

## **Maternal Infant-Feeding Decisions: Reasons and Influences**

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L'objectif de cette étude longitudinale prospective est de déterminer quelles sont les raisons qui poussent les mères à prendre telle ou telle décision en matière d'allaitement pendant les six mois qui suivent la naissance de leur enfant et ce qui les influence à ce chapitre. En six mois, le nombre de mères qui allaitent au sein passe de 41,7 % à 11,4 %. Les principales raisons qui poussent les mères à ne pas allaiter sont la gêne et un certain inconfort à l'idée d'allaiter. Les mères plus jeunes et moins instruites, dont les revenus sont inférieurs, sont moins susceptibles d'allaiter, plus enclines à interrompre prématurément l'allaitement maternel et plus susceptibles de donner à leur enfant des laits évaporés bon marché. Les mères cessent d'allaiter tôt, soit parce que c'est trop difficile, soit parce qu'elles doivent reprendre le travail. Les mères qui allaitent et celles qui allaitent au biberon changent de lait, soit parce que le bébé n'était « pas satisfait », soit parce qu'il « digérait mal » le lait en question. En règle générale, c'est le réseau social, plus que les professionnels de la santé, qui exerce l'influence la plus marquée sur les décisions des mères.

The purpose of this prospective longitudinal study was to determine the reasons for and influences on mothers' infant-feeding decisions over the 6 months post-birth. The breastfeeding initiation rate of 41.7% had declined to 11.4% at 6 months. The major reasons for not choosing breastfeeding were embarrassment and discomfort with the idea. Younger, less-educated mothers with lower incomes were less likely to start breastfeeding, more likely to discontinue breastfeeding early, and more likely to feed their babies cheaper evaporated milks. Mothers gave up breastfeeding early because it was too difficult or because they were returning to work. Reasons given by both breastfeeding and bottle-feeding mothers for switching milks were that the baby was "not satisfied" on the milk or that it was "not agreeing with" the baby. Generally, the social network, rather than health professionals, had greater influence on mothers' decisions.

An integral part of a mother's caretaking role is infant feeding. Method of feeding is an important determinant of an infant's health and its growth and development (Chandra, 1990). National and provincial programs have been introduced to promote breastfeeding as the

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optimal type of feeding, and national infant-nutrition guidelines have been established (Health and Welfare Canada & Canadian Paediatric Society, 1986; Nutrition Committee, Canadian Paediatric Society, 1979). However, in spite of these initiatives many mothers choose not to breastfeed or to give up breastfeeding within the first few months. Of the mothers who choose bottlefeeding, many switch from the formula recommended in the guidelines and started in hospital to milks not considered suitable for very young infants.

The degree to which both breastfeeding and bottlefeeding mothers follow established guidelines was examined in one Canadian province (Matthews, Webber, McKim, Banoub-Baddour, & Laryea, 1995), with the following results: the breastfeeding initiation rate was 41.7%; by 6 months after the birth the majority of breastfeeding mothers had given up; among bottlefeeding mothers, 33% switched from a commercially prepared infant formula (CPIF) to evaporated milk; solid foods were introduced earlier than the recommended 4 to 6 months; and, for some babies, iron and vitamin supplementation was either lacking or inappropriate. The study collected data on mothers' reasons for their infant-feeding decisions. The purpose of this paper is to present these data and discuss the reasons for maternal infant-feeding decisions and the factors that influenced the mothers' choices. The results of this analysis have implications for educational programs that target pregnant and postpartum women and their families.

### **Literature Review**

Most studies examined demographic variables to determine which mothers are likely to breastfeed and found that feeding method is largely determined by socio-economic factors: women from higher-income and more highly educated groups are more likely to breastfeed (Aberman & Kirchhoff, 1985; Grossman, Fitzsimmons, Larsen-Alexander, Sachs, & Harter, 1990; Jones, West, & Newcombe, 1986; Michaelsen, Larsen, Thomsen, & Samuelson, 1994). For North America, however, income and education factors are true for white populations only; black and Hispanic women are likely to follow accepted cultural practices and choose breastfeeding (Ford & Labbock, 1990). Psychosocial factors also play a part in infant-feeding decisions. For example, spousal support and having a mother who breastfed her children were found to be positively associated with a mother's decision to begin breastfeeding (Jones et al.; Littman, Mendendorp, & Goldfarb, 1994).

