
Breast-feeding Education and Practice in Family Medicine

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Background. Physician support has been shown to increase breast-feeding rates, but anecdotal reports suggest that physicians are ill prepared for their role in breast-feeding promotion. Inadequate breast-feeding education during residency training may be a contributing factor.

Methods. A self-administered questionnaire mailed to 1099 family medicine residents and 665 recently board-certified family physicians assessed knowledge, attitudes, education, and activity related to breast-feeding promotion. Response rates were 71% for residents and 58% for physicians.

Results. Although residents and physicians were strongly convinced that family physicians should be involved in breast-feeding promotion, both groups demonstrated significant deficits in knowledge about breast-feeding benefits and clinical management strategies. Common errors included inappropriate recommendations for

breast-feeding termination or formula supplementation, a proven cause of breast-feeding failure. Personal breast-feeding experience was the only factor consistently associated with more frequent breast-feeding promotion activity among residents and increased self-confidence for both groups. Respondents reported only limited opportunities for developing breast-feeding counseling skills during residency training.

Conclusions. Improved breast-feeding education is needed for family medicine residents and physicians. Residency training and continuing education programs should emphasize the benefits of breast-feeding, clinical management strategies, and development of practical counseling skills.

Key words. Breast feeding; family physicians; internship and residency; education, medical, graduate.
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As the only physicians routinely able to provide both prenatal care to expectant mothers and postnatal care to mothers and infants, family physicians have the broadest opportunity to engage in breast-feeding promotion. The prenatal period, when most parents make the decision regarding infant feeding method,¹⁻³ is particularly suited to patient education and recommendations regarding breast-feeding; postnatal guidance and problem solving provided by physicians equips parents with information and skills necessary for prolonged breast-feeding.⁴ For these reasons, physician promotion of breast-feeding has the potential to greatly enhance rates of breast-feeding

initiation as well as duration, an effect that has been demonstrated in previous studies.^{5,6}

The American Academy of Family Physicians (AAFP) recognizes breast-feeding as the preferred source of infant nutrition and encourages its membership to promote breast-feeding. *Healthy People 2000*⁷ and other health initiatives advocate breast-feeding through at least 5 to 6 months of age. The proven health benefits to both infants and mothers make breast-feeding an appropriate emphasis for primary care.^{8,9} Nevertheless, breast-feeding rates have declined. Current data indicate that only one half of mothers in the United States initiate breast-feeding, and less than 20% maintain breast-feeding for 5 to 6 months.¹⁰

Any number of hypotheses are offered to explain declining breast-feeding rates: an increase in working mothers, societal trends, marketing of infant formula, and convenience.¹¹ Another possible factor has been suggested by anecdotal reports and small research studies: physicians are ill prepared to offer effective and appropri-

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ate support to breast-feeding mothers, and this lack of knowledge and skills may undercut their patients' attempts to initiate and sustain breast-feeding.¹²⁻¹⁴ Despite pronouncements advocating a renewed focus on primary care training, the breast-feeding education provided during residency training may be inadequate.¹⁵

To further explore the issue of breast-feeding education for physicians, this study focused on the assessment of the breast-feeding knowledge, attitudes, training experiences, and activities of a nationally representative sample of resident and recently graduated practicing family physicians.

Methods

Subjects

Data were collected from two physician samples. First, a national random sample of 665 family physicians, board-certified within the last 3 to 5 years, was obtained from the American Board of Medical Specialties. This sampling frame was constructed to best capture a population of family physicians who were trained by current educational methods and who also could offer the perspective of recent practical clinical experience. Second, a national random sample of 1099 family medicine residents was provided by the AAFP. This sample was divided evenly between first- and final-year residents to allow for exploration of potential differences related to training. These samples were part of a larger study assessing physician breast-feeding education among three specialties involved with maternal and child care (family physicians, obstetricians and gynecologists, and pediatricians).¹⁶

Questionnaire Design

Separate but comparable 4-page questionnaires were constructed for residents and for physicians. Each questionnaire contained a core set of questions to assess basic breast-feeding knowledge, attitudes, training experiences, and breast-feeding promotion activity. Questions were uniformly designed and worded to facilitate cross-comparisons. Items related to training were specific for residents (eg, source of instruction and frequency of activity), whereas physician ratings provided a more global retrospective assessment of their training.

Questions used by the principal investigator in previous studies of family medicine and pediatric residents' breast-feeding education and attitudes formed the basis for the construction of the study surveys.^{17,18} Additional questions highlighted specialty-specific opportunities for breast-feeding guidance and intervention. For example,

because family physicians have the unique opportunity for extensive involvement in both prenatal and postnatal care, items related to prenatal counseling and the choice of infant feeding method were included, as well as questions on breast-feeding management and problem solving.

