

AN ABSTRACT OF THE THESIS OF

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Title: Does the Relationship with the Baby's Father
Predict Breastfeeding for Low-Income Mothers?

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The study hypotheses, based on sociobiology, were that the more committed and positive the parental relationship, the greater the likelihood of breastfeeding and of later weaning. Data from the Fragile Families and Child Wellbeing Study was used; sample size was 3635, and over half were African-American. In a logistic regression model, women who were cohabiting were significantly less likely to initiate breastfeeding than those who were married but more likely than those who were in a visiting/friendship relationship. In a Cox proportional hazards regression model, women who were cohabiting or in a

visiting/friendship relationship were more likely to stop breastfeeding earlier than were married women. Relationship quality was not significant in either regression model. However, in a sub-sample of only African-American women, higher relationship quality was associated with lower odds of breastfeeding initiation. In a sub-sample of married women, higher relationship quality was associated with reduced odds for early breastfeeding cessation.

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Does the Relationship with the Baby's Father Predict
Breastfeeding for Low-Income Mothers?

by

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Does the Relationship with the Baby's Father Predict
Breastfeeding for Low-Income Mothers?

The benefits of being breastfed are widely acknowledged and include lower rates of illness (American Academy of Pediatrics, 1997) and less risk of death in infancy (Chen & Rogan, 2004). Health benefits continue through childhood, and even into adulthood (Leon-Cava, Lutter, Ross, & Martin, 2002). Furthermore, breastfeeding has been shown to have a positive effect on women's health (Dermer, 1998). Increasing the incidence and duration of breastfeeding particularly among minority and low-income women is a public health goal in the United States (U.S. Department of Health and Human Services, 2000).

Breastfeeding has often been viewed as an individual preference influenced by personality (Forste, Weiss, & Lippincott, 2001; Losch, Dungy, Russell, & Dusdieker, 1995). Breastfeeding promotion efforts have generally focused on educating mothers about the health benefits of breastmilk for infants (Turner-Maffei, 2002). However, the decision to breastfeed and the subsequent course of breastfeeding is correlated with and possibly affected by a number of biological, environmental, cultural, and social factors (Scott & Binns, 1998). Breastfeeding

advocates have called for a closer look at the circumstances in which mothers make and carry out infant feeding decisions (Heinig, 2001).

Past research has indicated a connection between marriage and rates of breastfeeding (Grossman, Fitzsimmons, Larsen-Alexander, Sachs, & Harter, 1990). The opinion of the infant's father appeared to affect breastfeeding initiation (Guigliani, Caiaffa, Vogelhut, Witter, & Perman, 1994). Social, emotional, and tangible support (often supplied by the father) have been shown to influence feeding decisions (Matich & Sims, 1992). Many mothers have credited emotional and practical support from fathers as vital in helping them to continue breastfeeding (Bar-Yam & Darby, 1997). There have been some attempts to involve fathers in breastfeeding promotion efforts (Sciacca, Phipps, Debe, & Ratliff, 1995) and to understand the concerns and needs of new fathers (Sharma & Petosa, 1997), but the role of marriage itself and of the quality of the relationship between the parents in breastfeeding initiation and duration has received little attention.

In this thesis I will explore two possible influences on breastfeeding initiation and duration: 1) the mother's relationship status with the father (e.g., married, cohabiting, visiting/friendship, little/no contact) and 2) her assessment of the quality of the relationship with the baby's father. My hypotheses are:

Hypothesis 1: The status of the relationship with the infant's father will have an effect on breastfeeding initiation and duration, with married women most likely to initiate and continue and those with little/no contact least likely to breastfeed or continue breastfeeding.

Hypothesis 2: Those women who reported more shared activities, a more harmonious relationship, and more emotional support from the baby's father will be more likely to breastfeed and to continue breastfeeding.

I used the data set from the Fragile Families and Child Wellbeing Study (McLanahan, et al., 2003). This is a sample of low-income, urban, predominately un-married mothers and fathers of newborn infants. The sample size was 3635 and consisted of mothers born in the United States. Outcome variables were whether the child was

breastfed at all and the age of the child when weaned from the breast.

Theoretical Framework

I approached this issue from both a family studies and a public health perspective, using sociobiology theory. Sociobiology--a synthesis of biology, sociology, anthropology, psychology, and other disciplines (Wilson, 1975)--provides a useful theoretical framework for examining breastfeeding initiation and duration. Although sociobiology is not yet widely used in either public health or family studies, I believe it fits with the public health emphasis on the importance of the cultural environment on health behaviors (Glanz, Rimer & Lewis, 2002) and with the family studies emphasis on the importance of interpersonal processes (Troost & Filsinger, 1993). Sociobiology is an overarching theory, able to take into account many relevant influences on behavior. For breastfeeding, these include the physiology of how the breast produces milk and how the infant suckles (Mohrbacher & Stock, 2003), our evolutionary heritage (Hrdy, 1999), cultural beliefs and practices that impact breastfeeding (Quandt, 1995), and policies

and personal circumstances that restrict women's options (Van Esterik, 1995). Although sociobiology should not be viewed as reducing all actions to biology (Rowe, 1994), it invites a deeper look at the context of "choice" in human behavior (Van Esterik, 1989).

Breastfeeding is a learned behavior and is affected by many factors. For example, maternal stress can inhibit the milk ejection reflex necessary for an infant to receive adequate milk when suckling (Mohrbacher & Stock, 2003). Although this problem can be remedied, its existence may be a vestige of evolution--a built-in brake on maternal investment when the mother's own wellbeing is threatened. The conditions of a mother's life appear to play an important role in the feeding decision (Bentley, Dee, & Jensen, 2003), and in breastfeeding duration (Piper & Parks, 1996).

Breastfeeding Rates in the United States

The mother who breastfeeds in the United States is most likely to live in the western part of the country, and to be older, richer, better educated, non-smoking, married, and White (Ford & Labbok, 1990; Piper & Parks, 1996; Turner-Maffei, 2002). The exception to this

characterization is the immigrant mother who may have less education and little acculturation (Baydar, McCann, Williams, & Vesper, 1997; Rassin et al., 1994). With the possible exception of race and geography, these factors are common in other English-speaking, industrialized countries (Scott & Binns, 1998), so some studies conducted in other countries have been included in this review.

Increasing the rate of breastfeeding to 75% initiation, 50% duration at 6 months, and 25% duration at one year is one of the goals of Healthy People 2010 (U.S. Department of Health and Human Services, 2000). Of particular concern are low rates for African-American women, whose current rates, 50.8% at initiation, 20.6% at six months, and 12.4% at one year fall well below those for White women (71.5% at initiation, 33.8% at six months, and 18.2% at one year) and for Hispanic women the rates were 70.8% at initiation, 27.7% at six months, 18.4% at one year (Ross Products Division, 2002). Mothers enrolled in the Special Supplemental Nutrition Program for Women Infants and Children (WIC), which was implemented in 1972 to improve maternal and child health

for lower income families, also have lower rates of initiation: 56.8% and duration: 20.1% at six months, 12.4% at one year (Ross Products Division, 2002).

