

Breastfeeding and Low Income Women: An Ecological Assessment

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Abstract

The Surgeon General of the United States (2011) and the American Academy of Pediatrics (2005) have stated unequivocally that breastfeeding is the optimal method of feeding and nurturing children. Decades of scientific literature has indicated that breastfeeding decreases child morbidity and mortality rates, improves maternal health outcomes, provides economic benefits to the family, decreases national health care costs, increases mother-child attachment, and positively impacts society as a whole (United States Department of Health and Human Services-HHS 2011: American Academy of Pediatrics,-AAP,2005)

Although breastfeeding promotion and support are defined as integral components of the federally funded Women, Infants, and Children (WIC) Program, breastfeeding initiation and duration rates are disproportionately low among WIC participants (Ryan & Zhou, 2006). Since the inception of the American WIC program in the early 1970's, breastfeeding promotion has been a stated goal of the WIC program, yet according to published reports, only 0.6% of the annual WIC budget is spent on promoting breastfeeding for low income women (Ryan & Zhou, 2006).

The medical literature indicates that breastfeeding is an essential component of infant and maternal health, and that increasing breastfeeding rates across diverse populations would substantially impact maternal, pediatric, and societal functioning (AAP, 2005). The Surgeon General of the United States (2011) has called upon researchers to identify specific factors that have the potential to increase breastfeeding rates among disadvantaged populations and has urged the scientific community to develop strategies that support and encourage the breastfeeding dyad.

In the pilot study presented here, a likert scaled survey derived from the Surgeon General's "Blueprint for Action on Breastfeeding" was administered to 106 low income women participating in the WIC program in a Midwestern State. The purpose of this study was to identify what factors influenced low income women's decision to breastfeed. Although previous research has indicated that a myriad of factors are correlated with maternal feeding decisions, data from this study indicated that having access to breastfeeding role models significantly increases breastfeeding rates among low income women participating in the federally funded WIC program.

Keywords: Breastfeeding, Lactation, Nursing, Breastfeeding and Low income Women, Infant Feeding

Introduction

Increasing breastfeeding rates in the United States has been defined as a pressing public health priority (Health and Human Services, HHS, 2011: American Academy of Pediatrics, AAP, 2005). Current statistics indicate that breastfeeding initiation and duration rates are exceptionally low in the United States, particularly among disadvantaged populations (HHS, 2011; Ryan & Zhou, 2006). Although scholars disagree as to why these reported infant feeding discrepancies exist, all agree that increasing breastfeeding rates in America would substantially impact both child and maternal health outcomes (AAP, 2005; HHS, 2011). Significant steps must be taken in order to increase breastfeeding rates exponentially, and particular attention must be given to closing the economic divide that exists with regard to infant feeding practices (HHS, 2011). The Women, Infants, and Children (WIC) program was created in the United States in 1973. The purpose of the American WIC program is to distribute free food (including formula) to low income women and children, to provide nutritional counsel, and to refer low income women to various social service programs (Ryan & Zhou, 2006). Since the inception of the WIC program in the United States in the early 1970's, public records have indicated that breastfeeding rates are disproportionately low among women participating in the American WIC program.

It is a scientific fact that observable and measurable differences exist between breastfed and artificially fed children as prolonged breastfeeding has been found to decrease a myriad of physiological dysfunction (HHS, 2011; Schiff, 2006; Wolf, 2006). Research indicates that Type 1 and Type 2 diabetes (American Academy of Pediatrics, AAP, 2005; Virtanen & Aro, 1994), obesity (Fry, 2006), asthma (Dell & To, 2001), and allergies are significantly lower in breastfed populations (Stranaland, 2004). Breastfeeding is also significantly correlated with lower cholesterol levels and increased cardiovascular health in adulthood, with the most significant effects observed in individuals who were breastfed two years or longer (Owen, Peter, Whincup, Odoki, Gilg, & Cook, 2002). Decades of medical data has indicated that breastfeeding protects against the development of various cancers (AAP, 2005; HHS, 2011). Davis and Colleagues found a six to eightfold increase in diagnoses of lymphomas in children under 15 years of age who were breastfed less than 6 months (1988). In England, a nationwide cohort study revealed that broad spectrum cancer rates were significantly higher in formula fed populations (Golding, Paterson, & Kinlen, 1990). In addition, researchers have documented that that breastfeeding protects against the development of particular types of malignant tumors (Mishra, Sameer, & Arya, 2004). Although the linkages between formula feeding and the development of specific types of childhood cancers are unclear at this time, published research indicates that breast milk is currently the only identified substance that can eradicate human cancer cells in a laboratory setting (Radetsky, 1999; Wolf, 2006).

