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# *Sources of Infant Feeding Information Used by Pregnant Women*

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## **Abstract**

Selecting an infant feeding method is one of the most important decisions a mother-to-be makes. Little information is available to characterize women who plan to use both formula and breast milk. In this study, 89 pregnant women indicated their anticipated feeding method and the sources and initiator of infant feeding information. No differences were found in the type of resources used by women who planned to breastfeed, formula feed, or combination feed. Women in the study were four times more likely to initiate a conversation about infant feeding methods with a family member or friend than with a health care provider. Involving these key individuals in perinatal education classes and support programs is a simple, but powerful, strategy that childbirth educators can use to promote breastfeeding.

*Journal of Perinatal Education, 10(3), 20–26; infant feeding, breastfeeding, combination feeding.*

## **Introduction**

Breastfeeding is one of the most important contributors to infant health (U.S. Department of Health and Human Services, 2000a). Recent data indicate approximately 67% of new mothers breastfeed during the early postpartum period (U.S. Department of Health and Human Services, 2000b). While this rate falls below the recommendation of 75% set forth in *Healthy People 2010*, it reflects a positive movement from the 1988 rate of 54% (U.S. Department of Health and Human Services, 2000b). In part, this trend may be due to more women electing to feed formula in combination with, rather than instead of, breast milk. Little research is available to

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characterize the phenomenon of combination feeding. This study will examine sources of information used during the prenatal period by women who plan to breastfeed, formula feed, or combination feed their infants.

### Literature Review

A growing body of research in the area of lactation provides evidence that the use of formula supplements during the early postpartum period negatively impacts the breastfeeding process. Formula supplementation in the hospital following delivery is associated with reduced length of exclusive breastfeeding (Riva et al., 1999) and of any breastfeeding (Chezem, Friesen, Montgomery, Fortman, & Clark, 1998). The potentially disruptive effects of formula feeding appear to extend beyond the first days after birth; studies suggest that formula feeding in the first two to four weeks of breastfeeding increases the incidence of early weaning (Hill, Humenick, Argubright, & Aldag, 1997; Vogel, Hutchison, & Mitchell, 1999). Despite strong evidence against the use of formula supplements, a significant proportion of women choose to feed their infants a combination of breast milk and formula, increasing the risk of premature weaning and reducing the benefits associated with sustained breastfeeding.

To date, much research has been conducted to describe differences between women who choose to feed breast milk to their infants versus those who choose formula. The information gained from these studies has been used by health care professionals to develop meaningful breastfeeding promotion programs and to target these programs to women identified as being at greatest risk of formula feeding (Ahluwalia, Tessaro, Grummer-Strawn, MacGowan, & Benton-Davis, 2000; Coombs, Reynolds, Joyner, & Blankson, 1998; Grossman, Harter, & Hasbrouck, 1990). In contrast, little research explores characteristics of women who plan to combination feed their infants and evaluates strategies to promote breastfeeding in this group. Previous research has typically categorized these women as “breastfeeders” or excluded them completely. Preliminary work in our research group suggests these women make up a substantial percentage of expectant mothers who plan to breastfeed (30% to 35%) and differ markedly from women who intend to provide only breast milk to their infants. Specifically, we have ob-

served lower social self-confidence, reduced confidence in the ability to breastfeed, and a shorter duration of breastfeeding among women who choose to feed their infants a combination of breast milk and formula compared to women who choose to breastfeed exclusively (Boettcher, Chezem, Roepke, & Whitaker, 1999; Chezem, Friesen, & Boettcher, 1999).

During pregnancy, women receive information about infant feeding—both breast and formula feeding—from a variety of sources, including the woman’s health care provider and prenatal health education classes (Giugliani, Caiaffa, Vogelhut, Witter, & Perman, 1994; Matthews, Webber, McKim, Banoub-Baddour, & Laryes, 1998). Family and friends, as well as audiovisual and reading materials, may also provide information in a more informal setting (Chezem, Friesen, & Boettcher, 1999; Grossman, Fitzsimmons, Larsen-Alexander, Sachs, & Harter, 1990; Marchand & Morrow, 1994). The purpose of this study is to explore sources of infant feeding information during the prenatal period among women planning to exclusively breastfeed, exclusively formula feed, or feed a combination of breast milk and formula during the first month of their infants’ lives.

