2 <input type="checkbox"/> No	(Skip to Q 17)
2 <input type="checkbox"/> No		(Skip to Q 17)

16d. When breastfeeding last time, what was the most important problem you or your baby had? (Do not read choices, check one)

- 01 Breast pain/soreness
- 02 Baby still hungry/not enough milk
- 03 Problems sucking/latching on
- 04 Feeding too frequent/baby wanted to suck all the time
- 05 Baby did not gain enough weight
- 06 Mother sick/on medication
- 07 Baby sick
- 08 Spitting up/vomiting
- 09 Breastmilk intolerance
- 10 Feeding was too tiring/draining
- 11 Mother returned to work/school
- Other (specify): _____

17. How confident are you about your ability to feed (----)? Would you say you are:
(Read choices, check one.)

- 1 Not confident at all
- 2 Not very confident
- 3 Somewhat confident
- 4 Very confident
- 9 (Don't read) Don't know

Appendix D

★ Mother's MRN:

18. How confident are you about your ability to take care of (----)? Would you say you are: *(Read choices, check one.)*
- 1 Not confident at all
 - 2 Not very confident
 - 3 Somewhat confident
 - 4 Very confident
 - 9 *(Don't read)* Don't know

My last few questions are about your family and household.

19. Not including yourself, how many adults 18 or older live in your household?
(Do not include landlords or tenants. Include roommates only if they will be helping with the baby.)

(Write in number, using leading zero(es). If 0, skip to Q 21)

- 20a-g. Can you tell me how each adult is related to (----)?
(Don't read choices. Write in the # of each living in household, using leading zero(es).)

- Father
- Stepfather
- Mother's partner
- Grandparent(s)
- Adult sibling(s)/other relative(s)
- Unrelated au pair(s)/nanny(ies)
- Other, specify: _____

(Verify that total equals number recorded in Q 19.)

Appendix D

★ Mother's MRN:

- 21. What is your race or ethnicity? Please name all that apply. (Check the category(ies) the respondent names. Prompt for subcategories. Check all that apply.)

- | | |
|--|---|
| <input type="checkbox"/> White | <input type="checkbox"/> Native American or Indigenous People |
| <input type="checkbox"/> North American | <input type="checkbox"/> North American Indian |
| <input type="checkbox"/> European | <input type="checkbox"/> Eskimo |
| <input type="checkbox"/> Middle Eastern | <input type="checkbox"/> Aleut |
| <input type="checkbox"/> North African | <input type="checkbox"/> Native Hawaiian |
| | <input type="checkbox"/> Native Samoan, Guamanian,
or other Pacific Islander |
| <input type="checkbox"/> Black | |
| <input type="checkbox"/> US Black or African American | <input type="checkbox"/> Asian or Pacific Islander |
| <input type="checkbox"/> Caribbean | <input type="checkbox"/> Chinese |
| <input type="checkbox"/> Central or South American | <input type="checkbox"/> Filipino |
| <input type="checkbox"/> North African | <input type="checkbox"/> Korean |
| <input type="checkbox"/> Sub-Saharan African | <input type="checkbox"/> Japanese |
| | <input type="checkbox"/> Asian Indian |
| <input type="checkbox"/> Latina/Latino or Hispanic | <input type="checkbox"/> Vietnamese |
| <input type="checkbox"/> Mexican American or Chicana/
Chicano | |
| <input type="checkbox"/> Puerto Rican | <input type="checkbox"/> Other, specify: _____ |
| <input type="checkbox"/> Cuban | |
| <input type="checkbox"/> Central or South American | |

- 22. What is (---)'s race or ethnicity? Please name all that apply. (Check the category(ies) the respondent names. Prompt for subcategories. Check all that apply.)

- | | |
|--|---|
| <input type="checkbox"/> White | <input type="checkbox"/> Native American or Indigenous People |
| <input type="checkbox"/> North American | <input type="checkbox"/> North American Indian |
| <input type="checkbox"/> European | <input type="checkbox"/> Eskimo |
| <input type="checkbox"/> Middle Eastern | <input type="checkbox"/> Aleut |
| <input type="checkbox"/> North African | <input type="checkbox"/> Native Hawaiian |
| | <input type="checkbox"/> Native Samoan, Guamanian,
or other Pacific Islander |
| <input type="checkbox"/> Black | |
| <input type="checkbox"/> US Black or African American | <input type="checkbox"/> Asian or Pacific Islander |
| <input type="checkbox"/> Caribbean | <input type="checkbox"/> Chinese |
| <input type="checkbox"/> Central or South American | <input type="checkbox"/> Filipino |
| <input type="checkbox"/> North African | <input type="checkbox"/> Korean |
| <input type="checkbox"/> Sub-Saharan African | <input type="checkbox"/> Japanese |
| | <input type="checkbox"/> Asian Indian |
| <input type="checkbox"/> Latina/Latino or Hispanic | <input type="checkbox"/> Vietnamese |
| <input type="checkbox"/> Mexican American or Chicana/
Chicano | |
| <input type="checkbox"/> Puerto Rican | <input type="checkbox"/> Other, specify: _____ |
| <input type="checkbox"/> Cuban | |
| <input type="checkbox"/> Central or South American | |

Appendix D

★ Mother's MRN:

23. What language do you usually speak at home? (Don't read choices, check one. If more than one; Which do you speak most of the time, or most comfortably?)

