Assessment of Breastfeeding Self-Efficacy* in a Family Medicine Residency Practice

Peggy Nepps, PsyD
Penn Medicine Lancaster General Health
Family Medicine Residency Program

Michael Horst, PhD
Penn Medicine Lancaster General Health Research Institute


Nepps


Horst

ABSTRACT

Background and Objectives

Resident physicians know that breastfeeding provides many benefits for infants and mothers, but do not always fully address the issue with all mothers. If residents could identify mothers most likely to benefit, the discussions could be targeted where they would be more likely to succeed. Self-efficacy for breastfeeding can predict breastfeeding rates. We assessed the predictive value of the Breastfeeding Self-Efficacy Scale Short Form (BSES-SF) administered by family medicine residents.

Methods

After delivery, 295 patients of a residency practice completed the BSES-SF and provided information on parity, past feeding practices, and plans for feeding the newborn. We assessed their children's breastfeeding status by chart review at one week, and at one, two, four, six, nine and 12 months postpartum. Data were analyzed using multivariate regression (mixed effects logistics regression).

Results

Scores on the BSES-SF significantly correlated with breastfeeding, with the adjusted odds of breastfeeding increasing by more than two times for every 5-point increase in score ($p< 0.001$). Planning to breastfeed was the strongest unadjusted predictor of breastfeeding, and scores on the BSES-SF were positively correlated ($p<0.001$). Mothers who were married, older, or working were also significantly more likely to breastfeed, and those with less than a high school education were significantly less likely to do so. Most breastfeeding cessation occurred between the first week and first month postpartum.

Conclusions

The BSES-SF is a valid tool for helping resident physicians to predict breastfeeding status. It helps identify not only which women are most likely to respond to an intervention, but the best time to offer it – i.e. the critical time postpartum when mothers decide whether to breastfeed.

INTRODUCTION

One of the key objectives of the Healthy People 2020 initiative from the U.S. Office of Disease Prevention and Health Promotion, is to increase the proportion of breastfed infants.[1] In the U.S. today, 79% of infants start out breastfeeding, but only 49% continue at six months of age.[2] Family physicians know that breastfeeding provides many benefits for infants and mothers, but they often lack the time or understanding to fully address the issue with all mothers. It would be useful if residents could identify mothers most likely to benefit from intervention, as well as the best time to do so.

One important predictive factor is self-efficacy, a concept developed by Albert Bandura[3] in social cognitive theory. It is an individual's estimate of their ability to reach a specific goal or to successfully accomplish a task such as breastfeeding.[4] There is a positive correlation between self-efficacy and goal attainment; people with greater self-efficacy try longer and harder to reach goals. To be effective, however, self-efficacy must be true for all or most of the component behaviors of an activity. For breastfeeding, it includes things like producing enough milk, having the baby latch properly, etc.

* Self-efficacy is a psychological term that indicates an individual's confidence in their ability to complete a task, or achieve a goal.

There are several breastfeeding self-efficacy scales, with the Breastfeeding Self-Efficacy Score (BSES) being the best known. Dennis and Faux[5] originally developed this 33-item scale to measure breastfeeding confidence based on Bandura's self-efficacy theory. It measures a mother's confidence in her ability to breastfeed successfully across a number of different breastfeeding behaviors or thoughts, including: "determine that my baby is getting enough milk." and "keep wanting to breastfeed." Each item is anchored by the stem phrase "I can always..." and is rated using a five-point Likert scale ranging from "not at all confident (1)," to "always confident (5)."

Dennis subsequently shortened the test to create the 14-item Breastfeeding Self-Efficacy Scale-Short Form (BSES-SF) and evaluated its psychometric properties.[6] BSES-SF scores at I week significantly differentiated between mothers who would be breastfeeding or bottle-feeding at 1 and 2 months, as well as predicting which breastfeeding mothers would continue to breastfeed exclusively. This scale is available in 10 languages and has been used with diverse populations,[7] with strong positive correlation between scores on the BSES-SF and longer breastfeeding duration, even independent of other factors.[8]

Multiple factors affect a person's self-efficacy for a task. These include personal mastery experiences, vicarious exposure, and verbal persuasion[4] (including from physicians). Resident physicians, however, may lack training about breastfeeding self-efficacy.[9] For this reason, we studied the predictive validity of the BSES-SF, a previously validated instrument, in a practice served by a family medicine residency, a setting where it has not been previously researched.