The most common reason for mothers to choose to breastfeed was found to be that it is better for the baby (Aberman & Kirchhoff, 1985). Giugliani, Caiaffa, Vogelhut, Witter, and Perman (1994) note that reasons for breastfeeding tend to be more infant-centred, while reasons for bottlefeeding tend to be more mother-centred. A study with low-income breastfeeding mothers (Libbus, Bush, & Hockman, 1997) also found that the women perceived the advantages of breastfeeding to be infant-related and the disadvantages to be mother-related. A study with young, single, multiparous mothers found that embarrassment, limitations on freedom, and inconvenience were the reasons for choosing not to breastfeed (Dix, 1991). The fact that breastfeeding is better for the baby may not be sufficient motivation for a woman to choose it, Dix comments, if breastfeeding does not meet her personal needs. The major reasons offered by bottlefeeding mothers for choosing this method were negative attitudes towards breastfeeding and convenience. Few studies have asked specifically why mothers chose not to breastfeed. Morse and Bottorff (1989) found that complicated decision-making was required when returning to work was the reason for giving up breastfeeding. Indecision and temporizing marked these mothers' approach to their infant-feeding decisions.

Duration of breastfeeding has been positively correlated with social support (Giugliani, Caiaffa, et al., 1994; Richardson & Chapman, 1992). In a study of the importance of the social network for choosing and persevering with breastfeeding for mothers of pre-term infants, Kaufman and Hall (1989) found that breastfeeding mothers reported significantly more social support than bottlefeeding mothers and were more motivated to comply with the wishes of the baby's father, the doctor, and the nurses. This group is likely to be more influenced by health professionals because of the dangers of prematurity and the close follow-up it requires. These investigators concluded that the social network significantly influenced the duration of lactation. If the social network is more influential than professional support systems in maternal infant-feeding decisions, the question arises: How much knowledgeable support is available to mothers? Giugliani, Bronner, et al. (1994) studied fathers as a source of support and reported that older, more-educated fathers who had attended prenatal classes were more knowledgeable about infant feeding and more supportive than younger, less-educated fathers. However, they found that many fathers felt helpless and unprepared to support their breastfeeding partners. Although breastfeeding mothers have been found more likely than bottlefeeding mothers to have sought and received professional advice when making their initial feeding

decision, the mothers' choice was influenced less by health-care professionals than by the informal network. Grossman et al. (1990) found that professional health-care providers had little influence on whether a mother chose to breastfeed. Dix (1991), in a study with low-income black women, found that the women were influenced more by nurse-midwives than by physicians.

In summary, a review of the literature suggests that maternal age, education, and income influence infant-feeding decisions. Women in higher socio-economic groups are more likely to breastfeed and to breastfeed longer than women in lower socio-economic groups. Major reasons for choosing breastfeeding are infant-related, although recognition of the superior quality of breastmilk may not influence some mothers if breastfeeding does not meet their own needs. Cultural and psychosocial factors also play a part. Mothers' support networks play a key role in their decisions, with family and friends being more influential than health professionals.

### **Rationale for the Study**

Although breastfeeding rates for Newfoundland increased from 17% in 1978 (Alton-Mackey & Orr, 1978) to 33% in 1983 (Banoub et al., 1985), the rates remained the lowest in Canada. The rates for persevering with breastfeeding were even lower. Despite provincial and local initiatives to promote breastfeeding, such as publicity campaigns and the establishment of support groups for nursing mothers, anecdotal reports from hospital and community-health nurses suggested that breastfeeding initiation and continuance rates were still low and that bottlefeeding mothers were using milks not recommended for infants.

While infant-feeding patterns require investigation, knowledge of such patterns in a population is incomplete if the influences on a woman's decision are not also studied. In a large, random survey of Newfoundland mothers, Matthews et al. (1995) found that 41.7% started breastfeeding, 11.6% were still breastfeeding exclusively at 6 months, and a significant number of both breastfeeding and bottlefeeding mothers were not following the Health and Welfare Canada & Canadian Paediatric Society (1986) infant-feeding guidelines. Knowing who or what influences women in their infant-feeding decisions will guide the development of effective institutional and community-health programs for prepartum and postpartum families.

### *Objectives*

1. To establish the reasons for initial maternal infant-feeding decisions.
2. To establish the reasons for changing the initial feeding decision over the first 6 months.
3. To determine which members of support networks, both informal and professional, most influence a mother's feeding decisions.

### *Research Questions*

1. What reasons are given by mothers for choosing not to breastfeed?
2. What reasons are given by mothers for changing their initial infant-feeding decision?
3. Who are the major influences in maternal infant-feeding decisions?
4. What role do health professionals play in infant-feeding decisions?

### **Method**

The data for this paper were collected during a prospective longitudinal study of infant-feeding practices conducted in Newfoundland and Labrador from January 1992 through June 1993.