- | | | |
|------------------|-----------------|------------------------------|
| 01 [] English | 05 [] Korean | 09 [] Tagalog |
| 02 [] Spanish | 06 [] Laotian | 10 [] Thai |
| 03 [] Cantonese | 07 [] Mandarin | 11 [] Vietnamese |
| 04 [] Cambodian | 08 [] Russian | 12 [] Other, specify: _____ |

24. What is the highest grade or year you completed in school? (Don't read choices, check one).

- | | |
|---------------------------------|--|
| 1 [] 8th grade or less (0-8) | 4 [] Some college or technical school (13-15) |
| 2 [] Some high school (9-11) | 5 [] Completed college (16) |
| 3 [] High school graduate (12) | 6 [] Post graduate training/degree (17+) |

25. Please think about your total household income in 1995. Include income from jobs, help from a family member or agency, Disability, Unemployment, child support, alimony, scholarships, Social Security, rents, or interest earned by any member of your household.

(Show mother card with income categories.) Which of the following categories best describes your total household income in 1995, before taxes?

- 01 [] No income
- 02 [] \$10,000 or less
- 03 [] \$10,001 to \$12,500
- 04 [] \$12,501 to \$15,000
- 05 [] \$15,001 to \$17,500
- 06 [] \$17,501 to \$20,000
- 07 [] \$20,001 to \$22,000
- 08 [] \$22,001 to \$25,000
- 09 [] \$25,001 to \$27,000
- 10 [] \$27,001 to \$30,000
- 11 [] \$30,001 to \$35,000
- 12 [] \$35,001 to \$40,000
- 13 [] \$40,001 to \$45,000
- 14 [] \$45,001 to \$50,000
- 15 [] \$50,001 to \$55,000
- 16 [] More than \$55,000
- 88 [] Refused
- 99 [] Don't know

26. Including yourself, how many people did that income support in 1995 ?

(Write in number, using leading zero.)

That's my last question. Thank you very much for your time and cooperation. (Open randomization envelope, enter dates for interviews, and give letter to mother.)

Appendix D

★ Mother's MRN:

★ A. Language of initial interview and informed consent:
1 English
2 Spanish

★ B. Randomization Envelope Number:

★ C. Assigned to:
1 Home visit
2 Clinic visit

★ D. Comment (Fill in only if there is something unusual that needs to be recorded. Limit is 50 characters.):

Appendix E

★ Mother's MRN:

INTRODUCTION:

Hello, my name is (----). I'm calling from the Kaiser Division of Research. May I speak with (mother's name)?

(If mother is not available:) Is there a better time to call her or another number that I can reach her at? *(If yes, record above)* *(If not: Thank you, I'll try again. Do not leave a message, other than your name and that you are calling from the Kaiser Division of Research.)*

(If mother is available:) I'm an interviewer with the BABE study, the study you signed up for in the hospital. I'm calling today to ask you some questions about your baby and the care you have received from Kaiser. This should only take about 15 minutes. Is this a good time? *(Pause to see if mom needs you to call back.)* First, I have some questions about your stay in the hospital when your baby was born.

1. Would you say that your labor and delivery were: *(Read choices, check one)*

- 1 Very hard
- 2 Somewhat hard
- 3 Average
- 4 Somewhat easy
- 5 Very easy
- 9 *(Don't read)* Don't know/No opinion

2a. Did the amount of time you stayed in the hospital seem: <i>(Read choices, check one)</i>	2b. What was the main reason the time you stayed in the hospital seemed too short? <i>(Do not read choices, check one. If more than one reason: Which was the most important reason?)</i>
1 <input type="checkbox"/> Much too short	01 <input type="checkbox"/> Needed more time to rest/recover 02 <input type="checkbox"/> Concerns about baby's health 03 <input type="checkbox"/> Concerns about mother's health 04 <input type="checkbox"/> Not enough time to ask questions 05 <input type="checkbox"/> Needed more help with breast-feeding 06 <input type="checkbox"/> Concerns about being able to care for the baby at home
2 <input type="checkbox"/> Too short	__ <input type="checkbox"/> Other, <i>(specify):</i> _____ _____
3 <input type="checkbox"/> About right	<i>(Skip to Q 3a)</i>
4 <input type="checkbox"/> Too long	<i>(Skip to Q 3a)</i>
5 <input type="checkbox"/> Much too long	<i>(Skip to Q 3a)</i>
9 <input type="checkbox"/> <i>(Don't read)</i> Don't know/No opinion	<i>(Skip to Q 3a)</i>

Appendix E

★ Mother's MRN:

3a. While you were in the hospital, did the nurses or doctors give you any advice about feeding (----)? (Check one)	3b. How helpful was the feeding advice you received in the hospital? Would you say it was: (Read choices, check one)
1 <input type="checkbox"/> Yes	1 <input type="checkbox"/> Very helpful 2 <input type="checkbox"/> Somewhat helpful 3 <input type="checkbox"/> Not helpful 9 <input type="checkbox"/> (<i>Don't read</i>) No opinion
2 <input type="checkbox"/> No	(Skip to Q 4a)
9 <input type="checkbox"/> <i>Don't know/can't remember</i>	(Skip to Q 4a)

