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Enhancing Breastfeeding Rates Among African American Women: A Systematic Review of Current Psychosocial Interventions

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Abstract

The goals of this article are to provide a review of key interventions and strategies that impact initiation and duration of breastfeeding with particular focus on low-income African American mothers' maternal psychological vulnerabilities during the early postpartum period using a social ecological perspective as a guiding framework. Although modest gains have been achieved in breastfeeding initiation rates in the United States, a projected gap remains between infant feeding practices and national Healthy People breastfeeding goals set for 2020, particularly among African Americans. These disparities raise concerns that socially disadvantaged mothers and babies may be at increased risk for poor postnatal outcomes because of poorer mental health and increased vulnerability to chronic health conditions. Breastfeeding can be a protective factor, strengthening the relationship between mother and baby and increasing infant health and resilience. Evidence suggests that no single intervention can sufficiently address the multiple breastfeeding barriers faced by mothers. Effective intervention strategies require a multilevel approach. A social ecological perspective highlights that individual knowledge, behavior, and attitudes are shaped by interactions between the individual woman, her friends and family, and her wider historical, social, political, economic, institutional, and community contexts, and therefore effective breastfeeding interventions must reflect all these aspects. Current breastfeeding interventions are disjointed and inadequately meet all African American women's social and psychological breastfeeding needs. Poor outcomes indicate a need for an integrative approach to address the complexity of interrelated breastfeeding barriers mothers' experience across layers of the social ecological system.

Introduction

Over the past few decades multiple studies have confirmed that breastfeeding has positive effects for mother and child from a nutritional,[1] physiological,[2–4] or developmental[5–7] perspective. For example, the large breastfeeding intervention trial published in 2008 among preterm infants clearly demonstrated better cognitive outcomes among breastfed versus bottle-fed infants.[5] Simultaneously, overall breastfeeding rates in the United States have risen,[1] most likely reflecting various legislative changes specifically addressing health, economics, employment, and welfare policies and practices with a unifying goal of providing systemic support for mothers to breastfeed. The Innocenti Declaration (1990)[8] and U.S. legislations, including the Family Medical Leave Act (1993), Personal Responsibility Welfare and Work Opportunity Act (1996), the Affordable Care Act (2010),[9] and the Healthy People Act (2010),[10,11] have resulted in national policies such as the Surgeon General's Call to Action to Support Breastfeeding (2011)[12] and the Baby-Friendly Hospital Initiative (BFHI).[13]

However, despite these many breastfeeding initiatives and the apparent overall success of enhancing U.S. breastfeeding rates over the past 25 years, one group of U.S. women—namely, African American mothers—have persistently lagged behind, showing, by far, the lowest breastfeeding rates.[14,15] This puts African American mothers and their babies at higher risk for poor postnatal outcomes[16–20] and may be a substantial contributor to the origins of health disparities among African Americans across the lifetime.[21]

With this public health concern in mind, it seems important, as a first step, to carefully examine potential barriers and facilitators to breastfeeding specifically among African American mothers and to critically review the current state of

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research on effective interventions aiming to enhance breastfeeding among black women. For purposes of this study, the term ''African American'' and ''black'' will be used interchangeably to refer to the same population. We will first provide a review of currently suggested barriers and facilitators specific to breastfeeding among African American women, followed by a systematic review of currently published breastfeeding interventions for this group.

Barriers and facilitators to breastfeeding among African American women

African American mothers are uniquely situated when it comes to making decisions about infant feeding and parenting and face a complex set of dynamics that shape their reproductive decisions and behaviors,[22,23] including breastfeeding.[24] These specific dynamics are shaped by cultural attitudes and ideologies toward breastfeeding, both publicly and privately,[25,26] and are suggested results of slavery, wet-nursing, and other negative historical reproductive health experiences among black women in the United States.[16,27–29]

Black women are also disproportionately more likely compared with white women to have poor perinatal health outcomes[22,30] and to suffer from chronic illness,[31] stress,[32,33] depression,[34] or posttraumatic stress disorder,[35] all of which are known risks associated with lower breastfeeding rates.[36] As underlying contributors to such racial health disparities, research suggests the presence of low-income status,[37] systemic discrimination,[32,33,38] living in racially segregated communities,[39] and experiencing racial disempowerment[16,40–43] among blacks, all of which ultimately may lead to adverse overall life and health outcomes.[40,44,45] Because discrimination increases the volume of stress that one experiences, African Americans are particularly vulnerable to its adverse health impact in its various forms.[46,47] Although some studies have shown that middle and upper class women have moderately better rates of breastfeeding, higher socioeconomic status is not a protective factor against the deleterious effects of racism, and, in fact, socioeconomic status confounds racial differences in health and may serve as a causal pathway by which race affects health.[48,49] Additionally, low-income mothers often lack adequate levels of personal social support from family and friends as well as the flexibility within work environments that are associated with positive breastfeeding behavior.[45,50] Furthermore, negative life events,[51] chronic social and environmental stress,[52] and lack of models and resources[53,54] might all account for class differences in postpartum care practices like breastfeeding among low-income African American women. Despite great need, African American mothers are less likely than other groups of women to receive support or treatment for their social, physical, or emotional needs.[55,56]

Black mothers in the United States are also disproportionately more likely to experience the workplace as unsupportive of breastfeeding. On average, they return to work at 8 weeks postpartum, which is earlier than women from other racial and ethnic groups,[21] and once they return to work, they encounter less flexible work conditions.[57,58] Finally, several modifiable predictors of low rates of breastfeeding, such as lack of personal support,[7] inadequate access to professional breastfeeding resources,[36,59] racially biased health care,[60] and low breastfeeding self-efficacy, contribute to the range of breastfeeding challenges.[21,45,61,62] Although these predictors are not unique to black mothers, they are disproportionally prevalent in this group and therefore may contribute to the low breastfeeding rates among African American women.

In summary, risk factors found in the literature that are associated with lower breastfeeding rates are more prevalent among African American women, thus contributing to the reasons why black mothers breastfeed less often and for shorter times.[21,28,29,63] Targeted breastfeeding interventions for black mothers could potentially increase their breastfeeding uptake. In the next section, and as the main content of this article, we provide *methodology* for and *results* from a comprehensive review of currently available breastfeeding interventions in the United States targeting African American mothers.

Methodology

We use an adapted social ecological framework, drawing on the work of Bronfenbrenner and Carter,[64] to systematically organize the various breastfeeding interventions revealed through the literature search. We chose this framework as an organizational structure because of its comprehensive multilevel systems approach. The social ecological framework includes several levels of systems interdependently linked to, and functioning in concert with, other levels of the social structure. The outer level, or macrosystem/public policy (society/culture), includes policy, legislation, and social, economic, and health institutions that address breastfeeding. The exosystem (local implementation) includes lactation consultants, pediatricians, and other clinically trained healthcare practitioners. The microlevel system (interpersonal) includes family and friends. Finally, the inner, or individual, level is typically understood as the mother–infant dyad.[50,63] Although the social ecological framework shows the level that the intervention targets, the history of past and present racial discrimination presents the sociohistorical context in which the interventions operate,[26] thus functioning as a larger context in which all interventions operate (Fig. 1).

In addition, as a way of approaching this systematic literature review, we followed the five-stage qualitative literature review process of Whittemore and Knafl[65]: problem identification, literature review, data evaluation, data analysis, and presentation of results.

Literature search

An electronic search was performed in the databases Cumulative Index to Nursing and Allied Health Literature (CINAHL), PubMed, Web of Science, and Google Scholar using the words ''breastfeeding,'' ''breastfeeding interventions,'' ''breastfeeding strategies,'' ''African American mothers,'' and ''black mothers'' as key concepts in the title, abstract, or key words. Results were limited to research studies published during the 1995–2013 period whose primary focus was on *breastfeeding interventions or strategies* intended to enhance breastfeeding initiation or duration primarily in African American mothers.

