DETERMINANTS OF CHILD HEALTH 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[1] and the Northern Ontario Baseline Child Health Information: Analysis of Secondary Data.[2] 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 offered by health units and community agencies. Topics of the focused reports are: Access to Parenting Resources; Breastfeeding Practices; Unintentional Injuries and Safety; Nutrition; and the present report, Determinants of Child Health in Northern Ontario.

DETERMINANTS OF HEALTH PERSPECTIVE

In 1974, a working paper entitled, *A New Perspective on the Health of Canadians,* published by Canada's Minister of Health and Welfare, Marc Lalonde, began a shift in the way Canadian policy-makers viewed health and wellness. The report acknowledged the importance of biological, environmental, behavioural, as well as health care system influences in the determination of public health.[3] Health Canada's Second Report on the Health of Canadians presents a model of the "determinants of health." The determinants of health are categorized as twelve broad variables: income and social status, social support networks, education and

literacy, employment/working conditions, social environments, physical environments, personal health practices and coping skills, healthy child development, biology and genetic endowment, health services, gender, and culture.[4] This report explores the relationship between income, education, partner status and other measures of socioeconomic status (SES) and the following health conditions and behaviours: 1) awareness, access, and utilization of community and health care services, 2) family nutrition and household food security, 3) breastfeeding practices, and 4) frequency and treatment of childhood injuries.

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.

RESULTS AND IMPLICATIONS

Health Status

Self-reported health is recognized as a useful indicator of general health status. In this survey, mothers were asked to report on the general health of their child. The majority of mothers felt that their child's health was either good (21%) or very good (73%).

Seeking Help

The NOPCHS data revealed that mothers' first language, as well as mothers' and partners' education levels had an impact on whether or not mothers knew where to go for help. Regardless of income level, most northern mothers (between 85% and 90%) said that they were aware of community supports. More mothers who completed a post secondary education agreed that they knew where to get help in their communities, as compared to those who had completed all or some high school. Approximately 86% of respondents who first learned English or French agreed that they knew where to go for help. A slightly higher percentage of respondents who first learned to speak a language other than French or English agreed that they knew where to go for help in their community (92%).

Barriers to Accessing Programs

Mothers in higher income categories report less of a need for child and family programs than mothers with family incomes of less than $27,000. Barriers to accessing programs, such as cost, transportation, or inconvenient location, are more likely to be faced by lower income mothers. In fact, mothers with family incomes of less than $27,000 are 3 to 4 times more likely to report these barriers (15%) than those in the two highest income categories (4%). Mothers who had completed a post-secondary education were more likely to report not needing health unit and community programs, and were less likely to have faced barriers to participation than mothers with less than a high school education. Single mothers were less aware of programs and had more trouble accessing programs than those with partners. A higher percentage of mothers (79%) with partners reported having no problems or not needing services compared to those without partners (61%).

Satisfaction with Services

Families with higher income and those living above LICO had increased satisfaction rates with services: 47% of respondents living below LICO were very satisfied with supports and services, while 56% of respondents above LICO were very satisfied. Mothers without a partner had lower satisfaction rates. This dissatisfaction felt by the single parents may be a result of their perceived barriers to accessibility, which were higher among mothers with no partner.

Access to Programs

Accessibility to available programs was influenced by income, LICO, education level of the partner, as well as language. Those families with lower incomes and living below LICO reported fewer services to be close to their homes. Prenatal classes, parenting classes, health unit clinics for child services, recreation programs, and toy libraries were reported to be available close to where they live more often by mothers with higher incomes. A lower percentage of mothers with high school educations felt that prenatal classes, parenting classes, family resource centres, and recreation services and programs were available near them when compared to those who held college, university, or graduate degrees. In addition, access to recreation programs, family resource centres and toy libraries also increased as partner's education increased. The percentage of mothers who reported that parenting classes and health unit clinics for children were available close to their homes was greater for English or French-speaking mothers than for those whose first language was not English or French. Almost ten percent more respondents first speaking English reported a family resource centre close to their homes (55%) than mothers who speak another language other than French (46%). French-speaking mothers reported parent support groups close to their homes (59%) more often than those who speak a language other than French or English (48%). French-speaking mothers also reported having toy libraries close to their homes (72%) more often than English-speaking mothers (67%).

Access to Physicians

Over 94% of mothers surveyed indicated that they had a family physician. However, these rates differed somewhat depending on socioeconomic levels. Mothers with lower family incomes were less likely to have a family physician. Although over 90% of mothers of the lowest income category, less than $27,000, reported having a family physician, about 95% of mothers with higher incomes reported having a family physician. Mothers with partners with less than a high school education (83%) were less likely to have a family physician than those with partners with more education (95%). With respect to seeing a physician, 92% of mothers above the LICO reported that their child saw a physician in the past year, while 86% of mothers below the LICO stated that their child had seen a physician.

Prenatal Service Utilization

Roughly half of mothers attended prenatal classes; however, attendance varied according to some measures of socioeconomic status. Mothers below the LICO (36%) went to prenatal classes less than mothers above the LICO (51%). Both mother's and partner's education level had an impact on attendance of prenatal classes. Lower education levels of both the mother and partner resulted in approximately a 10% decrease in attendance of prenatal classes.

Mother's income level slightly impacted the amount of time in pregnancy before she first sought prenatal care. More low-income mothers (12%) waited until between 4 and 6 months before seeking prenatal care than higher income mothers (8%). Education levels of the mothers and partners also affected how long mothers waited before first seeking prenatal care. Mothers with higher educations (90%) sought prenatal care within the first 3 months of pregnancy more often than mothers with lower educations (85%). An examination of partners' education revealed similar trends. Almost 20% more mothers with partners with a higher education level first sought prenatal care within 3 months of pregnancy than those with partners having less than a high school education. More single mothers waited until between month 4 and 6 of pregnancy before seeking prenatal care (15%) than those who had a partner (9%).

Program Utilization

Utilization of services such as parent support groups, recreational programs, and food banks were examined according to six measures of SES: income, LICO, mother's education, partner's education, language, and partner status. Income influenced program utilization for the majority of the listed programs and services. Utilization of parent support groups, visit programs (Healthy Babies, Healthy Children), and food banks were reported most used by families in the lowest income level compared to higher income categories. On the other hand, there was a trend for increased use of recreational services and programs for children as income category increased. Library services and toy libraries were also reportedly used more by families with incomes of $60,000 or more than by families with less than $27,000 in family income.

Home visits (Healthy Babies Healthy Children) and food banks were used less by families above the LICO than families below the LICO. Recreational services and programs for children and library services for mothers and children were used more by above LICO families than below the LICO families. Taken together, these findings suggest that lower income families, or families living below the LICO, will more often use basic services for help and survival, while higher income families and families living above the LICO utilize programs more often for leisure and education.

Food Security and Food Bank Use

Families who were food secure had "access by all people at all times to enough food for an active, healthy life." Families who had "limited or uncertain availability of nutritionally adequate and safe foods or limited or uncertain ability to acquire acceptable foods in socially acceptable ways" were deemed food insecure. The NOPCHS revealed that income, LICO, the educational level of both of the mother and partner, and partner status affected food security.

The fact that 6 to 9% of young children in Northern Ontario face food insecurity is a serious concern. Not unexpectedly, it was noted that families with lower incomes and those living below LICO had lower food security levels. Income has a positive impact food security. Only three out of four families with less than $27,000 were food secure. By contrast, more than nine out of ten families making more than $27,000 were food secure. Not surprisingly, there was also a trend for food bank use to drop as income increased. Similarly, families living below the LICO reported being food insecure 9 to 10 times as often as those living above the LICO, at 29%. Also, as mother's and partner's education levels decreased, food insecurity was more likely. Single mothers had decreased food security and increased food bank use than mothers with partners. In fact, there was an 18% difference between the food security level of mothers with partners and single mothers. Food bank use was almost five times higher for mothers without a partner than for mothers with a partner.