### *Sample*

The inhabitants of the island of Newfoundland are primarily Caucasian, many descending from people who came from Devon, Cornwall, and Dorset in England or from the south of Ireland. A small number of Micmac Indians live in the Conne River area; while distinct as an ethnic group, these generally have been assimilated into rural Newfoundland culture. The inhabitants of coastal Labrador can be classified as native (both Innu and Inuit), Caucasian, and mixed origin (or "settlers" — the products of intermarriage between European settlers and Inuit). Europeans settled in the towns of Happy Valley/Goose Bay, at the head of Lake Melville, and Cartwright and Black Tickle in southern Labrador. The Innu reside mainly in Sheshashit and Davis Inlet, the Inuit in the communities of Nain, Postville, Rigolet, Hopedale, and Makkovik. Many of the inhabitants of Makkovik are "settlers." In western Labrador, near the Quebec border, the population of the mining-company towns of Labrador City and Wabush is similar to that of the island of Newfoundland. While most people on the island of



Newfoundland live in areas that are easily accessible, most of the native populations, as well as the inhabitants of Cartwright and Black Tickle, are located along coastal Labrador in areas reached only by boat or small aircraft. Almost all the mothers of coastal Labrador give birth at the regional hospital in Goose Bay.

A sample size of 400 was needed to establish a 95% confidence interval. This number would allow for an estimate of the prevalence of various characteristics of infant feeding, analysis of the patterns of starting solid foods, and the reasons for changing feeding methods. However, in order to ensure a minimum number of 400 throughout the 6 months of follow-up, a total sample of 900 (approximately 1 mother in 6) was required. Of the 909 breastfeeding and bottlefeeding mothers recruited (73%) — including 69 (6%) from coastal Labrador — 778 (85%) were retained for 6 months; this was 14% of the total population of mothers who gave birth in Newfoundland and Labrador in 1992. Anonymous demographic data were collected for mothers who declined to participate, for the purpose of identifying differences between participants and non-participants; no significant differences between the groups were found for age, ethnic background, living status, education, or spousal employment.

### *Sample Selection*

Mothers who spoke English, or, in Labrador, the aboriginal languages of Innu or Innuktitut, and whose healthy, full-term babies were being discharged with them, were eligible for enrolment. For practical reasons, given the geography of the province and the low number of births in some of its maternity units, the mothers of Newfoundland and western Labrador were randomly selected according to the week they gave birth. The 54 weeks of data collection were divided into nine periods of 6 weeks each. Within each period 1 week was identified by the throw of a die. All eligible mothers who gave birth during these randomly selected weeks were asked to participate. This method allowed for possible seasonal differences over the data-collection period. The exception to the sampling method was coastal Labrador, where a survey for the year prior to the start of data collection showed that recruitment of 1 mother in 6 would yield only 8 or 9 mothers for each of the Innu and Inuit groups. For this reason and because of lack of telephone access for some families, *every* mother who delivered in coastal Labrador was invited to participate.

### *Procedure*

Ethical approval was obtained from the Human Investigation Committees of sponsoring and participating institutions. All institutions providing maternity care in Newfoundland and Labrador were approached and gave permission for data collection at their institutions.

All eligible mothers were recruited in maternity units through an intermediary within the first few days postpartum. After the study was explained to the mother and signed consent was obtained, the local data collector administered questionnaire 1. At 1, 4, and 6 months postpartum the data collector telephoned the recruited mothers and administered questionnaire 2.

As with sampling, data were collected differently in coastal Labrador. Aboriginal leaders were approached for permission to conduct the study with their peoples. Permission was granted on condition that data collection among Innu and Inuit mothers would be carried out by aboriginal community health representatives (CHRs). Although this method would not be consistent with data collection for the rest of the study population, the investigators agreed because it would allow for mothers to be interviewed in the language of their choice, because they felt the involvement of the CHR would encourage participation, and because telephone follow-up was not feasible for coastal communities. Therefore, coastal Labrador mothers were recruited as soon as they returned home from the hospital and were followed up by interview at each data-collection week. To give mothers an opportunity to respond in their own language, the questionnaires were translated into the Innu and Innuktitut languages.

Throughout the data-collection period the research team communicated with all data collectors by telephone and newsletter to ensure that any misinterpretations or questions could be clarified.

### *Preparation for Data Collection*

The province of Newfoundland and Labrador is divided into five public health regions. One team member was assigned responsibility for data collection in each region. Preparatory work included selection of 21 data collectors throughout the province, development of an instruction manual for data collection, and a teleconference training session. With the exception of the CHRs in the aboriginal communities, all data collectors were registered nurses residing near the data-collection sites.

### *Instruments*

Two questionnaires were developed for the study. Questionnaire 1, administered at the initial interview in the hospital following the birth, was used to gather data on maternal demographic variables, infant birth weight, the mother's initial feeding choice, reasons for not choosing breastfeeding, and the persons most influential in her infant-feeding decisions. Questionnaire 2, administered by telephone at 1, 4, and 6 months after the birth, focused on ongoing feeding practices, changes in practice, and maternal infant-feeding decisions. The questionnaires comprised both closed-ended and open-ended questions. Close-ended questions dealt with specific feeding methods (e.g., "What milk are you feeding your baby now?"). Open-ended questions dealt with the reasons for feeding decisions made both before and after the birth (e.g., "If you are bottlefeeding, why did you choose not to breastfeed?"). The mothers were asked to give their reasons for choosing not to breastfeed and their reasons for switching from the original feeding method. They were also asked with whom, if anyone, they discussed infant feeding prior to making their decisions and by whom, if anyone, they were influenced in making their decisions.