Relationship Status

Marriage was associated with breastfeeding initiation in many studies (Baydar et al., 1997; Evers, Doran, & Schellenberg, 1998; Grossman et al., 1990; Scott & Binns, 1998). Baydar et al. (1997) and Wiemann, DuBois, and Berenson (1998) found higher initiation rates for mothers with partners. Guigliani, et al. (1994) noted that the father's support of breastfeeding was associated with higher odds of initiation even when the parents were unmarried. There was less evidence for a connection between marital status and breastfeeding duration (Baydar et al., 1997; Piper & Parks, 1996; Scott & Binns, 1998; Visness & Kennedy, 1997). Certainly many mothers have credited fathers with emotional support and practical assistance that they found crucial in helping them overcome breastfeeding challenges (Bar-Yam & Darby, 1997). An intriguing finding by Evers et al. (1998), was shorter duration of breastfeeding by women living with a partner than by either single or married women.

Most research on fathers and breastfeeding has focused on the father's attitude toward breastfeeding (Guigliani et al., 1994; Kessler, Gielen, Diener-West, & Paige, 1995; Sharma & Petosa, 1997) or the mother's perception of the father's attitude (Arora, McJunkin, Wehrer, & Kuhn, 2000). However, Freed, Fraley, and Schanler (1993) found that the mother's assumptions about the father's views did not correspond with the views actually expressed by the father, which raises a question about the importance of the father's views. Wiemann et al. (1998) found that, for adolescent African-American mothers, the presence of a partner was associated with higher odds for breastfeeding initiation than was the partner's feeding preference.

Fathers' knowledge about breastfeeding was associated with duration (Freed et al. 1993; Kessler et al., 1995) and fathers were also significant sources of assistance with breastfeeding, a task that many felt unprepared for (Bar-Yam & Darby, 1997; Matthews, Webber, McKim, Banoub-Baddour, & Laryea, 1998). But fathers also had concerns about how breastfeeding would affect their sexual relationship with their partner, and about

establishing their own relationship with the infant (Sharma & Petosa, 1997).

Forste et al. (2001) suggested that marital status served to raise income and that this accounted for the higher initiation rates among married women. Marriage might also increase the likelihood that a mother would have health insurance and thus better access to care and to higher quality care. Health care professionals also provided breastfeeding information to married women more often than to single ones (Kogan, Kotelchuck, Alexander, & Johnson, 1994).

Social support has long been seen as important for breastfeeding success (Grossman et al., 1990; Matich & Sims, 1992). Traditionally, grandmothers and other female relatives provided physical care for the new mother and took over her household responsibilities (Turner-Maffei & Cadwell, 2002). At the same time, they passed on their knowledge of breastfeeding. The lack of this support system was given as a reason to bottle-feed by some immigrants both in England (Carter, 1995) and the United States (Denham-Vitale & Murillo, 1999). Maternal grandmothers continued to play an important support role

in some cultural groups (Bentley et al., 2003) and in many individual families (Matthews et al., 1997).

Grandmother presence and involvement, in the absence of knowledge or enthusiasm for breastfeeding, however, may have encouraged bottle-feeding, particularly for single, teenaged mothers (Wiemann et al., 1998). Matich and Sims (1992) found that the relationship between support and breastfeeding was non-linear--women with little or a great deal of social support were more likely to bottle-feed.

Social support may also come from other family and friends, health care providers, lay peer support (one-to-one or from support groups) (Arlotti, Cottrell, Lee, & Curtin, 1998), and religious attendance (Forste et al., 2001). Use of some support sources appeared to be linked to education and income (Turner-Maffei, 2002). Since different types of social support are intertwined with each other (Heaney & Israel, 2002), the value and use of one form of support may be linked to past (and possibly current) experiences of other types of support (Pierce, et al., 1996). Thus having a supportive partner might

make it more likely that a woman would seek out and be able to benefit from other support sources.

Relationship Quality

In several qualitative studies, some mothers who had chosen formula-feeding or who had had difficulties with breastfeeding made comments that indicated a lack of emotional and practical support from partners and a lack of power for the woman in the relationship (Blum, 1999; Carter, 1995; Murphy, 1999; Schmeid & Barclay, 1999). Women who had unpleasant experiences with breastfeeding in Schmeid and Barclay's (1999) study commented resentfully on the comparative freedom of their partners. Such comments might indicate that the partners were not emotionally or physically helpful to them (which could have contributed to their negative breastfeeding experiences--my speculation, not that of the authors). Murphy (1999) found that breastfeeding mothers felt they had an extra job in having to assure that their partner felt involved. She commented, "there was no suggestion that partners could or should take responsibility for establishing their own relationship with the baby" (p. 202). Carter (1995) noted that some women were able to

get partners (or others) to bottle-feed, but believed that if they chose to breastfeed, they would be doing that in addition to all their other chores. Lack of time for breastfeeding was often cited by women (Bentley, et al., 2003; Guttman & Zimmerman, 2000) as a reason to choose formula-feeding. Perhaps women are more willing to breastfeed, and may have a better experience with breastfeeding if they believe that their partners are willing to pitch in and help with chores and/or if they have enough power within their relationships to demand help and involvement if it is not readily offered. A recent study found that the higher the number of household tasks performed by the mother, the greater the odds of early breastfeeding cessation (Sullivan, Leathers, & Kelley, 2004).

An extreme aspect of relationship quality, domestic violence, was considered in one article (Acheson, 1995). That author described anecdotal evidence from the medical records of a family practice with high breastfeeding rates; recorded cases of domestic violence were .2% among breastfeeding mothers, and 6.2% among mothers who were bottle-feeding. A recent study, conducted in Brazil,

found no correlation between couples relationship quality and breastfeeding duration, but did find that for those couples with higher relationship quality, fathers were more supportive of breastfeeding and more involved with infant care (Falceto, Guigliani, & Fernandes, 2004). Another study (done in the United States) found marginal significance for relationship distress as a predictor of early weaning (Leathers et al., 2004).

Other Factors Associated with Breastfeeding

Many factors have been associated with breastfeeding initiation, including income (Baydar, et al., 1997; Forste et al., 2001; Grossman, et al., 1990), age (Peterson & DaVanzo, 1992), ethnicity (Forste et al., 2001), smoking (Scott & Binns, 1998; Edwards, Sims-Jones, & Beithaupt, 1998; Evers et al., 1998), and maternal education (Avery, Duckett, Dodgson, Savik, & Henly, 1998). Maternal employment was related to non-initiation or early weaning in many studies (Roe, Whittington, Fein, & Teisl, 1999; Schwartz et al., 2002). Being in school deterred young mothers from breastfeeding (Wiemann et al., 1998). Marriage is related to many of these factors, particularly age, income, and employment. There are also

differences in marriage rates for different ethnic groups (Timbo, Altekruise, Headrick and Klontz, 1996).

Other factors noted in the literature were the use of prenatal care (Grossman et al., 1990), and access to quality health care (Turner-Maffei, 2002). Findings on the effect of parity were inconsistent (Scott & Binns, 1998). Piper and Parks (1996) noted that later born children were breastfed longer.

Although breastfeeding initiation and breastfeeding duration are often considered together, they may be influenced by different factors (Scott & Binns, 1998). No one factor guarantees or prevents successful breastfeeding, but many things can either facilitate or interfere with the establishment and maintenance of breastfeeding (Mohrbacher & Stock, 2003). Postpartum procedures such as delayed first feedings and mother-baby separation were correlated with short duration (Baydar et al., 1997; DiGirolamo, Grummer-Strawn, & Fein, 2001). The separation of mother and baby for work (Visness & Kennedy, 1997) contributed to early weaning (Arlotti, Cottrell, Lee, & Curtin, 1998; Schwartz et al., 2002).

