Abstract

Purpose: Develop a measure to quantitatively assess perceived pressure to breastfeed and examine associations between perceived pressure, emotional distress, and the breastfeeding experience and self-efficacy among women with 2- to 6-month-old infants.

Study Design and Methods: A cross-sectional study using an online survey to assess perceived pressure to breastfeed, emotional distress, and the breastfeeding experience and self-efficacy was conducted. Participants were recruited through ResearchMatch, a national online service that matches potential participants to research studies, and online community forums (e.g., Facebook).

Results: Women ($n = 187$) reported themselves and society as the greatest sources of pressure. Pressure to breastfeed was negatively associated with the breastfeeding experience ($r = -.34$, $p < .01$) and self-efficacy ($r = -.39$, $p < .01$), but not emotional distress. Pressure to breastfeed remained a significant explanatory factor, even when considering demographic covariates, with the final models accounting for 16% and 20% of the variance in the breastfeeding experience and self-efficacy, respectively.

Clinical Implications: Perceived pressure to breastfeed may be an important psychosocial factor to consider when aiming to improve women's breastfeeding experiences. Reducing perceived pressure may be beneficial for promoting breastfeeding outcomes.

Key words: Breastfeeding; Mothers; Postpartum period, Psychological distress; Self-efficacy.

NEW MOTHERS' PERCEPTIONS OF PRESSURE TO BREASTFEED

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The physical (Victora et al., 2016) and psychological (Krol & Grossmann, 2018) benefits of breastfeeding for babies and mothers have been established. The American Academy of Pediatrics (2012) and World Health Organization (2021) recommend exclusively breastfeeding for the first 6 months with a mix of breastfeeding and foods for 2 years or longer. It is important to identify factors related to breastfeeding outcomes that are potentially amenable to intervention to improve the wellbeing of new mothers and their infants (de Jager et al., 2015). The positive or negative evaluation of the breastfeeding experience and breastfeeding self-efficacy are important for consideration and influence breastfeeding duration (Cooke et al., 2003). Emotional distress, such as anxiety and depression symptoms, must be minimized to promote optimal breastfeeding outcomes. Postpartum depressive symptoms predict shorter breastfeeding duration (Dias & Figueiredo, 2015), and greater postpartum anxiety is associated with an increased risk of early breastfeeding discontinuation and lower breastfeeding self-efficacy (Fallon et al., 2016). A negative breastfeeding experience and low breastfeeding self-efficacy may increase women's risk for developing postpartum depressive symptoms (Brown et al., 2016; Dias & Figueiredo).

Other factors may be implicated in poorer breastfeeding outcomes. Qualitative studies indicate that women report strong expectations or pressure to breastfeed, chiefly from health professionals and cultural messaging (Burns et al., 2010; Hunt & Thomson, 2017; Thomson et al., 2015), which may contribute to feelings of self-blame, depression, and failure when breastfeeding is discontinued or goals are unmet (Burns et al.; Ladores & Aroian, 2015). Extrinsic motivations, such as breastfeeding to please others, is associated with greater negative effect and postpartum depression (Kestler-Peleg et al., 2015). Therefore, perceiving significant pressure to breastfeed may contribute to poorer breastfeeding experiences and self-efficacy. However, in our review of the literature, we did not find any studies that quantitatively examined the association between pressure to breastfeed and breastfeeding outcomes.

This study aimed to 1) develop a measure of perceived pressure to breastfeed from multiple sources; 2) determine the relationships between perceived pressure to breastfeed, emotional distress, breastfeeding experience evaluations, and breastfeeding self-efficacy; and 3) explore the relative contribution of

pressure to breastfeed on breastfeeding experience evaluations and self-efficacy. We hypothesized that greater perceived pressure would be associated with a poorer breastfeeding experience and lower self-efficacy above and beyond age, education level, marital status, and family income.

