

Sources of Information and Support for Breastfeeding: Alignment with Centers for Disease Control and Prevention Strategies

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Abstract

Background and Objectives: Research consistently supports health benefits of breastfeeding; however, rates in the United States remain below Healthy People 2020 goals. To increase breastfeeding, information and support are needed from multiple sources. Given differences in breastfeeding rates by demographic characteristics, sources of information and support may also differ. In addition, recent research suggests potential differences in health outcomes related to feeding method (direct breastfeeding only, feeding expressed human milk, combination-feeding with formula). This study examined (1) information and support received within Centers for Disease Control and Prevention (CDC)-defined strategies for supporting breastfeeding mothers, (2) differences in rates of information and support received by demographics, and (3) associations with feeding method at 6 weeks postpartum.

Materials and Methods: A sample of 447 women participating in the Synergistic Theory Research Obesity and Nutrition Group (STRONG) Kids 2 study completed surveys with questions from the CDC Survey on Infant Feeding Practices II related to sources of information and support for breastfeeding and breast pump use, and about demographics and feeding method at 6 weeks postpartum.

Results: Frequencies of supports received within each category indicate that professional supports were the most pervasive, followed by support from friends and relatives. However, women at greater risk for breastfeeding cessation (lower education, Women, Infants, and Children participants, single mothers) received information and support at lower rates. Education and information support was the only source significantly associated with feeding method.

Conclusion: New approaches are needed to increase efficacy of information delivery, especially for at-risk populations, to better meet CDC recommendations.

Keywords: breastfeeding, information, support

Introduction

DESPITE MANY DOCUMENTED benefits of breastfeeding,^{1,2} rates in the United States remain below recommendations. National rates of breastfeeding initiation and exclusive breastfeeding through 6 months have shown increases over the past decades,³ but overall they remain below Healthy People 2020 goals.⁴ Reasons for breastfeeding cessation are multifactorial, ranging from physical complications such as

insufficient milk supply, to structural barriers such as returning to work.^{5,6} Support and information are needed from multiple domains to lessen barriers and help women breastfeed for the recommended duration. As such, there is a need to understand the association that different sources of information and support have with establishing sustainable breastfeeding practices. Such information is necessary to create effective public health messaging, breastfeeding policy, and allocation of resources to sources of support.

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To support breastfeeding women in the United States, the Centers for Disease Control and Prevention (CDC) introduced a guide of eight strategies to support breastfeeding mothers. These include: immediate prenatal care during labor and delivery (1: Maternity Care); improving the knowledge, skills, attitudes, and behaviors of healthcare providers (2: Professional Education); support from healthcare professionals (3: Professional Support); building connections between breastfeeding women in the same community (4: Peer Support); employee benefits and services (5: Workplace Support); early care and education staff support in handling breast milk and following mothers' feeding plans (6: Early Care and Education [ECE] Support); access to information and resources to increase mothers' knowledge and skills (7: Education and Information); and the promotion of breastfeeding practices in the community, hospital, and workplace (8: Social Marketing).⁷ Individual sources of information and support that fall within these categories have been linked to breastfeeding rates and duration.⁸⁻¹⁴ However, few studies have considered multiple sources together in one model, a necessary step to compare efficacy. In studies that have included more than one source, differences in associations are noted with breastfeeding initiation and duration.¹⁵ For example, Chen et al. found that education from birthing classes, peer support groups, and friends or relatives was related to greater odds of breastfeeding beyond 2 months, whereas receiving breast pump information from professionals was related to reduced odds.¹⁶ These studies provide a basis for understanding the most useful sources of information and support as well as those that need to be bolstered, but more research is needed, in particular considering sources within the context of the CDC strategies.

It is also important to consider that not all women have access to or benefit from the same sources of support and information. The rates at which women initiate and sustain breastfeeding differ across demographic groups, with women who have lower education levels, participate in the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC), and who are not White less likely to breastfeed.¹⁷⁻¹⁹ One reason for these differences may be differential access to and use of sources of information and support. Increasing awareness of group-level differences is necessary for efforts to improve access to multiple supports across all groups of breastfeeding women in the United States.