Cultural Beliefs

The effect of marriage may be due to cultural beliefs about when breastfeeding is appropriate or feasible. Breastfeeding has been linked with intensive, child centered mothering, and the lifestyle of middle-class, married women (Guttman & Zimmerman, 2000) and breastfeeding information often incorporates the assumption that the infant's father is available to help with infant care or household chores (Wall, 1999). These perceptions may discourage unmarried mothers from considering breastfeeding.

Mothers reported opting for formula-feeding because of the widespread cultural belief that breasts are primarily sexual (Dettwyler, 1995a). Embarrassment about the sexual connotations of breasts may be more of a deterrent to breastfeeding for women with less social status and power (Bentley et al., 2003). Carter (1995) and Guttman and Zimmerman (2000) noted that lower income women were more aware of and concerned about the opinions of others and about appearing respectable than were middle or upper income women. Lack of privacy (Blum, 1999), and societal disapproval of breastfeeding in

public, were cited by mothers as deterrents to initiating breastfeeding (Guttman & Zimmerman, 2000).

Many mothers felt that breastfeeding did not allow others to help care for the baby (Guttman & Zimmerman, 2000). Fathers reported feeling left out or feeling they must postpone developing a relationship with the infant (Sharma & Petosa, 1997). Fathers and mothers often saw bottle-feeding (formula or expressed breastmilk) as a primary way of sharing infant care and promoting father involvement (Murphy, 1999; Schmidt & Sigman-Grant, 1999). In many ways American society places the responsibility for breastfeeding on the individual mother. Mothers have had to seek out accurate information and supportive care on their own (Turner-Maffei & Cadwell, 2003) to overcome the deleterious effects of standard maternity care practices (DiGirolamo et al., 2001). Women have had to make their own arrangements to accommodate breastfeeding and working (Galtry, 1997; McInerney, 2003) and have sometimes been held accountable for breastfeeding problems which could have been averted by health care professionals with adequate training in breastfeeding management (Bentley, et al., 2003; Turner-Maffei, 2003).

The traditional approach taken in breastfeeding research has been to emphasize individual maternal traits, attitudes, and knowledge (Blum, 1999; Carter, 1998; Losch, et al., 1995). Moralistic or judgmental language has been used (Murphy, 1998; Wall, 1999), with mothers who chose formula-feeding giving "mother-centered" reasons and those who choose breastfeeding giving "infant-centered" reasons (Guigliani et al., 1994, p. 160).

Breastfeeding advocates have pointed out that mothers who succeed at breastfeeding in the United States are those who have "more resources to make and implement choices that counter a culture that promotes bottle-feeding" (Piper & Parks, 1996, p. 11). In a cultural climate that is rarely breastfeeding friendly, the status and support provided by a committed, well-functioning relationship with the infant's father may be resources that help mothers. This study contributes to knowledge in this area by examining both relationship status and relationship quality simultaneously in a low income, largely minority sample.

Methodology

Secondary analysis was done using the data set of the Fragile Families and Child Wellbeing Study (McLanahan, et al., 2003; Reichman, Teitler, Garfinkel, & McLanahan, 2001). The full sample is nationally representative of non-marital births. A comparison group of marital births was also included. The data set included both mothers and fathers, but for this study, only data from mothers was included. After some exploratory analysis, the sample was restricted to just those mothers born in the United States, with a sample size of 3635.

Two outcome variables were chosen: whether the infant was breastfed at all, and the age at which the infant was weaned. Because the first outcome was dichotomous, logistic regression was used to test for associations between the variables and breastfeeding initiation. Data for the age of the child when weaned included some children who were still breastfeeding at the time of the follow-up survey, so I used a Cox proportional hazards regression model to estimate the

effect of the variables on how soon the mothers stopped breastfeeding.

The first hypothesis (relationship status) was tested using a constructed variable in the baseline data set. To test the second hypothesis about relationship quality, I created a continuous variable from responses to fourteen questions in the baseline survey (see Appendix for the wording of the questions). A third hypothesis, domestic violence, was originally included, however, because this variable was not significant in bivariate analysis, the question it was based on, "Does the [baby's father] hit or slap you when he is angry" was included in the measure for relationship quality.

A large number of control variables were considered. To simplify the analysis, only nine were included in the model. All the control variables were measured at the time of the first interview (shortly after the birth of the baby) and were selected on the basis of past research, fit with the theoretical approach, sufficient response rates, and whether they were significantly associated with the outcome variables in bivariate analyses. The controls were: age, prenatal care (first

trimester compared with later/none), education (high school diploma, GED or less compared with post high school education or training), ethnicity (African-American compared with White and with Hispanic/Other-- which included Asian-American and Native American), family financial support during pregnancy (a measure of economic stress and of social support), first birth, smoking during pregnancy, method of paying for the birth (Medicaid/uninsured/charity/other assistance compared with private insurance/self pay and other/combination Medicaid/private), and attendance at religious services.

Associations between all variables were checked. None was high enough to prevent both factors being used in the same model, but there was some association between relationship status and relationship quality, relationship status and method of paying for birth, and relationship status and ethnicity. Education and method of paying for birth were also somewhat associated.

Two other variables, employment and age of infant when the mother returned to work, were measured at the same time as the predictor variables. Models including these variables were run separately. A variable measuring

total household income was not used because the response rate was low. Income was given in nine categories ranging from below \$5,000 to greater than \$75,000. For those who did respond (2908) the mean income was between \$15,000 and \$24,999, the median \$20,000 to \$24,999, and the mode less than \$5,000. In preliminary analyses, the regression models were run on the same sample, first using income, and then using payment for birth. Similar results for those two variables and for the other variables were obtained in each model, so payment for birth (which had a higher response rate) was used in the final models.

Does the Relationship with the Baby's Father Predict Breastfeeding for Low-Income Mothers?

Breastfeeding is the recommended feeding method for all infants (American Academy of Pediatrics, 1997). Breastfed infants have lower rates of illness and death. They have fewer health problems in infancy, childhood, and even into adulthood, compared with those who were fed infant formula (Leon-Cava, Lutter, Ross, & Martin, 2002). Furthermore, breastfeeding has been shown to have a positive effect on women's health (Dermer, 1998). Increasing the incidence and duration of breastfeeding and removing disparities in rates for minority and low-income women is a public health goal in the United States (U.S. Department of Health and Human Services, 2000).

While breastfeeding has often been viewed as an individual preference influenced by personality (Forste, Weiss, & Lippincott, 2001; Losch, Dungy, Russell, & Dusdieker, 1995), the decision to breastfeed and the subsequent course of breastfeeding is correlated with and possibly affected by a number of biological, environmental, cultural, and social factors (Scott & Binns, 1998). Breastfeeding advocates have called for a

closer look at the circumstances in which mothers make and carry out infant feeding decisions (Heinig, 2001). This study explores the association between the type and quality of the mother's relationship with the infant's father with breastfeeding initiation and duration in a low-income population.

Theoretical Framework

Sociobiology--a synthesis of biology, sociology, anthropology, psychology, and other disciplines (Wilson, 1975)--provides a useful theoretical framework for examining breastfeeding initiation and duration. Although sociobiology should not be viewed as reducing all actions to biology (Rowe, 1994) it invites a deeper look at the context of "choice" in human behavior (Van Esterik, 1989).

According to Hrdy's (1999) application of the theory to breastfeeding, humans (like other primates) invest heavily in an infant when environmental and social conditions are favorable for the survival of that particular infant. If conditions are not good, it may be more cost effective (from the standpoint of reproductive success), not to invest heavily in that infant, but to

try again when conditions are better. It should be emphasized that this is not a conscious decision, nor is it predetermined, since there are always many factors at work.