The search initially yielded 508 studies from a broad base of disciplines, including nursing, medicine, public health, and various social sciences. Abstracts and reference lists from these publications were reviewed for additional potentially relevant

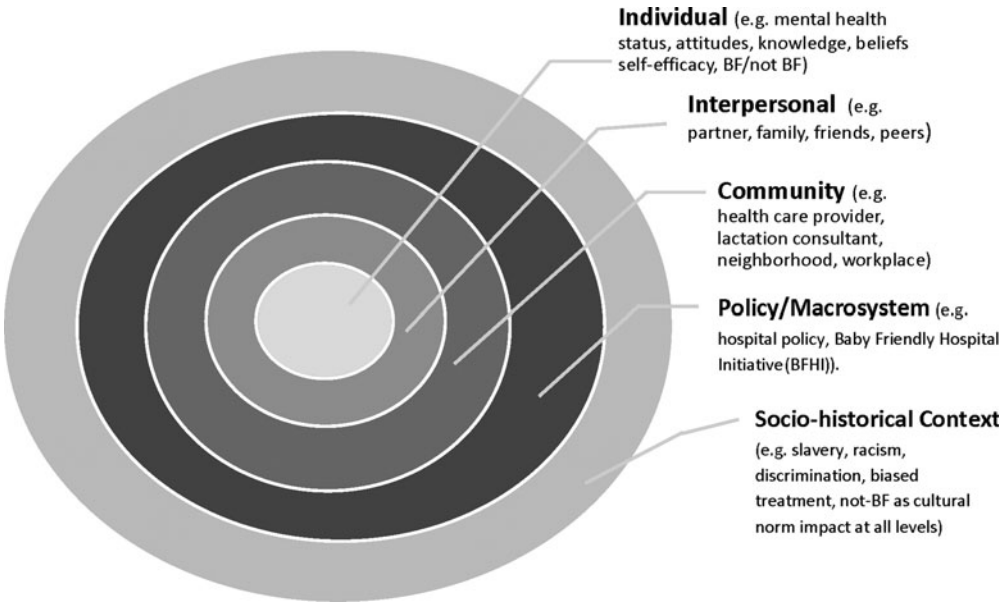

FIG. 1. A social ecological framework underpinning psychosocial factors influencing breastfeeding (BF) among African American mothers.

studies, and then the full text of each article was further considered to identify those meeting the inclusion criteria.

Data evaluation

This stage of the review included determining inclusion and exclusion criteria for studies. All studies were evaluated with regard to relevance. Study relevance was consistent with review focus and was determined based on whether articles included a study sample of a substantial (30% or more) proportion of African American mothers or pregnant women. The integrative review by Spencer and Grassley[21] of factors that impact breastfeeding in African American women suggests that similar reviews should reflect a minimum of 25% of the total study sample to ensure adequate representation. This review excluded studies that included mixed-race participants not identified as African American. Commentaries and reviews were excluded. In total, 32 studies met the inclusion criteria. The full-text version of these articles was then considered in detail. Several articles were eliminated because they discussed breastfeeding barriers but failed to identify or offer potential interventions or strategies. For the final review, 23 published reports met inclusion criteria and underwent further analysis.

Data analysis

Studies included in this review were initially coded and grouped according to the social ecological framework[50,63] as outlined above. We assessed whether the intervention or strategy had been evaluated and also specified the methodological research approach (e.g., quantitative, qualitative, or mixed method). Table 1 illustrates findings organized by ecological perspective, methodology, type (intervention or strategy), participant characteristics, and results.

Results

Overall, we found 23 distinct interventions or strategies discussed in the reviews. Eighty-three percent ($n=19$) of the interventions had more than 50% African American participants, and 17% ($n=4$) enrolled fewer than 50% African American participants but at least 30%.

Consistent with our framework, we grouped the interventions as follows: breastfeeding interventions targeting only macrosystems/public policy-level (none), exosystem (local implementation/institutional)-level (four, or 16% of the total), interpersonal-level (three, or 13% of the total), individual-level (two, or 8% of the total), and multilevel (16, or 67% of the total) functioning. The largest group of interventions combined interpersonal and institutional target levels, making six of the 23 total interventions. These typically applied a breastfeeding team approach consisting of two or more of the positions of lactation consultant, breastfeeding peer counselor, or family and/or friends who provide in-person technical education, training, and emotional support.

Macrosystem/policy-level interventions and strategies

We were surprised to find that we could not identify any macrolevel systems interventions published in the literature that purposefully targeted African American women, given their high-risk status. In applying the ecological systems approach to breastfeeding, we anticipated overlap across multiple levels. Interactions between multiple layers of the ecological system are inherent to this framework and demonstrates interdependence, overlap, and a bidirectionality between levels.[63] Consequently, we anticipated that the social ecological profile of interventions would reflect a comprehensive systemic approach to the support of breastfeeding. Policy implementation must occur throughout the regional, state, and local institutional levels. In this way, we might evaluate the impact of a policy through its effects on populations at a specific hospital, agency, or organization. Four interventions reflected a combined institutional- (local implementation) and macrolevel systems ecological approach as they measured the effect of the BFHI, launched in

Table 1. Summary of Published Breastfeeding Interventions and Strategies Targeting African American Women Organized by Ecological Perspective

Level, reference (year)	*Research design; location*	*Participant characteristics*	*Intervention/strategy*	*Results*
Individual (microsystem) level				
Avery et al.[79] (2009)	Qualitative: focus groups and thematic analysis of results; Chicago, New Orleans, and San Francisco	$n=152$, 56% AA; 24 focus groups of 4–11 participants each; 12 focus groups of pregnant women, 6 focus groups of mothers currently breastfeeding, 6 focus groups of mothers formula feeding	Collected mothers' perceptions about prenatal breastfeeding confidence and commitment as predictors of breastfeeding	Confidence in breastfeeding process and ability to breastfeed may predict breastfeeding despite obstacles.
Racine et al.[80] (2009)	Qualitative: in-depth interviews; Maryland	$n=44$, 96% AA low-income women who breastfed	Assessed whether mothers who breastfed were intrinsically motivated, extrinsically motivated (using breastfeeding support team), or successfully experienced with both intrinsic and extrinsic motivation	Mothers who successfully breastfed a previous child and were intrinsically and extrinsically motivated are more likely to breastfeed to 6 months postpartum.
Interpersonal (mesosystems) level				
Ickovics et al.[75] (2007)	Mixed methods: multisite RCT, structured interview at enrollment, 3rd trimester, and postpartum; New Haven, CT and Atlanta, GA	$n=1,047$, 80% AA	20 hours of peer group prenatal care with women of the same delivery month at an urban hospital clinic	Breastfeeding initiation rates were higher in the intervention group (67%) versus (55%) in the control group.
Meyerink et al.[77] (2002)	Mixed methods: literature review of breastfeeding barriers; three-step regression analysis of breastfeeding initiation and duration; individual interviews; Birmingham, AL	$n=150$ predominantly low-income mothers/patients of infants 4–7 months old at a county health clinic, 93% AA	Measured impact of familial influence, breastfeeding modeling behavior, and breastfeeding behavior	Maternal familial breastfeeding experience and breastfeeding experience have positive impact on breastfeeding initiation and continuation.
Wolfberg et al.[76] (2004)	RCT; Maryland	$n=59$, 85% AA expectant fathers at an inner-city obstetrics/ gynecology clinic	2-hour peer educator-led class targeting expectant fathers on how to support a breastfeeding mother Class content included a video, slides, role-play, and breastfeeding support technical skills. Control group received basic baby care class.	Breastfeeding rates among intervention group (74%) versus control group (41%) Intervention group fathers were more likely to live with the baby's mother. No difference in breastfeeding duration between groups
Institutional (exosystems) level				
Beal et al.[72] (2003)	Quantitative (multivariate) analysis of secondary data; New York	$n=8,757$, 54% AA mothers from the National Maternal and Infant Health Survey	Comparison of self-reported breastfeeding advice received from healthcare provider and WIC staff	AA mothers reported differences in breastfeeding information they received; there was no reported effect on breastfeeding behavior.
Bonuck et al.[70] (2005)	RCT; baseline prenatal interviews for demographic data, breastfeeding experience, intention, and knowledge; postpartum weekly interviews; New York	$n=304$ low-income community health clinic patients, 36% AA women	Home visits by lactation consultants: two prenatal, one postnatal; telephone support, nursing bra, and breast pumps up to 52 weeks postnatally	53% of intervention group versus 39% of control group ($p<0.05$) were breastfeeding through Week 20 postpartum with the exception of Week 18, and 46% of intervention group versus 33% of control group ($p<0.05$) reported at least half of feedings were breastfeeding through 9 weeks.
Serwint et al.[71] (1996)	RCT; interview at enrollment, 2-month postnatal visit; Baltimore, MD	$n=156$, 91% AA new mothers	Discuss breastfeeding with a resident at a scheduled pediatric clinic prenatal appointment at 32–36 weeks of gestation The resident received a 1-hour training in breastfeeding techniques and strategies.	42% of intervention group versus 31% of control group were breastfeeding at birth. No differences in breastfeeding at 30 and 60 days postpartum
Chiu et al.[73] (2008)	Quantitative, secondary data analysis, Index of Breastfeeding Scale used to measure breastfeeding status, descriptive statistics to provide analysis; Midwestern United States	$n=48$ mother–infant dyads experiencing breastfeeding difficulties, 33% AA low-income patients	Measured impact of a series of a minimum of four skin-to-skin breastfeedings 11–24 hours after birth	81% breastfeeding exclusively at discharge, 76% breastfeeding exclusively at 1 week postpartum, 53% exclusively breastfeeding at 1 month; results similar across racial groups except at 1 month black mothers had lower exclusive breastfeeding (33%) and higher breastfeeding cessation (46.7%)

