Determinants of Exclusive Breastfeeding Among Low-Income Inner-City Women

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A Thesis
Submitted in Partial Fulfillment of the
Requirements for the Degree of
Master of Public Health
at the
University of Connecticut
2005
Master of Public Health Thesis
DETERMINANTS OF EXCLUSIVE BREASTFEEDING AMONG
LOW-INCOME INNER-CITY WOMEN

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2005
ACKNOWLEDGEMENTS

I would like to take this opportunity to thank all those special people who have been steadfast in their support of me and my academic pursuits.

First and foremost, I would like to thank Dr. Rafael Perez-Escamilla for your support, guidance and unique mentoring over the past four years. As my major advisor for both my PhD and MPH, you have supported and always been there for me through the challenges of my academic and social life with encouragement and rich fatherly advice. Your mentorship, challenge, encouragement and passion to attain excellence have made me a better person and focused my career. Words alone cannot express how indebted and appreciative I am to have been part of your research group. I say a very big thank you to you and your family for the warm reception extended to me during my studies.

To Joan Segal, I say a big thank you for your support and encouragement when I finally decided to enroll in the MPH program as part of my graduate studies at the University of Connecticut. I am thankful when you agreed to serve on my advisory committee, because of your wonderful and caring personality.

Dr. Glen Affleck, thank you for agreeing to be part of my advisory committee. I am very fortunate to have you on my committee not only as an excellent professor but the background you bring to it.

Thank you to all my lab group colleagues past and present. Being the only male member you never left me out of anything and also had open arms to welcome my wife as part of the lab group each time she visited. I will also want to thank you for your cooperation and support in bringing me this far in my career. A big thank you to Lisa Phillips for all the administrative support during the course of my graduate studies at UCONN. You will always have a special place in my heart.

To my family: grandparents, mother, siblings, nephews and nieces. Thank you for always having confidence in me, and supporting and encouraging me throughout my academic pursuits. Your unwavering support, both financially and physically throughout these years, has helped me achieve my goals and made me what I am today. I couldn’t have come this far without all of you.

To my in-laws, thank you for the unflinching support for my academic pursuits and in the development of my career.

To my wife, Mildred, you have trusted and had faith in my ability to achieve the heights. You have encouraged me to pursue my dreams and have always been supportive in everything I set myself to do. You have stood by me through challenging times, always with encouraging words, patience and all the understanding a wife could give to her husband. Thank you for everything, most especially your love.
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Breastfeeding is an optimal infant feeding behavior that offers considerable
benefit to both mothers and infants. For this reason it has been endorsed by various health
organizations (1-3). Besides being nutritionally superior to infant formula, human
breastmilk also contains immunoglobulins and antibodies that protect the infant from
infections during the first few months of life when the infant’s immune system is not well
developed (4-6). In an effort to improve the public’s health and to give children a healthy
start in life, the American Academy of Pediatrics(1) and other professional and
international organizations (e.g., the World Health Organization and UNICEF) have
issued statements, as well as instituted variety of programs, all in favor of promoting,
protecting and supporting breastfeeding (2, 4, 7-11). The activities resulting from the
statements and programs of these professional and international organizations have
subsequently reversed the downward trend in breastfeeding rates that existed worldwide
prior to the last quarter of the last century (12-15).

Although, there is a general increase in breastfeeding rates in countries across the
world, the proportion of mothers breastfeeding in the US has been disappointingly low
compared to other developed countries (13-18). Even though more Americans are
breastfeeding today than they did in the latter part of the 20th century, only few of them
continue to breastfeed through their babies’ first birthday compared to women from other
countries (16-23). In the US, some populations and ethnic/racial groups have lower rates
of initiation, exclusivity and duration of breastfeeding (13, 15, 16, 24, 25). The greater
increase in breastfeeding that occurred in the last quarter of the 20th century was found
among sub-groups that are known to be less likely to breastfeed such as WIC participants, low-income mothers, and the less educated, as well as Blacks and Hispanics (14, 15).

The scientific literature over the last decade in the area of infant feeding and pediatric health strongly suggests a trend in the protective effect of breastfeeding on childhood and adolescent overweight and obesity (4, 11, 26-33). This observation is of public health importance with the identification of overweight/obesity as a risk factor for exposing individuals to chronic diseases such as type 2 diabetes, heart disease and certain types of cancers, and increased mortality (34-37). A recent study using data from the Third National Health and Nutrition Examination Survey (NHANES) found minority groups in the US to have a higher risk of becoming overweight or obese (38). A 2005 review by Olshansky and colleagues(39) using mathematical modeling has predicted a reduction in the US life expectancy as a result of the current rise in overweight and obesity among children and adolescents. The authors found that if the current epidemic of childhood and adolescent overweight and obesity are not controlled and prevented, the gain in life expectancy over the years may be reversed (39).

Literature Review

Marketing of breast milk substitute

In an effort to reverse the downward trends in breastfeeding as a result of the active and aggressive advertisement and marketing of breast milk substitutes by formula companies during the last half of the 20th century, the WHO at its 34th World Health Assembly in 1981 adopted a resolution on the International Code of Marketing of Breast Milk Substitutes (40). This Code and subsequent resolutions aim to contribute to the
provision of safe and adequate nutrition for infants, through the protection, promotion and support of breastfeeding as well as the proper use of breast milk substitutes on the basis of providing adequate information through appropriate marketing and distribution. The Code specifically bans formula companies from directly contacting pregnant women and mothers but to only provide health care workers with scientific and factual information on their products (41). Under the Code, patients and hospitals are not to be provided with free or subsidized infant formula and accompanying products by formula companies, and also restrict direct advertising and inadequate labeling of their products (41, 42).

The position of the Code is that the provision of free formula is an important disincentive to breastfeeding. Even though the United States voted against this Code, it was passed as a resolution that proclaims breast milk to be superior to breast milk substitutes for infant feeding (43). Governments from both developing and developed countries have since passed legislation either including all or some of the provisions of this Code (43). Some researchers and health professionals have found various degrees of violations of the International Code of Marketing of Breast Milk Substitutes even among countries who have officially adopted the Code (44-46). In Hong Kong, for example, researchers have found formula companies to promote infant and follow-on formula in hospitals and also provide free supplies of their products to hospitals to be given to pregnant women and mothers (46) with similar practices in Africa (45).
Current Breastfeeding Trends in the US

Recent results from surveillance data indicate a general increase in breastfeeding rates within the Continental USA, although this increase falls short of the national Healthy People 2010 (11) objectives for breastfeeding: of 75% of mothers initiating breastfeeding at the hospital, 50% breastfeeding their children at 6 months and 25% still breastfeeding at 12 months of age (47). In the same report, it was found that the recommendation by the American Academy of Pediatrics and the World Health Organization for exclusive breastfeeding in the first 6 months after birth was far from being reached (47). During the period under surveillance, 14 out of the 50 States and the District of Columbia achieved the 75% breastfeeding initiation at hospital discharge, while only eight States met or exceeded the objective of 25% of mothers still breastfeeding at 12 months postpartum or beyond (47). There were also disparities in duration and exclusivity of breastfeeding within the population surveyed as well as between sociodemographic and racial/ethnic groups. Breastfeeding initiation, duration and exclusivity were higher among mothers with female infants than among their counterparts with male infants, which is inconsistent with the literature where male infants in developing and other Western countries were more likely to be breastfed for longer durations (20, 23, 47). Blacks had lower rates of breastfeeding initiation, duration, and exclusivity compared to other racial/ethnic groups (47). Breastfeeding initiation, duration and exclusivity was higher among non-WIC recipients, older mothers, mothers with greater than high school education, mothers with income greater than 185% of the poverty line and married mothers (47).
Another study also reports regional differences in breastfeeding initiation and duration but confirms the disparities in breastfeeding by socio-demographic characteristics in the US found in other studies (15, 47). In this study by Ryan et al. (15), western states recorded the highest rate of breastfeeding initiation in the hospital (81.3%) which exceeds the Healthy People 2010 goal of 75%. The rates of breastfeeding initiation in New England, Northern and Southern Regions were 73.%, 67.6% and 65.1%, respectively (15). The trend was similar for breastfeeding rates at 6 months ranging from 28.8% in Southern to 42.5% in Western United States, with these rates being lower than the Healthy People 2010 goal of 50% (15). The incidence and duration of breastfeeding was not influenced by socio-demographic characteristics across regions although the authors observed influence of these maternal characteristics on initiation and duration of breastfeeding within regions of residence (15).

**Factors Associated with Breastfeeding**

If the US is to be able to achieve the goals and objectives for breastfeeding set by the American Academy of Pediatrics (1) and the US Surgeon General (11), it is important to identify and understand factors that influence the decision to breastfeed. A woman’s decision to breastfeed is believed to be influenced by a complex array of factors such as political, sociocultural, psychosocial, demographic, biomedical and environmental (16, 48, 49). Among the specific factors known to influence a woman’s choice of infant feeding across the world are maternal age; marital status; maternal literacy; religious affiliation; infant gender and birth weight; substance use (smoking and alcohol consumption); household size; place of residence (urban or rural); cultural beliefs, norms
and attitudes toward breastfeeding; biosocial situation (availability of lactation support in the clinical and community settings); employment and socio-economic status (16, 22, 48-50).