For our ancestors, breastfeeding for several years was necessary to ensure infant survival and a mother would be unlikely to conceive again while lactating (Dettwyler, 1995b). Therefore breastfeeding represented a substantial investment of reproductive time. Reproductive success would occur for those mothers who made the breastfeeding investment only when other facilitating factors (such as a reliable food supply and social support from others) were present (Hrdy, 1999). People with a genetic link to the infant (fathers and grandparents) would be logical sources of social support. The presence of the infant's father in the mother's life could help create favorable conditions (safety and economic and social support) that would increase her ability to invest in that infant. The absence of the father might decrease her ability to invest. Because of the importance of a father for reproductive success, Hrdy (1999) argued that a mother without a partner might

direct her reproductive efforts towards securing a new partner, whose presence might increase the likelihood of survival of another infant.

In contemporary America, breastfeeding is not viewed as necessary for infant development, although it is regarded by most mothers as beneficial to infant health (Guttman & Zimmerman, 2000). However, it is seen as requiring much effort and time on the part of the mother (Bentley, Dee, & Jensen, 2003). The American cultural environment is also a deterrent to successful breastfeeding (Dettwyler, 1995a; Guttman & Zimmerman, 2000). In this environment, the more resources, both material and social, a mother has, the more likely she will be to breastfeed and to continue breastfeeding (Turner-Maffei, 2002; Piper & Parks, 1996). The relationship with the infant's father may serve as a resource--providing a mother with security, social, emotional, and tangible support. If so, the more positive and committed the relationship, the more it should be associated with breastfeeding. Extrapolating from Hrdy's (1999) theory, I hypothesized that in a less committed and/or less positive relationship with the father, the

mother would put more effort into improving that relationship and would be less likely to initiate or continue breastfeeding. When the father is absent from the mother's life, breastfeeding should be less likely, particularly for a mother with fewer other resources.

Hypotheses

Hypothesis 1: The status of the relationship with the infant's father will have an effect on breastfeeding initiation and duration, with married women most likely to initiate and continue and those with little/no contact least likely to breastfeed or continue breastfeeding.

Hypothesis 2: Those women who reported more shared activities, a more harmonious relationship, and more emotional support from the baby's father will be more likely to breastfeed and to continue breastfeeding.

Literature Review

Marriage was positively associated with breastfeeding initiation in several studies (Baydar, McCann, Williams, & Vesper, 1997; Evers, Doran, & Schellenberg, 1998; Grossman, Fitzsimmons, Larsen-Alexander, Sachs, & Harter, 1990). Baydar et al. (1997) and Wiemann, DuBois, and Berenson (1998) found higher

initiation rates for mothers with partners even when they were unmarried. Forste et al., (2001) found that both marriage and cohabitation lost significance when other factors were included. There was less evidence for a connection between marital status and breastfeeding duration (Baydar et al., 1997; Piper & Parks, 1996; Scott & Binns, 1998; Visness & Kennedy, 1997). An intriguing finding by Evers et al. (1998) was shorter duration of breastfeeding by women living with a partner than by either single or married women.

Although, traditionally, support for new mothers was provided by female relatives (Turner-Maffei & Cadwell, 2002), male partners may be more important sources of help and support for many American mothers (Matich & Sims, 1992). Most research on fathers and breastfeeding initiation has focused on the father's attitude toward breastfeeding (Guigliani, Caiaffa, Vogelhut, Witter, & Perman, 1994; Kessler, Gielen, Diener-West, & Paige, 1995) or the mother's perception of the father's attitude (Arora, McJunkin, Wehrer, & Kuhn, 2000). However, Freed, Fraley, and Schanler (1993) found that the mother's assumptions about the father's views

did not correspond with the views actually expressed by the father. Wiemann et al. (1998) found that, for adolescent African-American mothers, the presence of a partner was associated with higher adjusted odds ratio for breastfeeding initiation than the partner's feeding preference, although both were significant factors.

Father's assistance and encouragement have been associated with breastfeeding duration (Bar-Yam & Darby, 1997). In several qualitative studies, some mothers who had chosen formula-feeding or who had had difficulties with breastfeeding made comments that indicated a lack of emotional and practical support from partners and a lack of power for the woman in the relationship (Blum, 1999; Carter, 1995; Murphy, 1999; Schmeid & Barclay, 1999). Sullivan, Leathers, and Kelley (2004) found that mothers who were responsible for more household tasks had higher odds of early breastfeeding cessation. Although there has been an effort to involve fathers in breastfeeding promotion (Sciacca, Phipps, Debe, & Ratliff, 1995) and to understand the concerns and needs of new fathers (Sharma & Petosa, 1997), the role of marriage itself and of the quality of the relationship between the parents in

breastfeeding initiation and duration has received little attention. Falceto, Guigliani, and Fernandes (2004) did not find couples' relationship quality associated with breastfeeding rates at four months, but this was in an area where 70% were still breastfeeding at four months and where other family social support was prevalent. Sullivan et al. (2004), found that relationship distress predicted earlier breastfeeding termination, but this finding was only marginally significant.

The effect of marriage may be due to cultural beliefs about when breastfeeding is appropriate or feasible. Breastfeeding has been linked with intensive, child centered mothering, and the lifestyle of middle-class, married women (Blum, 1999; Guttman & Zimmerman, 2000) and breastfeeding information often incorporates the assumption that the infant's father is available to help with infant care or household chores (Wall, 1999). Married women reported receiving breastfeeding advice from health care professionals more frequently than did unmarried women (Kogan, Kotelchuck, Alexander, & Johnson, 1994).

Several other factors have been found to be associated with breastfeeding. Ethnicity (Bentley et al., 2003; Forste et al., 2001; Timbo, Altekruze, Headrick & Klontz, 1996), income (Baydar et al., 1997; Forste et al., 2001; Grossman, et al., 1990), age (Peterson & DaVanzo, 1992), smoking (Scott & Binns, 1998), maternal education (Avery, Duckett, Dodgson, Savik, & Henly, 1998), social support (Grossman et al., 1990; Matich & Sims, 1992), maternal employment (Roe, Whittington, Fein, & Teisl, 1999; Schwartz et al., 2002; Visness & Kennedy, 1997), parity (Scott & Binns, 1998), prenatal care (Grossman et al., 1990), lack of health care services that truly promote and facilitate breastfeeding (DiGirolamo, Grummer-Strawn, & Fein 2001; Wiemann et al., 1998) and access to quality health care (Turner-Maffei, 2002).

Because of the substantial differences in breastfeeding rates associated with ethnicity, I will examine the possible role of relationship status and quality for African-Americans, Whites, and Hispanic/Others.

Methodology

Secondary analysis was done using the data set of the Fragile Families and Child Wellbeing Study (McLanahan, et al., 2003; Reichman, Teitler, Garfinkel, & McLanahan, 2001). Baseline interviews were conducted in hospitals with 4,898 mothers and 3,830 fathers, from 1998 to 2000. Follow-up interviews with 4,365 mothers and 3,367 fathers, took place approximately one year after the initial interviews. The full sample was nationally representative of non-marital births. A comparison group of marital births was also included. The majority of parents were low-income.