4a. Since you arrived home from the hospital, have you had enough help taking care of (----)? (Check one)	4b. How much more help have you needed, a little or a lot more? (Check one)
1 <input type="checkbox"/> Yes	(Skip to Q 5a)
2 <input type="checkbox"/> No	1 <input type="checkbox"/> A little 2 <input type="checkbox"/> A lot 9 <input type="checkbox"/> (<i>Don't read</i>) Don't know

5a. Since you arrived home from the hospital, have you had enough help with household chores? (Check one)	5b. How much more help have you needed, a little or a lot more? (Check one)
1 <input type="checkbox"/> Yes	(Skip to Q 6)
2 <input type="checkbox"/> No	1 <input type="checkbox"/> A little 2 <input type="checkbox"/> A lot 9 <input type="checkbox"/> (<i>Don't read</i>) Don't know

6. How confident are you about your ability to feed (----)? Would you say you are:
(Read choices, check one.)

- 1 Not confident at all
2 Not very confident
3 Somewhat confident
4 Very confident
9 (*Don't read*) Don't know

12/5/06 2week int

Appendix E

★ Mother's MRN:

7. How confident are you about your ability to take care of (----)? Would you say you are:
(Read choices, check one.)
- 1 Not confident at all
 - 2 Not very confident
 - 3 Somewhat confident
 - 4 Very confident
 - 9 *(Don't read)* Don't know

Now I have some questions about the medical care you and (----) have had since you left the hospital.

8a. When (----) was a few days old, did a Kaiser nurse come to visit you and (----) at home or did you take (him/her) to a check-up at a pediatric clinic? <i>(Check one)</i>	8b. There are many reasons that families don't have follow-up visits. Why didn't you and (----) have this visit? <i>(Don't read choices, check all that apply)</i>	8c. <i>(If more than one choice in Q 8b: Which was the MAIN reason you didn't have a check-up?)</i> <i>(Check one)</i>
1 <input type="checkbox"/> No follow-up	<input type="checkbox"/> Kaiser didn't schedule one (01) <input type="checkbox"/> Told the wrong time/place (02) <input type="checkbox"/> Kaiser provider had to re-schedule (03) <input type="checkbox"/> Wanted to see a doctor or nurse who was not available (04) <input type="checkbox"/> Home health nurse didn't show (05) <input type="checkbox"/> Didn't feel it was needed (06) <input type="checkbox"/> Too tired/busy (07) <input type="checkbox"/> Didn't want home health visit (08) <input type="checkbox"/> Forgot (09) <input type="checkbox"/> Was told I didn't need to make the visit (10) <input type="checkbox"/> Baby readmitted (11) <input type="checkbox"/> Other, specify: _____ <input type="text"/> <input type="text"/> _____ _____	01 <input type="checkbox"/> Kaiser didn't schedule one 02 <input type="checkbox"/> Told the wrong time/place 03 <input type="checkbox"/> Kaiser provider had to re-schedule 04 <input type="checkbox"/> Wanted to see a doctor or nurse who was not available 05 <input type="checkbox"/> Home health nurse didn't show 06 <input type="checkbox"/> Didn't feel it was needed 07 <input type="checkbox"/> Too tired/busy 08 <input type="checkbox"/> Didn't want home health visit 09 <input type="checkbox"/> Forgot 10 <input type="checkbox"/> Was told I didn't need to make the visit 11 <input type="checkbox"/> Baby readmitted ___ <input type="checkbox"/> Other, specify: _____ _____ _____ <i>(Skip to Q 14a)</i>
2 <input type="checkbox"/> Home health visit	<i>(Skip to Q 9a)</i>	
3 <input type="checkbox"/> Clinic visit	<i>(Skip to Q 9a)</i>	

Appendix E

★ Mother's MRN:

(See Q 8a. Do not ask if no follow-up visit. Skip to Q 14a)

Now I'd like to ask you to think back on (your home visit when (----) was a few days old / (----)'s clinic check-up when (he/she) was a few days old). Please tell me whether or not the doctor or nurse talked with you about each of the following items.

Did the doctor or nurse talk to you about: (Read each item)	(Check one)	(Check one)	
9a. Whether to put (----) to sleep on (his/her) side, back, or stomach?	1 <input type="checkbox"/> Yes	9b. What did they tell you? (Do not read choices, check one) 1 <input type="checkbox"/> Back and/or side 2 <input type="checkbox"/> Stomach (with/without back /side)* (NOTIFY DR. LIEU) 3 <input type="checkbox"/> Other (specify): _____ _____ 9 <input type="checkbox"/> Don't know/Can't remember	
	2 <input type="checkbox"/> No		(Skip to Q 10)
	9 <input type="checkbox"/> Don't know		(Skip to Q 10)
10. Whether or not (----)'s weight was okay?	1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No 9 <input type="checkbox"/> Don't know		
11. How to comfort (him/her) when (he/she) cries?	1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No 9 <input type="checkbox"/> Don't know		
12. How to get help if (----) had a problem?	1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No 9 <input type="checkbox"/> Don't know		
13. How to take care of YOURSELF, like if you had too much pain or a fever?	1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No 8 <input type="checkbox"/> N/A 9 <input type="checkbox"/> Don't know		

Appendix E

★ Mother's MRN:

(Ask everyone:) Now I have some questions about feeding.