(*continued*)

TABLE 1. (CONTINUED)

Level, reference (year)	*Research design; location*	*Participant characteristics*	*Intervention/strategy*	*Results*
Multilevel interventions and strategies Individual and interpersonal combined				
Caulfield, et al.[101] (1998)	Experimental intervention study, baseline interviews (breastfeeding intention), statistical analysis of breastfeeding; Baltimore, MD	$n=242$ low-income WIC participants, 100% AA from four different WIC offices	2×2 factorial design across four clinics: Clinic #1, control/no intervention; Clinic #2, prenatal motivational video; Clinic #3, pre- and postnatal peer counseling; Clinic #4, video and counseling The video addressed benefits and barriers to breastfeeding. Peer counselor visits up to 16 weeks postpartum	Intervention groups 2×higher breastfeeding intention than control group; breastfeeding initiation rates of 26% control/no intervention group, 50% prenatal motivational video group, 62% peer counseling group, and 52% video and peer counseling group Intervention participants less likely to wean by 16 weeks postpartum
Individual and institutional system levels combined				
Cricco-Lizza[17] (2004)	Qualitative: ethnographic observations of all participants, in-depth audio-taped interviews with key informants	$n=130$ WIC participants, 100% AA, 11 ''key informants''	Perceived breastfeeding education and support from nurses and physicians during pregnancy and after childbirth	Informants perceived limited breastfeeding education and support received during pregnancy and childbirth. Hospital practices facilitated formula use.
Hartley and O'Connor[100] (1996)	Quantitative, pre- and postintervention trial	$n=167$ mother–infant dyads, 86, 85% AA pre-intervention, 81, 93% AA postintervention	Education and communication-based program, ''Best Start,''trained practitioners to ask mothers, ''What do you know about breastfeeding?'' in place of ''Are you going to breastfeed or bottle-feed?	Postintervention group had higher breastfeeding initiation and duration rates: 15% in 1993 versus 31% in 1994 initiated breastfeeding; 13% in 1993 versus 21% in 1994 were breastfeeding at the 2-week clinic visit.
Memmott and Bonuck[104] (2006)	RCT, qualitative exit interviews; Bronx, NY	RCT: $n=382$, 37% AA Qualitative interviews: $n=21$, 52% AA	Education and support provided pre- and postnatally by a lactation consultant in-person and via telephone and available up to 1 year postnatally for consultation	Intervention participants had greater continued breastfeeding duration through Week 20 (53.0% vs. 39.3% for controls; $p<0.028$), and feeding of ≥50% breastmilk through Week 9 (45.8% vs. 33.1% for controls; $p<0.030$). Control group postpartum study interviews raised breastfeeding awareness, perceived support, and self-efficacy.
Interpersonal and institutional system levels combined				
Kum-Nji et al.[99] (1999)	Qualitative interviews; Mississippi	$n=420$, 80% AA, low-income rural	Assessed impact of breastfeeding encouragement from physicians and nurses and exposure to breastfeeding in the family or a breastfeeding friend on breastfeeding initiation in the sample	75% of respondents received encouragement, but only 25% initiated breastfeeding. More whites initiated breastfeeding than AA (44% vs. 20%, respectively). Healthcare provider was least likely to encourage breastfeeding.
Lewallen and Street[97] (2010)	Exploratory qualitative design using focus groups; Southeastern United States	$n=15$, 100% AA	Women participated in one of three focus groups to identify reasons to start and stop breastfeeding, advice about breastfeeding that was useful or not useful, and cultural issues related to breastfeeding that were perceived to be unique among AA	Participants perceived lack of support and practical information from family, healthcare provider, and peers that negatively impacted their breastfeeding.
Pugh et al.[93] (2002)	RCT, academic center; Mid-Atlantic U.S. region	$n=41$ low-income women, 95% AA	Breastfeeding support team (community health nurse and peer counselor), educational support, social support, hospital nurse visit, provided peer counselor 2× weekly in person and by telephone 6 months postpartum	Intervention participants had higher exclusive breastfeeding and breastfeeding duration rates: exclusive breastfeeding, 45% versus 25% at 3 months; 30% versus 15% breastfeeding at 6 months. Breastfeeding duration: 45% versus 35% at 6 months Fewer sick infant visits and less medication use

(*continued*)

Table 1. (Continued)

Level, reference (year)	*Research design; location*	*Participant characteristics*	*Intervention/strategy*	*Results*
Pugh et al.[94] (2010)	RCT; Johns Hopkins, Baltimore, MD	$n=328$ low-income mother–infant breastfeeding dyads, WIC participants at two urban hospitals; 89% AA (intervention group)	24-week intervention to "extend breastfeeding" included visits by the breastfeeding team (lactation consultant and peer counselor) predischarge; hospital visits, home visits, and 24-hour pager access to the breastfeeding peer counselor	More intervention participants breastfed through 6 weeks postpartum: 66.7% of intervention group versus 56.9% of control group were breastfeeding at 6 weeks postpartum. More intervention participants breastfed at 12 weeks, but difference was not statistically significant. No difference in breastfeeding at 24 weeks
Wambach and Cohen[98] (2009)	Qualitative; Kansas City, KS	$n=23$ adolescents with breastfeeding experience enrolled at one of two postpartum clinics, 61% AA	Exploratory analysis of focus groups and semistructured interviews to discover the process of a teen's breastfeeding decision-making, initiation, continuation, and termination	Teens who breastfed beyond 6 weeks reported significant emotional, informational, and instrumental support from family, friends, and school.
Wambach et al.[95] (2011)	RCT with one usual care control, one attention control, and one intervention, χ^2 test of breastfeeding initiation; Kansas City	$n=289$ single, low-income adolescents from multiple prenatal clinic and school settings, 61% AA	Prenatal, in-hospital, and postnatal education and counseling intervention provided by a lactation consultant and a peer counseling team in the 2nd trimester of pregnancy through 4 weeks postpartum; mothers were encouraged to bring a support person to a session.	Intervention group breastfeeding initiation rates were higher and median breastfeeding duration rates were longer than for controls. Breastfeeding initiation: 79% for intervention group versus 66% for attention control versus 63% for usual care control Breastfeeding duration: 177 days for intervention groups versus 42 days for attention control versus 61 days for usual care control No significant difference in exclusive breastfeeding rates: 65% for intervention group versus 68% for attention control group versus 60% for usual care control group [χ^2 ($df=2$) $=1.04$, $p=0.60$]
Institutional and macro/policy system levels combined				
Merewood et al.[88] (2007)	Secondary analysis of medical records, measured breastfeeding initiation and breastfeeding duration at 6 months postpartum; Boston, MA	$n=336$ mother–infant low-income dyads at BMC, 63% AA	Measured factors associated with BFHI practices at BMC	Breastfeeding duration comparable to cross-sectional national breastfeeding data: 87% initiated breastfeeding (95% CI, 83.9–91.1); 31% of intervention dyads breastfeeding at 6 months postpartum versus 36% national rates and 37% BMC-born at 6 months Increasing maternal age ($p=0.014$), non–U.S.-born mother ($p=0.015$), absence of breastfeeding problems ($p=0.038$), and private insurance ($p=0.061$) were associated with breastfeeding at 6 months postpartum.
Parker et al.[89] (2013)	Quantitative χ^2 analysis of hospital birth records for infants admitted to the BMC NICU between 1999 and 2009; Boston	Predominantly low-income AA mothers in NICU at BMC: $n=117$ in 1999, 66% AA; $n=142$ in 2009, 59% AA	BFHI practices between 1999 and 2009 in BMC NICU	Overall breastfeeding initiation increased 74% to 85% ($p=0.04$). AA breastfeeding initiation increased 68% to 86% ($p=0.01$). Of babies who remained in the NICU in 1999 and 2009, breastfeeding continuation (2 weeks gestation) increased 66% to 80% ($p=0.05$).
Philipp et al.[85] (2001)	Quantitative retrospective study of computer-selected newborn medical records from 1995, 1998, and 1999; Boston	Newborn infants born at BMC: $n=236$ (1995), 56% AA; $n=225$ (1998), 61% AA; $n=234$ (1999), 54% AA	BFHI practices at BMC within 24 hours postnatally	Overall breastfeeding initiation among all infants increased: from 58% in 1995 to 76% in 1998 to 87% in 1999 ($p>0.001$). Overall exclusive breastfeeding increased: from 6% in 1995 to 29% in 1998 to 34% in 1999. AA breastfeeding initiation increased: from 34% in 1995 to 64% to 74% in 1999.
Philipp et al.[86] (2003)	Quantitative analysis of 200 medical records of infants admitted to BMC in 1999, 2000, and 2001; Boston	Full-term healthy infants born at BMC: $n=200$ (1999), 54% AA; $n=200$ (2000), 46% AA; $n=200$ (2001), 54% AA	BFHI practices at BMC between 1999 and 2001	Overall breastfeeding initiation rates were similar: 87% in 1999, 82% in 2000, and 87% in 2001 ($p=0.23$). Overall exclusive breastfeeding decreased: from 34% in 1999 to 26% in 2000 to 25% in 2001 (results not statistically significant, $p=0.10$) AA breastfeeding initiation was sustained: from 74% in 1999 to 77% in 2000 to 69% in 2001 ($p=0.83$).