We sought to determine if the BSES-SF would be a useful and acceptable tool for family medicine residents, and if BSES-SF scores of residents' patients predict breastfeeding status, identify women for whom intervention would be most useful, and pinpoint the critical times when the feeding method is chosen.

METHODS

This study was reviewed and approved by the hospital's institutional review board. All maternity patients of the residency practice were offered the opportunity to participate at the time their hospital discharge after delivery. This was typically within one to two days after delivery. Residents were trained to do recruitment and informed consent. Each patient was asked to participate, and if they agreed, the consent and survey forms were administered by the resident in attendance.

Table 1. Participant Characteristics

Mean Age	24.8 Years
Parity	32.1% Primiparous
Race	40.8% White 40.1% Hispanic 11.2% Black 7.8% Other
Marital Status	42.0% Unmarried with Partner 37.2% Single 20.8% Married
Education	24.1% Elementary/Some High School 49.1% High School Graduate/GED 26.8% College Graduate/Some College
School Status	7.9% Full-Time 6.2% Part-Time
Work Status	19.5% Full-Time 17.8% Part-Time

In conjunction with the BSES-SF, the survey form requested the following information: age, race, marital status, education, work status, the baby's gender, as well as the mother's past breastfeeding experience and intentions for this baby (see Table 1). We later reviewed the electronic medical record to assess the breastfeeding status at well-child checkups at one week and at one, two, four, six, nine and 12 months postpartum. We used a multivariate regression analysis to determine odds ratios, and adjusted to control for the impact of variables known to be associated with differences in breastfeeding (mothers' marital status, education, and age).

RESULTS

The final sample of participants included 295 patients of the residency practice who delivered healthy term infants. Of our sample, 65.9% said they intended to breastfeed, (23.2% exclusively and 42.7% with formula supplementation). Mothers who *planned* to breastfeed were significantly ($p<0.001$) more likely to do so than those who did not plan to breastfeed (adjusted odds ratio (OR) of 25.6, 95% confidence interval (CL) 4.5-146). In addition, women were more likely to breastfeed if they were older (adjusted OR of 1.12, 95% CL 1.06-1.18), more educated (adjusted OR of 4.35, 95% CL 2.08-8.33), or married (adjusted OR of 4.24, 95% CL 2.12-8.44).

To look at the predictive value of the BSES-SF in our setting, we used multivariate regression analysis, adjusted to control for the impact of variables known to be associated with differences in breastfeeding (mothers' marital status, educational and age)

to determine odds ratios. We found that for every five-point increase in the BSES-SF score, a mothers' likelihood of breastfeeding up to six months postpartum more than doubled, for breastfeeding that was exclusive ($p = 0.001$), or partial ($p < 0.001$). There were not enough mothers still breastfeeding beyond six months to analyze the correlation after that.

As can be seen in Fig. 1, the steepest drop-off in breastfeeding occurred between one week and one month postpartum. This was particularly true for women scoring in the second quartile of BSES-SF scores, whether we looked at exclusive or partial breastfeeding.

DISCUSSION

Among patients in our family medicine residency practice, the BSES-SF accurately predicted the likelihood that new mothers would breastfeed. The BSES-SF was an easy way for physicians-in-training to identify which new mothers were more likely to never breastfeed or to stop breastfeeding early, and thus might be most likely to benefit from intervention even before delivery. Our chart review and analysis helped identify the time period during which there is the greatest cessation in breastfeeding, namely, between the first week and the first month after birth. Thus, even an inexperienced physician-in-training can be guided to intervene in a timelier and strategic way, as mothers are most likely to stop breastfeeding in between the first few well-child checkups.