14a. Are you now feeding (----) formula, breastmilk, or both? (Check one)	14b. Did you try to breastfeed (----) at all? (Check one)	14c. How many days did you breastfeed? (Enter number, use leading zero)
1 <input type="checkbox"/> Formula only	1 <input type="checkbox"/> Yes	<input type="text"/> <input type="text"/> (Skip to Q 15a)
	2 <input type="checkbox"/> No	(Skip to Q 16a)
2 <input type="checkbox"/> Breastmilk only		(Skip to Q 16a)
3 <input type="checkbox"/> Breastmilk and formula		(Go to Q 14d)

14d. (If Q 14a=3: How many ounces of formula did you give (---) in the last 24 hours?

(Enter number, use leading zero(es)) (Skip to Q 16a)

15a. (See Q 14a & 14b. Ask if mom stopped breastfeeding:) What was the MAIN reason you stopped breastfeeding? (Do not read choices, check one)

- 01 Breast pain/soreness
- 02 Baby still hungry/not enough milk
- 03 Problems sucking/latching on
- 04 Feeding too frequent/baby wants to suck all the time
- 05 Baby not gaining enough weight
- 06 Mother sick/on medication
- 07 Baby sick
- 08 Spitting up/vomiting
- 09 Breastmilk intolerance
- 10 Too tiring/draining
- 11 Mother returned to work/school
- 12 Bottle feeding easier/more convenient
- 13 Mother and/or baby ready to stop breastfeeding
- Other (specify): _____

15b. How many days old was (----) when that problem began?

(Use a leading zero)

Appendix E

★ Mother's MRN:

(Ask everyone) Now I am going to read you a list of problems that some parents have when feeding their babies either breastmilk or formula.

	(See Q 8a, do not ask if no follow-up visit)		
	(Check one)	b. Did the doctor or nurse give you any advice about that at your first follow-up visit? (Check one)	c. Was the advice very helpful, somewhat helpful, or not helpful? (Check one)
16a. When (---) was 3 days old, did you have breast pain or soreness?	1 [<input type="checkbox"/>] Yes	1 [<input type="checkbox"/>] Yes	1 [<input type="checkbox"/>] Very helpful 2 [<input type="checkbox"/>] Somewhat helpful 3 [<input type="checkbox"/>] Not helpful
		2 [<input type="checkbox"/>] No	
		9 [<input type="checkbox"/>] Don't know	
	2 [<input type="checkbox"/>] No		
17a. At 3 days old, did (---) have problems sucking?	1 [<input type="checkbox"/>] Yes	1 [<input type="checkbox"/>] Yes	1 [<input type="checkbox"/>] Very helpful 2 [<input type="checkbox"/>] Somewhat helpful 3 [<input type="checkbox"/>] Not helpful
		2 [<input type="checkbox"/>] No	
		9 [<input type="checkbox"/>] Don't know	
	2 [<input type="checkbox"/>] No		
18a. At 3 days old, did (---) still seem hungry after feeding?	1 [<input type="checkbox"/>] Yes	1 [<input type="checkbox"/>] Yes	1 [<input type="checkbox"/>] Very helpful 2 [<input type="checkbox"/>] Somewhat helpful 3 [<input type="checkbox"/>] Not helpful
		2 [<input type="checkbox"/>] No	
		9 [<input type="checkbox"/>] Don't know	
	2 [<input type="checkbox"/>] No		

Appendix E

★ Mother's MRN:

		<i>(See Q 8a, do not ask if no follow-up visit)</i>	
<i>(Check one)</i>		b. Did the doctor or nurse give you any advice about that at your first follow-up visit? <i>(Check one)</i>	c. Was the advice very helpful, somewhat helpful, or not helpful? <i>(Check one)</i>
19a. At 3 days old, had (---) lost too much weight?	1 <input type="checkbox"/> Yes	1 <input type="checkbox"/> Yes	1 <input type="checkbox"/> Very helpful 2 <input type="checkbox"/> Somewhat helpful 3 <input type="checkbox"/> Not helpful
		2 <input type="checkbox"/> No	
		9 <input type="checkbox"/> Don't know	
	2 <input type="checkbox"/> No		
	3 <input type="checkbox"/> Don't know		
20a. When (----) was 3 days old, did you or (----) have any other problems with feeding? <i>(Code one problem here, use Q 21a for second problem.)</i>	1 <input type="checkbox"/> Yes <i>(specify:)</i> _____ _____ _____ _____ <input type="text"/> <input type="text"/>	1 <input type="checkbox"/> Yes	1 <input type="checkbox"/> Very helpful 2 <input type="checkbox"/> Somewhat helpful 3 <input type="checkbox"/> Not helpful
		2 <input type="checkbox"/> No	
		9 <input type="checkbox"/> Don't know	
	2 <input type="checkbox"/> No	<i>(Skip to Q 22)</i>	
a. (Code here if a second problem is given in Q 20a.)	1 <input type="checkbox"/> Yes <i>(specify:)</i> _____ _____ _____ _____ <input type="text"/> <input type="text"/>	1 <input type="checkbox"/> Yes	1 <input type="checkbox"/> Very helpful 2 <input type="checkbox"/> Somewhat helpful 3 <input type="checkbox"/> Not helpful
		2 <input type="checkbox"/> No	
		9 <input type="checkbox"/> Don't know	
	2 <input type="checkbox"/> No		