Study Design and Methods

Participants

The Life After Pregnancy Study was a cross-sectional study of infant feeding practices and postpartum physical and emotional health. Women were eligible to participate if they 1) were 18 years of age or older, 2) were able to read and write proficiently in English, 3) had an infant ages 2 to 6 months of age, and 4) had attempted breastfeeding at least once. Women were eligible to win one of four gift cards if they completed the survey (four participants received one gift card). The study protocol was approved by the Institutional Review Board at Nationwide Children's Hospital in Columbus, OH.

Procedure

Participant recruitment occurred between May and October of 2016. An email informing potential participants about the study was sent to women ages 18+ who were registered on the National Institutes of Health-sponsored ResearchMatch Web site, a national online platform that connects volunteers with research studies seeking participants. Social media (e.g., Facebook communities for Ohio mothers) and electronic message boards within the children's hospital were also used to recruit participants. The invitation advertised the study as exploring infant feeding practices and other aspects of maternal postpartum health; it did not target participants with any specific infant feeding, care, or health problems. The email invitation contained a link to the online survey, administered using REDCap. Initial survey questions confirmed mothers' eligibility, with subsequent questions asking about pressure to breastfeed, the breastfeeding experience, breastfeeding self-efficacy, emotional distress, and demographics. Informed consent was obtained from all participants via REDCap.

Measures

Pressure to Breastfeed: Pressure to Breastfeed Questionnaire

The Pressure to Breastfeed Questionnaire is a self-report measure developed for this study. It evaluates 11 poten-

Women with unmet breastfeeding goals may experience emotional distress, which can potentially have a negative impact on breastfeeding outcomes.

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tial sources of pressure, including "Other" in which participants can specify (Table 1). Mothers indicated the degree of perceived pressure to breastfeed from each source on a 4-point scale from 0 (Very little pressure) to 3 (A lot of pressure). Responses were summed creating a total score ranging 0 to 30, with higher scores indicating greater perceived pressure. The "Other" item was not included in the total score. This measure demonstrated good internal consistency ($\alpha = .86$) and convergent validity via association with reports of pressure from sources that provided breastfeeding assistance such as physicians, lactation consultants, nurses, friends, family, organized breastfeeding support groups, and online peer support ($r = .37$, $p < .001$).

Anxiety Symptoms: State-Trait Anxiety Inventory

The State-Trait Anxiety Inventory measures state and trait domains of anxiety (Spielberger et al., 1983). In this study, only the 20 items assessing state anxiety were used. Items are rated on a 4-point Likert-type scale ranging from "Not at all" to "Very much so." Total scores range 20 to 80, with higher scores indicating greater state anxiety. This measure demonstrated excellent internal consistency ($\alpha = .95$).

Depressive Symptoms: Edinburgh Postnatal Depression Scale

The Edinburgh Postnatal Depression Scale is a 10-item self-report measure of depressive symptoms among postpartum women (Cox et al., 1987). Women rate the frequency with which they have experienced depressive symptoms in the past 7 days on a scale from 0 (Yes, most of the time) to 3 (No, not at all). Total scores range 0 to 30, with higher scores indicating greater symptoms. Scores >13 indicate clinically elevated depressive symptoms. For this study, good internal consistency was demonstrated ($\alpha = .84$).

Breastfeeding Experience: Maternal Breastfeeding Evaluation Scale

The 30-item Maternal Breastfeeding Evaluation Scale assesses the breastfeeding experience (Leff et al., 1994), including maternal enjoyment and role attainment, infant relationship and growth, and lifestyle and maternal body image. Mothers rated whether they agreed or disagreed with the statements on a 5-point Likert-type scale ranging from strongly disagree to strongly agree. This measure was originally intended for mothers who have stopped breastfeeding. To evaluate the experience of mothers who are still breastfeeding, the verb tense was adjusted, creating two versions of the measure: past tense for those who had stopped breastfeeding and present tense for those continuing to breastfeed at the time of the survey. Total scores range from 30 to 150, with higher scores indicating a more positive breastfeeding experience. This measure demonstrated excellent internal consistency for the past ($\alpha = .94$) and present ($\alpha = .93$) tense items.