**Effects of Public Health and National Policies on Breastfeeding**

Good public health and governmental policies are effective ways of improving health and living standards of mankind, which is evident in the recent trends in breastfeeding all over the globe after a general decline in breastfeeding rates since the mid 1940s through the early 1970s due to vigorous marketing of infant formula by formula companies (51). The downward trend of breastfeeding was dramatic in developing countries whose governments allowed heavy advertisement and marketing by formula companies (52). The reversal of the downward trend of breastfeeding was facilitated by the institution of the International Code of Marketing Breast Milk Substitutes by the World Health Organization (9) and the Innocenti Declaration on the Protection, Promotion and Support of Breastfeeding by UNICEF (53). We continue to see a general rise in breastfeeding rates all over the world as more and more hospitals are certified as “Baby Friendly” as a result of the implementation of the Ten Steps to Successful Breastfeeding recommended by UNICEF/WHO since the early 1990s (7). This increase in breastfeeding rates due to these sound public health policies is seen in both developed and developing countries (12-16, 18, 19, 21, 22, 24, 47, 54). This is a successful public health effort documented by comparing rates of breastfeeding initiation, exclusiveness and duration from studies conducted before (54-57) and after (13, 17, 58) the launch of the Baby Friendly Hospital Initiative.
Sociocultural, Demographic Factors and Breastfeeding

In general, mothers who choose to breastfeed tend to share some common characteristics depending on their race/ethnicity and country of origin/birth. Other characteristics that need to be taken into account are maternal age and education, employment, marital status, socioeconomic status, parity, place of residence, biomedical, and infant characteristics.

Across the globe, maternal age has been found to be associated with initiation, exclusiveness and duration of breastfeeding. Mothers 25 years and older are more likely to initiate and continue breastfeeding than younger mothers irrespective of country of origin or ethnicity (15, 17, 23, 47, 58-65). For example, in their study of 8,362 mothers in the United States, Ryan and co-workers (15) found older mothers to be more likely compared to their younger counterparts to initiate breastfeeding and to continue breastfeeding at 6 months. Similarly, recent results from the 2002 US National Immunization Survey consisting of 3,444 mothers showed that at 6 months 43% of mothers 30 years or older were still breastfeeding compared to only 17% of their younger counterparts (< 20 years) while 20% and 11%, respectively, were still breastfeeding at 12 months postpartum (64). There is also evidence that strongly suggests a positive association between maternal age and the duration of exclusive breastfeeding in the US (64, 66).

Maternal level of education has been reported to be positively associated with initiation, exclusiveness and duration of breastfeeding. In Vietnam researchers have reported a higher percentage of exclusive breastfeeding among women with more than high school education (68%) compared to only 32% among those with high school or less
Similarly, in the US, Ahluwalia et al. (65), Scott et al. (59, 62), Ryan et al. (15), and Li et al. (64) have reported higher percentages of breastfeeding initiation and duration among mothers with more than high school education compared to their counterparts with high school or less education. While maternal level of education continues to be shown to have positive association with exclusive breastfeeding across countries, Nath and Goswami (23) in India found an inverse association. In this study involving 5000 couples from Guwahati, the capital city of Assam, India, Nath and Goswami (23) reported that the median length of exclusive breastfeeding was longer for mothers with less than lower primary education (5.45 months) than those with some high school (3.86 months) and high school graduates (3.60 months). In another study among rural Moslem women in Israel, researchers found mothers with ≤ 8 years of education were about 2.5 times (OR = 2.45) and 1.5 times (OR = 1.64) more likely to be breastfeeding at 3 and 6 months, respectively, compared to their counterparts with ≥ 9 years of education (68).

Researchers have found associations between breastfeeding and marital status (47, 59-61, 64). For instance, results of a secondary data analysis involving 556 women who delivered at two hospitals in Perth, Western Australia, indicate that married women are more likely to be breastfeeding at hospital discharge (OR = 1.41; 95% CI: 1.00-1.98) than single mothers (59). In a prospective study of 247 mothers from the UK who delivered singleton births, Ward and co-workers (61) reported that married mothers were more likely to initiate breastfeeding at hospital discharge (80.2% vs. 66.7%) and exclusively breastfeeding at 6 and 14 weeks postpartum (91.1% vs. 74.1% and 93.8% vs. 75.5%),
respectively) than single mothers. Similarly, among 425 Australian mothers, Binns et al. (60) reported that mothers who were married were more likely to breastfeed at hospital discharge than single/never married mothers (OR = 1.74; 95% CI: 0.76-3.99). Data from the 2002 US National Survey also suggest improved breastfeeding outcomes among married women than among their single counterparts (64).

Maternal employment has been found to have a negative association with breastfeeding initiation, exclusiveness and duration irrespective of country of birth, race or ethnicity (14, 58-61, 67-69). While some researchers (61, 69-71) have found maternal employment outside the home to be negatively associated with duration of breastfeeding, others (14, 15, 68) have found type of employment to be a risk factor for not breastfeeding. However, other studies have failed to document a significant association between maternal intention to return to paid employment, either part-time or full-time, and breastfeeding outcomes (70, 71). Although maternal employment has been reported to generally affect the duration and exclusivity of breastfeeding, Rea et al. (69) report that in Brazil employed mothers who had access to and utilized work-related day care and breast milk expression facilities had a longer mean duration of exclusive breastfeeding than their counterparts with no access to these facilities (31 vs 12 days, respectively). Also, in Honduras, Perez-Escamilla et al. (58) found maternal employment to be inversely associated with the duration of exclusive breastfeeding. Among Moslem women in Israel, Azaiza and Palti found mothers who did not engage in employment outside the home were more likely to breastfeed at 3 months (OR: 1.69) and 6 months (OR: 1.80) than their counterparts with outside jobs (68). Other researchers in the US
have also found that mothers who worked full-time were at a greater risk of terminating breastfeeding before 6 months postpartum (14).

Parity is another important maternal characteristic reported to influence breastfeeding intention, exclusivity and duration, and actual practice (59, 60, 62, 65, 68). Studies across countries, cultures and ethnic groups have found higher rates of breastfeeding initiation among primiparous mothers (mean: 74%) than among their multiparous counterparts (mean: 65%) (59, 60, 62, 65). Conversely, multiparous mothers have been found to breastfeed for longer than first time mothers. For example, Ahluwalia et al. (65) have reported that a greater proportion of multiparous mothers continue breastfeeding after hospital discharge compared to primiparous mothers. Similarly, Ryan et al. (15) have found a higher percent of multiparous women breastfeeding at 6 months (mean: 36%) compared to their primiparous counterparts (mean: 34%) across the different regions of the United States.

Delivery type, i.e. whether spontaneous or by cesarean section and infant’s birth weight have been found to influence both breastfeeding initiation and duration. While one group of researchers has reported positive associations between delivery type (vaginal delivery) and infant birth weight with breastfeeding at hospital discharge (59, 67), others have found an inverse association between vaginal delivery and breastfeeding initiation (60). In Western Australia, Scott et al. (59) found mothers who had a vaginal delivery to be about twice as likely to breastfeed at hospital discharge compared to mothers who had cesarean delivery (OR: 1.60; 95% CI: 1.08-2.38). In the same study, infants born of normal birth weight (≥ 2500 g) were over two times more likely (OR: 2.16; 95% CI: 1.13-4.12) to have been breastfed at hospital discharge than low-birth
weight babies (< 2500 g) (59). The study by Binns et al. (60) in Australia, found that mothers who had a normal delivery were less likely than their counterparts who had cesarean section to initiate breastfeeding at hospital discharge (OR: 0.34; 95% CI: 0.17-0.69). They also found normal birth weight infants to be less likely to breastfeed at hospital discharge than low-birth weight infants, although the difference was not statistically significant (OR: 0.62; 95% CI: 0.27-1.44) (60). It is important to mention that in the US, both vaginal and normal birth weight deliveries have been found to be positively associated with breastfeeding initiation and continuation beyond 2 months postpartum (65). Also in Vietnam, researchers have found vaginal delivery to positively influence the decision to exclusively breastfeed (OR: 18.52; 95% CI: 5.47-6271) (67). Perez-Escamilla and colleagues (72) have also reported associations between cesarean section and initiation and duration of breastfeeding based on the 1987 Mexican Demographic and Health Survey. In this study, the authors found cesarean section deliveries to be a risk factor for not initiating breastfeeding (OR: 0.64; 95% CI: 0.50-0.82) and also for breastfeeding for less than 1 month (OR: 0.58; 95% CI: 0.37-91) compared with vaginal deliveries (72). However, they did not find cesarean section to be associated with breastfeeding duration among those who breastfed for at least 1 month. The inconsistencies in the findings of the studies from Australia (59, 60) may be due to the sample size, study design and the specific populations studied. It is also possible that in Baby Friendly Hospitals cesarean section women receive strong breastfeeding support for a significantly longer period of time compared to women who deliver vaginally.

Breastfeeding initiation, exclusivity and duration have been reported to be influenced by different psychosocial factors. Partner and maternal grandmother support
have been consistently identified as being positively associated with the initiation, exclusivity and duration of breastfeeding (59-61, 67). Support from health care workers such as doctors, nurses/lactation consultants and breastfeeding counselors have all been found to impact breastfeeding (63, 68, 73-78). Researchers have also found higher breastfeeding incidence and duration among mothers who attend ante-natal breastfeeding classes (59, 60). In a study of 1059 women delivering at two rural and two urban hospitals in Australia, Scott et al. (59) concluded that, support from partners (OR: 10.92; 95% CI: 6.50-18.32)), maternal grandmother (OR: 5.91; 95% CI: 3.37-10.39), and attendance to ante-natal classes (OR: 1.39; 95% CI: 1.01-1.92) were significantly associated with a higher likelihood of breastfeeding at hospital discharge. Other researchers have demonstrated that breastfeeding initiation, exclusiveness and duration increase if mothers have access to breastfeeding support either from a lactation consultant or a peer counselor irrespective of ethnicity or country of birth, education and marital status (73-82). In general, mothers are more likely to initiate and continue breastfeeding if they have access to psychosocial support of one form or the other.

With the current trends in childhood overweight and obesity in the US it is essential to promote exclusive breastfeeding as a means of improving child health, growth and development. Thus, the overall aim of this thesis is to explore determinants of exclusive breastfeeding among low-income inner city women in the United States. The specific objectives are to document the determinants of exclusive breastfeeding at: a) hospital discharge, and b) months 1 to 3 postpartum.
Chapter 2

METHODOLOGY

Data for the present analyses came from a previously described randomized controlled trial assessing the impact of peer counseling on exclusive breastfeeding among inner-city, low-income, predominantly Latina women residing in the Greater Hartford Area of the State of Connecticut (83). The study was approved by the Human Subjects Institutional Review Boards (IRBs) of the University of Connecticut, Hartford Hospital and the Hispanic Health Council.

