A B S T R A C T

Often, efforts to improve overall population health require identifying and targeting programs to specific high-risk populations. Breastfeeding is an example. In order to determine initiation and duration rates among various groups in the City of Toronto, a random sample of 434 mothers with infants at four months of age was surveyed to determine the prevalence of breastfeeding and major impacts on its duration. The study found that, overall, 83% of mothers initiated breastfeeding at birth. The greatest rate of decline occurred during the first month. At four months postpartum, 57% of mothers continued to breastfeed, including 35% who were exclusively breastfeeding and 22% who were supplementing breast milk with formula. Breastfeeding duration was related to a number of factors, including information and support, parity, education, use of formula supplements and country of birth. Specific groups are identified for targeted programs, and a number of strategies are proposed.

A B R É G É

Il arrive souvent que les efforts destinés à améliorer la santé de la population exigent l'identification et le ciblage de programmes à l'intention de segments de la population à risque élevé. L'allaitement est un exemple du genre. Afin de déterminer les taux d'amorçage et de durée de l'allaitement au sein de divers groupes dans la ville de Toronto, une enquête a été menée auprès d'un échantillon aléatoire de 434 mères de nourrissons âgés de quatre mois pour déterminer la prévalence de l'allaitement au sein et les principaux facteurs influençant sa durée. L'étude a révélé que, dans l'ensemble, 83 % des mères avaient commencé à allaiter dès la naissance de leurs enfants. Le taux le plus élevé de baisse de l'allaitement se manifeste au cours du premier mois. Quatre mois après leur accouchement, 57 % des mères continuaient d'allaiter, 35 % d'entre elles s'en tenant exclusivement à l'allaitement et 22 % le complétant avec du lait maternisé. La durée de l'allaitement est apparue liée à plusieurs facteurs dont l'information et le soutien disponibles, la parité, le niveau d'études, l'utilisation de suppléments de lait maternisé et le pays d'origine. Plusieurs stratégies sont proposées et certains groupes devant être ciblés par les programmes sont identifiés.

Using a Breastfeeding Prevalence Survey to Identify a Population for Targeted Programs

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There is substantial evidence that breastfeeding has both short and long term advantages for infants.¹ It benefits the mother as well in terms of cost, convenience, mother-infant bonding and reduced risk of chronic disease.¹⁻⁴ Although breastfeeding has been endorsed as the ideal method of infant feeding by all levels of government and many Canadian health professional associations,⁴⁻⁷ optimal initiation and duration rates have not been achieved in Canada. A 1990 report showed that approximately 80% of Canadian mothers were choosing to breastfeed, but only 30% continued to do so for at least six months.⁸ The greatest decline occurred during the first six weeks, the period in which breastfeeding is being established.

Breastfeeding rates are influenced by a variety of physical, psychological, cultural, social, and environmental factors^{2-4,9} and are therefore likely to vary considerably between communities and subgroups within a large multicultural city. The purpose of this study was to determine breastfeeding initiation and duration rates in Toronto and the factors that affect them, so that subgroups could be identified for targeted interventions.

METHODS

A random sample of 434 mothers was obtained from official birth records during

a one month period in 1992. This number represents approximately one-half of the average number of births per month in the City of Toronto. Of these, 350 completed a questionnaire at approximately four months postpartum, 345 by telephone and 5, who had no telephone, during home visits. This represents an 81% response rate. Those unable to speak English were referred to available staff or volunteers to be interviewed in their own language. Thirty-six such interviews were conducted in the following languages: Cantonese (13), Portuguese (10), Vietnamese (5), Spanish (4), Mandarin (1), Filipino (1), Hindi (1), and Italian (1).

The questionnaire provided demographic data as well as information about breast and formula feeding practices at birth and four months, reasons for feeding choice, reasons for terminating breastfeeding and sources of advice and support.

RESULTS

Almost one-half (49%) of the 350 mothers in the survey were born outside Canada, from a total of 51 different countries. This ethnic distribution corresponds closely with statistics for the general population of the City of Toronto. Among women born outside Canada, 21% had lived in Canada for less than five years. Fifty-seven percent of respondents were primiparous, a proportion that is similar to the general Toronto population. The mean age was 29.6 years, with 3% of the sample 20 years or younger, 51% between the ages of 21 and 30, 35% between 31 and 35, and 11% 36 years or older. Seventeen percent of the sample had not finished high school, 21% had completed high school, and 62% had some postsecondary education.