Eating Frequency and Variety of Foods

This report also demonstrated that there are many factors influencing the nutritional status of children in Northern Ontario. Results from the NOPCHS showed that the income, LICO and the education level of the mother affected eating patterns. Children in families with lower income levels and living below LICO were shown to eat three meals plus snacks less often than children in higher income levels or above the LICO. A higher percentage of children from families with over $36,000 had 3 main meals plus snacks 5 to 7 days a week than those from families with less than $36,000. The survey revealed that the children living with mothers with a partner enjoyed eating a variety of food, where as children in single parent homes enjoyed a more limited variety of foods. Interventions should be considered

that address these various factors and to assist in eliminating the nutritional challenges faced by the children of Northern Ontario.

Breastfeeding

Our research shows that Northern Ontario mothers at higher income levels and mothers with higher education levels are more likely to initiate breastfeeding than mothers with less income and education. Breastfeeding was initiated more often by women living above the LICO (75%) than women living below (64%). Having a partner was also positively associated with breastfeeding initiation during the first 48 hours after birth. Income, LICO, mothers' education level, and partner status did not appear to affect duration of breastfeeding for Northern Ontario mothers.

Unintentional Injuries

Children of single mothers had greater rates of falls requiring medical attention in the past year (15%) than children of mothers with partners (8%). This finding could indicate a need to pay special attention to single parent families when designing childhood injury prevention programs in Northern Ontario.

DISCUSSION

It is apparent that the SES variables of income, LICO, education, language, as well as partner status need to be addressed when considering families' access, awareness and ultimately the utilization of health services and community programs. Ongoing efforts should be made to tailor programs and services to meet the needs identified, since families most in need often face more barriers. Although most NOPCHS respondents stated that they indeed felt satisfied by the services provided, suggestions were made to create more play centres, recreational services and daycares. There was also a call to increase awareness of and accessibility to these services.

Lower education levels of mothers and their partners affect the health conditions and behaviours of their children. Health promotion campaigns and programs must take special efforts to make their campaigns and programs suitable to parents with lower education levels.

Single mothers reported facing more barriers, lower satisfaction with community supports, less (and later) use of prenatal services, less food security, less variety in the child's diet, and less breastfeeding initiation rates. Single mothers used parent support groups and food banks more often than those mothers with a partner. Their children also experienced more falls requiring medical attention. It is important to cater to needs of single parents and the unique challenges they face.

First language did not appear to have a major influence on program utilization. It was noted that children of mothers first learning French used recreational programs less often than children of mothers first learning English or other languages. This may indicate a lack of French oriented recreational programs.

The results of this report bring to light important implications for social and economic planning. This report shows that income disparity in Northern Ontario is potentially having an adverse affect on the health conditions and behaviours of residents, and most importantly, Northern Ontario children. Agencies and governments at municipal, provincial and federal levels need to take income levels and disparities into account when designing and evaluating policies and programs. At the local level, attempts to alleviate burden and increase accessibility to health services will help reduce some of the barriers faced by low-income families, families with low education levels, and single parent families. Programs that make special attempts and are successful in reaching these populations should be evaluated for initiatives that can be applied to other programs.

EXECUTIVE SUMMARY REFERENCES

(1) Northern Ontario Perinatal and Child Health Survey Consortium. The Northern Ontario Perinatal and Child Health Survey Highlights Report: A First Look. Sudbury: 2002.

(2) Northern Ontario Perinatal and Child Health Survey Consortium. Northern Ontario Baseline Child Health Information: Analysis of Secondary Data. Sudbury: 2002.

(3) Lalonde M. A new perspective on the health of Canadians: a working document. 1974. Available online at: http://www.hc-sc.gc.ca/hppb/phdd/pdf/perspective.pdf

(4) Health Canada. What determines health? 2003. Available online at: http://www.hc-sc.gc.ca/hppb/phdd/determinants/determinants.html#income

TABLE OF CONTENTS

LIST OF TABLES

Demographic Profile

Awareness, Access, and Utilization of Community and Health Unit Programs

Food Security and Nutrition

Breastfeeding Initiation and Duration

Injury

LIST OF FIGURES

Demographic Profile:

Awareness, Access, and Utilization of Community and Health Unit Programs

Food Security and Nutrition

Breastfeeding

SECTION I: 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 (NOPCHS) 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.

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In 2002, the Consortium released two reports: The Northern Ontario Perinatal and Child Health Survey Highlights Report: A First Look[2] and the Northern Ontario Baseline Child Health Information: Analysis of Secondary Data.[3] 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 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 offered by health units and community agencies. Topics of the focused reports are: Access to Parenting Services; Breastfeeding; Determinants of Child Health; Unintentional Injuries and Safety; and Prenatal and Child Nutrition.

The Sudbury & District Health Unit is taking the lead on this focused report concerning determinants of child health. This report will draw from the results of the Northern Ontario Perinatal and Child Health Survey (NOPCHS) to explore the relationship between socioeconomic determinants and selected health-related conditions. This will better enable health units and community partners to design and implement programs, to address the needs of Northern Ontario children and their families.

DETERMINANTS OF HEALTH PERSPECTIVE

In 1974, a report published by Canada's Minister of Health and Welfare, Marc Lalonde, began a shift in the way Canadian policy-makers viewed health and wellness. The working paper entitled, *A New Perspective on the Health of Canadians,* acknowledged the importance of biological, environmental, behavioural, as well as health care system influences in the determination of public health.[4] Often referred to as a "population health perspective", the ideas presented in the Lalonde report are now widely accepted and represented throughout the health literature[5-8] and served as a starting point for current models. For example, Health Canada's Second Report on the Health of Canadians presents a model of the "determinants of health." The determinants of health are categorized as twelve broad variables: income and social status, social support networks, education and literacy, employment/working conditions, social environments, physical environments, personal health practices and coping skills, healthy child development, biology and genetic endowment, health services, gender, and culture.[9] The report provides definitions, as well as evidence to support the inclusion of each of these variables. Furthermore, the report provides an excellent lens through which to view the underlying factors that influence health and illness and has guided much of the literature review conducted as part of the this report.

A review of existing literature, consultation with planners and providers of health services, and the scope of the (NOPCHS) questionnaire, suggest that two of Health Canada's determinants of health, income and education, deserve particular attention. A large body of work supports the validity of these variables as measures of socioeconomic status.[10-16] Many additional studies have adopted them for the purposes of their own research and support the link between socioeconomic status (SES) and child health outcomes.[10,17-20] However, it is important to note that assessments of income and education by no means provide a comprehensive picture of one's social and economic status. Many other characteristics including gender, race, age, employment, marital and immigrant status have been suggested as strong determinants of health.[9,21,22] Furthermore, it is necessary to recognize that the influences of an individual's education and income do not occur in isolation of each other.[23] For example, an individual's level of education may certainly contribute to their type and quantity of employment, and in turn impact their income and social status. It will be important to bear this in mind when interpreting NOPCHS data. The significance of the two above-mentioned socioeconomic indicators to health is summarized below.

Income and Social Status:

"At each rung of the income ladder, Canadians have less sickness, longer life expectancies and improved health".[9] The relationship between income and health status is seen across the socioeconomic spectrum and is associated with immediate effects such as poor living conditions and inadequate nutrition as well as more indirect consequences such as a lower degree of control over life circumstances.

Specific to child health, studies have examined the relationship between household income and child morbidity and mortality[14,19,24], as well as the health of adults who were raised in poverty.[25] Séguin et al.[18] investigated the impact of inadequate income on the health of infants in Quebec. Their results suggest that infants with poorer overall health and higher hospital admission rates more often come from households with less than sufficient income. Furthermore, a review of studies by Brooks-Gunn and Duncan[26] suggests that family income impacts more than just the physical health of children. Children's cognitive abilities, school achievements, emotional and behavioural outcomes, and teenage out-of-wedlock childbearing are all influenced by family income.

Other outcomes that are adversely affected include children's cognitive abilities, school achievements, emotional and behavioural outcomes, and teenage out-of-wedlock childbearing.

