Infant feeding practices: 1984-85 versus 1977-78

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In 1979 and 1980 the Canadian Paediatric Society's Nutrition Committee published guidelines for professionals counselling mothers of infants on feeding practices. The practices in 1984–85 of mothers in Toronto were determined for comparison with the practices identified in a similar study conducted in Toronto and Montreal in 1977–78 to ascertain if practices had changed in favour of the recommendations. Between July 1984 and February 1985, 404 metropolitan Toronto mothers of infants were interviewed. Compared with the 1977–78 group of mothers, more of the 1984–85 mothers had chosen to breast-feed and fewer had stopped breast-feeding in the first month. As well, fewer of the 1984–85 infants had been fed unmodified cow's milk in the first 6 months of life and introduced to solid foods before 4 months of age. We conclude that major changes in infant feeding practices had occurred since 1977–78 and that the 1984–85 practices corresponded closely to the infant feeding guidelines.

En 1979 et 1980 ont paru les directives du Comité de nutrition de la Société canadienne de pédiatrie à l'usage des professionnels qui guident les mères dans l'alimentation de leurs nourrissons. Après avoir, de juillet 1984 à février 1985, interrogé 404 mères dans le Toronto métropolitain, nous avons comparé leurs réponses aux données d'une enquête semblable réalisée à Montréal et Toronto en 1977–78, afin de savoir si les pratiques se sont conformées aux directives précitées. Les mères interrogées en 1984–85 ont plus souvent choisi de donner le sein que celles qui avaient participé à l'enquête antérieure, et moins d'entre elles ont cessé d'allaiter au cours du premier mois. Moins d'enfants en 1984–85 ont pris avant 6 mois du lait nonpréparé spécialement pour l'alimentation des nourrissons et avant 4 mois des aliments solides. La manière d'alimenter les nourrissons a donc grandement changé depuis 1977–78: en 1984–85 elle se conforme de près aux directives du comité.

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Infancy is a period of rapid growth and development unsurpassed at any other period in the human life cycle. Adequate nutrition is essential for the infant to develop optimally. The responsibility for feeding the infant ultimately rests in the hands of the parents, more specifically the mother. Unfortunately, mothers do not always have complete knowledge and understanding of the infant's nutritional requirements. For these reasons, health professionals place a high priority on continual assessment and review of not only the requirements of the infant[1] but also the feeding practices of the primary caretaker.[2-5]

Retrospective data on infant feeding practices of Canadian mothers for the years 1965–71 were collected during the Nutrition Canada survey of 1970–72. Between 1965 and 1971, only 25% of the new mothers in Canada had breast-fed their babies during their hospital stay, and 75% of these mothers had stopped nursing within 3 months.[2] The median age for introduction to solid foods ranged between 1 and 2 months.[2] Although only 250 dietary records of infants up to 11 months of age were analysed in the Nutrition Canada survey, the data indicated that as many as 38% of the infants less than 6 months old were receiving unmodified cow's milk.[6]

Surveys conducted in the late 1970s in Newfoundland,[3] Prince Edward Island,[4] Manitoba[7,8] and Saskatchewan[9] showed similar infant feeding practices in different regions of Canada. However, the proportion of mothers choosing to breast-feed varied, from 17% in Newfoundland and 23% in Prince Edward Island to 58% in Manitoba and Saskatchewan. It was not uncommon, though, for many of the breast-feeding mothers in all these regions to end the practice within 3 months. In fact, in Manitoba only 28% of the breast-feeding mothers were still breast-feeding at 3 months. In Saskatchewan 29% had stopped by 6 weeks, and in Prince Edward Island 56% had done so by 3 months. Introducing solids early was common in Newfoundland, Prince Edward Island and Manito-

ba, the median age at introduction being less than 2 months in Newfoundland and Manitoba and less than 3 months in Prince Edward Island.