Study Design

Briefly, the original study involved the prenatal recruiting and randomization of 182 women seeking obstetrical care at the Women’s Ambulatory Health Services (WAHS) clinic at Hartford Hospital (January – December 2003). To qualify for the study, participants had to be: 1) considering breastfeeding; 2) with no health condition known to impair successful breastfeeding; 3) carrying a single fetus; 4) planning to deliver at Hartford Hospital; 5) no more than 32 weeks of gestation at the time of recruiting; 6) have an income level below 185% of the Federal Poverty Level; and 7) willing to stay in the study area at least 3 months after delivery. Women who agreed to participate signed an informed consent and were randomized to either an intervention or control group. Women assigned to the intervention group received 3 prenatal home visits by a peer counselor (involving breastfeeding education and counseling), perinatal in-hospital hands-on support (daily during hospitalization), 9 postpartum home visits and counseling, plus conventional breastfeeding education provided by the hospital. Women
in the control group only received conventional breastfeeding care. After delivery, mother-infant dyads were screened for the presence of any potential health condition that would be likely to affect successful breastfeeding. Mother-infant pairs were followed through 3 months postpartum.

**Data Collection**

Participants were interviewed in their language of choice (English or Spanish) by a bilingual and bicultural research staff at the time of recruitment to obtain baseline data to allow for comparison between participants and those lost to follow-up. Baseline data collected included participant age, ethnicity, marital status, educational level, parity, employment status, previous breastfeeding experience, intended exclusive breastfeeding practice and duration, pregnancy intentions, and WIC participation (Appendix 1). During postpartum hospitalization there was a second set of baseline data collection through an in-person interview (Appendix 2) and review of medical records (Appendix 3). Postpartum baseline data collected included breastfeeding initiation, introduction of infant formula and other fluids, maternal and newborn anthropometry, type of delivery, and the use of analgesic during labor.

After hospital discharge participants were interviewed via the telephone weekly in the first month (Appendix 4) and biweekly thereafter until the infant was 3 months of age (Appendix 5). During these postpartum telephone interviews information was collected on infant feeding practices, infant health parameters, and lactation amenorrhea among participants. Data on infant feeding included exclusive breastfeeding, formula feeding, introduction of foods other than breast milk, age of introduction of other fluids and foods.
(e.g. baby cereal, juice, cow’s milk and water). Information on diarrhea episodes (if the infant had had 3 or more watery stools within a day) and WIC participation was also collected.

Of the 182 participants recruited for the study, 20 were dropped because they did not meet the study criteria after the delivery of their newborn. Of the 20 participants dropped 6 had low-birth weight deliveries; the remaining 14 were either missed at delivery or had moved from the study area. Twenty-seven participants out of 162 who delivered their newborns were lost to follow-up between delivery and 3 months postpartum, leaving 135 mother-infant pairs for the final analyses (Figure 1).

**Outcome Variable**

The outcome variable was duration of exclusive breastfeeding using the “previous 24-hours” and the “ever given the infant anything besides breastmilk since birth” definitions.

**Independent Variables**

The following independent variables which were associated with the outcome variable were included in the multivariate analyses: marital status (married/cohabiting, single); level of education (< high school, high school graduate, > high school); ethnicity (Puerto Rican, Non-Puerto Rican Hispanic, other (Caucasian and Blacks)); maternal grandmother residing in the US (yes/no); partner supporting respondent’s decision to breastfeed (yes/no); respondent breastfed as a child (yes/no); intentions to exclusively
breastfeed the index child at pregnancy (yes/no); and use of analgesic during delivery (yes/no).

**Data analyses**

SPSS for Windows (version 12.0) was used for data entry and all analyses. The main outcome variable for this study was exclusive breastfeeding. Chi-square analyses were used to examine bivariate associations between the outcome variable and independent variables. Multivariate logistic regression analyses were conducted to assess the independent influence of significant factors from the bivariate analyses in predicting the duration of exclusive breastfeeding controlling for group assignment and infant age. All results are interpreted using p<0.05 (2-sided) as the criterion for statistical significance.
Chapter 3

RESULTS

Baseline Demographic Characteristics

Participants in this study were part of a randomized controlled trial assessing the efficacy of peer counseling in the promotion of exclusive breastfeeding. Of the 162 mother-infant pairs who were eligible for the study after delivery, 135 completed the 3 months follow-up with 27 lost to follow-up (Figure 1). Participants were predominantly Latina (71.9%), 17.8% Black/African-American (79.1% African American, 16.7% African and 4.2% Caribbean), and 10.4% Caucasian women who gave birth at Hartford Hospital (Table 1). Among the Latina participants, 59.8% identified themselves as Puerto Ricans, 25.9% were bilingual (spoke both English and Spanish), 31.9% spoke only Spanish and 42.2% spoke only English. The vast majority of participants were 20 years or older (mean = 25.0±5.6 years; range: 18-41 years) and 68.1% had high school or less education. About two-thirds (67.4%) reported to be single or had no partner, 90.4% were participating in the WIC program and 48.1% were receiving Food Stamps. Only a small proportion of participants either smoked (17.8%) or consumed alcoholic beverage (8.1%) (Table 1).

Biomedical Characteristics and Breastfeeding History

Over half (52.6%) of the participants were multiparous. Over one-third (35.6%) reported that the pregnancy was planned, 77.8% had a vaginal delivery, and 85.9% received analgesic during labor to reduce the pains of delivery (Table 2). The average gestational age at which participants initiated antenatal care was 12.1±4.2 weeks, and
mean gestational age at delivery was 39.4±1.2 weeks. The mean maternal weight gain during pregnancy was 14.9 kg, and the mean of infant birth weight and birth length were 3.4±0.5 kg and 50.9±2.3 cm, respectively (Table 2). Over half (53.3%) of participants reported to have been breastfed as a child, and 77% of the multiparous women breastfed a previous child. About 74% of participants also reported that their partners/infants father supported their decision to breastfeed. While 38.5% reported to have received prenatal breastfeeding advice, 68.1% were planning to breastfeed exclusively during the prenatal recruitment (Table 3).

**Feeding Patterns**

Of the 135 mothers that completed the three month follow-up, 17.0% fed their infants only formula and no breastmilk, 83.0% initiated breastfeeding, and 51.1% were breastfeeding exclusively at hospital discharge. The rate of exclusive breastfeeding at 3 months was 14.1% and 10.4% using the “previous 24-hours” and “since birth” definitions, respectively.

**Bivariate Analyses**

For the bivariate analyses we report only the independent variables that had significant associations with exclusive breastfeeding at hospital discharge, and/or at 1, 2 and 3 months postpartum using both “previous 24-hours” and “since birth” exclusive breastfeeding definitions. At hospital discharge exclusive breastfeeding was found to be significantly associated (p<0.05) with the following variables: partner/infants father support of mother’s decision to breastfeed, prenatal exclusive breastfeeding intentions,
marital status, and ethnicity of participant (Table 4). Fifty-nine percent (59.0%) of participants whose partners supported their decision to breastfeed, exclusively breastfed compared to only 28.6% who did not have their partner’s support at hospital discharge. The rate of exclusive breastfeeding was higher among participants who planned to exclusively breastfeed prenatally (59.8%) compared to 32.6% among those who had no prenatal exclusive breastfeeding intentions. Married women were more likely to exclusively breastfeed at hospital discharge (65.9% vs. 44.0%, respectively) than their single counterparts. Only 37.9% of Puerto Ricans compared to 66.7% of non-Puerto Rican Hispanics and 55.3% of other mixed ethnicities (Caucasians and Blacks) were exclusively breastfeeding at hospital discharge.

Tables 5-7 list socio-demographic, psychosocial and biomedical factors of participants that had significant association (p<0.05) with exclusive breastfeeding using both definitions at 1, 2, and 3 months postpartum. At 1 month, participants who were married, were high school graduates, were themselves breastfed as a child, with infant maternal grandmother not residing in the US, were of non-Puerto Rican Hispanic origin, and who did not receive analgesic during delivery were more likely to exclusively breastfeed their infant irrespective of the definition used (Table 5). At 2 months, being married/cohabiting, partner supporting decision to breastfeed, respondent breastfed as a child, infant’s maternal grandmother not residing in the US and respondent being of non-Puerto Rican Hispanic origin were associated with a higher likelihood to exclusively breastfeed, irrespective of the definition used (Table 6). Likewise at 3 months postpartum, the rate of exclusive breastfeeding was higher among participants who were married/cohabiting, who graduated from high school, who had a partner that supported
their decision to breastfeed, who were breastfed as a child, who intended to exclusively breastfeed during pregnancy, with infant’s maternal grandmother not residing in the US, and of non-Puerto Rican Hispanic origin irrespective of the definition used (Table 7).

As shown in Figures 2A and 2B, the percent of participants breastfeeding exclusively across time was highest among non-Puerto Rican Hispanics (43.6%-20.5%) followed by other ethnicity (Caucasians and Blacks) (18.4%-13.2%), and then Puerto Ricans (8.6%-1.7%), irrespective of the definition of exclusive breastfeeding used. As expected, the prevalence of exclusive breastfeeding decreased across time in all the ethnic groups irrespective of the definition used.

Table 9 presents the bivariate association between ethnicity and those variables that were associated with exclusive breastfeeding. Results from this bivariate analyses show that there was no difference in marital status between ethnic groups. Greater proportion of non-Puerto Rican Hispanics had less than high school education (43.6%) than their counterparts of Puerto Rican (37.9) and other (Caucasian and Black) (21.1%) ethnic origins \( (p=0.010) \). Non-Puerto Ricans had the support of their partners on their decision to breastfeed than their Puerto Rican counterparts \( (p=0.052) \). Results also show that respondent having been breastfed as a child and intending to breastfeed exclusively were positively associated with being non-Puerto Rican. Majority of Puerto Ricans (79.3%), and others (78.3%) had their mothers here in the US than their non-Puerto Rican Hispanic counterparts (25.6%) (Table 9).