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TABLE I

Breastfeeding* Prevalence by Age of Infant, City of Toronto, 1992

Age of Infant in Weeks	Breastfeeding Prevalence
At birth	82.9
<4	71.1
4-7	66.3
8-11	60.6
12-16	57.4

* Includes respondents either exclusively or partially breastfeeding. Exclusive breastfeeding refers to feeding no other food or liquids. Partial breastfeeding refers to use of food or liquids in addition to breastmilk.

Prevalence and duration of breastfeeding

Eighty-three percent of mothers reported breastfeeding at birth, a number that decreased to 57% at four months postpartum (Table I). The latter figure includes 35% who were exclusively breastfeeding and 22% who were supplementing breast milk with formula. The most rapid decline in breastfeeding occurred during the first month, when 12% changed to formula feeding. The number of breastfeeding mothers who began to supplement breast milk with formula was measured only at four months.

Factors affecting feeding practices

One purpose of the survey was to explore key factors related to mothers' decisions about breastfeeding. The factors that proved most significant were the following:

Mother's concerns about feeding

The reasons most often mentioned for terminating breastfeeding during the first four months were perceived inadequacy of milk supply and/or perceived hunger of the baby (63%). The next most important reasons also concerned difficulties in the feeding process, such as baby crying, poor sucking, sore nipples and breast infection. Similarly, the most frequently reported reasons for supplementing with formula were perceived inadequacy of milk supply and/or hunger of the baby (65%). Of this latter group of 77 mothers who supplemented, 40% said ease and convenience were determining factors, although this was rarely mentioned in open-ended responses from mothers who had discontinued breastfeeding.

TABLE II

Feeding at Four Months Postpartum by Mother's Sources of Advice, City of Toronto, 1992

Source of Advice	% Exclusively Breastfeeding	% Partially Breastfeeding	% Discontinued Breastfeeding
Hospital or clinic staff	13.4	10.0	14.5
Physician	5.9	7.6	3.8
Public health nurse/ prenatal class, midwife	7.9	5.5	5.2
Media	5.2	1.7	1.0
Family/partner/friends	10.0	15.5	14.1
No one	2.4	2.4	6.6
La Leche League	3.1	1.4	0.3
Other	2.1	3.1	2.1

* Percentages may not add to 100 because of multiple responses.

TABLE III

Breastfeeding Prevalence by Mother's Country or Region of Origin, City of Toronto, 1992

Mother's Country or Region of Origin	% Breastfeeding at Birth	% Breastfeeding at 4 months
Canada/U.S. (n=185)	86.5	65.9
Europe (n=35)	85.7	60.0
Central & South America (n=12)	83.3	66.7
Caribbean (n=13)	100.0	53.8
Portugal (n=30)	83.3	26.7
China/Viet Nam (n=28)	21.4	7.1
Other Asian (n=36)	91.7	66.7
Africa/Oceania (n=8)	100.0	75.0

Chi-squared tests for differences in breastfeeding initiation rates were significant ($\chi^2_5 = 78.48$, $p < 0.05$)

Sources of good advice and support

Of the 290 mothers who did breastfeed, 23% reported that hospital or clinic staff were important sources of good advice and support, 25% mentioned family, partner or friends, and 14% mentioned physicians (Table II). Other supports such as public health nurses, prenatal classes, midwives and La Leche League were mentioned less frequently. Interestingly, 11% (n=33) of breastfeeding mothers reported that there was "no one" who gave them good advice or support. Of this latter group, more than half (58%) had discontinued breastfeeding by four months.

Employment

Returning to work was mentioned by 10% of mothers as a reason for terminating breastfeeding before four months and by 22% of mothers who supplemented breast milk with formula before four months.

Country of birth

Initiation rates according to mother's country of birth ranged from 83% to

100% in all countries except China/Viet Nam, where rates were very low, at 21% (Table III). Four month duration rates were significantly lower among only the Chinese and Vietnamese (7%) and the Portuguese (27%). Length of time living in Canada was not shown to be an important factor.

Parity of mother

Primiparous mothers had higher initiation rates (87%) than multiparous mothers (77%), although there was little difference between the two groups at four months postpartum. Multiparous mothers who had breastfed their previous child had very high breastfeeding initiation rates (95%). Their four month rate was 70%, which was higher than the Toronto average. Of the multiparous mothers who did not breastfeed their last child, only 20% chose to do so with the present baby, and very few continued to four months.