Further research can examine how this tool can best be utilized in medical education and practice (e.g. in the office or patient portal). It can also identify which techniques, if any, can improve breastfeeding self-efficacy, and when applying these tools can increase breastfeeding rates. One such study found that giving patients a breastfeeding self-efficacy workbook in the third trimester improved self-efficacy and exclusive breastfeeding at four weeks postpartum, but only among mothers who delivered at "Baby-Friendly"-certified hospitals.[10]

Other factors may have influenced our results. Our breastfeeding levels started out lower than national averages, likely due in part to demographic variables, which have been shown here and elsewhere to be negatively correlated with breastfeeding. Being

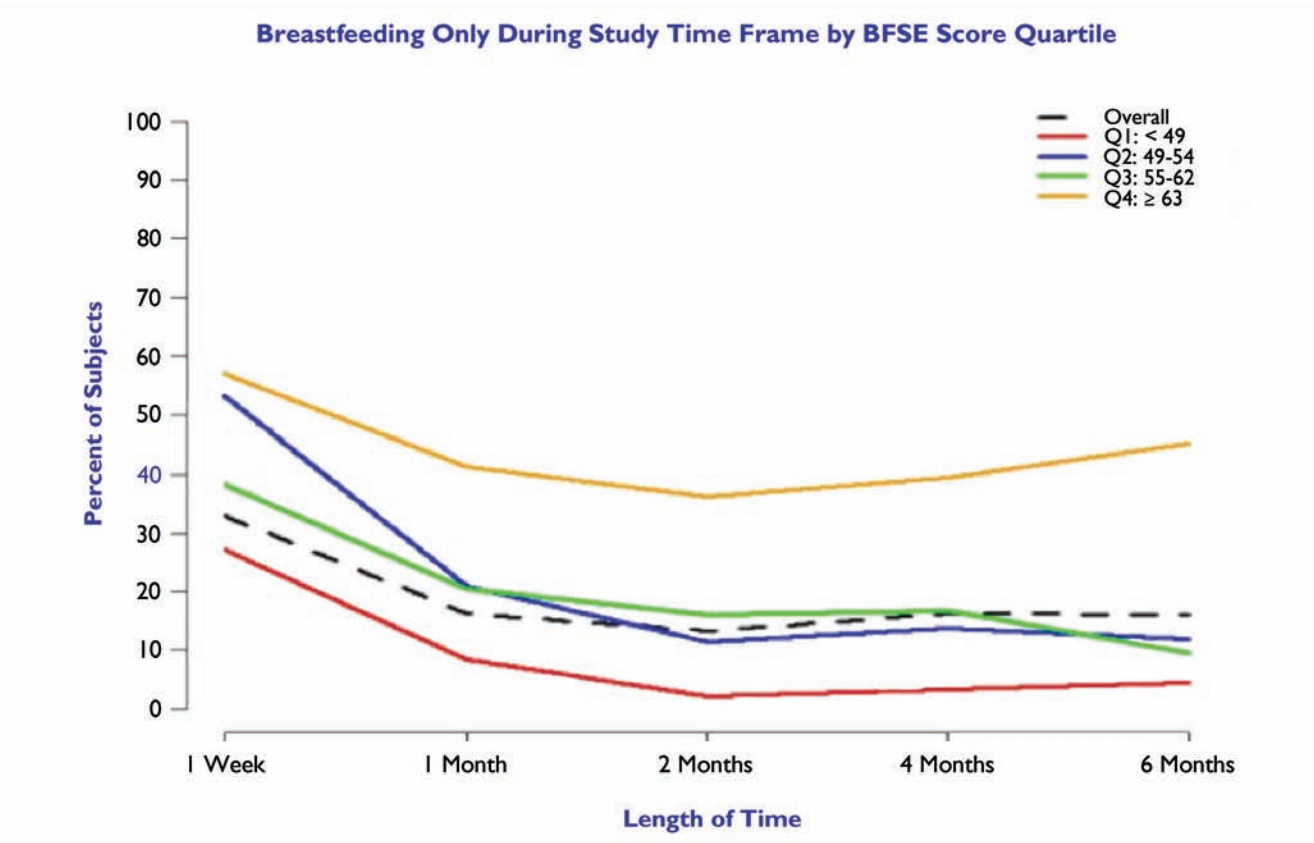

Fig. 1. Graph shows the steepest drop-off in breastfeeding occurred between one week and one month postpartum.

younger, unmarried and less educated are all negatively correlated with breastfeeding.[11] Multivariate regression, however, controlled for these factors, and the BSES-SF still showed a robust predictive value.