Education and Literacy

When investigating the role of parent education as a determinant of child health, several alternative relationship pathways must be considered. A review of literature conducted by Reynolds and Ross[27] presents two of these proposed pathways and defines them as: *education as the reproduction of inequality*, and *education as achieved status*. The first suggests that education is merely a marker of one's background and overall social location. It is these variables, which include both individual and family employment and income status that more directly influence health outcomes. *Education as an achieved status* implies that the observed relationship between education and health outcomes occurs independently of other socioeconomic variables. As stated by Reynolds and Ross,[27] this may be because education, "increases individuals' effective agency by developing habits, skills, resources, and abilities that enable people to shape a lifestyle that improves well-being" (p.5). This concept is further supported by Case and Paxson[28] who note that, due to increased awareness of positive health behaviours and availability of health resources, children of more educated mothers are more likely to be in very good or excellent health.[28] Both of the above mentioned pathways are supported by results of the American National Longitudinal Mortality Study which propose that, "the pathways through which income and education affect mortality are complex but are likely to be linked to purchasing power for health services, healthy habits and behaviours, and the knowledge and empowerment that comes with education."[21](p. 26).

Further, when reporting self-assessed health, the importance of examining both mothers' and partners' education level has been demonstrated by Christiaan et. al.[29] His research shows that, in addition to own education, partner's education level influences health outcomes and "the social gradient in health is underestimated by not considering partner's education, especially for women."[29]

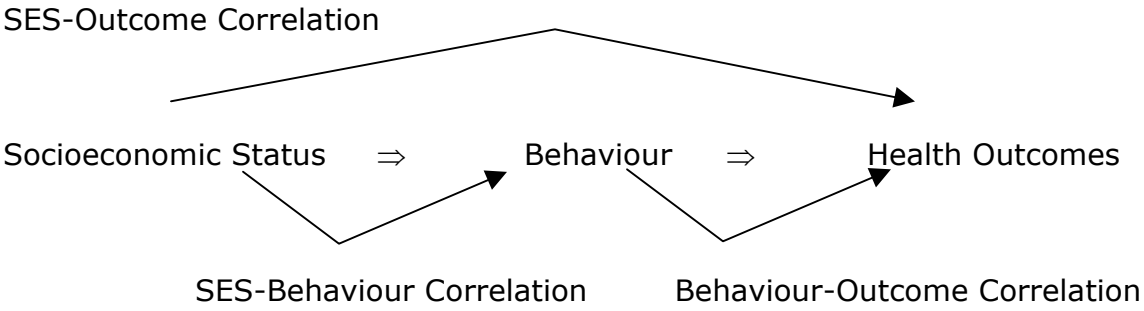
CORRELATIONS MODEL

Socioeconomic determinants of health, specific health behaviors, and health outcomes intersect in several significant ways.[16,17,23,30,31] Possible explanations include differences in available financial and social resources, access to quality health care services, and personal behaviours and health practices. The correlations model, illustrated in Figure 1, was developed as a way to understand the complex relationships between determinant of health variables as well as their influence on perinatal and child health. For example, health behaviors such as smoking are associated with respiratory disease, certain cancers and other health outcomes.[32,33] This relationship is identified in the correlations model as the behaviour-outcome correlation.

Research also suggests that an individual's SES is strongly linked with specific health outcomes. For example, in reference to child health, Duncan established that poor children, relative to nonpoor children, have increased risk for low birth-weight, lead poisoning, child mortality, and a short stay hospital episode.[34] In the correlations model, this relationship is referred to as the SES-outcome correlation.

Lastly, and of greatest significance to this report, is the SES-behaviour correlation. This refers to the relationship between socioeconomic status and specific health behaviours and practices.

Correlations Model



FOCUS OF REPORT

This report will explore the relationship between income, education and other measures of SES and the following health behaviours: 1) awareness, access, and utilization of community and health care services, 2) family nutrition and food security issues, 3) breastfeeding practices, and 4) frequency and treatment of childhood injuries. Each of these SES-behaviour relationships represents a possible pathway between socioeconomic status and child health outcomes.

The development and selection of this model are informed by several sources. Firstly, three in-person focus groups were conducted with internal and external health service planners and providers. Participants identified each of these relationships as interesting and meaningful to their work as planners and providers of supportive health care services. Although many additional topics, such as childhood asthma and smoking were presented throughout focus group discussions, participants felt that these had received, or would gain attention through other research projects. Secondly, the NOPCHS data set was reviewed for the sufficiency of sample for cross-tabulations. This ensured that each of the identified areas of interest could be analyzed in a meaningful way; this was essential in order to provide useful and significant information regarding the health of Northern Ontario children. Lastly, an extensive review of the literature supports the existence of a correlation between measures of socioeconomic status and many health related behaviours. These include the relationship between SES and health service utilization,[15,35,36] nutrition practices and food security,[37-39] breastfeeding practices[40-42] and injury frequencies and treatment.[43-45]

A comprehensive review of the relationships under investigation in the Determinants of Child Health focused report will now be discussed in relation to this existing literature.

SECTION II: LITERATURE REVIEW

Databases used to identify literature related to the socioeconomic determinants of child health and health related practices included:

- Medline:1993-current;
- PsycINFO: 1972-current;
- Social Sciences Abstracts 1980-current; and
- Sociological Abstracts: 1963-current

The selection of articles for reference was based on their publication in an English peer reviewed journal. No grey literature such as thesis publications was included in this review. Other selection criteria included date of publication, study location and sample, research methodology and relevance to the NOPCHS Determinants of Child Health focused report. Preference was given to Canadian studies published after 1995, (except for classic findings), which explored the relationship between socioeconomic status and child health and between SES and health related behaviours.

Keywords used in our database search included the following:

Income	AND	*each of*: breastfeeding; nutrition; food security; injury; prenatal care; health; health care utilization; satisfaction
Education	AND	*each of*: breastfeeding; nutrition; food security; injury; prenatal care; health; health care utilization
Employment	AND	*each of*: breastfeeding; nutrition; food security; injury; prenatal care; health; health care utilization
Socioeconomic Status	AND	*each of*: breastfeeding; nutrition; food security; injury; prenatal care; health care utilization; health; health behaviours; indicators; measures
Health Care	AND	*each of:* access; utilization
Parenting	AND	utilization

References cited in selected articles were also reviewed for their relevance to our study.

A large body of research supports the relationship between socioeconomic status and specific child health outcomes.[10,14,17,24] This report will investigate the determinants of child health. However, as previously illustrated, there are multiple pathways that mediate this connection. For example, as cited in Lynch, Kaplan and Salonen,[46] studies which explore this relationship have demonstrated that lower

SES is associated with "higher rates of smoking, obesity, poorer dietary habits, [and] lower levels of physical activity." (p. 809) Furthermore, other studies demonstrate that parents' health behaviours, especially during the prenatal period, may have a profound effect on the health of their children. The negative effects of alcohol, tobacco, and other drug use, poor nutrition, and inadequate prenatal care have been repeatedly demonstrated throughout the literature. During childhood, many of these same behaviors have been associated with negative health outcomes, as are choices such as whether or not children wear seatbelts or have a regular bedtime routine.[28] An understanding of the various correlations between socioeconomic status and health behaviors relevant to the NOPCHS Determinants of Child Health focused report was obtained through a review of existing literature.

THE IMPACT OF SOCIOECONOMIC STATUS ON PROGRAM AWARENESS, ACCESSIBILITY AND UTILIZATION

Accessibility to certain health services across Canada is legislated to be uniform by the Canada Health Act.[47] Although the Act attempts to reduce financial barriers by paying for basic health services, there remain discrepancies in accessibility and utilization of health services and programs both covered by provincial insurance plans and ones offered free of charge. For example, low-income individuals are less likely to have a family physician, and less likely to practice preventative health care.[48]

These discrepancies in accessibility may or may not be due to the cost of health programs themselves. For example, a study by Fuller and Gallagher[49] found that low-income mothers report finding transportation as a barrier to accessing prenatal care. Also, non-financial barriers play an important role in accessibility across SES level. Lack of time, or a lack of available services in the community, such as a family physician, may influence access. The NOPCHS data set provides us with information on which barriers mothers encountered when trying to access perinatal and child health services, which services were available to them, and suggestions for improvement.