For demographic and training experience questions, subjects were asked to choose the most appropriate response option or to write in a more accurate answer. The variable subsequently referred to as "previous personal breast-feeding experience" was determined by asking female respondents if they (or, in the case of male respondents, their spouses) had ever breast-fed an infant for at least 2 weeks. This time frame was not intended to represent *successful* breast-feeding experience, but rather an adequate length of time to initiate a diligent attempt at breast-feeding and to ensure first-hand understanding of common breast-feeding techniques and problem solving. The five-point Likert scales used for attitudinal questions allowed for varying degrees of response and a definite neutral choice. Breast-feeding management questions were presented as clinical vignettes, followed by treatment choices. Correct answers were determined by information provided in published breast-feeding texts and reference guides.^{19,20}

Each questionnaire was designed to require no more than 15 minutes to complete. To ensure clarity of interpretation and ease of completion, survey instruments were pretested with a convenience sample of resident and practicing family physicians.*

Questionnaire Administration

Survey questionnaires were sent by first-class mail with a postage-paid return envelope. A personalized cover letter signed by the principal investigator and one co-investigator (a family physician) announced that participants who returned completed questionnaires would receive a reference book on maternal and infant nutrition, donated by the US Bureau of Maternal and Child Health. Two follow-up questionnaires were mailed to nonrespondents at 3-week intervals. A comparatively low response rate among physicians prompted a fourth mailing to that group. No telephone follow-up was done.

Data Analysis

Data analysis consisted of several phases. First, frequency distributions were generated, and analysis of missing data found no consistent pattern or bias due to item nonre-

*Copies of the questionnaires may be obtained from Gary L. Freed, MD, MPH, G. Sheps Center for Health Services Research, CB# 7590, University of North Carolina, Chapel Hill, NC 27599-7590.

Table 1. Attitudes Regarding Family Physician Role in Breast-feeding Promotion

Statement	Agree with Statement, %		
	First-Year Residents (n=321)	Senior Residents (n=445)	Board-Certified Physicians (n=334)
It is the role of family physicians to:			
Recommend breast-feeding to expectant mothers	89	93	92
Assist breast-feeding mothers in hospital	77	76	73
Follow up on breast-feeding issues after discharge	92	95	90
Family physician counseling is effective in promoting breast-feeding	80	83	86
Breast-feeding promotion is an important use of family physician time	87	87	77

NOTE: Some residents and physicians did not respond to some of the survey items.

response. Next, chi-square analysis was used to assess the significance of the association of each response variable (ie, breast-feeding knowledge, attitudes, and experiences) with demographic variables (eg, sex, year of training, previous breast-feeding experience). Finally, logistic regression models were constructed to investigate the independent influence of various predictor variables on key outcomes related to breast-feeding attitudes and experiences.

Results

After removing from the sample the 85 physicians and 2 residents who had died or moved without leaving a forwarding address, the response rate for residents was 71% (n=776) and 58% for physicians (n=337). Two thirds of respondents were trained in a community-based rather than a university hospital. Forty percent of residents and 29% of physicians were female; these proportions are similar to current national figures for family physicians ≤ 35 years of age. Nearly twice as many physicians as residents (65% vs 33%) had personal breast-feeding experience, defined as self or spouse having breast-fed an infant for at least 2 weeks. Among physicians, 35% reported providing maternity care, a proportion similar to current national averages.

Respondents were inconsistent in their knowledge of the health benefits of breast-feeding. Although almost all (96% residents, 95% physicians) agreed that breast-feeding enhances infant immune function, a considerable number were unaware of other research-proven benefits. Only 64% of residents and 70% of physicians knew that breast-feeding decreases the incidence of gastroenteritis, and only 60% of residents and 65% of physicians were aware that breast-feeding provides a protective effect against otitis media. Further, 30% of residents and 27% of physicians did not agree that exclusive breast-feeding,

which is advocated by the AAFP, is the preferred form of infant nutrition.

The respondents' lack of knowledge about breast-feeding management issues was equally problematic. Forty-three percent of both groups selected inappropriate advice for a mother concerned about insufficient milk supply during the first 2 weeks of lactation, and over 62% of physicians and 66% of residents did not know how to manage an otherwise healthy breast-fed 4-day-old infant with jaundice. The most common incorrect answers were water or formula supplementation. In a separate but related question, only 56% of residents and 53% of physicians were aware that supplementing with formula during the first 2 weeks of life is a cause of breast-feeding failure.