### Methods

Screening forms were used to recruit pregnant women during their third trimester of pregnancy from two medical practices located in the Midwest. Interested women were contacted by telephone and invited to join the study. Each subject was mailed a packet containing an information letter, a demographic questionnaire, a questionnaire about infant feeding resources, and a postage-paid return envelope. Requested demographic data included age, race, education, number of children, and (if applicable) method of infant feeding for previous children. The infant feeding resource questionnaire collected subjects’ description of various prenatal sources of information used to make their infant feeding decisions (i.e., health care provider, family, friends, reading materials, audiovisual materials, and other sources) and identified who initiated the giving of information (i.e., other, self, both). Subjects received a telephone reminder if the packet was not returned within two weeks. Subjects who did not return the packet within one month or before their expected due date (whichever came first) were dropped from the study.

## Sources of Infant Feeding Information Used by Pregnant Women

Level of education, number of children at the time of the prenatal interview, sources of infant feeding information, and initiators of information were categorized. Differences in education among women planning to breastfeed, formula feed, or combination feed were assessed using Kruskal-Wallis 1-Way ANOVA. Differences in number of previous children among women in the three groups were evaluated by Chi square analysis. Differences between sources of infant feeding information and anticipated infant feeding method by parity were evaluated using Mantel-Haenszel Chi square and Odds Ratio with Exact Confidence Limits. Data were analyzed by SPSS-X (SPSS for Vax/VMS, version 4.1, SPSS Inc., Chicago, Illinois) and Epi Info (Epi Info, version 6.04b, Centers for Disease Control and Prevention, Atlanta, Georgia). Significance levels were set at  $p < .05$ .

### Results

Ninety-eight women were recruited for the study. Of these, 89 (91%) women completed and returned the questionnaires within the required time frame. Results indicated that 30 (34%) women planned to breastfeed, 28 (31%) planned to formula feed, and 31 (35%) planned to feed a combination of breast milk and formula to their infant during the first month postpartum.

*The most frequent sources of prenatal infant feeding information cited by participants were health care providers . . . and reading materials . . . .*

Demographic characteristics of the sample are shown in Table 1. The women ranged in age from 16 to 39 years with an average age of 28 years. Ninety-nine percent ( $n = 88$ ) of the participants were white, 58% ( $n = 52$ ) were experienced mothers, and 72% ( $n = 62$ ) had at least some college education. There was no statistical difference in age ( $p = .50$ ) among the three groups. A strong trend ( $p = .05$ ) toward lower education levels among women in the formula feeding group was observed; only 54% ( $n = 15$ ) of these women reported education beyond high school compared to 80% ( $n = 24$ ) in the breastfeeding group and 75% ( $n = 23$ ) in the combination feeding group. Among first-time mothers, the majority indicated they would either breastfeed ( $n = 16$ ; 44%) or combination feed ( $n = 15$ ; 41%), with only a few ( $n = 6$ ; 16%) reporting plans for formula feeding. In contrast, experienced mothers were almost four times more likely to indicate they were going to formula feed their infant

**Table 1** Demographic Characteristic of Subjects\*

Characteristic	Planned Method of Infant Feeding:			Significance
	Breast Milk ( $n = 30$ )	Formula ( $n = 28$ )	Both ( $n = 31$ )	
<i>Ethnicity</i>				NS
Caucasian	100%	100%	97%	
Indian/Alaskan	0%	0%	1%	
<i>Age (in years)</i>				NS
$\leq 20$	7%	11%	10%	
21-25	27%	25%	10%	
26-30	33%	36%	45%	
31-35	20%	25%	22%	
36-40	13%	3%	13%	
<i>Education</i>				.05
High School	20%	46%	26%	
College	67%	50%	68%	
Postgraduate	13%	4%	7%	
<i>Previous child(ren)</i>				.03
None	53%	21%	48%	
$\geq 1$	47%	79%	52%	