Note that there were no published studies found with the perspective of public policy (macrosystems) level or individual, interpersonal, institutional, and macro/policy system levels combined.

AA, African American; BFHI, Breastfeeding-Friendly Hospital Initiative; BMC, Boston Medical Center; CI, confidence interval; NICU, neonatal intensive care unit; RCT, randomized controlled trial; WIC, Special Supplemental Nutrition Program for Women, Infants, and Children.

1991 to recognize and train healthcare professionals as the primary catalysts in supporting, protecting, and promoting breastfeeding by requiring them to follow the Ten Steps for Successful Breastfeeding. More about these studies is discussed in a later section, Combined macrolevel and institutional-level systems.

Local implementation of institutional-level interventions and strategies

Consistent with the social ecological perspective, these interventions measured the impact of breastfeeding education and support from healthcare professionals (e.g., lactation consultant, pediatrician, nurse) and employer-based programs on breastfeeding initiation or duration in predominantly African American samples of women served primarily within the hospital environment. Healthcare providers do not operate as individuals, but rather they typically function within and as part of an institution. In this way, they represent the interests of the institutions to which they belong. For this reason, we recognize interventions that use healthcare providers as the main catalyst as having an *institutional* focus. Based on international and national recommendations, institutional breastfeeding interventions are designed to improve breastfeeding behavior at the group level and encourage breastfeeding as a social norm by standardizing breastfeeding information and support as well as by training healthcare professionals to provide direct, immediate, and consistent technical support. These initiatives also discourage the institutional distribution of breastmilk substitutes.[66,67]

Employer-based programs are a critical part of a comprehensive program to support breastfeeding.[68] We were unable to identify any interventions that targeted African American women returning to work. This omission is problematic given African American women's greater risk for breastfeeding cessation with return to work.[69]

We identified four publications that detailed local implementation of institutional-level interventions and strategies. Two studies used a randomized control trial (RCT) methodology, and two studies performed secondary data analyses on national surveys and hospital records. In the first, Bonuck et al.[70] performed an RCT to measure the effect of home visits and telephone support by lactation consultants in a sample of 304 low-income women who visited a New York community health clinic as patients. Intervention participants also received nursing bras and breast pumps for up to 1 year. The results indicated that participants had higher rates of breastfeeding through postnatal week 20 (53% vs. 39%; $p < 0.05$).

Serwint et al.[71] also conducted an RCT in a sample of 156 predominantly low-income African American new mothers. They found that providing mothers with a scheduled, prenatal breastfeeding-focused appointment at a pediatric clinic for pregnant women during 32–36 weeks of gestation increased breastfeeding initiation rates. A higher proportion of mothers in the intervention group initiated breastfeeding, although this was not statistically significant (42% in the intervention group vs. 31% in the control group; $p = 0.26$). However, there was no difference between groups in breastfeeding duration rate at 30 and 60 days postpartum. Of mothers who breastfed, 14 of the 31 (45%) in the intervention group changed their mind after enrollment compared with only three of 22 (14%) in the control group, a result that was significant at $p = 0.03$. This study excluded those who had a history of drug use or a mental health condition. It can be conjectured that although important, discussions with mothers about breastfeeding during the prenatal period is only part of what is needed. Mothers often experience difficulty in the early postpartum period, as well as when they return to work.[58] Also, it is not clear the depth and content of discussion that was shared with mothers during their prenatal breastfeeding support visit, making program replication difficult.

For the third local implementation/institutional-level study, Beal et al.[72] performed a secondary, multivariate data analysis on 8,757 women enrolled in the National Maternal and Infant Health Survey to assess the impact of self-reported breastfeeding advice from healthcare and Special Supplemental Nutrition Program for Women, Infants, and Children's (WIC's) staff on breastfeeding behavior and comparing differences by race. African American women were more likely to report having been advised by WIC staff to bottle feed and less likely to report being advised by WIC staff to breastfeed. Both African American and white women showed higher rates of breastfeeding when advised by their healthcare provider to breastfeed versus when they were advised to bottle feed. Additionally, African American women showed similarly higher rates of breastfeeding when reporting that providers advised them to breastfeed (39.9% vs. 15.1%; $p < 0.001$), as well as WIC staff (25.7% vs. 11.1%; $p < 0.001$). Results are consistent with previous research indicating that African American mothers often experienced differences in care from breastfeeding support professionals in ways that undermine and discourage their breastfeeding behavior.[19,50] These findings have implications for training healthcare providers to provide culturally appropriate care for increasingly diverse populations of mothers in ways that assure consistency and avoid racial bias in breastfeeding education.

The fourth study consisted of a secondary data analysis conducted by Chiu et al.[73] The original study examined the postnatal birth experiences of 48 low-income mother–infant dyads at a Midwestern U.S. hospital (33% African American mothers). Further analysis evaluated breastfeeding outcomes (i.e., exclusive breastfeeding at 1 month postpartum) for the mother–infant dyads who were given a series of four in-hospital skin-to-skin breastfeeding sessions within the first 2 days after birth. Mother–infant dyads were enrolled when babies were 12–18 hours old. Starting 1 day after enrollment, mother and diaper-clad baby were laid together physically to breastfeed at four separate time points through Day 2 after birth. Despite breastfeeding difficulties, rates of breastfeeding initiation improved. It should be borne in mind that this study did not include a control group, and results were based on comparison with national breastfeeding rates. Eighty-one percent (compared with 71% nationally) of all mothers had initiated breastfeeding at discharge, 76% of all mothers breastfeed exclusively at 1 week postnatally after birth, and 53% of all mothers exclusively breastfed at 1 month. Results were similar across racial groups, although black mothers had a lower exclusive breastfeeding rate (33%) and higher rates of breastfeeding cessation at 1 week and 1 month postpartum (47%).

The recruitment and the analysis strategy of Chiu et al.[73] were problematic. First, the sample size was relatively small and reflective of the fact that enrollment was completed only

when staffing was available to cover the 2-day protocol. Second, it would be better to compare the breastfeeding experiences of mothers who had undergone the skin-to-skin intervention with those of mothers who had not undergone the skin-to-skin method. Nationally speaking, mothers are exposed to a wide range of different prenatal, in-hospital, and postpartum experiences that make it unfeasible to compare them with a sample of mothers exposed to a single intervention technique. These points raise issues about the generalizability of results. Including nurses and other healthcare providers as part of a breastfeeding intervention program is critical because nurses are important, second only to partners, in terms of influencing the breastfeeding decision.[74] Additional work is needed to offer culturally appropriate healthcare-based breastfeeding interventions that extend support from the early prenatal period through the postpartum period.

Interpersonal-level interventions and strategies

Interventions targeting interpersonal or microsystem factors are defined as those that address the exchange between the mother and her family and/or friends. Interpersonal breastfeeding support interventions are commonly made up of a breastfeeding peer—another breastfeeding mom—who provides educational counseling and/or psychoemotional support to the mother and ties well into individually based interventions seeking to also build mothers' breastfeeding self-efficacy.