Further examination of group assignment shows that only non-Puerto Rican Hispanics and Caucasians are more likely to breastfeed exclusively in this community as seen among participants assigned to the control group (Figure 3A), while the percent
exclusive breastfeeding was higher among non-Puerto Ricans than Puerto Ricans in the peer counseling group (Figure 3B).

**Multivariate Analyses**

For the multivariate analyses, we controlled for the infant’s age and group assignment. At hospital discharge, partner support for decision to breastfeed and participant’s exclusive breastfeeding intentions during pregnancy significantly influenced exclusive breastfeeding in the multivariate logistic regression analysis (Table 4). In this analysis, participants whose partners did not support their breastfeeding decision and were not planning to exclusively breastfeed their infant during pregnancy were 63% (OR=0.37; 95% CI: 0.15-0.91) and 65% (OR=0.35; 95% CI: 0.15-0.79) less likely to breastfeed exclusively, respectively, at hospital discharge. Marital status and ethnicity did not have a significant influence on exclusive breastfeeding. Participants who were married/cohabiting instead of single (OR=2.17; 95% CI: 0.95-4.94), and were non-Puerto Rican Hispanic (OR=2.31; 95% CI: 0.91-5.85) or were of other ethnicities (OR=1.95; 95% CI: 0.78-4.85) instead of Puerto Rican tended to be more likely to breastfeed exclusively at hospital discharge.

With regard to exclusive breastfeeding at 1 month using the “previous 24-hours” exclusive breastfeeding definition (Table 5 model 1), participants who were high school graduates (OR=4.14; 95% CI 1.00-17.18), non-Puerto Rican Hispanics (OR=4.89; 95% CI: 1.13-21.17) or of other non-Puerto Rican ethnicity (OR=4.90; 1.02-23.63) were more likely to be breastfeeding exclusively. Using the “since birth” exclusive breastfeeding definition, only those mothers of other non-Puerto Rican ethnicity (OR=6.61; 95% CI:
1.20-36.52) were significantly more likely to breastfeed exclusively at 1 month. No other variables were significant in the model (Table 5, model 2). Likewise, at 2 months postpartum, only the ethnicity variable was associated with exclusive breastfeeding behavior (Table 6). Participants who completed high school, compared with those with less than high school education, and those of other ethnic origin, compared with their Puerto Rican counterpart were significantly more likely to breastfeed exclusively at 3 months irrespective of the definition used (Table 7). Also, at 3 months using the “previous 24-hours” definition, participants who were not breastfed as a child were 94% (OR=0.06; 95% CI: 0.01-0.52) less likely to breastfeed exclusively compared to their counterparts who were breastfed as a child (Table 7, model 1).

Table 8 shows the bivariate logistic regression analysis between ethnicity and exclusive breastfeeding across time. Odds ratios (ORs) were calculated to determine the association between the different ethnic groups and exclusive breastfeeding at hospital discharge, 1, 2, and 3 months postpartum. Being of “non-Puerto Rican Hispanic” origin vs being Puerto Rican was positively associated with exclusive breastfeeding across time irrespective of the definition of exclusive breastfeeding used. Also, participants who were of “other” ethnicity (i.e. Caucasians and Blacks) were more likely to breastfeed exclusively at 2 months (OR=4.14; 95% CI: 1.00-17.17) and 3 months (OR=5.25; 95% CI: 1.00-27.56) using the “previous 24-hours” definition. There was no significant association between other ethnic origin and exclusive breastfeeding across time using the “since birth” exclusive breastfeeding definition (Table 8).
Discussion

All participants were intending to breastfeed during pregnancy, yet some did not initiate breastfeeding at discharge from the hospital after delivering their newborn. Results indicate general improvement in the breastfeeding behaviors of mothers in the study community (25, 84), with breastfeeding initiation at hospital discharge exceeding the national target under the Healthy People 2010 initiative (11) and also higher than reported for the New England region (15, 64). The rate of exclusive breastfeeding was also higher than previously reported among low-income women in this community (85) but still well behind the recommendations by the American Academy of Pediatrics and the World Health Organization (1, 2). In this study Puerto Ricans were less likely to initiate breastfeeding at hospital discharge and to breastfeed exclusively across time compared to non-Puerto Ricans, irrespective of the definition. Risk factors for not breastfeeding exclusively across time were being single, lack of partner support for breastfeeding, respondent not breastfed as a child, and infant’s maternal grandmother residing in the US.

Our results support findings from other studies that mothers who have their partners support for breastfeeding are more likely to initiate breastfeeding and exclusively breastfeed their infants (60, 63, 86, 87). In the study by Binns and co-workers (60), mothers whose partners preferred breastfeeding to formula feeding were reported to be about 7 times more likely to breastfeed at hospital discharge (OR=6.65; 95% CI: 2.81-15.74). In a similar study conducted among 506 Mandarin-speaking women living in
Perth, Western Australia (63), those whose partners preferred breastfeeding were found to be 5 times more likely to initiate breastfeeding compared to their counterparts whose partners preferred formula feeding or were ambivalent about breastfeeding (OR=4.96; 95% CI: 1.93-12.66). In another study in Canada, Rempel (86), reported a strong association between significant other’s approval for breastfeeding and initiation and duration of breastfeeding. Although, none of these studies assessed the influence of partner’s breastfeeding support on exclusive breastfeeding, they found a positive association with any breastfeeding.

As shown in previous studies concentrating on any breastfeeding (58, 84, 88, 89), this study found a positive association between exclusive breastfeeding and the prenatal decision to exclusively breastfeed, and between exclusive breastfeeding and whether the participant was breastfed as a child. Results from the study are in agreement with findings from another study which shows that mothers who prenatally planned to breastfeed exclusively were more likely to breastfeed exclusively for a longer duration (58). This study’s findings are also consistent with studies that have documented that mothers tend to make their infant feeding decisions during pregnancy and sometimes even before pregnancy (61, 88, 89). This indicates that women in this community who intend to breastfeed actually make the effort to fulfill their feeding intentions and also maintain this behavior over time. The positive association between participant having been breastfed as a child and breastfeeding exclusively could be attributed to the positive influence and breastfeeding role models that the infant’s mother had since childhood.

As in previous studies (47, 61, 64), this study found that exclusive breastfeeding was significantly less common among single mothers than among their counterparts who
were married or cohabiting. This finding held irrespective of the exclusive breastfeeding definition used (range of OR is 1.94-3.86), although the result could be attributed to the fact that married mothers may have more support from their partners, which therefore enhances their ability to breastfeed exclusively.

Interestingly, we found negative association between exclusive breastfeeding and if infant’s maternal grandmother resides in the US. This bivariate finding is unusual as a number of studies have found that the presence and support of the infant’s maternal grandmother is positively associated with initiation, exclusivity and duration of breastfeeding (59, 60). For example, in the study by Binns et al. (60), participants whose mothers supported breastfeeding were found to be 3 times more likely to breastfeed at hospital discharge (OR=3.19; 95% CI: 1.49-6.80). The inverse association between the presence of infant’s maternal grandmother in the US and exclusive breastfeeding could be attributed to its positive relationship with ethnicity (being Puerto Rican) (Table 9), or perhaps it is also a marker of a high level of acculturation.

In agreement with other studies conducted in the US and other countries (15, 58, 64, 90), we found a significant association between ethnicity and exclusive breastfeeding. In the current study our results indicate that exclusive breastfeeding was less common among Puerto Ricans compared to other ethnic groups (such as non-Puerto Rican Hispanics, Caucasians and Blacks). For example, the bivariate analyses suggest a stronger association of exclusive breastfeeding with non-Puerto Rican Hispanics, followed by other ethnicity (i.e. Caucasians and Blacks) and lastly Puerto Ricans across time, irrespective of the definition used (Table 8; Figures 2A and 2B). In the multivariate analyses which adjusted for the over-representation of Hispanics and Spanish speakers in
the peer counseling group, we found that participants who identified themselves as non-Hispanic were more likely to breastfeed exclusively across time followed by non-Puerto Rican Hispanics compared with Puerto Ricans (Tables 4-7). Conversely, a recent study by Li and colleagues in the US found a higher proportion of Hispanics to breastfeed exclusively compared with non-Hispanic Blacks and non-Hispanic Whites at 3 months (64). That study which used data from the 2002 National Immunization Survey, found race and ethnic differences in rates of exclusive breastfeeding. At 6 months, 14.6% of non-Hispanic Whites and 13.8% Hispanics were breastfeeding exclusively compared to only 5.4% of non-Hispanic Blacks (64). It is important to note that the Hispanic composition in this study is not known, but most of such national surveys tend to over sample Hispanics of Mexican origin who tend to breastfeed for longer duration than Puerto Ricans. Hence, the differences in the likelihood of breastfeeding exclusively observed in this study and that by Li et al. (64) may be due to differences in the Hispanic composition between the two studies. The rate of exclusive breastfeeding at 3 months postpartum observed in the present study is lower than the 42% reported for the New England Region by Li et al. (64). This finding could also be due to the overrepresentation of Puerto Ricans among our study participants, who have a strong preference for mix feeding (84).

Conclusions

Low-income women in the target community are far from meeting the current recommendation for exclusive breastfeeding by both the American Academy of Pediatrics and the World Health Organization even though they have a relatively high
rate of breastfeeding initiation. This could be explained by the fact that women who participated in this study were considering breastfeeding prenatally and also delivered at a hospital designated as Baby Friendly. These women received breastfeeding support from the staff nurses at the hospital and about 50% received breastfeeding support from highly trained peer counselors as part of the original study in addition to conventional breastfeeding support. It is therefore important for future studies to use the stages of change model to examine the impact of breastfeeding peer counseling on prenatal feeding intentions and the process through which these intentions get translated into actual behaviors.