The questions were developed by the research team — all of whom were mother-child health specialists — based on a review of the literature, information on infant feeding obtained from both mothers and hospital and community-health nurses, and consultations with experts in both perinatal care and questionnaire development. The questionnaires were reviewed by a bio-statistician and a nutritionist for face and content validity. A pilot study was conducted to test the questionnaires and the interview procedure. Minor modifications were made.

### *Data Analysis*

Data were analyzed both quantitatively and qualitatively: The numerical data on methods of feeding, demographic data, and persons influencing the mother were analyzed using descriptive statistics to calculate frequencies and means. Cross-tabulations and chi-square were used to test for relationships between method of feeding and demographic variables such as age, education, parity, living status, ethnic group, and monthly income. Cross-tabulations and chi-square were also used to determine whether a relationship existed between feeding method and spousal, family, and/or professional influences. The demographic categories were collapsed into two or three major categories — for example, completed high school or did not complete high school; income less than \$1,500/month or greater than \$1,500/month; and



living with spouse/partner, with family or friends, or alone. Age was divided into under 21 years, 21–30 years, and over 30 years. The significance level was set at 0.05.

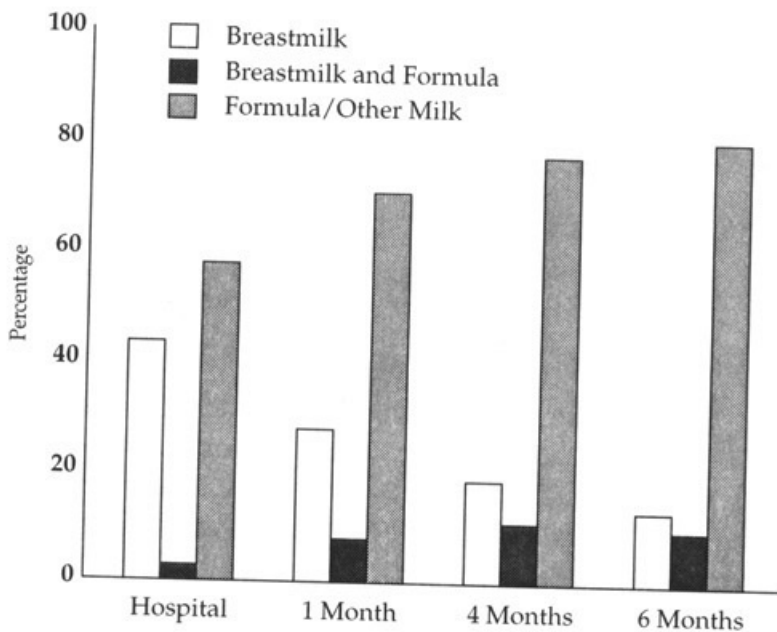
The qualitative data were obtained from the open-ended questions related to mothers' reasons for choosing not to breastfeed and for changing feeding method. The mothers' comments were typed. Each idea, belief, or feeling was the unit of data analysis. The research team sorted each unit into a major category or theme expressing the particular belief or feeling until agreement was reached that each unit was correctly identified with a particular theme. The categories were then coded and ranked in order of frequency to determine the most common reasons for maternal decisions.

## Results

### *Breastfeeding and Bottlefeeding Initiation and Continuance Rates*

In the hospital after birth, 379 mothers (41.7%) started breastfeeding, 11 (1.2%) started both breastfeeding and bottlefeeding, and 519 (57.1%) started bottlefeeding. However, over time the breastfeeding rate declined sharply and the bottlefeeding rate increased. By 6 months only 11.6% of the mothers were breastfeeding without a formula supplement.