Like access to health services, utilization of health services also differs according to SES level. Research conducted by Séguin et al.[18] found that insufficient household incomes are generally associated with higher hospital admission rates for infants in the first 5 months of age, although, the likelihood of hospital admission was lowest among infants in the poorest income category. Séguin et al. also found that infants of mothers without partners and mothers with lower education were at increased risk for hospitalization. A study of health service utilization by Manitoba children found that physician visits varied by income level, and were opposite for urban and rural regions. In rural regions, physician visits increased with income, while in urban regions they decreased with income.[50] SES was also found to influence childhood vaccination rates. If a child's mother was unmarried, had less than a college education, or was living near or below the poverty line, the less likely the child was to be fully vaccinated.[51] Furthermore, utilization of prenatal care early in pregnancy was less likely to be undertaken by women who were never married, had

less than 12 years of schooling, and who reported low family incomes.[52] These differences in perinatal and child health service utilization by SES will be examined in the context of Northern Ontario in this report.

THE IMPACT OF SOCIOECONOMIC STATUS ON PARENT/CHILD NUTRITION PRACTICES AND FOOD SECURITY

Many of the factors that contribute to an individual's nutrition practices, during the prenatal period, during childhood, and into adulthood, are linked to their socioeconomic status.[37,39,53] Clearly, income levels dictate how much money people have to spend on food as well as which types of food they are able to purchase. Furthermore, knowledge of healthy food options may be influenced by an individual's overall educational attainment.

Research by Crooks,[54] found a significant correlation between measures of child growth and socioeconomic status. This correlation supported the study's hypothesis that, "child growth and nutritional status reflect the social circumstances in which they occur" (p. 129). Among 88 children aged 7 – 11, mean differences in heights were found to be significant when the child's father had at least a high school education. Mean weights of children were significantly higher in households where both parents were employed or where mothers were employed. It is suggested that this relationship is indirect and due to greater financial security which is often associated with education and employment. Separate studies conducted by Miller & Korenman[55] and McIntyre, et al.[56] suggest that stunting, wasting, and decreased growth rates are all directly related to poor nutrition due to low income. In addition, work by Casey et al. [57] demonstrates that while children in low-income, food-insufficient households consumed fewer calories and total carbohydrates, they had a higher cholesterol intake. Each of these nutrition practices may have a considerable impact on overall child health.

In addition to questions related to the impact of food security on child health, the NOCPHS asked mothers to comment on their own eating habits related to income and financial stability. For example, the survey asked, "In the last 12 months, did you or other adults in your household ever cut the size of your meals or skip meals because there wasn't enough money for food?" Research suggests that it is not uncommon for adults to sacrifice their own nutritional needs for the benefit of their children.[38,56] Studies by McIntyre et al.[56] found that among 141 low-income, lone mothers living in Atlantic Canada, mothers' dietary intake and the adequacy of intake was consistently poorer than their children's intake. The authors conclude by drawing attention to the fact that the socially acceptable practice of maternal self-deprivation has far-reaching implications for both mothers and their families. The consequences of poor maternal nutrition go beyond the nutritional risks associated with their reproductive role. Reviewed literature provides ample evidence of a link between SES and food-security and nutrition practices. Analysis of NOPCHS data will examine this relationship in the context of Northern Ontario children and their families.

THE IMPACT OF SOCIOECONOMIC STATUS ON THE INITIATION AND DURATION OF BREASTFEEDING

According to the World Health Organization (WHO), "breastfeeding is the most cost-effective, health-promoting, and disease-preventing activity new mothers can perform."[41] (pg. 12) Along with UNICEF and the Breastfeeding Committee for Canada, WHO also recommends exclusive breastfeeding for the first six months of life followed by continued breastfeeding in combination with complimentary food for up to two years of age and beyond.[58] 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 to meet the infant's nutritional requirements and developmental needs.

In addition to factors such as whether or not mothers have supportive partners or experience with breastfeeding, other variables including the age, ethnicity, income, education and employment status of the mother have been shown to impact breastfeeding practices.[14,59] As consistent predictors of breastfeeding behaviour, two of these variables, income and education, will be the focus of this report.

A review of the literature, by Dennis[41], identifies several studies that suggest that women from a higher SES are more likely to initiate breastfeeding and to breastfeed for longer in the child's life. This includes women with higher gross family incomes[40] and women who are well educated.[41] This correlation may be the result of several key factors. Women with higher family incomes may be able to take longer maternity leaves. And, as revealed by Dennis[41], several studies demonstrate that duration of breastfeeding is positively associated with the length of maternity leaves. Women with higher education may have access to more information and resources about the benefits and practice of breastfeeding and they may be more likely to research breastfeeding prior to the birth of their children. Studies by Sheehan and Krueger[42] suggest that the length of time a mother intends to breastfeed is the strongest predictor of actual length of breastfeeding. It follows that women who have more information about breastfeeding may intend to breastfeed longer.

THE IMPACT OF SOCIOECONOMIC STATUS ON INJURY FREQUENCY / TREATMENT

The Report on the Health Status of the Residents of Ontario indicates that, "injury and poisoning are by far the leading cause of death, accounting for 36% of deaths among children 1 to 9"[43] (p.127). The report also revealed that from 1986 to 1995, infant deaths from injuries and poisonings decreased across the province by 17%; however, in Northern Ontario those rates increased by 9%.[43] In Manitoba, children from both urban and rural low-income regions have higher injury mortality rates than children from the highest income regions, illustrating that income level affects

injury mortality.[60] This report will examine the relationship of income and education to injury frequency and care received.

Much of the literature suggests that socioeconomic status affects rates of childhood injury. Laing and Logan[44] found that risk of injury for children 0-14 years in London, England, was strongly related to social disadvantage. Research also suggests that a mother's education level affects risk of injury. Compared with college educated mothers, children of mothers with less than a high school education had at least a 50% increased risk of injury mortality.[45] Where a child receives treatment has also been found to be influenced by SES. As reported above in the literature review of the impact of socioeconomic status on access, awareness, and utilization, low-income families are more likely to utilize emergency hospital services and have higher hospitalization rates.[18,48]

As there is an abundance of literature suggesting a relationship between SES and childhood injuries, and because of increased childhood injury mortality rates in Northern Ontario, this report will investigate this relationship in Northern Ontario.

SECTION III: METHODOLOGY

NORTHERN ONTARIO PERINATAL AND CHILD HEALTH SURVEY

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 program and service planning for Northern Ontario and 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. 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 them. 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.

The sample for the NOPCHS was drawn from two sources, the Integrated Services for Children information System 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 3413 participants, with approximately 400 participants from each health unit area. The average refusal rate for the ISCIS sample was 20%. Among the general population, 5% for the eligible respondents (families with children under 7 years) refused to participate in the survey.

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.[2]

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 AREAS OF THIS REPORT

The Northern Ontario Perinatal and Child Health Survey provided our team with an enormous amount of data regarding many determinants of child health. In order to guide the development of this report, three 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 representatives from the Health Promotion Division and Resources, Research, Evaluation and Development Division of the Sudbury & District Health Unit, the Ontario Early Years Centre, Our Children, Our Future Program, the Centre for Rural and Northern Health Research, and the Social Planning Council of Sudbury.

Using Health Canada's twelve identified determinants of health as a guideline, determinant of health subgroups were created based on available NOPCHS data. For example, breastfeeding support was a subgroup of social support networks and child nutrition appeared under the broader category of personal health practices. Focus group participants were asked to discuss issues related to determinants of health that most impact their daily work. They were also asked to suggest possible relationships that they would be interested in investigating further. Some of these included: the association between respondents' education levels and personal health practices and the relationship between family income and the use of parent support services. The objective of this process was to direct our study in a way that would be beneficial to program planners and providers, and ultimately to service users themselves. A summary of the outcomes of the focus group meetings can be found in Appendix A.

STATISTICAL ANALYSES

For this report, the primary analyses were: frequency distributions, cross-tabulations, and correlations between variables for all northern health units combined, and for individual health units. 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 a dash (--).

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 size for cross-tabulations, response categories of SES measures have been combined. The original 12 response categories for approximate family income (see Table 1.2) have been combined into 5 categories. Education levels were measured by both mothers' and partners' last completed level of schooling (see Tables 1.4 and 1.5). Education responses were combined into 5 response categories for mother's education level and 6 categories for partner's education level, adding Not Applicable for respondents without partners. Responses of mother's first spoken language spoken, still understood, have been combined into English, French and Other (see Table 1.7).