Appendix E

★ Mother's MRN:

22. (Any feeding problems in Q 16a-21a: ask Q 22. No problems: skip to Q 23a.) Overall, when (----) was 3 days old, how serious were your and (----)'s problems with feeding? Would you say they were: (Read choices, check one)
- 1 Very serious
 - 2 Somewhat serious
 - 3 Not very serious
 - 4 Not serious at all
 - 9 (Don't read) Don't know

(See Q 14a & 14b, do not ask if never breastfeed. Skip to Q 24a)

<p>23a. When (----) was 3 days old, did you need a referral to a breastfeeding consultant? (Check one)</p>	<p>(See Q 8a, do not ask if no follow-up. Skip to Q 23c)</p>	<p>23c. Did you talk with the consultant by telephone, in person, or both? (Check one)</p>
<p>23b. Did the doctor or nurse at your 3-day follow-up visit refer you to a breastfeeding consultant? (Check one)</p>		
<p>1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No 9 <input type="checkbox"/> Don't know</p>	<p>1 <input type="checkbox"/> Yes 2 <input type="checkbox"/> No</p>	<p>1 <input type="checkbox"/> Telephone only 2 <input type="checkbox"/> In-person only 3 <input type="checkbox"/> Both 4 <input type="checkbox"/> Neither</p>

Appendix E

★ Mother's MRN:

<p>24a. (Ask everyone: During the LAST WEEK, did you or (---) have any feeding problems? (Check one)</p>	<p>24b. What was the most important problem? (Do not read choices, check one.)</p>
<p>1 <input type="checkbox"/> Yes ==></p>	<p>01 <input type="checkbox"/> Breast pain/soreness 02 <input type="checkbox"/> Baby still hungry/not enough milk 03 <input type="checkbox"/> Problems sucking/latching on 04 <input type="checkbox"/> Feeding too frequent/baby wants to suck all the time 05 <input type="checkbox"/> Baby not gaining enough weight 06 <input type="checkbox"/> Mother sick/on medication 07 <input type="checkbox"/> Baby sick 08 <input type="checkbox"/> Spitting up/vomiting 09 <input type="checkbox"/> Breastmilk/formula intolerance 10 <input type="checkbox"/> Too tiring/draining 11 <input type="checkbox"/> Mother returned to work/school __ <input type="checkbox"/> Other (specify): _____</p>
<p>2 <input type="checkbox"/> No</p>	<p>(Skip to Q 26)</p>

25. (Any feeding problems in the last week:) Overall, during the last week, how serious were those problems with feeding? Would you say they were:

(Read choices, check one)

- 1 Very serious
- 2 Somewhat serious
- 3 Not very serious
- 4 Not serious at all
- 9 (Don't read) Don't know

Appendix E

★ Mother's MRN:

<p>26. (See Q 7a. Do not ask if no follow-up) Please think about (your home visit / (----)'s clinic check-up when (he/she) was a few days old). Tell me if you would rate the following items as poor, fair, good, very good, or excellent.</p> <p>(Read each item, followed by:) (Was it/were they) poor, fair, good, very good, or excellent? (Circle one)</p>	Poor	Fair	Good	Very Good	Excellent	Not given/ NA	Don't Know/ No Opinion
a. The convenience of the visit.	1	2	3	4	5	8	9
b. The amount of time the doctor or nurse spent with you and (---).	1	2	3	4	5	8	9
c. The caring attitude of the doctor or nurse.	1	2	3	4	5	8	9
d. The skills and abilities of the doctor or nurse	1	2	3	4	5	8	9
e. The advice you got about ways to keep your baby safe and healthy.	1	2	3	4	5	8	9
f. Overall, the care (---) has received since leaving the hospital.	1	2	3	4	5	8	9
g. Overall, the care YOU have received since leaving the hospital.	1	2	3	4	5	8	9

Appendix E

★ Mother's MRN:

<p>27a. As part of this study, you were assigned to a home health visit or a pediatric clinic visit when (----) was about 3 days old. If you had a choice, would you have preferred a home health visit or a clinic visit? (Check one)</p>	<p>27b. What would be your MAIN reason for choosing a (home health visit/clinic visit)?</p> <p><i>(If more than one: If you had to choose ONE?)</i></p> <p><i>(Don't read choices, check one.)</i></p>
<p>1 <input type="checkbox"/> Home health visit</p>	<p>01 <input type="checkbox"/> More personalized 02 <input type="checkbox"/> More convenient/easier 03 <input type="checkbox"/> Other family members could participate 04 <input type="checkbox"/> Wanted to see our family's own doctor or nurse practitioner 05 <input type="checkbox"/> The provider would be better qualified 06 <input type="checkbox"/> Didn't want someone in my home 07 <input type="checkbox"/> Wanted to go to clinic 08 <input type="checkbox"/> Didn't want to expose baby to germs/ weather / Didn't want to take baby out 09 <input type="checkbox"/> Wanted to get out of the house -- <input type="checkbox"/> Other (specify): _____ _____ _____</p>
<p>2 <input type="checkbox"/> Clinic visit</p>	
<p>9 <input type="checkbox"/> Don't know/No opinion <i>(Skip to Q 28)</i></p>	

Appendix E

★ Mother's MRN:

Now I'd like to ask some questions about how you have been feeling during the past week. For each item I mention, please think about the past week. Tell me whether you felt that way: rarely or never, a little of the time, a moderate amount of the time, or most or all of the time.

28. During the past week, would you say that (<i>read item</i>) rarely or never, a little of the time, a moderate amount of the time, or most or all of the time? (Circle one)	Rarely or Never	A little of the time	A moderate amount of the time	Most or all of the time
a. You were bothered by things that usually don't bother you.	0	1	2	3
b. You did not feel like eating; your appetite was poor.	0	1	2	3
c. You felt that you could not shake off the blues, even with help from your family or friends.	0	1	2	3
d. You felt that you were just as good as other people.	3	2	1	0
e. You had trouble keeping your mind on what you were doing.	0	1	2	3
f. You felt depressed.	0	1	2	3
g. You felt that everything you did was an effort.	0	1	2	3
h. You felt hopeful about the future.	3	2	1	0
i. You thought your life had been a failure.	0	1	2	3
j. You felt fearful.	0	1	2	3
k. Your sleep was restless.	0	1	2	3
l. You were happy.	3	2	1	0
m. You talked less than usual.	0	1	2	3
n. You felt lonely.	0	1	2	3
o. People were unfriendly.	0	1	2	3
p. You enjoyed life.	3	2	1	0
q. You had crying spells	0	1	2	3
r. You felt sad.	0	1	2	3
s. You felt that people disliked you.	0	1	2	3
t. You could not get "going."	0	1	2	3

Appendix E

★ Mother's MRN:

Now I have a few last questions about your and (----)'s health care.

29. Since (----) was born, how many times have you TRIED to call the pediatric advice nurse or the doctor? Count every time you TRIED, even if you didn't get through.

(Write in number, use leading zero. If 0, skip to Q 31)

30. Since (----) was born, how many times have you actually SPOKEN with a pediatric advice nurse or doctor on the telephone?

(Write in number, use leading zero)

31. Not counting the check-up when (----) was a few days old, how many times have you taken (----) to the pediatric clinic or emergency department?

(If no follow-up: Since you came home from the hospital, how many times have you taken (----) to the pediatric clinic or emergency department?)

(Write in number, use leading zero. Circle number of visits below. If 0, skip to Q 39.)

	Visit #	a. When was the (first, second, etc.) visit? (Prompt for date, e.g., "So that would have been the 16th.")	b. (If visit at 10 + days of life:) Was this (his/her) 2-week check-up? (If visit less than 10 days of life:) Were you told to come back for this visit by a doctor or nurse at a previous visit, or did you or someone in your family notice a new problem? (Check one)
32.	1	<input type="text"/> <input type="text"/> / <input type="text"/> <input type="text"/> / <input type="text"/> <input type="text"/> m m d d y y	1 <input type="checkbox"/> 2-week check-up 3 <input type="checkbox"/> Doctor/nurse 2 <input type="checkbox"/> Mother/family member
33.	2	<input type="text"/> <input type="text"/> / <input type="text"/> <input type="text"/> / <input type="text"/> <input type="text"/> m m d d y y	1 <input type="checkbox"/> 2-week check-up 3 <input type="checkbox"/> Doctor/nurse 2 <input type="checkbox"/> Mother/family member
34.	3	<input type="text"/> <input type="text"/> / <input type="text"/> <input type="text"/> / <input type="text"/> <input type="text"/> m m d d y y	1 <input type="checkbox"/> 2-week check-up 3 <input type="checkbox"/> Doctor/nurse 2 <input type="checkbox"/> Mother/family member
35.	4	<input type="text"/> <input type="text"/> / <input type="text"/> <input type="text"/> / <input type="text"/> <input type="text"/> m m d d y y	1 <input type="checkbox"/> 2-week check-up 3 <input type="checkbox"/> Doctor/nurse 2 <input type="checkbox"/> Mother/family member
36.	5	<input type="text"/> <input type="text"/> / <input type="text"/> <input type="text"/> / <input type="text"/> <input type="text"/> m m d d y y	1 <input type="checkbox"/> 2-week check-up 3 <input type="checkbox"/> Doctor/nurse 2 <input type="checkbox"/> Mother/family member
37.	6	<input type="text"/> <input type="text"/> / <input type="text"/> <input type="text"/> / <input type="text"/> <input type="text"/> m m d d y y	1 <input type="checkbox"/> 2-week check-up 3 <input type="checkbox"/> Doctor/nurse 2 <input type="checkbox"/> Mother/family member
38.	7	<input type="text"/> <input type="text"/> / <input type="text"/> <input type="text"/> / <input type="text"/> <input type="text"/> m m d d y y	1 <input type="checkbox"/> 2-week check-up 3 <input type="checkbox"/> Doctor/nurse 2 <input type="checkbox"/> Mother/family member