**Figure 1** *Breastfeeding and Bottlefeeding Rates at Birth and at 1, 4, and 6 Months*



**Table 1** *Effect of Demographic Variables on Choice of Feeding Method*

Variable	N	Breast		Bottle		$\chi^2$	P
		N	%	N	%		
<b>Monthly Income</b>							
< \$1,500	649	99	15.2	228	35.1	44.69	0.00
> \$1,500		181	27.2	142	21.9		
<b>Educational Level</b>							
Grade 12 or less	902	127	14.1	361	40.0	125.82	0.00
> Grade 12		260	28.8	154	17.1		
<b>Maternal Age</b>							
< 20 years	909	30	3.3	104	11.4	33.86	0.00
21-30		269	29.6	333	36.6		
31-41		91	10.0	82	9.0		
<b>Parity</b>							
Primipara	909	186	20.5	229	25.2	1.16	.558
Multipara		204	22.4	290	31.9		
<b>Attend Prenatal Class</b>							
All classes	909	111	12.2	67	7.4	39.93	0.00
Some classes		56	6.2	66	7.3		
No classes		223	24.5	386	42.5		
<b>Living Status</b>							
Alone	909	10	1.1	24	2.6	16.90	0.02
With husband/partner		332	36.5	386	42.5		
With family/friends		48	5.3	109	12.0		
<b>Ethnic Group</b>							
Caucasian	847	362	42.7	487	57.5	22.57	0.004
Innu	24	17	66.6	8	33.3		
Inuit	23	4	17.4	16	82.6		
Micmac	10	3	30.0	7	70.0		
Other (Asian,	5	4	80.0	1	20.0		
African, etc.)							
p = < 0.05							

### Demographics

The mean age of the mothers at the time of enrolment in the study was 26.0 years (SD 4.96, median 26.0, mode 23.0); 5 mothers were under 16. The majority were Caucasian (93.1%); there was a small group of Micmac mothers (1.1%); 5.2% were aboriginal from coastal Labrador; further breakdown of the coastal Labrador data indicated that there were 24 Innu (34.3%), 23 Inuit (32.6%), 20 Caucasian (29.9%), and 2 mothers of mixed origin (3%). Most (77.2%) of the Newfoundland and

## Maternal Infant-Feeding Decisions

Labrador mothers lived with a husband or partner, 17.3% lived with friends or relatives other than husband or partner, and 3.7% lived alone. The majority of mothers (77.4%) had completed high school. Eighteen percent of fathers were unemployed. Primiparous mothers made up 45.7% of the sample, multiparous mothers 54.3%; 16 mothers had 5 or more children.

### *Effect of Demographic Variables on Infant-Feeding Practices*

**Breastfeeding.** The findings from the chi-square test for relationships between type of feeding and demographic variables revealed that mothers who breastfed were more likely to be older ( $p = 0.00$ ), better educated ( $p = 0.00$ ), and belong to higher-income groups ( $p = 0.00$ ).

**Bottlefeeding.** Younger, single, and less-educated mothers were more likely to choose bottlefeeding ( $p = 0.00$ ). Mothers who were young ( $p = 0.00$ ), single ( $p = 0.02$ ), and from low-income groups ( $p = 0.00$ ) were more likely to switch to evaporated milks from commercially prepared infant formulas (CPIFs) ( $p = 0.00$ ).

**Table 2** *Effect of Demographic Variables on Choice of Bottlefeeding at 1 Month*

Table 2 <i>Effect of Demographic Variables on Choice of Bottlefeeding at 1 Month</i>							
Characteristics	N	Formula		Evaporated Milk		$\chi^2$	P
		N	%	N	%		
<i>Maternal Age</i>							
≤ 26 years		215	37.2	95	16.4		
26–30		147	25.4	32	5.5		
31–41		81	14.0	8	1.4		
Total	578					22.47	0.000
<i>Educational Level</i>							
≤ Grade 12		259	44.7	116	20.0		
> Grade 12		181	31.3	18	3.1		
Total	579					34.81	0.000
<i>Living Status</i>							
With spouse/partner		338	58.6	89	15.4		
Single		105	18.2	45	7.8		
Total	577					5.22	0.022
<i>Monthly Income</i>							
< \$1,500		174	40.2	83	19.2		
> \$1,500		160	36.9	16	3.7		
Total	433					31.89	0.000
Note: Some mothers may have chosen not to answer all questions.							

### *Reasons for Choosing Not to Breastfeed*

The reasons for not breastfeeding were ranked in order of their frequency in the mothers' responses. At the time of the first interview, 33.7% of the 519 bottlefeeding mothers in the sample reported embarrassment, distaste, or discomfort as the major reasons for not breastfeeding. Another 23% either "preferred not to" breastfeed, believed it was inconvenient, or considered it too demanding or time-consuming. Other reasons included medical factors, early infant-health problems, return to work, and a previous bad breastfeeding experience. Twenty-three mothers preferred not to breastfeed because they smoked.