The results of this study support those of previous studies that suggest Hispanics and especially Puerto Ricans are more likely to mix feed or formula feed than breastfeed exclusively compared to Caucasians (25, 50, 64, 84). This therefore calls for culturally appropriate programs to promote exclusive breastfeeding among Hispanics and Puerto Ricans in particular to help achieve the recommendation for exclusive breastfeeding and the objective of the *Healthy People 2010* for breastfeeding in the United States. This way infants born to Hispanic mothers will enjoy the tremendous benefits that come with being fed human breast milk especially when done exclusively. Because of the wide disparities in breastfeeding practice and health outcomes between ethnic groups and across regions in the US, there is the need for extensive promotional efforts to improve rates of breastfeeding, especially exclusive breastfeeding, among mothers who are less likely to breastfeed.

A puzzling bivariate finding in the current study was the inverse association between exclusive breastfeeding and infant’s maternal grandmother residing in the US.
This finding is of public health interest as several studies have shown positive association between the presence and support of maternal grandmother with health and well-being. Further study is needed to explore this finding and its implication for infant feeding and exclusive breastfeeding promotion in the US. This way we will be able to design the appropriate intervention aimed at changing the norms of infant feeding and increasing community support that could significantly increase the practice of exclusive breastfeeding, and prolong the duration of breastfeeding, especially among Hispanics in general and Puerto Ricans in particular.

Among the limitations that need to be considered in interpreting the findings is the fact that all participants came from a specific community. Thus, results may not be generalizeable to other communities in the US. Also, our study population was overrepresented by Hispanics and Puerto Ricans in particular. Future studies in other communities which are more representative of the ethnic distribution of the US are needed. The ethnic main effect results presented in this thesis should be interpreted with caution as Blacks/African Americans and Puerto Ricans had similar exclusive breastfeeding rates in the control but not in the peer counseling group (Figures 3A and 3B). This will be further explored in subsequent analyses.

In summary, non-Puerto Ricans were found to be more likely to breastfeed exclusively compared to their Puerto Rican counterparts. These findings have important public health implications for exclusive breastfeeding promotion programs targeting minority groups in the United States. Respondents breastfed as a child were more likely (than those not breastfed as a child) to breastfeed exclusively at 3 months postpartum. Non-Puerto Rican respondents were more likely to breastfeed exclusively compared with
their Puerto Rican counterparts. It is important to understand why different ethnic groups choose to breastfeed exclusively for different lengths of time. There is therefore a need for studies to assess how different ethnic groups respond to exclusive breastfeeding peer counseling interventions especially Puerto Ricans and Blacks or African Americans.
182 pregnant women recruited prenatally

20 lost to initial follow-up at delivery
  - 14 missed at delivery
  - 6 low birth weights

162 mother-infant pairs eligible after delivery

27 mother-infant pairs lost to follow-up

135 mother-infant pairs completed the 3 months follow-up

Figure 1: Flow-chart of Participants in the Study
Table 1: Baseline Socio-demographic Characteristics of Study Participants (N=135)

<table>
<thead>
<tr>
<th>Variables</th>
<th>n</th>
<th>%</th>
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<tr>
<td>Respondent’s Age (years)</td>
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<tr>
<td>&lt; 20</td>
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<tr>
<td>20 – 30</td>
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<tr>
<td>&gt; 30</td>
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<td>24.4</td>
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<td>71.9</td>
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<td>Caucasian</td>
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<td>10.4</td>
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<td>Non-Puerto Ricans</td>
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<td>Spanish only</td>
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<td>82.2</td>
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<td>Drink alcohol</td>
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<td>8.1</td>
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<tr>
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<td>124</td>
<td>91.9</td>
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Table 2: Biomedical Characteristics of Study Participants (N=135)

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<td>Type of Delivery</td>
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<td>Vaginal delivery</td>
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<td>Cesarean section</td>
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<td>22.2</td>
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<td>Use of Analgesic</td>
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<td>116</td>
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<td>Gestational age antenatal care was initiated (wks)</td>
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<td></td>
<td>Gestational age at delivery (wks)</td>
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<tr>
<td></td>
<td>Maternal pre-pregnancy weight (kg)</td>
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<tr>
<td></td>
<td>Maternal weight gain during pregnancy (kg)</td>
</tr>
<tr>
<td></td>
<td>Infant birth weight (kg)</td>
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<tr>
<td></td>
<td>Infant birth length (cm)</td>
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<tr>
<td>Variables</td>
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<td>Respondent breastfed as a child</td>
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<td>Breastfed previous child</td>
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<td>Partner supports breastfeeding</td>
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<td>Received prenatal breastfeeding advice</td>
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<td>Intention to exclusively breastfeed after delivery</td>
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<td>Breastfeeding initiation at hospital discharge</td>
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<td>Index child received pre-lacteal feed</td>
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Table 4: Factors Associated with Exclusive Breastfeeding at Hospital Discharge (N=135)

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<th>N = 135</th>
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<th>n</th>
<th>OR</th>
<th>95% CI</th>
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<td></td>
<td>Yes (%)</td>
<td>No (%)</td>
<td></td>
<td></td>
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<tr>
<td>Partner Support Decision to BF</td>
<td>59 (59.0)</td>
<td>41 (41.0)</td>
<td>100</td>
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<tr>
<td>Yes</td>
<td>10 (28.6)</td>
<td>25 (71.4)</td>
<td>35</td>
<td>0.37</td>
<td>0.15-0.91</td>
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<td>55 (59.8)</td>
<td>37 (40.2)</td>
<td>92</td>
<td>1.00</td>
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<tr>
<td>EBF Intentions</td>
<td>14 (32.6)</td>
<td>29 (67.4)</td>
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<td>0.35</td>
<td>0.15-0.79</td>
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<td>Marital Status</td>
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<td>15 (34.1)</td>
<td>44</td>
<td>2.17</td>
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<td>Ethnicity</td>
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<td>36 (62.1)</td>
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<td>Puerto Rican</td>
<td>26 (66.7)</td>
<td>13 (33.3)</td>
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<tr>
<td>Non-Puerto Rican Hispanic</td>
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<td>Other*</td>
<td>21 (55.3)</td>
<td>17 (44.7)</td>
<td>38</td>
<td>1.95</td>
<td>0.78-4.85</td>
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<td>Study Group</td>
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<td>1.61</td>
<td>0.74-3.50</td>
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*Adjusted for group assignment
OR: Odds ratio; CI: Confidence interval; BF: Breastfeeding; EBF: Exclusive breastfeeding
*Caucasian and Black
<table>
<thead>
<tr>
<th></th>
<th>Model 1 (24-hours definition)</th>
<th>Model 2 (since birth definition)</th>
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<tr>
<td></td>
<td>Yes (%)</td>
<td>No (%)</td>
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<td>&gt; High School</td>
<td>4 (9.3)</td>
<td>39 (90.7)</td>
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<td>High School Graduate</td>
<td>14 (31.1)</td>
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<tr>
<td>&lt; High School</td>
<td>10 (21.3)</td>
<td>37 (78.7)</td>
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<td><strong>Respondent Breastfed as a Child</strong></td>
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<td></td>
</tr>
<tr>
<td>Yes</td>
<td>21 (29.2)</td>
<td>51 (70.8)</td>
</tr>
<tr>
<td>No</td>
<td>7 (11.1)</td>
<td>56 (88.9)</td>
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<td><strong>Respondent’s Mother in US</strong></td>
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<td>Yes</td>
<td>11 (12.9)</td>
<td>74 (87.1)</td>
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<td>No</td>
<td>17 (34.0)</td>
<td>33 (66.0)</td>
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<td><strong>Ethnicity</strong></td>
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*Adjusted for group assignment and infant’s age.
OR: Odds ratio; CI: Confidence interval
*Caucasian and Black
Model 1: Hosmer-Lemeshow $\chi^2=4.342$, $p=0.825$
Model 2: Hosmer-Lemeshow $\chi^2=5.309$, $p=0.724$
Table 6: Factors Associated with Exclusive Breastfeeding at 2 Months Postpartum (N=135)

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*Adjusted for group assignment and infant’s age. OR: Odds ratio; CI: Confidence interval; BF: Breastfeeding
*Caucasian and Black; Model1: Hosmer-Lemeshow $X^2=5.404$, $p=0.611$; Model2: Hosmer-Lemeshow $X^2=8.003$, $p=0.433$
### Table 7: Factors Associated with Exclusive Breastfeeding at 3 Months Postpartum (N=135)

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* Adjusted for group assignment and infant’s age. OR: Odds ratio; CI: Confidence interval; BF: Breastfeeding

\*Caucasian and Black

Model 1: Hosmer-Lemeshow \(X^2 = 4.281, p = 0.831\); Model 2: Hosmer-Lemeshow \(X^2 = 0.755, p = 0.999\)
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<td>1.00</td>
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<td>1.00</td>
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| Non-Puerto Rican Hispanic    | 39          | 3.27                        | 8.19     | 6.75                        | 7.20      | 9.66                        | 11.00     | 14.71
|                              |             | 1.40-7.67                   | 2.69-24.96 | 2.00-22.74                 | 1.86-27.93 | 1.98-47.02                 | 2.28-53.06 | 1.76-123.09 |
| Other*                       | 38          | 2.02                        | 1.99     | 2.53                        | 4.14      | 4.24                        | 5.25      | 8.64
|                              |             | 0.88-4.64                   | 0.56-7.04 | 0.66-9.65                  | 1.00-17.17 | 0.78-23.11                  | 1.00-27.56 | 0.97-77.12 |

*OR: Odds ratio; CI: Confidence interval  
*Caucasian and Black
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*Caucasian and Black

BF: Breastfeeding
Figure 2A: Percent Exclusive Breastfeeding “Previous 24-hours” by Ethnicity
*EBF*: Exclusive breastfeeding

Figure 2B: Percent Exclusive Breastfeeding “Since Birth” by Ethnicity
*EBF*: Exclusive breastfeeding
Figure 3A. Exclusive Breastfeeding at 2 Months within Peer Counseling Group by Ethnicity