Another common management error involved inappropriate recommendations for breast-feeding termination. Respondents were asked whether they would "tell a mother to stop breast-feeding completely (ie, discontinue nursing or pumping on both sides)" for several common lactation problems. A substantial number of respondents reported that they would recommend permanent breast-feeding termination for one or more of the problems presented (mastitis, insufficient milk supply, breast abscess, teething, frequent loose stools, and baby not seeming satiated), even though none is a clinical indication for such advice.¹⁷ Some improvement was seen over the progression of training and practice from first-year resident to physician. For example, breast-feeding termination because of mastitis was recommended by 32% of first-year residents, 23% of senior residents, and 16% of physicians. For breast abscess, 77% of first-year residents, 64% of senior residents, and 47% of physicians indicated that they would advise patients to discontinue breast-feeding.

Despite deficiencies in knowledge, both residents and physicians were strongly convinced of their role in breast-feeding promotion (Table 1). Most believed that physician counseling was an effective way to increase

Table 2. Predictors of Family Physician Confidence in Assisting with Breast-feeding Initiation, Based on Results of Logistic Regression Analysis

Predictor Variable	Odds Ratio	95% Confidence Interval
Residents (n=773)		
Taught breast-feeding techniques ≥ 5 times	2.3	(1.9, 2.9)
Counseled about lactation problems ≥ 5 times	1.5	(1.3, 1.9)
Previous personal breast-feeding experience	3.0	(2.0, 4.4)
Video as mode of breast-feeding instruction	2.2	(1.4, 3.4)
Agree that breast-feeding decreases gastroenteritis	1.8	(1.2, 2.5)
Physicians (n=324)		
Taught breast-feeding techniques ≥ 5 times	2.6	(1.7, 4.1)
Greater residency emphasis on breast-feeding	2.5	(1.4, 4.8)
Effective in meeting patient needs (self-rated)	5.8	(3.1, 10.8)
Previous personal breast-feeding experience	3.0	(1.6, 5.7)

NOTE: Some residents and physicians did not respond to some of the survey items.

breast-feeding rates. However, nearly one fourth of physicians felt that breast-feeding promotion was not an important use of their time.

Physicians' perceptions about their role in breast-feeding promotion, however, did not correspond to how frequently they actually encouraged their patients to breast-feed. The authors chose five or more clinical encounters over the entire course of residency as a minimal amount necessary to gain skill and confidence in a particular aspect of breast-feeding promotion. "Frequent" activity among physicians was deemed to be ≥ 5 encounters during the past year. For *senior* residents, the only activity that had been routinely performed a total of ≥ 5 times during residency training was discussion about infant feeding options with expectant mothers (86% of senior residents); 62% of physicians reported frequent prenatal counseling. Activities in other areas requiring more direct patient intervention were performed less often.

Counseling breast-feeding mothers about common lactation problems ≥ 5 times was reported by 53% of senior residents and 44% of physicians; observing a breast-feeding mother in a hospital or office setting a minimum of 5 times was reported by 49% of senior residents and 34% of physicians. In the activity most critical to successful breast-feeding initiation, only 19% of senior residents had demonstrated breast-feeding techniques ≥ 5 times during their training, and 32% had *never* taught breast-feeding techniques to a new mother. Among physicians, only 16% reported frequent demonstration of techniques.

Even though the frequency of breast-feeding promotion activity was lower for physicians than for residents, more physicians than residents rated themselves as effective in meeting the needs of breast-feeding patients (68% vs 53%) and confident in assisting with breast-feeding initiation (70% vs 53%). The odds ratios listed in Table 2 identify the predictors of physician self-confidence, as de-

termined by logistic regression analysis. For residents and physicians alike, personal breast-feeding experience was found to strongly predict self-rated confidence in assisting new mothers with breast-feeding initiation. For physicians, self-rated effectiveness in meeting the needs of breast-feeding patients was the strongest predictor of increased self-confidence.

With regard to promoting breast-feeding among working mothers, 83% of physicians and 84% of residents expressed the belief that it is feasible for a mother to continue breast-feeding after returning to work. However, only 6% of physicians regularly taught breast-feeding mothers how to use a breast pump; 79% of residents had *never* demonstrated this device.

Asked to rate their breast-feeding education, 50% of the resident respondents reported that their residency training provided "less than adequate" or "no" preparation to support breast-feeding mothers, and 56% felt that the importance of family physician involvement in breast-feeding promotion received "too little" or "no" emphasis. Residents' common sources of breast-feeding information included family medicine faculty (71%), pediatric faculty (62%), hospital nursing staff (59%), and other residents (49%). The mode of instruction was most often lecture (69%), hospital rounds (62%), or video (24%). The active forms of learning, such as demonstration (14%) or role play (2%), were used less frequently.