We identified three studies that focused on interpersonal-level factors to enhance breastfeeding in samples of predominantly African American participants (80–100%). These comprised two RCTs, one survey, and a mixed-methods design. The multisite RCT of Ickovics et al.[75] measured the impact of peer prenatal group support on breastfeeding behavior among 1,047 low-income women who attended urban hospitals in New Haven, CT and Atlanta, GA. Women were randomly assigned to standard care or group (intervention) care. The second RCT was conducted by Wolfberg et al.[76] among 59 fathers at an inner city obstetrics and gynecology clinic in Maryland and measured the impact of peer-led educational breastfeeding targeting expectant fathers. Higher breastfeeding initiation rates were observed in both trials (67% vs. 55% [$p < 0.001$] and 74% vs. 41% [$p < 0.02$], respectively). These studies demonstrated the positive impacts of peer educational support and, in the case of the second study, the influence of fathers on breastfeeding also.

Third, Meyerink and Marquis[77] measured the relationship between family and friends as breastfeeding role models, assessing breastfeeding experience and breastfeeding behavior. Interviews were conducted with a random sample of 150 low-income mothers from a public health clinic in Birmingham, AL and compared mothers who initiated breastfeeding with mothers who did not initiate breastfeeding. Mothers who initiated breastfeeding were significantly more likely to have been breastfed themselves (27% vs. 8%) and to have had prior experience breastfeeding (34% vs. 9%), a mother who breastfed (40% vs. 16%), a grandmother who breastfed (80% vs. 40%), a sister who breastfed (27% vs. 9%), or other relative who breastfed (51% vs. 35%). According to findings from this study, previous breastfeeding experience and family breastfeeding experience—particularly an immediate family member (i.e., mother, sister, grandmother)—are both strong predictors of breastfeeding in a sample of low-income African American women. Results, however, are not generalizable to broader, economically diverse populations of African American mothers due to sampling methods.

The results of these studies are consistent with perspectives that identify informal supporters—mother's partner and family—as important in promoting breastfeeding in predominantly African American populations.[78] Engaging the mother's partner and family in the breastfeeding experience helps ensure improved breastfeeding outcomes in samples of predominantly low-income African American mothers. This is an important point in the spectrum of potential strategies as it may offer critical empathetic, relevant support and help mediate negative environment and social experiences to which African American women have historically been exposed.

Individual-level interventions and strategies

Two individual-level breastfeeding support strategies were identified. Interventions and strategies in these categories were defined as ''individual'' because they focused on the mother–infant dyad and addressed breastfeeding attitudes, perceptions, and breastfeeding self-efficacy. Both studies recruited a significant proportion of African American mothers from large, urban areas and used qualitative methodologies to explore mothers' perceptions of potential breastfeeding strategies. Avery et al.[79] recruited 152 women across 24 focus groups in three cities to assess mothers' perceptions of breastfeeding confidence. Similarly, Racine et al.[80] recruited 44 predominantly low-income African American women from Maryland to participate in an in-depth interview designed to explore whether intrinsic or extrinsic motivation best predicted breastfeeding.

Emergent themes from the focus groups and in-depth interviews suggested that confidence in one's ability to breastfeed and confidence and commitment to the process of breastfeeding, as well as previous breastfeeding experience, influence breastfeeding behavior. These findings accurately recognize breastfeeding efficacy as the critical precursor of breastfeeding and are consistent with the self-efficacy theory of Dennis,[81] which refers to a mother's confidence in her ability to breastfeed her infant and predicts her breastfeeding behavior, the amount of effort she will expend doing so, and her ability to cope with subsequent breastfeeding challenges. Although not unique to African American women, improving low self-efficacy in this population is critical because of their lower rates,[82] higher risk for breastfeeding cessation,[18] and the greater likelihood they perceive breastfeeding barriers.[82] Breastfeeding self-efficacy is a significant predictor of breastfeeding behavior,[83] so increasing maternal breastfeeding confidence and her ability to persevere if she does encounter difficulties are essential.[84]

Multilevel interventions and strategies

Sixteen breastfeeding support interventions and strategies combined multiple levels of ecological functioning. This integrative approach speaks to recommendations[50,63] and reinforces the proposal that breastfeeding barriers are not just individually based, they are contextual and extend beyond the mother–infant dyad,[50,63] and interventions must occur at many levels concurrently.[58] Multilevel interventions

are detailed by ecological focus and discussed in the following sections.

Combined macrolevel and institutional-level systems. The BFHI requires that hospitals follow the Ten Steps for Successful Breastfeeding, evidence-based practices that have been shown to increase breastfeeding initiation and duration.[85] Hospitals are awarded national recognition as ''Baby Friendly'' as they systemically follow steps that include but are not limited to (1) routinely communicating a written breastfeeding policy to all healthcare staff, (2) training all staff in skills necessary to implement strategies, (3) informing all women about the benefits of breastfeeding, (4) helping mothers to breastfeed within 1 hour of birth, (5) showing mothers how to breastfeed and how to maintain breastfeeding if separated from their infants, and (6) practicing rooming together mother and baby so that they both can be together 24 hours a day, etc.

Following the launch of the 1991 BFHI, many impact studies were conducted to assess the effectiveness of this program worldwide. A majority of available U.S. studies analyzed BFHI impact on breastfeeding rates at the Boston Medical Center (BMC), Boston, MA, a hospital that provides care primarily to poor, minority, and immigrant families,[85] over the decade following the hospital's BFHI designation. The following studies represent those interventions that analyzed data and provided outcomes based on requirements of this review.

The team of Philipp et al.[85] compared breastfeeding initiation rates by analyzing 200 computer-selected medical records of infants born before, during, and after BFHI policies were in place and found that overall breastfeeding initiation rates among African Americans experienced a marked increase: 34% in 1995 to 74% in 1999. A research team led by Philipp et al.[86] again analyzed breastfeeding data at BMC using same criteria 2 years later and records of infants born in 2000 and 2001 and found that breastfeeding rates among African American infants had sustained over the period since 1999 and not risen any higher at 74% (in 1999), 77% (in 2000), and 69% (in 2001). It is notable that exclusive breastfeeding rates overall declined by 30% in this study. This is important given the intention that the BFHI should increase exclusive breastfeeding.[87] The study fails to discuss challenges faced in implementation of BFHI at BMC such as staff 's perceptions, attitudes, and behavior around the adoption of the policy, particularly as they relate to breastfeeding support of African American dyads. Further evaluation is required in order to assess the impact on African Americans of the BFHI program at BMC.

Two years later, members from the initial research team led by Merewood et al.[88] conducted an exploratory analysis of hospital records from 350 randomly selected, predominantly African American low-income mothers and infants born at BMC, to determine the impact of Baby-Friendly hospital policies on breastfeeding duration and to assess other factors associated with breastfeeding at 6 months. Of the 248 infants who attended the 6-month visit, only 92 women (37%) were breastfeeding at 6 months. Additionally, five factors were associated with breastfeeding at 6 months in this sample, including maternal age, being a non–U.S.-born mother, absence of documented breastfeeding problems, having private insurance, and the presence of a smoker in the house. Although this study takes into account the mother's social environment, it is missing discussion about whether mothers returned to work and the impact of returning to work.

More recently, Parker et al.[89] assessed the rate of breastfeeding initiation and duration among infants born in the neonatal intensive care unit at BMC 10 years after the hospital's BFHI designation. Breastfeeding initiation and duration rates among African American mothers at 2 and 6 weeks postpartum were measured. Results showed that breastfeeding initiation rates increased from 74% to 85% ($p = 0.04$) among all neonatal intensive care unit infants and from 68% to 86% ($p = 0.01$) among African American neonatal intensive care unit infants. The rates of infants in the neonatal intensive care unit receiving any breastmilk at 2 weeks increased from 66% to 80%, but exclusive breastfeeding rates at 2 weeks did not change. Although results infer an association between BFHI policy and breastfeeding, rates for exclusive breastfeeding are not changed. Additionally, implications are unclear because of study limitations. Several important factors remained unmeasured, including the stated increase in the number of International Board Certified Lactation Consultants providing care at BMC during this period, mother's paid employment activity and intensity, and personal breastfeeding experience, influence, and support. It is thus difficult to discern how much other factors such as these may account for the improvements in breastfeeding.