**Table 3** *Reasons for Choosing Not to Breastfeed*

Reason	Frequency	%	Valid %
Not comfortable, embarrassing, distasteful, not emotionally prepared	176	19.4	33.7
Did not want to/preferred not to (mother's decision)	52	5.7	10.0
Returning to work	43	4.7	8.2
Do not know/no particular reason	42	4.6	8.0
Inconvenient	39	4.3	7.5
Medical reasons (maternal-related, physician advised)	34	3.7	6.5
Early post-partum reasons (mainly infant-related)	30	3.3	5.7
Too demanding or time/energy-consuming	28	3.1	5.4
Bad previous experience	26	2.9	5.0
Because I smoke	23	2.5	4.4
Other	17	1.9	3.3
Not encouraged to/advised against by family, friends, or spouse	7	0.8	1.3
Wanted father more involved	5	0.6	1.0
Missing or N/A	387	42.6	—

## Maternal Infant-Feeding Decisions

### *Reasons for Switching to Bottlefeeding*

By 1 and 4 months, respectively, 132 (35%) and 224 (59%) of the 390 mothers who had started breastfeeding had switched to bottlefeeding. The small group of mothers who both breastfed and bottlefed in hospital had given up breastfeeding by 1 month. The most common reasons for quitting at 1 and 4 months were perceiving that the baby was not being satisfied on breastmilk (24% at 1 month, 21% at 4 months); finding breastfeeding too difficult (16% at 1 month, 9.7% at 4 months); and baby not doing well (7.5% at 1 month, 9.3% at 4 months). By 6 months, 256 (67.5%) of the 379 mothers in the initial breastfeeding group had switched to bottlefeeding. The most common reason for weaning at this time was return to work.

### *Reasons for Feeding Changes*

In hospital, 519 bottlefeeding mothers had started their babies on CPIF with iron. By 1 month, 184 mothers had switched to CPIF without iron and 117 had switched to evaporated milks. The main reason for switching from the iron-fortified formula was the perception that the iron was causing infant side effects. Like breastfeeding mothers, the bottlefeeding mothers switched because they perceived that the baby was not satisfied with the milk, was "allergic" to the milk, or "did not like" the milk. Expense was a major reason for switching to evaporated milk. At 1 month, only three mothers had changed feeding method on the advice of a health professional.

**Table 4** *Health Professionals with Whom Mothers Discussed Feeding Methods*

Member	Frequency	%	Valid %
Doctor	245	27.0	46.8
Public health nurse	198	21.8	37.9
Prenatal instructor	170	18.7	32.5
Midwife	28	3.1	5.4
Hospital nurse	173	19.0	33.1
La Leche League	16	1.8	3.1
Other	14	1.5	2.7
Missing or N/A	386	42.5	—



*Influence of Others on Infant-Feeding Decisions*

Prior to making their decision on feeding method, a small majority of respondents (57.7%) reported that they had discussed feeding methods with health professionals, family/friends, or both. However, only 27% of the total had discussed it with the physician (all mothers saw a physician during their pregnancy). Other sources of advice were the public-health nurse (21.8%), the prenatal instructor (18.7%), and a hospital nurse or midwife (22%). Several mothers had discussed feeding methods with more than one health professional (see Table 4); 3% had consulted the La Leche League, a self-help group of breastfeeding mothers. As for non-professionals, 70.4% of mothers ranked their husband/partner as the person with whom they discussed infant feeding; friends (54%), mother (47.2%), and sisters (34%) were also consulted (see Table 5).

**Table 5** *Members of Social Network with Whom Mothers Discussed Feeding Methods*

Member	Frequency	%	Valid %
Husband/partner	368	40.5	70.4
Mother	247	27.2	47.2
Mother-in-law	114	12.5	21.8
Sisters	179	19.7	34.2
Friends	283	31.1	54.1
Other	34	3.7	6.5
Missing or N/A	386	42.5	—

Mothers were not necessarily influenced by their discussions about infant feeding. When asked who was the most influential person in their decision, 30% of the mothers said they had made their own choice and had not been influenced by anyone and 20.5% said they had been most influenced by their husband or partner; friends and mothers accounted for approximately 19%. Health professionals appeared to have little influence with this group. A small group of mothers (7.8%) reported that the public-health nurse was the most influential health professional in their feeding decisions, followed by the physician (4.6%), the prenatal instructor (3.6%), and the hospital nurse or midwife (3%). When tested for relationships among method of feeding, mater-

nal demographic variables, and those mothers most likely to be influenced, breastfeeding mothers were found more likely to be influenced by health professionals and family and friends. Bottlefeeding mothers were more likely to say they had made their own decision or to have been influenced by their partner ( $p = 0.002$ ). As expected, primiparous mothers were significantly more likely to be influenced by health professionals and family and friends than multiparous mothers ( $p = 0.000$ ), as were mothers not living with a spouse or partner ( $p = 0.000$ ). Education or age of the mothers were not significant factors in the influence of health professionals.