\* $n = 89$

**Table 2** Resources Used for Infant Feeding Information

Resource	Planned Method of Infant Feeding:			Significance
	Breast Milk ( <i>n</i> = 30)	Formula ( <i>n</i> = 28)	Both ( <i>n</i> = 31)	
Health Care Provider ( <i>n</i> = 73)*	24	26	23	NS
Family ( <i>n</i> = 67)	25	22	20	NS
Friends ( <i>n</i> = 65)	22	19	24	NS
Reading Materials ( <i>n</i> = 72)	25	21	26	NS
Audiovisual Materials ( <i>n</i> = 19)	9	3	7	NS

\*The *n* values represent the total number of subjects who identified the specific source of infant feeding information out of the 89 subjects in the study.

(OR = 3.79 [1.24<OR>12.88]) rather than breastfeed or combination feed (*p* = .009).

Infant feeding resources are shown in Table 2. The most frequent sources of prenatal infant feeding information cited by participants were health care providers (82%; *n* = 73) and reading materials (81%; *n* = 72). Approximately three-quarters of subjects indicated they had discussed infant feeding with family (75%; *n* = 67) and friends (73%; *n* = 65). Audiovisual materials were utilized by 21% (*n* = 19) of the women. Other sources, typically described by fewer than 5% of the sample, included the Internet (*n* = 1), prenatal classes (*n* = 2), previous infant feeding experience (*n* = 1), and the Special Supplemental Food Program for Women, Infants and Children (*n* = 3). There were no significant differences among the three feeding groups in reported use of the various resources.

Data concerning the initiator of infant feeding information (i.e., other, self, or both) are presented in Table 3. In 80% (*n* = 54) of the cases, the health care provider introduced the topic of infant feeding, either independently or in addition to conversations initiated by the

subject. Women were four times more likely to initiate a conversation about infant feeding with family or friends than with their health care provider (OR = 4.39 [2.31<OR<8.51]; *p* = .000). Of the 72 women who received reading materials, 75% (*n* = 54) indicated the acquisition was due, in whole or in part, to the initiation efforts of others; 54% (*n* = 39) reported themselves, either independently or in addition to efforts by others, as responsible for obtaining the written materials. Although few women received information from audiovisual resources (*n* = 18), 95% of these women reported that the receipt of the materials was initiated, at least in part, by another individual.

## Discussion

In general, well-educated Caucasian women living in or around a large Midwestern city participated in the current study. Although screening forms were offered to all pregnant women at the recruiting sites, only subjects indicating an interest were contacted by the study staff. This type of self-selection may be one reason for the high incidence of experienced mothers within the formula feeding group. All of these mothers had previously formula fed an infant, either as the sole method for infant feeding (82%) or in combination with breastfeeding (17%). Perhaps the skills and knowledge gained from experience enhanced their confidence and willingness to join the study. Alternatively, first-time mothers planning to formula feed may have felt ambivalent about their

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**Table 3** Initiator of Infant Feeding Information

Resource	Other Initiated	Self-Initiated	Both Indicated	Initiator Not Indicated
Health Care Provider ( <i>n</i> = 73)*	47	13	7	6
Family ( <i>n</i> = 67)	16	33	11	7
Friends ( <i>n</i> = 65)	17	31	15	2
Reading Materials ( <i>n</i> = 72)	33	18	21	0
Audiovisual Materials ( <i>n</i> = 19)	16	1	1	1

\*The *n* values represent the total number of subjects who identified the specific source of infant feeding information out of the 89 subjects in the study.

decision or concerned they would be viewed negatively, thus reducing participation. Due to these issues of self-selection and homogeneity among the study sample, results should not be generalized to all pregnant women.