Two questions on the one-year follow up survey addressed breastfeeding, "Did you ever breastfeed (the child)?" and "How old was (the child) when you stopped breastfeeding?" This analysis uses the mother's responses only and 4,331 responded to the first question. Of the 2,467 who responded "yes," 2,447 gave the duration of breastfeeding. Age of weaning was recorded for 2208 cases and 239 were listed as still breastfeeding at the time of the second interview.

Because of the much higher rates of breastfeeding for those born outside the United States--foreign born women were more than five times as likely to initiate breastfeeding (bivariate logistic regression odds ratio = 5.78, $p \leq .001$, 95% confidence interval [CI]: 4.62 - 7.24)--this study was restricted to those born in the United States, which resulted in a sample size of 3635 women.

Relationship status was taken from a constructed variable, which included married, cohabiting, visiting, friends, little contact, no contact, father unknown. To aid in the analysis, the last 5 categories were collapsed into two: visiting/friends and little/no contact/unknown. A continuous variable measuring relationship quality was constructed from fifteen questions in the survey. For those mothers with little/no contact, questions referred to the last month when the relationship with the infant's father was a romantic one. One set of four questions measured shared activities such as going out to eat or solving a problem together (answers were "yes" or "no"). A set of six questions asked how often couples disagreed about issues such as money and spending time together

(answers for each were "often," "sometimes," or "never"). Finally, a set of five questions measured aspects of emotional support, such as expressions of love and respect. Responses for these were also "often," "sometimes," or "never." The responses to all questions were coded so that low numbers represented low relationship quality and high numbers represented high quality. Responses were summed and standardized (z) scales were constructed for shared activities, harmony, and emotional support. Factor analysis showed all three scales loading on a single factor so they were combined into a single scale, also transformed into a standardized scale and then recoded so that all values were positive.

Logistic regression was used to test for association between these variables and breastfeeding initiation. Odds ratios greater than 1.00 indicated increased odds of initiation. I used a Cox proportional hazards regression model to estimate the effect of these variables on how soon the mothers stopped breastfeeding. To simplify the presentation of results, I will refer to these odds ratios as an effect on the odds of weaning. In the Cox regression odds ratios, less than 1.00 indicated a

decreased odds of weaning (in other words: longer breastfeeding). All factors used met the proportionality assumption.

Besides the variables of interest, nine other variables were included as statistical controls in the model and are shown in Table 1, along with breastfeeding frequencies for all variables. All the control variables were measured at the time of the first interview (shortly after the birth of the baby) and were selected based on past research, fit with the theoretical approach, sufficient response rates, and whether they were significantly associated with the outcome variables in bivariate analyses. Total household income was not used because the response rate was low. In preliminary analyses, payment for birth operated in a similar fashion as income so it was used instead. Family financial support of the mother during pregnancy also served as an indication of lower income.

Although the association was not high enough to prevent both factors being used in the same model (Cramér's V was no higher than 0.38), there was some association between relationship status and relationship

Table 1
Frequencies for Variables and Breastfeeding Frequencies

Variable	Frequencies (%)	Ever breastfed (% of category)	At six months ^a : (% of category)
Ever Breastfed:	3635		
no	1762 (48.5)		
yes	1873 (51.5)	1873 (51.5)	600 (16.5)
Rel. Status:	3635		
married	798 (22.0)	579 (72.6)	280 (35.1)
cohabiting	1299 (35.7)	635 (48.9)	156 (12.0)
visit/friends	1274 (35.0)	520 (40.8)	123 (9.7)
little/no contact	264 (7.3)	139 (52.7)	41 (15.5)
Rel. Quality:	3583		
low (\leq mean)	1503 (41.9)	703 (46.8)	204 (13.6)
high ($>$ mean)	2080 (58.1)	1146 (55.1)	392 (18.8)
Ethnicity:	3631		
African-American	1961 (54.0)	852 (43.4)	259 (13.2)
White	901 (24.8)	603 (66.9)	245 (27.1)
Hispanic/Other	769 (21.2)	415 (54.0)	94 (12.2)
Education:	3632		
High school/less	2303 (63.4)	958 (41.6)	228 (9.9)
Post high school	1329 (36.6)	914 (68.8)	372 (27.9)
Smoked:	3628		
no	2838 (78.2)	1557 (54.9)	533 (22.7)
yes	790 (21.8)	310 (39.2)	63 (7.9)
Paying for birth:	3624		
Medicaid/Charity	2274 (62.7)	998 (43.9)	248 (10.9)
Private Ins/Self	1234 (34.1)	819 (66.4)	331 (26.8)
Other	116 (3.2)	49 (42.2)	20 (17.2)
Age:	3635		
14-19	718 (19.8)	340 (47.4)	72 (10.0)
20-25	1537 (42.3)	737 (48.0)	191 (12.4)
26-46	1380 (38.0)	796 (57.7)	337 (24.4)
First Birth:	3622		
no	2255 (62.3)	1080 (47.9)	386 (17.1)
yes	1367 (37.7)	788 (57.6)	212 (15.5)
Prenatal Care:	3606		
late or none	715 (19.8)	291 (40.7)	78 (10.9)
first trimester	2891 (80.2)	1569 (54.3)	517 (17.8)
Family Finan. Help:	3628		
no	1855 (51.1)	1072 (57.8)	386 (20.8)
yes	1773 (48.9)	798 (45.0)	213 (12.0)
Religious Attend:	3631		
never/rarely	1545 (42.6)	698 (45.2)	191 (12.3)
attends	2086 (57.4)	1174 (56.3)	408 (19.5)
Employed After Birth	3474		
yes	2784 (80.1)	1454 (52.2)	430 (15.4)
no	690 (19.9)	365 (52.9)	155 (22.5)
Returned to work	2437		
$<$ 12 weeks	812 (33.3)	408 (50.2)	118 (14.5)
\geq 12 weeks	1625 (66.7)	828 (51.0)	249 (15.3)

a. Breastfeeding duration data was available for 1858 cases, $<$ 1% are missing for each variable.

quality, relationship status and method of paying for birth, and relationship status and ethnicity. Education and method of paying for birth were also somewhat associated.

Employment after the baby's birth was not included in the basic model, because it was measured at the one-year interview. A separate analysis was conducted to consider the effect of employment since the birth of the baby on the odds of weaning. Another analysis considered the effect of the age of the child when the mother returned to work. Frequencies for these two variables are also included in Table 1.

Results

Hypothesis 1: Relationship Status

The adjusted odds ratios for breastfeeding initiation are shown in Table 2. Married women were significantly more likely to breastfeed compared with those who were cohabiting, and those who were in a friends/visiting relationship, but not more likely than those with little/no contact with the baby's father.

Table 2
Multiple Logistic Regression for Breastfeeding Initiation^a

Variable (reference category)	Adjusted Odds Ratio (95% CI)	
Rel. Status (married)	--	
cohabiting	0.69**	(0.55 - 0.87)
visit/friends	0.54***	(0.42 - 0.69)
little/no contact	0.75	(0.52 - 1.08)
Relationship Quality	0.95	(0.87 - 1.02)
Ethnicity (African-American)	--	
White	1.79***	(1.47 - 2.18)
Hispanic/Other	1.40***	(1.17 - 1.68)
Education (High school/less)	--	
Post high school	2.09***	(1.76 - 2.47)
Smoked (no)	--	
yes	0.68***	(0.57 - 0.82)
Pay for birth	--	
(Medicaid/charity)	--	
Private Insure/self	1.26*	(1.05 - 1.52)
Other	0.75	(0.50 - 1.12)
Age	0.99 [†]	(0.97 - 1.00)
First birth (no)	--	
yes	1.28**	(1.09 - 1.51)
Prenatal Care (late/no)	--	
first trimester	1.22*	(1.02 - 1.47)
Family finan. help (no)	--	
yes	0.81**	(0.69 - 0.94)
Religious Attend	--	
(never/rarely)	--	
attends	1.33***	(1.15 - 1.54)
Number	3512	
-2 Log Likelihood	4410.07	
Chi-square (df)^b	$\chi^2 (15) = 454.50***$	

[†] $p \leq .10$, * $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$

- a. Adjusted odds ratios greater than 1.00 indicate increased odds of initiating breastfeeding, odds ratios less than 1.00 indicate decreased odds of breastfeeding.
b. Chi-square test compared with model with no predictors.