**Table 6** *Most Influential Person in Maternal Feeding Decision*

Member	Frequency	%	Valid %
No one/own decision	156	17.2	29.8
Husband/partner	107	11.8	20.5
Friends	49	5.4	9.4
Mother	49	5.4	9.4
Public health nurse	41	4.5	7.8
Sisters	34	3.7	6.5
Doctor	24	2.6	4.6
Prenatal instructor	19	2.1	3.6
Other	16	1.7	3.1
Hospital nurse	10	1.1	1.9
Midwife	5	0.6	1.0
La Leche League	3	0.3	0.6
Missing or N/A	386	42.5	—

### Summary and Discussion

This study, like others, found demographic variables to be significant factors in maternal infant-feeding choices. Younger, less-educated, unsupported mothers with low incomes were found to be less likely to breastfeed, although breastmilk is much more economical than artificial milks. The mothers who chose bottlefeeding were more likely than breastfeeding mothers to switch to cheaper evaporated milks within the first few months. There were significant differences among ethnic

groups. Innu mothers showed a significantly higher rate of breastfeeding than Inuit, Micmac, or rural Caucasian mothers. In this sample, ethnicity was associated with less education and lower income. Embarrassment and "preferred not to" were the most common reasons given by mothers in the total sample for choosing not to breastfeed. Over time, many mothers changed their feeding method. Breastfeeding mothers switched to bottlefeeding because they found breastfeeding too difficult or time-consuming or because they perceived that the baby was not being satisfied on the breastmilk. Bottlefeeding mothers gave similar infant-related reasons for switching from the CPIX started in the hospital. The formula either did not satisfy or did not agree with the baby. Younger, less-educated mothers with lower incomes were more likely to switch from formula to the cheaper evaporated milks. A small majority of mothers had discussed infant feeding with a health professional during pregnancy but were more likely to be influenced by their social network, especially their husband or partner.

From this study it appears that there are two major decision-making periods for mothers: prior to the birth, when they make their infant-feeding choice, and the first few weeks following the birth, when they decide whether to continue breastfeeding or, if bottlefeeding, whether to continue with the milk recommended in the hospital.

Several studies, including the present one, support the contention that choice of feeding method is determined by socio-economic factors and that more-educated women from higher-income groups are more likely to breastfeed (Aberman & Kirchhoff, 1985; Grossman et al., 1990; Michaelson et al., 1994). The identification of specific groups with lower breastfeeding rates and higher rates of using milks not recommended for infants suggests that breastfeeding-promotion programs and infant-feeding information strategies should target these groups. One such initiative has been taken by Healthy Baby Clubs (Rabinowitz & McKim, 1996), whose aims are to meet the prenatal and postpartum needs of socially disadvantaged mothers and to encourage breastfeeding.

Ethnicity was found to be an important demographic variable in choice of feeding method, independent of socio-economic status. In coastal Labrador, significantly more Innu mothers than Inuit mothers chose to breastfeed (McKim, Laryea, Matthews, Webber, & Banoub-Baddour, 1997). On the island of Newfoundland, the breastfeeding rate of 30% among Micmac mothers reflects the rates of their rural neighbours. Some possible explanations for the differences among the groups may relate to the Innu having a strong commitment to their traditional ways. Caution is needed when analyzing aboriginal or native popula-

tions, as relatively little is known about native feeding practices in general. Most studies have involved small groups, and, as these data show, groups can vary greatly.

It must be recognized that provision of information is not enough. Other factors, particularly maternal attitudes, have been shown to be important variables in maternal infant-feeding decisions. In the present study, the major reasons given for not breastfeeding were psychological, relating to embarrassment, distaste, or simply "preferred not to." Healthier attitudes about what is an important nutritional and nurturing function of parenting must be developed. Mothers who find breastfeeding embarrassing and distasteful are not going to breastfeed, and they are likely to pass their attitudes on to their peers and their own children. In some environments breastfeeding is the norm. The 17% breastfeeding rates for Newfoundland in 1978 (Alton-Mackey & Orr, 1978) indicate that this generation of young mothers had few breastfeeding role models. If breastfeeding rates continue to rise, societal attitudes will change and it will become the preferred method. Strategies to change societal attitudes towards breastfeeding are prerequisites for promotion and educational programs. Ellis (1981) makes several suggestions for cultivating conducive attitudes towards breastfeeding, such as promotion in schools, homes, and clinics; provision of role models; public-awareness campaigns; and political action. Friel, Hudson, Banoub, and Ross (1989) found that attitudes among female adolescents are positively affected by media campaigns. Current initiatives such as Health Canada's "Breastfeeding Anywhere, Anytime" campaign and a video targeting low-income Newfoundland families (Breastfeeding Coalition of Newfoundland and Labrador, 1997) are examples of strategies to normalize breastfeeding. Health professionals, especially those who see mothers regularly during their pregnancy, can take an active role by initiating one-to-one discussions with them about the advantages of breastfeeding and good infant-feeding practices.

Bottlefeeding mothers ranked inconvenience high on their list of reasons for not breastfeeding. Women who terminated breastfeeding early said they found it too difficult; they also reported fatigue and stress with breastfeeding, and cited the convenience of being able to have someone else do the bottlefeeding for them. The notion that breastfeeding is inconvenient contradicts a major argument *for* breastfeeding — that it is easy and convenient. Therefore, mothers' perceptions of which method is more convenient requires further exploration.