A longitudinal study, commonly known as the Baby 400 Project, was begun in January 1977 and completed in December 1978: 403 mothers and infants in Montreal and Toronto were followed for 18 months to determine infant feeding practices and their impact on the infants' health.[10] Although more mothers (71%) had started breast-feeding than in 1965–71, 30% of these mothers had stopped breast-feeding within the first month.[2,11] The median age at introduction to solids was less than 2 months, and an introduction to unmodified cow's milk before 6 months of age was common.[5]

Concerns raised by these observed infant feeding practices led the Nutrition Committee of the Canadian Paediatric Society to publish position statements on infant feeding in 1979[12] and 1980.[13] The statements were intended to act as references for Canadian professionals counselling expectant mothers and mothers of newborns on infant feeding practices. The main recommendations were as follows:

- Term newborns should be breast-fed for the first 6 to 9 months. If breast-feeding is not possible, a commercially prepared formula should be used. Unmodified cow's milk should not be used until the infant is 6 months of age. Although whole cow's milk is acceptable for the infant 6 to 12 months old, 2% or skim milk is not acceptable before 1 year of age.
- The introduction of solids should be delayed until the infant is 3 to 4 months of age (special circumstances excepted). Solids should be introduced one at a time, with several days between the introduction of each.
- The use of general vitamin/mineral supplements is unnecessary, but breast-fed infants should receive a daily vitamin D supplement. A source of iron supplementation should begin at 3 to 4 months of age for infants fed regular formula and at 6 months of age for breast-fed infants. The use of fluoride supplements is recommended only for formula-fed infants living in areas where the water is not fluoridated, and then only if they do not receive a ready-to-serve formula.
- Wholly vegetarian diets should not be used for infants in the first 2 years of life.

The present survey was conducted to provide current information on infant feeding practices in metropolitan Toronto. The results are compared with those observed in the 1977–78 Baby 400 Project and with the CPS Nutrition Committee's recommendations. Dramatic differences in the feeding practices of the two groups of mothers were found.

Methods

Names of mothers of infants in metropolitan Toronto were obtained through a marketing list provided by H.J. Heinz Company of Canada Ltd. The total sample consisted of mothers from all metropolitan Toronto postal code areas. The sample size for each postal code area was representative of the population density of that area. A program generating random numbers was used to obtain approximately 1600 names from the 11 500 provided in the listing. Letters describing the study were sent to these mothers. A follow-up telephone call was made 1 to 2 weeks later to arrange an interview with those who indicated willingness to participate. Written consent was obtained at the time of the interview. Approval for the study was given by the Human Subjects Review Committee of the University of Toronto.

Between July 1984 and February 1985, 404 mothers of infants 4 to 15 months of age were interviewed. The mothers were divided into four groups according to the age of the infant: 92 mothers had infants 4 to 6 months old, 104 had infants 7 to 9 months old, 106 had infants 10 to 12 months old, and 102 had infants 13 to 15 months old. Trained personnel conducted a single interview in each of the mothers' homes to answer 145 open-ended and closed questions. The questionnaire had three main sections, designed to obtain information on the mothers' infant feeding practices, resources used to obtain information on infant nutrition, and understanding of the information presented in the nutrient labels of commercial infant food.

Results

Population profile

Tables I and II compare the demographic profiles and family incomes of the 1984–85 and 1977–78 study groups.

The mothers in the 1984–85 group had access to infant nutrition information before and after the birth of their infants; however, most of their information was obtained in the postnatal period. Prenatal classes, primarily attended by first-time mothers, provided such information to 35% of the sample, through group or individual counselling or both. Postnatally 83% of the mothers received infant nutrition information while in the hospital; however, only 46% were provided with this information through counselling (group, individual or both). The balance received written information from the hospital or with gift packs given to them in hospital or both. Family physicians and pediatricians provided infant nutrition information postnatally to 51% and 40% of the mothers, respectively, primarily through counselling.

Infant feeding practices

Breast-feeding: Of the 1984–85 group of mothers 88% started breast-feeding. Within the first month 14% of those who had started breast-feeding stopped. By the beginning of the third month 67% of the 1984–85 group of mothers were

still breast-feeding. The corresponding figures for the 1977–78 group were 71%, 30% and 40%.[11] Fig. 1 shows the percentages of the mothers breast-feeding during the first 12 months: the patterns are the same, but the percentages still breast-feeding at each interval, especially during the first 6 months, are clearly higher for the 1984–85 group.