12/5/06 2week int

Appendix E

★ Mother's MRN:

39. For YOUR health problems, how many times have YOU visited a clinic or emergency department since you gave birth?

(Write in number, use leading zero. Circle number of visits below. If 0, skip to Q 47a)

	Visit #	a. When was the (first, second, etc.) visit? (Prompt for date, e.g., "So that would have been the 16th.")	b. Were you told to come back for this visit by a doctor or nurse at a previous visit, or did you notice a new problem? (Check one)
40.	1	<input type="text"/> <input type="text"/> / <input type="text"/> <input type="text"/> / <input type="text"/> <input type="text"/> m m d d y y	1 <input type="checkbox"/> Mother 2 <input type="checkbox"/> Doctor/nurse
41.	2	<input type="text"/> <input type="text"/> / <input type="text"/> <input type="text"/> / <input type="text"/> <input type="text"/> m m d d y y	1 <input type="checkbox"/> Mother 2 <input type="checkbox"/> Doctor/nurse
42.	3	<input type="text"/> <input type="text"/> / <input type="text"/> <input type="text"/> / <input type="text"/> <input type="text"/> m m d d y y	1 <input type="checkbox"/> Mother 2 <input type="checkbox"/> Doctor/nurse
43.	4	<input type="text"/> <input type="text"/> / <input type="text"/> <input type="text"/> / <input type="text"/> <input type="text"/> m m d d y y	1 <input type="checkbox"/> Mother 2 <input type="checkbox"/> Doctor/nurse
44.	5	<input type="text"/> <input type="text"/> / <input type="text"/> <input type="text"/> / <input type="text"/> <input type="text"/> m m d d y y	1 <input type="checkbox"/> Mother 2 <input type="checkbox"/> Doctor/nurse
45.	6	<input type="text"/> <input type="text"/> / <input type="text"/> <input type="text"/> / <input type="text"/> <input type="text"/> m m d d y y	1 <input type="checkbox"/> Mother 2 <input type="checkbox"/> Doctor/nurse
46.	7	<input type="text"/> <input type="text"/> / <input type="text"/> <input type="text"/> / <input type="text"/> <input type="text"/> m m d d y y	1 <input type="checkbox"/> Mother 2 <input type="checkbox"/> Doctor/nurse

12/5/06 2week int

Appendix E

★ Mother's MRN:

47a. Are you now working outside your home? (Check one)	47b. Are you working full-time, 35 or more hours a week, or part-time? (Check one)
1 <input type="checkbox"/> Yes	1 <input type="checkbox"/> Full-time 2 <input type="checkbox"/> Part-time
2 <input type="checkbox"/> No (Skip to Q 48a)	

48a. Are you now in school? (Check one)	48b. Are you in school full-time, 35 or more hours a week, or part-time? (Check one)
1 <input type="checkbox"/> Yes	1 <input type="checkbox"/> Full-time 2 <input type="checkbox"/> Part-time
2 <input type="checkbox"/> No (Skip to Q 49)	

49. Think about all of your care and (----)'s care from the start of pregnancy until now. Overall, how would you rate your and (----)'s care from Kaiser? Was it:
(Read choices, check one)
- 1 Poor
2 Fair
3 Good
4 Very good
5 Excellent
9 (Don't read) No opinion/don't know

50a. Has having (----) at Kaiser changed your overall opinion of Kaiser? (Check one)	50b. How would you say your opinion has changed? Is it now: (Read choices, check one)
1 <input type="checkbox"/> Yes	1 <input type="checkbox"/> Much worse 2 <input type="checkbox"/> Somewhat worse 3 <input type="checkbox"/> Somewhat better 4 <input type="checkbox"/> Much better
2 <input type="checkbox"/> No (Skip to Pg. 17)	
9 <input type="checkbox"/> Don't know/no opinion (Skip to Pg. 17)	

Appendix F

Table 1F. Outcome measure variables.