*Based on 24-hour recall exclusive breastfeeding definition.*

*Caucasians not presented because n=3.*

Figure 3B. Exclusive Breastfeeding at 2 Months within Control Group by Ethnicity

*Based on 24-hour recall exclusive breastfeeding definition.*
REFERENCES

27. Gilman MW et al. Risk of overweight among adolescents who were breastfed as infants. JAMA 2001;285:2461-2467.


42. Power J. The baby killers are still at large. Sun 1994;12:21A.


Appendix 1
EXCLUSIVE BREASTFEEDING PEER COUNSELING INTERVENTION
STUDY AT HARTFORD HOSPITAL
SCREENING FORM

Name ____________________________ Today’s date __________
Team: Rose Blue Green Time recruited __________
Recruiter: ________________________

Eligibility Criteria
1. What is your due date (at least 2 months from today) __________
2. How old are you? (at least 18 years) __________
3. Are you interested in breastfeeding? YES/NOT SURE NO
4. Are you enrolled in the BF Peer counselor program? NO YES
5. Can we contact you by phone? YES NO
6. Are you participating in the WIC program? YES NO
7. Are you receiving Food Stamps? YES NO
8. Do you plan to work within the first 3 months after delivery? NO YES

If not a WIC participant and not receiving Food Stamps, please ask for:

Total Monthly Household income:
1. Less than $1,366
2. $1,367 - $1,841
3. $1,842 - $2,316
4. $2,317 - $2,791
5. $2,792 - $3,266
6. $3,267 - $3,741
7. $3,742 - $4,215
8. $4,216 - $4,690
9. Total number of people in your household? __________

ELIGIBLE: YES NO
RECRUITED: YES NO
If recruited, go to number 9 and complete questionnaire
If not eligible or not recruited, please go to number 13.

9. Where do you live? ____________________________

10. Is this your permanent residence? YES NO

11. If not your permanent residence, how long after delivery are you planning on
staying at this place? < 3 months At least 3 months > 3 months

12. Phone # ____________________ Alternate phone
#: ____________________________
Best time to call you: ____________________________
Permanent home address ____________________________
Alternate address ____________________________

We would appreciate it if you could answer a few other questions for us....

13. Ethnicity
   ____ Hispanic: From (circle one) Puerto Rico, Mexico, Peru, Cuba, Columbia
   ____ Black: From (circle one) African-American, Africa, Carribean, Haiti,
   Guyana
   ____ Caucasian
   ____ Asian
   ____ Other, specify: ____________________________

14. Are you: MARRIED  SINGLE  DIVORCED  OTHER ________________
15. Are you working:  FULL-TIME  PART-TIME  NOT WORKING
16. How many children have you given birth to? ________________
17. If you have other children, did you breastfeed any of these children?  YES  NO
18. If yes, for how long did you breastfeed the previous child ______________________
19. If multiparous, did you have a BF peer counselor for any of your infants?  YES  NO
20. Do you plan to exclusively breastfeed (give breastmilk as the only food or fluid to
   the infant) the baby you are carrying?  YES  NO
21. If yes, how long do you intend to exclusively breastfeed the baby? ________________
22. If no, please, give reasons for not wanting to exclusively breastfeed the baby.

23. For how long do you plan to breastfeed this baby? ______________________
24. Have you been provided with any advice on breastfeeding during this pregnancy?
   YES  NO
25. If yes, by whom?  My doctor,  Nurse,  Mother,  Husband/Partner,
   Friend,  Health worker,  Relative,
   Other (please, specify) ____________________________
26. Were you breastfed as a child?  YES  NO
27. How many years of school have you completed?  (highschool=12) ________________
28. As at the time you realized you were pregnant, was it a surprise?  YES  NO
29. Was this a planned pregnancy?  YES  NO
30. At the time you became pregnant, did you want to become pregnant then, later, or
   did you not want to become pregnant at all?  Then  Later  Not at all
31. Are you taking any mineral or vitamin supplements for this pregnancy?  YES  NO
32. If yes, please list a) vitamins ____________________________
   b) minerals ____________________________

Interviewer: please check patient’s folder for the following information;

33. Gestational age at time of recruiting ________________ weeks
Appendix 2
EXCLUSIVE BREASTFEEDING PEER COUNSELING INTERVENTION
STUDY AT HARTFORD HOSPITAL
DAY 1 POSTPARTUM INTERVIEW

Name
Date of birth
Interviewer
Date

1. In what language do you prefer to be spoken to?

2. What is your baby’s name?

3. How are you feeding your baby?
   A. Exclusive breastfeeding (breastmilk as the only food or fluid so far given to the child)
   B. Breast and formula feeding
   C. Formula feeding (if formula feeding, skip to question 12)

4. How soon after delivery was your infant put to the breast?

5. Did your infant receive anything to eat/drink before s/he was first put to the breast? YES NO

6. If yes to question 5, what was given to the infant?

7. Why was the infant given the above-mentioned drink before breastmilk?

8. Why have you not put the baby to the breast?

9. For how long would you like to exclusively breastfeed (feed breastmilk as the only feed or fluid) your baby?

10. When do you wish to stop breastfeeding your baby?

11. How does your partner/baby’s father feel about your decision to breastfeed?
   A. Strongly agrees
   B. Agrees
   C. Neither agrees nor disagrees
   D. Disagrees
   E. Strongly disagrees
   F. Partner not involved

12. Have you received help with breastfeeding in the hospital? YES NO
    If yes, who has helped you with breastfeeding while you were at Hartford Hospital?
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<th>Answer Options</th>
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</tr>
<tr>
<td>Peer counselor</td>
<td>Yes/No</td>
</tr>
<tr>
<td>Lactation consultant</td>
<td>Yes/No</td>
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<tr>
<td>Your baby’s doctor</td>
<td>Yes/No</td>
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<tr>
<td>Your OB/GYN</td>
<td>Yes/No</td>
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<td>Family member (specify______________________)</td>
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<td>Friend</td>
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<tr>
<td>Other</td>
<td>Yes/No</td>
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</tbody>
</table>

13. Has your baby had anything besides breastmilk to drink? YES NO

If yes, what ____________________________ How many ounces? ________________

14. Has your milk come in yet? YES NO

15. If yes, how did you know that it came in? ____________________________

16. When did your milk come in? ____________________________

17. As at the time you realized you were pregnant, was it a surprise? YES NO

18. Was this a planned pregnancy?
   A. Yes (if yes, skip to question # 19)
   B. No

19. At the time you became pregnant, did you want to become pregnant then, later, or did you not want to become pregnant at all? Then Later Not at all

20. Did you go to a prenatal breastfeeding class? ________________

21. How much time in total did health care workers at the Hartford Hospital clinic spend talking to you about breastfeeding during your pregnancy? ________________

22. What did they give/teach you about breastfeeding:
   - Brochures
     Yes No
   - Information on positions for breastfeeding
     Yes No
   - Pumping information
     Yes No
23. Did you meet with a breastfeeding peer counselor during your pregnancy? YES No
   If yes, who? ________________________
   If yes, how much time in total did the peer counselor spend with you during your pregnancy? _____________

24. What did she give/teach you about breastfeeding?
   Brochures
   Yes  NO
   Information on positions for breastfeeding
   Yes  NO
   Pumping information
   Yes  No
   Watched a breastfeeding video
   Yes  NO
   Discussed common myths about BF
   Yes  No
   Discussed differences between EBF & BF YES NO

25. Did you have a breastfeeding peer counselor assisting you on any of your previous pregnancies or deliveries? YES NO

26. Did you breastfeed (previous child)? YES NO

27. If yes, how long did you breastfeed (previous child)? ________________________

Check Q30; 31; 32 from the medical chart

29. How tall are you? ________ feet ________ inches

30. How much did you weigh before you became pregnant? ___________ pounds

31. How much weight did you gain during your pregnancy? ___________ pounds

32. How long have you lived in the Hartford area? ________________________

33. How long have you lived in the United States? ________________________

34. Where were you born? ________________________

35. What language do you speak at home? ________________________
36. Do you consider yourself the head of the household, i.e. the person who provides economically for your family?  YES  NO  Refused (if yes, skip question # 33)

37. Who is the head of the household? ___________________________________________

38. What is the current employment status of the household head?
   Employed full time  Job: __________________________
   Employed part time  Job: __________________________
   Full time homemaker
   Student (not working)
   Unemployed
   Other (please specify): __________________________________________

39. Do you do anything to make additional income in your home (e.g. sewing, babysitting etc)?  YES (please specify activity): __________________________
   NO

40. Does your mother live in the continental U.S.?  YES  NO

41. Do you lend or borrow money from any friends or relatives?  YES (specify relationship): __________________________
   NO  Refused

42. Do you lend or borrow goods (e.g. food, household items, clothes) from any friends or relatives?  YES (specify relationship): __________________________
   NO  Refused

43. Do you exchange services (e.g. errands, babysitting, cooking) with any friends or relatives?  YES (specify relationship): __________________________
   NO  Refused

44. Your current address __________________________________________

45. What is your current phone number? __________________________________________

46. Do you expect to be at this same address and phone number in 1 month? ______

   If no, what will be your new address? __________________________________________

   If no, what will be your new phone number? __________________________________________
<table>
<thead>
<tr>
<th>Name</th>
<th>Name</th>
<th>Address</th>
<th>Address</th>
<th>Phone number</th>
<th>Phone number</th>
<th>Relationship to you</th>
<th>Relationship to you</th>
</tr>
</thead>
</table>

47. Could you please give us the names and numbers of 2 persons who will always be able to reach you in case you move?
## Appendix 3
### EXCLUSIVE BREASTFEEDING PEER COUNSELING INTERVENTION
#### STUDY AT HARTFORD HOSPITAL
##### MEDICAL RECORD REVIEW

<table>
<thead>
<tr>
<th>Name</th>
<th>Date</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Mom’s birth date</th>
<th>Room number</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Mom’s spouse/partner’s name</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Interviewer</th>
<th>Medical Record Number</th>
</tr>
</thead>
</table>