Regrouping of health behaviour response categories were based on suggestions from program planning staff and to allow for easy comparison to other Ontario health reports. Qualitative responses were grouped into categories.

All 'Not Stated', 'Don't Know', or 'Refused' responses were coded as 'missing' for all analyses. 'Missing' values were excluded from the analysis unless more 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, with the exception of the partner education variable.

Besides examining approximate household income to determine income status, a low-income cutoff (LICO) variable was derived for participants of the survey. One of the benefits of deriving the LICO variable was that significant differences were more observable between two LICO categories for certain cross-tabulations where otherwise not apparent when grouped into five income categories.

Low-income cutoffs are based on the 1992 Family Expenditure Survey by Statistics Canada.[61] The variable was derived based on the number of people supported by family income and approximate family income. The derived variable is a conservative (lower) estimate than the number of households that are below LICO. This is a limitation of the derived variable since the income categories in the NOPCHS do not match exactly with low-income cutoffs. For example, the LICO for a household size of three is $24,497 and $24,326 (depending on the population size). In NOPCHS, the first two income categories are <$17,000, and $17,000 to $26,999. Even though there are potentially three person households in the second income category with an income of less than $24,500, only three person households in the first income category were considered to be below LICO in this particular example.

A Food Security Index was created based on the United States Department of Agriculture's Guide to Measuring Household Food Security.[62] It uses a standard 6-item indicator set for classifying household by food security status level. Total affirmative responses were categorized into food secure and food insecure depending on the number of affirmatives. Households were categorized as food insecure based on two or more affirmative responses.

LIMITATIONS

There are a few limitations to this report. Due to the nature of some questions dealing with prenatal care and breastfeeding, fathers have been excluded from the survey. The study design meant that mothers who do not have a telephone or mothers living in institutions were excluded from the study. Time limitations for a telephone survey resulted in the omission of some questions that would have yielded useful information.

After comparing the NOPCHS sample to the population of Northern Ontario using Statistics Canada, Census 2001 data, some differences were found. The NOPCHS sample of mothers had a higher level of education than Northern Ontario females

as a whole. Household income levels for the NOPCHS sample varied in their representation to the Northern communities. Also, there were a lower proportion of French speaking mothers in the NOPCHS sample than in Northern Ontario. Finally, a comparison of marital status indicated a higher proportion of common-law couples (with the exception of findings in the Thunder Bay Health Unit catchment area), and a lower proportion of lone parent families across all Northern Ontario health unit catchment areas when compared to census data.

The derived low-income cutoff (LICO) variable was a conservative (lower) estimate than the number of households that are actually below LICO, and thus, a limitation of the derived variable. This was due to income categories in the NOPCHS not matching exactly with the low-income cutoffs for various household sizes.

SECTION IV: RESULTS

PART 1 – DEMOGRAPHIC PROFILE OF THE SAMPLE

With the exception of Table 1.1, the results represent weighted estimates as outlined in the methods section, unless otherwise specified. Frequencies are expressed as percentages of the total sample for both the North as a whole and for distinct health unit areas. Sample sizes of less than 30 are suppressed and presented by a dash (--). Point estimates for frequency distributions and cross-tabulations are presented with 95% confidence limits (C.L.).

Health unit areas are labeled:

- AHU Algoma Health Unit
- MPSHU Muskoka-Parry Sound Health Unit
- NBDHU North Bay & District Health Unit
- NWHU Northwestern Health Unit
- PHU Porcupine Health Unit
- SDHU Sudbury & District Health Unit
- TBDHU Thunder Bay District Health Unit
- THU Timiskaming Health Unit
- NORTH All areas combined

Respondents were asked to provide information regarding several demographic characteristics such as: age of 'target child', family income, and education levels. The results are presented below.

There was a fairly even distribution of male and female children within all northern health unit districts. Figure 1.1 represents the unweighted distribution of 'target children' by age. Over 50% of the unweighted sample of 'target children' were 1 year of age or younger. Using a weighted sample, however, only 27% of 'target children' fall in this age category, as illustrated in Figure 1.2. Figure 1.2 shows the weighted distribution of the child by age and gender.

Figure 1.1 Percent distribution of the 'target child' by age, all Northern Health Units; 2002

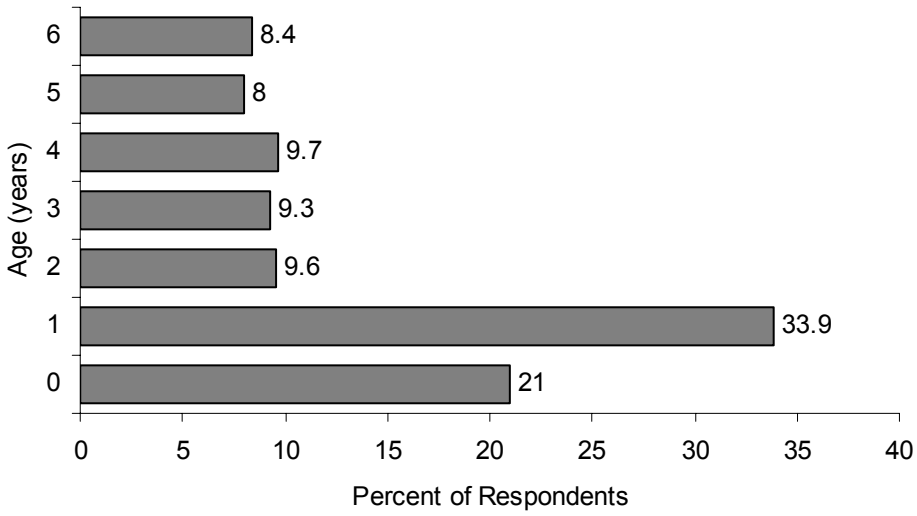
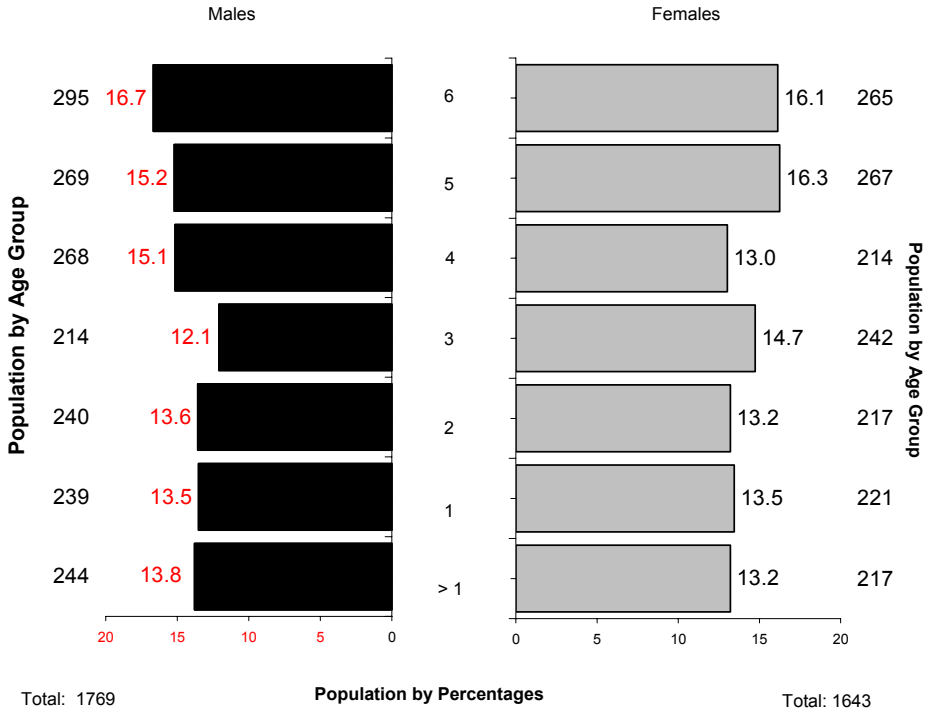