Variable Groups	Variable	Data Source	SAS Name
Intention to breastfeed	Mother tried to breastfeed at all	2-week interview, Q14b	BFTRY_2
Outcome measures at 2 weeks	Breastfeeding status at 2-weeks	Q14a	FD_2WK
	Ozs of formula in 24 hours	Q14d	OZ_F_2
	# of days breastfed	Q14c	BF_DAYS
Reason for discontinuation	Breast pain/soreness	Q15a	BFQUIT2
	Baby still hungry		
	Problem sucking/latching on		
	Feeding too frequently		
	Baby not gaining enough weight		
	Mother is sick		
	Baby is sick		
	Spitting up/vomiting		
	Breastmilk intolerance		
	Too tiring/draining		
	Mother returned to work/school		
Bottle feeding easier			
Mother or baby ready to stop			
	Age of infant at onset of	Q15b	BFQUITDY

	problem		
Breastfeeding problems at 3 days postpartum	Breast pain/soreness	Q16a	PROB16
	Baby has problem sucking	Q17a	PROB17
	Baby seems hungry after feeding	Q18a	PROB18 PROB19
	Baby lost too much weight	Q19a	PROB20
	Other problem feeding	Q20a	PROB21
	Specify other problem		PROB21SP
	Code other problem	Q21a	PROB21CD
		Severity of the problem	Q22
Breastfeeding problems at 2 weeks postpartum	Presence of a feeding problem	Q24a	FDPROB2
The most important problem	Breast pain/soreness	Q24b	FDPIMP2
	Baby still hungry		
	Problem sucking/latching on		
	Feeding too frequently		
	Baby not gaining enough weight		
	Mother is sick		
	Baby is sick		
	Spitting up/vomiting		
	Breastmilk intolerance		
	Too tiring/draining		
	Mother returned to work/school		
	Mother is engorged		
	Sleepy baby		

	Severity of the problem	2-week, Q25	FDPSEV2
Outcome measures at 12 weeks postpartum	Breastfeeding status at 12 weeks	12-week interview, Q3a	FD_12WK
	Mother tried to breastfeed	Q3b	BFTRY_12
	Ozs of formula in last 24 hours	Q3d	OZ_F_12
	# of weeks breastfed	Q3c	BF_WEEKS
	Mother breastfed for as long as she wanted	Q4c	BF_ENUF
Reason for discontinuation	See variables collected at 2 weeks	Q4a	BFQUIT12 Q_SPEC12
	Age of infant at onset of problem	Q4B	BFQUITWK

Table 2F. Predictor variables.

Variable Group	Variables	Data source	SAS Name	
Demographics	Parity	Initial interview, Q9	PARA	
	Education	Q24	MEDUC	
	Race/Ethnicity		Q21	MWHITE
				MBLACK
				MLATIN
				MNATIV
				MASIAN
		MOTHRACE		
	Income	Q25	INCOME	
	Number of people supported by income	Q26	INCPERS	
	Language spoken at home	Q23	LANGHOME	
	Father lives in the household	Q20a	FATHER	
	Maternal age	Chart review form	H_ADM_DT	
	Mother's employment outside home at 2 weeks		2-week interview, Q47a	WORK2
Q47b			WORK2_FT	
Q48a			SCHOOL2	
Q48b			SCH2_FT	

	Mother's employment outside home at 12 weeks	12-week interview Q19a	WORK12 WORK12_FT
	Employment full-time	Q19b	
	Age of infant at start of work	Q19c	WRK12_WK
	Breastfeeding status at work	Q19d	WRK12_BF
	School at 12 weeks	Q21a	SCHOOL12
	School full-time at 12 weeks	Q21b	SCH12_FT
	Age of infant at start of school	Q21c	SCH12_WK
	Breastfeeding status at school	Q21d	SCH12_BF
Mother's attitude	Intention to breastfeed during 1st month	Initial interview Q14a	FDPLAN1
	Importance of breastfeeding to mother	Q14b	BFIMPORT
	Confidence in ability to breastfeed in the hospital	Q17	FEEDCON1
	Confidence in ability to breastfeed at 2 weeks	2-week interview Q6	FEEDCON2
Other's experience	Month of pregnancy prenatal care started	Initial interview Q10b	PREVISIT
Controlled by	Prenatal breastfeeding classes	Q12b	BF_CLS
With care	Other classes related to feeding	Q12d	CLS_SPEC
m	Prenatal advice on feeding	Q13a	FDINFOP
	Amount of advice	Q13b	FDAMOUNP
	Quality of advice	Q13c	FDQUALTP

	Advice on feeding in hospital	2-week interview, Q3a	BFINFO_H
	Usefulness of advice	Q3b	BFHELP_H
	Need referral to BF consult at 3 days	Q23a	NEED_CON
	Got referral to BF consult at 3 days	Q23b	GOT_CON
	Consulted BF specialist	Q23c	TALK_CON
	L&D difficulties	Q1	LD_EASE
	ER contact by baby	Q31	BABY_ER
	ER contact by mother	Q39	MOM_ER
	BF info received from Kaiser	12-week interview, Q7a	BF_INFO
	Encouragement to BF from Kaiser medical personnel	Q8	BF_ENCRG
Previous experience with breastfeeding	Previous BF experience	Initial interview, Q16a	BFBEFORE
	Previous BF problem	Q16b	PREVBFPB
	Severity of previous BF problem	Q16c	PREVSEV
	Main previous BF problem	Q16d	PREVIMPB
	Problem feeding in hospital	Q15a	FDPROBH
	Severity of problem in hospital	Q15b	FDPSEVH
	Main BF problem in hospital	Q15c	FDPIMPH
			FDH_SPEC
Support from	Support for breastfeeding from	12-week interview	BF_DAD

family	father	Q5	
	Support for breastfeeding from family members	Q6	BF_FAMILY

Appendix G

RACE1