In both breastfeeding and bottlefeeding groups, a significant number of women switched feeding method or type of milk over the

first few months, some of them frequently, because they perceived that their babies were not being satisfied. The perception that the iron in the CPIF had infant side effects was the major reason for switching to a non-iron-fortified formula. Expense was a major reason for bottlefeeding mothers to switch to evaporated milk. Clearly, there was overlapping of reasons, as the breastfeeding mothers who found their babies to be not satisfied with the milk were likely to also find breastfeeding difficult and time-consuming.

Social support was the other major factor in maternal feeding decisions. Prior to making their initial decision, 58% of the sample reported having discussed it with a health professional. The data did not cast light on the quality of these discussions. The content and tone of the discussion are likely to vary with the knowledge level and philosophy of the health professional. Generally, as can be seen in Table 6, health professionals had little influence on the mothers' decisions. The exceptions were primigravidas and breastfeeding mothers, who reported being more influenced by health professionals.

The social network, particularly the spouse or partner, was found to have the most significant influence on the mother. The male partner and the mother's mother were found to be the main sources of support in Newfoundland families. Several other studies (Bevan, Mosley, Lobach, & Solimano, 1984; Black, Blair, & Jones, 1990; Littman et al., 1994) also found the baby's father and the social network to have a significant influence on the mother's choice of feeding method. However, a study of the comparative influence of the social network on Anglo-Americans (Giugliani, Bronner, et al., 1994), which reported similar findings, found that several fathers reported feeling helpless and unprepared to support their breastfeeding partners. The authors suggest that paternal lack of preparedness tempers the effect of fathers' support and that the influence of the partner may be positive or negative. An interesting finding of the Newfoundland study was that 30% of the mothers stated they made their own decisions, uninfluenced by any one person. The majority of these women were in the bottlefeeding groups. This suggests that the decision whether to breastfeed is ultimately, given the psychological reasons cited for not breastfeeding, a very personal one.

Most studies have found the influence of health professionals on mothers' feeding choices to be minimal. The present investigation found that only 27% of the mothers discussed the topic with their physician, 40.8 % with a nurse, which raises questions about the nature of professional support. An earlier study by Starbird (1991), which examined influences through 2 decades, found that women were 3.5



times more likely to start breastfeeding if they had received information from a medical professional. Almost all studies, however, found family and friends to be more influential than health professionals. Possibly the day-to-day social presence has more effect on maternal decision-making than the more remote professional presence. Readily available services for mothers to resort to in times of feeding difficulties, such as a 24-hour hotline, are useful resources for mothers and families.

This study found the first month to be the period in which the largest numbers of mothers made a switch, although some mothers continued to change milks throughout the first 6 months in an attempt to "satisfy" the baby. Both bottlefeeding and breastfeeding mothers switched because they perceived that the baby was "not satisfied." The issue of mothers' perception of infant satisfaction with milk has been observed in other studies (Hillervik-Lindquist, Hofvander, & Sjolin, 1991; Tully & Dewey, 1985) and needs further exploration. What are a mother's expectations of her infant's response to feeding? Are they realistic? Are her interpretations of infant hunger accurate? These are some of the questions raised in studies. These observations about mothers' perceived infant cues on their feeding decisions have profound implications for breastfeeding satisfaction and continuance rates, and they pose challenges to clinical practice. Pridham and Schutz (1981) found that information given to parents on how to evaluate infant-hunger cues was inadequate, as was, indeed, how to tell when the infant has had enough to eat. Judging from the comments of some of the women in the present study, mothers still have difficulty responding appropriately to infant-feeding cues. The resources developed by Barnard, Blackburn, Kang, and Spitz (1978) to facilitate parent-infant interaction and help parents read infant cues may be useful for nurse educators and clinicians who work with families.

### **Conclusion**

The results of this study suggest that infant-feeding education and promotion requires a family-centred and/or a social-network approach. Since health professionals apparently have a relatively minor influence on mothers, compared to members of their social network, the nature of individual professional advice, knowledge, and support needs to be examined, to find out why the influence is low and determine the quality of advice given.

Strategies for changing societal attitudes might include not only mothers, but partners, mothers, mothers-in-law, and friends. Husbands/partners especially need more information and help in

supporting breastfeeding mothers. Infant-feeding education must go beyond "what and how to feed" to include the broader issues of parental expectations of infant behaviour, especially infant-feeding behaviour. Public-health agencies must seek ways to reach a greater number of expectant parents and families, especially those in groups with low breastfeeding rates and groups that require extra advice and support, whether breastfeeding or bottlefeeding. Changing attitudes towards breastfeeding and infant-feeding behaviour requires innovative strategies by informed, skilled health professionals to support mothers, fathers, and their families during pregnancy and childbearing.

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