

BREASTFEEDING PRACTICES

in NORTHERN ONTARIO

A Report from the Northern Ontario Perinatal and Child Health Survey Consortium

A Perinatal and Child Health Survey Strategies Initiative

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EXECUTIVE SUMMARY

INTRODUCTION

In 2002, as part of the overall Ontario Early Years initiative, each Ontario health unit was eligible for funding for Perinatal and Child Health Survey Strategies from the Ministry of Health and Long-Term Care, Public Health Branch. Health units across Northern Ontario pooled some of these resources, and together with other northern partners, established the Northern Ontario Perinatal and Child Health Survey (NOPCHS) Consortium. The Consortium has representation from the eight northern health units: Algoma, Muskoka-Parry Sound, North Bay & District, Northwestern, Porcupine, Sudbury & District, Thunder Bay District, and Timiskaming, as well as the Northern Health Information Partnership (NHIP), and the three Northern universities: Lakehead, Laurentian and Nipissing. The Public Health Research, Education & Development (PHRED) Program at the Sudbury & District Health Unit, coordinates the Consortium. The Consortium had two key objectives: quality data to guide northern child health program and policy decisions, and a strong collaboration between northern health units, all three northern universities, NHIP and the Sudbury PHRED Program.

In 2002, the Consortium released two reports: *The Northern Ontario Perinatal and Child Health Survey Highlights Report: A First Look* and the *Northern Ontario Baseline Child Health Information: Analysis of Secondary Data*. The "Highlights Report" presents initial findings from the Consortium's 2002 telephone survey of 3413 mothers of children aged 0-6 years. The "Baseline Report" presents existing data from secondary sources on the health of Northern Ontario children aged 0-6, and provides a compendium of information to supplement the survey findings.

In 2003, continued funding from the Ministry of Health and Long Term Care allowed five focused reports to be undertaken as a continuation of the work of the Consortium. The reports present in-depth analyses of the survey data, and focus on the implications of the findings for child and family programs in health units and community programs. Topics of the focused reports are: Access to Parenting Resources; Determinants of Child Health; Unintentional Injuries and Safety; Nutrition; and the present report, Breastfeeding Practices in Northern Ontario.

DATA SOURCE

The data source for this report is the Northern Ontario Perinatal and Child Health Survey (NOPCHS). The telephone survey targeted Northern Ontario mothers of children aged 0-6 across the eight northern health unit areas. The total sample for this survey was 3413 participants. The NOPCHS project was designed to provide information for perinatal and child-focused program and service planning for Northern Ontario and at the individual health unit level. Data were collected between March and June 2002. Potential participants were contacted by telephone at various times of the day as well as evenings and weekends. Interviews were conducted in both English and French. Mothers who did not have a telephone are excluded from the sample.

This report explores breastfeeding initiation and duration rates in Northern Ontario, as well as support systems and resources for mothers, breastfeeding problems that mothers have and reasons why mothers stop breastfeeding.

BACKGROUND

Breastfeeding is an important component in the healthy development of a child. Human milk is designed to meet the unique and specific nutritional needs of newborn babies, and is essential for optimal health of mother and child (1). Extensive research has indicated that breast milk provides benefits beyond the immediate nutritional needs of the child, including a potential reduction in infant and childhood morbidity and mortality (2).

Breastfeeding initiation rates in Canada have increased steadily over the past few decades. During the 1960s and 1970s, breastfeeding initiation rates were approximately 25% (3;4). Between 1980 and 1982, the national average rate of breastfeeding initiation increased to 69% (5). More recent national surveys have found that breastfeeding initiation rates in Canada are closer to 80% (6;7).

Despite successes in increasing breastfeeding initiation rates in Canada, limited progress has been made in lengthening breastfeeding duration. The most dramatic decline in breastfeeding rates is observed within the first month postpartum. Rates continue their decline at four and six months postpartum.

RESULTS

Breastfeeding Initiation

Respondents were asked how they were feeding their infant (target child) in the first 48 hours after birth for each year from 1995 through to 2002. It appears that breastfeeding initiation rates are increasing slightly over time in Northern Ontario. During the years 2000 through to 2002, the percentage of respondents in Northern Ontario that chose to breastfeed their babies was 77.2%. This rate is only slightly lower than the average Canadian breastfeeding initiation rate of 80.1%.

Women who were under 20 years of age, or who were single, divorced, or widowed were less likely to initiate breastfeeding. Women with incomes below \$27 000, and especially below \$17 000, had the lowest breastfeeding rates (67.4% and 60.2%, respectively). Women who only had education levels of public school or less, or some of all of high school showed, or spoke French as their first childhood language, showed lower breastfeeding initiation rates than women with some post-secondary education. Lastly, women who attended pre-natal classes were more likely to initiate breastfeeding.

The top three reasons why women chose to breastfeed their babies were: benefits for baby, convenience, and bonding. The most common reason reported for mother's choosing to breastfeed was to benefit her baby (92.5%), followed distantly by convenience and bonding (27.8% and 20.7%, respectively).

Respondents received the most support for the way they chose to feed their baby from family and friends, 90.9%, and their spouse/partner, 90.2%, followed by 78.7% from their baby's doctor.

Among women who bottle-fed, 20% did so because of medical reasons (including being unable to produce milk, having c-sections, premature babies, and adoption of babies), for 19% of women it was a personal choice, 10% of women had a previously unsuccessful experience with breastfeeding, and 10% of women felt uncomfortable with the idea of breastfeeding.

Upon hospital discharge, many respondents felt comfortable with the positioning of the baby at the breast, 71.4%, baby's latching, 72.2%, recognizing baby's cues, 82.9%, and recognizing signs that the baby was fed adequately, 79.8. For all northern health units, 71.9% of respondents were confident about breastfeeding when they left the hospital, whereas only 11.4% of respondents were not at all or not very comfortable.

A woman's confidence level about breastfeeding may affect her success with breastfeeding. Indeed, more women, 78.4%, who did not feel confident about breastfeeding, compared to only 18.7% of respondents who felt confident about breastfeeding after they left the hospital went on to have breastfeeding problems at home. As well, women who were more confident about breastfeeding when they left the hospital breastfed on average longer (mean = 8.3 months) than those who were not confident (mean = 4.6 months).

Breastfeeding Duration

Respondents were asked for the total time they breastfed, which may have included supplementation with formula and/or other foods, as well the time they spent exclusively breastfeeding. At four months, 64.9% of respondents were still breastfeeding, but only 52.6% of respondents exclusively breastfed their infants until at least four months.

Breastfeeding duration, with or without supplements, may be affected by a number of variables, including mother's age, education level, total family income, marital status, attendance of pre-natal classes, and language first learned and still understood. Table 6 displays the effect these variables have on respondent's total breastfeeding time. Women who are older, or have more than a high school education, or first learned a language other than English or French, were all more likely to breastfeed longer. Women who are older or who are married, are all more likely to exclusively breastfeed longer compared to younger women, and women who are single.

Reasons for Stopping Breastfeeding

Due to a variety of reasons such as breastfeeding difficulties and having to return to work or school, many women stop breastfeeding before they actually intended to. Across all northern health units, 57.7% of respondents were able to breastfeed for the length they intended.

Close to one-third of respondents experienced problems with breastfeeding. Women who attended pre-natal classes were also less likely to experience breastfeeding problems, 24.1%, than those who did not attend pre-natal classes, 37.5%. The three most common breastfeeding problems were latching problems, 28.2%, sore nipples, 25.8%, and the worry that respondents did not have enough milk, 24.3%. The majority of respondents, 81.9%, sought help when breastfeeding problems were encountered. Respondents sought the most help from their doctor, midwife, nurse practitioner, or obstetrician, 39.2%. Please note that there are relatively few lactation consultants in Northern Ontario. Therefore, the low percentage of

mothers receiving breastfeeding help from this source is likely a result of the low numbers of lactation consultants available for women.

The three most common responses reasons why women ceased to breastfeed were the child weaned him/herself, 21.7%, returned to work/school, 21.0%, or did not have enough milk, 18.0%. Interestingly, women who had midwives as their main care provider were less likely to stop breastfeeding due to the perceived notion of low milk supply than women who had family doctors or obstetricians as their main care provider.

Smoking While Breastfeeding

For all northern health units, 15.1% of respondents smoked while they were breastfeeding. Overall 24.8% of respondents had someone who regularly smoked in the respondents' presence during or after pregnancy.

Breastfeeding in Public Places

Women have various comfort levels when it comes to breastfeeding in public places such as malls, restaurants, and the workplace. The range of percentages of respondents who were comfortable breastfeeding in public was 34.6% to 39.5% and the range for those who were not comfortable breastfeeding in public was 34.5% to 48.6%. Respondents were the most uncomfortable about breastfeeding in the workplace, 48.6%. Nearly half of the respondents said their workplaces were inflexible for breastfeeding mothers. Respondents felt it was most important to have a special place to breastfeed or express milk in malls, 86.9%, however, restaurants and workplaces followed closely, 78.6 and 77.9%, respectively. In contrast to breastfeeding in public places, respondents were very comfortable about breastfeeding in the presence of close family, 81.8% for all northern health units.

CONCLUSION

The purpose of the NOPCHS was to provide quality data to guide northern child health program and policy decisions. Specifically, the Breastfeeding Practice in Northern Ontario Report is intended to provide current information on breastfeeding practice in Northern Ontario to help public health units, as well as other community programs who work with breastfeeding mothers offer the programs, support and education that are needed by breastfeeding women.

It is very encouraging that the Northern Ontario breastfeeding initiation rate is almost identical to the Canadian breastfeeding initiation rate. In addition

to breastfeeding initiation rates that are comparable with Canadian initiation rates, Northern Ontario has achieved a breastfeeding rate of 50.4% at six months, which meets the goal set forth by the Ontario Ministry of Health's Mandatory Health Programs and Service Guidelines of having the percentage of infants breastfed up to six months to 50% by the year 2010 (8). As Northern Ontario has a number of small communities, there may be an enhanced relationship between service providers that is responsible for the higher breastfeeding rate at six months.

The following is a short summary of some of the specific recommendations mentioned in this report:

- establish educational programs in grade schools
- educate mothers on benefits of breastfeeding for the mother
- raising awareness of community resources offering breastfeeding support both during pre- and post-natal period.
- promotion of Baby Friendly Hospital Initiative
- continued breastfeeding education for physicians/nurses and medical/nursing students
- joint seminars for physicians, nurses, midwives, public health nurses and all other health professionals working with mothers to try to create consistency in the breastfeeding information
- develop more peer support groups, or one-on-one breastfeeding buddies for breastfeeding mothers
- continued breastfeeding education for mothers and her support system
- adoption of the Seven Point plan for communities to become Baby-Friendly
- advocate for Breastfeeding Anytime/Anywhere

Health units and community resource providers play an essential role in ensuring that all of these components are available to the mothers. Health units and community resource providers can also provide educational opportunities and support to the mother and her support system, and to professionals working with breastfeeding mothers. The organization of media campaigns is another essential service that may be delivered by health units and community resource providers to promote public awareness and the social acceptance of breastfeeding in public places.

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INTRODUCTION

In September 2000, the Ministry of Health and Long-Term Care, Public Health Branch, received funding from the Government of Ontario to support health unit-based Early Years projects. In 2002, as part of the overall Ontario Early Years initiative, each health unit was eligible for funding for Perinatal and Child Health Survey Strategies. The four key action areas identified as priorities for funding in the First Ministers' Meeting Communiqué on Early Child Development (1) were:

- Promoting healthy pregnancy, birth and infancy
- Improving parenting and family supports
- Strengthening early childhood development, learning and care
- Strengthening community supports

After discussion among health units and partners across Northern Ontario, a decision was made to pool some of these resources to maximize the use of the funds and the scope of the projects. As a result, the Northern Ontario Perinatal and Child Health Survey Consortium was established in 2002, and continued with additional funding through 2003. The Consortium has representation from the eight northern health units: Algoma, Muskoka-Parry Sound, North Bay & District, Northwestern, Porcupine, Sudbury & District, Thunder Bay District, and Timiskaming, as well as the Northern Health Information Partnership (NHIP) and the three northern universities: Lakehead, Laurentian and Nipissing. The Consortium is coordinated by the Public Health Research, Education & Development (PHRED) Program at the Sudbury & District Health Unit.

The project had two key objectives: quality data to guide northern child health program and policy decisions, and a strong collaboration between northern health units, all three northern universities, NHIP and the Sudbury PHRED Program.

In 2002, the Consortium released two reports: The Northern Ontario Perinatal and Child Health Survey Highlights Report: A First Look and the Northern Ontario Baseline Child Health Information: Analysis of Secondary Data. The "Highlights Report" presents initial findings from the survey. The "Baseline Report" presents existing data from secondary sources on the health of Northern Ontario children aged 0-6, and provides a very useful compendium of information to supplement the survey findings.

In 2003, continued funding from the Ministry of Health and Long-term Care allowed five focused reports to be undertaken as a continuation of the work

of the consortium. The reports present in-depth analyses of the survey data, and focus on the implications of the findings for child and family programs in health units and community programs. Topics of the focused reports are: Parenting and Access to Services; Breastfeeding; Determinants of Child Health; Unintentional Injuries and Safety; and Prenatal and Child Nutrition.

The North Bay and District Health Unit is taking the lead on this focused report concerning Breastfeeding Practice in Northern Ontario. Health Canada recommends exclusive breastfeeding for at least the first four months of life and the introduction of complementary foods at four to six months (2). This report will explore breastfeeding initiation and duration rates in Northern Ontario, as well as support systems and resources for mothers, breastfeeding problems that mothers have, and reasons why mothers stop breastfeeding. This analysis will better enable health units and community partners to design and implement programs that will address the breastfeeding needs of Northern Ontario children and their families.

METHOD

The data source for this report is the Northern Ontario Perinatal and Child Health Survey (NOPCHS). The NOPCHS project was designed to provide information for planning perinatal and child-focused programs and services for Northern Ontario and at the individual health unit level. Topics were proposed based on needs of program staff and community partners for current data to guide program and policy decisions. The main topic areas were:

- Parenting
- Breastfeeding
- Unintentional Injuries and Safety
- Asthma
- Food Security
- Prenatal and Child Nutrition

Data were collected between March and June 2002 by Oraclepoll Research Limited. Potential participants were contacted by telephone at various times of the day as well as evenings and weekends. Interviews were conducted in both English and French.

The telephone survey targeted Northern Ontario mothers of children aged 0-6. Only mothers were contacted for the survey, since several topic areas, such as breastfeeding and folic acid intake during pregnancy were only applicable to mothers. For mothers with more than one child aged 0-6, the survey focused on the child who had the most recent birthday (the 'target child') in the family. This 'target child' approach ensured an equal chance of selection among the eligible children in a family. For all calls, surveyors asked to speak with the mother of a child six years of age or under who lives with her. If there was no answer, the surveyors made up to 15 repeat calls to each number.

The sample for the NOPCHS was drawn from two sources, the Integrated Services for Children Information System (ISCIS) database and random digit dialling. In the NOPCHS sample, 56% of participants were recruited from consenting ISCIS contacts and 44% from random digit dialling. The total sample for this survey was 3,413 participants.

For more details on the survey development, data collection and limitations, please refer to *The Northern Ontario Perinatal and Child Health Survey Highlights Report: A First Look (3)*.

WEIGHTING

Weights were assigned to the respondents' data based on two factors. First, a weight was calculated so that the distribution of children's ages 0-6 matched the population distribution within each health unit area, correcting for over-representation of younger children in our sample. The second level of weighting was for health unit population, in order to account for proportional under-representation of mothers in larger health unit areas in the calculation of northern rates.

FOCUS GROUPS

The NOPCHS provided our team with a large amount of data regarding breastfeeding practice. In order to bring focus to our research efforts, three in-person focus groups were conducted with internal and external health service planners and providers. In addition, an e-mail solicitation for input was sent to individuals unable to attend focus group meetings. Participants included, but were not limited to, representatives from various divisions of the North Bay & District Health Unit, the Ontario Early Years Centre, and the Breastfeeding Coalition for North Bay and District.

STATISTICAL ANALYSIS

For this report the primary analyses were: frequency distributions and cross-tabulations between variables for all northern health units combined, for all years combined. As a precaution, unweighted frequencies were determined in a preliminary analysis, and any cell size with a count of less than 30 was excluded from any analytically weighted analysis. Data from cell sizes with a count less than 30 have been suppressed and are represented by N/A (not available).

Sampling error occurs as a result of selecting a sample rather than surveying an entire population. Statistics based on samples drawn from the same population will vary from each other (and from the true population) simply because of chance. The variation is called *sampling error*, and the measure used to estimate it is called *standard error*. Standard errors are used to estimate how precise the estimates are. The coefficient of variation (CV) is a measure of dispersion, based on the standard error of the estimate and the estimate itself. If an estimated proportion has a CV greater than 33.3% with sufficient sample size, the estimate must be suppressed. If an estimated proportion has a CV greater than 16.5%, but no greater than 33.3%, with sufficient sample size, the estimate can be reported but should be interpreted with caution.

Based on sampling distribution theory, we are 95% confident that the true value of an estimate is within two standard errors in either direction of the estimate. This range (estimate plus or minus 2 standard errors) is called the 95% confidence interval. A 95% confidence interval is defined as an interval that will contain the true parameter for 95% of all samples that could have been obtained from the reference population.

The confidence interval illustrates the degree of variability associated with an estimate. Wide confidence intervals indicate wide variability, and thus, such estimates should be interpreted and compared with due caution. Confidence intervals can be used to determine whether an estimate in one subgroup is statistically below, above, or no different than the estimate for the same indicator in another subgroup. If the confidence intervals for two estimates overlap, then we would conclude that the difference between them is not statistically significant.

In order to increase sample sizes for cross-tabulations, response categories of education levels, income levels, and mother's age have been combined.

Education responses were grouped into five response categories for mother's education level and income was grouped into two categories, below \$36,000 and \$36,000 and/or above. Mother's age was grouped into three categories: below 20, 20 to 34 years of age, and 35 years of age and over.

All 'Not Stated', 'Don't Know', or 'Refused' responses were coded as missing for all analyses. 'Missing' values were excluded from the analysis unless greater than 8% of the responses were missing, in which case, missing values were reported separately as a category. All 'Not Applicable' and 'Missing' responses were excluded from the cross-tabulations.

LIMITATIONS

- Mothers who do not have a telephone are excluded.
- Mothers living in institutions are excluded.
- Due to limitations of time for a telephone survey, some questions that would have yielded useful information were not included in the survey.

LITERATURE REVIEW

INTRODUCTION

Breastfeeding is an important component in the healthy development of a child. Human milk is designed to meet the unique and specific nutritional needs of newborn babies and is essential for optimal health of mother and child (4). Health Canada states that:

Breastfeeding is an unequalled way of providing ideal food for the healthy growth and development of infants, and has a unique biological and emotional influence on the health of both mother and child. (5)

The Breastfeeding Committee for Canada (5) states that, “exclusive and sustained breastfeeding provides a biologically efficient system that provides nutritional, immunological, and emotional nurturing for normal growth and development during the vulnerable first years of a child’s life.” Indeed, the benefits of breast milk and the act of breastfeeding are unparalleled by any breast milk substitute. Both the National Population Health Survey (NPHS) and the *l’Etude longitudinale du développement des enfants du Québec* (ELDEQ) (Longitudinal Study of Child Development in Quebec) report that ‘benefit to the baby’ was the most common reason given for breastfeeding (6;7).

Extensive research has indicated that breast milk provides benefits beyond the immediate nutritional needs of the child, including a potential reduction in infant and childhood morbidity and mortality (8). According to the United States Breastfeeding Committee (9), for example, children who are breastfed have a lower incidence of Sudden Infant Death Syndrome, diarrhoea, ear infections, respiratory tract infections, and have a lower risk than formula-fed children of bowel diseases such as Crohn’s disease and ulcerative colitis. United Nations International Children’s Emergency Fund (UNICEF) and the World Health Organization (WHO) maintain that exclusive breastfeeding during the first six months of life would prevent one million infant deaths each year (10).

The benefits of breastfeeding may also continue into early childhood, adolescence and beyond. Formula-fed children tend to show a higher incidence of some forms of cancer, childhood obesity, juvenile onset diabetes, asthma, and eczema. Children who were not breastfed have, on average, more cavities and are more likely to need orthodontics than children who were breastfed exclusively for at least six months (9).

Breastfeeding also appears to enhance the emotional and cognitive development of children. The skin-to-skin contact required for breastfeeding helps establish a secure and loving bond between mother and infant (11). In terms of cognitive development, existing research evidence suggests that breastfed children have higher intelligence quotient (IQ) scores than formula-fed infants (12;13). Further, the apparent cognitive benefits of breastfeeding are enhanced by increased breastfeeding duration (13).

Breastfeeding is advantageous for the health of mothers as well. According to the Breastfeeding Committee for Canada (5), breastfeeding has a positive impact on women's health by offering protection from various types of cancer including breast, ovarian, and endometrial cancer. Other health benefits include a reduction in osteoporosis, postpartum bleeding, anemia, and anxiety (14-16). As well, breastfeeding mothers burn an average of 500 calories more than formula feeding mothers per day (17). Therefore, all mothers need to continue to eat a balanced diet, as directed by the Canada Food Guide, in order to maintain adequate nutrition. (18). For some mothers with excess fat stores, the additional calories burned through breastfeeding may help them return to a healthy body weight (9).

NUTRITION

The optimal duration of exclusive breastfeeding and the age of introduction of complementary foods is a topic for considerable discussion. The introduction of solid foods is an individual decision based on many factors such as ethnic, cultural and geographic origin, birth weight, maternal nutritional status, and the infant's readiness physiologically and developmentally (2). *Nutrition for Healthy Term Infants* represents the most recent national recommendations from Health Canada (2). These recommendations, released in 1998, were intended to provide basic information for health professionals to communicate consistent messages about infant nutrition to parents and caregivers across Canada. Recommendations included: exclusive breastfeeding for at least the first four months of life and the introduction of complementary foods at four to six months to meet the infant's nutritional requirements and developmental needs.

WHO and UNICEF, along with the Breastfeeding Committee for Canada recommend exclusive breastfeeding for the first six months of life followed by continued breastfeeding in combination with complementary foods for up to two years of age and beyond (19). The goal set forth for Ontario by the Ontario Ministry of Health's Mandatory Health Programs and Service Guidelines is to increase the percentage of infants breastfed up to six months to 50% by the year 2010 (20).

Since the 1998 national recommendations from Health Canada, new research has provided additional information and fostered the current lack of consensus. To clarify evidence for recommendations on optimal duration of exclusive breastfeeding, a systematic review was commissioned by the World Health Organization in 2002 (21). The review states that 'although infants should still be managed individually so that insufficient growth or other adverse outcomes are not ignored and appropriate interventions are provided, the available evidence demonstrates no apparent risk in recommending, as public health policy, exclusive breastfeeding for the first 6 months of life in both developing and developed country settings' (21).

As a result of the WHO systematic review findings and growing international discussion, the Canadian Paediatric Society, Dietitians of Canada and Health Canada have reconvened a working group to review their joint guideline on exclusive breastfeeding recommendations (2). A systematic review of the literature with relevance to Canadian infants is also being conducted in Canada (personal communication). Thus Canada has not yet reviewed its current official position, which would provide further direction and guide the practice of public health professionals. Prudent individualized management of the mother and infant continues to be a priority for health care professionals.

Although the WHO recommends exclusive breastfeeding to six months, which confers several benefits on the infant and the mother, exclusive breastfeeding to six months can lead to iron deficiency in susceptible infants (21). Susceptible infants may be those who are born with low iron stores (preterm infants, infants with low birth weights, and infants of mothers with diabetes), and infants from a low socioeconomic background (22). At birth, infants have an endogenous store of iron which is used by the infant within four to six months. After four to six months of age, the introduction of solids helps to develop and maintain iron stores in early life (23). Susceptible infants may deplete their iron stores earlier and may require iron supplemental sooner with iron-fortified infant cereal, or iron-rich foods such as liver, meat, fish, legumes, and egg yolk (22). Available data are insufficient to exclude several other potential health risks of six months of exclusive breastfeeding including growth faltering or other micronutrient deficiencies, in some infants. On an individual infant basis, the potential risks of exclusive breastfeeding must be weighed against the benefits, especially the potential reduction in morbidity and mortality.

Despite guidelines regarding recommended exclusive breastfeeding duration, the age of introduction of solids must be established on an individual basis according to infants' nutritional needs, physiological maturation, and behavioural and developmental readiness (22). If solids are introduced before the infant is ready, solid foods may displace breast milk or formula resulting in inadequate nutrient intake, and may also increase the risk of

digestive problems and food allergies. If the introduction of solids is delayed beyond six months, there may be increased risk of feeding problems, such as a preference for fluids and refusal to progress to textured food, which in turn may create nutrient deficiencies (2;21).

BREASTFEEDING PROMOTION

Beginning in the early 1950s, infant formula manufacturers undertook intensive advertising campaigns, marketing formula as nutritionally equivalent to breast milk. As well, formula feeding was characterized as a “convenient” and “liberating” alternative to breastfeeding for women. As a result, many mothers around the world chose to formula feed rather than to breastfeed (5). In order to counteract the increasingly popular use of infant formula, UNICEF and WHO developed the following three policy statements emphasizing the role of hospitals and health care professionals in breastfeeding promotion (24).

1. International Code of Marketing of Breast-milk Substitutes (1981)

The International Code of Marketing of Breast-milk Substitutes, developed by the WHO/UNICEF in 1981, was designed to control the promotion and distribution of formula within hospitals (24). The Code includes the following provisions:

- No advertising of these products to the public.
- No free samples to mothers.
- No promotion of products in health care facilities.
- No company nurses to advise mothers.
- No gifts or personal samples to health care workers.
- No words or pictures idealizing artificial feeding, including pictures of infants on the labels of the products.
- Information to health workers should be scientific and factual.
- All information in artificial infant feeding, including the labels, should explain the benefits of breastfeeding, and the costs and hazards associated with artificial feeding.
- Unsuitable products, such as sweetened condensed milk, should not be promoted for babies.
- All products should be of a high quality and take account of the climatic and storage conditions of the country where they are used. (24)

As a result of this initiative, the International Association of Infant Food Manufacturers signed an agreement with the WHO and UNICEF in 1991, confirming their commitment to ending donations of formula to maternity wards by the end of 1992 (25). Anecdotal evidence at the local level suggests that such donations may be continuing. As well, a number of industrialized countries have undertaken their own initiatives, including agreements with manufacturers, in order to terminate the distribution of free and low-cost formula in hospitals (25).

2. Ten Steps to Successful Breastfeeding (1989)

This international statement outlines the policies and practices that should be implemented in hospitals in order to promote breastfeeding (24). The Ten Steps are as follows:

1. Have a written breastfeeding policy that is routinely communicated to all health care staff.
2. Train all health care staff in skills necessary to implement this policy.
3. Inform all pregnant women about the benefits and management of breastfeeding.
4. Help mothers initiate breastfeeding within half an hour of birth.
5. Show mothers how to breastfeed, and how to maintain lactation even if they should be separated from their infants.
6. Give newborn infants no food or drink other than breast milk, unless medically indicated.
7. Practice rooming-in. Allow mothers and infants to remain together 24 hours a day.
8. Encourage breastfeeding on demand.
9. Give no artificial teats or pacifiers (also called dummies or soothers) to breastfeeding infants.
10. Foster the establishment of breastfeeding support groups and refer mothers to them on discharge from the hospital or clinic. (5)

3. Innocenti Declaration (1990)

The third and final document, the Innocenti Declaration, called upon all governments to develop national breastfeeding policies and to set appropriate targets during the 1990s (24). The declaration also recommended that all countries appoint a national breastfeeding coordinator and establish a multi-sectoral national breastfeeding committee.

In response to the development of these three documents, as well as other conventions and resolutions produced around the world, 12 countries came together under the auspices of WHO and UNICEF to start the Baby-Friendly Hospital Initiative (BFHI), a program intended to create a hospital environment which encourages breastfeeding through two main mandates (25):

- To encourage hospitals to earn the Baby-Friendly designation by adopting the Ten Steps to Successful Breastfeeding.
- To encourage governments to adopt measures to end free or low-cost distribution of formula and other breast milk substitutes to the public health system.