In addition, a nuanced perspective of feeding methods is necessary to fully understand the support and information that women need for breastfeeding, given that breastfeeding does not look the same for all women. Some women may feed directly from the breast only, whereas others may also feed their infant expressed human milk (HM), or combination-feed both HM and formula. Understanding differences in sources of information and support related to direct breastfeeding versus pumping is particularly important for women returning to work who may not be able to exclusively direct breastfeed. Considering combination-feeding of HM and formula, one study of pregnant women did not find differences in sources of information related to women's plans to breastfeed, formula-feed, or combined-feed.²⁰ However, differences have been found between women who exclusively breastfeed and those who combined-feed in terms of participation in antepartum breastfeeding education as well

as in ratings of social support after birth.²¹ More research is needed to understand the different sources of information and support that are the most effective for varied feeding methods to provide policy and outreach beneficial to all women regardless of the breastfeeding approach they take.

Objectives

This study builds on literature considering different sources of information and support for breastfeeding within the framework of the CDC strategies, with the long-term goal of providing policy and practice recommendations. This goal is addressed through three objectives, to increase understanding of (1) the frequency at which women receive information and support from each source, (2) demographic differences in who receives support from each source, and (3) associations between sources of information and support with feeding method (direct breastfeeding only, breastfeeding with expressed HM, formula-feeding, and combined-feeding). In addressing these three aims, we consider five of the eight CDC strategies that had questions available to assess in data from the Synergistic Theory Research Obesity and Nutrition Group (STRONG) Kids 2 study convenience, community sample of mothers. In addition, we include a category of friend and relative support based on a plethora of prior research indicating the importance of social support from family and friends for breastfeeding.²²⁻²⁴ Sources of information and support are considered separately for breast pump use and breastfeeding, given potential differences related to direct versus expressed HM feeding. Outcomes for feeding method were considered at 6 weeks postpartum in an attempt to capture early patterns of feeding after initiation of breastfeeding in the hospital. Given the importance of initiating and establishing breastfeeding for longer term durations, the goal of the current research was to consider establishment of early feeding patterns as part of a larger, longitudinal cohort study.

Materials and Methods

Sample

Participants in the current sample were part of the STRONG Kids 2 birth cohort study. Women were excluded from participation in the study if their child was born prematurely (<37 weeks), the child's birth condition precluded normal feeding (e.g., phenylketonuria and other inborn errors of metabolism), or their child had a low birthweight (<2.5 kg). The current sample ($n=447$) included individuals with complete self-report data for questions related to sources of breastfeeding information and support at 6 weeks postpartum.

Procedure

This study was approved by the authors' institutional review board and carried out according to all ethical principles for research. Detailed procedures for the full study are reported elsewhere.²⁵ Participants were recruited during their third trimester of pregnancy from healthcare facilities and birthing classes. Pertinent to this study, participants completed an online survey at 6 weeks postpartum.

Sources of information and support

Questions about sources of information and support (presented in Table 1) were drawn from the CDC Survey on