The two reasons most frequently given by the 1984–85 group for choosing to breast-feed were because it is "better" or "healthier" for the baby and because it is a convenient way to feed the baby; 60% and 28% of the mothers, respectively, gave these reasons. The same two reasons predominated in the 1977–78 group, the proportions of mothers giving them being 37% and 13%.[11]

Table I — Demographic profile of samples of mothers whose infant feeding practices were studied

Descriptor	Study group; % 1984–85 (n = 404)	1977–78[10] (n = 403)*
Single	3	1
Canadian by birth	67	74
Primiparous	54	> 50
Age, yr		
≤ 20	2	2
21–35	–	93
21–39	97	–
> 35	–	5
≥ 40	1	–
Education		
Less than high school	7	8
High school	34	44
Technical training/college	27	–
University	32	–
14–17 years	–	41
> 18 years	–	7

*The sample initially consisted of 403 mothers of newborns; 317 were followed up for 18 months.

Table II — Yearly family income of the two groups*

Income, $	Study group; % 1984–85	1977–78[10]
< 10 000	2	7
10 000–19 999	6	40
20 000–29 999	20	31
30 000–39 999	21	–
> 30 000	–	7
> 40 000	34	–
	Income, $	
Canadian median	~ 40 000	~ 20 000‡
Canadian mean	35 767†	19 530
Ontario mean	38 464†	20 988
Quebec mean	–	18 488

*Many of the mothers did not answer the question; hence, the percentages do not total 100.
†Data for 1984.[14]
‡Similar to the 1984–85 median when inflation is taken into account.

Problems with the process of breast-feeding (e.g., inadequate quality or quantity of milk, pain or inability of the infant to nurse) and the convenience of stopping (e.g., in view of return to work, travel plans or a busy schedule) were primary in the 1984–85 group as reasons for ending the practice. Problems with starting and maintaining breast-feeding dominated for the first month as a reason to stop. Although problems with the process of breast-feeding were still important at 3 months in the decision to stop, convenience became increasingly important and was the dominant factor at 6 months. As Fig. 2 illustrates, problems with the process of breast-feeding and the convenience of stopping were also important factors in

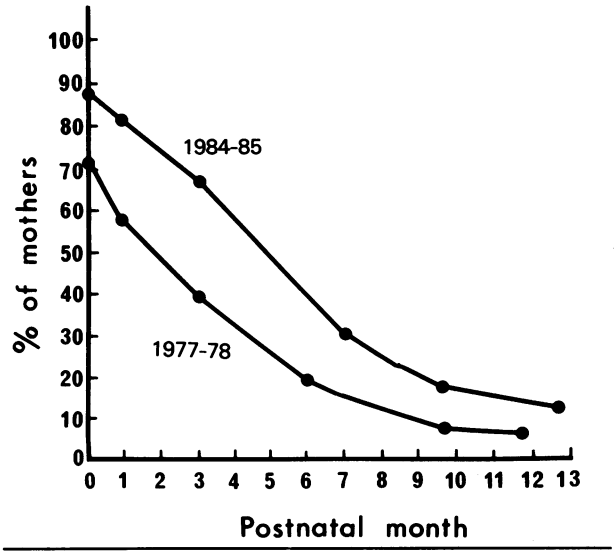

Fig. 1 — Proportions of mothers surveyed in 1984–85 and 1977–78[11] who were breast-feeding during their infants' first year of life.