The model had a moderate level of classification accuracy for breastfeeding initiation (sensitivity = 0.63, specificity = 0.66). Adjusted odds ratios were significant for each of the control variables included in the model except age.

The same model shown in Table 2 was estimated using cohabitation as the reference category. Women who were cohabiting were more likely to breastfeed when compared with mothers in a visiting/friendship relationship (adj. odds ratio [aOR] = 0.78, $p \leq .01$, 95% CI: 0.65 - 0.93). There was no significant difference between those who were cohabiting and those who had little/no contact with the baby's father.

Because ethnicity appeared to play an important role in breastfeeding in the United States (U.S. Department of Health and Human Services, 2000), the model for initiation was run for each ethnic group. Results are shown in Table 3. The association between relationship status and initiation for African-American women was similar to that of the whole sample, while White women who were married were much more likely to initiate breastfeeding than those in other relationships,

Table 3
Multiple Logistic Regression for Breastfeeding Initiation^a
by Ethnicity

Variable (reference)	African-American	White	Hispanic/Other
Rel. Status			
(married)	--	--	--
cohabiting	0.67*	0.55**	1.11
visit/friends	0.54***	0.39***	0.83
little/no contact	0.84	0.41*	1.32
Rel. Quality	0.89*	1.09	0.99
Education			
(High school/less)	--	--	--
Post high school	2.10***	3.07***	1.39 [†]
Smoked (no)	--	--	--
yes	0.73*	0.66*	0.67 [†]
Pay for birth			
(Medicaid/charity)	--	--	--
Private Insure/self	1.34*	1.06	1.38
Other	0.62	0.73	1.38
Age	0.98*	0.98	0.99
First birth (no)	--	--	--
yes	1.17	1.37 [†]	1.56**
Prenatal Care (late/no)	--	--	--
first trimester	1.45**	0.72	1.16
Family finan. help (no)	--	--	--
yes	0.82 [†]	0.89	0.71*
Religious Attend			
(never/rarely)	--	--	--
attends	1.44***	1.18	1.29
Number	1887	887	738
-2 Log Likelihood	2411.74	984.92	975.41
Chi-square (df)^b	$\chi^2(13) =$	$\chi^2(13) =$	$\chi^2(13) =$
	174.36***	140.52***	43.42***

[†] $p \leq .10$, * $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$

a. Adjusted odds ratios greater than 1.00 indicate increased odds of initiating breastfeeding, odds ratios less than 1.00 indicate decreased odds of breastfeeding initiation.

b. Chi-square test compared with model with no predictors.

including little/no contact. However, relationship status had no effect on breastfeeding initiation for Hispanic/Other women. When cohabitation was used as the reference (not shown in tables), it was not significantly different from friends/visiting or little/no contact for White or Hispanic/Other women for breastfeeding initiation, but, for African-Americans, cohabitation was marginally significant compared with visiting/friends (aOR = 0.81, $p \leq .10$, 95% CI: 0.65 - 1.01).

The adjusted odds ratios for weaning were also associated with relationship status (see Table 4), with married women having significantly decreased odds of weaning compared with those who were cohabiting and those in a visiting/friendship relationship. Again there was no significant difference between married and little/no contact. Only married status offered an advantage; when the same model was run with cohabiting as the reference, it was not significantly different from either visiting/friendship or little/no contact.

Although ethnicity was not associated with breastfeeding duration in the regression shown in Table 4, because of the differences between ethnic groups for

Table 4
Cox Proportional Hazards Regression for Odds for Weaning^a

Variable (reference category)	Adj. Odds Ratio (95% CI)	
Rel. Status (married)	--	
cohabiting	1.27**	(1.09 - 1.47)
visit/friends	1.30**	(1.10 - 1.53)
little/no contact	1.10	(0.87 - 1.40)
Relationship Quality	1.00	(0.94 - 1.05)
Ethnicity (African-American)	--	
White	0.93	(0.81 - 1.06)
Hispanic/Other	1.09	(0.96 - 1.24)
Education (High school/less)	--	
Post high school	0.80***	(0.72 - 0.90)
Smoked (no)	--	
yes	1.28***	(1.11 - 1.46)
Pay for birth	--	
(Medicaid/charity)	--	
Private Insure/self	0.99	(0.88 - 1.12)
Other	0.77 [†]	(0.57 - 1.05)
Age	0.99**	(0.98 - 1.00)
First birth (no)	--	
yes	1.19**	(1.07 - 1.33)
Prenatal Care (late/no)	--	
first trimester	1.00	(0.87 - 1.14)
Family finan. help (no)	--	
yes	0.96	(0.86 - 1.07)
Religious Attend	--	
(never/rarely)	--	
attends	1.02	(0.92 - 1.14)
Number	1801	
-2 Log Likelihood	22204.65	
Chi-square (df)^b	χ^2 (15) = 150.78***	

[†] $p \leq .10$, * $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$

a. Cox proportional hazards regression model estimating the effect of variables on breastfeeding cessation, referred to as odds of weaning. Adjusted odds ratios greater than 1.00 indicate increased odds of weaning. Odds ratios less than 1.00 indicate decreased odds of weaning (and longer breastfeeding)

b. Chi-square test compared with model with no predictors

breastfeeding initiation, the Cox regression was also run for each ethnic group. Results are shown in Table 5. Relationship status was significantly associated with odds for weaning for African-American women when married was compared with visiting/friends. For Hispanic/Other women, married was significantly different from cohabiting, but not from other types of relationships. Relationship status was not significantly associated with odds for weaning for White women. When the models were run with cohabitation as the reference there were no differences by relationship status for any ethnic group.