TABLE 1. SOURCES OF INFORMATION AND SUPPORT REPORTED AT 6 WEEKS POSTPARTUM

	Breastfeeding			Breast pump/pumping			Unknown/ missing, n (%)
	Received, n (%)	Did not receive, n (%)	Unknown/ missing, n (%)	Received, n (%)	Did not receive, n (%)	Unknown/ missing, n (%)	
Professional Support (CDC No. 3) Have you obtained information from ...							
a doctor or physician assistant?	426 (95.3)	21 (4.7)	—	350 (78.3)	97 (21.7)	—	—
nurse, midwife, or nurse practitioner?	230 (51.5)	217 (48.5)	—	82 (18.3)	365 (81.7)	—	—
nutritionist or dietitian?	320 (71.6)	127 (28.4)	—	179 (40)	268 (60)	—	—
WIC food program?	28 (6.3)	419 (93.7)	—	11 (2.5)	436 (97.5)	—	—
lactation consultant?	75 (16.8)	372 (83.2)	—	45 (10.1)	402 (89.9)	—	—
birthing or baby care class?	358 (80.1)	89 (19.9)	—	238 (53.2)	209 (46.8)	—	—
How did you learn to use the breast pump you use most often? (A lactation consultant, WIC staff, nurse, or doctor)	227 (50.8)	220 (49.2)	—	102 (22.8)	345 (77.2)	—	—
Peer Support (CDC No. 4) Have you obtained information from a breastfeeding support group?	—	—	—	169 (37.8)	259 (57.9)	—	19 (4.3)
Workplace Support (CDC No. 5) Did any of the following people want you to stop breastfeeding? (your employer or supervisor)	67 (15)	380 (85)	—	29 (6.5)	418 (93.5)	—	—
How important was each of the following reasons for your decision to stop breastfeeding your baby? (I could not or did not want to breastfeed at work)	38 (8.5) No, 37 (8.3)	6 (1.3)	403 (90.2) 410 (91.7)	—	—	—	—
ECE Support (CDC No. 6) How important was each of the following reasons for your decision to stop breastfeeding your baby? (my baby started childcare)	45 (10.1) Not at all/not very important, 39 (8.7)	0 (0) 0 (0)	402 (89.9) 408 (91.3)	—	—	—	—
Did any of the following people want you to stop breastfeeding? (your childcare provider)	No, 39 (8.7)	0 (0)	408 (91.3)	—	—	—	—
How supportive is your childcare provider of breastfeeding in regards to storing breast milk? (from 5—Very Supportive to 1—Very Unsupportive)	Very supportive/ supportive, 9 (2)	Unsupportive, 1 (0.2)	437 (97.8)	—	—	—	—
How supportive is your childcare provider of breastfeeding in regards to heating breast milk? (from 5—Very Supportive to 1—Very Unsupportive)	Very supportive/ supportive, 10 (2.1)	0 (0)	437 (97.9)	—	—	—	—
How supportive is your childcare provider of breastfeeding in regards to providing a place to breast feed? (from 5—Very Supportive to 1—Very Unsupportive)	Very supportive/ supportive, 10 (2.1)	0 (0)	437 (97.9)	—	—	—	—
Education and Information (CDC No. 7) Have you obtained information ...	264 (59.1)	183 (40.9)	—	127 (28.4)	320 (71.6)	—	—
telephone support helpline or hotline?	26 (5.8)	421 (94.2)	—	9 (2)	438 (98)	—	—
books or videos?	214 (47.9)	233 (52.1)	—	90 (20.1)	357 (79.9)	—	—
newsletters?	29 (6.5)	418 (93.5)	—	12 (2.7)	435 (97.3)	—	—
newspapers or magazines?	30 (6.7)	417 (93.3)	—	12 (2.7)	435 (97.3)	—	—
television or radio?	9 (2)	438 (98)	—	3 (0.7)	444 (99.3)	—	—
the website www.4woman.gov?	5 (1.1)	442 (98.1)	—	2 (0.4)	445 (99.6)	—	—

(continued)

TABLE 1. (CONTINUED)

	Breastfeeding			Breast pump/pumping			Unknown/ missing, n (%)
	Received, n (%)	Did not receive, n (%)	Unknown/ missing, n (%)	Received, n (%)	Did not receive, n (%)	Unknown/ missing, n (%)	
the website www.womenshealth.gov ?	13 (2.9)	434 (97.1)	—	3 (0.7)	444 (99.3)	—	—
the American Academy of Pediatrics website (www.aap.org)?	69 (15.4)	378 (84.6)	—	6 (1.3)	441 (98.7)	—	—
the La Leche League website (www.llli.org)?	172 (38.5)	275 (61.5)	—	44 (9.8)	403 (90.2)	—	—
other web sites?	172 (38.5)	275 (61.5)	—	98 (21.9)	349 (78.1)	—	—
How did you learn to use the breast pump you use most often? (I got instructions from the internet)	—	—	—	26 (5.8)	402 (89.9)	—	19 (4.3)
How did you learn to use the breast pump you use most often? (I watched a video about how to use the pump)	—	—	—	27 (6)	401 (89.7)	—	19 (4.3)
Friend/Relative Support (non-CDC)	274 (61.3)	173 (38.7)	—	174 (38.9)	273 (61.1)	—	—
Have you obtained information from relatives or friends?	274 (61.3)	173 (38.7)	—	150 (33.6)	297 (66.4)	—	—
How did you learn to use the breast pump you use most often? (A friend, relative, sales clerk, or other person showed me how to use it)	—	—	—	54 (12.1)	374 (83.7)	—	19 (4.3)