The BFHI has now been adopted in approximately 161 countries, including 135 developing countries and 26 industrialized countries (25). There are 14,994 hospitals world-wide that have been identified as “Baby-Friendly,” of which only 262 are found in industrialized countries (26). The majority of the world’s Baby-Friendly hospitals are found in China and Nigeria, with a total of 6,312 and 1,147 Baby-Friendly hospitals, respectively (26). Industrialized countries, such as Canada, are lagging behind developing nations in terms of adopting Baby-Friendly strategies.

In Canada, only two hospitals (of approximately 576 hospitals that provide maternity care) have received an official ‘Baby-Friendly’ designation (27): the Brome-Missisquoi-Perkins Hospital in Cowansville, Quebec (28) and St. Joseph’s Healthcare in Hamilton, Ontario (29). Across Canada, hospitals are striving to gain Baby-Friendly status. In British Columbia alone, over twenty hospitals have committed to the program (10), and several other Canadian hospitals are very close to requesting an assessment (28).

BREASTFEEDING INITIATION

Breastfeeding initiation rates refer to the proportion of women who choose to breastfeed their child, regardless of duration, and may be in combination with formula feeding. Initiation rates in Canada have increased steadily over the past few decades. During the 1960s and 1970s, breastfeeding initiation

rates were approximately 25% (30;31). Between 1980 and 1982, the national average rate of breastfeeding initiation increased to 69% (32). Both the National Population Health Survey and the National Longitudinal Survey of Children and Youth established the national average breastfeeding initiation rate as 73% in 1994/1995 (6). More recent national surveys have found that breastfeeding initiation rates in Canada are closer to 80% (33;34).

Initiation rates vary widely within Canada, demonstrating a distinct east-west gradient. Western provinces, such as British Columbia, Alberta, and Saskatchewan, display high breastfeeding initiation rates of 89%, 90%, and 88% respectively (35). Rates for Ontario range between 80% and 84% (36;37), and mark a progressive eastward decline, with rates in Quebec of 72% (7), the Maritime provinces between 53% and 60% (38), and 42% in Newfoundland (39). Continuing this downward trend, initiation rates in eastern Newfoundland are said to be approximately 31% (40).

Breastfeeding initiation rates in Canada are comparable to some other countries (Australia) and relatively high in comparison to others (U.S., Britain, and Hong Kong). In the U.S., for example, current initiation rates are comparable to those exhibited in Canada prior to the 1980s (33). U.S. initiation rates in the 1960s and 1970s were roughly 24%, followed by an increase to approximately 60% in 1982 (41). Unlike the consistent increase experienced in Canada, initiation rates in the U.S. fell to 52% in 1989 (41), before rebounding to 65% in 2001 (42). In Australia, breastfeeding initiation rates declined from the 1950s to the 1970s, and then increased steadily into the 1990s with initiation rates of over 80% (43). Substantially lower rates are reported for the period 1995-1997 in both Britain (66%) and Hong Kong (34%) (44;45).

Why Mothers Choose to Breastfeed

Although the choice to breastfeed is a personal decision involving a combination of many factors that are unique to each woman's situation, the literature identifies some common reasons why women chose to breastfeed. According to the ELDEQ (7), for example, the most reported reasons for breastfeeding relate to benefits for the baby's health, followed by reinforcing the mother/child bond. Participants in a study by Brown *et al.* (46) cited optimal infant nutrition, the bond breastfeeding creates between mothers and children, and mothers' peace of mind knowing that they are providing the best food for their children as the key reasons behind their preference for breastfeeding. The most commonly reported reasons to not breastfeed were related to embarrassment, perceived pain, and lack of interest by the infant.

Education and Support for Mothers During Pregnancy

The support of others, including professionals, family, friends, employers, and the general public, figure prominently in successful breastfeeding (40). Each of these support systems influences a mother's decision and her experience of breastfeeding. Hence, the availability of these support systems affects the initiation and duration of breastfeeding.

Spouse and Family Support

A mother's family is influential on a woman's breastfeeding experience. The chance of a mother initiating breastfeeding increases nearly seven-fold if the mother has been breastfed herself (47). Although the mother's mother has very significant influence in the decision to breastfeed, the support and opinion of the woman's spouse or partner is often the most significant influence in her decision to breastfeed (7). In Quebec, breastfeeding initiation rates for mothers who received support from their spouse/partner for breastfeeding were 83%, compared to 21% of mothers whose partners did not support breastfeeding (7). In a study of men from diverse cultural backgrounds, knowledge and attitudes about breastfeeding was collected via survey by Pollock *et al.* (48). Eighty-one percent of the men sampled wanted their baby to be breastfed. Over 90% of men agreed that breastfeeding promotes mother/infant attachment, and said they would support their partner if she chose to breastfeed. Men who were breastfed themselves were more likely to want their baby breastfed (48).

Professional Support

Since the majority of health care professionals involved in the care of new mothers and infants are based in a hospital setting, the policies and procedures used by the hospital staff to support breastfeeding mothers are crucial. As many women's perceptions and decisions about breastfeeding are affected by their stay experience in the hospital, it is important that this experience be as supportive and positive as possible. A study examining influences on breastfeeding found that women who received information on the benefits of breastfeeding from a medical professional were 3.5 times more likely to initiate breastfeeding (49). Another study discovered that a total of 19% of mothers felt that health professionals, such as physicians, public health nurses, midwives or pre-natal instructors, had the most influence in their feeding outcome (39). The adoption of the Baby-Friendly Hospital Initiative across Canada would strengthen the promotion of breastfeeding through the positive interaction between health care professionals and mothers.

In a study completed by Levitt *et al.* (24), there were notable inconsistencies in the adoption of BFHI in facilities across Canada. Quebec and the Prairie provinces were significantly less likely than those in Ontario to have a written policy, or to have policies based on the Ten Steps to Successful Breastfeeding. The hospitals in the Prairie provinces and those in Quebec were also significantly more likely to give free sample packs to formula-feeding mothers. In addition, the hospitals in Quebec were significantly less likely than those in Ontario to have policies supporting 19 to 24 hours per day of rooming-in.

Martens *et al.* (50) undertook a feeding study, in Manitoba, which was intended to assess the degree to which hospitals were adhering to the Ten Steps to Successful Breastfeeding. A significant gap between theory and practice was noted: “only 63% of the maternity facilities had written breastfeeding policies, and only half of the policies were based on the Ten Steps to Successful Breastfeeding” (50). According to Martens, less than one-half of the women were told about the benefits of breastfeeding or breastfed within the first hour. Many infants were supplemented in the hospital, or provided with pacifiers. Many nurses recommended a two-hour waiting period before feedings, and a limited time at each breast. Less than one-half of the infants stayed in the room with the mother overnight, and less than one-half of the mothers were referred to breastfeeding support groups. As well, many of the hospitals used subsidized formula supplies, with mothers noticing a formula brand name in the hospital.

Community Support

In response to enthusiasm among health care professionals for the Baby-Friendly Hospital Initiative, the United Kingdom Baby-Friendly™ Initiative Committee in consultation with professionals, service providers, and mother-to-mother support groups, developed the Seven Point Plan for the Protection, Promotion and Support of Breastfeeding in Community Health Care Settings (51). The goal was to present best practice standard statements for the support of breastfeeding mothers and babies in community health settings. The Seven Point Plan sets the standard for care providers to achieve if they would like to obtain similar levels of care to those given by hospitals that have been designated as Baby-Friendly. The Seven Point Plan includes the following provisions:

1. Have a written breastfeeding policy that is routinely communicated to all staff and volunteers.
2. Train all health care providers in the knowledge and skills necessary to implement the breastfeeding policy.

3. Inform pregnant women and their families about benefits and management of breastfeeding.
4. Support mothers to establish and maintain exclusive breastfeeding to six months.
5. Encourage sustained breastfeeding beyond six months with appropriate introduction of complementary foods.
6. Provide a welcoming atmosphere for breastfeeding families.
7. Promote collaboration between health care providers, breastfeeding groups and local community.

There are also programs throughout Northern Ontario designed to educate women about breastfeeding and to enable them to have a positive breastfeeding experience. Some of these programs include Healthy Babies Healthy Children, pre-natal classes, breastfeeding and well-baby clinics, breastfeeding support drop-ins, breastfeeding mentorships, parent support groups, and the parent-child information line. Each health unit also provides public health nursing and telephone calls. Breastfeeding information is available to the public via the Internet, pamphlets, and personal correspondence with health educators.

Factors Affecting Breastfeeding Initiation

In addition to the support a mother receives, a number of other variables, such as socioeconomic status (which may include total family income and education level of the mother), age, marital status, and parity, influence rates of breastfeeding initiation. The Ontario Mother and Infant Survey, conducted by Sheehan and colleagues (37), revealed that the lowest breastfeeding initiation rates were amongst participants who were less educated, of lower socioeconomic status, younger, and first-time mothers.

Likewise, Williams *et al.* (52) report that breastfeeding initiation rates in B.C. consistently decline with socioeconomic status. In this study, initiation rates in the income brackets of (>50, 000) (30, 000-50, 000), (20, 000-29, 999), (10, 000-19, 999), and (<10, 000) were 88%, 78%, 76%, 60%, and 46% respectively. Fieldhouse (53) showed that women categorized as being of high socioeconomic status initiated breastfeeding 97% of the time, compared to 86% of women with medium socioeconomic status, and 61% of those with low socioeconomic status. Children in Quebec born into households receiving some form of government allowances were breastfed at a rate of 63%, compared to children of higher income families who were breastfed at a rate of 73% (7).

Age is also an important factor influencing the decision to initiate breastfeeding. Breastfeeding initiation rates in Canada in 1994/1995 were 67% among mothers aged 20 to 24, compared to 75% among mothers aged 35 to 44 (35). Nolan & Goel (33) also highlight the importance of mother's age on breastfeeding initiation rates: in Ontario the lowest rates are observed amongst mothers under the age of 25. In 1990, U.S. national surveys revealed initiation rates of 39% for teenage mothers compared to 86% for mothers over the age of 30 (54).

The mother's education is also correlated with higher breastfeeding initiation rates. Women with a university degree have the highest initiation rates (92%), followed by those with a high school diploma (72%). Initiation rates are lowest amongst mothers with no high school diploma (60%) (7). Confirming this gradient, Williams *et al.* (52) found significant differences in breastfeeding initiation between women with a high school education or less (initiation rates of approximately 52%) and women with a college or university education (78% and 91% respectively).

While the decision to breastfeed is largely driven by 'infant-centred' concerns, formula feeding appears to be motivated primarily by 'mother-centred' factors, such as 'lack of time' to breastfeed (39). Many women also report choosing to formula feed because they felt that their spouse could actively participate in the feeding process (7). Other motivations for formula feeding include illness within the mother and maternal smoking habits, which deter some mothers from breastfeeding (7). Interestingly, many formula-feeding mothers choose this method because they consider it to be more convenient than breastfeeding, contradicting one of the major perceived advantages of breastfeeding. A number of psychosocial factors also make formula feeding more attractive to some mothers, who report feeling awkward or embarrassed about breastfeeding in public (55).

BREASTFEEDING MYTHS

A number of 'myths' negatively impact upon both the prevalence and duration of breastfeeding. In order for women to make an informed infant feeding decision, it is necessary to educate mothers about breastfeeding to dispel some of these myths.

Myth #1: Many women do not produce enough milk.

Most women produce more than enough milk. Physiologic studies reveal that only 1% to 5% of women actually have problems with insufficient breast milk production (56). Breast milk is produced on the principles of supply and demand; amounts produced will vary according to the infant's needs (57). The problem may not be that the mother does not produce enough milk, but

rather the baby is not receiving the milk that the mother produces, due to latching problems or improper feeding practices (58). For this reason, it is imperative that the mother be shown how to latch the baby correctly to the breast within the first hour after birth, as delayed breastfeeding initiation may result in disinterest and latching difficulties for the infant (58;59).

Myth #2: Women need to drink milk to produce milk.

The distribution of milk coupons to mothers who breastfeed may perpetuate the misconception that a mother must drink milk to produce quality breast milk. Though it is highly recommended that breastfeeding mothers drink milk, it is not necessary to do so in order to produce quality breast milk (58).

Myth #3: The baby should breastfeed for a set time period.

Another common mistake made by mothers when breastfeeding is limiting the amount of time the baby feeds on each breast. Time limiting not only limits a woman's milk supply, it also minimizes a baby's caloric intake. The foremilk expressed during the first few minutes of feeding is low in fat and calories. It is not until during the latter part of the feeding that the milk increases in lipid content. As a result, limiting feeding duration may prevent the infant from receiving the lipid-rich milk that is essential for growth (60). A distinction must also be made between time *at the breast* and time *actually breastfeeding*. A baby may be at the breast for twenty minutes, but only drink for five minutes due to latching problems. A mother must watch to see if baby is swallowing to ensure that he is feeding effectively while at the breast (59;60).

Myth #4: Babies should be breastfed every four hours.

There is no 'correct' feeding schedule for every baby; rather, mothers should breastfeed on demand, rather than limit feedings to pre-established intervals (58). The frequency of feedings may vary based on the storage capacity of a mother's breasts, as well as periods of rapid growth of the baby. A mother with a large breast capacity may have to express milk from each breast four times per day, while a woman with a small capacity may have to express milk eight times per day at each breast (59).

Myth #5: Women on medication should not breastfeed.

Women often believe that they need to discontinue breastfeeding while on medication. However, most prescription and over-the-counter medications do not contraindicate breastfeeding (60). Those medications which are contraindicated for breastfeeding mothers include radioactive isotopes, antimetabolites, cancer chemotherapy agents, and illicit drugs such as

cocaine (12). Thus, breastfeeding is rarely contraindicated, unless a mother is undergoing cancer treatment or has a drug addiction.

Myth#6: Women suffering illness/infection should not breastfeed.

There are very few instances requiring mothers to discontinue breastfeeding due to infection (5). Most infectious diseases are already infectious before the mother even knows she is sick. By the time she develops symptoms, she may have already passed on the disease to her baby. Breastfeeding is advantageous for the baby even while the mother is sick as the mother will pass on antibodies to her baby, which offer increased protection from illness or a milder form of the illness. Therefore, continued breastfeeding is a baby's best defense against illness (58). Infectious diseases that may contraindicate breastfeeding include human immunodeficiency virus (HIV), human T-cell lymphotropic virus, cytomegalovirus (CMV), and active tuberculosis (TB).

Myth #7: Women who smoke should not breastfeed.

Although smoking is undesirable for both mother and child, mothers who do smoke should not be discouraged from breastfeeding their infant (5). In fact, breastfeeding decreases the negative effects of cigarette smoke on a baby's lungs, making breastfeeding of increased importance when an infant is exposed to tobacco smoke (58). Breastfeeding thus remains the best choice for a child's health, despite the mother's cigarette consumption.

BREASTFEEDING DURATION

Despite successes in increasing breastfeeding initiation rates in Canada, limited progress has been made in lengthening breastfeeding duration. Hence, it seems necessary to consider the factors that cause women to wean prematurely or that prevent them from breastfeeding for as long as they had intended.

Variation in Breastfeeding Duration Rates

The most dramatic decline in breastfeeding rates is observed within the first month postpartum. For example, in British Columbia, breastfeeding rates fell from 89% at initiation, to 71% at one month postpartum (52). Similarly, in Quebec, reported breastfeeding rates of 72%, at initiation, fell to 60% at one month postpartum (7). Rates continue their decline at four and six months postpartum; however, the decline is not as striking as in the first month. Breastfeeding rates at four months postpartum are approximately 53% in Vancouver (52) and 59% in Quebec (61). Studies completed in the Middlesex-London region of Ontario found breastfeeding rates are between 51% and 62% at four months postpartum (62). At six months, Canadian

breastfeeding rates vary between the provinces, with rates of 41% in Quebec (61), 30% in Vancouver (52), 33% in Newfoundland (39), and 40% in Sudbury, Ontario (63). After six months postpartum, breastfeeding rates continue to decline. A survey conducted between June and December, 1999, in the Elgin-St. Thomas area of Ontario, for example, revealed that breastfeeding rates at twelve months were a mere 13% (63).

On the whole, Canadian women appear to breastfeed longer than women in many other parts of the world. Breastfeeding rates four months postpartum are, in Britain, approximately 27% (44); and in The Netherlands, 21% (64). In the U.S., breastfeeding rates are approximately 27% and 12% at six and twelve months, respectively (42). In Hong Kong, breastfeeding rates at six months were found to be approximately 10% (45).

Factors Affecting Breastfeeding Duration

Health Canada recommends that women exclusively breastfeed their babies for at least four months (2), yet many Canadian women are not doing so. Consequently, it is important to consider the factors that influence a mother's decision to breastfeed exclusively for four months, as well as continuing to breastfeed for two years and beyond. According to McLeod *et al.* (65):

There is the potential to improve rates of breastfeeding at four months by creating realistic expectations about breastfeeding; ensuring access to consistent information; and ensuring quality ongoing support from partners, family, friends, professionals, and the community.

Support Provided by the Spouse/Partner

The role of the father has been identified as one of the strongest influences on the success of breastfeeding among mothers in the U.S. according to Cohen *et al.* (66), Peregrin (67) states that:

If the father truly believes that breastfeeding is best for the baby, that tends to have a very strong impact on the mother. If, however, the father is ambivalent, or even against it, and does not believe in its benefits, the impact can be just as strong on the mother and her decisions about breastfeeding.

'The Fathering Program,' for example, undertaken in Los Angeles, has had encouraging results; breastfeeding duration rates for the partners of the men enrolled in the program are over three times longer than the national average (66).

Peer Support

Peer support programs are intended to provide mothers with one-on-one support from other mothers who have breastfed successfully. Methods of support may include home visits, peer-counselling classes, and/or telephone contact (68). Studies on the impact of peer support show that significantly more mothers involved in peer support groups initiate breastfeeding (69;70). In one study, counsellors contacted new mothers by phone within the first week after birth. Results showed an increase in exclusive breastfeeding rates from 40% to 53%, and a decrease from 43% to 32% in combining formula feeding with breastfeeding (68). Another study discovered that mothers who were a part of a peer support group were 2.5 times more likely to continue breastfeeding at three months postpartum (69). Likewise, Dennis *et al.* (69) found that 81.1% of the mothers who received peer volunteer support were breast-feeding at three months postpartum, as compared with 66.9% of mothers in the control group. These results continued at four, eight, and twelve weeks postpartum. As well, significantly more mothers in the peer support group were exclusively breastfeeding at twelve weeks, indicating that breastfeeding duration and exclusivity were affected by peer support.

Reflecting its apparent effectiveness, La Leche League and many other breastfeeding advocate organizations place a strong emphasis on peer counselling. However, "the one problem that the La Leche League encountered was that women who tend to join the League were well-educated and were professional and knowledgeable individuals. As a result, lower-income mothers with less education were relatively underrepresented in this volunteer group" (16). This issue has been addressed by training volunteers with lower-income, so that all women will have a peer in the program, and thus receive peer support (16).

Professional Support

The support of professionals working with new mothers and their infants is important in helping mothers to feel comfortable in their ability to breastfeed, and to enable them to develop the confidence necessary to make contact with other professionals if further assistance is required. "Women who reported that their health care providers encouraged them to breastfeed were approximately half as likely to discontinue breastfeeding by 12 weeks postpartum than those who did not" (71).

Before the new mother leaves the hospital, she and a health professional (nurse, lactation consultant, physician, midwife) should discuss information about issues that may arise during breastfeeding, and discuss services within the community that are available to help the mother with any future questions or concerns. A mother's support person should also receive

accurate information and specific techniques for facilitating breastfeeding (72). It is important that the mother feels confident about her decision and ability to breastfeed prior to returning home from hospital, as mothers who leave the hospital feeling confident about breastfeeding are more likely to breastfeed for their intended duration (73).

Lactation consultants are in the unique position of being able to provide women with excellent breastfeeding support. Stefuk *et al.* (74) completed a process evaluation of a Saskatoon Breastfeeding Centre which was fully staffed by lactation consultants. The Centre provides in person and phone support for new mothers, and those mothers using the Centre reported being very satisfied with the services provided to them. Most women also felt that the information and support provided to them at the Centre was sufficient in helping them to breastfeed for the entire time period that they had intended.

Community Support

The health units of Northern Ontario provide support and information services to new mothers within their communities. All of the health units use the Healthy Babies Healthy Children program, which provides information and resources to parents. The Healthy Babies Healthy Children program also organizes group workshops, play groups, home visits from a registered nurse, and support groups. La Leche League is a well-respected organization that has many chapters across Northern Ontario. The mission of this group is to “give information and encouragement, mainly through personal help, to all mothers who want to breastfeed their babies” (75). In addition to these programs, there are many other programs and services offered in different formats across the health units of Northern Ontario. Some of these services include parent support groups, parent information hotlines, breastfeeding and well-baby clinics, access to lactation consultants, dieticians, midwives, and public health nurses.

Support for Mothers of Various Ethnic Backgrounds

In order to provide the best support for mothers choosing to breastfeed, it is important to understand the barriers faced in making feeding decisions. Dodgson *et al.* (76) notes that among Native American populations breastfeeding promotion that reflects cultural norms and tribal customs is important for successful breastfeeding. This may be applied to many cultures, as the importance of understanding, respecting, and incorporating individual cultural belief systems into the breastfeeding programs can affect the success of breastfeeding mothers. Dodgson *et al.* (76) recommend that “using teaching and promotion activities that incorporate cultural values by

seeking the assistance of elders and other interested parties within the community may be more effective than are less inclusive methods” (76).

Kannan *et al.* (77) and Denman-Vitale and Murillo (78) both emphasize the unique needs and issues of new immigrants. Ideally, the nurse/lactation consultant will speak the mother’s native language. However, if this is not possible, it is best to have an interpreter who is able to rephrase ideas to make them understandable and acceptable to the mother. The best approach would involve a health care worker who is fluent in the language, and is a trusted member of the cultural community (77).

Socio-Demographic Factors Affecting Breastfeeding Duration Rates

Demographic and socioeconomic variables have an impact on breastfeeding duration. Women who are younger, single, or who are socially and/or economically disadvantaged are most likely to wean prematurely (5). For example, the 1998-2002 ELDEQ examined rates of breastfeeding at four months postpartum and revealed that the highest rates of breastfeeding were among Quebec households whose main source of income was salary (61%) or self-employment (65%), while the lowest rates were among those dependant upon social assistance (48%) and employment insurance (56%). Similar results have been obtained in studies undertaken in Australia, England, New Zealand, Denmark, Sweden, Finland, and the U.S. (43).

Women between the ages of 35 and 39 are six times more likely than mothers under 25 to breastfeed for up to four months (61). Likewise, the ELDEQ (7) revealed that 20% of mothers under the age of 20 breastfed for less than one week, compared to 2% of mothers over 35 years of age. In Australia, women 30 years of age are significantly more likely to continue breastfeeding at any duration period than are women 20 years of age (43).

Dubois (61) concluded that mothers with a university diploma are five times more likely than mothers without a high school diploma to breastfeed their child for the recommended minimum of four months. Also, Fieldhouse (53) shows that over 50% of all mothers who breastfed had received post secondary education, compared to 16% of formula feeders. The positive correlation between education and breastfeeding duration was also shown in a study conducted by Williams *et al.* (52). In this study, 6% of women in Vancouver with less than a high school diploma continued to breastfeed beyond six months postpartum, compared to 17% of women with a university degree.

Breastfeeding Problems That May Influence Duration

A mother may experience a number of common breastfeeding problems that may affect her breastfeeding duration including latching problems, sore nipples, insufficient milk supply, mastitis, the baby falling asleep, and jaundice. An Ontario study, for example, revealed that 13% of women felt they could not produce enough milk, while 10% said that the baby still seemed hungry after feeding (79). Mothers in Hamilton-Wentworth report a number of other problems, including sore nipples (30%), insufficient milk supply (28%), fatigue (20%), engorgement (18%), and mastitis (5%)(80). The Ontario Mother and Infant Survey reported similar breastfeeding problems, as well as difficulties with breastfeeding techniques (37%) and latching problems (3%)(37). Problems reported by mothers in Eastern Nova Scotia included having 'inadequate milk' (25%), that breastfeeding was 'too tiring' (16%), and that they experienced 'breast engorgement' (16%) (81).

Other breastfeeding problems may be infant-oriented, such as infants having jaundice, being frustrated with breastfeeding, or being too tired to breastfeed (80). In *Dr. Jack Newman's Guide to Breastfeeding* (82), Newman states that a sleepy baby, especially in the first week, may be an indication of a health problem. Mothers may think their infant is 'content and getting lots of milk' when, in fact, the baby may be dehydrated and lethargic. Newman also discusses the issue of jaundice in his book. He states that many women feel they have to cease breastfeeding due to jaundice, but that it is neither healthy nor necessary to discontinue breastfeeding in almost all cases.

Factors Influencing Breastfeeding Cessation at Specific Postpartum Intervals

The most common reasons for breastfeeding cessation within the first three months postpartum include physiological problems such as nipple soreness and perceived insufficiency of milk supply (7;64). The National Population Health Survey (NPHS) (1994/1995) revealed that insufficient milk was the reason given by 41% of mothers who ceased to breastfeed within the first five weeks postpartum (6), while the ELDEQ (7) revealed breastfeeding cessation between seven and twenty-nine days occurred 92% of the time due to problems such as insufficient milk, breast pain, or the child not wanting to take to the breast. Evers *et al.* (79) cite similar reasons for discontinuing breastfeeding at three months postpartum, including 'not enough milk' (13%), 'baby rejected it' (13%), and 'baby seemed hungry' (10%).

Between four and six months postpartum, the return to work or school becomes a central factor associated with breastfeeding cessation (39;83). Ross Laboratories Mothers' Survey found that at six months postpartum only 10% of working mothers were breastfeeding, compared to 28% of their stay-

at-home counterparts (84). Therefore, the duration of breastfeeding is negatively correlated with maternal employment.

The decision to formula feed upon returning to work may be partially due to a lack of pre-natal education and preparation, as well as a lack of Baby-Friendly workplaces (85). Support programs are greatly needed in the workplace in order to encourage breastfeeding duration for up to two years and beyond. The Bureau of Labor Statistics reported that in 2000, "51% of U.S. women with children under one year of age were employed outside the home. Of these, 67% were employed full time" (86).

Cohen *et al.* (66) identify advantages for those employers who provide breastfeeding promotional programs, including a reduction in absenteeism from work, improved recruiting and retention rates, increased productivity at the work site, reduced infant health care expenses, and reduced maternal stress. Employers also acknowledged that breastfed infants are less likely to suffer from health-related problems, and that this might contribute to fewer claims for providers of health insurance (46). The need for employer support of breastfeeding has been recognized in the U.S., with California, Connecticut, Illinois and Washington passing state laws requiring employers to provide private rooms in which mothers can express milk (87).

Breastfeeding in Public

In a study reported by Mackay (88), "Almost every woman we spoke to had the desire to breastfeed, but most were uncomfortable doing so in public." This lack of comfort was mirrored by Stopka *et al.* (89), who found that the most common reason for not breastfeeding or stopping before six months postpartum was embarrassment in public. Since there are negative feelings and experiences associated with breastfeeding in public, it is necessary to understand and address the issues faced by nursing mother in order to fully support a mother's decision to breastfeed her child.

Sheeshka *et al.* (90) studied women's feelings about breastfeeding in public places, as well as the public's reaction to breastfeeding in public. Mothers described their insecure feelings about breastfeeding as "vulnerable," "self-conscious," and "nervous." Words used by the sample to describe the attributes that a woman who successfully breastfeeds in public must display included "determination," "confidence," and "commitment to breastfeeding."

Very few people (approximately 3%) even noticed mothers while they were breastfeeding in malls, and among those who did notice, the amount of attention was the same when mothers were nursing as when they were not (90). This information indicates that the breastfeeding mother's perceptions

of how the public feels towards breastfeeding may be more negative than actual attitudes towards breastfeeding.