Hypothesis 2: Relationship Quality

Relationship quality was associated with breastfeeding initiation in the bivariate analysis of the whole sample, with an odds ratio of 1.19 ($p \leq .001$, 95% CI: 1.12 - 1.27). Because relationship quality was a continuous variable, each one-unit increase in quality would correspond with a 19% increase in the odds of breastfeeding initiation. However, when the control variables were included, quality of the relationship was not significant for the sample as a whole. For African-American women, quality of the relationship was

Table 5
Cox Proportional Hazards Regression for Odds for Weaning^a
by Ethnicity

Variable (reference)	African-American	White	Hispanic/Other
Rel. Status			
(married)	--	--	--
cohabiting	1.21	1.06	1.39*
visit/friends	1.29*	1.05	1.33
little/no contact	1.20	0.81	0.98
Rel. Quality	1.02	0.92	0.94
Education			
(High school/less)	--	--	--
Post high school	0.82*	0.83 [†]	0.78 [†]
Smoked (no)	--	--	--
yes	1.31*	1.39**	1.11
Pay for birth			
(Medicaid/charity)	--	--	--
Private Insure/self	1.21*	0.91	0.72*
Other	0.65 [†]	0.75	0.86
Age	0.99	0.97**	1.00
First birth (no)	--	--	--
yes	1.25**	1.21 [†]	1.16
Prenatal Care (late/no)	--	--	--
first trimester	0.82*	0.95	1.35*
Family finan. help (no)	--	--	--
yes	0.97	0.90	0.91
Religious Attend			
(never/rarely)	--	--	--
attends	1.10	0.88	1.04
Number	817	590	394
-2 Log Likelihood	9130.13	5771.39	3819.15
Chi-square (df)^b	$\chi^2(13) =$	$\chi^2(13) =$	$\chi^2(13) =$
	48.57***	75.90***	34.49***

[†] $p \leq .10$, * $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$

a. Cox proportional hazards regression model estimating the effect of variables on breastfeeding cessation, referred to as odds of weaning. Adjusted odds ratios greater than 1.00 indicate increased odds of weaning. Odds ratios less than 1.00 indicate decreased odds of weaning (and longer breastfeeding)

b. Chi-square test compared with model with no predictors

associated with a *lower* likelihood of breastfeeding initiation when control variables were included (see Table 3).

Relationship quality was associated with a 6% decrease in the odds for weaning in the bivariate analysis of the whole sample, (odds ratio = 0.94, $p \leq .01$, 95% CI: 0.89 - 0.98). There were no statistically significant effects for relationship quality when the control variables were included in the model, nor were there differences by ethnicity. In an effort to understand the complex effects of relationship quality, its effect was examined for each relationship status group separately (numbers were too few for those with little/no contact to consider the whole model). Breastfeeding initiation was not significantly associated with relationship quality for any of the groups. But married women with higher relationship quality had significantly decreased odds of weaning (see Table 6).

The Effect of Return to Work

The possible effect of the mother's employment after the baby's birth and the effect of the timing of her return to work on the odds of weaning were considered in

Table 6
Cox Proportional Hazards Regression for Odds for Weaning^a
for Married Mothers

Variable (reference category)	Adj. Odds Ratio (95% CI)	
Relationship Quality	0.81**	(0.70 - 0.93)
Ethnicity (African-American)	--	
White	0.83	(0.65 - 1.04)
Hispanic/Other	0.84	(0.61 - 1.15)
Education (High school/less)	--	
Post high school	0.99	(0.78 - 1.26)
Smoked (no)	--	
yes	1.29	(0.89 - 1.87)
Pay for birth		
(Medicaid/charity)	--	
Private Insure/self	0.80	(0.61 - 1.05)
Other	0.59	(0.31 - 1.15)
Age	0.98*	(0.96 - 1.00)
First birth (no)	--	
yes	1.28*	(1.05 - 1.57)
Prenatal Care (late/no)	--	
first trimester	1.27	(0.85 - 1.92)
Family finan. help (no)	--	
yes	0.75*	(0.58 - 0.95)
Religious Attend (never/rarely)	--	
attends	0.85	(0.69 - 1.05)
Number	560	
-2 Log Likelihood	5418.27	
Chi-square (df)^b	χ^2 (12) = 42.87***	

[†] $p \leq .10$, * $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$

a. Cox proportional hazards regression model estimating the effect of variables on breastfeeding cessation, referred to as odds of weaning. Adjusted odds ratios greater than 1.00 indicate increased odds of weaning. Odds ratios less than 1.00 indicate decreased odds of weaning (and longer breastfeeding)

b. Chi-square test compared with model with no predictors

separate analyses. The Cox regression model with all the other controls was run with the employment variable included. No employment after the baby's birth was significantly associated with decreased odds for weaning (aOR = 0.81, $p \leq .001$, 95% CI: 0.71 - 0.92). The significance of relationship status remained in the model. The timing of return to work was significant (aOR = 0.99, $p \leq .001$, 95% CI: 0.99 - 1.00) although the sample size was reduced ($n = 1200$). Relationship status was insignificant in this smaller sample.

Discussion

Marriage and cohabitation were associated with a greater likelihood of breastfeeding initiation. These results were consistent with Hypothesis 1 and with past research (Baydar et al., 1997; Timbo et al., 1996). The significance of marriage remained even though economic factors were included in the model. Unlike the sample population used by Forste et al. (2001), who found that marriage lost significance when income was included, these mothers were predominately low-income, which may account for the difference in findings. Marriage was also associated with decreased odds of weaning. This finding

departed from recent past research that did not find marital status important for breastfeeding duration (Baydar et al., 1997; Piper & Parks, 1996; Scott & Binns, 1998; Visness & Kennedy, 1997). Although cohabitation was also associated with breastfeeding initiation (particularly for African-American mothers), it was not associated with decreased odds for weaning. This finding was consistent with a study of low-income mothers (Evers et al., 1998) that found longer duration for married (and single) women as compared with those who were cohabiting. It may be that, particularly when other resources are scarce, marriage is connected with (or helps create) conditions that facilitate breastfeeding. Having a partner, but not being married, signals (or creates) a different set of conditions, which are less conducive to breastfeeding.

High relationship quality was associated with increased likelihood of breastfeeding initiation and decreased odds of weaning in the bivariate analyses. For married women, relationship quality was associated with decreased odds for weaning. This finding and those on marriage were consistent with sociobiological theory

(Hrdy, 1999): for those mothers currently in relationships, the greater the commitment of the baby's father, as represented by marriage, the more likely the mother was to start breastfeeding and to continue with it. Mothers in less committed relationships (those in the visiting/friendship category) had lower rates of breastfeeding initiation and duration. High relationship quality (within marriage) was associated with longer duration.

However, not all the findings supported the original hypothesis. Mothers with little/no contact were not significantly different from married or cohabiting mothers (although the effect was in the same direction). The results for relationship quality were insignificant for the model for the whole sample. For African-American women, relationship quality was associated with decreased likelihood of breastfeeding initiation. As there has been little past research on relationship quality and breastfeeding, and the measurement of quality was broadly defined, interpretation of these findings is difficult. Given that parents may view breastfeeding as interfering with their romantic relationship (Sharma & Petosa, 1997),

some aspects of relationship quality, such as going out together, may have discouraged breastfeeding. Other aspects, such as encouragement and helpfulness, may have facilitated breastfeeding. Relationship quality may have had a somewhat different meaning for couples who were married and thus a stronger effect on breastfeeding.

Limitations

Breastfeeding behavior, particularly duration, appears to be affected by a number of factors, some of which may remain unidentified by research. The study design made it difficult to measure the true impact of employment or the impact of school on breastfeeding duration. Some factors such as pregnancy intendedness and geographic location were not used in the study. No information about the mother's or the father's attitudes toward breastfeeding, past experience with breastfeeding, or breastfeeding education, was collected in the survey. Nor was any information available about when foods other than human milk were introduced, or the reasons for weaning. There may have been some recall bias about the duration of breastfeeding, as that information was not collected until the second interview, which was, in some

cases, a year after weaning had occurred. These factors limited the usefulness of this survey for much breastfeeding research.

The measurement used may not have provided an accurate assessment for relationship quality. The study did not examine which (if any) specific aspects of relationship quality might facilitate or discourage breastfeeding. Changes after the birth of the child in relationship status or relationship quality were not considered. Reasons why partners were not married and attitudes toward marriage were not considered, nor were relationships with partners other than the infant's father (either prior to or after the birth).