CDC, Centers for Disease Control and Prevention; ECE, Early Care and Education; WIC, Women, Infants, and Children.

Infant Feeding Practices II.²⁶ Questions were asked separately about breastfeeding and breast pumps/pumping. The majority of questions were in a format such that the participant was able to check a box to indicate whether they had received information from each specific source. However, some questions (noted in Table 1) were answered by using a Likert scale. To examine all questions in a similar manner, answers were dichotomized to any responses indicating that the source was unsupportive (0) and any responses indicating that the source was supportive (1).

Each question was considered separately and then grouped based on source of information and support. Within this study, these questions covered Professional Support, Peer Support, Workplace Support, ECE Support, Education and Information Support, and Friend/Relative Support. Participants were considered to have received information or support from each strategy/source if they provided an affirmative response on any questions within that category.

Demographic variables

Participants also reported demographic information. Due to low frequencies for some levels of maternal education, this variable was recoded for analyses such that maternal education was represented as grade school to high school graduate, some college or technical school, or college graduate to post-graduate work. Due to low frequencies of women who reported race/ethnicity other than White, this variable was considered in models dichotomously as White versus non-White. Marital status was also considered as a dichotomous variable of single versus non-single due to low frequencies of reports in the single, separated, and divorced categories.

Outcome: feeding method

To assess the type of feeding method used at 6 weeks postpartum, participants answered the question, “Did you feed your baby formula, breast milk, or both in the past 7 days?” Women who were exclusively breastfeeding were further classified as direct breastfeeding only versus breastfeeding with expressed HM, through answers to the question, “How many times in the past 7 days was your baby fed pumped breast milk to drink? Include breast milk you expressed in any way as pumped milk.” Answers of 0 times were used to classify women as direct breastfeeding only, whereas any value greater than 0 classified women as breastfeeding with expressed HM. Groups were discrete with women only classified into one of the four feeding methods.

Statistical analysis

Chi-square tests of independence were used to examine differences in the frequency of receiving information and support from each source by demographic variables. Multinomial logistic regression models were fit to examine associations between sources of support and feeding method, with exclusive formula-feeding as the outcome reference group. Unadjusted models with each source of information and support were examined, then as a combined model comparing all strategies, and finally including demographic variables. Analyses were conducted in SAS Version 9.4 by using the PROC LOGISTIC procedure with a generalized logit function for nominal categorical outcomes.

TABLE 2. DEMOGRAPHIC DIFFERENCES IN SOURCES OF INFORMATION AND SUPPORT FOR BREASTFEEDING

	<i>Professional Support</i>			<i>Peer Support</i>			<i>Education and Information</i>			<i>Friend/Relative Support</i>		
	<i>Received (%)</i>	<i>Did not receive (%)</i>	<i>p</i>	<i>Received (%)</i>	<i>Did not receive (%)</i>	<i>p</i>	<i>Received (%)</i>	<i>Did not receive (%)</i>	<i>p</i>	<i>Received (%)</i>	<i>Did not receive (%)</i>	<i>p</i>
Maternal education			0.34			0.56			<0.001			0.02
Grade school to high school	92	8		19	81		38	62		42	58	
Some college or technical school	93	7		18	82		37	63		54	46	
College graduate/post-graduate	96	4		12	88		66	34		65	45	
WIC enrollment			0.28			0.76			<0.001			0.002
Yes	93	7		16	84		39	61		47	53	
No	96	4		15	85		64	36		65	45	
Parity			0.03			0.24			0.13			0.001
First child	97	3		16	84		62	38		67	33	
Multiple children	92	8		12	88		46	54		50	50	
Maternal race/ethnicity			0.17			0.74			0.82			0.01
White	96	4		15	85		60	40		64	36	
Non-White	91	9		14	86		59	41		47	53	
Marital status			0.003			0.81			0.01			0.65
Single	86	14		16	84		40	60		58	42	
Non-single	96	4		15	85		62	38		62	38	