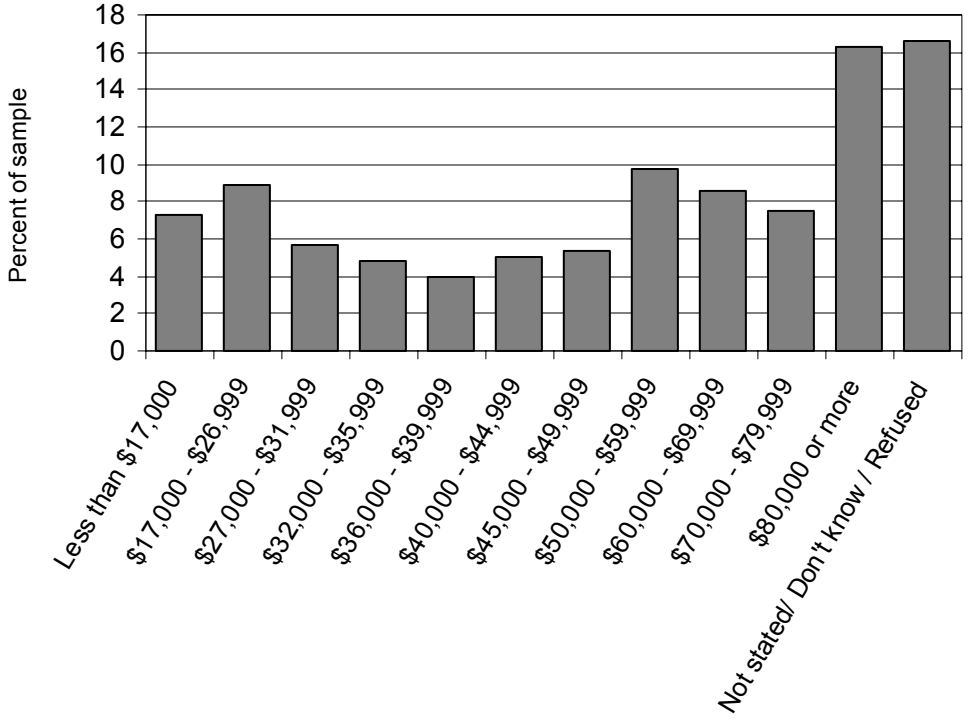
Figure 1.2 Population pyramid of the 'target child' by gender, all northern health units; 2002



Respondents were asked questions about their total household income and the number of individuals dependent on that income. Based on these two demographic variables, a third income variable was derived representing the percentage of respondent families who live below and above the designated low-income cut-off (LICO) (See Methodology for LICO calculations). Figure 1.3, Figure 1.4, and Figure 1.5 represent the sample distributions for each of these variables.

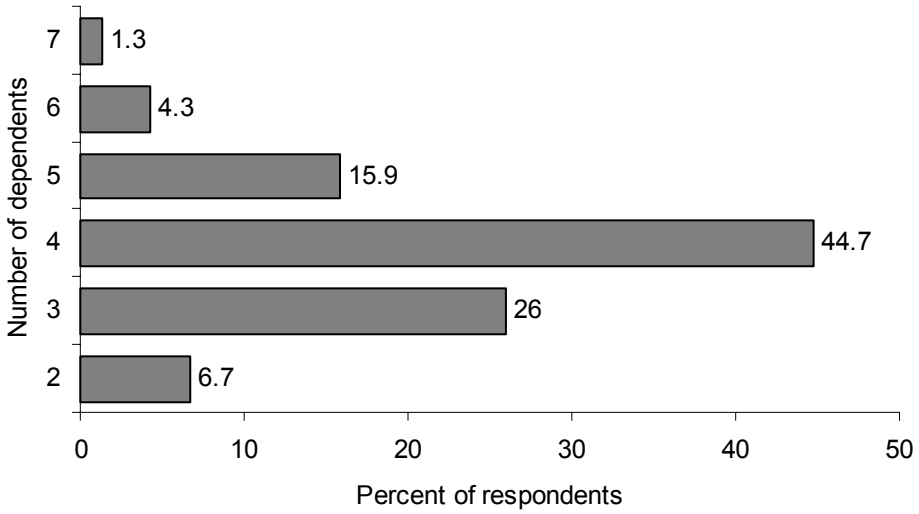
Approximately 50% of the weighted sample reported a family income of $50,000 or greater. Among the sample disclosing family income, the largest proportion had a family income of $80,000 or more.

Figure 1.3 Percentage distribution of respondents by family income from all sources, all Northern Health Units; 2002



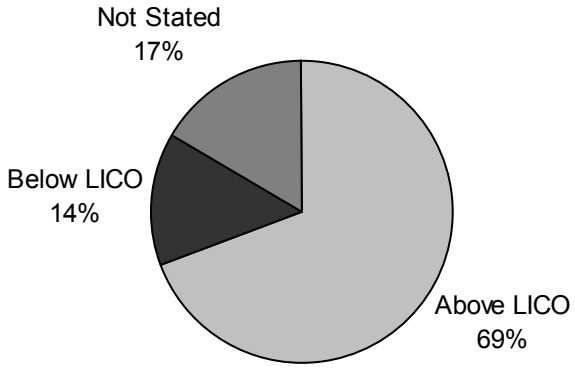
Over 65% of those surveyed reported four or more dependents. Figure 1.4 illustrates the distribution of these responses.

Figure 1.4 Percent distribution of dependents on family income, all northern health units; 2002



Based on the derived LICO variable, almost 70% of the weighted sample of families live above the designated low-income cut-off. This is illustrated in Figure 1.5.

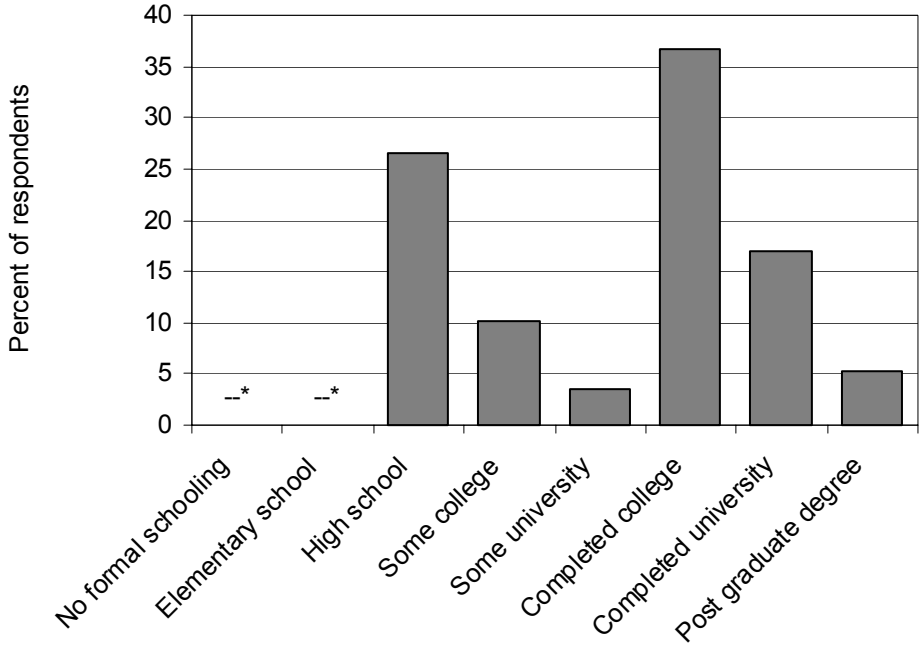
Figure 1.5 Percent distribution of dependents on family income, all northern health units; 2002



Respondents were also asked to provide demographic information regarding their education level, partnered status, ethnicity and first language. Both mother's and partner's education was measured by their last completed level of schooling. The language respondents first learned and can still understand is indicated by the language variable, and partner status indicates whether the respondent was with or without a partner. The response distribution by education level of both the mother