TABLE 1. ITEM FREQUENCIES FOR THE PRESSURE TO BREASTFEED QUESTIONNAIRE

Item		Frequencies (% or n)	
To what extent have you felt pressure to breastfeed your baby from the following people or sources:		Very little pressure or Not much pressure	Some pressure or A lot of pressure
1.	Your spouse or partner	72%	28%
2.	Your obstetric health care provider	66%	34%
3.	Your child's pediatrician	71%	29%
4.	Your mother	74%	26%
5.	Your friend(s)	74%	26%
6.	Someone providing lactation support (lactation consultant)	48%	52%
7.	Yourself	18%	82%
8.	Society	36%	64%
9.	Other moms you interact with online	60%	40%
10.	Other moms you interact with in-person	58%	42%
11.	Is there anyone else you felt a lot of pressure from to breastfeed?†		
	Aunt	1	
	Coworkers	1	
	God Mother	1	
	Nurses	2	
	Mother-in-law	4	
	Sister	1	
	Sister-in-law	1	
	Strangers	1	

†Participants were asked to write in any additional sources of pressure to breastfeed.

TABLE 2. PARTICIPANT AND OUTCOMES CHARACTERISTICS ($N = 187$)

	M (SD), Range or %	*n*
Demographics		
Age	31.13 (4.84), 18–43	
18–26	17%	31
27–30	28%	53
31–34	30%	56
35+	25%	47
Race ($n = 186$)		
White	83%	154
Black	8%	15
Asian	3%	6
Other	6%	11
Education Level		
≤ High school diploma or GED	6%	12
Some college or Associate degree	20%	38
College graduate	30%	55
Post graduate education	44%	82
Marital Status		
Married or Living with partner	94%	176
Single	5%	9
Separated, Divorced, Widowed, or Not living together	1%	2
Family Income		
<$35,000	13%	24
$35,000 to <$75,000	31%	57
$75,000 to <$95,000	14%	26
$95,000+	42%	79
Breastfeeding Status		
Breastfeeding	74%	139
No longer breastfeeding	26%	48
Outcomes		
Pressure to Breastfeed Questionnaire	12.49 (6.95), 0–30	187
Maternal Breastfeeding Evaluation Scale	114.56 (22.44), 41–149	187
Breastfeeding Self-Efficacy Scale-Short Form	51.78 (15.02), 14–70	187
State-Trait Anxiety Inventory (State Anxiety Subscale)	36.07 (12.26), 20–76	187
Edinburgh Postnatal Depression Scale	6.76 (4.72), 0–22	187

Breastfeeding Self-Efficacy: Breastfeeding Self-Efficacy Scale-Short Form

The Breastfeeding Self-Efficacy Scale-Short Form is a 14-item measure of breastfeeding self-efficacy that uses a 5-point Likert-type scale ranging from not at all confident to always confident (Dennis, 2003). It was originally intended for women who are currently breastfeeding. Like the Maternal Breastfeeding Evaluation Scale, the verb tense was adjusted to create two versions of the measure. Total scores range from 14 to 70, with higher scores indicating greater breastfeeding self-efficacy. This measure demonstrated excellent internal consistency for past ($\alpha = .93$) and present ($\alpha = .94$) tense items.

Demographics

Participants completed items about their age, education level, marital status, and annual household income. Women indicated whether they were currently breastfeeding or had discontinued by the time of the survey.

Statistical Analyses

Mean imputation for missing items was used if at least 80% or more of the items for that specific measure were completed (State-Trait Anxiety Inventory: n = 0, Edinburgh Postnatal Depression Scale: n = 0, Maternal Breastfeeding Evaluation Scale: n = 2, and Breastfeeding Self-Efficacy Scale: n = 1). The Pressure to Breastfeed Questionnaire is a newly developed measure, thus women with any missing items on the measure were excluded from analyses (n = 8). Frequencies of responses on each item of the Pressure to Breastfeed Questionnaire were calculated, and Pearson correlations were calculated between pressure to breastfeed, anxiety and depressive symptoms, breastfeeding experience, and breastfeeding self-efficacy. Linear regressions were then conducted with pressure perceptions predicting breastfeeding experience and self-efficacy (model 1). Lastly, general linear models were used with pressure perceptions predicting breastfeeding experience and self-efficacy, including demographic covariates such as age, education level, marital status, and family income, which were selected *a priori* based on factors previously reported to be related to infant feeding practices (model 2).