Several cross cultural studies have indicated that exclusive and long term breastfeeding protects against Sudden Infant Death Syndrome (McKenna, 1986; McKenna & Masko, 1993). Researchers have documented that infants who were breastfed less than a month are five times more likely to die of SID's than infants who were breastfed for four months or longer (Alm, Wennergren, Norvenius, Skjaerven, Lagercrantz, Helweg-Larsen, & Irgens, 2002; Wolf 2006). Furthermore, scholars have found that in cultures where women practice long term breastfeeding and co-sleeping, SIDS rates are extremely low (Gantley, Davies, & Murcott, 1993; Takeda, 1987). Although scientists continue to debate as to *why* breastfeeding acts as a buffer against Sudden Infant Death Syndrome, medical data clearly indicates that exclusively breastfed infants are significantly less likely to die of SIDS when compared to their artificially fed cohorts (HHS, 2000; McVea, 2000).

The scientific literature documents that secretory immunoglobulin A (S-Ig A), found in abundance in human milk protects children from a wide variety of bacterial and viral infections (Cunningham, 1981; HHS, 2000; Riordan, 1997; Schiff, 2006). Data also confirms that breastfeeding reduces respiratory illness, E coli, Streptococci, Staphylococci, Pneumococci, and Diarrhoeal disease (AAP, 2005; Golding, Emmett, & Rogers, 1997; HHS, 2000; Talayero, 2006). According to the American Academy of Pediatrics (2005), mammalian milk is species specific and as such, contains specialized proteins that are produced to meet the unique evolutionary needs of a particular mammal. When human infants consume another mammal's milk, a plethora of physiological reactions can result. Eczema, rhinitis, otitis media, Heiners syndrome, poor weight gain, anaemia, liver disease, meningitis, celiac disease, and Crohn's disease have all been associated with the consumption of bovine based formula in infancy (AAP, 2005; HHS, 2011; Jelliffe & Jelliffe, 1978; Lawrence, 2004; Udall, Dixon, & Newman, 1985). Breastfeeding impacts not only child morbidity and mortality rates, but also directly effects the physiological functioning of adolescents and adults.

Individuals who were artificially fed as children, or were breastfed only for brief periods, are more likely to suffer from inflammatory bowel disease, Crohn's disease, cardiac dysfunction, elevated cholesterol, behavioral disorders, depression, multiple sclerosis, obesity, and allergies (AAP, 2005; Dahl-Jorgensen, Joner, & Hanssen, 1991; Gillman, 2001; Klement, Cohen, Boxman, Joseph, & Reif, 2004; Martin, Gunnell, & Smith, 2005; Owen, Martin, Whincup, Smith & Cook, 2006; Rich-Edwards, Stampfer, Manson, Rosner, Hu, Michaels, & Willett, 2004; Saarinen, 1995; Schack-Nielsen & Michaelsen, 2006). The benefits that women derive from breastfeeding have been well documented in the scientific literature (AAP, 2005; HHS, 2011; Stolzer & Hossain, 2006). As is evidenced by cross cultural longitudinal data, women who breastfeed long-term have lower rates of ovarian, breast, and endometrial cancers (Collaborative group on Hormonal Factors in Breast Cancer; 2000; HHS, 2011; Pettersson, Adami, Bergstrom & Johansson, 1986). Exclusive and long term breastfeeding has also been highly correlated with decreased risk of hip fractures and osteoporosis in postmenopausal women (AAP, 2005). In addition, there is mounting scientific evidence which suggests that the hormonal changes that occur in lactating women may be responsible for increased self confidence, lowered anxiety levels, fewer mood swings, and increased mother-child bonding (AAP, 2005; HHS, 2011; Lawrence, 2004; Mezzacappa, 2004).

Scientists working in the field of human lactation have also documented that breastfeeding acts as a natural contraceptive (Bongaarts, 1978; HHS, 2000; Konner & Worthman, 1980). Researchers have documented that exclusive breastfeeding is a highly effective means of birth control as it suppresses ovarian cyclicity postpartum and induces a state of lactational infertility that has been observed across cultures (HHS, 2011; McNeilly, 1993). It must be acknowledged that breastfeeding is a dose-response specific variable as data indicates that the positive effects associated with breastfeeding are dependent upon the dose, frequency, duration, and intensity of breastfeeding behaviors (Fredrickson, 1993). Although the scientific community has reported that long term, child initiated breastfeeding is correlated with the most positive health outcomes in pediatric and maternal populations, the United States continues to report one of the lowest breastfeeding initiation and duration rates in the world (HHS, 2011). The majority of American children are breastfed for “token” periods, are supplemented with formula, and/or are weaned prematurely relative to other countries (Stuart-Macadam & Dettwyler, 1995).