The focus group participants studied by Sheeshka *et al.* (90) noted that planning ahead of time for a comfortable level of discretion was important, as was recommending other proactive behaviours for new mothers. Behaviours included going out with a friend while breastfeeding in public, tuning things out, practising latching at home, and waiting until breastfeeding is well established before trying it in public locations.

In order for women to breastfeed for the duration of their choosing, they need the support of those around them. Since it is apparent that women feel uncomfortable breastfeeding both in the workplace and in public places, it is important that those involved in policy and planning incorporate breastfeeding-friendly areas for mothers to breastfeed or express milk.

Public places frequented by women and families with young children, for example, family restaurants, cinemas, department stores, and shopping complexes, should provide attractive, well-maintained, and easy to locate facilities where mothers can breastfeed in private, should they choose to. (91)

Even if these facilities are provided, it remains important to note that some women will choose not to use the facility; and that since breastfeeding is not predictable, seclusion may be neither convenient, nor possible, at the time that the infant needs to be fed.

CONCLUSION

The literature suggests that exclusive breastfeeding to at least the first four months of life and sustained breastfeeding may contribute positively to a child's emotional, cognitive, and physical development, while offering benefits to the breastfeeding mother and society as a whole. It is important to help women achieve at least four months of exclusive breastfeeding, as well as sustained breastfeeding past four months time.

Factors that are associated with a successful breastfeeding experience often include a strong support network, quality pre-natal and postnatal education programs, the adoption of the Baby-Friendly Initiative in Canadian hospitals and community health services, and social acceptance of breastfeeding in public places. The support of a spouse or partner appears to have a significant impact on a woman's decision to initiate and sustain breastfeeding. As a result, it is important that a woman receives positive reinforcement and encouragement from her partner if she decides to breastfeed. The Baby-Friendly Hospital Initiative (BFHI) may play a central

role in ensuring mothers receive quality pre-natal and postnatal care by promoting breastfeeding-friendly hospital practices in Canadian hospitals and community health services. Socio-demographic factors such as maternal age, education, and socioeconomic status may be associated with differing initiation rates and duration periods. Although these factors appear to be non-modifiable, it may be advantageous to target support and educational programs toward younger women, less educated women, and women of low socioeconomic status. Lastly, society as a whole must journey towards the acceptance of breastfeeding in public, which would contribute to increasing a woman's breastfeeding duration. All of these factors are important targets for public health units, hospitals, community resources and programs, and the community itself to create a positive breastfeeding environment to ensure infants receive optimal nutrition during their first year of life and beyond.

RESULTS

The Northern Ontario Perinatal and Child Health Survey (NOPCHS) was conducted across the eight health units situated in Northern Ontario. There were between 396 and 460 respondents interviewed in each health unit area. Mother's ages ranged from 16 years to 58 years, with a median age of 31.0 (unweighted data). Please note that mothers of adopted children were also included in the study. The average age of child at the time of survey was 2.1 years, with 48.1% being female (unweighted data).

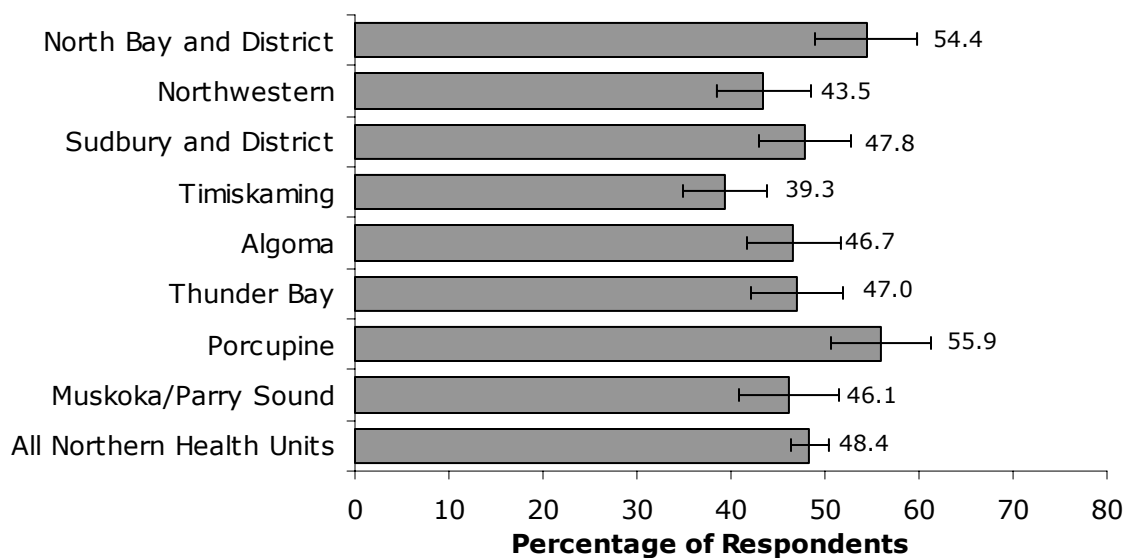
Table 1. Descriptive statistics of the survey population (unweighted data)

| Health Unit | Number of Respondents | Age of Mothers at Time of Survey: Mean Age (Range of ages) | Age of Children at Time of Survey: Mean | Percentage of Female Children |
|------------------------|-----------------------|--|---|-------------------------------|
| North Bay and District | 460 | 30.9 (18 - 50) | 2.0 | 52.0 |
| Northwestern | 397 | 31.1 (17 - 50) | 2.4 | 48.4 |
| Sudbury and District | 441 | 31.2 (18 - 58) | 2.1 | 46.9 |
| Timiskaming | 396 | 30.8 (16 - 55) | 2.5 | 51.0 |
| Algoma | 451 | 31.1 (17 - 50) | 1.9 | 45.2 |
| Thunder Bay | 447 | 31.5 (17 - 57) | 2.0 | 47.4 |
| Porcupine | 400 | 29.7 (17 - 55) | 2.0 | 49.5 |
| Muskoka-Parry Sound | 421 | 31.5 (18 - 47) | 2.1 | 44.7 |
| Total | 3413 | 31.0 (16 - 58) | 2.1 | 48.1 |

AWARENESS, EDUCATION AND SUPPORT OF MOTHERS DURING PREGNANCY

A mother's awareness of resources and specific education acquired about breastfeeding affect a mother's decision regarding breastfeeding initiation. This section focuses on mothers' attendance at pre-natal classes and awareness of available community resources. Figure 1 gives the percentage of respondents who had pre-natal classes available in their community and attended pre-natal classes. Across all northern health units, 48.4% of respondents who had access to pre-natal classes attended the classes.

Figure 1. Percentage of respondents* who had prenatal classes available in their community and who attended prenatal classes, by health unit



*7.6% of respondents did not have prenatal classes offered in their area and were excluded for this analysis.

There are several resources offered by public health units and community resources for mothers that offer breastfeeding education and support. Respondents were asked "During your pregnancy, were you aware of, or did you become aware of, any of the following community resources: the 'Health Babies Healthy Children' program, public health nursing visits/telephone calls, breastfeeding mentorship programs, breastfeeding support drop-ins, well baby drop-ins, and the parent child information line?" Figures 2 through 7 give the percentage of respondents who were aware, or became aware during pregnancy, of the aforementioned community resources.

Overall, the three programs that respondents were most aware of were public health nursing visits/telephone calls, 67.0%, breastfeeding support drop-ins, 45.1%, and the Healthy Babies Healthy Children program, 43.2%. Please note that women could choose more than one reason about why they chose to breastfeed their baby. Respondents were less aware of the well baby drop-ins, 33.2%, the parent child information line, 31.8%, or the breastfeeding mentorship program, 24.1%. It is interesting to note that Timiskaming Health Unit has a much higher percentage of respondents, 57.1%, who were aware of the well baby drop-in resource compared to other health units. As well, Algoma Health Unit had double the awareness of the parent child information line, 63.9%, of the other northern health units. One caveat: the survey questions did not allow different program names that may be used in different communities, and this may have affected awareness ratings.

Figure 2. Percentage of respondents who were aware, or became aware during pregnancy, of the following community resource: Healthy Babies Healthy Children, by health unit

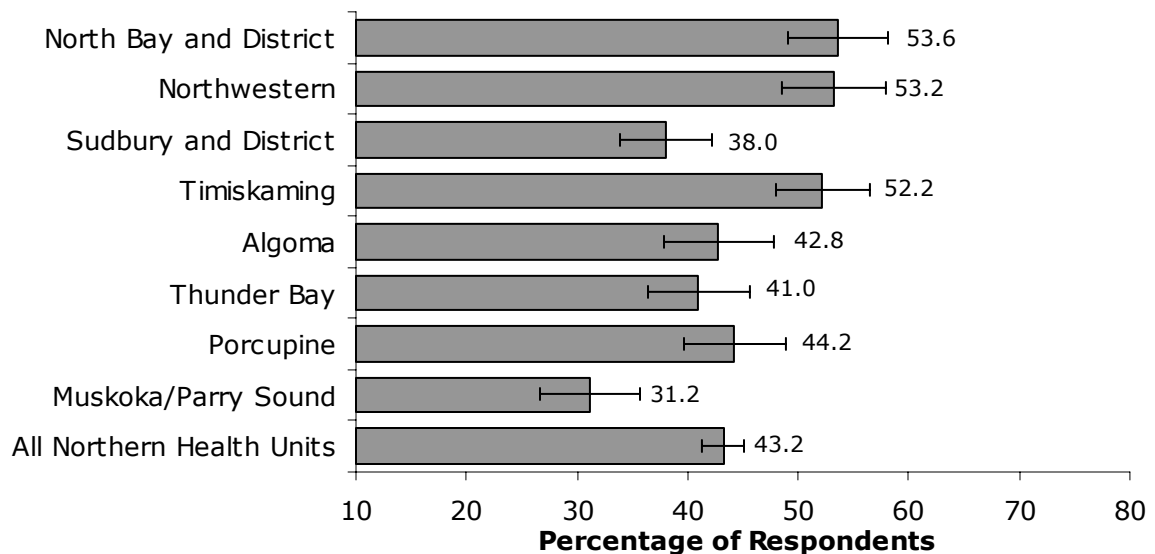


Figure 3. Percentage of respondents who were aware, or became aware during pregnancy, of the following community resource: public health nursing visits/telephone calls, by health unit

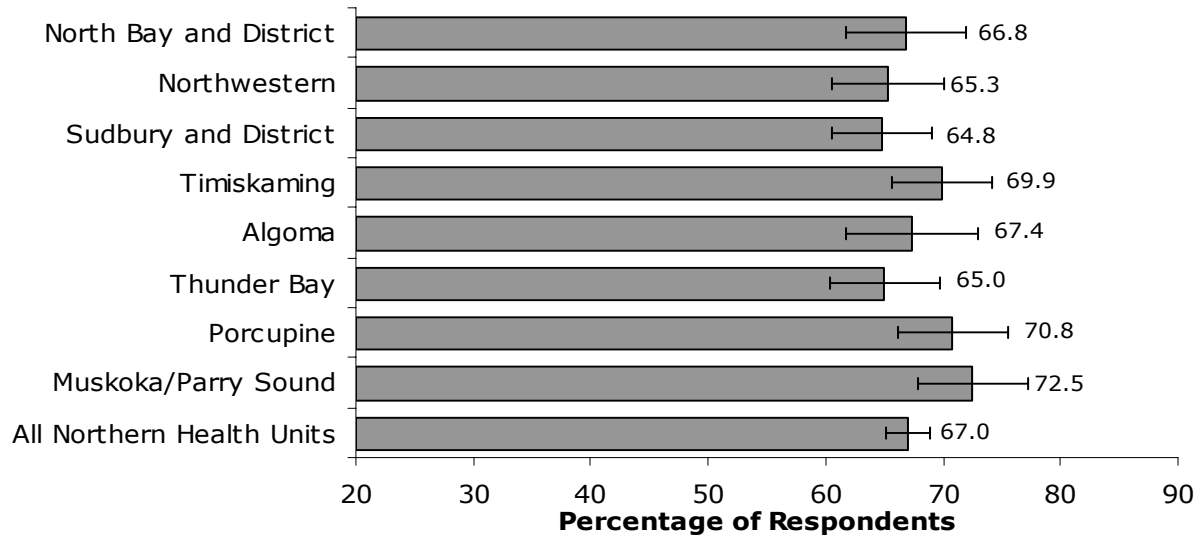


Figure 4. Percentage of respondents who were aware, or became aware during pregnancy, of the following community resource: breastfeeding mentorship program, by health unit

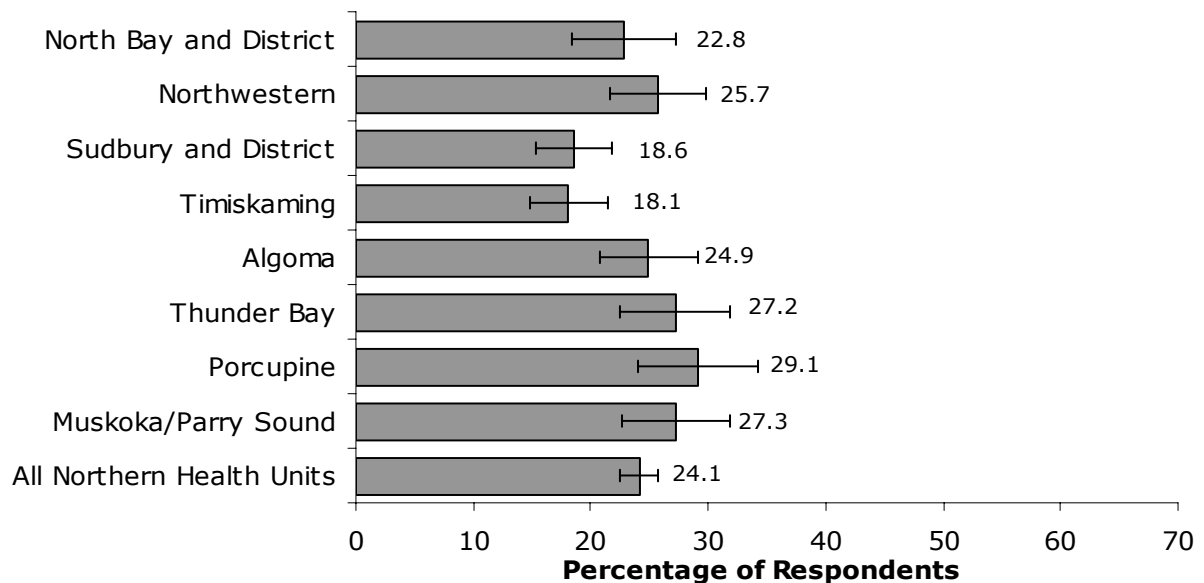


Figure 5. Percentage of respondents who were aware, or became aware during pregnancy, of the following community resource: breastfeeding support drop-ins, by health unit

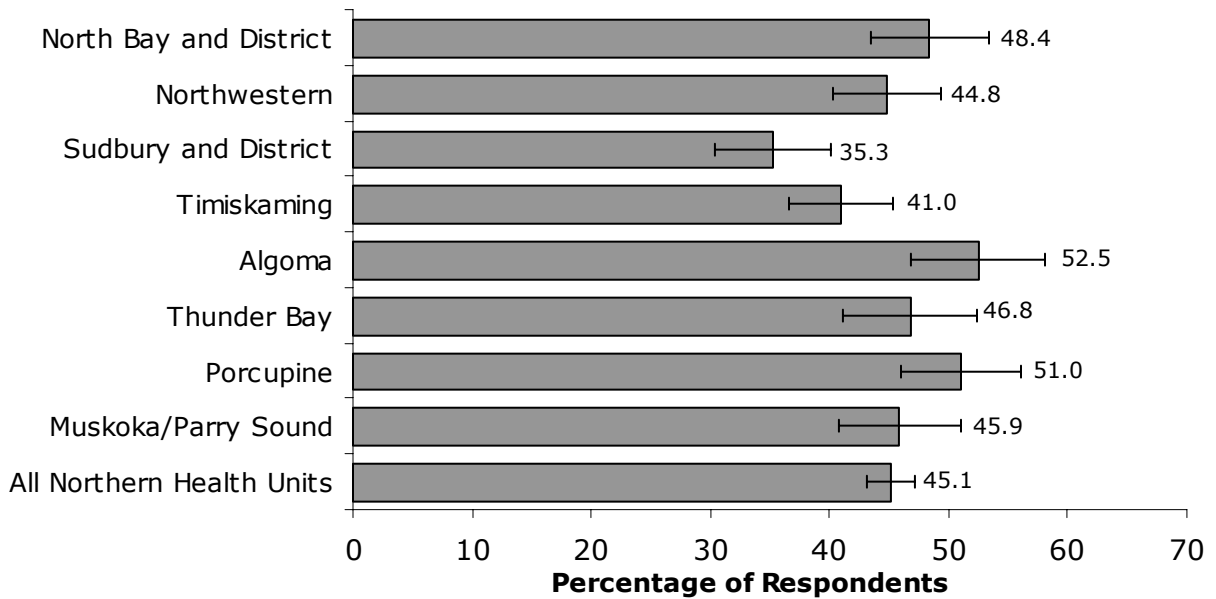


Figure 6. Percentage of respondents who were aware, or became aware during pregnancy, of the following community resource: Well baby drop-ins, by health unit

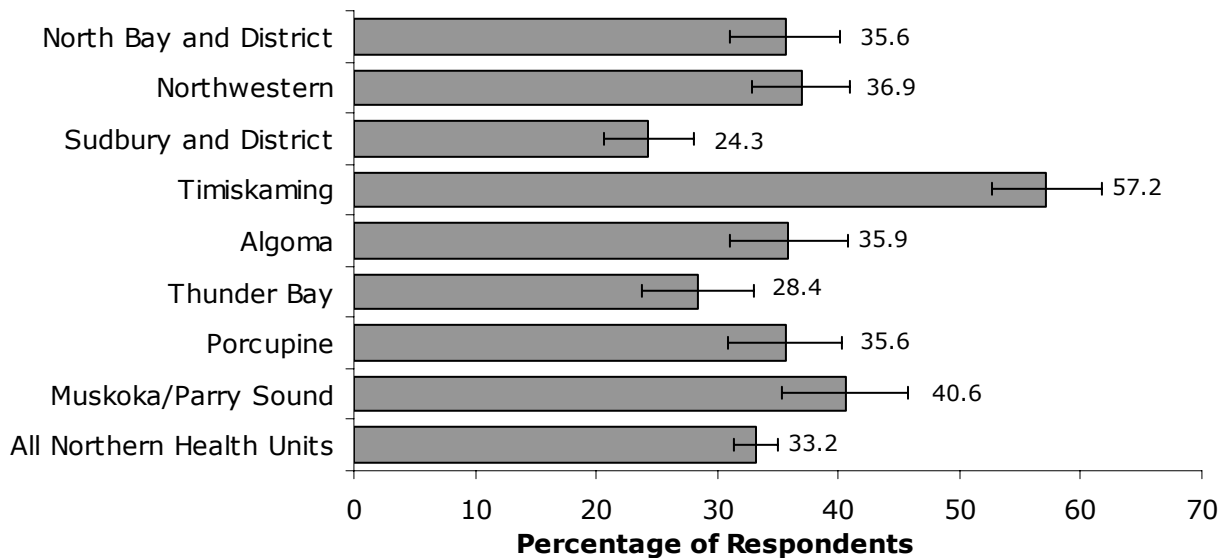
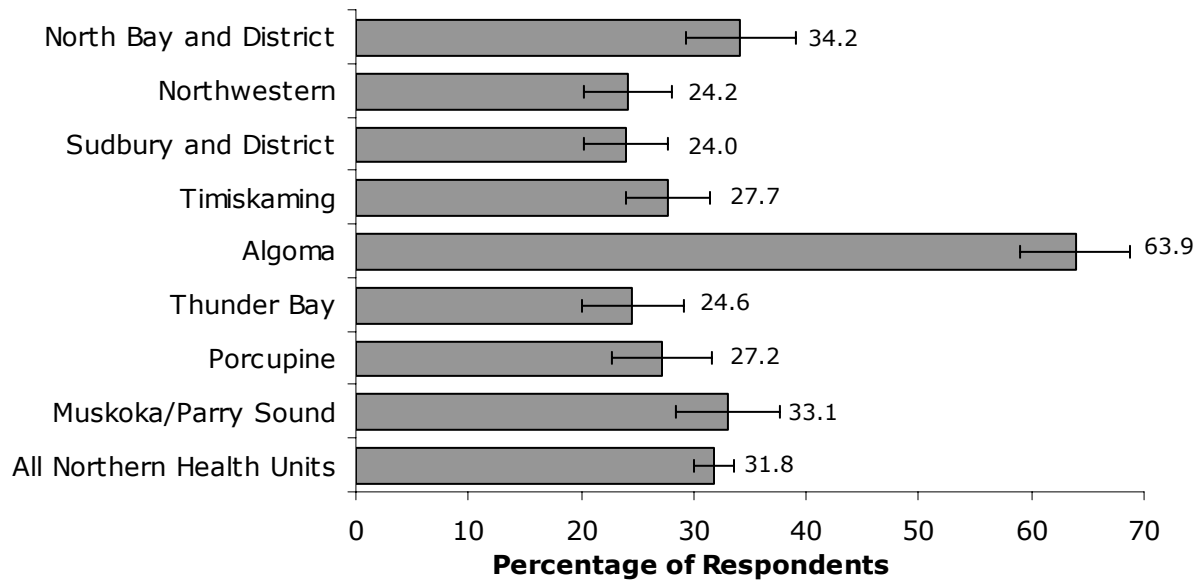


Figure 7. Percentage of respondents who were aware, or became aware during pregnancy, of the following community resource: parent child information line, by health unit



Several respondent characteristics, such as mother's age at infant's birth, total family income, education level, attendance at pre-natal classes, and language first learned and still understood, were analyzed in order to determine what type of respondents were more likely to be aware of these community resources. The community resource analyzed is the breastfeeding support drop-ins, as this program is very specific for breastfeeding support. As Table 2 indicates, age at time of breastfeeding, total family income, education level and attendance at pre-natal classes were all factors that affected the awareness of the respondent. Respondents who were younger, or had a lower income or education level, or who did not attend prenatal classes, or who were aboriginal were all less likely to be aware of the breastfeeding support drop-in community resource.

Table 2. How various respondent characteristics affect respondent awareness of the community resource: breastfeeding support drop-ins

| Respondent Characteristics | Were you aware of the community resource? Breastfeeding Support Drop Ins % (95% CI) |
|--|--|
| Mother's Age at Infant's Birth | |
| < 20 | 32.6 (25.4, 40.4) |
| 20-34 | 45.9 (44.0, 47.8) |
| 35 + | 45.2 (40.8, 49.6) |
| Income Categories | |
| < \$35,999 | 39.8 (36.6., 43.0) |
| \$36,000 and over | 48.0 (45.8, 50.2) |
| Income not indicated* | 43.7 (39.6, 47.8) |
| Education Categories | |
| Public school or less | N/A** |
| Some or all of high school | 42.6 (39.4, 45.8) |
| Some college or university | 42.4 (37.9, 46.9) |
| Completed college or university | 47.3 (45.1, 49.5) |
| Pre-natal Classes | |
| Respondents who attended pre-natal classes | 48.3 (45.8, 50.8) |
| Respondents who did not attend pre-natal classes | 45.0 (42.6, 47.4) |
| Pre-natal classes not available | 26.4 (21.0, 31.8) |
| Language First Learned and Still Understood | |
| English | 45.2 (43.4, 47.1) |
| French | 45.5 (41.3, 49.7) |
| Other | 41.0 (34.3, 47.7) |

* Note that 12% of respondents did not indicate an income category

**N/A indicates that cell counts were less than 30.

BREASTFEEDING INITIATION

Respondents were asked how they were feeding their infant (target child) in the first 48 hours after birth. The breastfeeding initiation rates for all northern health units between the years 1995 through to 2002 are illustrated in Figure 8. There was insufficient data to report individual health units' breastfeeding initiation rates for each year from 1995 through to 2002. It appears that breastfeeding initiation rates are increasing slightly over time in Northern Ontario.

Figure 8. Percentage of respondents who chose to breastfeed during the first 48 hours (1995-2002), all northern health units

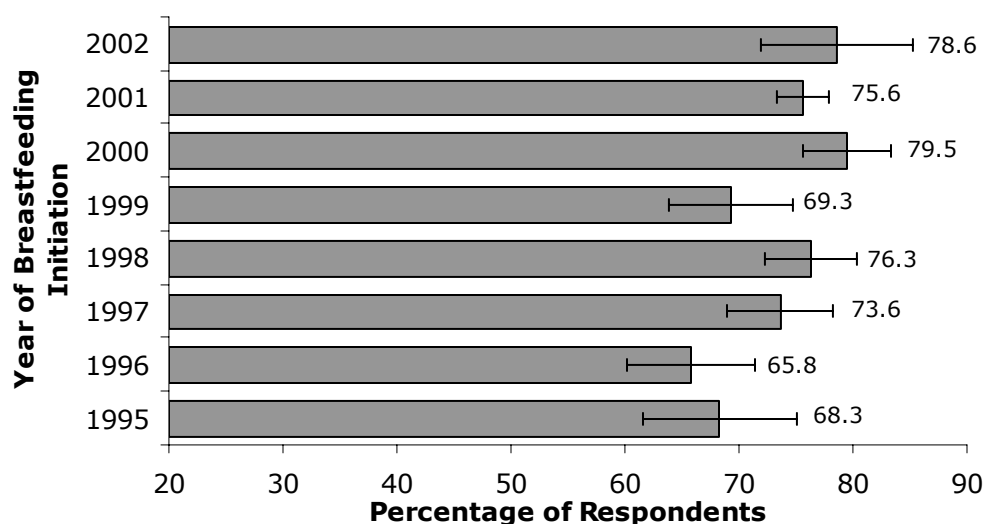


Figure 9 illustrates the breastfeeding initiation rates for each northern health unit for the years 2000-2002. Analyzing only the years 2000 through to 2002 breastfeeding initiation rates gives a more accurate view of the current breastfeeding practice in Northern Ontario, as breastfeeding rates have changed over time (refer to Figure 8). During the years 2000 through to 2002, the percentage of respondents in Northern Ontario that chose to breastfeed their babies was 77.2%.