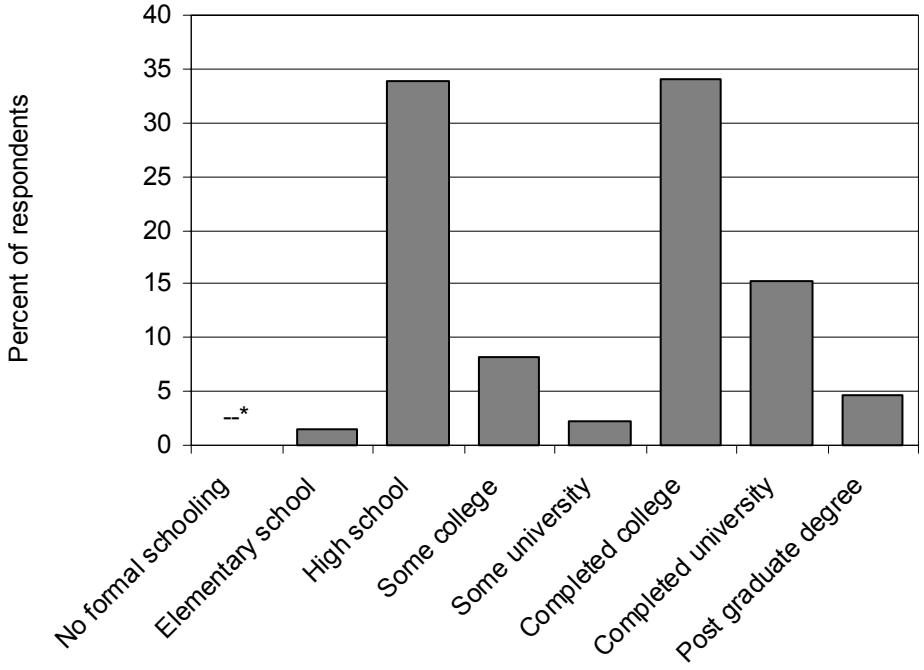
and her partner are represented in Figure 1.6 and Figure1.7 respectively. Over 50% of surveyed mothers and their partners had completed college, university or a postgraduate degree.

Figure 1.6 Percent distribution of mother's education level, all Northern Health Units; 2002



*estimates based on sample size less than 30 are suppressed and represented by a dash (--)

Figure 1.7 Percent distribution of partner's level education, all Northern Health Units; 2002



*estimates based on sample size less than 30 are suppressed and represented by a dash (--)

Approximately 87% of respondents reported having a partner, as shown in Figure 1.8.

Figure 1.8 Percent distribution of mother's marital status, all Northern Health Units; 2002

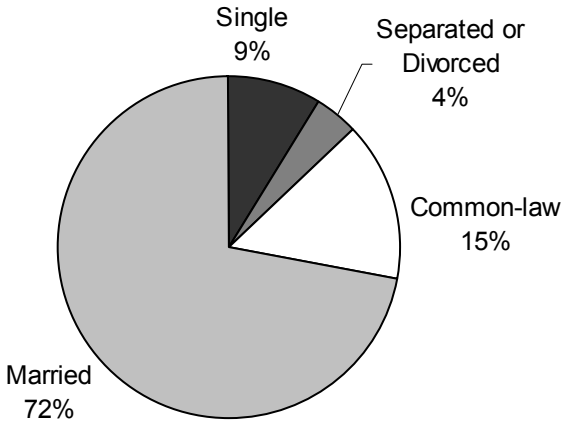


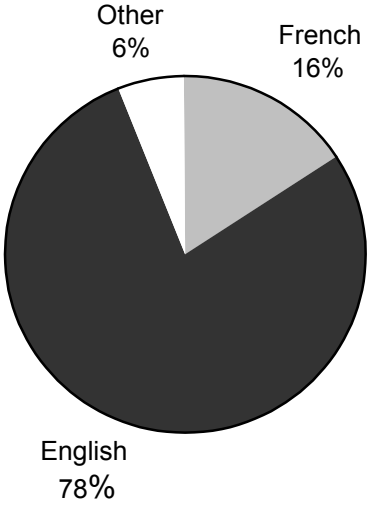
Table 1.1 represents the percentage distribution by ethnicity of the mother. This was determined by responses to the question, "To which ethnic or cultural group(s) did you ancestors belong?" One quarter of respondents indicated that their ethnicity was 'Canadian'.

Table 1.1 Percent distribution mother's ethnicity, all Northern Health Units; 2002

Ethnic/cultural group	% of sample	(Lower and Upper Confidence Limit)
Canadian	25.1	(23.4 – 26.7)
French	22.6	(21.1 – 24.2)
English	16.9	(15.4 – 18.5)
Scottish	7.1	(6.0 – 8.1)
Italian	5.4	(4.5 – 6.3)
Irish	4.6	(3.8 – 5.4)
German	3.4	(2.7 – 4.1)
North American Indian	3.4	(2.7 – 4.1)
Ukrainian	2.5	(1.9 – 3.1)
Polish	1.7	(1.2 – 2.3)
Dutch	1.3	(.09 – 1.7)
South Asian	0.6 [E]	(0.3 – 0.9)
Other	5.4	(3.4 – 5.0)
[E] data with a coefficient of variation (CV) from 16.6% to 33.3% are identified by an (E) and should be interpreted with caution		

Respondents were asked, "What is the language that you first learned at home in childhood and can still understand?" As illustrated in Figure 1.9, almost 80% of northern respondents reported English to be their first language. Over 15% identified French as the language they first learned.

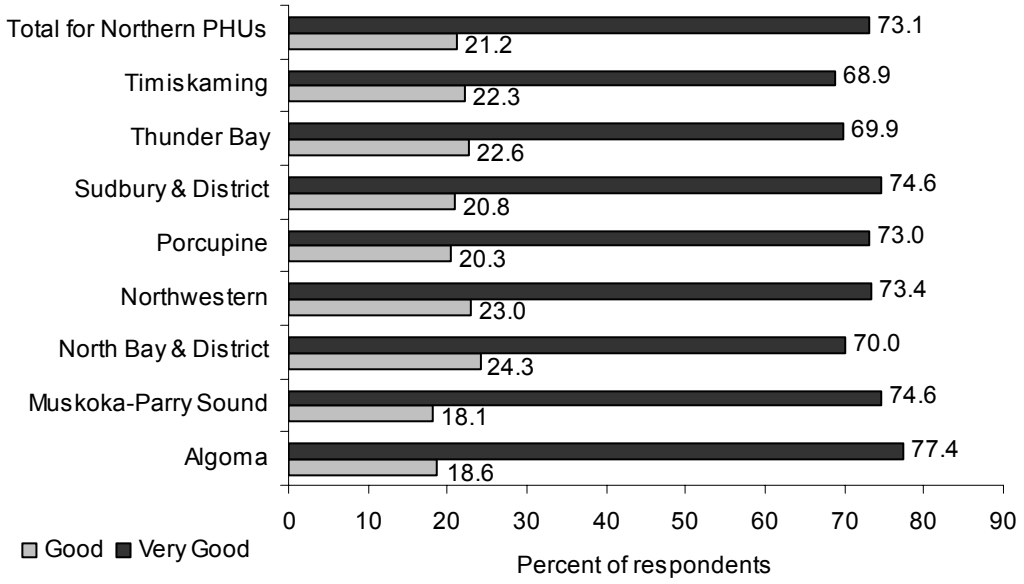
Figure 1.9 Percent distribution of mother's first spoken language, all Northern Health Units; 2002



1.1 Health Indicators

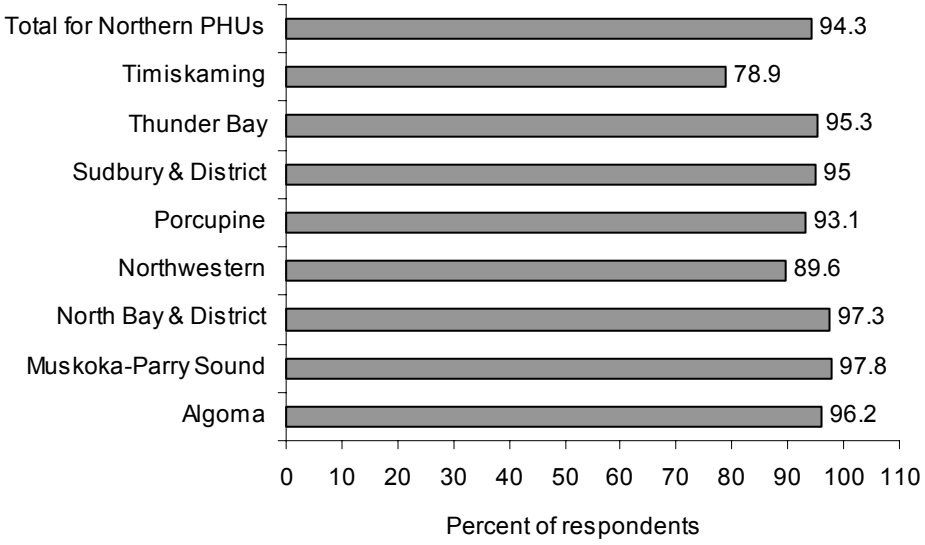
Self-reported health is recognized as a useful indicator of general health status.[63] Respondents were asked to rate the health of the target child from poor to very good. The responses for all northern health units (Figure 1.10) indicate that the majority of mothers felt that their child's health was good (21%) or very good (73%).