Results

Participants in the current sample were highly educated (75.2% college graduates or post-graduate work, 18.8% some college or technical school, 5.8% completed grade school to high school), majority Non-Hispanic/Latino White (81%; 4.3% Hispanic or Latino, 8.5% Asian, 5.4% Black or African American, 2.9% other ethnicity or prefer not to say), and non-single (89.9% married, civil union, or co-habiting; 9.6% single, separated, or divorced). Children were majority first born (65.3%). Twenty percent of mother-child pairs had enrolled in WIC within the past month. Thirty-two percent of the sample reported monthly household income above \$5,000 (24.7% \$3,001–\$5,000, 26% \$3,000 and under, 17.3% unknown). Approximately 70.6% of participants were exclusively breastfeeding (16.1% direct breastfeeding only, 54.5% breastfeeding with expressed HM), 11% were exclusively formula-feeding, and 18.4% were combined-feeding.

Professional Support was most commonly reported (95.3% of the sample) for both breastfeeding and breast pump (78.3%) information and support (Objective 1, see Table 1). Support from friends and relatives was the next most common source (61.3%) for breastfeeding information as well as breast pumps (38.9%). Receiving support from education and information sources was also commonly reported for breastfeeding (59.1%) and breast pump information and support (28.4%). Peer support was not commonly reported (15% breastfeeding, 6.5% breast pump), nor was support from the workplace (8.5%) or ECE (10.1%). However, the majority of the sample did not complete questions related to workplace or ECE (90.2% and 89.9%). Due to missing data for these sources, these variables were excluded from further analyses.

As expected, sources of information and support differed by maternal demographic characteristics (Objective 2, see Tables 2 and 3). The percentage of women receiving support from education and information sources and from friends and relatives differed by maternal education and WIC enrollment; women who reported high education levels (college or post-graduate work) as well as those not enrolled in WIC indicated that they received support at a higher rate as compared with those with less than a college degree or enrolled in WIC, respectively. A greater percentage of first-time mothers reported professional support as well as support from relatives or friends for breastfeeding, and support from peers for breast pumping, as compared with multiparous mothers. By race/ethnicity, a greater percentage of White women reported receiving information from relatives or friends as compared with non-White women. A lower percentage of single mothers reported receiving professional, and education and information support, compared with non-single mothers.

When considering all sources of information and support along with demographic variables together in the full model (Objective 3, see Table 4), education and information support was the only source that remained a significant predictor of feeding method,* with greater odds of direct breastfeeding only and marginally greater odds of breastfeeding with expressed HM, as compared with formula-feeding. Being enrolled in WIC was related to lower odds of breastfeeding with

*All models were also examined with a combined exclusive breastfeeding outcome (including both direct and expressed HM feeding). Statistical inference remained the same, with education and information sources of support the only category significantly associated with odds of breastfeeding.