Figure 9. Percentage of respondents with children born in 2000 – 2002 who breastfed in the first 48 hours after birth, by health unit

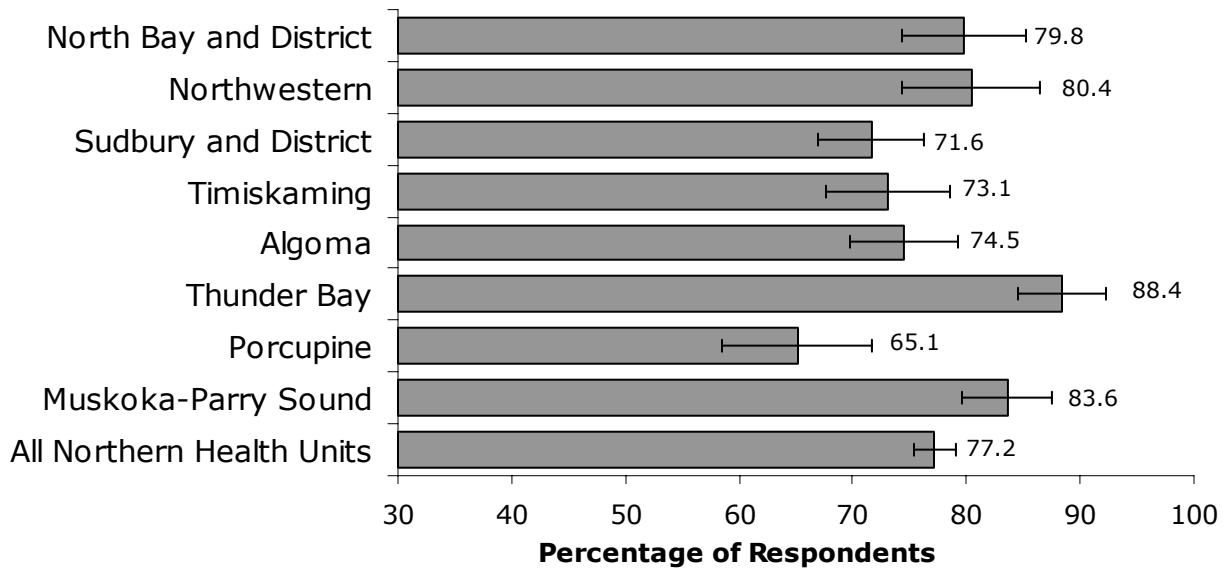
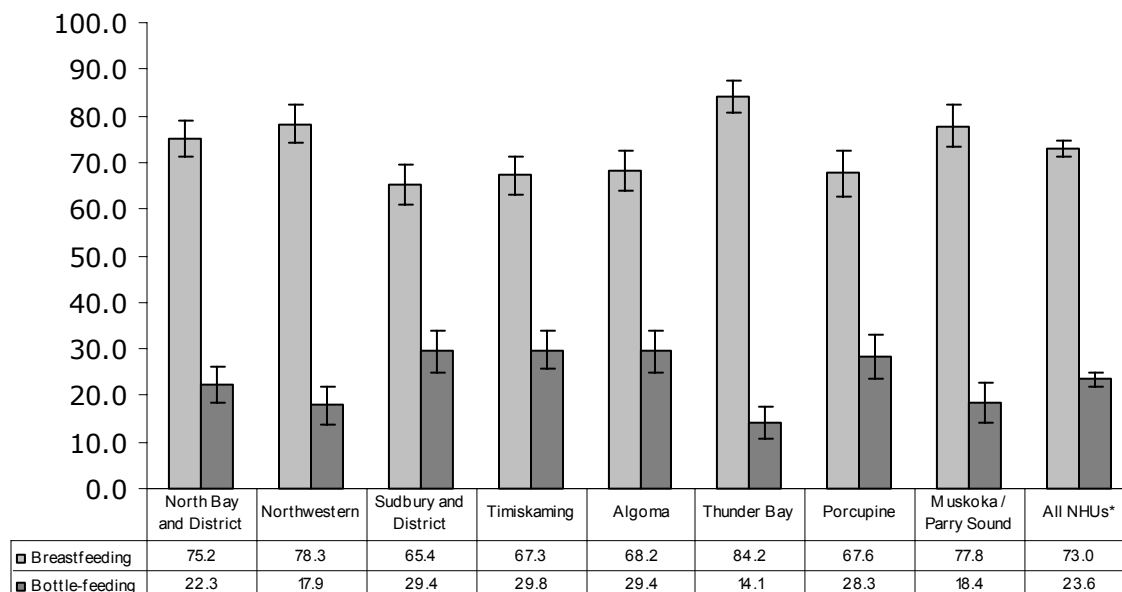


Figure 10 displays the percentage of respondents that exclusively breastfed or bottle-fed within the first 48 hours after the target child’s birth. Overall within all of Northern Ontario, more women are choosing to only breastfeed (73.0%) rather than to only bottle-feed (23.6%) their infants within the first 48 hours.

Figure 10. Percentage of respondents breastfeeding or bottle-feeding within the first 48 hours after the target child's birth, by health unit



* All NHUs refers to 'All Northern Health Units'

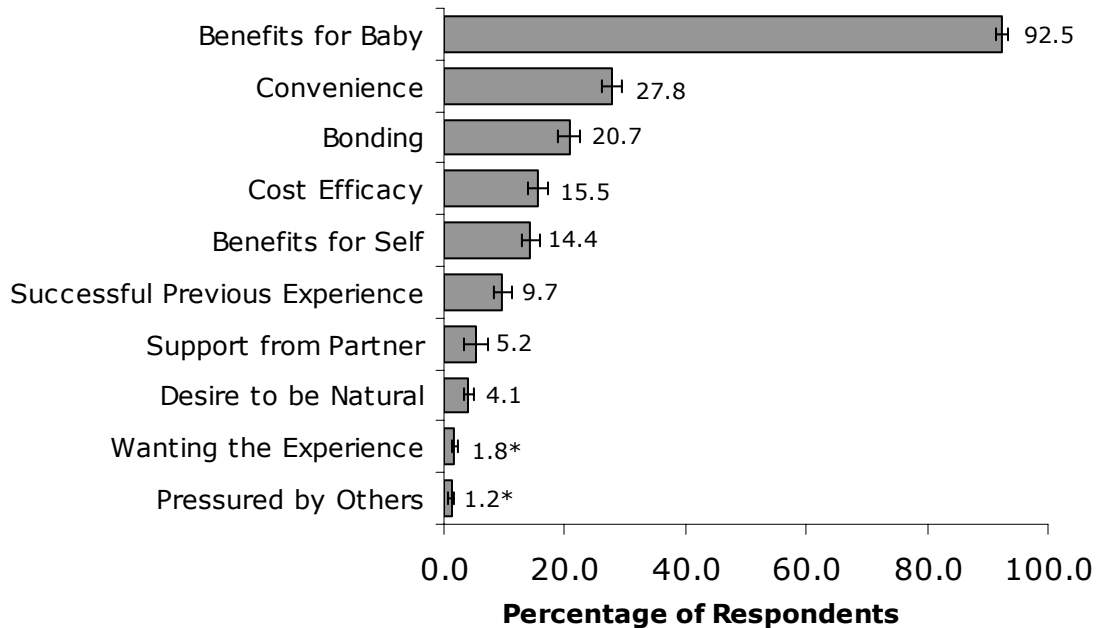
Table 3 displays the top three reasons why women chose to breastfeed their babies: benefits for baby, convenience, and bonding. Please note that women were able to choose more than one of why they chose to breastfeed their babies. The most common reason reported for mother's choosing to breastfeed was to benefit her baby (92.5%), followed distantly by convenience and bonding (27.8% and 20.7%, respectively).

Table 3. Top three reasons why women chose to breastfeed, all northern health units

| Health Unit | Top Three Reasons why Women Chose to Breastfeed, n = 2585 % (95% CI) | | |
|----------------------------------|--|------------------------------|------------------------------|
| | Benefits for Baby | Convenience | Bonding |
| North Bay and District | 94.1 (91.4, 96.7) | 29.2 (24.2, 33.9) | 23.5 (19.0, 28.0) |
| Northwestern | 90.7 (87.5, 93.8) | 29.6 (24.8, 34.4) | 19.7 (15.5, 23.8) |
| Sudbury and District | 93.4 (90.7, 96.2) | 33.0 (27.6, 38.4) | 29.2 (23.7, 34.6) |
| Timiskaming | 92.2 (89.2, 95.2) | 25.8 (21.2, 30.4) | 23.8 (19.5, 28.2) |
| Algoma | 93.2 (90.0, 96.3) | 25.6 (20.3, 30.9) | 14.0 (10.0, 18.0) |
| Thunder Bay | 93.3 (90.9, 95.7) | 24.2 (19.4, 29.0) | 15.2 (11.8, 18.6) |
| Porcupine | 92.0 (88.3, 95.6) | 24.7 (19.1, 30.3) | 22.5 (17.0, 28.0) |
| Muskoka/Parry Sound | 88.9 (84.8, 93.0) | 28.0 (22.4, 33.7) | 17.2 (13.2, 21.2) |
| All Northern Health Units | 92.5 (91.5, 93.6) | 27.8 (26.0, 29.6) | 20.7 (19.0, 22.4) |

There were also other reasons, although less common, why women chose to breastfeed their babies (Figure 12). These reasons included cost efficacy, benefits for self, successful previous breastfeeding experience, support from partner, desire to be natural, wanting the experience, and pressured by others. As there was insufficient data to display these other reasons for each health unit, results are presented for all northern health units.

Figure 11. Reasons why women chose to breastfeed, all northern health units



*indicates high sampling variability and results should be interpreted with caution

Factors Affecting Breastfeeding Initiation Rate

There are several different factors that may influence a woman’s choice to breastfeed her baby, including her age, total family income, her education levels, marital status, attendance at pre-natal classes, and language first learned and still understood, see Table 4. Women who were single/divorced/widowed were less likely to initiate breastfeeding. Women with incomes below \$27,000, and especially below \$17,000, had the lowest breastfeeding rates (67.4% and 60.2%, respectively). Women who had education levels of public school or less, or some or all of high school showed, or spoke French as their first childhood language, showed lower breastfeeding initiation rates. Lastly, women who did not attend pre-natal classes were less likely to initiate breastfeeding.

Table 4. Respondents characteristics that may influence breastfeeding initiation

| Respondent Characteristics | Respondents who initiated breastfeeding % (95% CI) |
|--|---|
| Mother's Age at Infant's Birth | |
| < 20 | 65.1 (57.4, 72.8) |
| 20-34 | 74.1 (72.5, 75.7) |
| 35 + | 72.6 (68.6, 76.6) |
| Marital Status | |
| Single/Divorced/Widowed | 63.1 (58.6, 67.6) |
| Married or Common Law | 74.7 (73.1, 76.3) |
| Income Categories | |
| \$60,000 and over | 74.7 (72.1, 77.3) |
| \$45,000 to \$59,999 | 76.5 (72.7, 80.1) |
| \$36,000 to \$44,999 | 75.3 (70.5, 80.1) |
| \$27,000 to \$35,999 | 75.4 (70.9, 79.9) |
| \$17,000 to \$26,999 | 67.4 (62.1, 72.7) |
| Less than \$17,000 | 60.2 (54.1, 66.3) |
| Income not indicated* | 72.2 (69.4, 76.8) |
| Education Categories | |
| Public school or less | 56.7 (39.0, 74.4) |
| Some or all of high school | 65.2 (62.2, 68.3) |
| Some college or university | 71.3 (67.2, 75.4) |
| Completed college or university | 77.2 (75.4, 79.0) |
| Pre-natal classes | |
| Respondents who attended pre-natal classes | 79.0 (77.0, 81.0) |
| Respondents who did not attend pre-natal classes | 69.1 (67.2, 71.6) |
| Pre-natal classes not available | 61.5 (56.1, 68.1) |
| Language First Learned and Still Understood | |
| English | 74.5 (72.8, 76.2) |
| French | 64.8 (60.7, 68.9) |
| Other | 76.2 (70.4, 82.0) |

* Note that 12% of respondents did not indicate an income category.

Supports for Breastfeeding Initiation

The survey included questions about respondents' sources of support for breastfeeding initiation from and how helpful that support was. Figures 12 through to 15 show the percentage of respondents who received support for the way they chose to feed their baby, whether by breast or bottle, from their baby's doctor, spouse/partner, family and friends, and a lactation consultant. For all northern health units, respondents received the most support for the way they chose to feed their baby from family and friends, 90.9%, and their spouse/partner, 90.2%, followed by 78.7% from their baby's doctor and finally only 26.5% from a lactation consultant. Please note that there are relatively few lactation consultants in Northern Ontario. Therefore, the low percentage of mothers receiving support for the way they chose to feed their baby is likely a result of the low numbers of lactation consultants available for women.

Figure 12. Percentage of respondents who received support for the way they chose to feed their baby from their baby's doctor, by health unit

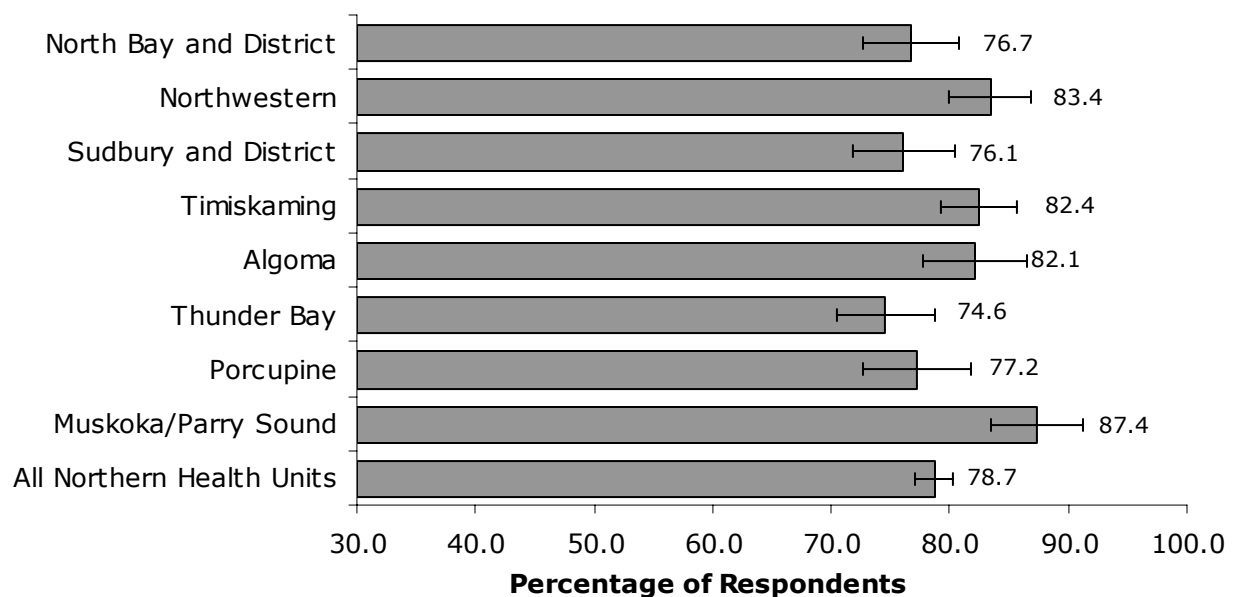


Figure 13. Percentage of respondents who received support for the way they chose to feed their baby from their spouse/partner, by health unit

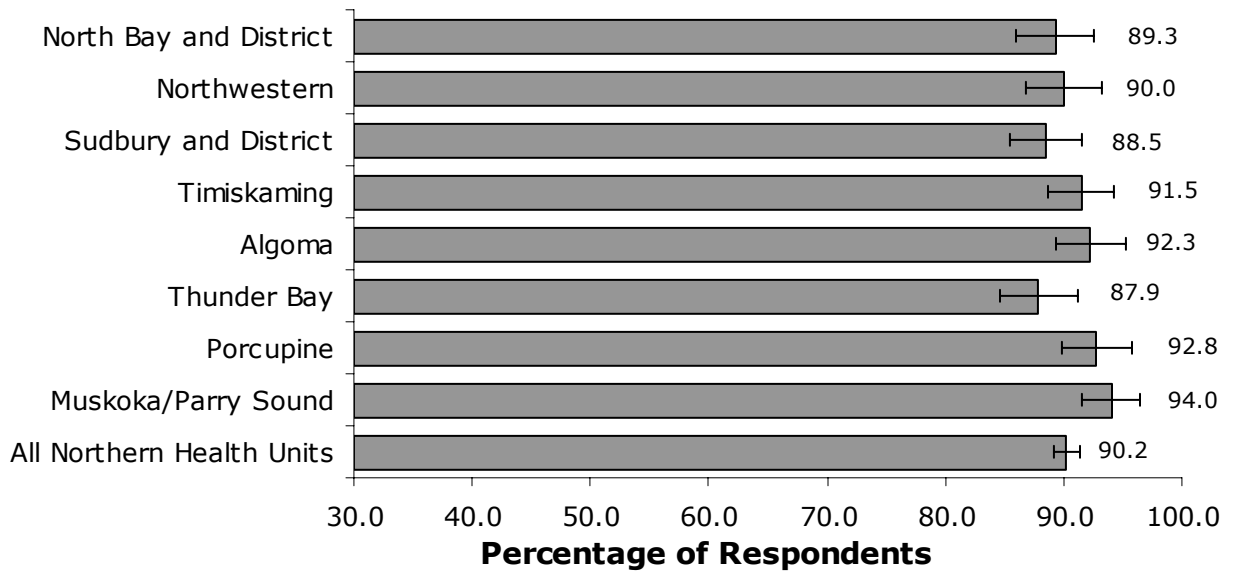


Figure 14. Percentage of respondents who received support for the way they chose to feed their baby from their family/friends, by health unit

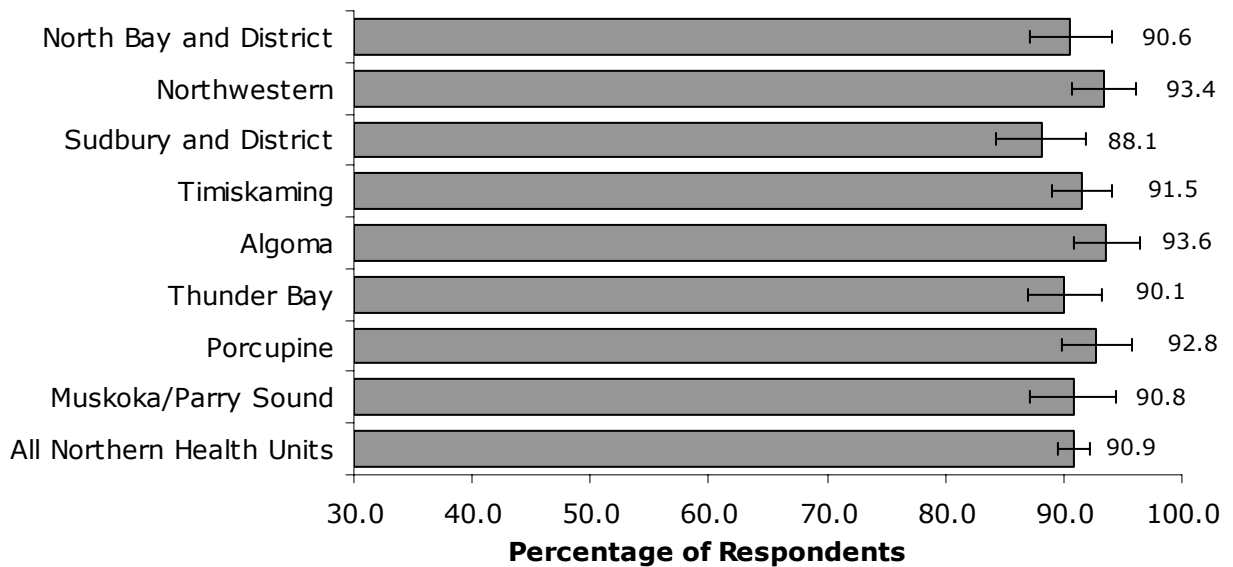


Figure 15. Percentage of respondents who received support for the way they chose to feed their baby from their lactation consultant, by health unit

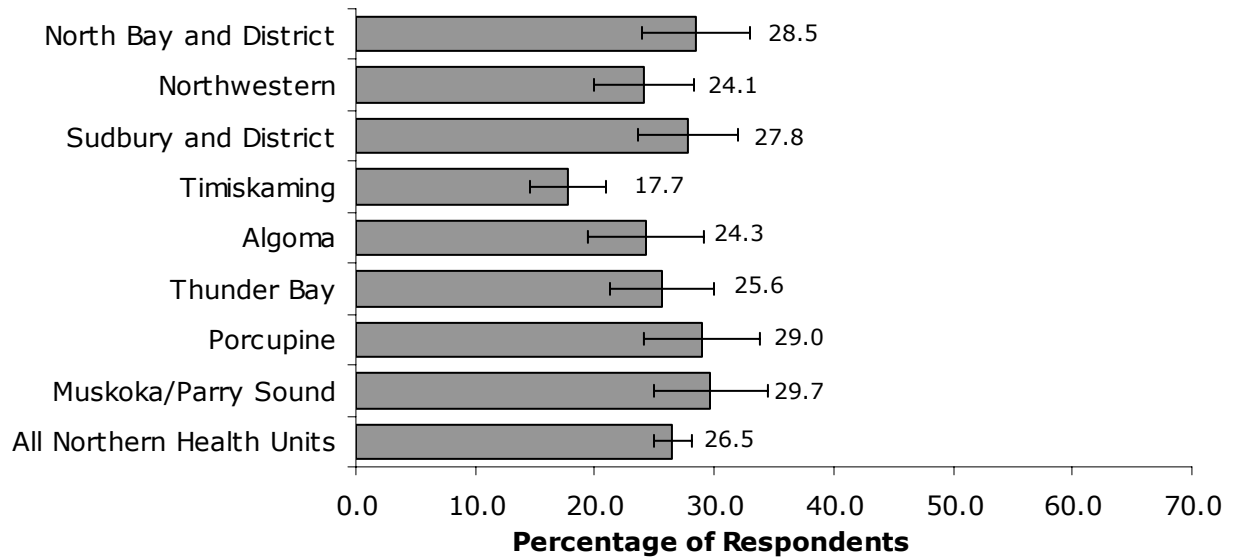


Table 5 displays various factors (mother's age at time of birth, total family income levels, education levels, language first learned and still understood, and marital status) that may affect which women receive support (from a lactation consultant) for the way they chose to feed their baby. Mothers who had some post-secondary education or attended pre-natal classes were more likely to receive support from a lactation consultant.

Table 5. Respondent characteristics which may influence the type of woman consulting a lactation consultant

| Respondent Characteristics | Respondents who had support from a lactation consultant % (95% CI) |
|--|---|
| Mother's Age at Infant's Birth | |
| < 20 | 24.2 (17.3, 31.1) |
| 20-34 | 26.6 (25.0, 28.4) |
| 35 + | 27.4 (23.4, 31.4) |
| Marital Status | |
| Single/Divorced/Widowed | 27.0 (24.5, 28.6) |
| Married or Common Law | 23.6 (19.7, 27.5) |
| Income Categories | |
| < \$36,000 | 25.0 (22.2, 27.8) |
| \$36,000 and over | 28.2 (26.2, 30.2) |
| Income Not Indicated* | 23.2 (19.7, 26.7) |
| Education Categories | |
| High school or less | 21.9 (19.2, 24.6) |
| Post-secondary | 28.2 (26.5, 30.1) |
| Pre-natal Classes | |
| Respondents who attended pre-natal classes | 36.8 (34.4, 39.2) |
| Respondents who did not attend pre-natal classes | 19.0 (17.0, 20.8) |
| Pre-natal classes not available | 13.6 (9.6, 18.0) |
| Language First Learned and Still Understood | |
| English | 26.4 (24.7, 28.1) |
| French | 27.5 (23.7, 31.3) |
| Other | 24.9 (19.0, 30.8) |

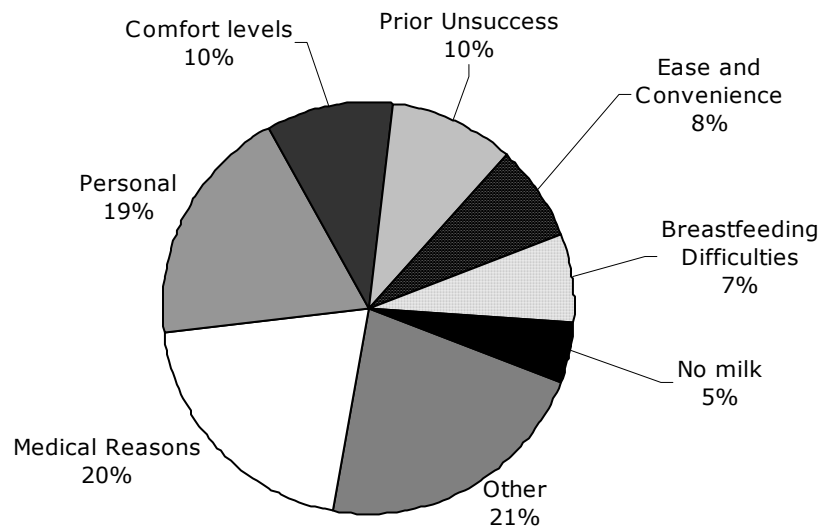
* Note that 12% of respondents did not indicate an income category.

FORMULA-FEEDING

Figure 16 displays the reasons why women chose to bottle-feed their babies (n= 793). Twenty percent of the women who bottle-fed did so because of

medical reasons (including being unable to produce milk, having c-sections, premature babies, and adoption of babies), for 19% of women it was a personal choice, 10% of women had a previously unsuccessful experience with breastfeeding, and 10% of women felt uncomfortable with the idea of breastfeeding. The 'other' reasons listed in Figure 16 of why women chose to bottle-feed include: difficulties with breastfeeding, lack of education and support for breastfeeding initiation, mothers who felt they were too young, or thought bottle-feeding was easier, more convenient or more beneficial for the child, did not enjoy breastfeeding, were too busy with other children, or had a desire to have spouses/partners/other family members involved with all aspects of the new baby, including feeding.

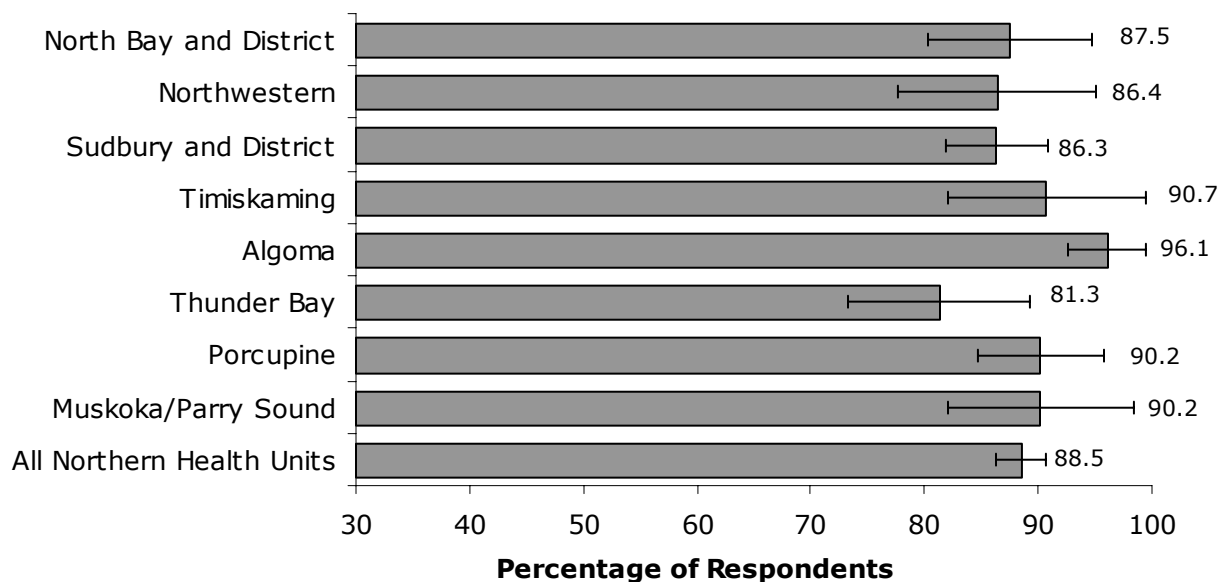
Figure 16. Reasons why women chose to breastfeed, all northern health units, n = 793



Mothers who decided to bottle feed in the first 48 hours (n=806) were asked if they were shown how to prepare formula either in hospital or by a midwife. For all northern health units, only 28.2% of mothers who chose to bottle-feed were actually shown by a nurse or midwife how to prepare formula (results not shown).

Figure 17 displays the percentage of respondents who chose to bottle-feed who felt somewhat or very confident about bottle-feeding their baby after they were discharged from the hospital. Even though only 28.2% of respondents were shown how to prepare formula, 88.5% of respondents felt somewhat or very confident about bottle-feeding their babies when they left the hospital.