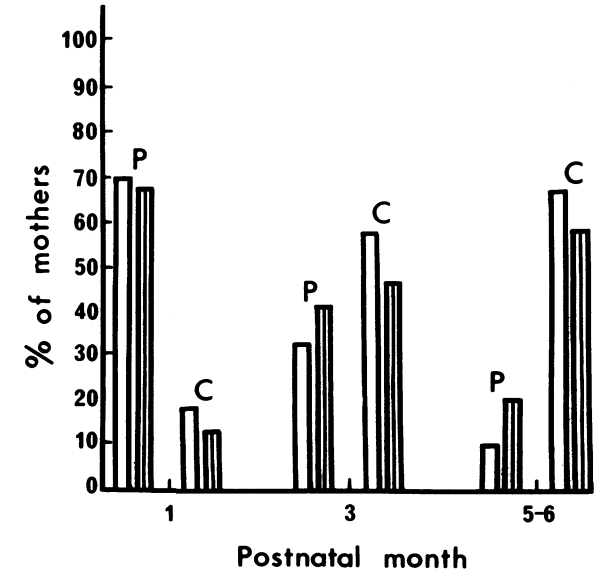

Fig. 2 — Proportions of the 1984–85 group (clear bars) and the 1977–78 group[11] (striped bars) who stopped breast-feeding because of problems with the process (P) or for convenience (C).

the decision to end the practice during the first 6 months for the 1977–78 group of mothers.[11]

Introduction of unmodified cow's milk: Few of the 1984–85 infants received unmodified cow's milk before 6 months of age. However, of those given unmodified cow's milk, more received 2% milk than received whole milk. As Table III shows, the proportion of infants introduced to unmodified cow's milk within the first 6 months of life was considerably higher in 1977–78.[5]

Introduction of solids: In 1984–85 the mothers were greatly delaying the introduction of solids (Fig. 3): at 3 months of age, only 42% of their infants were receiving solids. The median age at introduction to solids was less than 2 months in 1977–78[5] but 4 months in 1984–85.

At 4 months of age, only 42% of the 1984–85 infants were receiving infant cereals, but by 6 months of age 93% had been introduced to these foods. The three primary reasons, each given by 25% of the mothers, for including them were the doctor's advice, their nutrient or iron content and their role as a supplement or filler. Only 57% of the 1984–85 infants were still receiving infant cereals at 12 months of age. The main reason that the use of these foods was stopped was that the infant would no longer take them; 67% of the mothers gave this reason.

In comparison, 70% and 93% respectively of the 1977–78 infants had been introduced to infant cereals by 4 and 6 months of age, and by 12 months of age only 57% were still receiving them.[15]

Table III — Time of introduction of the infants to unmodified cow's milk

Age of infant, mo	Study group; type of milk; % of mothers			
	1984–85		1977–78[5]	
	Whole	2%	Whole	2%
4	1	2	12	23
6	11	16	20	51

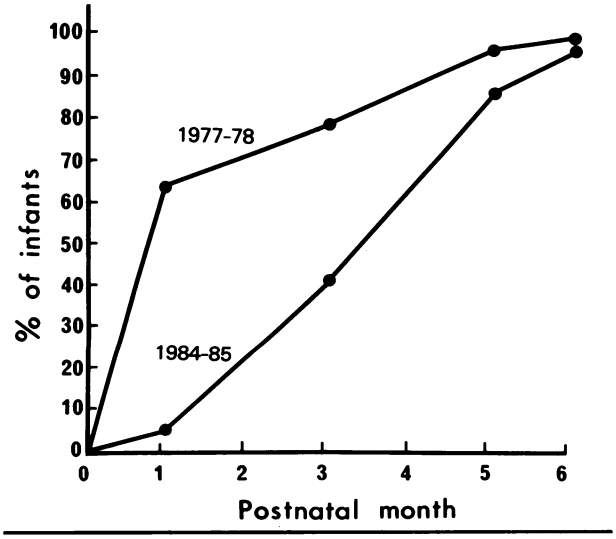

Fig. 3 — Proportions of the infants of the 1984–85 and 1977–78[5] groups who were receiving solid foods at 1, 3 and 5 months of age.

Discussion

Our results indicate that the infant feeding practices of the 1984–85 sample of Toronto mothers were more closely aligned with the 1979–80 recommendations of the CPS Nutrition Committee[12,13] than the practices of the 1977–78 sample of Montreal and Toronto mothers. Because of the restricted location of the sample base we cannot state with certainty that similar dramatic changes in infant feeding practices occurred throughout Canada. Our study provides evidence, however, that at least within a population with the characteristics described, a change occurred.