1. **G P**

2. Gestational age of patient when antenatal care was initiated __________ weeks

3. Gestational age at delivery __________________________________________________________________________________ weeks

4. Does mother smoke? **YES** **NO**

5. Does mother drink alcohol? **YES** **NO**

6. Delivery type:
   a. Vaginal delivery
   b. Scheduled Cesarean delivery
   c. Unscheduled Cesarean delivery for
      a. Failure to progress
      b. Failure to descend
      c. Breach position
      d. Macrosomia
      e. CPD
      f. Cord wrapped around

7. Analgesia
   a. None
   b. Local __________________________________________________________________________________
   c. Epidural ________________________________________________________________________________
   d. Spinal __________________________________________________________________________________
   e. General ________________________________________________________________________________
3. LABOR SUMMARY | DATE | TIME
---|---|---
Admission | |
Membranes ruptured | |
Onset of labor | |
Full dilation | |
Delivered infant | |
Delivered placenta | |
Duration of stage I labor | |
Duration of stage II labor | |
Duration of stage III labor | |

8. Were forceps used? ________________

9. Was vacuum extraction used? ________________

10. Was Pitocin used to induce labor? YES NO

11. Medical history: ____________________________________________

12. **Maternal pre-pregnancy weight** ________ pounds

13. **Maternal weight at delivery** ________________ pounds

14. Maternal weight gain during pregnancy ________________ pounds

Infant summary

1. Infant sex
   a. Male
   b. Female

2. Infant birth weight: ______ pounds, ______ ounces

3. Birth length __________ cm

4. Gestational age: ________ weeks

5. Apgar scores:
   A. 1 minute __________
   B. 5 minute __________
Appendix 4
EXCLUSIVE BREASTFEEDING PEER COUNSELOR INTERVENTION STUDY AT HARTFORD HOSPITAL WEEKLY FOLLOW-UP INTERVIEW

Name __________________________ Date __________ Phone number __________

Baby’s name ____________________ boy girl Interviewer __________

Weeks postpartum: 1 2 3 4

Infant feeding questions
1. Over the past week, how did you feed your baby?
   A. Breastfeeding only (exclusive breastfeeding)
   B. Both breast and formula feeding
   C. Formula feeding only (skip to question #15)

2. On average over the past week, how many times per day did you breastfeed? ____

3. On average over the past week, how long does a breastfeeding session last? ____

4. Are you using a breast pump? Yes No
   If no, skip to question #10

5. Did you purchase the pump? Yes No
   If yes, what was the cost to purchase the pump? ________

6. Are you renting the pump? Yes No
   If yes, How much is the cost of the pump rental per month? ________

7. On average, over the past week how many times per day did you pump your breasts? ___

8. On average, over the past week how long does a pumping session last? ____

9. On average over the past week, how many times per day did your baby get a bottle of expressed breastmilk? ___________ times per day

10. Has your baby received any foods other than breastmilk (for example, formula, sugar water, teas or other foods) over the past week? Yes No
    If yes, for how long did your baby receive only breastmilk, and no other formula, foods, or sugar water? ________
11. Have you had any of the following breastfeeding problems over the past week?

<table>
<thead>
<tr>
<th>PROBLEM</th>
<th>YES/NO</th>
<th>RECEIVED HELP?</th>
<th>RECEIVED HELP FROM:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cracked/bleeding nipples</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not enough milk</td>
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<td></td>
</tr>
<tr>
<td>Mastitis</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Baby not latching well</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pain while breastfeeding</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Others, specify:</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

12. Over the past week, have you received breastfeeding education/advice from?

<table>
<thead>
<tr>
<th>Source</th>
<th>YES/NO</th>
<th>If yes, please give the name of the person or people from that source who helped you:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hartford Hospital warm line</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>WIC</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Community BF resources</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>La Leche League</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Breastfeeding peer counselor</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Lactation consultant</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Pediatrician/pediatric clinic</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Obstetrician/WAHS clinic</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Family members</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Friends</td>
<td>Yes</td>
<td></td>
</tr>
</tbody>
</table>

13. Are you still breastfeeding your baby? Yes No
   If no, how old was your baby when you stopped breastfeeding? ________
   If no, Why did you stop breastfeeding? __________________________________________

14. For how long would you like to breastfeed your baby? _______________________

(IF MOM IS NOT GIVING ANY FORMULA, GO TO QUESTION # 23)

15. On average, over the past week, how many times per day did your baby get a bottle of expressed breastmilk mixed with formula? _______ times per day

16. What brand of formula does your baby drink?
   A. Enfamil  D. Similac with iron
   B. Enfamil with Iron  E. Isomil
   C. Similac  F. Prosobee
17. Is the formula that you use?
   A. Liquid concentrate:
   B. Powder
   C. Ready to feed

18. On average, over the past week, how much time do you spend per day preparing formula and washing bottles? _____ hours _____ minutes

19. On average over the past week how many times per day did your baby receive a bottle of formula? _____

20. On average, how long does it take your baby to drink this bottle? _____

21. On average, how many ounces of formula does your baby drink at a feeding? __oz.

22. On average, over the past week, how many bottles do you personally give to your baby per day (ie. This does not include bottles that dad or other caregivers provide) __

23. **ASK THIS QUESTION ONLY FOR THE 1st WEEK PP INTERVIEW:**

   **Your baby was born on___________ (day) ___________ (date) at ____________ (time). Please tell me the date and time that your milk “came in”.
   **
   Date ____________
   Time ____________

   If she cannot remember the exact time, please ask her to specify:
   Did your milk “come in” in the ___morning ___afternoon ___evening

24. Over the past 7 days, has your baby received anything besides breastmilk or formula, such as cow’s milk, juice, cereal, baby food, water or teas? _______ (If no, skip to # 27)

25. How old was your baby when you first introduced something other than breastmilk or formula? ____________

26. Over the past 7 days, has your baby received:

<table>
<thead>
<tr>
<th>ITEM</th>
<th>RECEIVED?</th>
<th>Age of introduction</th>
<th>If yes, on average how many times per day:</th>
<th>If yes, what was the usual portion size?</th>
</tr>
</thead>
<tbody>
<tr>
<td>cow’s milk</td>
<td>YES</td>
<td>NO</td>
<td></td>
<td></td>
</tr>
<tr>
<td>baby cereal</td>
<td>YES</td>
<td>NO</td>
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<td>baby food</td>
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<tr>
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<tr>
<td>juice</td>
<td>YES</td>
<td>NO</td>
<td></td>
<td></td>
</tr>
<tr>
<td>teas</td>
<td>YES</td>
<td>NO</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other: specif</td>
<td></td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>
27. If your baby has received water for the past week, please indicate the type/brand of water.

28. For the past 24 hours did your baby receive any other food besides breastmilk? YES  NO
If yes, what was giving?

Infant health issues

29. Since (date of last interview one week ago), have you taken your baby to the doctor or clinic? _______________ (if no, skip to question # 31)

30. What was your baby’s weight at your last office visit? _____ pounds ___ ounces
What was the date when that weight was obtained? ______________________

31. For each visit your baby has had over the past week, please list the date and type of visit:

<table>
<thead>
<tr>
<th>DATE</th>
<th>Type of Office Visit (check one)</th>
<th>Cost (if any)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Well baby check up</td>
<td>Weight check</td>
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</tbody>
</table>

32. Since (date of last interview one week ago), how many days has your baby been sick? ____________ (if baby has not been sick, skip to #36)

33. Since (date of last interview one week ago), how many days of work have you or your partner missed because your baby was sick? ______________________

34. How many hours have you been up at night because your baby was sick? ______

35. How much time did you spend getting to your doctors office because your baby was sick? ______________________

36. How much time did you spend waiting in your doctors office with your sick baby before you saw your doctor? ____________
37. How much time did you and your sick baby actually spend with your doctor or nurse on this office visit? ______________________

38. Over the past week, has your baby had an ear infection? _____ (If no, skip to #39)

39. On a scale of 1 to 10, with 10 being the best, how would you rate a usual day with your baby? ______________________

40. On a scale of 1 to 10, with 10 being the best, how would you rate a day in which your baby has an ear infection? ______________________

41. When your baby has a bowel movement/poops/ or “uses the bathroom” what is the usual consistency of your baby’s poops?
   A. Very watery
   B. Mushy or semi-solid
   C. Hard

42. Over the past week, has your baby had diarrhea, which we define as 3 or more watery or somewhat watery bowel movements/stools/poops in a 24-hour period?

   If yes, how many days of diarrhea has your baby had in the past week? ________

43. Since (date of last interview one week ago), have you had to get any prescription medication for your baby? Yes  No

   If yes, what medications did your baby receive and how much did that cost you?

<table>
<thead>
<tr>
<th>Medication</th>
<th>Cost</th>
<th>Copay or out of pocket</th>
</tr>
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<tbody>
<tr>
<td></td>
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<td>CP  OOP</td>
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<td>CP  OOP</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CP  OOP</td>
</tr>
</tbody>
</table>

44. Since (date of last interview one week ago), have you had to take your baby to the emergency room? __________ (If no, skip to question # 45)

45. Since (date of last interview one week ago), how many times have you had to take your baby to the emergency room? _______________
   Why? ____________________________________________________________
   What did that cost you? __________________________________________

46. Since (date of last interview one week ago,) has your baby been admitted to the hospital? Yes  No
   If yes, Date______________
If yes,  
Reason  
What did that cost you?  

47. Do you have a breastfeeding peer counselor? Yes No  **(If no, skip to #64)**  

48. What is your peer counselor’s name?  

49.  **Only ask this question on the first (1 week pp) interview:**  
A. How many times were you seen by a peer counselor in the hospital?  
B. How much time in total did the peer counselor spend with you while you were in Hartford Hospital? hours minutes  

50. Did any nurse or lactation consultant come into your room to help with breastfeeding while in the hospital after delivery? Yes No  
A. If yes, how many times?  
B. How many minutes in total would you say the nurse or Lactation Consultant spent with you while in the hospital? minutes.  