Figure 17. Percentage of respondents who felt 'somewhat or very confident' about bottle-feeding their baby after discharge from hospital, n = 793, by health unit



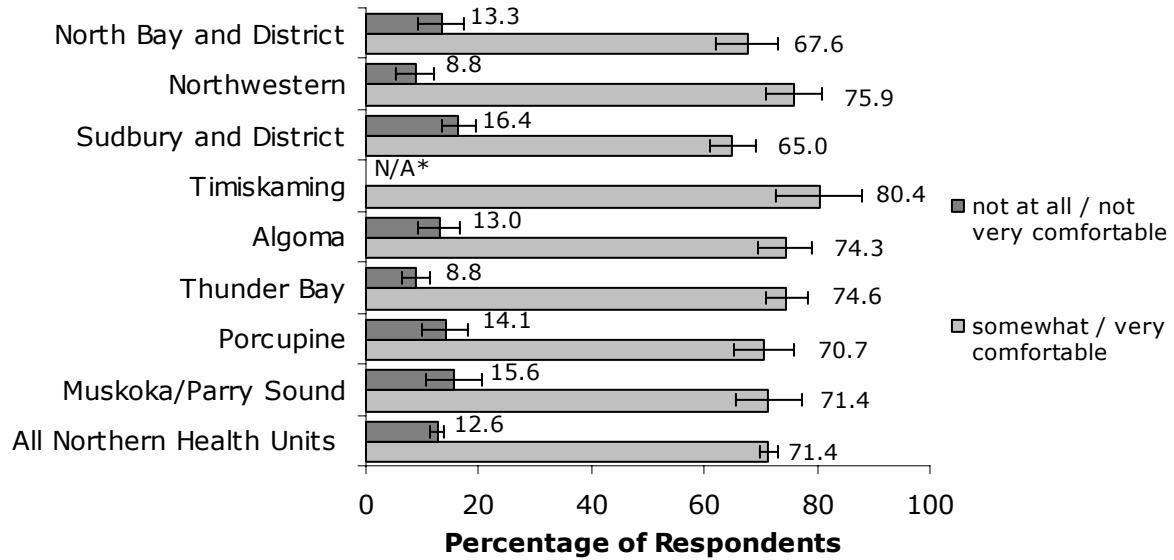
BREASTFEEDING DURATION

Breastfeeding confidence levels when women leave the hospital

Upon hospital discharge, respondents were asked to describe their degree of comfort, shortly after the birth, with the following aspects of breastfeeding: positioning of the baby at the breast, baby's latching (baby's mouth joining the breast), recognizing baby's cues, and recognizing signs that the baby is feeding adequately. The responses to each of these issues by health unit are presented in Figures 18 to 21.

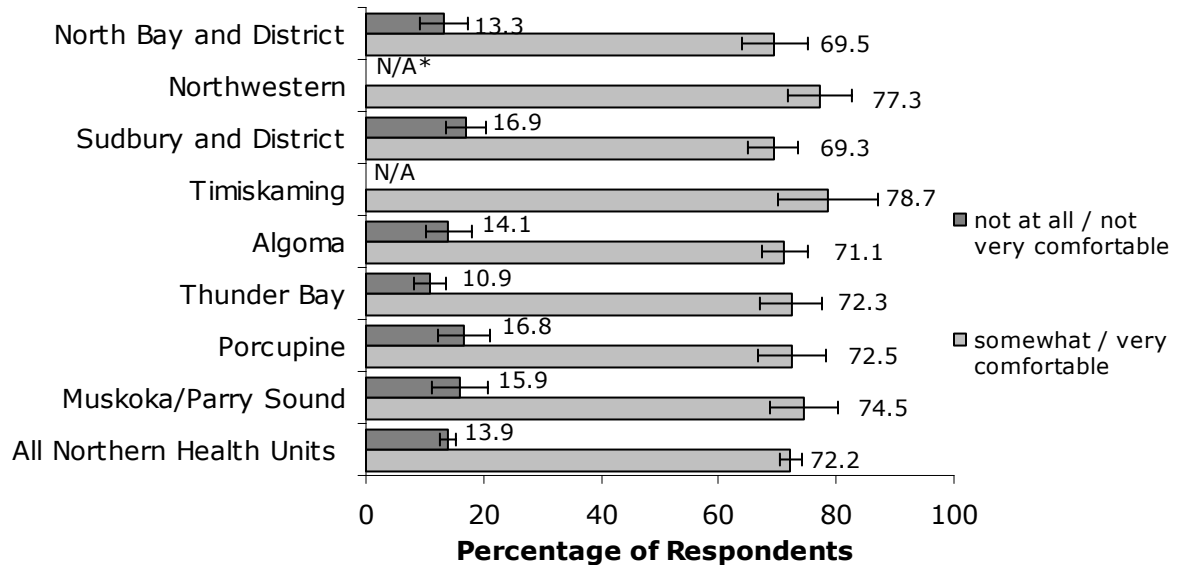
Many respondents felt comfortable with the positioning of the baby at the breast, 71.4%, compared to only 12.6% who did not feel comfortable (Figure 18). Similar results were seen for respondents feeling comfortable or not comfortable for baby's latching, 72.2% and 13.9%, respectively (Figure 19). For all northern health units, 82.9% of respondents felt comfortable recognizing baby's cues, 87.3%, with only 3.0% not feeling comfortable, and slightly less respondents, 79.8% felt comfortable with recognizing signs that the baby was fed adequately with only 6.4% not feeling comfortable (Figures 20 and 21).

Figure 18. Percentage of respondents who felt 'not at all / not very comfortable' and 'somewhat / very comfortable' with the positioning of the baby at the breast, by health unit



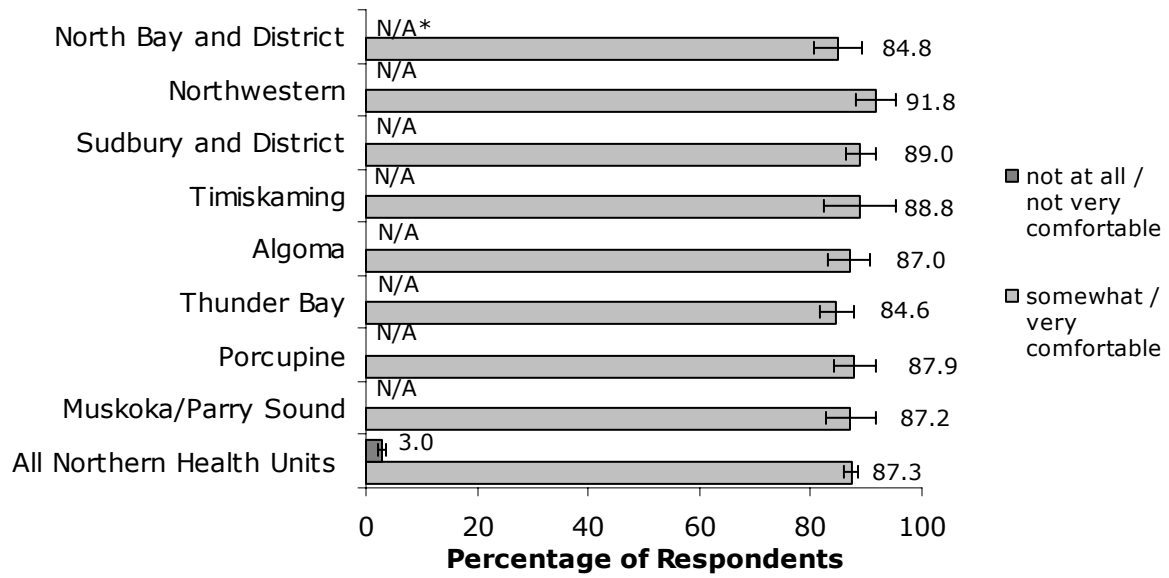
*N/A indicates that cell counts were less than 30.

Figure 19. Percentage of respondents who felt 'not at all / not very comfortable' and 'somewhat / very comfortable' with the baby's latching (baby's mouth joining the breast), by health unit



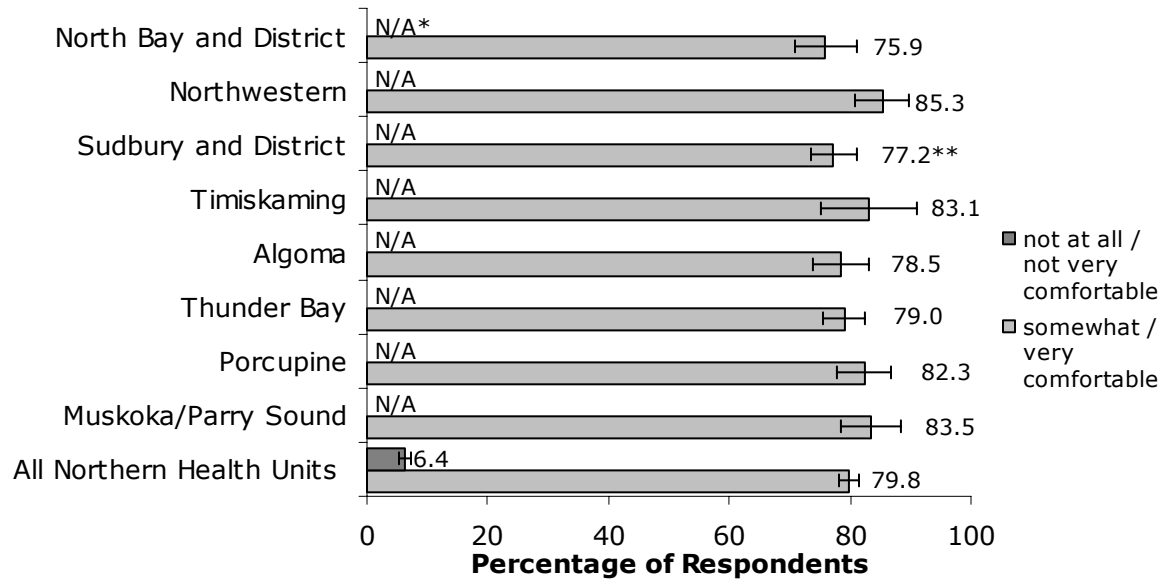
*N/A indicates that cell counts were less than 30.

Figure 20. Percentage of respondents who were 'not at all / not very comfortable' and 'somewhat / very comfortable' with recognizing their baby's cues, by health unit



*N/A indicates that cell counts were less than 30.

Figure 21. Percentage of respondents who were 'not at all / not very comfortable' and 'somewhat / very comfortable' with recognizing signs that baby is fed adequately, by health unit

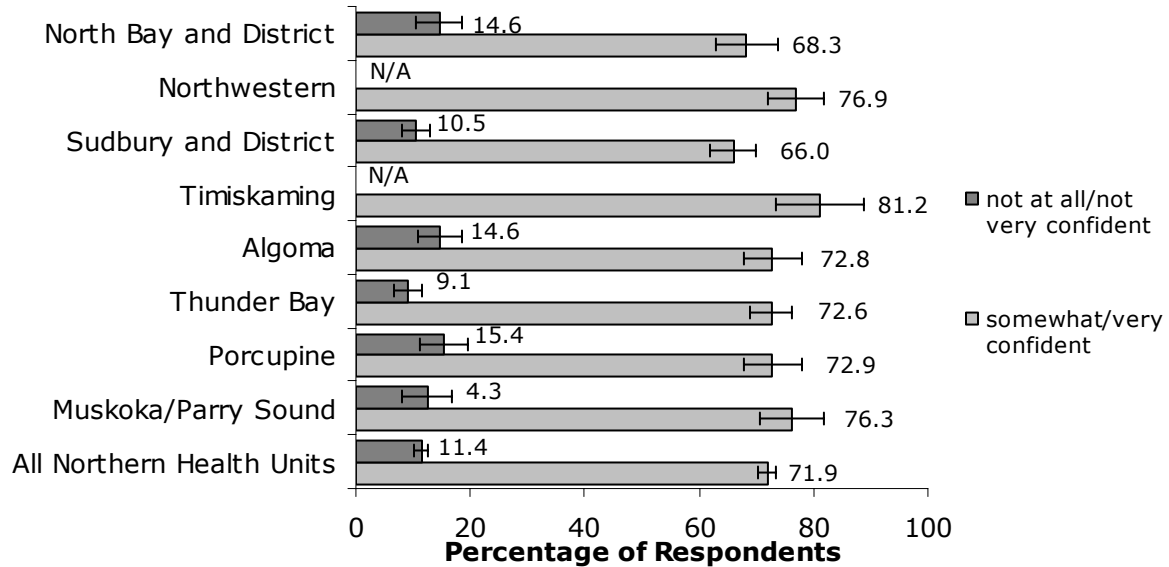


* N/A indicates that cell counts were less than 30.

**Please note that there were 17.1% of respondents from the Sudbury and District Health Unit that did not know or refused to answer this question, and were coded as 'missing' and excluded from this analysis.

Figure 22 gives the percentage of respondents who were 'not all/not very confident' or 'somewhat or very confident' about breastfeeding in general after they were discharged from hospital. For all northern health units, 71.9% of respondents were confident about breastfeeding when they left the hospital, whereas only 11.4% of respondents were not at all or not very comfortable.

Figure 22. Percentage of respondents who were 'not at all / not very confident' and 'somewhat / very confident' about breastfeeding after discharge from hospital, by health unit



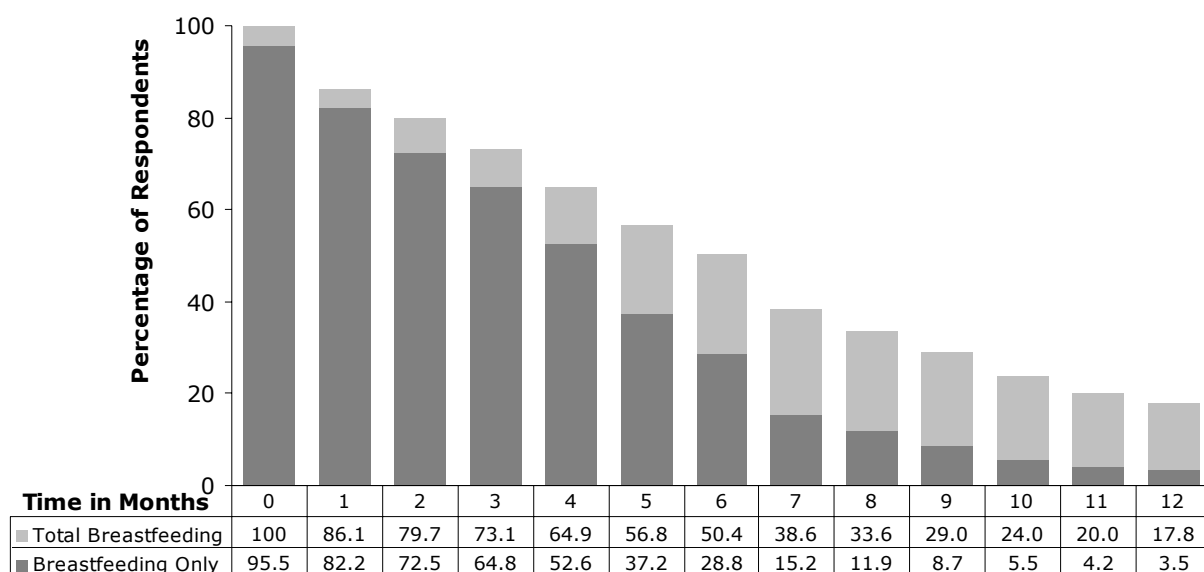
*N/A indicates that cell counts were less than 30.

A woman's confidence level about breastfeeding may affect her success with breastfeeding. Indeed, more women, 78.4%, who did not feel confident about breastfeeding, compared to only 18.7% of respondents who felt confident about breastfeeding after they left the hospital went on to have breastfeeding problems at home (results not shown). As well, women who were more confident about breastfeeding when they left the hospital breastfed on average longer (mean = 8.3 months) than those who were not confident (mean = 4.6 months) (results not shown).

Breastfeeding Duration

Respondents were asked for the total time they breastfed, which may have included supplementation with formula and/or other foods, as well the time they spent exclusively breastfeeding. Figure 23 presents the total percentage of respondents who were breastfeeding at various time intervals and the percentage who were breastfeeding exclusively at those intervals. At four months post-partum, 64.9% of respondents were still breastfeeding, but only 52.6% of respondents exclusively breastfed their infants until at least four months.

Figure 23. Total percentage of respondents who breastfed only and total who breastfed at all, at various time intervals, by health unit



Factors Affecting Breastfeeding Duration

Breastfeeding duration, with or without supplements, may be affected by a number of variables, including mother's age, education level, total family income, marital status, attendance at pre-natal classes, and language first learned and still understood. Table 6 displays the effect these variables have on respondents' total breastfeeding duration. Women who are older, or have more than a high school education, or first learned a language other than English or French, were all more likely to breastfeed longer.

Table 6. Factors affecting total breastfeeding duration, all northern health units

| Respondent Characteristics, n = 2585 | Mean Total Breastfeeding Duration (months) Mean (95% CI) |
|--|---|
| Mother's Age at Infant's Birth | |
| < 20 | 3.9 (3.2, 4.6) |
| 20-34 | 6.6 (6.3, 6.9) |
| 35 and over | 8.3 (7.5, 9.1) |
| Education Categories | |
| Respondents with high school education or less | 5.6 (5.2, 6.0) |
| Respondents with more than high school education | 7.1 (6.8, 7.4) |
| Income Categories | |
| < \$36,000 | 6.7 (6.2, 7.3) |
| \$36,000 and over | 6.8 (6.5, 7.1) |
| Income not indicated* | 6.5 (5.9, 7.1) |
| Marital Status | |
| Single/Divorced/Widowed | 6.0 (5.3, 6.7) |
| Married/Common law | 6.8 (6.5, 7.1) |
| Attendance of Pre-natal classes** | |
| Did not attend pre-natal classes | 6.9 (6.6, 7.3) |
| Attended pre-natal classes | 6.5 (6.2, 6.8) |
| Language First Learned and Still Understood | |
| English | 6.7 (6.4, 7.0) |
| French | 5.7 (5.1, 6.3) |
| Other | 8.8 (7.6, 10.0) |

* Note that 12% of respondents did not indicate an income category.

** Respondents who did not have pre-natal classes offered in their area (7.6%) were excluded from the analysis.

A mother's age, education level, total family income, marital status, attendance of pre-natal classes, and language first learned and still

understood, may also have an affect the length of time women exclusively breastfeed their infants. Table 7 displays the effect these variables have on respondents' breastfeeding only time. Women who are older or who are married/common-law are more likely to exclusively breastfeed longer compared to younger women, and women who are single.

Table 7. Factors affecting exclusive breastfeeding duration, all northern health units

| Respondent Characteristics, n = 2585 | Mean Breastfeeding Only Duration (months) Mean (95% CI) |
|--|--|
| Mother's Age at Infant's Birth | |
| < 20 | 3.1 (2.5, 3.7) |
| 20-34 | 4.0 (3.9, 4.1) |
| 35 and over | 4.6 (4.2, 5.0) |
| Education Categories | |
| Respondents with high school education or less | 3.9 (3.6, 4.2) |
| Respondents with more than high school education | 4.1 (4.0, 4.3) |
| Income Categories | |
| < \$36,000 | 3.9 (3.6, 4.2) |
| \$36,000 and over | 4.1 (3.9, 4.3) |
| Income not indicated* | 4.1 (3.8, 4.4) |
| Marital Status | |
| Single/Divorced/Widowed | 3.3 (3.0, 3.6) |
| Married/Common law | 4.1 (4.0, 4.2) |
| Attendance of Pre-natal classes** | |
| Did not attend pre-natal classes | 4.0 (3.8, 4.2) |
| Attended pre-natal classes | 4.2 (4.0, 4.4) |
| Language First Learned and Still Understood | |
| English | 4.0 (3.9, 4.1) |
| French | 4.0 (3.6, 4.4) |
| Other | 4.9 (4.4, 4.9) |

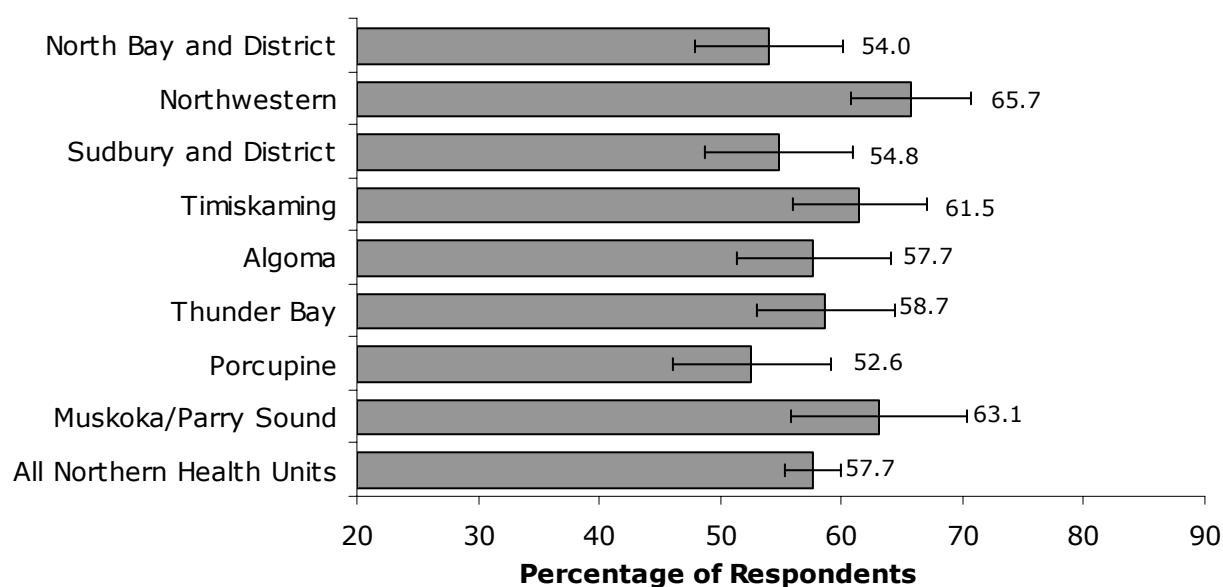
* Note that 12% of respondents did not indicate an income category

** Respondents who did not have pre-natal classes offered in their area (7.6%) were excluded from the analysis

BREASTFEEDING EXPECTATIONS

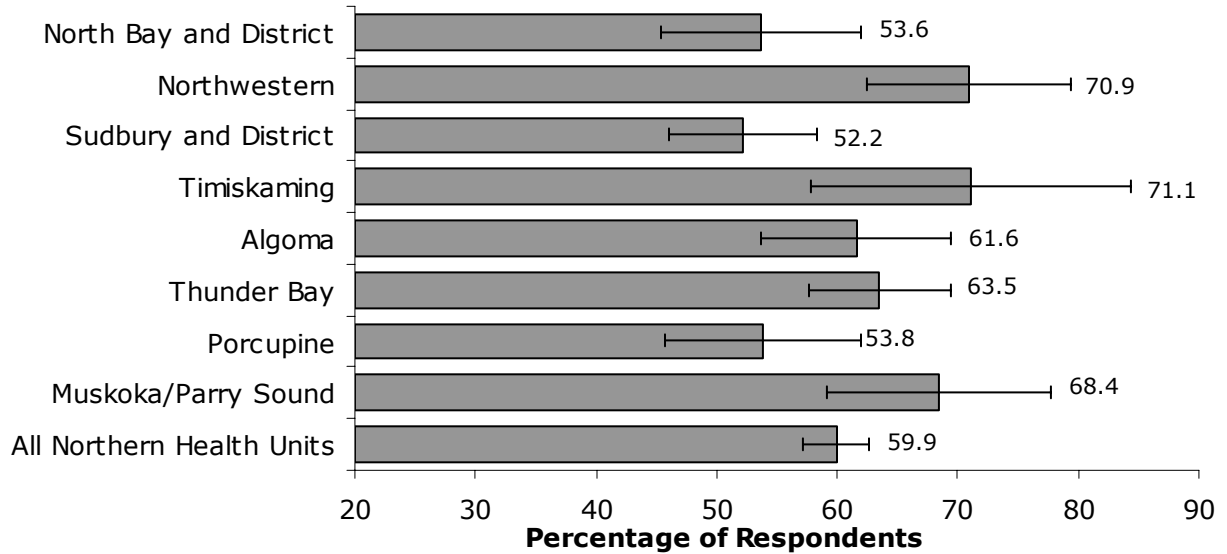
Due to a variety of reasons such as breastfeeding difficulties and having to return to work or school, many women stop breastfeeding before they actually intended to. Figure 24 displays the percentage of respondents who were able to continue breastfeeding for the length of time that they intended. Across all northern health units, 57.7% of respondents were able to breastfeed for the length they intended.

Figure 24. Percentage of respondents who were able to continue breastfeeding for the length of time they intended, by health unit



All women have different expectations of breastfeeding depending on whether or not they have breastfed before or have gained knowledge from prenatal classes or from other women who have breastfeeding experiences. If a woman has previously successfully breastfed an infant, she may expect that breastfeeding her current baby will be a success. Women who have never breastfed before may or may not expect difficulties with their breastfeeding experience. Figure 25 displays the percentage of respondents who 'somewhat or strongly agreed' that the expectations they had about breastfeeding were what they actually experienced. Overall, 57.5% of respondents had experiences that matched their expectations of breastfeeding.

Figure 25. Percentage of respondents who 'somewhat agreed' or 'strongly agreed' that the expectations they had about breastfeeding were what they actually experienced, by health unit



BREASTFEEDING PROBLEMS AT HOME

Some women experience problems with breastfeeding. Many different reasons may cause a women to cease breastfeeding, some of those being expected reasons, such as return to work or school, and some of those being unexpected reasons, such as difficulty with breastfeeding. Figure 26 shows that 30.3% of respondents across all northern health units experienced problems with breastfeeding. It is interesting to note that of the women whose expectations of breastfeeding were met, less of these women experienced breastfeeding problems, 26.0%, compared to 66.4% of women whose breastfeeding expectations were not met (results not shown). Women who attended pre-natal classes were also less likely to experience breastfeeding problems, 24.1%, than those who did not attend pre-natal classes, 37.5% (results not shown).

Figure 26. Percentage of respondents who experienced problems breastfeeding at home, by health unit

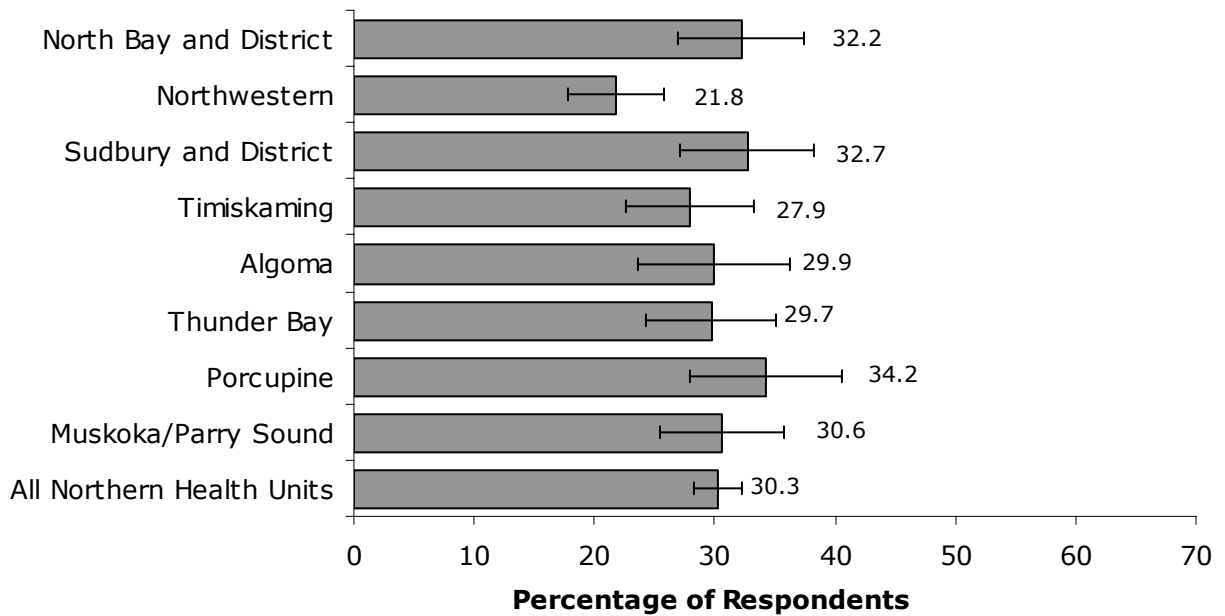
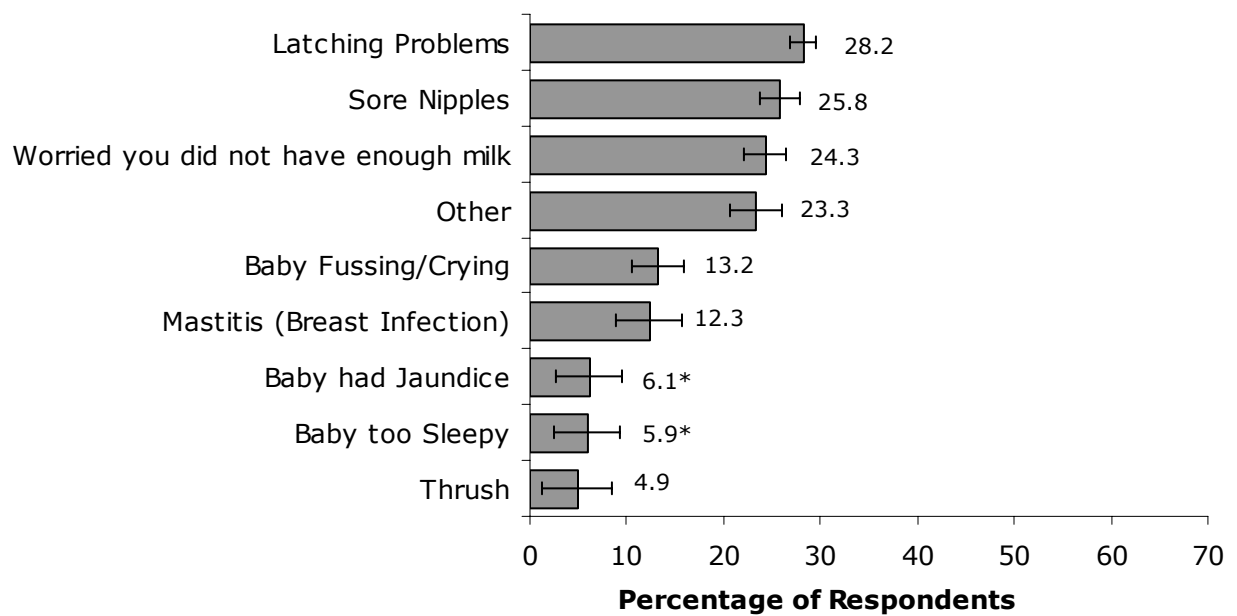


Figure 27 lists common problems that women experienced while breastfeeding at home. The three most common breastfeeding problems were latching problems, 28.2%, sore nipples, 25.8%, and the worry that respondents did not have enough milk, 24.3%. 'Other' problems include lack of knowledge or support, blocked milk ducts, illness in baby or mother, and infant preferring formula in a bottle over breast milk.