The United States Department of Health and Human Services' *Blueprint for Action on Breastfeeding* (2000a), the American Dietetic Association's *Position of the American Dietetic Association: Promotion of Breastfeeding* (1997), and the American Academy of Pediatrics' *Policy Statement: Breastfeeding and the Use of Human Milk* (1997) strongly recommend that health professionals offer breastfeeding education to pregnant patients. Research suggests health care providers can be a major influence in the decision-making process (Balcazar, Trier, & Cobas, 1995; Grossman, et al., 1990). Subjects in the present study frequently cited health care providers as a source of infant feeding information. Nevertheless, 18% of study subjects reported they had not discussed infant feeding with a provider despite repeated contacts during prenatal visits. This may be related to providers' limited training in the area of infant feeding methods, especially breastfeeding, and their lack of self-confidence in breastfeeding counseling skills (Burglehaus, Smith, Sheps, & Green, 1997; Freed, Clark, Curtis, & Sorenson, 1995; Howard, Schaffer, & Lawrence, 1997). Health professionals working in the area of maternal and child services should be knowledgeable about all methods of infant feeding and discuss infant feeding options with each expectant mother—whether first-time or experienced, formula-feeding or breastfeeding—to ensure every woman is afforded the opportunity to make a fully informed infant feeding decision (AAP, 1997).

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While subjects were somewhat reluctant to initiate infant feeding discussions with health providers, they frequently sought information from family and friends. Families have traditionally been viewed as a source of emotional support for pregnant women. In addition, family members, especially the baby's father and the baby's grandmothers, serve as resources for infant feeding information (Humphreys, Thompson, & Miner, 1998; Matich & Sims, 1992). The experiences, either positive or negative, of family and friends can strongly influence a woman's choice of feeding methods (Hoddinott & Pill, 1999). For a woman who learns skills through a practical approach, the direct exposure to the positive breastfeeding experience of a friend or family member may be more influential than theoretical knowledge gained from health professionals or written materials. These findings suggest broad-based breastfeeding

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promotion campaigns, inclusion of family members in breastfeeding education activities, and antenatal apprenticeships (pairing a pregnant woman with a successful breastfeeding woman within her social network) may be valuable strategies to improve the breastfeeding initiation rate (U.S. Department of Health and Human Services, 2000a; Hoddinott & Pill, 1999).

Women often access information through pamphlets, books, and other reading materials. Health care providers and the public health sector are responsible for ensuring pregnant women have access to current, culturally appropriate, and accurate reading materials that portray breastfeeding as the normative behavior. Patient education materials produced by formula companies, which are frequently distributed in clinics and physicians' offices, typically do not meet these standards (Howard et al., 1997). In a study conducted by Valaitis, Sheeshka, and O'Brien (1997), commercial publications available in physicians' offices were frequently outdated, contained factual errors, and provided complicated and medicalized instructions for breastfeeding that "presented a negative and illness oriented" approach to the breastfeeding process (p. 205). At best, these inappropriate materials do not promote breastfeeding and, at worst, may contribute to a patient's decision not to breastfeed (Howard, Howard, & Weitzman, 1993; Valaitis et al., 1997).

### Conclusions

The decision to breastfeed, formula feed, or combination feed an infant should be a personal choice made after much reflection. A woman's decision is influenced by a variety of factors, including information obtained and advice offered to her by her health care provider, her friends and family, and through reading materials. Although health care providers discussed feeding practices with the women in this study, subjects were more likely to reach out to family and friends for information about infant feeding than to their health care provider.

The results of this study suggest several strategies that may assist childbirth educators and other health professionals in breastfeeding promotion. Identifying and including key support individuals in education and support group activities will ensure accurate information for those involved in infant feeding decisions. While expectant or new mothers are frequently encouraged to seek

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guidance from health professionals regarding breastfeeding concerns, some women may feel uncomfortable calling their physician or other professionals with questions. Encouraging women to view friends and family with breastfeeding experience as sources of valuable advice may increase the likelihood that they will be called upon when breastfeeding assistance is needed. Because formula companies produce and distribute patient education materials that are both free and visually appealing, it may be tempting to consider using them. However, utilizing free materials from government agencies and not-for-profit groups or paying for materials from companies specializing in perinatal education avoids a conflict of interest and ensures clients receive the clear message, "Breast is best." Although small in terms of resources required, these strategies can potentially assist with increasing breastfeeding rates to those recommended in *Healthy People 2010*.

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### Fact Finding

*A father decided to tell his young son the facts of life and was stumped right away by the boy's first question: "How many are there?"*

—Unknown

*Perfect as the wing of a bird may be, it will never enable the bird to fly if unsupported by the air. Facts are the air of science. Without them a man of science can never rise.*

—Ivan Pavlov