Institutional interventions have the potential to increase breastfeeding initiation and breastfeeding duration by addressing critical systemic breastfeeding barriers. Healthy People 2020 goals include an objective about increasing the number of births at hospitals adopting breastfeeding supportive practices like BFHI to 8.1% (http://healthypeople.gov.2020). However, the last available 2009 outcomes (2.9%) fall short of goals. Furthermore, the BFHI has enjoyed worldwide adoption,[90] but its success in the United States is unimpressive,[13] particularly for African American women. For example, achieving exclusive breastfeeding rates is a key programmatic goal, but positive exclusive breastfeeding outcomes are not reported in these studies. As well, the effects of U.S. interventions on African American women are more pronounced for breastfeeding initiation than for breastfeeding duration. Successful outcomes have been evidenced in other minority populations.[91] The limited impact of BFHI for African American mothers may be attributable to geographical locations of BFHI-designated hospitals that are not serving large numbers of African American patients,[92] thus making it uncertain that this policy may benefit African American women.

Combined institutional- and interpersonal-level systems. Several interventions measured the effect of interpersonal factors like peer counseling combined with institutional-level factors such hospital staff or a public health nurse on breastfeeding behavior. Additionally, these interventions emphasized breastfeeding duration by extending support beyond hospital discharge. Three of the six interpersonal and community institutional interventions undertook an RCT investigation focused on low-income, predominantly African American mothers in two U.S. cities.

Pugh et al.[93] investigated the impact of educational and social support on breastfeeding initiation and duration provided by a breastfeeding support team composed of a

community health nurse and a peer counselor. The intervention was provided to 41 new mothers in the hospital, after discharge in-home, and via telephone through 6 months postpartum. Intervention group participants showed higher rates of breastfeeding duration after discharge. More mothers exclusively breastfed (45% vs. 25% who breastfed at 3 months and 30% vs. 15% breastfed at 6 months) and for longer periods of time (45% vs. 35% at 6 months). Additionally, there were fewer sick infant visits and less medication use in the intervention group.

Pugh et al.[94] expanded previous study efforts by enrolling 328 low-income WIC mothers and babies postpartum from two urban hospitals into a 24-week intervention designed to extend breastfeeding. Again, intervention participants (168 participants and 160 control subjects) received educational and supportive visits by a lactation consultant and/or a peer breastfeeding counselor postpartum, predischarge, at home, and as requested via pager through 24 weeks postpartum. Intervention participants were more likely to breastfeed through 6 weeks postpartum (67% vs. 57%, $p < 0.05$). Mothers who received the intervention were also more likely to breastfeed at 12 weeks postpartum, but these results were not statistically significant. There was no difference in breastfeeding at 24 weeks postpartum.

Wambach et al.[95] performed an RCT also using a lactation consultant and a trained breastfeeding peer counselor to provide a similar intervention of in-home and telephone visits. The target population differed, however, and included 289 low-income adolescent (15–18 years of age) African American mothers. The intervention also differed in duration and was briefer. Support was provided to the intervention group of 128 mothers during the second and fourth postnatal weeks only. They found that the intervention positively influenced breastfeeding duration ($p < 0.001$) but not breastfeeding initiation.

Although these empirical studies signify the importance of factors external to the hospital environment, it is notable that results are mixed and inconsistent in showing measured success, particularly with breastfeeding duration in the most recent RCT of Pugh et al.[94] These investigations fail to consider factors important to an ecological perspective, such as home, neighborhood, and economic or employment policies aimed at low-income women,[96] and demographic differences that might influence mothers' breastfeeding behavior. These issues may help explain the apparent lack of evidence of impact on breastfeeding duration.

The final three interpersonal- and institutional-level studies were qualitative, exploring issues through support groups, focus groups, and quantitative using a retrospective survey. Lewallen and Street[97] recruited 15 mothers who had recently breastfed from a North Carolina community and engaged them in discussions around useful breastfeeding advice unique to African Americans. Wambach and Cohen[98] similarly enrolled 23 predominantly African American teen mothers (14–18 years of age) from Kansas City to participate in focus group discussion about breastfeeding strategies. Roughly half the teens were currently breastfeeding. whereas the other half had weaned their infant in the last 6 months. Those mothers who persisted in breastfeeding longer than 3 months reported supportive networks that directly influenced the continuation through emotional, informational, and instrumental forms of support. Kum-Nji et al.[99] surveyed 420 new mothers at a community hospital in rural Mississippi to determine whether exposure to breastfeeding encouragement from hospital staff, a friend, or a family member best predicted breastfeeding intention and behavior. Seventy-five percent of respondents reported receiving breastfeeding encouragement. Most (83%) was verbal encouragement from a nurse or a nutritionist. Only 25% of mothers successfully initiated breastfeeding.

These studies highlight the importance of family-based and personal breastfeeding support and experience as important factors for successful breastfeeding, particularly for disadvantaged and African American teens whose breastfeeding rates are lowest. Other contextual elements may have also shown relevance, had they been examined. For this reason, it is important to consider the ecological perspective that may help us understand best how African American mothers' breastfeeding experiences are contextualized given the discourse around the impact of health care.

Combined institutional- and individual-level systems. Four of the multilevel interventions combined individual and institutional systems approaches to addressing breastfeeding support. These interventions typically evaluated the impact of perceptions, attitudes, and ideas combined with the impact of healthcare providers on breastfeeding outcomes.

The first, by Hartley and O'Connor,[100] compared the frequency of breastfeeding among a sample of 81 mothers exposed to the Best Start breastfeeding education program with the frequency of breastfeeding among infants born to 86 mothers who received a standard breastfeeding approach. Healthcare providers were trained to elicit and acknowledge mothers' perceptions and understanding about breastfeeding at prenatal visits by asking ''What do you know about breastfeeding?'' instead of ''Are you going to breastfeed or bottle feed?'' Mothers exposed to the Best Start program initiated breastfeeding at double the rate (31% vs. 15%; $p < 0.03$) and breastfed longer (21% vs. 13%; $p > 0.20$) than those mothers who received the standard care question of ''Are you going to breastfeed or bottle feed*?*''

These findings are notable in light of findings by Caufield et al.,[101] who similarly tested the effects of the Best Start program but instead packaged the intervention into a video format and found it less successful than the in-person methods of Hartley and O'Connor.[100] We might speculate that there is added value in breastfeeding education and support being delivered in-person by a trained healthcare provider, particularly in the pre- and early postnatal periods when interventions are most likely to coincide with mothers' breastfeeding challenges. Also, the success of this strategy might be conducive to spontaneous interactions complete with immediate answers to impromptu questions between a mother and her breastfeeding supporter as characteristic of interpersonal interactions.

In the third study, Cricco-Lizza[59] purposively sampled 130 African American (100%) mothers enrolled in a New York WIC program to explore the mother's perceptions about treatment received from nurses and physicians around breastfeeding education and support. In addition, the study used 11 key informants (also mothers) to provide more in-depth prospective infant feeding information. Participants expressed distrust and anxiety about unsatisfactory treatment

from nurses and physicians. Additionally, they reported having received limited breastfeeding education and support during pregnancy and following childbirth. The study did not measure the impact of these perceptions on breastfeeding outcomes. Although this study provides mothers' perceptions about the treatment received from healthcare providers, it fails to offer an explanation about the relationship among a mother's distrust, her perceived unsatisfactory treatment, and her breastfeeding behavior. This is an important omission, given the impactful role that healthcare providers play as willing participants in institutionally based maltreatment and discriminatory practices that precipitate health disparities.[44,102,103]

The fourth intervention, led by Memmott and Bonuck,[104] investigated a mother's perceived impact of education and support as provided pre- and postnatally by a lactation consultant on breastfeeding initiation and duration. Using a mixed-methods approach, a sample of 382 women was randomized to pre- and postnatal, in-person and telephone-based, lactation consultant support over the period of 1 year postnatally. Control participants received standard care. A higher number of intervention participants breastfed through Week 20 (53% vs. 39.3%; $p < 0.028$). In addition, a subsample of 21 women (i.e., 7% [11 from the intervention group and 10 from the control group]) enrolled in the RCT provided qualitative exit interviews. Results from the interviews indicated that mothers felt the intervention was helpful in supporting their breastfeeding behavior. Additionally, control group participants reported that the study interview raised their breastfeeding awareness, perceived support, and self-efficacy.

It is apparent that education combined with psychological support by a lactation consultant has a positive effect on breastfeeding initiation and duration. Comprehensive personalized health care potentially extends standard care practices to provide practical, psychological, and emotional support in ways that advance standard care outcomes. Previous work demonstrates that increasing the length of time spent with patients, engaging in follow-up care, and expanding staff attention and time are effective in reducing racial health disparities and enhancing outcomes.[102] However, the generalizability of this study's results is limited because some findings are based on a subsample of all study subjects: those who participated in the qualitative exit interviews ($n = 21$), half of whom were African American women. Similarly, the study retention rate ($n = 181$; 50% stratification by race for this subsample is not reported) at 12-month follow-up support may create general methodological problems, and results are not generalizable to all African American women.