Figure 27. Problems that respondents experienced with breastfeeding at home, all northern health units

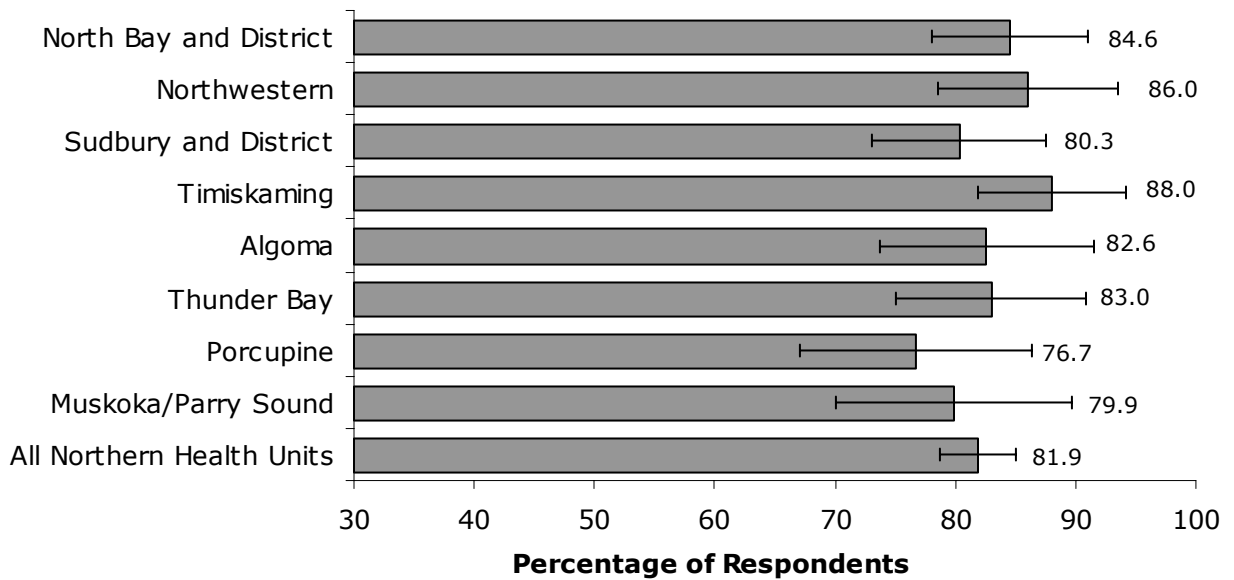


* indicates high sampling variability and results should be interpreted with caution

Breastfeeding Support for Problems at Home

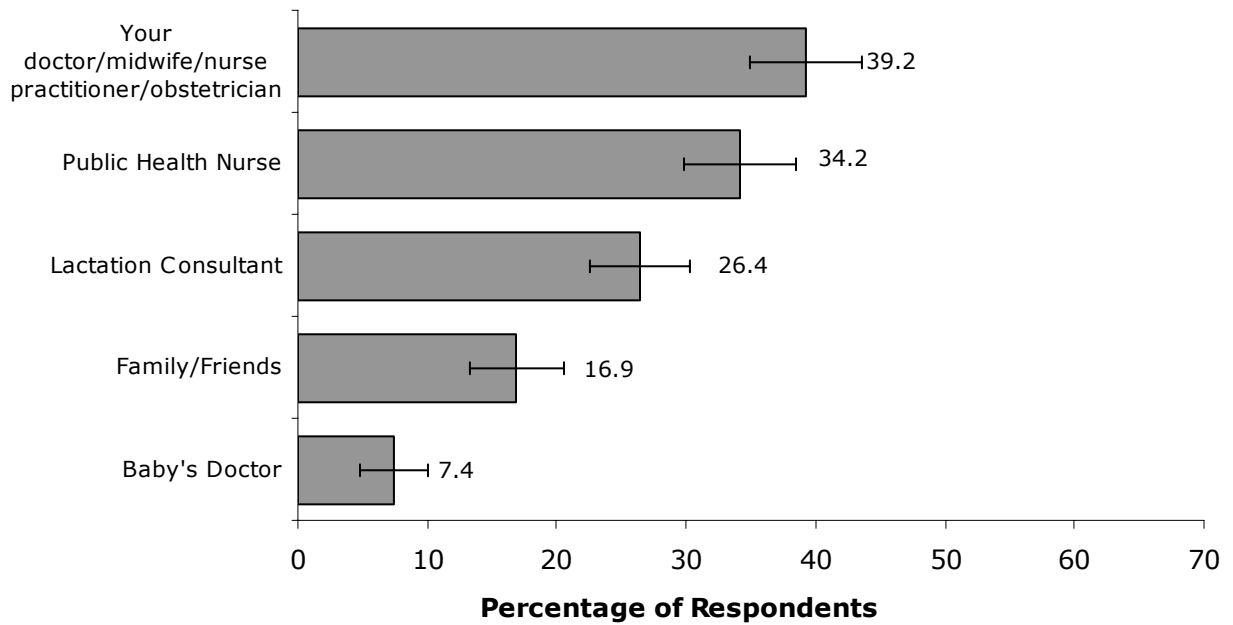
Figure 28 displays the percentage of respondents that sought help when they encountered breastfeeding problems at home. For all northern health units, 81.9% of respondents sought help when breastfeeding problems were encountered.

Figure 28. Percentage of respondents who sought help from someone when they encountered breastfeeding problems at home, by health unit



There are various sources from which mothers can seek breastfeeding help when they encounter problems at home. Figure 29 lists with whom respondents sought help. Respondents sought the most help from their doctor, midwife, nurse practitioner, or obstetrician, 39.2%. Please note that there are relatively few lactation consultants in Northern Ontario. Therefore, the low percentage of mothers receiving breastfeeding help is likely a result of the low numbers of lactation consultants available for women.

Figure 29. Those from whom respondents sought breastfeeding help, all northern health units



There are also community resources that respondents could use for breastfeeding support, such as parent support groups, breastfeeding and well-baby clinics, the Healthy Babies Healthy Children program, and the parent information hotline. Figures 30 through 33 describe the respondents' usage, and in some cases the availability, of these community resources.

Across all northern health units, 13.4% of respondents who had access to parent support groups utilized this resource in the past year (results not shown). The breakdown of parent support group usage by health unit is not available due to low cell numbers. Figure 30 displays the percentage of respondents that stated they did not have parent support groups in their community. Across all northern health units, 45.0% of respondents did not have access to parent support groups.

Figure 30. Percentage of respondents who did not have parent support groups in their community, by health unit, n = 3,413

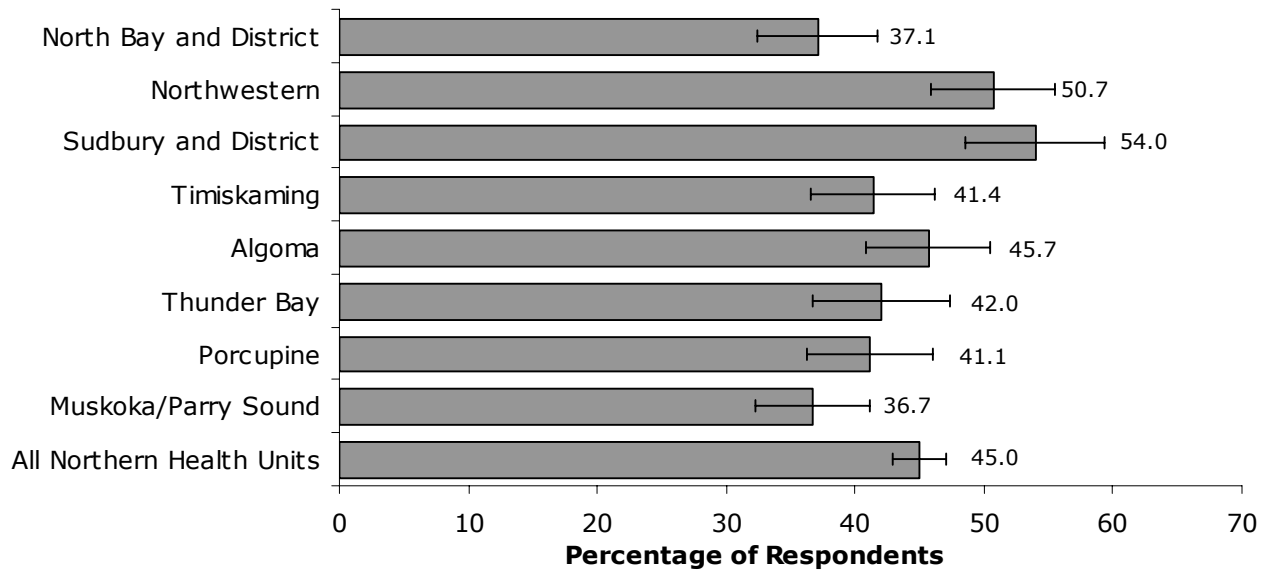
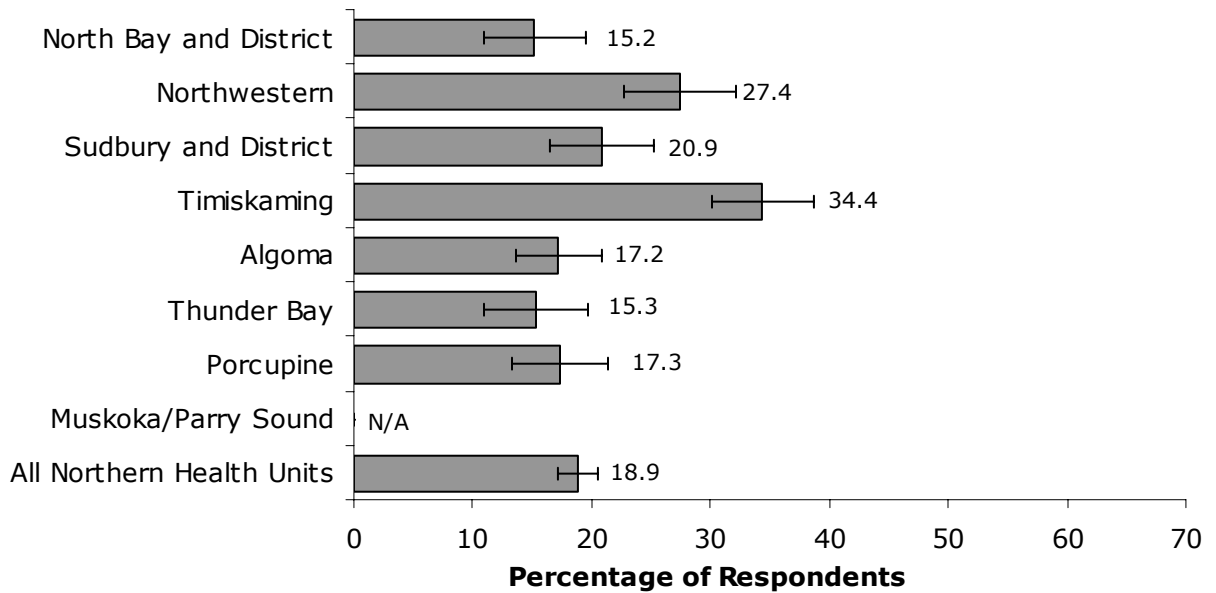


Figure 31a displays the percentage of respondents with access to breastfeeding/well baby clinics who utilized this resource in the past year. Overall, 18.9% of respondents used the breastfeeding/well baby clinics in the past year. Figure 31b displays the percentage of respondents who stated they not did have these clinics in their community. Across all northern health units, 28.5% of respondents did not have access to these clinics.

Respondents used the breastfeeding or well-baby clinics the most, 18.9%, followed by the parent support group community resource, 13.4%, and Healthy Babies Healthy Children, 13.4%, while only 11.5% of respondents used the parent information line. Algoma Health Unit had a large number of respondents using the parent information line, 28.8%, compared to all the other health units.

Figure 31a. Percentage of respondents who used the breastfeeding/well baby clinics (of those who had these clinics available), by health unit



*N/A indicates that cell counts were less than 30 and information cannot be provided

Figure 31b. Percentage of respondents who did not have breastfeeding/well baby clinics available in their community, by health unit

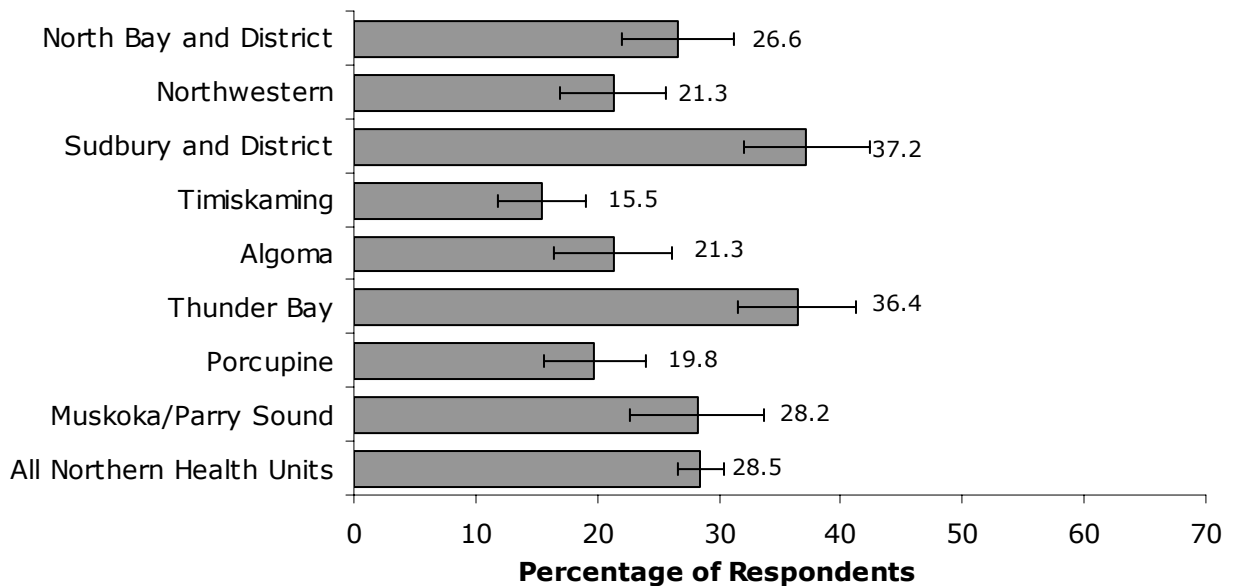


Figure 32. Percentage of respondents who have used the Healthy Babies Healthy Children program in the last year, by health unit, n = 3,413

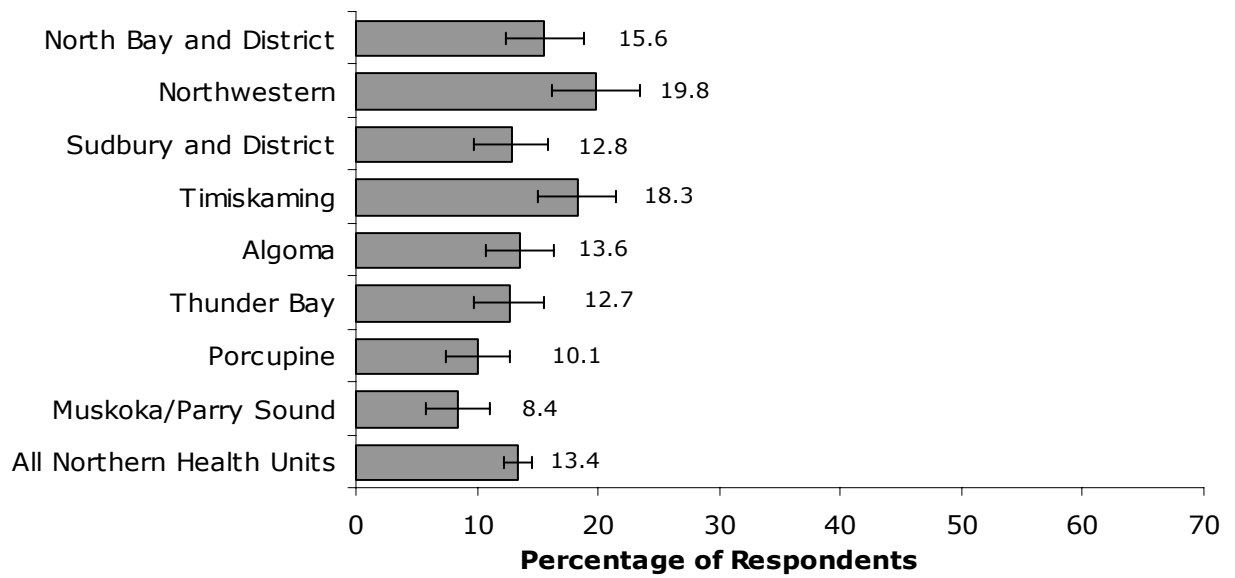
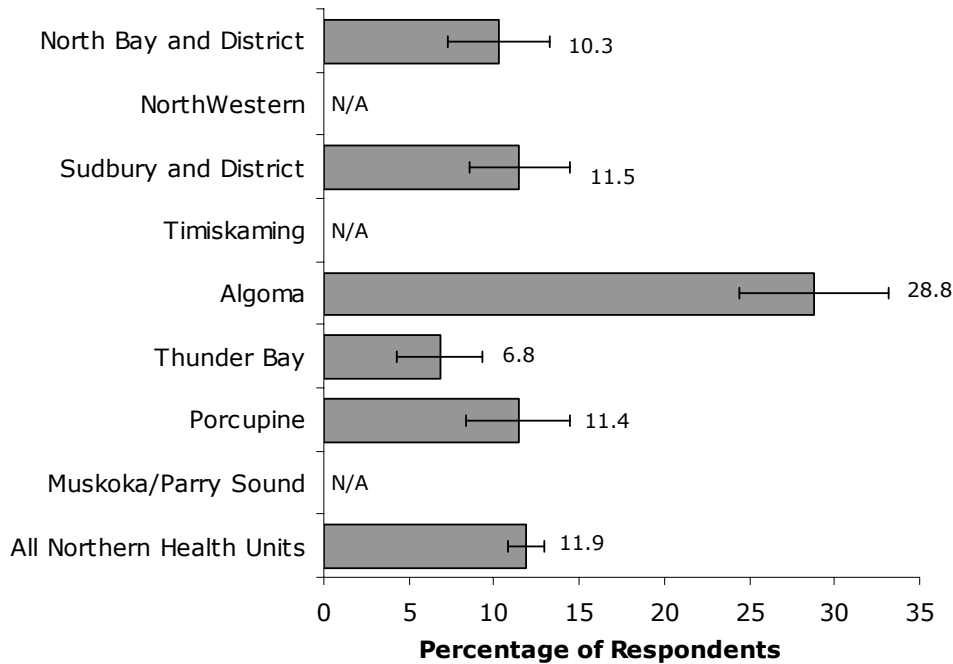


Figure 33. Percentage of respondents who used the parent information line in the past year, by health unit, n = 3,413



REASONS WHY WOMEN STOPPED BREASTFEEDING

Figures 34 through 38 display the reasons why women ceased to breastfeed: not enough milk, inconvenience/fatigue, planned to stop at this time, child weaned him/herself, or returned to work/school. Women were allowed to choose more than one answer. The three most common responses were: the child weaned him/herself, 21.7%, returned to work/school, 21.0%, or did not have enough milk, 18.0%. Interestingly, women who had midwives as their main care provider were less likely to stop breastfeeding due to the perceived notion of low milk supply than women who had family doctors or obstetricians as their main care provider (results not shown).

Figure 34. Percentage of respondents who stopped breastfeeding because they were not producing enough milk, by health unit

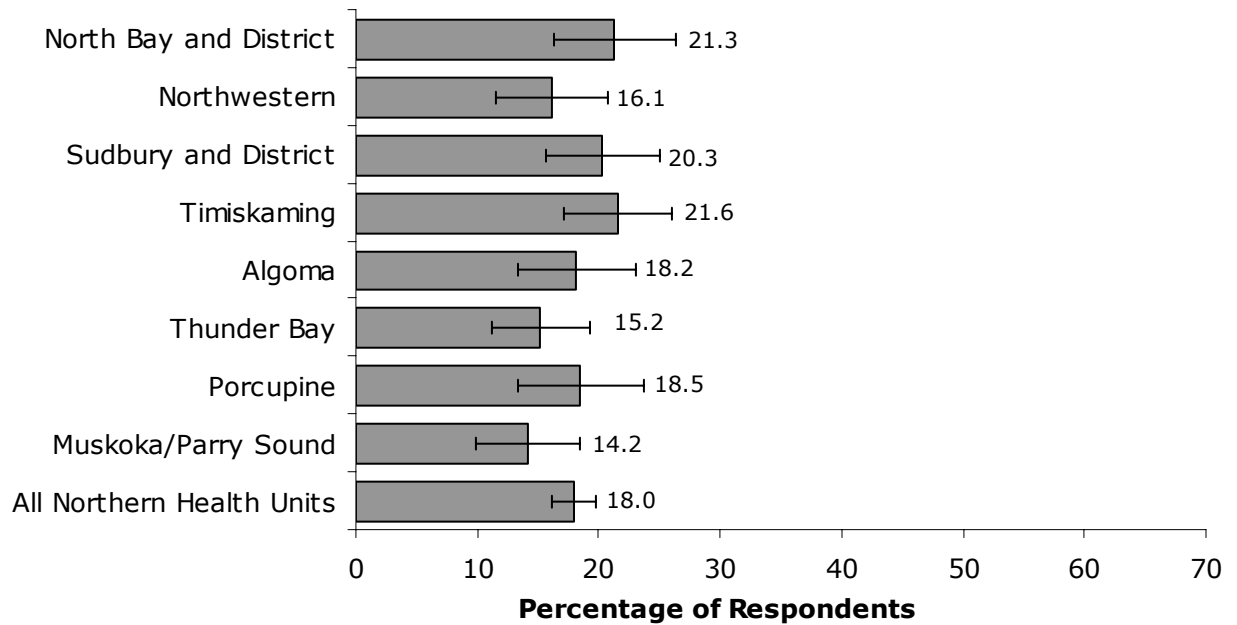


Figure 35. Percentage of respondents who stopped breastfeeding because of inconvenience / fatigue, by health unit

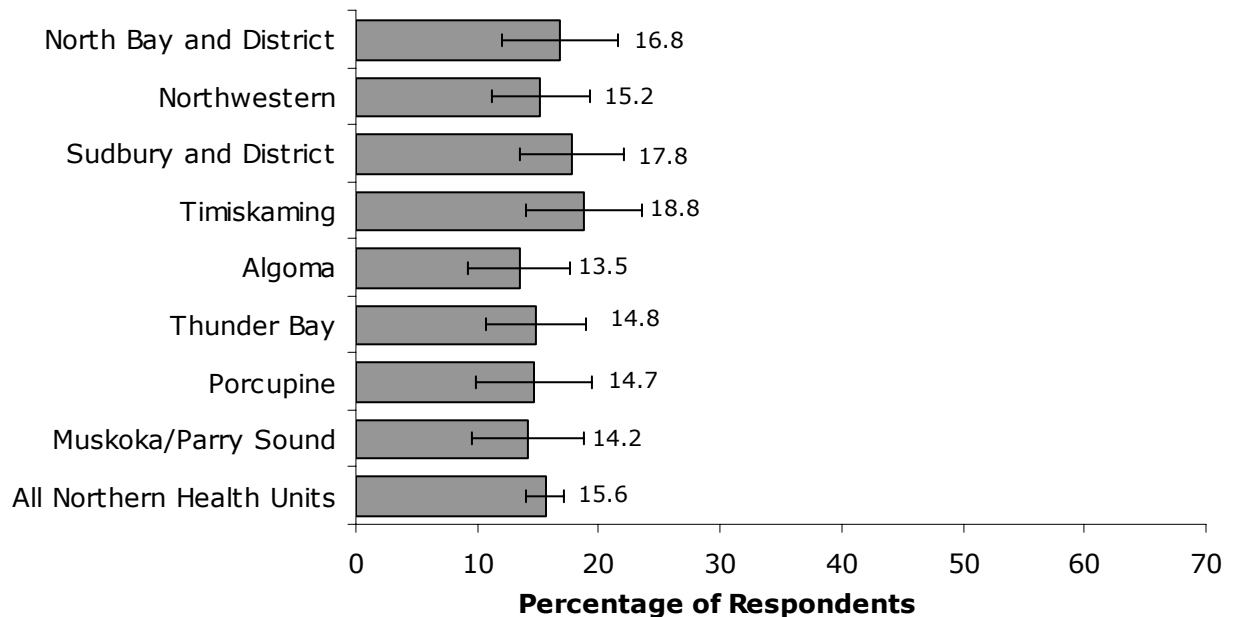


Figure 36. Percentage of respondents who stopped breastfeeding because they planned to stop at this time, by health unit