TABLE 3. DEMOGRAPHIC DIFFERENCES IN SOURCES OF INFORMATION AND SUPPORT FOR BREAST PUMP/PUMPING

	<i>Professional Support</i>			<i>Peer Support</i>			<i>Education and Information</i>			<i>Friend/Relative Support</i>		
	<i>Received (%)</i>	<i>Did not receive (%)</i>	<i>p</i>	<i>Received (%)</i>	<i>Did not receive (%)</i>	<i>p</i>	<i>Received (%)</i>	<i>Did not receive (%)</i>	<i>p</i>	<i>Received (%)</i>	<i>Did not receive (%)</i>	<i>p</i>
Maternal education			0.08			0.42			<0.001			0.29
Grade school to high school	81	19		8	92		12	88		31	69	
Some college or technical school	67	33		10	90		13	87		33	67	
College graduate/post-graduate	80	20		6	94		94	6		59	41	
WIC enrollment			0.75			0.87			<0.001			<0.001
Yes	77	23		7	93		11	89		22	78	
No	79	21		6	94		33	67		43	57	
Parity			0.12			0.04			0.13			0.38
First child	80	20		8	92		29	71		39	61	
Multiple children	74	26		3	97		27	73		36	64	
Maternal race/ethnicity			0.21			0.32			0.28			0.03
White	77	23		7	93		29	71		41	59	
Non-White	84	16		3	97		22	78		26	74	
Marital status			0.59			0.44			0.25			0.35
Single	81	19		9	91		21	79		33	67	
Non-single	78	22		6	94		29	71		40	60	

TABLE 4. ASSOCIATIONS BETWEEN SOURCES OF BREASTFEEDING INFORMATION AND SUPPORT AND FEEDING METHOD AT 6 WEEKS POSTPARTUM

	<i>Individual unadjusted models</i>		<i>Model including all sources</i>		<i>Full model adjusted for demographics</i>	
	<i>OR</i>	<i>95% CI</i>	<i>OR</i>	<i>95% CI</i>	<i>OR</i>	<i>95% CI</i>
Professional Support (CDC No. 3)						
Breastfeeding (direct only) ^a	1.52	0.42–5.57	0.92	0.23–3.69	1.05	0.21–5.17
Breastfeeding (with expressed milk)	4.49 ^b	1.31–15.35	2.62	0.71–9.61	3.26	0.75–14.19
Combined-feeding	1.75	0.48–6.38	1.29	0.33–5.02	1.66	0.36–7.67
Peer Support (CDC No. 4)						
Breastfeeding (direct only)	1.03	0.39–2.73	0.72	0.26–1.99	1.14	0.35–3.69
Breastfeeding (with expressed milk)	0.98	0.43–2.25	0.66	0.28–1.59	1.04	0.37–2.89
Combined-feeding	0.55	0.19–1.59	0.42	0.14–1.25	0.65	0.20–2.13
Education and Information (CDC No. 7)						
Breastfeeding (direct only)	4.26 ^c	1.96–9.27	4.09 ^c	1.81–9.22	2.73 ^b	1.06–7.03
Breastfeeding (with expressed milk)	4.37 ^c	2.25–8.48	3.90 ^c	1.95–7.80	2.22 ^d	0.98–5.00
Combined-feeding	2.38 ^b	1.13–5.02	2.32 ^b	1.06–5.06	1.61	0.65–3.97
Friend/Relative Support (non-CDC)						
Breastfeeding (direct only)	1.93 ^d	0.92–4.03	1.41	0.63–3.15	1.68	0.65–4.31
Breastfeeding (with expressed milk)	2.32 ^c	1.25–4.33	1.55	0.78–3.05	1.56	0.69–3.53
Combined-feeding	1.73	0.85–3.54	1.45	0.67–3.14	1.45	0.59–3.59
Model fit						
AIC			1,049.15		936.67	
–2 Log likelihood			1,110.66		870.67	

Demographic variables included: maternal education, WIC enrollment, parity (first-time parent versus multiparous), maternal race/ethnicity (White versus non-White), and marital status (single versus non-single).

^aExclusive formula-feeding used as reference group.

^b*p* < 0.05.

^c*p* < 0.01.

^d*p* < 0.10.

AIC, Akaike information criterion; CI, confidence interval; OR, odds ratio.