After 3 to 5 years in practice, 53% of physicians reported that their breast-feeding training during residency was inadequate. They recommended that residency training include more lecture time devoted to breast-feeding topics (48%), more practice teaching breast-feeding techniques (65%), and more opportunities to practice patient counseling (46%). However, 40% stated that they provide breast-feeding counseling *less* often than they expected after completing residency training.

Table 3. Effects of Previous Personal Breast-feeding Experience on Residents' Promotion of Breast-feeding

Promotion Activity	Performed Activity ≥ 5 Times During Residency, %		P Value
	Had Personal Experience (n=254)	Had No Personal Experience (n=519)	
Counseled expectant mother regarding infant feeding methods	83	66	.001
Taught breast-feeding techniques	24	9	.001
Taught mother how to use a breast pump	7	1	.001
Counseled breast-feeding mother about common lactation problems	50	34	.001

NOTE: Previous personal breast-feeding experience is defined as self or spouse having breast-fed for ≥ 2 weeks. Some residents did not respond to some survey items.

When data were stratified according to various demographic variables, previous personal breast-feeding experience again proved to be an important influence, particularly for residents. As shown in Table 3, residents with breast-feeding experience were more likely to engage in activities to promote breast-feeding. More residents who had breast-fed or whose spouses had breast-fed provided accurate advice for most clinical management scenarios, such as mastitis (82% vs 68%, $P \leq .001$) and perceived insufficient milk supply (71% vs 51%, $P \leq .001$), and more of them were aware that supplementation is a cause of breast-feeding failure (61% vs 53%, $P = .04$). Also, more of these residents were confident in their breast-feeding promotion abilities (76% vs 42%, $P \leq .001$).

More physicians with than without personal breast-feeding experience reported self-confidence in counseling breast-feeding mothers (78% vs 56%, $P \leq .001$), were aware of the negative effects of supplementation (57% vs 45%, $P = .03$) and chose accurate answers to several of the breast-feeding management questions.

Significantly more residents (74% vs 42%, $P \leq .001$) and physicians (72% vs 60%, $P \leq .03$) who had either breast-fed an infant themselves or whose spouse had done so rated themselves as effective in meeting the needs of their breast-feeding patients. Unlike residents, however, physicians with personal experience did not engage in breast-feeding promotion activities any more frequently than did their counterparts with no personal breast-feeding experience.

Differences between first- and final-year residents demonstrated that, after additional years of training, senior residents reported more involvement in breast-feeding promotion activities and responded more accurately to many breast-feeding management questions. More final-year residents also rated themselves as effective in meeting the needs of their breast-feeding patients (62% vs 40%, $P \leq .001$)

and confident in assisting with breast-feeding initiation (62% vs 42%, $P \leq .001$). As shown in Table 1, no significant differences were demonstrated between first- and final-year residents with regard to attitudes toward breast-feeding promotion.

Stratification of results by type of residency program (community- or university-based) revealed no significant differences. The gender of residents exerted no consistent influence on results. However, for physicians, sex differences were observed in perception of training: more female physicians rated their residency training as inadequate (69% vs 46%, $P \leq .001$) and felt that too little emphasis was placed on physician involvement in breast-feeding promotion (64% vs 48%, $P = .03$). A greater proportion of female than male physicians responded that breast-feeding is feasible for working mothers (93% vs 79%, $P = .002$). Female physicians did not perceive themselves as more confident or more effective than male physicians in meeting the needs of breast-feeding patients.

Discussion

The results of this study suggest that residency training in family medicine does not adequately prepare physicians to assume an active and effective role in breast-feeding promotion. Deficits in knowledge of breast-feeding health benefits and management strategies were common among both resident and practicing family physicians. Although almost all respondents agreed that their clinical responsibility includes pre- and postnatal breast-feeding counseling, more than one fourth did not agree that exclusive breast-feeding is the most beneficial form of infant nutrition for the first months of life. The inconsistent knowledge of proven health benefits (eg, decreased incidence of otitis media and gastroenteritis) is further

evidence that many family physicians do not possess a thorough understanding of the clinical rationale for breast-feeding.

Questions assessing physicians' management choices for breast-feeding problems also demonstrated insufficient knowledge. Not only did a large proportion of both residents and physicians select inappropriate advice for many clinical scenarios, their preferred treatment frequently involved formula supplements. Unnecessary supplementation is a well-established cause of breast-feeding failure, but nearly one half of all respondents were unaware of this potential deleterious effect. Another barrier to successful prolonged breast-feeding is evident in respondents' proclivity to recommend bilateral termination of lactation for conditions that do not require total breast-feeding cessation, such as maternal breast abscess or mastitis.