Conclusions

These findings, from a recent survey of a predominately low-income population, contribute to the understanding of the factors influencing breastfeeding. In spite of the increase and acceptance of non-marital child-bearing, being married (more so than cohabiting) appears to make a difference in both initiation and duration of breastfeeding among low-income mothers. Relationship quality for low-income married women is

associated with decreased odds of weaning. In light of these findings, research on breastfeeding should continue to take marital status into account. Further exploration of why marriage is important and what aspects of relationship quality promote continued breastfeeding seems warranted. The role of relationship quality is an intriguing one, as it may have a different effect on breastfeeding initiation than on duration, may vary with the status of the relationship, and may differ by ethnicity.

Efforts by health care practitioners and educators to increase the duration of breastfeeding might benefit from additional awareness of both the status and the state of the relationship between the mother and father. The inclusion of relationship skills in prenatal and lactation education could prove helpful. Social support appears crucial for breastfeeding success (Grossman et al., 1990), particularly for mothers who may lack other resources, and American mothers view fathers as sources of support (Matich & Sims, 1992). Brief duration of breastfeeding has been associated to some extent with breastfeeding problems, particularly the perception of

insufficient milk (Avery et al., 1998; Baydar et al. 1997). Possibly the presence of the infant's father, especially if the relationship quality is good, may assist mothers in solving problems, seeking help, or simply in persevering with breastfeeding (Bar-Yam & Darby, 1997). These results illustrate the need for a better understanding of the role of the parental relationship and its possible effect on breastfeeding.

Conclusion

Research indicates that increasing breastfeeding rates would help reduce infant morbidity and mortality in the United States (Chen & Rogan, 2004). Rates have been gradually increasing in recent years, but still have not reached the goals set by the Department of Health and Human Services (2000). A greater understanding of the influences on breastfeeding initiation and duration could facilitate efforts to increase rates.

This study of low-income mother's relationships with the fathers of their infants provides some evidence that a committed relationship (especially marriage) and good relationship quality may positively influence breastfeeding behavior. The findings provided support for both hypothesis and for the theoretical approach. Marriage was associated with a greater likelihood of breastfeeding initiation and decreased odds of weaning. Cohabitation was also associated with breastfeeding initiation. High relationship quality was associated with increased likelihood of breastfeeding initiation and decreased odds of weaning in the bivariate analyses. For

married women, relationship quality was associated with decreased odds for weaning in the model with the control factors.

Not all the findings supported the original hypothesis. Mothers with little/no contact were not significantly different from married or cohabiting mothers in initiation or duration. The results for relationship quality were insignificant for the whole model. For African-American mothers, relationship quality was significantly associated with not initiating breastfeeding, a finding that was in the opposite direction from what was hypothesized.

This data set, while not perfect for breastfeeding research, did provide unique information about two populations--low income and African-American women--which have been targeted for breastfeeding promotion efforts (U.S. Department of Health and Human Services, 2000). The results of this study added to past research (Baydar et al., 1997; Timbo et al., 1996) and extended the knowledge of influences on breastfeeding duration. As much previous research has been based on data collected in the 1980's (Timbo et al., 1996; Visness & Kennedy,

1997) before changes in the WIC program to help increase breastfeeding (Baydar et al., 1997) and before greater attention to breastfeeding promotion in the United States, these findings, from a recent, large, national data set, should help contribute to the knowledge about influences on breastfeeding in a low-income population. Although breastfeeding rates for African-American mothers in this sample were lower than those for other ethnic groups, they were still higher than the rates found in previous research. Forste et al., using national data collected in 1995, reported a 30% initiation rate for African-American mothers.

Some of the tangential findings of this study are worth mentioning. Age had an opposite effect for African-American mothers and those who were cohabiting from the usual finding that older mothers were more likely to initiate breastfeeding (Scott & Binns, 1998). First birth was associated with breastfeeding initiation but was then associated with increased odds of weaning.

Most of the variables were not significant predictors of breastfeeding duration in the model. Although ethnicity was not associated with odds for

weaning in the whole sample, influences for some variables were different for different ethnic groups. For African-American women, private insurance (compared with Medicaid/charity) was associated with increased odds for weaning. This was in the opposite direction from the effect on Hispanic/Other women. For Hispanic/Others, early prenatal care was associated with increased odds for weaning, for African-Americans, early prenatal care was associated with decreased odds of weaning.

Other findings might help guide improvements in breastfeeding promotion efforts. Educational efforts to help mothers stop smoking should include the information that it is still beneficial to breastfeed and continue breastfeeding even if the mother is unable to stop smoking (Mohrbacher & Stock, 2003). The finding that attendance at religious services was associated with breastfeeding initiation, but was not significant for odds of weaning suggests an important venue for the provision of breastfeeding help. The need for maternity leave and breastfeeding friendly workplaces (Galtry, 1997) was underscored by the finding that employment and

the timing of return to work increased the odds of weaning.

The findings were consistent with sociobiological theory: for those mothers currently in relationships, the greater the commitment of the baby's father, as represented by marriage and cohabitation, the more likely the mother was to start breastfeeding. Married mothers, and married mothers with high relationship quality were more likely to continue breastfeeding. Mothers in less committed relationships (those in the visiting/friendship category) had lower rates of breastfeeding initiation and duration.

Those women who weren't married might have felt burdened with more responsibilities and believed they lacked the time to breastfeed (Guttman & Zimmerman, 2000). In keeping with Hrdy's (1999) arguments and my hypothesis, they also might have spent more time and energy maintaining or improving the (presumably) fragile relationship with the infant's father, and have had less energy to devote to breastfeeding. Married women, particularly those with high relationship quality, might have access to the most practical help and might also

feel most secure about their partners and thus would have the most time and psychological energy to devote to breastfeeding.

The role of relationship quality is an intriguing one, which might be worth further investigation. Much work remains to be done before rates of breastfeeding for all mothers in the United States, to reach the goals originally set for 1990, reset for 2000, and reset again for 2010 (U.S. Department of Health and Human Services, 2000). Improving the prospects for marriage, and helping both parents create a mutually supportive relationship, may be one small contribution to that work.

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APPENDIX

Wording of Questions in Mother's Baseline Survey

The same questions were asked of mothers not in a romantic relationship with the baby's father, in a romantic or "on again, off again" relationship, and mothers who were married to the baby's father. For couples not currently together, the questions were about the last month of the relationship and some of the wording was slightly different from that below (The Fragile Families and Child Wellbeing Study, 2003).

Shared activities questions:

I'm going to read you some things that couples often do together. Tell me which ones you and (baby's father) did in the past month.

[Answers: yes or no]

Visited with friends?

Went out for a movie, sporting event, or some other entertainment?

Ate out in a restaurant?

Helped each other solve a problem? (pp. 7, 13, 17)

Harmony questions:

The following is a list of subjects on which couples often have disagreements. How often, if at all, in the last month have you and (baby's father) had disagreements about each of the following:

[Answers: Often, sometimes, or never]

Money ?

Spending time together?

Sex?

The pregnancy?

Drinking or drug use?
Being faithful? (pp. 8, 13, 17)

Emotional support questions:

Thinking about your relationship with the (baby's father), how often would you say that:

[Answers: Often, sometimes, or never]

He is fair and willing to compromise when you have a disagreement?

He expresses affection or love for you?

He insults or criticizes you or your ideas?

He hits or slaps you when he is angry?

He encourages or helps you to do things that are important to you? (pp. 8, 14, 18)