51. How many times has your peer counselor called you on the telephone/visited you at home in the past week?  

52. How many times have you met with her in person over the past week?  

53. On a scale of 1 to 5 with 1 being very unsatisfied and 5 being very satisfied, how satisfied are you with your peer counselor?  

54. Have you talked about this study with anybody else who you know is participating in this study? YES NO  
If yes, who did you talk with?  

55. Do you expect to be at this same phone number next week? Yes No  
If no, at what phone number can we reach you?  

56. What is your current address?  

57. Confirm: In case we do not reach you, can you give me the name and number of someone who will always know how to reach you?  
Name  
Phone number  
Relationship to you  

THANK YOU VERY MUCH FOR YOUR TIME!  
I will be calling again next week to ask you some similar questions. I look forward to talking with you then.
Appendix 5
EXCLUSIVE BREASTFEEDING PEER COUNSELOR INTERVENTION
STUDY AT HARTFORD HOSPITAL
BIWEEKLY FOLLOW-UP INTERVIEW

Name __________________________ Date ________ Phone ______

Baby’s name_____________ boy __ girl ___ Interviewer _____________

Weeks postpartum: 6 8 10 12

Infant feeding questions
1. Over the past week, how did you feed your baby?
   A. Breastfeeding only (exclusive breastfeeding)
   B. Both breast and formula feeding
   C. Formula feeding only (skip to question #15)

2. On average over the past week, how many times per day did you breastfeed? ___

3. On average over the past week, how long does a breastfeeding session last? ___

4. Are you using a breast pump? Yes No
   If no, skip to question # 10

5. Did you purchase the pump? Yes No
   If yes, what was the cost to purchase the pump? ______

6. Are you renting the pump? Yes No
   If yes, How much is the cost of the pump rental per month? ______

7. On average, over the past week how many times per day did you pump your breasts? ___

8. On average, over the past week how long does a pumping session last? ______

9. On average over the past week, how many times per day did your baby get a bottle of expressed breastmilk? ____________ times per day

10. Has your baby received any foods other than breastmilk (for example, formula, sugar water, teas or other foods) over the past week? Yes No
    If yes, for how long did your baby receive only breastmilk, and no other formula, foods, or sugar water? ____________
11. Have you had any of the following breastfeeding problems over the past week?

<table>
<thead>
<tr>
<th>PROBLEM</th>
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<th>RECEIVED HELP?</th>
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<td></td>
<td></td>
</tr>
<tr>
<td>Others, specify:</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

12. Over the past week, have you received breastfeeding education/advice from?

<table>
<thead>
<tr>
<th>Source</th>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
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<tr>
<td>Hartford Hospital warm line</td>
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<td>Yes</td>
<td>NO</td>
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<td>Community BF resources</td>
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<td>NO</td>
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<td>La Leche League</td>
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<td>NO</td>
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<td>NO</td>
</tr>
<tr>
<td>Family members</td>
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<td>NO</td>
</tr>
<tr>
<td>Friends</td>
<td>Yes</td>
<td>NO</td>
</tr>
</tbody>
</table>

If yes, please give the name of the person or people from that source who helped you:

13. Are you still breastfeeding your baby?  
   Yes  No

   If no, how old was your baby when you stopped breastfeeding? 

   If no, Why did you stop breastfeeding? 

   (IF MOM IS NOT GIVING ANY FORMULA, GO TO QUESTION # 23)

14. On average, over the past week, how many times per day did your baby get a bottle of expressed breastmilk mixed with formula? 

   times per day

15. What brand of formula does your baby drink?
   A. Enfamil
   B. Enfamil with Iron
   C. Similac
   D. Similac with Iron
   E. Isomil
   F. Prosobee
   G. Other
16. Is the formula that you use?
   A. Liquid concentrate:
   B. Powder
   C. Ready to feed

17. On average, over the past week, how much time do you spend per day preparing formula and washing bottles? _____ hours _____ minutes

18. On average over the past week how many times per day did your baby receive a bottle of formula? _____

19. On average, how long does it take your baby to drink this bottle? _____

20. On average, how many ounces of formula does your baby drink at a feeding? _ oz.

21. On average, over the past week, how many bottles do you personally give to your baby per day (ie. This does not include bottles that dad or other caregivers provide)_____.

22. Over the past 7 days, has your baby received anything besides breastmilk or formula, such as cow’s milk, juice, cereal, baby food, water or teas? ______

23. How old was your baby when you first introduced something other than breastmilk or formula? ___________

24. Over the past 7 days, has your baby received:

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<th>ITEM</th>
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<th>Age of introduction</th>
<th>If yes, on average how many times per day:</th>
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<td>baby cereal</td>
<td>YES</td>
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</tr>
<tr>
<td>baby food</td>
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<td>NO</td>
<td></td>
<td></td>
</tr>
<tr>
<td>water</td>
<td>YES</td>
<td>NO</td>
<td></td>
<td></td>
</tr>
<tr>
<td>juice</td>
<td>YES</td>
<td>NO</td>
<td></td>
<td></td>
</tr>
<tr>
<td>teas</td>
<td>YES</td>
<td>NO</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other: specify</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

25. If your baby has received water for the past week, please indicate the type/brand of water. ____________________________________________

26. For the past 24 hours did your baby receive any other food besides breastmilk? YES NO
   If yes, what was giving? ____________________________________________
Infant health issues

27. Since (date of last interview one week ago), have you taken your baby to the doctor or clinic? ____________ (if no, skip to question # 29)

28. What was your baby’s weight at your last office visit? _______ pounds _____ ounces
   What was the date when that weight was obtained? ______________________

29. For each visit your baby has had over the past week, please list the date and type of visit:

<table>
<thead>
<tr>
<th>DATE</th>
<th>Type of Office Visit (check one)</th>
<th>Cost (if any)</th>
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</tr>
</tbody>
</table>

30. Since (date of last interview one week ago), how many days has your baby been sick? ____________ (if baby has not been sick, skip to #34)

31. Since (date of last interview one week ago), how many days of work have you or your partner missed because your baby was sick? __________________

32. How many hours have you been up at night because your baby was sick? _____

33. How much time did you spend getting to your doctor’s office because your baby was sick? __________________

34. How much time did you spend waiting in your doctor’s office with your sick baby before you saw your doctor? ______________

35. How much time did you and your sick baby actually spend with your doctor or nurse on this office visit? ______________

36. Over the past week, has your baby had an ear infection? Yes No

37. On a scale of 1 to 10, with 10 being the best, how would you rate a usual day with your baby? ______________
38. On a scale of 1 to 10, with 10 being the best, how would you rate a day in which your baby has an ear infection? ______________

39. When your baby has a bowel movement/poops/ or “uses the bathroom” what is the usual consistency of your baby’s poops?
   A. Very watery
   B. Mushy or semi-solid
   C. Hard

40. Over the past week, has your baby had diarrhea, which we define as 3 or more **watery** or somewhat watery bowel movements/stools/poops in a 24-hour period?

   If yes, how many days of diarrhea has your baby had in the past week? ________

41. Since (date of last interview one week ago), have you had to get any prescription medication for your baby?  Yes  No

   **If yes, what medications did your baby receive and how much did that cost you?**

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<tr>
<th>Medication</th>
<th>Cost</th>
<th>Copay or out of pocket</th>
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</table>

42. Since (date of last interview one week ago), have you had to take your baby to the emergency room?  Yes  No

43. Since (date of last interview one week ago), how many times have you had to take your baby to the emergency room? ______________

   Why? ______________________________________________

   What did that cost you? ____________________________

44. Since (date of last interview one week ago,) has your baby been admitted to the hospital?  Yes  No

   If yes, Date_________________

   If yes,

   Reason ___________________________________________

   What did that cost you? ____________________________

**Lifestyle/demographic data**

45. How many people are living in your household including yourself and the baby?

46. Are you currently employed?  Yes  No  (if no, skip to # 49)
If yes, where do you work?
If yes, how many hours per week do you work
If yes, what is your work phone number?

47. How is your baby cared for while you work?
   1. Daycare
   2. Cared for in your home
   3. Cared for in someone else’s home

48. How many other infants or children are in the setting where your child is cared for while you work?

49. Do you smoke?  Yes  No
    If yes, on the average how many packs per week?

50. Does anybody else in your household smoke?  Yes  No

51. Do you drink?  Yes  No
    If yes, on the average how many drinks per day?

52. Are you receiving Food Stamps currently?  Yes  No

53. Are you participating in the WIC program currently?  Yes  No
    If yes, what do you receive from WIC?
       Food vouchers
       Formula (specify brand)

54. Does the WIC formula last you the whole month?

55. How long does the WIC formula last you?

56. How much did you spend on formula last month?

Maternal issues
57. Has your menstrual cycle resumed since you delivered your baby?  Yes  No
   If yes, how long after delivery did your menses resume weeks?

58. Are you using any method of birth control?  Yes  No
    If yes, specify:
    A. The pill (i.e. Oral contraceptives) If yes, When did you start on it?
    B. Depoprovera injection If yes, When did you get your first shot?
    C. Other method (specify)
60. Do you have a breastfeeding peer counselor? Yes No

61. What is your peer counselor’s name? ____________________________

62. How many times has your peer counselor called you on the telephone/visited you at home in the past week? _____

63. How many times have you met with her in person over the past week? _______

64. On a scale of 1 to 5 with 1 being very unsatisfied and 5 being very satisfied, how satisfied are you with your peer counselor? _____________

65. Have you talked about this study with anybody else who you know is participating in this study? YES NO
   If yes, who did you talk with? ___________________________________

66. Do you expect to be at this same phone number next week? Yes No
   If no, at what phone number can we reach you? ______________________

67. What is your current address? ___________________________________

68. Confirm: In case we do not reach you, can you give me the name and number of someone who will always know how to reach you?
   Name ___________________________
   Phone number ____________________
   Relationship to you ________________

THANK YOU VERY MUCH FOR YOUR TIME!
I will be calling again next week to ask you some similar questions. I look forward to talking with you then.