Modern Americans now look to technology (i.e., antibiotics and other medical interventions) to replace the immunological benefits associated with long term breastfeeding, yet pharmaceutical drugs rarely, if ever, provide the compendious protection offered by evolutionarily based breastfeeding behaviors (AAP, 2005; Gulick, 1994; Stuart-Macadam & Dettwyler, 1995). Current statistics indicate that breastfeeding rates are increasing as 70% of American women report some form of breastfeeding behavior. However, only 14% of American mothers report breastfeeding at 6 months, and this figure is considerably lower among WIC participants (Center for Disease Control, 2004; Ryan & Zhou, 2006).

Extensive research conducted over the last eighty years has demonstrated that breastfeeding provides ubiquitous benefits for infants, children, mothers, families and society. According to the American Academy of Pediatrics, breastfeeding provides “health, nutritional, immunological, developmental, psychological, social, economic and environmental benefits” (2006, p.496). Currently, about 50% of American children are enrolled in the federally funded WIC program, and despite the decades of scientific evidence that documents that breastfeeding protects women and children from a plethora of health ailments, low income women continue to report the lowest rates of breastfeeding in the U.S. (Ryan & Zhou, 2006). According to the Surgeon General of the United States (2011), it is imperative that low income women are informed of the benefits of breastfeeding for themselves and for their children. This study provides important information that may help to increase breastfeeding rates among diverse populations, and in doing so, may positively impact both maternal and pediatric health outcomes.

Methods

Participants

Data collection took place at a WIC Clinic that provides services to approximately 600 women per year. One hundred and fifty nine were invited to participate in this study over a six week period. Of the 159 women invited, 106 agreed to participate in this study (response rate 66%). Consenting participants were females who were 19 years of age or older and were receiving federally subsidized WIC benefits in a midwestern city. All participants were defined as low income using federal guidelines and were the mothers of infant children (i.e., children 12 months of age or younger). The majority of participants were white (72.6%). Other racial groups represented in this study were: Hispanic (9.5%), Native American (7.4%), Black (6.3%), Asian (2.1%), Middle-Eastern (2.1%). Participants in this study ranged from 19-45 years of age with a mean age of 25.3 years. The majority of participants did not complete high school and the mean of formal education was 8.5 years.

Survey Design

The Ecology of Breastfeeding Survey (EBS) was developed specifically for this study and was based on the findings contained within the Surgeon General’s “Blueprint for Action on Breastfeeding” (2000). Eight questions were developed on Part II of the EBS survey to assess maternal parenting practices and exposure to breastfeeding role models. The EBS was piloted with a small group of child developmentalists who reviewed it for content, readability, and appropriateness for use with WIC participants. The survey was designed to take no more than ten minutes to complete.

Survey Administration

Three days per week over the course of a six week period, the primary investigator was stationed in the waiting room of the WIC clinic in a midwestern city. As women entered the waiting room of the WIC clinic, the primary investigator (PI) introduced herself and handed the women a formal invitation to participate in the study.

After it was determined that the women were 19 years of age or older, and were the mothers of infant children, the PI informed the women that participation in the study would in no way affect their WIC benefits. The PI also informed women that participation in this study was strictly voluntary and that individual answers to items contained within the study would be kept confidential. After volunteering to participate in this research study, each woman was handed an envelope containing the written survey. After completion of the survey, participants were instructed to seal the envelope and return the finished survey to the primary investigator. Data collection was concluded at the six week interval when it was determined that no new subjects were available for the participation in this study.

Methods

Of the 106 women participating in this study, 97 chose to respond to question #10 which indicated specific feeding practices. ANOVA was used to test the hypothesized differences between the three distinct feeding groups (i.e., breastfeeding, N=39, bottlefeeding, N=25, and both breastfeeding and bottlefeeding, N=33). One way ANOVAS were utilized as this particular analysis of variance procedure allowed the researcher to use data in the samples for the purpose of making a single inferential statement concerning the means of the study's comparison groups.