The strong correlation of BSES-SF scores with breastfeeding behavior certainly suggests that the measured self-efficacy is an important factor even within a few days of birth. We recognize that our results may not be generalizable to other practice settings, whether or not they are residency-based, but it seems likely that teaching residents about self-efficacy and giving them a simple tool like the BSES-SF could enhance their effectiveness and efficiency in encouraging breastfeeding.

ACKNOWLEDGEMENTS

Yuka Tachibana, M.D., The Queen's Center, Honolulu, HI, and Gladys Frye, M.D., for their roles in the original project development; the residents of the Family Medicine Residency Program; Penn Medicine Lancaster General Health for data collection; research assistants Stephen Bruckno, Alison Lauter, and Abigail Ness for data collection and management; Corey Fogleman, M.D., for reading and editing recommendations.

REFERENCES

1. Office of Disease Prevention and Health Promotion (2018). 2020 topics and objectives: Maternal, infant and child health. https://www.healthypeople.gov/2020/topics-objectives/topic/maternal-infant-and-child-health/objectives
2. Center for Disease Control (2017). Breastfeeding report card United States 2016. https://www.cdc.gov/breastfeeding/pdf/2016breastfeedingreportcard.pdf
3. Bandura A. Self-efficacy: towards a unifying theory of behaviour change. *Psychol Rev.* 1977; 84(2): 191-215.
4. de Jager E, Skouteris H, Broadbent J, et al. Psychosocial correlates of exclusive breastfeeding: a systematic review. *Midwifery.* 2013; 29: 506-518
5. Dennis CL, Faux S. Development and psychometric testing of the Breastfeeding Self‖Efficacy Scale. *Res Nurs Health.* 1999; 22: 399-409
6. Dennis CL, Heaman M, Mossman M. Psychometric testing of the breastfeeding self-efficacy scale-short form among adolescents. *Journal of Adolescent Health.* 2011;49:265–271. doi: 10.1016/j.jadohealth.2010.12.015.
7. Ho Y-J, McGrath M. A review of the psychometric properties of breastfeeding assessment tools. *J Obstet Gynecol Neonatal Nurs.* 2010 (4); 39: 386-400.
8. Baghurst P, Pincombe J, Peat B, et al. Breastfeeding self-efficacy and other determinants of the duration of breast feeding in a cohort of first-time mothers in Adelaide, Australia. *Midwifery.* 2007; 23 (4): 382-391. DOI: https://doi.org/10.1016/j.midw.2006.05.004
9. Pound CM, Williams K, Grenon R, et al. Breastfeeding knowledge, confidence, beliefs, and attitudes of Canadian physicians. *J Hum Lact.* 2014; 30(3): 298-309.
10. Otsuka K, Taguri M, Dennis CL, et al. Effectiveness of a breastfeeding self-efficacy intervention: Do hospital practices make a difference? *J Matern Child Health* 2014; 18(1): 296-306.
11. Jones JR, Kogan MD, Singh GK, et al. Factors associated with exclusive breastfeeding in the United States. *Pediatr.* 2011; 128(6): 1117-1125.

Peggy Nepps, PsyD
Penn Medicine Lancaster General Health
Family Medicine Residency Program
555 N. Duke St.
Lancaster, PA 17604-3555
717-544-4940
Margaret.Nepps@pennmedicine.upenn.edu

Mike Horst, PhD
Lancaster General Health Research Institute
555 N. Duke St.
Lancaster, PA 17604-3555
717-544-5999
Michael.Horst@pennmedicine.upenn.edu