Results

In total, 267 women participated in this study, with complete data available for 187 (M_{age} = 31, SD = 4.84, range = 18–43 years). As shown in Table 2, most women were highly educated, married, or living with a partner, and reported an income level above $95,000. Approximately 12% of women reported clinically elevated scores for postnatal depressive symptoms.

Table 1 presents response frequencies for each Pressure to Breastfeed Questionnaire item. Most women (82%) reported that they, themselves, were a source of at least some or a lot of pressure. Society was the second most prevalent source (64%). Over half of the women (52%) identified a lactation support person as a source of pressure. The least frequent sources of pressure were friend(s) and the participants' mothers.

Greater pressure to breastfeed was associated with a poorer breastfeeding experience (r = -.34, p < .01) and lower self-efficacy (r = -.39, p < .01). Pressure to breastfeed was not associated with symptoms of anxiety (r = .14, p = .06) or depression (r = .14, p = .06). However, greater anxiety and depressive symptoms were associated with a poorer breastfeeding experience (anxiety symptoms:

TABLE 3. LINEAR REGRESSION (MODEL 1) AND GENERAL LINEAR MODEL (MODEL 2) OF PRESSURE TO BREASTFEED PREDICTING BREASTFEEDING EXPERIENCE

Outcome: Breastfeeding Experience	B	*t*	R^2 or 95% CI
Model 1:			.11†
Pressure to Breastfeed	-1.09	-4.88	[-1.53, -0.65]
Model 2:			.16†
Age			
18–26	10.56	1.92	[-0.30, 21.42]
27–30	1.37	0.31	[-7.27, 10.02]
31–34	6.99	1.65	[-1.36, 15.34]
35+	0‡		
Education Level			
≤ High school diploma or GED	-15.25	-1.89	[-33.18, 0.67]
Some college or Associate degree	3.76	0.77	[-5.90, 13.42]
College graduate	-3.54	-0.95	[-10.87, 3.79]
Post graduate education	0‡		
Marital Status			
Married or Living with partner	-9.65	-0.63	[-40.10, 20.80]
Single	-5.51	-0.32	[-40.04, 29.03]
Separated, Divorced, Widowed, or Not living together	0‡		
Family Income			
<$35,000	1.87	0.31	[-10.10, 13.84]
$35,000–$74,999	5.62	1.37	[-2.50, 13.73]
$75,000–$94,999	-4.17	-0.88	[-13.58, 5.24]
$95,000+	0‡		
Pressure to Breastfeed	-1.17	-5.02	[-1.63, -0.71]

†Adjusted R^2

‡Value of 0 because it is the reference group

TABLE 4. LINEAR REGRESSION (MODEL 1) AND GENERAL LINEAR MODEL (MODEL 2) OF PRESSURE TO BREASTFEED PREDICTING BREASTFEEDING SELF-EFFICACY

Outcome: Breastfeeding Self-Efficacy	B	*t*	R^2 or 95% CI
Model 1:			.15†
Pressure to Breastfeed	-0.84	-5.77	[-1.13, -0.56]
Model 2:			.20†
Age			
18–26	5.88	1.64	[-1.19, 12.94]
27–30	4.67	1.64	[-0.96, 10.30]
31–34	5.43	1.97	[-0.00, 10.87]
35+	0‡		
Education Level			
≤ High school diploma/GED	-4.78	-0.91	[-15.14, 5.59]
Some college/Associate degree	3.84	1.06	[-2.90, 9.67]
College graduate	-2.32	-0.96	[-7.09, 2.45]
Post graduate education	0‡		
Marital Status			
Married or Living with partner	-5.13	-0.51	[-24.94, 14.69]
Single	-11.24	-0.99	[-33.72, 11.23]
Separated, Divorced, Widowed, or Not living together	0‡		
Family Income			
<$35,000	0.17	0.04	[-7.63, 7.96]
$35,000–$74,999	2.50	0.93	[-2.78, 7.78]
$75,000–$94,999	-4.61	-1.49	[-10.74, 1.51]
$95,000+	0‡		
Pressure to Breastfeed	-0.89	-5.89	[-1.19, -0.59]