In this study, 40% of physicians reported that they provide breast-feeding counseling less often than they expected at the completion of residency. As only 35% of physicians indicated that they provide maternity care, this modest level of counseling activity may be the result of a patient population that does not include many breast-feeding mothers. However, breast-feeding promotion is also an important component of well-child care. Previous studies by the principal investigator have found that approximately 80% of family physicians include well-child care in their practices.²¹ It seems plausible, then, that although patient population characteristics may legitimately constrain the extent of involvement in breast-feeding promotion for some family physicians, other factors play a significant contributory role.

The deficits in breast-feeding knowledge and clinical management demonstrated by these results may be one such factor related to inadequate breast-feeding promotion among physicians. The clinical advice reported by many respondents for common lactation problems was often inappropriate. In practice, if physicians' management strategies do not routinely and successfully resolve breast-feeding problems, physicians may lose confidence in their ability to have a positive influence on their patients' breast-feeding success. This in turn may lead them to decrease their breast-feeding-related interaction with patients. This hypothesis is supported by this study's lower rate of perceived importance for breast-feeding promotion among physicians as compared with residents.

It appears that while most residents were introduced to breast-feeding topics during their training, usually through lecture or rounds, they had few opportunities to practice counseling skills with patients. The only activity performed with some frequency was prenatal discussion of infant feeding methods. More interactive forms of physician counseling, such as observing the breast-feeding

mother-infant dyad or demonstrating breast-feeding techniques, were less commonly practiced. The amount of training experience corresponded closely with clinical practice; physicians exhibited similar patterns of activity related to breast-feeding promotion, though in lesser amounts as compared with that of residents.

Interestingly, physicians perceived themselves as more effective and more confident in assisting their breast-feeding patients, even though they were less involved in breast-feeding promotion. The prevalence of incorrect responses to breast-feeding knowledge and management questions, however, make physicians' self-ratings suspect and suggest a gap between good intentions and sound clinical practice. A telling example is found in items pertaining to working mothers. Most physicians endorsed the feasibility of breast-feeding continuation after maternal return to work, yet during the previous year, two thirds had *never* demonstrated how to use a breast pump, a critical device for expressing milk during work hours. The discrepancy between positive attitude and limited activity should serve as a target for educational intervention.

The significant influence of previous personal breast-feeding experience on breast-feeding attitude, knowledge, and counseling activity was not surprising but very disappointing. Breast-feeding counseling, like other clinical practices, is a learned skill; experience as a breast-feeding patient should not be a prerequisite to effective involvement in breast-feeding counseling and support.

Improved instruction with opportunity for guided patient interaction is needed in residency training and continuing education programs to enable family physicians to gain skill and confidence in breast-feeding promotion. Currently, breast-feeding education is not a standard component of residency programs; the Accreditation Council of Graduate Medical Examination curriculum guidelines for program accreditation in family medicine do not include a single mention of breast-feeding.²² Medical education policymakers and leaders at individual institutions may need to advocate inclusion of breast-feeding topics into training and continuing medical education programs, citing this and other studies that highlight gaps in breast-feeding knowledge and experience.

This study faced limitations inherent in any survey research methodology. Respondents may have had difficulty remembering specific components of their training and experience; however, the survey instrument and limited sampling frame were designed to reduce such recall bias. Knowledge and attitudinal questions explored the respondents' clinical management decisions and opinions at the present time, and reports of breast-feeding activity were limited to the preceding year. Because there was no opportunity to characterize nonrespondents, the exist-

presence of selection bias is unknown, but the nationally representative sampling frame and high response rate among residents should counteract such bias. Finally, these results may represent a "best-case scenario" of the current state of family physician education and experience related to breast-feeding promotion. Self-reporting allows respondents to choose a "socially desirable" answer, which would likely create a slight overestimate of breast-feeding-supportive behaviors and attitudes. Another potential limitation is that family physicians with a particular interest in breast-feeding may have been more motivated to respond to this survey, which would likely skew the results toward more positive attitudes and activities related to breast-feeding promotion.

Statements by specialty societies such as the AAFP underscore the importance of breast-feeding in decreasing infant morbidity. Although physician involvement in breast-feeding promotion has been shown to increase rates of breast-feeding initiation and duration,^{5,6} the need for appropriate, effective physician training has, to this point, been largely overlooked. Improved residency training and continuing education programs are necessary first steps toward enhancing family physicians' breast-feeding knowledge and skills.

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