Results

Data indicated that maternal exposure to breastfeeding role models was significantly related to the reported breastfeeding of infants. An ANOVA yielded significant results ($F(2)=.411$ p. 019), indicating that maternal exposure to breastfeeding role models (as measured by the combined scores of questions 3,19,and 22 on the EBS) is significantly related to low income women's feeding decisions (i.e., breastfeeding (M=1.55, N=38); bottlefeeding (M= 1.04, N=25); and both breastfeeding and bottlefeeding (M=1.30, N=33). Women who were exposed to breastfeeding role models indicated that they were more likely to breastfeed their children (M=1.56, SD=.795) than those women who reported no exposure to breastfeeding role models (M=1.04, SD=.676). Upon further investigation, post hoc analysis revealed that having a breastfeeding role model ($X^2(2, N=96) = 10.87$, $p=.04$) was statistically correlated with participants decision to breastfeed.

Limitations

As with any investigation, it is important to note the limitations associated with the study. First, it must be acknowledged that generalizability of this study may be limited as data collection was confined to one WIC clinic, and participants were low income women who were participating in the federally subsidized WIC program in a midwestern city located in the United States. Secondly, no random sampling was employed during the data collection phase of this investigation, and it is common knowledge that the absence of random sampling restricts generalizability. Lastly, the values in the sample used in this study may indeed be from the same population, but not from a normal one. The further use of histograms and normal probability plots, along with the normality test, could provide further information on the normality of the population distribution (Neuman, 1997). However, the one way ANOVA is robust for validity against non-normality, and has been documented to be the most powerful test available when its test assumptions are met (Neuman, 1997).

Discussion

This pilot study is relevant in that the Surgeon General of the United States has called upon researchers to focus their efforts on populations that have historically reported the lowest rates of breastfeeding in America (e.g., low income women). The survey instrument used in this study was developed in strict accordance with the Surgeon General's recommendations and the questions contained in this study were taken directly from the Surgeon General's "Blueprint for Action on Breastfeeding" (2000). The findings contained within this study are consistent with previous research in this area as the results of this pilot study indicate that having a breastfeeding role model significantly increases the likelihood that a low income mother will chose breastfeeding rather than formula feeding. The Surgeon General has indicated that the nominal breastfeeding rates among low income women must be specifically addressed as a public health priority, and has called upon researchers to identify those factors that have the potential to increase breastfeeding rates among disadvantaged populations. Although it must be acknowledged that a myriad of factors influence low income women's feeding decisions, results of this study, and studies conducted in the past, have documented that having access to a breastfeeding role model significantly increases breastfeeding rates in low income populations (Raine, 2003; Taveras, Capra, Braveman, Jensvold, Escobar, & Lieu, 2003).

Researchers have found that for low income women, supportive role models are more influential than health care provider advice when determining specific infant feeding practices (Humpreys, Thompson, & Miner, 1998). Furthermore, researchers have documented that a lack of pro-breastfeeding social support can significantly decrease breastfeeding rates among low income populations (Guttman & Zimmerman, 2000). Low income women who have never had contact with a breastfeeding role model report elevated levels of social embarrassment about breastfeeding, and hence, are statistically more likely to formula feed their children (Earle, 2002; Marchand & Morrow, 1994). In western cultures, female breasts are viewed as sexually stimulating for both males and females. Palmer (1991) hypothesized that the west's preoccupation with the sexualization of the female mammary glands has led to decreased levels of breastfeeding and increased levels of cognitive dissonance. Because of the mass sexualization of female breasts in western cultures, specific cultural dictums now mandate that this part of the female anatomy is acceptable only within the confines of the sexual arena (Palmer, 1991)

In spite of the western world's perception of female breasts, increasing breastfeeding rates is crucial to improving pediatric, maternal, and societal functioning (AAP, 2005; HHS, 2011). Data indicates that pro-breast feeding social support significantly increases the probability of breastfeeding among low income mothers and substantially reduces the health care costs that are associated with formula feeding in infancy (AAP, 2005; Smith, 2006). According to published research, the majority of low income mothers in the United States understand that breastfeeding is more beneficial than formula feeding, however, for mothers participating in the WIC program, there may be extraneous factors that deter women from breastfeeding (Fairbank, Maslin, & Maulin; 2002; Ryan & Zhou, 2006). Lack of education, physician advice, lack of confidence, social embarrassment, government policy, the sexualization of the female breast, and the lack of breastfeeding role models have all been found to decrease breastfeeding rates among low income women (Giellan, Faden, Campo, & Paige, 1992; Ryan & Zhou, 2006; Stolzer & Hossain, 2006).