Combined macro/policy, interpersonal-, and individual-level systems. We identified one study that examined the combined effects of individual-, interpersonal-, and media/macrolevel strategies. Caufield et al.[101] enrolled 242 low-income African American WIC recipients from four sites in Baltimore City, MD. In a 2×2 factorial study design, participants received (1) no support, (2) motivational video package, (3) peer counseling, or (4) both motivational video package and peer counseling. The motivational video package consisted of a motivational video on breastfeeding and accompanying posters, pamphlets, and counseling sessions. The motivational video was a modification of an earlier breastfeeding educational program, Best Start, which encouraged health professionals to ask mothers ''What do you know about breastfeeding?'' instead of ''Are you going to breastfeed or bottle feed?,''[100] acknowledging the impact of mothers' thoughts and perceptions on breastfeeding while it simultaneously educated mothers on the benefits of breastfeeding. Peer counselor visits lasted up to 16 weeks postnatally.

Results demonstrated that a higher proportion of mothers who received any one of the three intervention conditions initiated breastfeeding. Breastfeeding initiation rates included 50%, 62%, and 52% of women in the video, peer counseling, and video/peer counseling combination interventions groups, respectively, compared with 26% of the control group. Additionally, 30%, 38%, and 38% of women in each of the three intervention groups were still breastfeeding at 7–10 days. Results were statistically significant at $p < 0.05$ and demonstrated that having any breastfeeding support helped breastfeeding initiation and duration. However, peer counseling more significantly improved breastfeeding initiation rates when compared with the effects of video alone or video combined with peer counseling, signifying the importance of including personal and peer interactions as part of a comprehensive approach to support breastfeeding among African American women.

Discussion

This review presented a summary of breastfeeding interventions in the United States, aimed at increasing breastfeeding among African American mothers, organized using a social ecological framework. The body of literature supports a multilevel approach to address the low levels of breastfeeding among African American women. Overall, we found that there are numerous interventions aimed at addressing issues across social ecological system levels, and many reported some positive influence on initiating or extending breastfeeding in samples of African American women, although intervention success and outcomes vary. Interventions outlined in this review reflect approaches that are disjointed, indicating a need for an integrative approach to address the multifactorial complexity of interrelated breastfeeding barriers that mothers experience across layers of the social ecological system. Supportive breastfeeding initiatives must function comprehensively, operate seamlessly from the societal level of national-, state-, and local-level policies, and be incorporated throughout major institutions such as hospitals, workplace, schools, and churches. In this way, mothers may benefit from authentic breastfeeding education and care from healthcare providers and community lactation groups necessary to attain heightened breastfeeding standards and outcomes among African American women.

Although breastfeeding initiation rose during the 10 years following BFHI, breastfeeding duration rates saw only modest improvements.[105] Attaining the BFHI status may require multisectorial coordination[106] and genuine efforts at the macrosystems policy and the institutional levels—first, to challenge the impact of race on social and cultural norms and behaviors that impact breastfeeding,[107] and second, because full integration within healthcare practices entails strategic planning, implementation, and subsequent maintenance of

change throughout an entire institution.[85,92] This involves staff education at all levels, cooperation between many departments, and the support of senior staff members and, consequently, results in associated expenditures.[85,92] The Surgeon General's Call to Action 20-year follow-up articulated the need for national leadership to improve public health infrastructure in these areas.[108] The difficulty of maintaining consistency in practices critical for standard breastfeeding support across institutions may account for fluctuations in breastfeeding success. Finally, and significantly, reported assessments of the BFHI status predominantly took place at one site (i.e., BMC); therefore the results are difficult to generalize across geographical, institutional, and population differences. African American mothers often perceive inadequate care from their healthcare practitioners in ways that may compromise breastfeeding behavior.[45,59]

Factors surrounding return to work are critical barriers, particularly for African American women who tend to be in lower-income jobs,[109] have shorter maternity leaves,[21,110] and return to less supportive work environments.[57,58,110] Provisions for workplace support of breastfeeding remain inconsistent and nominal for all women. Prior to 2009, only 23 states had enacted statutes containing provisions relevant to breastfeeding in the workplace. The majority of these focused on break time or pumping location for breastfeeding mothers. Only 12 of these states appear to have enforcement provisions,[111] and only 37% of states encouraged or required employers to provide break time *and* accommodations by 2011.[112] Thus many women are not covered by laws that promote breastfeeding support in the workplace. The 2010 enactment of ''reasonable break time'' under the patient provision of the Affordable Care Act may still leave many mothers unsupported because it only provides break time to pump for children younger than 1 year and exempts employers that demonstrate hardship.[111] Protected workplace flexibility and accommodations are critical resources, especially for African American mothers.

Interpersonal or multilevel system interventions that include breastfeeding education and support by a peer breastfeeding mother alone[75,101] or in combination with a professional (e.g., lactation consultant and/or hospital staff) reported some degree of positive breastfeeding initiation outcomes across facilities and over time.[75,93–95,101] We speculate that such interventions address self-efficacy and breastfeeding education, simultaneously targeting two potentially critical factors. Positive breastfeeding self-efficacy is identified as a critical precursor to successful breastfeeding.[113] This comprehensive approach may harbor additional psychological and social value for African American mothers. Incorporating peer support may mediate inadequate healthcare or lactation support and improve self-efficacy. In this way, interventions that enhance breastfeeding self-efficacy, particularly when combined with education on breastfeeding practices and benefits, can be effective.[83,113] Finally, enhancing self-efficacy may be particularly important for African American women because it may offer critical tools for managing daily life stressors due to individual and systemic racism and discrimination in ways that may help protect against depression.[56]

Although an intervention cannot solve all wider social issues, it can help increase confidence and the ability to breastfeed by building self-efficacy, valuable coping skills, social support, and breastfeeding technical knowledge and by offering breastfeeding role models. Although focusing at the individual level, this review highlights the success of interpersonal interventions that engage informal support networks such as family, partners, and friends in education aimed to support the mothers' breastfeeding initiation. Less work has been done on interventions aiming to enhance breastfeeding duration. This may be due to historically low levels of breastfeeding duration among all populations of mothers making it a lower priority. We might consider that current focus shift to building comprehensive multisystems support for African American women that successfully extends the period of breastfeeding by engaging mothers, family, friends, healthcare providers, community organizations, and policy makers in effective breastfeeding support. Ideally, an intervention would target as many of these as possible. However, mothers may also benefit from participating in an intervention that offers psychoemotional, interpersonal, or educational support from one or more of their personal or institutional community sources. Finally, our review reflects that effective interventions, as part of a breastfeeding support program, need to begin early in pregnancy and extend into the postpartum period, as suggested by national breastfeeding initiatives such as the It's Only Natural Campaign launched in 2013.[114]

Remaining gaps

This review provides an overview of current perspectives on interventions developed to address breastfeeding disparities as framed by a social ecological model. Although multiple studies reference various system levels, important gaps remain in available interventions that might effectively support breastfeeding in African American mothers.

Considering the impact of discrimination. First, available research on breastfeeding interventions fails to consider the influence of racism across all system levels of the social ecological spectrum, although systemic discrimination is well documented and undermines African American women's chances for optimal health.[44] This represents a common oversight because most breastfeeding researchers do not address discrimination and are also criticized for failing to address manifestations of racism that may impact breastfeeding disparities.[115] Furthermore, disparity research experts suggest that ''race-associated differences in health outcomes are due to the effects of racism'' and are not simply artifacts of cultural differences or cross cultural misunderstandings[116] typically attributed to African Americans or other racial groups. Therefore, it is possible that the manifestation of discrimination or even racism is inherent in the well-documented differential breastfeeding care and support services that African American women historically receive from their healthcare providers[117] prenatally as well as when the mother is in the hospital[59,72] as discussed earlier in this article.