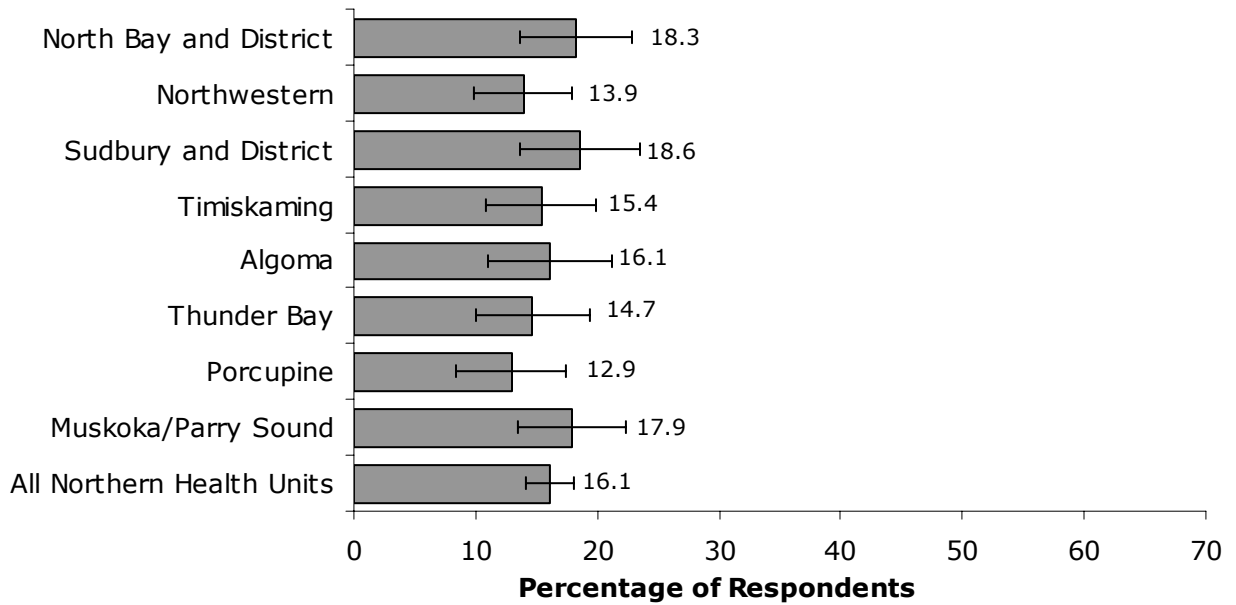


Figure 37. Percentage of respondents who stopped breastfeeding because the child weaned him or herself, by health unit

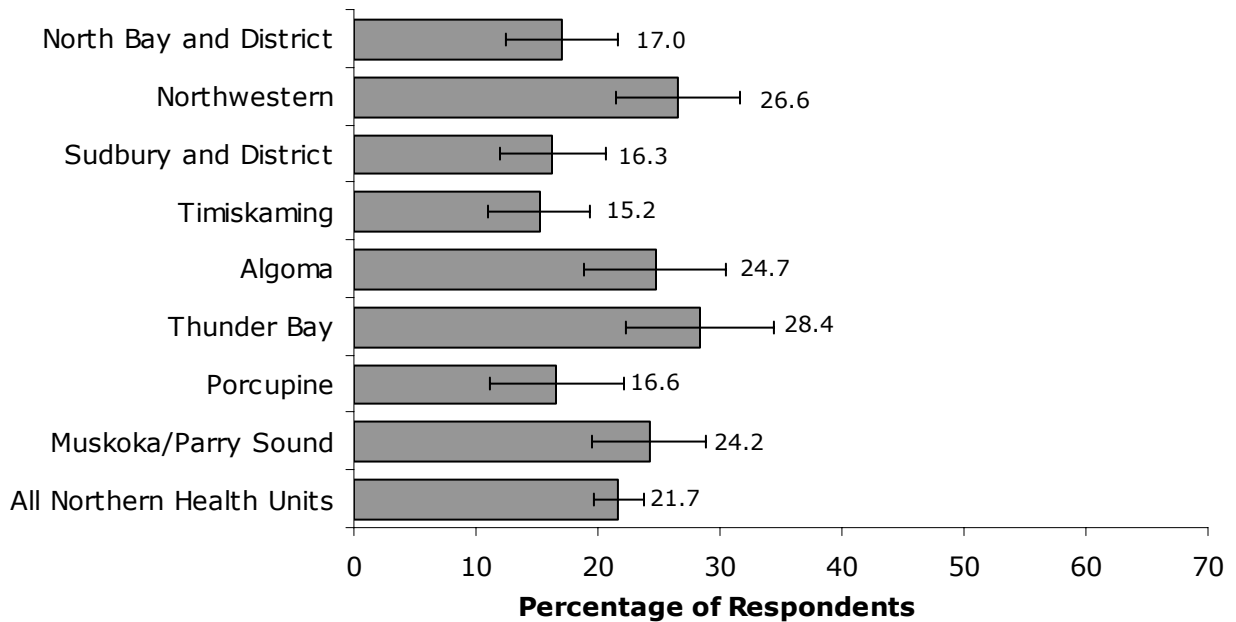
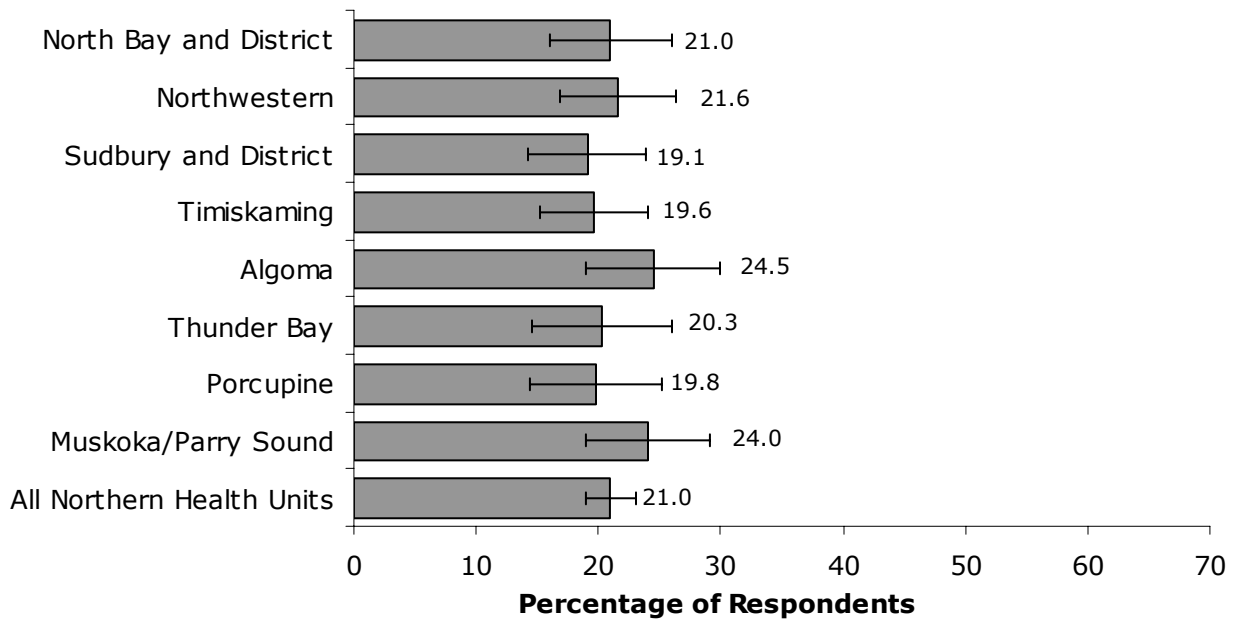
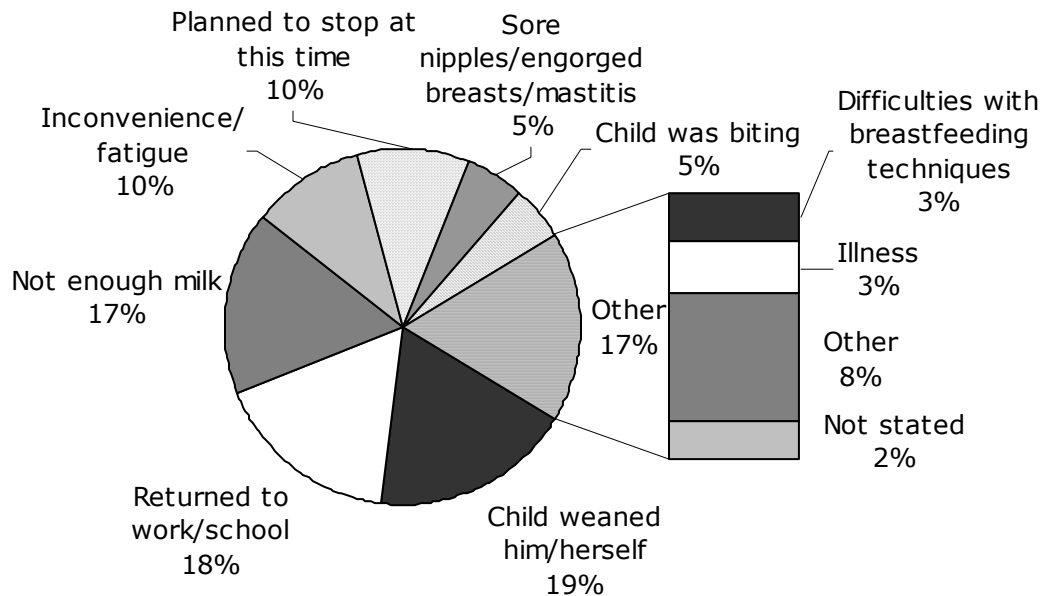


Figure 38. Percentage of respondents who stopped breastfeeding because they returned to work/school, by health unit



Respondents in the previous section were allowed to choose more than one answer to the question: why did you stop breastfeeding? However, in the next question, respondents were asked to give the single most important reason why they stopped breastfeeding. Figure 39 lists the ten most important reasons why women ceased breastfeeding.

Figure 39. Reasons why women stopped breastfeeding, all northern health units



Respondents were also asked what would have helped them to continue to breastfeed longer, Table 8. The factor that would have helped respondents the most was reassurance that their milk supply was adequate (although help with baby's latching may be needed to ensure the baby is able to effectively drink the produced milk) as 19.4% of women believed they needed greater milk supply to breastfeed. Other common factors were having experienced less breastfeeding problems, 16.0%, having more education or support for breastfeeding 15.3%, having better health for the mother, 12.3%, and not having to go back to work or school, 12.2%.

Table 8. Factors that would have helped respondents breastfeed longer

| What would have helped respondents breastfeed longer | Percentage of respondents (n= 713) |
|--|------------------------------------|
| Having a greater milk production | 19.4 |
| Having less breastfeeding difficulties including latching problems, painful nipples, no weight gain in baby, baby too demanding or not cooperative | 16.0 |
| More education and/or support | 15.3 |
| Having better health in the mother | 12.3 |
| Not having to go back to work or school | 12.2 |
| Not being so tired, stressed or busy with other children | 7.6 |
| Better baby's health | 6.5 |
| More interest from the baby | 5.6 |
| Other (not being pregnant, having no patience, lack of comfort with breastfeeding, having supplementation occur too early, not being on birth control pills) | 5.2 |

Comfort in Public Places

Women have various comfort levels when it comes to breastfeeding in public places such as malls, restaurants, and the workplace. Figures 40 and 41 give the percentage of respondents who were 'not at all/not very comfortable' or 'somewhat/very comfortable' breastfeeding in malls or restaurants. Figure 42 gives the percentage of respondents who were 'not at all/not very comfortable' or 'somewhat/very comfortable' breastfeeding in the workplace. Note that cell sizes less than 30 were shown as N/A within the analysis. There was very little variation between the percentage of respondents who were or were not comfortable breastfeeding in public for all public places: malls, restaurants, or workplaces. The range of percentages of respondents who were comfortable breastfeeding in public was 34.6% to 39.5% and the range for those who were not comfortable breastfeeding in public was 34.5% to 48.6%. Respondents were the most uncomfortable about breastfeeding in the workplace, 48.6%.

Figure 40. Percentage of respondents who were 'not at all / not very comfortable' and 'somewhat / very comfortable' about breastfeeding in malls

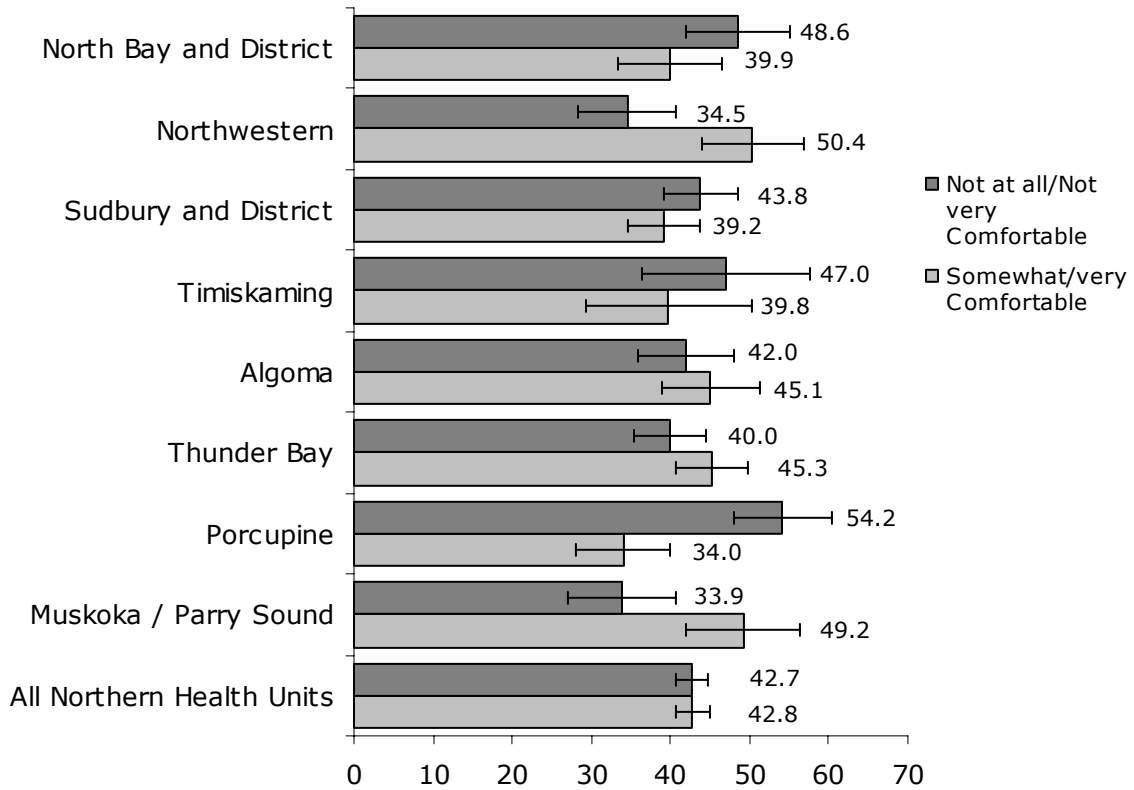


Figure 41. Percentage of respondents who were 'not at all / not very comfortable' and 'somewhat / very comfortable' about breastfeeding in restaurants, by health unit

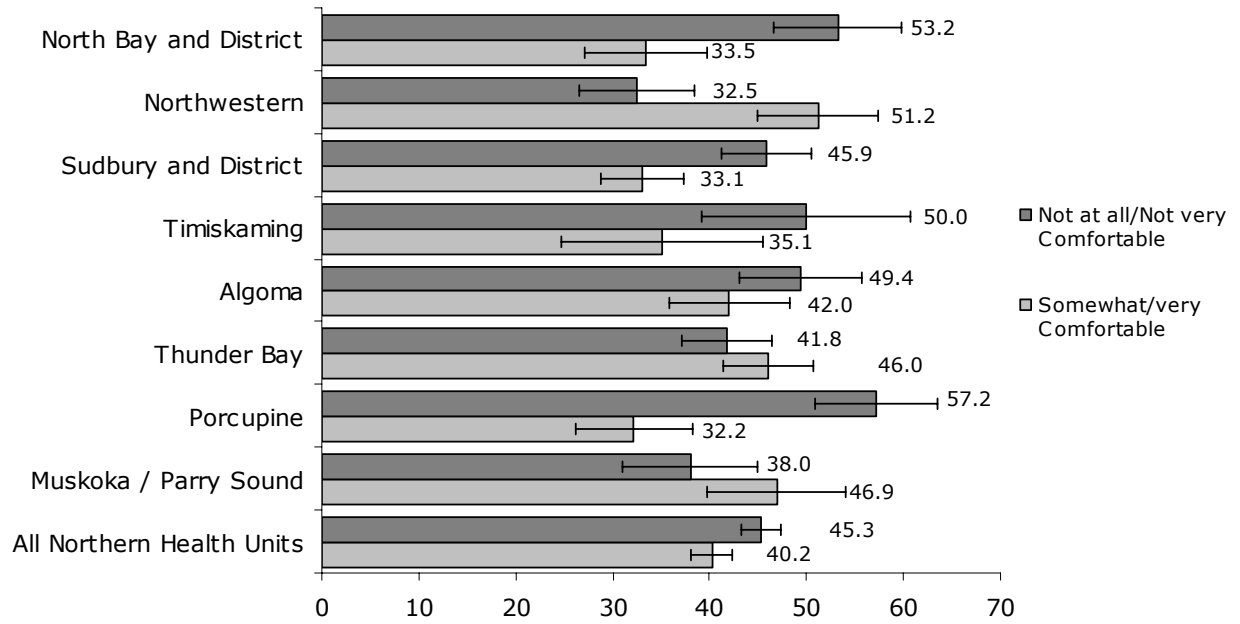
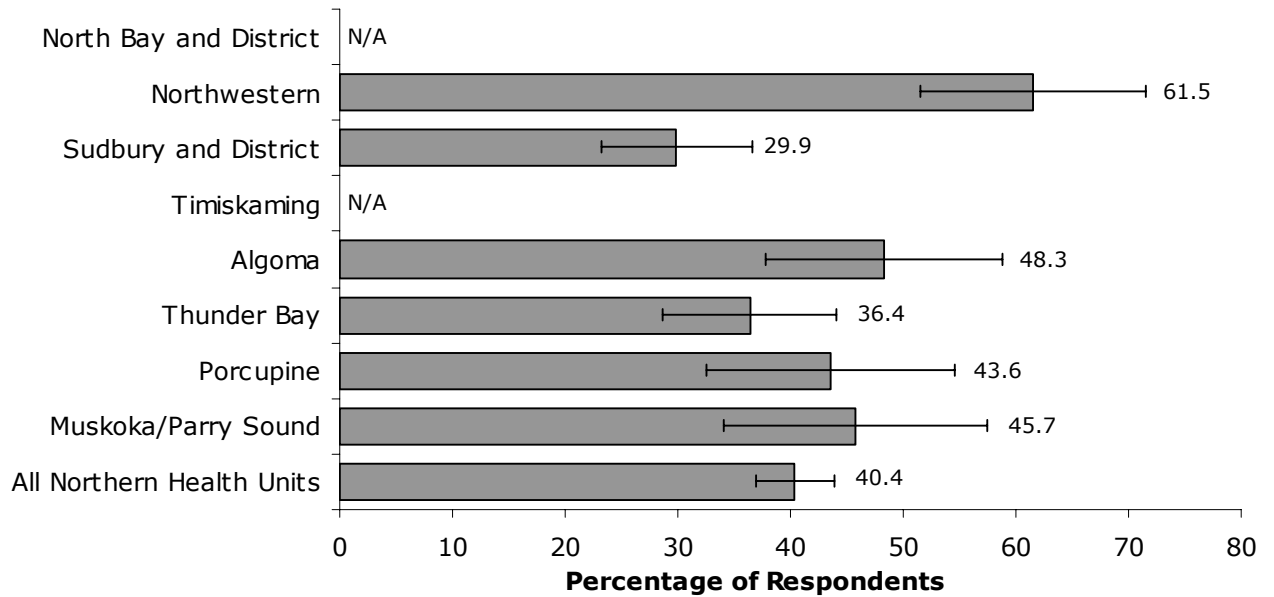


Figure 42a. Percentage of respondents who were 'somewhat / very comfortable' about breastfeeding in the workplace of those respondents who worked, by health unit, n=762



*N/A indicates that cell counts were less than 30.

Figure 42b. Percentage of respondents who were not working, by health unit, n = 1,826

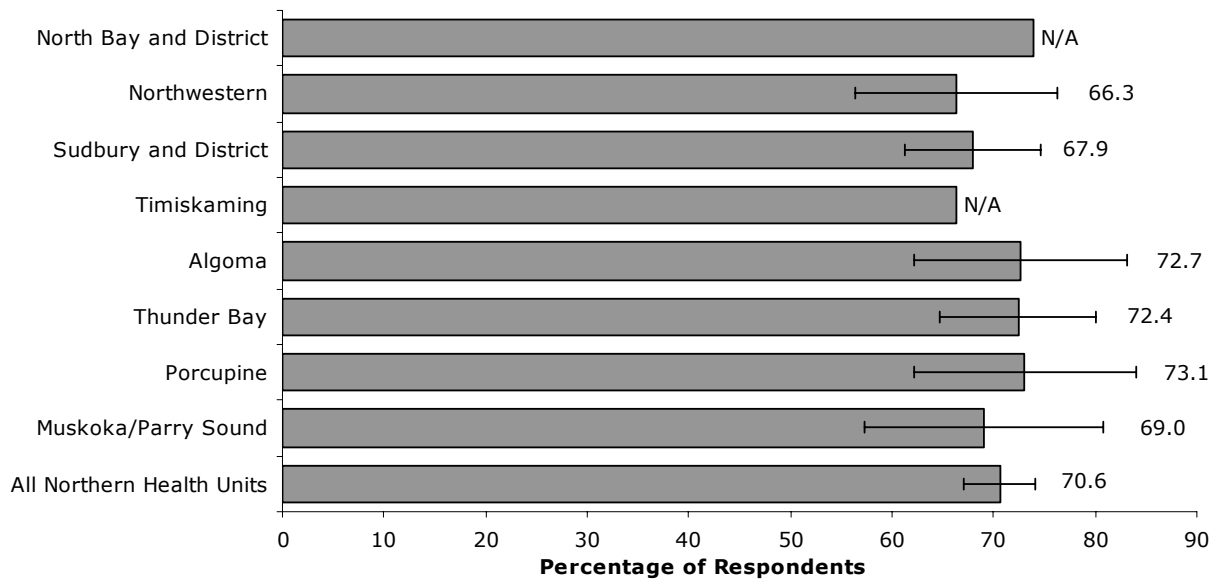
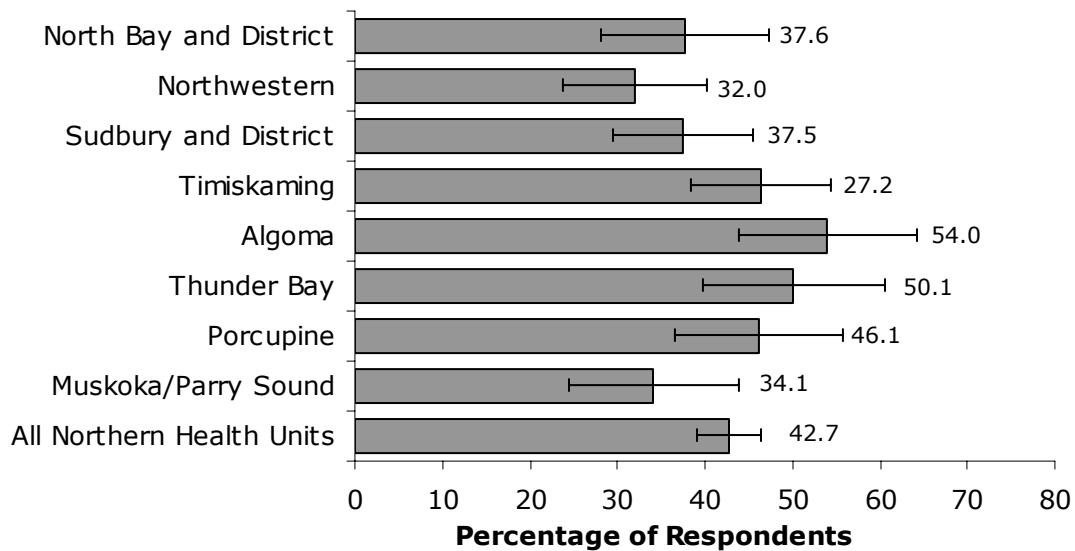


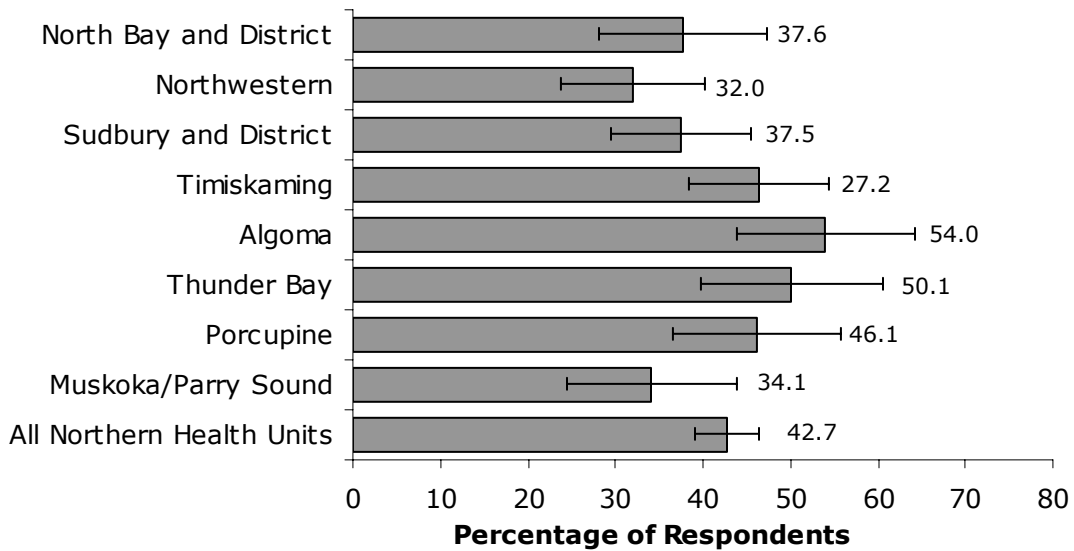
Figure 43 displays the percentage of respondents (who were able to give information regarding their workplace environment) who said their workplace was inflexible with regard to breastfeeding arrangements across Northern Ontario; nearly half of the respondents' workplaces were inflexible for breastfeeding mothers.

Figure 43. Percentage of respondents who said their workplace was inflexible with respect to breastfeeding arrangements, by health unit, n = 2,464



In contrast to breastfeeding in public places, respondents were very comfortable about breastfeeding in the presence of close family, 81.8% for all northern health units (Figure 44).

Figure 44. Percentage of respondents who were 'somewhat or very comfortable' about breastfeeding in the presence of close family, by health unit



Figures 45 through 47 display the percentage of respondents who feel it is somewhat/very important to have a special place to breastfeed or express milk in malls, restaurants, and the workplace, respectively. Respondents felt it was most important to have a special place to express milk in malls, 86.9%. However, restaurants and workplaces followed closely, 78.6 and 77.9%, respectively. Within in Figure 47, a separate category of 'missing' responses is shown, as many health units had missing responses greater than 8%.