TABLE 5. ASSOCIATIONS BETWEEN SOURCES OF BREAST PUMP INFORMATION AND SUPPORT AND FEEDING METHOD AT 6 WEEKS POSTPARTUM

	<i>Individual unadjusted models</i>		<i>Model including all sources</i>		<i>Full model adjusted for demographics</i>	
	<i>OR</i>	<i>95% CI</i>	<i>OR</i>	<i>95% CI</i>	<i>OR</i>	<i>95% CI</i>
Professional Support (CDC No. 3)						
Breastfeeding (direct only) ^d	0.87	0.37–2.05	0.78	0.33–1.87	0.76	0.29–2.03
Breastfeeding (with expressed milk)	1.18	0.56–2.47	1.05	0.49–2.24	1.03	0.44–2.45
Combined-feeding	0.90	0.39–2.08	0.85	0.36–1.98	0.75	0.29–1.92
Peer Support (CDC No. 4)						
Breastfeeding (direct only)	0.77	0.24–2.45	0.56	0.17–1.86	1.39	0.33–5.87
Breastfeeding (with expressed milk)	0.41 ^a	0.15–1.12	0.27 ^b	0.09–0.80	0.54	0.15–1.93
Combined-feeding	0.27 ^a	0.07–1.14	0.21 ^b	0.05–0.93	0.40	0.08–1.94
Education and Information (CDC No. 7)						
Breastfeeding (direct only)	3.36 ^b	1.25–9.03	3.58 ^b	1.29–9.95	1.72	0.56–5.23
Breastfeeding (with expressed milk)	3.45 ^c	1.41–8.45	3.60 ^c	1.42–9.13	1.64	0.61–4.46
Combined-feeding	2.16	0.80–5.85	2.40 ^a	0.86–6.75	1.46	0.49–4.35
Friend/Relative Support (non-CDC)						
Breastfeeding (direct only)	1.41	0.65–3.09	1.23	0.55–2.76	1.07	0.42–2.69
Breastfeeding (with expressed milk)	1.84 ^a	0.94–3.59	1.64	0.82–3.28	1.40	0.63–3.10
Combined-feeding	1.44	0.67–3.10	1.41	0.64–3.09	1.25	0.52–3.03
Model fit						
AIC			1,060.67		945.67	
–2 Log likelihood			1,030.67		879.67	

Demographic variables included: maternal education, WIC enrollment, parity (first-time parent versus multiparous), maternal race/ethnicity (White versus non-White), and marital status (single versus non-single).

^a $p < 0.10$; ^b $p < 0.05$; ^c $p < 0.01$.

^dExclusive formula-feeding used as reference group.

expressed HM (odds ratio [OR]: 0.18, $p < 0.05$), whereas being a first-time parent was related to lower odds of direct breastfeeding only (OR: 0.23, $p < 0.05$), and reporting an ethnicity other than White was related to greater odds of combined-feeding (OR: 5.67, $p < 0.05$), as compared with formula-feeding. For breast pumping (Objective 3, Table 5), only education and information support was significantly related to feeding method in unadjusted models. In the full model, none of the sources of information and support were related to feeding method. Associations between demographic variables and feeding method were consistent with the full model for breastfeeding.

Discussion

The goal of this research was to investigate how demographic variables influence the receipt of sources of information and support outlined in the CDC strategies for breastfeeding women. In addition, these findings were linked to differences in feeding methods at 6 weeks postpartum. Women in the current sample reported receiving support most commonly from professionals. Education and information sources were also common, as was support from friends or relatives. Peer support, ECE support, and workplace support were relatively uncommon, although for the ECE and workplace questions, missing data were a limitation. It is likely that ECE and workplace were not yet sources of support at 6 weeks postpartum due to most mothers within the sample having not returned to work, and will need to be examined at later time points to fully understand these sources in connection with feeding method. The frequency of

women who received support from different sources is similar to that reported by Chen et al.,¹⁶ with a slightly higher percentage of mothers receiving support from classes or support groups in the previous study. This may be due to sample differences, in particular that the majority of women in the prior study lived in metropolitan areas in which classes and peer support groups may be more readily available and accessible, as compared with the current sample that was drawn from small urban or rural areas. Although not part of the CDC strategies, friends and relatives were a commonly reported source of information and support. In future policy efforts, it may be prudent to include strategies and best practice guidelines for strengthening and encouraging family and friend support.