Administrators overseeing the American WIC program are adamant in their assertion that WIC is strongly committed to promoting breastfeeding among its clientele, yet some researchers in the field question why only a fraction of the WIC budget (0.6%) is spent on breastfeeding promotion and support for America's most disadvantaged population (Ryan & Zhou, 2006; Tuttle, 2000). It is a distinct possibility that mothers who enroll in the WIC program have already determined that they will formula feed their children, and that breastfeeding promotion does not alter their decision (Ryan & Zhou, 2006). What is clear at this time is that WIC participants have disproportionately low rates of breastfeeding when compared to non-WIC participants, and that additional research is needed if we are to fully understand the socioeconomic discrepancies that exist with regard to infant feeding decisions (Ryan & Zhou, 2006).

Approximately 40% of all formula sold in the United States is purchased by the American taxpayer and distributed free of charge to low income women via local WIC distribution centers (Baumslag & Michels, 1995). During the 1970's, 25% of children in the U.S. were enrolled in the WIC program and the annual program budget was 20.6 million dollars. As of 2005, 48% of American infants were enrolled in WIC, and the annual program budget was approximately 5.3 billion dollars. It is also worth noting that an additional 1.5 billion is currently allocated to WIC in the form of cash rebates from the pharmaceutical industry (i.e., the manufacturers of infant formula) (Ryan & Zhou, 2006; U.S. Department of Agriculture Food and Nutrition Service, 2007). Beginning in 1975, the federally funded WIC program has stated that breastfeeding promotion and support are crucial components of its mission statement. In 1992, federal legislation was enacted that established a nationwide breastfeeding promotion campaign that 1. Encourages breastfeeding as the optimal method of infant feeding, 2. Promotes the widespread acceptance of breastfeeding, and 3. Assists in the distribution of pro-breastfeeding materials (Ryan & Zhou, 2006; U.S. Department of Agriculture Food and Nutrition Service, 2007).

In spite of the continued efforts of the United States government to encourage breastfeeding among WIC participants, data continues to indicate that women participating in WIC report disproportionately low levels of breastfeeding when compared to non-WIC participants (Ryan & Zhou, 2006). Scholars in the field of human lactation have postulated that although children who live in poverty are the least likely to receive human milk, these children are in fact in most need of the immunological and nutritional benefits provided by breastfeeding (Baumslag & Michels, 1995; HHS, 2011). Women who are eligible to receive WIC services are also qualified to receive Medicaid (i.e., a government sponsored program that provides free health care to low income individuals).

The American taxpayer not only purchases formula for low income mothers, they also pay for the increased medical interventions that are the direct result of formula feeding during infancy (AAP, 2005; Baumslag & Michels, 1995; Lawrence, 2004; Schiff, 2006; Talayero, 2006). A substantial increase in breastfeeding among WIC participants would provide children optimal nutritional benefits, and would significantly decrease child morbidity and mortality rates. Furthermore, if breastfeeding rates were to increase significantly among low income women, maternal health problems would decrease and Americans would save billions of dollars annually in taxpayer funded medical costs (AAP, 2005; Baumslag & Michels, 1995; Zhou, 2006).

Results of this study indicate that low income women who have access to breastfeeding role models are significantly more likely to breastfeed. While it is clear that pro-breastfeeding role models play a pivotal role in low income women's feeding decisions, many other factors are also related to the low incidence of breastfeeding among WIC participants (Ryan & Zhou, 2006). According to researchers in the field of human lactation, micro, as well as macro level considerations must be addressed if we are serious in our collective endeavor to increase breastfeeding rates exponentially. Following is a list of such considerations:

- Providing women with knowledgeable breastfeeding support groups.
- Providing mandatory, ongoing breastfeeding education to women receiving WIC services.
- Informing women that formula and breastmilk are not equal methods of feeding (Walker, 1993).
- Informing women of the substantial risks associated with formula feeding (Walker, 1995).
- Employing a fulltime, certified lactation consultant at all WIC clinics
- Educating women that there is a difference between adequate and optimal development (Walker, 1995).
- Informing women that pacifiers and/or formula supplementation decreases maternal milk supply (AAP, 2005; Lawrence, 2005).
- Providing women with peripartum information that increases the likelihood of breastfeeding (AAP, 2005).
- Informing mothers that sleeping in close physical proximity to their infants facilitates optimal breastfeeding (AAP, 2005).
- Demanding ongoing, comprehensive breastfeeding education for physicians (Freed, 1993).
- The creation of public service announcements that publicize the pediatric and maternal risks associated with formula use (Stolzer & Zeece, 2006).
- Enacting federal policies that encourage and facilitate exclusive and long term breastfeeding (Baumslag & Michels, 1995).
- Demanding that the economic alliance between the formula industry and the medical community be severed. This includes preventing the manufacturers of formula from funding medical conferences and/or breastfeeding research; refusing to give free samples of formula in doctor's offices or in hospitals; and refusing to provide free advertising for the formula companies in clinics and/or in hospitals (i.e., posters coupons, diaper bags, etc) (Stuart-Macadam & Dettwyler, 1995).
- Questioning cultural norms that define the female breast solely as a sexual entity (Stuart-Macadam & Dettwyler, 1995).

Any discussion regarding increasing the rates of breastfeeding must take into account the various factors that are associated with this complex issue (Stolzer & Hossain, 2006). While it is clear that pro-breastfeeding role models significantly impact low income women's decision to breastfeed, it must be acknowledged that breastfeeding is a multifarious variable that is contingent upon many other factors which include, but are not limited to 1. Physician education and advice (Freed, 1993; Stolzer & Hossain, 2006) 2. Federal policies which impede both the initiation and duration of breastfeeding (Palmer, 1991; Stolzer, 2005) 3. The lack of breastfeeding role models in the family, the community, and in the mass media (Stolzer, 2006; Stuart-Macadam & Dettwyler, 1995) 4. Cultural ideologies which dictate that a woman's worth is based upon her economic earning power (Stuart-Macadam & Dettwyler, 1995) 5. The culture of the "self" that focuses on the needs of the individual rather than on the needs of children (Palmer, 1991; Stolzer, 2006) 6. The economic alliance that exists between the medical community and the pharmaceutical industry (Palmer, 1991) and 7. The mass sexualization of the female breast (Stolzer, 2006; Stuart-Macadam & Dettwyler, 1995).

Conclusion

In summary, the findings contained within this pilot study suggest that breastfeeding role models can significantly impact low income women's decision to breastfeed.

Statistical analysis indicated that having access to a pro-breastfeeding role model is strongly correlated with breastfeeding among WIC participants. While it is certain that many other complex variables influence maternal feeding decisions, results of this study indicate that role models are an essential component to increasing breastfeeding rates among low income women. Further research is needed in order to understand the complexities associated with the low rates of breastfeeding among WIC participants. Perhaps the findings contained within this study illustrate the importance of feeling socially safe and accepted. Over time, women have lost what scholars refer to as the “art of breastfeeding” (Stuart-Macadam & Dettwyler, 1995). Throughout the vast majority of human history, women had access to supportive and knowledgeable breastfeeding mothers. In the past, the “art of breastfeeding” was passed down through the generations and women were exposed to suckling children throughout their lives (Kitzinger, 1994). Currently in the United States, women are routinely subjected to artificial feeding via family, friends, the community, the mass media- and curiously enough, from doctor’s offices and hospitals. This analysis is purely hypothetical and points to the fact that additional research is needed in this area if we are to fully understand the findings contained in this study.

Breastfeeding is a multifaceted variable with far reaching cultural, physiological, economic, historical, and physiological implications (Stolzer&Hossain, 2006; Stuart-Macadam & Dettwyler, 1995). Although this pilot study concentrated on the importance of breastfeeding role models, this author recognizes the need for further studies that take into account the compendious variables that are associated with human lactation in the 21st century so that accurate and concise data analyses can occur. In spite of the overwhelming scientific evidence that indicates that breastfeeding protects women and children from a multitude of diseases and problematic conditions, the United States consistently has one of the lowest breastfeeding rates in the world, and the highest infant mortality rate among industrialized nations (Fogel, 2001; HHS, 2011; Ryan & Zhou, 2006). Although the present study detected a significant correlation between maternal role models and breastfeeding, other cultural determinants must be considered in the future if any substantial increase in breastfeeding initiation and duration rates are to be forthcoming. While it is certain that breastfeeding role models are significantly correlated with increased breastfeeding rates among low income women, cultural, biologic, medical, psychological, economic, and historic factors must also be examined in depth if we are indeed serious in our collective endeavor to increase breastfeeding rates among diverse populations.

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