Figure 45. Percentage of respondents who felt it was 'somewhat or very important' to have a special place in malls to breastfeed or express milk, by health unit

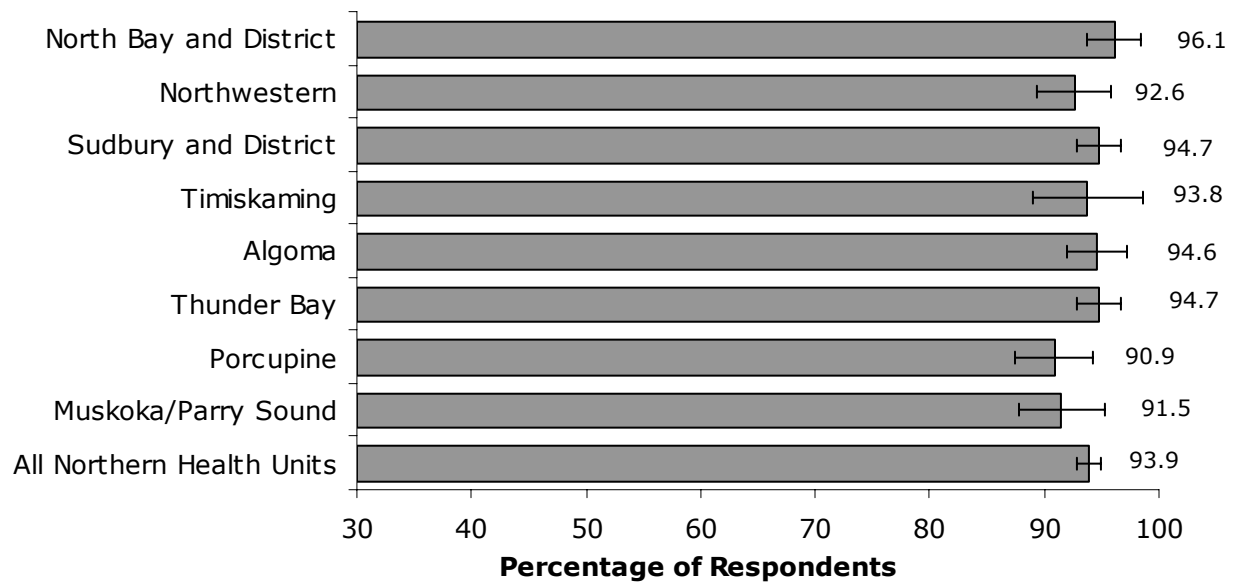
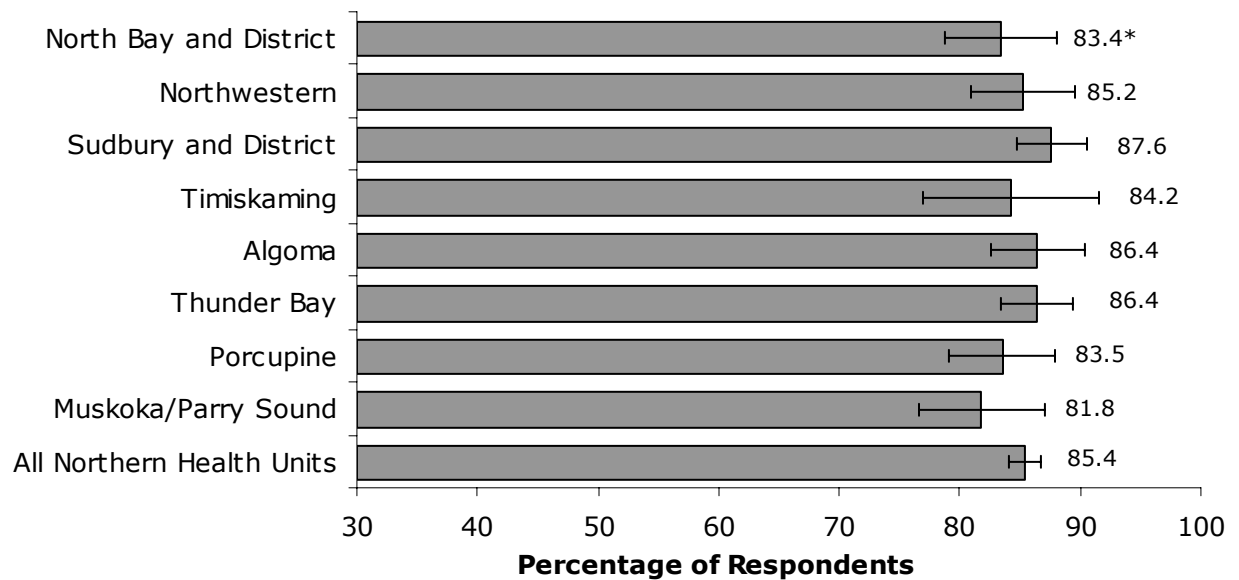
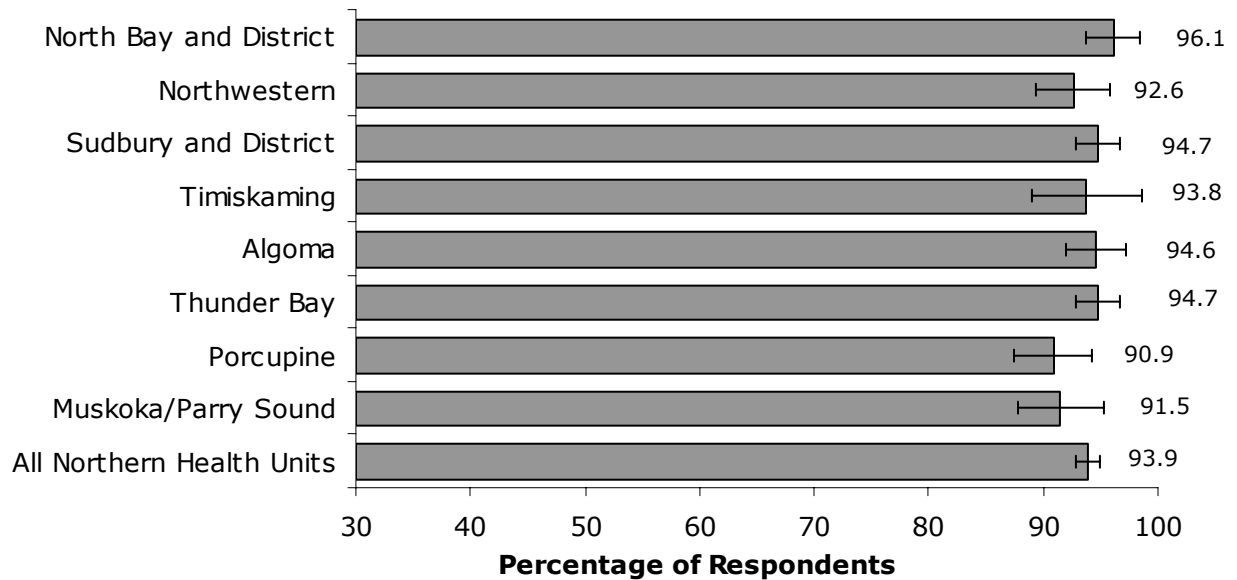


Figure 46. Percentage of respondents who felt it was 'somewhat or very important' to have a special place in restaurants to breastfeed or express milk, by health unit



*Please note that there were 11.5% of respondents from the North Bay and District Health Unit did not know or refused to answer this question, and were coded as 'missing' and excluded from this analysis.

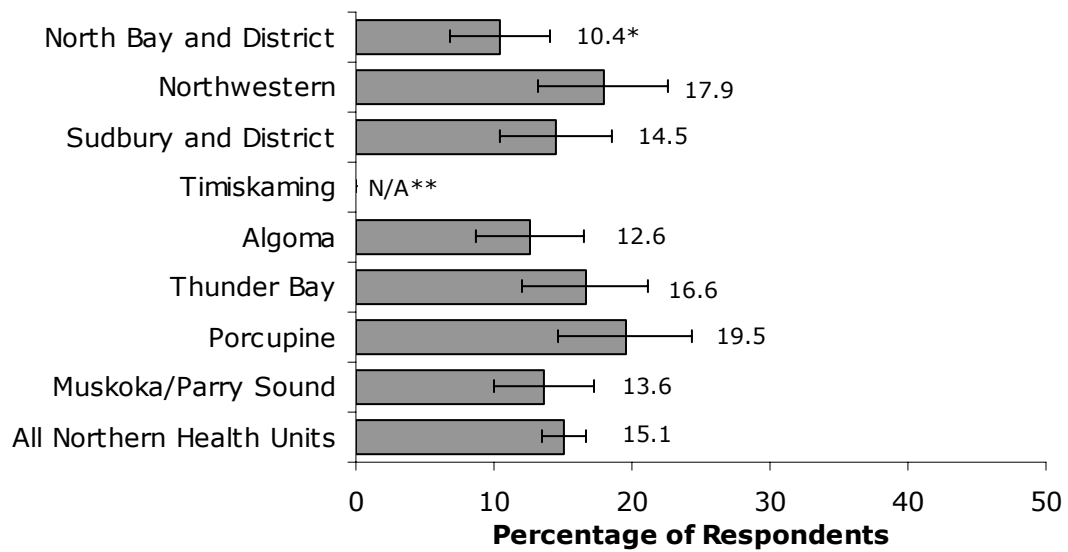
Figure 47. Percentage of respondents who felt it was 'somewhat or very important' to have a special place in the workplace to breastfeed or express milk, by health unit



BREASTFEEDING AND SMOKING

Figure 48 shows the percentage of respondents that smoked during pregnancy. For all northern health units, 15.1% of respondents smoked while they were breastfeeding. Percentage of respondents smoking during breastfeeding ranged from 10.4% in the North Bay and District region to 19.5% in the Porcupine Health Unit region. In addition, Figure 49 displays the average number of cigarettes respondents smoked per day while they were breastfeeding their infant. Most of the respondents smoked between 10 and 14 cigarettes per day, 36%. Figure 50 displays the percentage of respondents who had someone who regularly smoked in the respondents' presence during or after pregnancy (six months after). Overall, 24.8% of respondents had someone who regularly smoked in the respondents' presence during or after pregnancy.

Figure 48. Percentage of respondents who smoked when breastfeeding their last baby, all northern health units



* indicates high sampling variability and results should be interpreted with caution

**N/A indicates that cell counts were less than 30.

Figure 49. Number of cigarettes respondents smoked per day when they were breastfeeding their baby (of respondents who smoked, n = 357), all northern health units

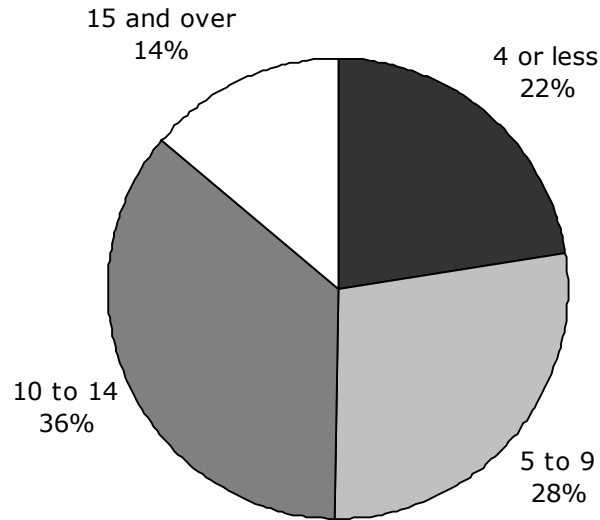
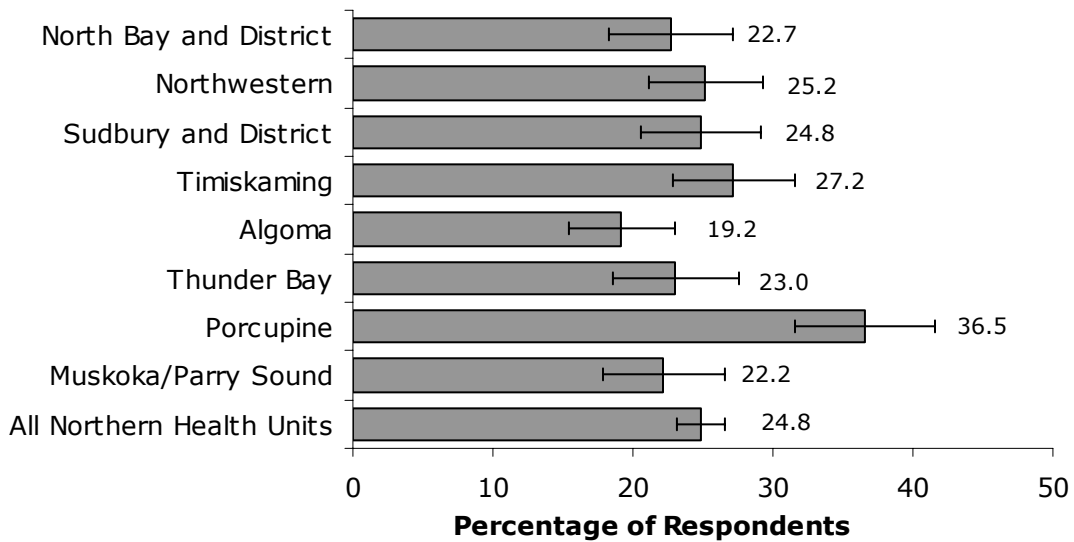


Figure 50. Percentage of respondents who had someone regularly smoke in their presence during or after the pregnancy (about 6 months after), all northern health units



LIMITATIONS OF THE DATA

There are a few limitations of the data within this breastfeeding report. First, there was not a clear distinction made between bottle-feeding with formula and bottle-feeding using expressed milk. Respondents were asked how they were feeding their babies within the first 48 hours after his/her birth and were given a choice of 'breastfeeding', 'bottle-feeding' or 'both'. In this instance, it is implied that bottle-feeding refers to formula feeding the infant, but this assumption is not explicitly stated. Therefore, we must make the assumption that mothers only indicated that they were 'bottle-feeding' or 'both' (breastfeeding and bottle-feeding) when they were actually feeding the infant formula in a bottle, rather than breast milk in a bottle.

Second, there were inconsistent responses to the four questions asked regarding breastfeeding duration. Respondents were asked four questions in this order: Question 1. For how long did you breastfeed (in months) -referred to as the 'total breastfeeding time' in this document- and Questions 2-4. Please indicate the length of time (in months) for the following items: a. breastfeeding only b. breastfeeding with formula supplements c. breastfeeding and bottle-feeding using expressed milk. Some respondents (n = 440) may have misinterpreted the first question of 'total breastfeeding time' as 'breastfeeding only' time, as their 'breastfeeding only' time was the same given as their 'total breastfeeding time', although they indicated that they spent some time breastfeeding and supplementing with formula concurrently. Therefore, their 'total breastfeeding time' should have been the addition of their 'breastfeeding only' time and the time they spent breastfeeding and supplementing with formula. In 76 cases, the 'breastfeeding only' time is longer than the time indicated by a respondent for 'total breastfeeding time'. As well, some respondents have included the time they spend breastfeeding and using expressed milk in a bottle as part of their answer to 'breastfeeding only' time (n = 39). Due to these inconsistencies, we have decided to only analyze the first two questions asked: for how long did you breastfeed? and for how long did you breastfeed only?

DISCUSSION

PURPOSE

The purpose of the NOPCHS was to provide quality data to guide northern child health program and policy decisions. Specifically, the Breastfeeding Practice in Northern Ontario report is intended to provide current information on breastfeeding practice in Northern Ontario to help public health units, as well as other community programs that with breastfeeding mothers to offer the programs, support and education that are needed by breastfeeding women.

MAIN RESULTS

For all of Northern Ontario, the current breastfeeding initiation rate (for the years 2000-2002) was 77.2%, which is only slightly lower than the average Canadian breastfeeding initiation rate of 80.1%. Women who had higher total family incomes, or married/common-law, or who attended pre-natal classes, or had higher education levels were all more likely to initiate breastfeeding than other women. More women chose to breastfeed than to formula feed for reasons such as the benefits for the baby, convenience and bonding that breastfeeding offers. Many women had breastfeeding support from their baby's doctor, spouse or partner, family and friends, and lactation consultants. Of respondents, 64.9% breastfed with or without formula or solid food supplementation for at least four months, and 52.6% exclusively breastfed for at least four months, the recommended length by Health Canada (2). Women who were older, or had a higher education level, or first learned a language other than English or French were more likely to breastfeed longer. The most common breastfeeding problems were latching problems, sore nipples and not enough milk supply, and the most important reason why women stopped breastfeeding was return to work or school. In general, women were not comfortable breastfeeding in public places such as malls, restaurants and the workplace, and felt it was important for women to have a special place to breastfeed in public places.

Breastfeeding Initiation Rates and Duration Within Northern Ontario

It is very encouraging that the Northern Ontario breastfeeding initiation rate is almost identical to the Canadian breastfeeding initiation rate. Northern Ontario's percentage of mothers still breastfeeding at six months, 50.4%, is higher than the range of percentages reported for Canada (30-41%) (39;52;61;63). As Northern Ontario has a number of small communities,

there may be an enhanced relationship between service providers that is responsible for the higher breastfeeding rate at six months. In addition to breastfeeding initiation rates that are comparable with Canadian initiation rates, Northern Ontario's breastfeeding rate of 50.4% at six months meets the goal set forth by the Ontario Ministry of Health's Mandatory Health Programs and Service Guidelines of having the percentage of infants breastfed up to six months reach 50% by the year 2010 (20). Even though we have met this goal set forth by the Mandatory Health Programs and Service Guideline, we continue to strive to increase breastfeeding initiation rates, as well as increasing the duration that women exclusively breastfeed and sustain breastfeeding.

In contrast to continuing education and support for women to exclusively breastfeed until at least four months, some women are still exclusively breastfeeding beyond six through 12 months time. Although breastfeeding is still encouraged past four to six months, it is recommended that infants be introduced to solid food around four to six months time to decrease the risk of potential feeding problems, preference for fluids, and nutrient deficiencies that may result from delayed introduction to solid foods (22).

Pre-natal Education and Support

The results of the survey suggest that women who attended prenatal classes were more likely to initiate breastfeeding. Women who attended pre-natal classes were more likely to breastfeed. This highlights the importance of pre-natal education, especially targeting women who are less likely to initiate breastfeeding, which includes women who are younger or are of lower socioeconomic status. One possibility for increasing education for women who are less likely to breastfeed is to introduce breastfeeding alongside nutrition into grade seven and eight school curriculum. A public health nurse or a lactation consultant may be hired to provide the breastfeeding or education classes. Establishing educational programs in grade schools may increase awareness on the subject of breastfeeding and target potential mothers who are more likely to formula feed their infants.

One of the basic functions of breastfeeding education is teaching women about the benefits of breastfeeding. Most women in this survey did not include 'benefits for the mother' as one of the reasons they chose to breastfeed, indicating they may not be aware of breastfeeding benefits for the mother. This indicates an important subject matter to be covered within education and support programs.

In addition to pre-natal education programs, raising awareness of community services that are available is essential to the success of the programs, as well as for women's breastfeeding. The utilization of these resources during the

pre-natal period can greatly influence a mother's initial feeding decision. As well, these resources may help enable women with any breastfeeding difficulties to exclusively breastfeed for at least four months. Many women in the survey were not well aware of the community programs offered such as well-baby drop-ins, the parent child information line, and the breastfeeding mentorship program. Indeed, lack of awareness of breastfeeding support programs was listed (by the women in the survey) as one of the reasons that prevented them from utilizing the available programs. Therefore, promotion of existing resources available to mothers in their communities such as the Healthy Babies Healthy Children program, mentorship programs, and parent child information lines is required. Perhaps in addition to simply providing these community programs, resources may be directed towards an awareness campaign of health resources available.

Birth of the Infant

A woman's hospital stay is a key intervention point for health professionals to encourage women to breastfeed by providing them with a supportive, positive breastfeeding environment. By becoming Baby-Friendly, a hospital will adopt the Ten Steps to Successful Breastfeeding, which will provide education for staff and a supportive breastfeeding environment (24). Lack of funds should not be a reason for hospitals to delay becoming Baby-Friendly, as the vast majority of Baby-Friendly hospitals are in developing countries. Indeed, western countries are far behind developing countries when it comes to numbers of Baby-Friendly hospitals (25). Currently, there are no Baby-Friendly hospitals in Northern Ontario, with only two Baby-Friendly hospitals in Canada (28;29).

A very important part of being Baby-Friendly is to initiate breastfeeding within the first half hour after birth, which is the first step towards a successful latching and breastfeeding experience (58;59). As shown in the results, a woman who leaves the hospital confident about breastfeeding is less likely to experience breastfeeding problems, and is more likely to breastfeed longer than women who are not confident about breastfeeding when they leave the hospital. The results on women's comfort levels regarding breastfeeding, such as comfort levels with baby's latching, shortly after women leave the hospital provide feedback to hospital staff on how well they are educating the mothers before they leave the hospital. The results on comfort with positioning and latching are somewhat lower than results on comfort with recognizing cues and signs of adequate feeding.

Mother's comfort level results may provide hospital staff opportunities to see what education women need in order for them to teach or design education program accordingly. Likewise, this may provide health units feedback on what problems women are having after leaving the hospital. Identifying such

issues may lend insight as to how support or training may be provided to women, for example, having telephone consultation for breastfeeding mothers. It is also interesting to note that women who learned French as their first language and can still understand French were less likely to initiate breastfeeding. This highlights the importance of having health professionals or peer support or support system that speak the same language of the mother to enhance the breastfeeding support available to the mother.

A woman's breastfeeding experience in the hospital (or at home with a midwife) during childbirth is largely influenced by the information that she receives from health care professionals (49). Therefore, it is essential that doctors and nurses are well educated and provide consistent breastfeeding information. Unfortunately, some doctors and nurses are not aware of the full benefits of breastfeeding, nor can they help with breastfeeding techniques or difficulties (50). Therefore, medical and nursing school curricula may need to be updated, and breastfeeding education efforts may extend into providing supplemental seminars to health professionals/doctor or nursing students who work and interact with birthing mothers. It may be helpful to provide doctors with resource information sheets that list breastfeeding community resource information (to which to refer women) as well as how to problem-solve some common breastfeeding problems.

As there are a number of health care professionals (family doctors, nurses, obstetricians, midwives, lactation consultants, public health nurses) and community resources workers that are in contact with breastfeeding mothers, it is important that the information mothers receive is consistent. In order to help ensure all health professionals are providing consistent, up-to-date breastfeeding information, joint seminars and workshops for all of these professionals may be appropriate. This is an opportunity to educate and address questions in one forum and allows for networking of different health care professionals.

Post-natal Education and Support

Many women experience difficulties with breastfeeding techniques once discharged. Continued education through community resources may help women continue their breastfeeding until the baby is at least four months old (Health Canada's recommended minimum duration). All community services, including health units, may strive to become Baby-Friendly by adopting the Seven Point Plan for Community Health Services. This may help community services be more supportive and responsive to women's breastfeeding needs, especially for breastfeeding in public. Women may require one on one teaching and support to assist with two of the most reported breastfeeding problems: baby's latching and sore nipples.

Although there are some services where women can receive direct breastfeeding help, such as breastfeeding drop-in clinics, and the Healthy Baby Healthy Children program, many obstacles prevent women from taking advantage of these programs. First, women may not be aware of these programs as discussed earlier, and some or all of these programs may not be readily accessible to all families. Second, the eight health units of Northern Ontario must provide service to a large geographical area, and residents may not always live close to towns or cities where these programs are offered. In this survey, 28.5% of respondents said that breastfeeding clinics or the HBHC program was not close to their area. It is a challenge to find solutions to the delivery of programs for all residents of a particular health unit.

Other obstacles women face when utilizing available community resources include finding the program staff unwelcoming or unable to provide information the woman needed, not having enough time due to having other children, waiting lists, and feeling shy, embarrassed or uncomfortable about using the program. In addition to currently offered services, women would also like to see more parenting classes, support groups, 24-hour breastfeeding help line, have increased access to lactation consultants, breast pumps for rent, more drop-in services, and more specific education on how to breastfeed and on common problems associated with breastfeeding. All the Northern Ontario Health Units may consider implementing a free, 24-hour child health line to help with various aspects of child health, including breastfeeding.

Continued breastfeeding education for mothers will help dispel the myths that cause many women to cease breastfeeding prematurely. For example, many women in this survey stated inadequate milk was part of their reason for breastfeeding cessation and was also the third most important reason why women stopped breastfeeding. For most women, lack of milk supply is not actually the problem, however, it may be due to inefficient latching by the baby who, therefore, does not get enough milk (58). Education and help with breastfeeding techniques may help alleviate this problem, as well as dispel other breastfeeding myths, and allow for continued breastfeeding.

When policies, programs and campaigns are being created, it is important to keep in mind the people in a mother's support system, since they greatly influence her breastfeeding decisions and beliefs. Women in this survey received the most support for their feeding decisions from their spouse and/or family and friends. The literature concurs that the spouse is the most powerful influence on a mother's infant feeding decision (61). However, when women experienced breastfeeding problems at home, most consulted their doctor/midwife/nurse practitioner/obstetrician or a public health nurse, rather than their friends and family. Lactation consultants were reported less frequently than most other health care professionals as providing support to

breastfeeding mothers. This is most likely a result from the low numbers of lactation consultants available in Northern Ontario. Indeed, women reported that they would like to have access to more lactation consultants in the survey. As mothers do have an extensive support system, policies/programs/campaigns should also target or include the various components of the mothers support system. If the support system is well-educated, they may be able to be more supportive for breastfeeding mothers.

Peer or parent support groups are of great value to new mothers (40;68;70). These programs provide a great opportunity and forum for mothers to voice their own questions and opinions to a group of women who are also making breastfeeding decisions. In this survey, parent support groups were utilized by 13.4% respondents. Unfortunately, 45.0% of respondents did not have support programs in their area, and many women indicated that they would like to see parent support groups available. Health units and/or other community resources may consider initiating a parent support group, or a one-to-one breastfeeding buddy system for mothers. In a one-to-one buddy system, a peer mother could be assigned to breastfeeding mothers to offer them support and advice.

Breastfeeding in Public Places

Many women in this survey are still uncomfortable about breastfeeding in public: malls (34.5%), restaurants (44.9%), and workplaces (48.6%). However, breastfeeding in public is an important aspect to breastfeeding as it is unrealistic for mothers to be confined to their homes. Unfortunately, cultural attitude delivers the message that it is taboo to breastfeed in public, as this may involve exposing one's breasts to feed the infant (92). As Anne Pugliese writes "when people see a women using her breasts for their most basic function, in an intimate relationship with her infant, they may consciously or unconsciously confuse it with something that's sexual and should be done in privacy" (92).

Often, women are presented with solutions to breastfeeding in public such as "just give him/her a bottle" or "take him/her to the restroom" (92). Giving an infant a bottle of expressed breast milk may not be as easy as some people may think. A woman must take extra time (which already may be quite limited due to the demands of taking care of an infant, as well as other children) to pump, store, and transport the milk she is planning to feed her baby. There are also the issues of nipple confusion (having trouble switching back and forth from bottle to breast) leading to breast refusal, and the increased possibility of a blocked duct or breast infection for the mother. Some mothers may feel uncomfortable breastfeeding their infant in the restroom as this room may have questionable cleanliness and is not designed

for comfortable breastfeeding. It may also be difficult for a mother to look after any other children she may have, especially while in a restroom.

The majority of mothers in this survey said they feel having a special place to breastfeed in malls, 86.9%, restaurants, 78.6% and workplaces, 77.9%, is needed. This may consist of a small lounge with a chair or couch that is private or semi-private where the mother can be comfortable breastfeeding as well as looking after other children. The only concern is that this method of coping with the discomfort some women may feel while breastfeeding may actually increase the perception that breastfeeding is not socially acceptable and should only be done in private places (92). Even if these facilities are provided, it remains important to note that some women will choose not to use the facility; and that since breastfeeding is not predictable, seclusion may be neither convenient, nor possible, at the time that the infant needs to be fed.

There are many things society and women can do to increase their comfort in public. Society may consider presenting the public with more images of women breastfeeding in public to get across the message that breastfeeding in public is acceptable. For women, they may wait until they feel comfortable latching and breastfeeding with their infants before trying to breastfeed in public. Perhaps bring along a friend, have a nursing bra for ease, and maybe even have some helpful comments ready in the unfortunate event that people feel uncomfortable and give criticism towards breastfeeding in public (92).

CONCLUSION

A favourable breastfeeding experience may be achieved if the following components are present: access to community resources (education programs, support and help programs), a solid support system (including friends, family and health care professionals), and a society or community that accepts breastfeeding as the optimal infant feeding choice. All of these components are essential for a woman to have a positive breastfeeding experience that lasts at least four months, the exclusive breastfeeding duration recommended by Health Canada.

The following is a short summary of some of the specific recommendations mentioned in this report:

- establish educational programs in grade schools
- educate mothers on benefits of breastfeeding for the mother
- raising awareness of community resources offering breastfeeding support both during pre- and post-natal period
- promotion of Baby-Friendly Hospital Initiative
- continued breastfeeding education for physicians/nurses and medical/nursing students
- joint seminars for physicians, nurses, midwives, public health nurses and all other health professionals working with mothers to try to create consistency in breastfeeding information
- develop more peer support groups, or one-on-one breastfeeding buddies for breastfeeding mothers
- continued breastfeeding education for mothers and their support systems
- adoption of the Seven Point plan for communities to become Baby-Friendly
- advocate for Breastfeeding Anytime/Anywhere

Health units and community resource providers play an essential role in ensuring that all of these components are available to mothers. Health units and community resource providers can also provide educational opportunities and support to the mother and her support system, and to professionals working with breastfeeding mothers. The organization of media campaigns is another essential service that may be delivered by health units and community resource providers to promote public awareness and the social acceptance of breastfeeding in public places. With all of us working together, we can strive to continue to make a difference in breastfeeding initiation and duration which ultimately will increase the health of our population.

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