In addition, our findings indicate that not all women receive breastfeeding information and support to the same degree. Importantly, women at greater risk for breastfeeding cessation (lower maternal education, single mothers, enrolled in WIC, non-White) reported receiving information and support at lower rates. This may be particularly problematic for women enrolled in WIC, who within our sample had lower odds of breastfeeding with expressed HM as compared with formula-feeding. Although disheartening given breastfeeding promotion efforts within WIC programming, this observation is consistent with prior research.^{27,28} Despite receiving information and support at higher rates, being a first-time parent was associated with decreased odds of direct breastfeeding only, as compared with formula-feeding. It is unclear whether information and support are completely absent, or, due to ineffective methods of delivery or heightened levels of stress for some mothers, the information is not resonating in a way

that is meaningful and supports breastfeeding practices. If mothers receive information that is not compatible with their lifestyle, for example promotion of direct breastfeeding only for mothers who must return to work soon after birth, the information and support are not likely to impact their feeding practices. More effective methods are needed to translate breastfeeding and breast pumping information and support into practice for at-risk mothers.

Overall, education and information support was the only category significantly related to feeding method at 6 weeks postpartum. Previous research indicates that lack of knowledge is a key barrier to breastfeeding,²⁹ whereas just being aware of breastfeeding recommendations is linked to higher odds of initiating and continuing breastfeeding.¹⁴ In this study, questions within the education and information strategy mainly encompassed paper or electronic sources such as websites or books. These sources may be effective because they can deliver information directly, without influence from interpersonal interaction or relationships. In some instances, delivery of information from a trusted or known individual with whom a mother has already developed a relationship may be beneficial; in other cases, personal factors may get in the way of effective delivery, thus obscuring any potential associations with feeding method. For example, barriers to breastfeeding in African American mothers participating in WIC included negative subjective norms and incorrect information provided by family and community members, but social support was also identified as a necessity.²³ In these types of situations, mothers may receive conflicting information and support from interpersonal sources that ultimately discourage breastfeeding. However, it will be important to more directly consider different types of paper and electronic sources of information and support in future research. Some websites and personal blogs that provide breastfeeding information can also be inaccurate or conflictual, whereas others may provide consistently updated information that is relevant for mothers from different backgrounds.

Limitations

This study adds to the literature around sources of information and support for breastfeeding mothers, but some limitations should be noted. First, the sample is somewhat homogenous, in particular in relation to race/ethnicity, which limited examination of ethnic differences to only a dichotomous consideration between White and non-White mothers. Prior research indicates differences in rates of breastfeeding across ethnicities¹⁷ as well as differences in cultural norms around breastfeeding,³⁰ suggesting that future research needs to further identify differences in sources of information and support that are the most effective across different ethnicities. We were also limited by the number and type of questions related to each category of information and support. Only one question fit within the CDC strategy of peer support, questions about sources of online support may be somewhat outdated (i.e., www.4woman.gov versus newer online forums such as Reddit), and questions did not differentiate between seeking information and support versus information and support being passively received. Finally, these analyses did not consider biological reasons that determine whether or not a mother is able to breastfeed. It will be important to further investigate these distinctions in future studies.

Conclusion

Within the current ongoing longitudinal study, we plan to further investigate changes in support and information over time in connection with changes in feeding method. This will be crucial to understand how mothers' needs for support change. For example, recent literature suggests that the timing of support for breastfeeding is key when returning to the workplace.³¹ In addition, future research can continue to build on a nuanced consideration of feeding method to differentiate the extent to which different methods are used (i.e., amount of formula versus HM feeding for the combined-fed group, ratio of feeding directly from the breast versus expressed HM) in a dose-response relationship with sources of information and support.

More effective education and information support is needed to increase mothers' breastfeeding knowledge base as a first step to initiate and sustain breastfeeding. For women at greater risk for breastfeeding cessation, this need is particularly great. Novel approaches to information delivery should be considered, as well as demographically relevant materials that avoid value judgments or assumptions. For example, recent use of social media and text messaging^{32,33} as mediums for breastfeeding intervention delivery have shown success and could be utilized at a larger scale to reach underserved populations. Findings underscore the importance of supporting women and effectively providing them with information needed to make informed choices that are compatible with their lifestyle and context.

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