The better feeding practices in 1984–85 are possibly attributable to an impact of the CPS's position statements[12,13] and the consequent delivery of a uniform message to mothers by health care professionals rather than to differences in sample base or study design. Most of the mothers received counselling or information or both on infant nutrition from health care professionals, who one assumes would base their advice on the CPS guidelines.

The higher rate of breast-feeding among the 1984–85 mothers may have been influenced somewhat by the higher level of education of the sample population: 59% of those mothers had obtained education past high school, as opposed to only 46% of the 1977–78 mothers. Studies have shown education to be a factor in the decision to breast-feed and in continuing to breast-feed past 4 months.[16,17] However, it is reasonable to conclude that the practice of breast-feeding has increased in frequency, even though one must undoubtedly consider regional variation and other factors. For example, a recent report of breast-feeding practices across Canada for the years 1963–82 consistently found a lower percentage of Quebec mothers than of Ontario mothers starting to breast-feed,[18] an observation consistent with the results of the Baby 400 Project.[11] Yet since 1963 there has been an upward trend across Canada in the proportion of mothers breast-feeding, with two major increases: one from 1973 to 1978 and the other from 1981 to 1982.[18] Our results are consistent with these previous findings.

Although mothers are adhering reasonably closely to the recommended practices, there are notable discrepancies, which require consideration.

First, a large proportion of mothers continue to stop breast-feeding early, primarily because of problems associated with the initiation and maintenance of breast-feeding. By the beginning of the third month 23% of the breast-feeding 1984–85 mothers had stopped, whereas only 40% of all the mothers in the 1977–78 group were still breast-feeding at that time. This suggests a definite need

for a better support system for breast-feeding mothers, especially within the first critical months. A lower level of education, found in previous studies[16,17] to be a factor in the decision to stop breast-feeding early, was not a factor in our study group. In fact, 47% of the mothers who stopped breast-feeding within the first 3 months had education beyond high school, and 40% had a high school education; these groups represented 12% of all the mothers with greater than high school education and 10% of all the mothers with a high school education.

Second, convenience was a factor in the decision to stop breast-feeding early, the reasons including return to work. Unpublished labour-force data from Statistics Canada show that 51.5% of women with children under 3 years of age were employed in 1984, as compared with only 33.9% in 1977. Research conducted in the United States on milk feeding patterns for the first 12 months of life indicate a more negative correlation between duration of breast-feeding and employment than between starting to breast-feed and employment.[19] After 6 months, only 19.8% of the employed mothers who had started breast-feeding were still breast-feeding, compared with 50% of the mothers not employed. In our survey group 50% of the mothers with infants 4 to 6 months of age were employed, and 55% of those who had stopped breast-feeding by 6 months were employed. Perhaps it is more important for the guidelines to stress the importance of breast-feeding in the first 3 to 4 months of life, when gastrointestinal development is at a critical stage,[20-23] than to state that term newborn infants ideally be breast-fed for the first 6 to 9 months. If a realistic goal is presented and a good support system exists, mothers may be prepared to deal with the initial problems with the process of breast-feeding.

Third, introducing 2% milk before the first birthday appears to continue to be common, despite recommendations to the contrary. However, the appropriateness of these recommendations may need reassessment: no obvious adverse nutritional effects in infants fed 2% milk before 12 months of age were observed in 1977–78.[5]

Finally, the importance of infant cereals for the provision of adequate iron in the infant's diet for the first 18 to 24 months of life[15] needs to be stressed to mothers. As well, the infant food industry needs to re-evaluate the products. Many infants do not like infant cereals past 12 months of age, possibly because of their texture and taste.

In conclusion, our survey results indicate that, for the most part, the CPS Nutrition Committee's recommendations on infant feeding practices were successfully relayed to our sample of mothers of newborns. Compared with the 1977–78 sample, more of the 1984–85 group started breast-feeding and continued for 6 months, far fewer introduced solid foods before their infants were 4 months of age, and far fewer introduced unmodified cow's milk before 6 months.

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