†Adjusted R^2

‡Value of 0 because it is the reference group

r = -.37, p < .01; depressive symptoms: r = -.32, p < .01) and lower self-efficacy (anxiety symptoms: r = -.36, p < .01; depressive symptoms: r = -.33, p < .01). Women who had stopped breastfeeding (M = 15.31, SD = 6.91) at the time of the survey reported greater pressure to breastfeed as compared with women who were still breastfeeding (M = 11.52, SD = 6.71; t (185) = -3.35, p < .01).

Regression and general linear models indicated that pressure to breastfeed accounted for a significant amount of the variability (16%) in breastfeeding experience (Table 3) and in breastfeeding self-efficacy (20%; Table 4), even after accounting for age, education level, marital status, and income.

Discussion

We developed a measure of perceived pressure to breastfeed from multiple sources, examined which sources of pressure are most prevalent, and explored the associations with and relative contributions of pressure to breastfeed on breastfeeding outcomes. Though previous work has anecdotally illustrated pressure to breastfeed, we did not find any published measure that was developed to quantitatively assess sources of pressure and the degree to which women perceive pressure.

The newly developed measure demonstrated good internal consistency and evidence of convergent validity, and it was significantly associated with self-reported breastfeeding outcomes. Prior work has detailed how women perceive pressure and/or judgment from health professionals, media, and their social networks (Hunt & Thomson, 2017), which is consistent with our findings. Women reported other sources of pressure including nurses and female family members such as a mother-in-law. However, very few women named additional sources, which suggests that the current instrument captures the primary sources experienced by many women.

Three sources of "some" or "a lot" of pressure emerged for over half of the study sample, including one's self, society, and individuals providing lactation support, all of which have been identified in prior qualitative work. Ladores and Aroian (2015) described mothers equating breastfeeding with being a "good" or "perfect" mother. Women described being strongly motivated to breastfeed in accordance with public health messaging (Burns et al., 2010; Thomson et al., 2015), as well as feeling pressured by health care providers (Burns et al.; Hunt & Thomson, 2017).

SUGGESTED CLINICAL IMPLICATIONS

- Women self-impose pressure to breastfeed, thus new mothers would benefit from receiving nonjudgmental, individualized support from nursing staff during the immediate postpartum period.
- Nurses have a unique opportunity to offer practical breastfeeding support, promote realistic expectations, and normalize breastfeeding difficulties.
- Asking new mothers about their perceptions of pressure to breastfeed may offer insight into how women approach breastfeeding their newborn, thereby informing approaches for support.
- Women's perceived pressure to breastfeed may color their breastfeeding experiences, possibly resulting in poorer breastfeeding outcomes.

Consistent with study hypotheses, perceptions of pressure were associated with both breastfeeding experiences and self-efficacy, even after accounting for demographics (e.g., maternal education) associated with breastfeeding outcomes (Dennis, 2006). This suggests that perceived pressure to breastfeed warrants further investigation as a predictor of breastfeeding outcomes. Future research should examine the predictive validity of the Pressure to Breastfeed Questionnaire on breastfeeding duration using a longitudinal design to determine whether pressure perceptions predict breastfeeding outcomes. If this is identified, perceptions of pressure may serve as a viable intervention target and could inform maternity and pediatric providers on messaging strategies for promoting breastfeeding, including how women interpret and manage messaging from various sources.