Education of mother

Education was strongly correlated with

TABLE IV
Method of Feeding at Birth by Mother's Level of Education,
City of Toronto, 1992

Mother's Level of Education	% Breastfeeding
Some high school or less (n=61)	65.6
Completed high school (n=72)	63.9
Some post-secondary (n=216)	94.0

Chi-squared test for differences in breastfeeding rates was significant at $p=0.05$ level ($\chi^2_2 = 49.72$, $p<0.005$)

breastfeeding (Table IV). Initiation rates were extremely high among women with some postsecondary education, compared with mothers with high school education or less. At four months, rates remained very high among mothers with some post-secondary education (70%) compared with those with high school education or less (30%).

Age of mother

Initiation rates did not vary greatly with the age of the mother, although four month postpartum rates differed considerably. Exclusive breastfeeding was highest (42%) among mothers 36 and over (n=40), compared with 26% for mothers 31 to 35 years (n=121) and 14% for mothers 30 and under (n=189).

DISCUSSION

Overall, breastfeeding initiation rates in Toronto were 83%, an increase of 11% over a previous study in 1984. The current rate corresponds closely to the national average reported by Health and Welfare Canada in 1990,⁸ although recent studies show that initiation rates continue to vary considerably across Canada (Red Deer, Alberta, 85%; North York, Ontario, 87%; Hamilton-Wentworth, Ontario, 72%; and New Brunswick, 56%).¹⁰⁻¹³ Rates at four months postpartum increased by 15% from 1984 in Toronto. These rates, however, are far below the current infant feeding guidelines to maintain breastfeeding until 4 to 6 months.

Of special concern was the rapid decline in breastfeeding that occurred particularly during the first month. Mothers' reported reasons for early cessation of breastfeeding were mainly related to feeding difficulties, particularly perceived lack of breast milk, a

finding that is confirmed in many literature surveys.⁹ Because feeding difficulties can usually be prevented or alleviated by proper feeding technique,^{5,8,9} it is apparent that mothers require more information and support. The current practice of early hospital discharge greatly increases the need for such support.

The study showed that mothers felt they received good advice or support from family and friends just as frequently as from physicians and other health professionals. Rates of breastfeeding success did not vary greatly between mothers who used professional as compared with nonprofessional sources of advice and support. It is notable that 11% of mothers felt they had "no one" to provide advice and support, and that duration rates were very low in this group.

The use of formula supplements is another factor known to influence breastfeeding duration. Many breastfeeding mothers began to use extra formula during the first month, a practice that is associated with a decrease in breast milk supply.^{9,13-15} As this survey did not measure the proportion of formula and breast milk in total daily feeding or hospital distribution of formula, no conclusion can be drawn regarding the impact of formula use on breastfeeding. This relationship must be studied more extensively so that mothers can be adequately informed about the effects of formula supplementation.

This study suggests that multilevel strategies are required to overcome the wide range of barriers to successful breastfeeding. They must be directed to many sectors of the population and include education at public and professional levels, promotion in the media, and community support programs. Public policies are necessary to support breastfeeding mothers in the workplace and to prevent public and

institutional promotion and distribution of infant formula.^{2,16}

Specifically, this survey revealed that targeted programs could benefit discrete population groups with low breastfeeding rates:

Chinese, Vietnamese and Portuguese communities: Mothers from these countries had the lowest breastfeeding rates in the survey. Although larger surveys of cultural groups are necessary to validate these findings, this study supports a wealth of research showing that feeding choices are strongly influenced by culture^{9,17-20} and that promotional programs should be specifically designed for cultural groups with low breastfeeding rates.

Primiparous mothers: Mothers who had bottlefed a previous child were highly unlikely to change feeding methods, whereas those with previous breastfeeding experience had very high initiation and duration rates. Similar findings are frequent in the literature⁹ and show the importance of promotional and support programs that reach women in their first pregnancy.

Mothers with low educational levels: Because of the strong correlation between education and breastfeeding found in this study and confirmed in many literature reports,⁹ breastfeeding promotion must be targeted to appeal to the interests and beliefs of those with less education. Social status, frequently related to educational level, is an important consideration in designing program approaches.²¹

CONCLUSION

Improving breastfeeding rates in specific target groups may represent the most effective strategy to increase overall breastfeeding rates. Because breastfeeding success is dependent on a wide range of personal, societal, cultural, and environmental factors, targeted programs must provide much more than health information. They must not only build on the interests and beliefs of the target group but also address political and structural changes that will provide an environment that provides mothers with a successful breastfeeding experience.

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