Although several aforementioned studies acknowledge that differences in care exist within hospital systems, they fail to acknowledge that it may likely be due to racial discrimination in healthcare delivery.[115] Interventions discussed in this review demonstrate that researchers and practitioners may not recognize their contextual ''positionality''[118] and

operate from a position of power and privilege that focuses on and treats mothers' personal attributes and education rather than question their own nonculturally competent practices and underlying assumptions. Public health experts maintain that ''although healthcare providers are often aware of disparities, they do not perceive that they exist in their own practices and tend to believe that important determinants are factors related to patients rather than factors linked to the provider or the healthcare system.''[102] Favorable breastfeeding outcomes among white women result, at least in part, from institutionalized systems of white privilege and power unavailable to African American women. Effective interventions will recognize and address white privilege and as well treat the conscious and unconscious racial bias embedded within breastfeeding inequities.[119]

Again, we were unable to identify any research focused on the impact of internalized discrimination or racism on disparate breastfeeding outcomes. The introduction of peer breastfeeding counselors may help establish and normalize breastfeeding behavior as well as increase the racial diversity of breastfeeding medical personnel. The absence of discrimination as a research agenda item extends throughout all levels—individual, interpersonal, and institutional—of the social hierarchy and is insufficiently addressed in breastfeeding promotion and support programs that aim to reduce discrimination through the education of healthcare and public health providers and overlook inherent assumptions.

Enhancing macrosystems policy. Second, there is a lack of intervention studies addressing major risk factors inherent in employment practices, healthcare, and treatment of public breastfeeding. Although we found no trials that offer effective workplace interventions in promoting breastfeeding specifically among African American women returning to paid work after the birth of their child,[120] we recognize that an employment policy that assists any mother by offering maternity leave and support in her return to work would also benefit African American mothers. Current state and national policies outlined earlier in this article reflects a scarcity of effort toward supporting mothers and highlight the need to expand and enforce work protections for returning mothers and to subsequently evaluate these practices and policies. Previous work suggests workplace support in the form of establishing pumping and storing stations,[45] break-time protection,[121] and flexible work schedules[62,122,123] as critical supports for breastfeeding mothers.[124] Targeting employment-based factors is particularly important because African American mothers experience shorter maternity leave time on average[21] and commonly return to inflexible work environments after giving birth,[125] and most importantly because return to work postpartum may serve as one of the sources of stress and role overload.[126,127]

Providing psychological and social support. Third, although individual systems-level factors such as major psychosocial risks including stress, mental health problems, or chronic medical illness were all identified in the literature as critical risk factors for breastfeeding,[128,129] we were unable to find interventions or strategies that uniquely target these risk factors or incorporate them as part of a comprehensive solution. It is clear that African American mothers may be at increased risk for stress and depression and might benefit from interventions that address these factors.[34,129–133] This is especially important given that African American mothers disproportionately face, in addition to role strain, depression, posttraumatic stress syndrome,[35] and earlier onset of chronic diseases, all of which are also potential physical consequences of cumulative socioeconomic disadvantage[134] and prompt social challenges and inadequate access to breastfeeding resources.[53] Although the empirical evidence on the relationship between stress and health disparities specifically due to racial discrimination is unclear,[135] these factors share critical ties to racial bias evidenced by the differential treatment of African American mothers in healthcare institutions.

Expanding the use of media. Fourth, like workplace interventions, despite an extensive search we were unable to identify any published interventions that address the influence of positive media on breastfeeding among African American mothers, although there is clear evidence that print and television media directed at mothers can significantly influence social norms and cultural beliefs around breastfeeding.[45,50] The media's sexualization of breastfeeding is pervasive and powerful and negatively impacts beliefs and behaviors at multiple levels of the ecological perspective.[50] Recent research reveals that the emergence of online sources and text-based[136] breastfeeding programs designed for self-help and social support directed at enhancing breastfeeding may effectively supplement existing programs,[137] increase breastfeeding capacity, and improve breastfeeding attitude.[138,139] Furthermore, interest in print and television-based breastfeeding information is increasingly refocused now on the Internet and social media sources as preferred sources of breastfeeding communication and support.[138,140,141]

We can be certain that mothers will increasingly seek out the Internet and social media as one of their primary sources of breastfeeding information and advice,[89] especially as mothers often perceive these as essential sources of emotional and social support—the precursors to building critical breastfeeding self-efficacy.[141] In addition to providing vital information, online support may help supplement existing in-person efforts by strengthening the critical sense of community that is particularly important for African American mothers who experience excess stress as a barrier to breastfeeding. Moreover, an online breastfeeding community might help offset negative associations of breastfeeding based on historical exploitative experiences. More work and evaluation of virtual support systems are needed to assess best practices for Internet, social media, and texting programs alone or as part of a multilevel approach to breastfeeding support.

Considering social class. Finally, there are inherent methodological problems with available studies that raise questions about the importance of income and social class. Studies fail, for instance, to include an economically diverse sample of participants. Study samples tended to be low-income, clinic-based, WIC-based, or single mothers without in-home support. Focusing on low-income women makes it difficult to generalize findings. Ludington-Hoe et al.[18] reported that disparate breastfeeding is minimized when education and income level are similar among African American, white,

and Hispanic women. Likewise, Persad and Mensinger[7] found that women who reported higher incomes were more likely to breastfeed. Although rates of breastfeeding among African American mothers improve with increased income, African American mothers still initiate breastfeeding at the lowest rates when compared with all other groups of mothers and at all income levels. An examination of U.S. sociodemographic characteristics of breastfeeding between 1999 and 2006 found that 58% of high-income African American mothers and 37% of low-income African American mothers initiated breastfeeding. Meanwhile, 76% of high-income non-Hispanic white mothers and 55% of low-income white mothers initiated breastfeeding. Overall, rates are 74% and 57%, respectively, for high- and low-income U.S. mothers.[1]

Being African American may, indeed, have unique cultural and social meaning associated with breastfeeding, but research on African Americans and breastfeeding is overwhelmingly focused on low-income women and thus makes it difficult to distinguish the effects of race from socioeconomic status. For example, low-income African American women are disproportionately represented in the population of all African Americans, so this may factor into the lower breastfeeding tendencies overall and consequently may warrant further investigation into the importance of social class as a predictor. More studies that evaluate the influence of social class on breastfeeding are needed.

Other potential demographic factors, such as geography and immigrant status, are overlooked, perhaps because meaningful measures of socioeconomic status, often used as a proxy for class, are difficult to create, and definitions of socioeconomic groups and methods for collecting these data vary significantly. One researcher noted: ''we have inadequate knowledge about the ways poverty affects breastfeeding. The well-established direct relationship between affluence and higher breastfeeding rates has been viewed simplistically, as a matter of education and racial categories.''[115] Furthermore, there is some disagreement about the significance of income. Some, using aggregate data, have reported racial/ethnic differences in breastfeeding independent of other sociodemographic factors,[142] whereas others disagree and maintain that breastfeeding differences are eliminated when stratified by income.[143] Highlighting the experiences of African American women from all socioeconomic levels might help in discerning barriers related to economic concerns versus those related to racial and cultural experiences. Furthermore, a sample that includes a cross-section of women from a diversity of healthcare or community facilities might better represent the impact of the intervention versus the unique healthcare facility or public program.

Conclusions

There are many studies that have extolled the health and other benefits of breastfeeding and highlighted persistent racial and class disparities despite these benefits. Numerous strategies are proposed based on beliefs and recommendations from these studies. These include major national initiatives that describes unique challenges for African American mothers, and yet, despite much progress, breastfeeding disparities for African American mothers still exist.[14] This research underscores the need for culturally appropriate breastfeeding promotion strategies for African American women, describes breastfeeding disparity as an important public health challenge, and encourages further work to overcome this challenge.

The results of this review suggest that although many current interventions provide some support for mothers interested in breastfeeding, more work needs to be done to develop a consistent, national program for breastfeeding support. Effective interventions will be cumulative, not singular, and multilevel. Breastfeeding promotion must occur simultaneously at several levels and at multiple points in time[63] to help ensure that mothers can both confidently initiate and maintain breastfeeding well beyond hospital discharge. Although a few existing interventions already fulfill the goal of being multilevel, more evaluation is needed. This review highlights the importance of addressing excess stress, lack of support, and discrimination as factors that may underlie disparate breastfeeding outcomes. Specifically, it emphasizes the continued need for interpersonal and empathetic peer-based health and socially based care in ways that are protective and possibly preventive of chronic stress and depression to effectively support African American mothers exposed to the traumas of discrimination and indifferent treatment. Important community breastfeeding support will include personal networks, employers, healthcare institutions, faith-based organizations, and other stakeholders who daily engage with African Americans. Additional research should target the development of culturally appropriate interventions that mirror the psychological, social, cultural, and societal needs of African American mothers to effectively engage them in the growing breastfeeding community through all levels of the social ecological system.

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