Pressure to breastfeed was not associated with emotional distress in our study which is inconsistent with Kestler-Peleg et al. (2015) who found a greater desire to please a significant other through breastfeeding was associated with decreased positive effect, increased negative effect, and higher levels of postpartum depression. However, this association with postpartum depression was only found at 8 weeks postpartum, not later. Given that our study examined women's experiences 2 to 6 months postpartum, the association between perceived pressure to breastfeed and emotional distress may have diminished.

Although the Pressure to Breastfeed Questionnaire shows promise, future studies are needed to validate this instrument in a wider population of women who vary in race, socioeconomic status, and breastfeeding duration, including women with infants younger than 2 months of age. Cultural and socioeconomic factors likely play a role in pressure perceptions and need further exploration. Conducting cognitive interviews would provide additional guidance on how the measure is interpreted by women, including how they interpret the term "pressure to breastfeed." Future studies should focus on determining whether perceived pressure changes over the postpartum period and whether it predicts breastfeeding outcomes, including duration. It may be worthwhile to examine mechanisms by which this self-pressure is internalized, how the concept of pressure the breastfeed fits within the context of other theoretical behavioral models in predicting breastfeeding behavior, as well as identify sources of internalized pressure (e.g., social media content), which could lead to brief targeted interventions employable by nursing staff.

Our study has several limitations. Because of the cross-sectional design, the ultimate breastfeeding duration for women who were currently breastfeeding was unknown. Nevertheless, the study examined the relationship between pressure to breastfeed and breastfeeding experiences and self-efficacy, both of which have been linked to breastfeeding duration (Cooke et al., 2003). The directionality between perceived pressure to breastfeed and breastfeeding outcomes can only be inferred. It could be that when women feel less satisfied or less competent with breastfeeding, they perceive more pressure. This study did not collect information on parity and infant birthweight, which may have implications for mothers' previous experience with breastfeeding pressure and outcomes. Future iterations of this work should consider the role of these variables in perceived pressure to breastfeed. Given that these data were collected in 2016, mothers' attitudes toward breastfeeding may have changed considering the novel coronavirus (COVID-19) pandemic. The impact of COVID-19 on breastfeeding practices in the United States is unclear. Most women identified as White, highly educated, with an above average income, which may limit the generalizability of findings. Our study examined experiences of women who were 2 to 6 months postpartum. Consequently, there may be substantial variability in the saliency of their early postpartum breastfeeding experience, which may have had an impact on the degree of perceived pressure.

Clinical Implications

Given that women who attempt breastfeeding frequently experience lactation difficulties (Gianni et al., 2019), it is critical to identify factors that exacerbate negative breastfeeding experiences. Our study supports what has anecdotally been identified in qualitative studies about the potential negative impact of greater perceived pressure to breastfeed among new mothers (Burns et al., 2010; Hunt & Thomson, 2017; Thomson et al., 2015). Maternity nurses are present during the initial stages of breastfeeding, ideally during the first hour of life, and play an important role in providing nonjudgmental support that could help normalize any difficulties and help new mothers develop realistic breastfeeding expectations (Debevec & Evanson, 2016). In this study, only two women reported that nurses were a source of pressure. Instead, women in the current study reported themselves as being the primary source of pressure, which maternity care givers would benefit from understanding. Therefore, nurses can provide much needed support to pregnant women and new mothers by discussing self-expectations, listening nonjudgmentally, and encouraging women to be kind to themselves, regardless of whether they decide to provide milk at the breast or by bottle, or to formula feed.

This new measure may serve as a useful screening tool in clinical settings to facilitate identification of women who are perceiving higher levels of pressure, thereby initiating conversation about their experiences and needs.

Conclusion

Our study presents a new measure of perceived pressure to breastfeed which demonstrated that women perceive high levels of pressure from various sources, notably themselves and society. Higher levels of pressure are associated with poorer self-reported breastfeeding outcomes. Given the benefits of breastfeeding, perceived pressure to breastfeed should be explored in future prospective studies, as it may be a viable intervention target to enhance breastfeeding outcomes and promote both maternal and child health. ✣

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