Figure 1.10 Percentage distribution of child's general health reported by the mother, all Northern Health Unit Areas; 2002



Over 94% of mothers surveyed indicated that they had a family physician. Figure 1.11 represents the percentage of positive responses by public health unit.

Figure 1.11 Percentage distribution of mothers who reported having a family physician, by Northern Health Unit Area; 2002



The next sections will focus on the determinants of child health and analysis of the SES-behaviour correlation pathway. Measures of SES, such as income and education, will be analyzed in relation to awareness, access, and utilization of community and health care services (Part 2), family nutrition and food security issues (Part 3), breastfeeding practices (Part 4), and frequency and treatment of childhood injuries (Part 5).

PART 2 – PROGRAM AWARENESS, ACCESS, AND UTILIZATION

Respondents were asked to provide information regarding their perceived awareness of, access to, and utilization of community and health unit perinatal and child health services. All results represent weighted estimates as outlined in the Methodology section, with the exception of Table 2.1 and 2.2 which contain reported frequencies of summarized qualitative data. Frequencies are expressed as percentages of the total sample for Northern Ontario, with health unit level analysis for certain cross-tabulations available in Appendix C, and D. Sample sizes of less than 30 are suppressed and presented by a dash (--). Point estimates for frequency distributions and cross-tabulations are presented with 95% confidence limits (C.L.).

All responses have been cross-tabulated with measures of socioeconomic status (SES). To examine health conditions across income levels, approximate family income and the low-income cut off (LICO) were used (see Methodology for LICO calculations). Education was measured by both mother's and partner's last completed level of schooling. The language respondents first learned and can still understand is indicated by the language variable, and partner status indicates whether the respondent was with or without a partner.

To determine if there were statistically significant differences the 95% confidence intervals were examined for overlap. If the intervals overlapped, there was no statistically significant difference between the two indicators being compared.

Graphs are presented in the text for where significant differences were found. All point estimates with confidence intervals can be found in tables in Appendix B.

2.1 Awareness

There are a wide range of services and programs offered in Northern Ontario communities, but unless residents are aware of the programs, communities will not benefit. To find out about awareness respondents were asked whether they felt they knew where to go for help in their communities and awareness of specific health unit and community child health services and programs.

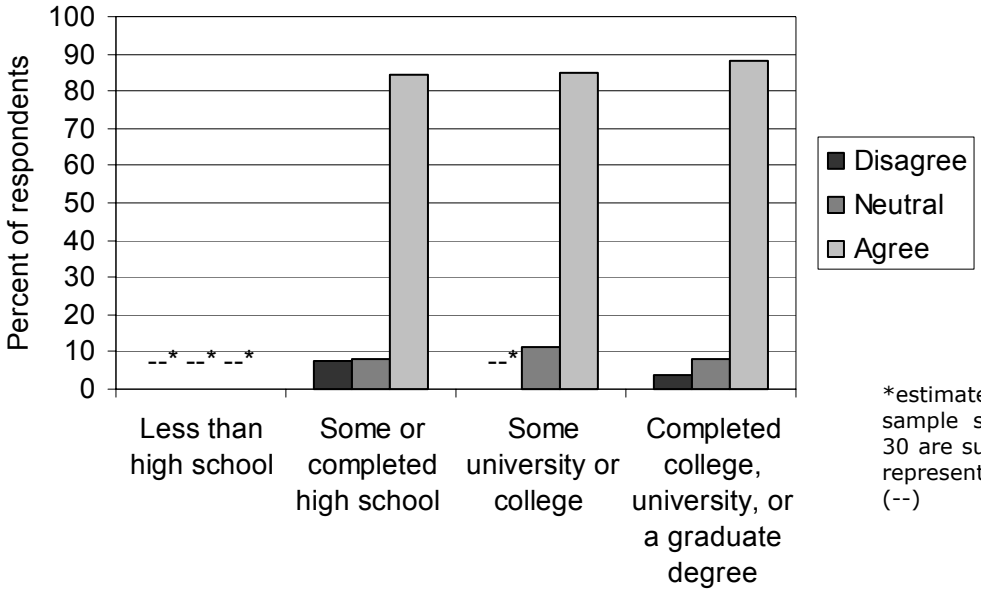
Awareness of Community Supports

To examine awareness of community supports, mothers were asked if they knew where to go for help in their community. Responses were examined according to five measures of SES: income, LICO, mother's education, partner's education and language. All cross-tabulations and confidence intervals can be found in Appendix B, Tables B.1 to B.5

Regardless of income level, most northern mothers felt aware of community supports with between 85% and 90% of mothers reporting that they were aware. Similarly, the majority of the respondents above and below LICO (87%) reported to be aware of community supports.

Awareness of community supports appeared to vary according to mother's education level. More mothers who completed a post secondary education agreed that they knew where to get help compared to those who had only completed all or some high school. Similarly, more mothers who had only completed all or some high school disagreed that they knew where to get help, than mothers with the highest education level. Figure 2.1 presents these comparisons.

Figure 2.1 Awareness of community support by level of mothers' education, for all Northern Health Units; 2002



*estimates based on sample size less than 30 are suppressed and represented by a dash (--)

Similar to mother's education level, a higher percentage of respondents with partners who had completed a post-graduate degree agreed that they knew where to get help (89%) when compared to those with partners who high school educations (86%). However, despite having partners with less education, respondents with partners having less than a high school education felt they knew where to get help more than any other partner education level, at 98%.

A slightly higher percentage of respondents who first learned to speak a language other than French or English agreed that they knew where to go for help in their community (92%). Approximately 86% of respondents who first learned English or French agreed that they knew where to go for help.

Awareness of Health Unit and Community Programs

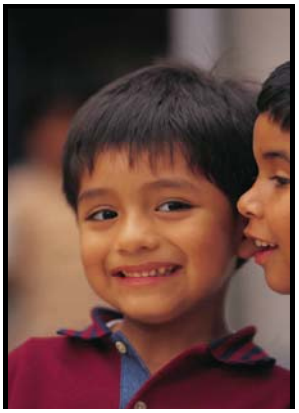
Mothers were asked if they were aware of a list of specific community resources, or became aware during the course of their pregnancy. The list included: public health nursing visits and/or telephone calls, Healthy Baby/Healthy Children program, Well Baby drop-ins, Parent Child Information Line, breast feeding support drop-ins, and breast feeding mentorship programs. The results from these questions were examined by five SES measures: income, LICO, mother's education, partner's education, and language. All cross-tabulations and confidence intervals can be found in Appendix B, Tables B.6 to B.10. Analysis of health unit level data can also be found in Appendix C (However, the analyses are not presented by health unit level where the sample sizes were too small for cross-tabulations.)

An examination of awareness of various community resources by income levels did not produce any notable differences. The only significant variation of awareness between respondents above and below LICO was awareness of the Breastfeeding Mentorship Program. Twenty six percent of those above LICO were aware of the program while only 19% of respondents below LICO were aware of the program.

Mother's education level and mother's first spoken language did not have an effect on whether she was aware or became aware during the course of pregnancy of health unit and community programs. Partner's education level did influence respondent's awareness of certain programs. For Well Baby drop-ins, Parent Child Information Lines, and breastfeeding mentorship programs, those who had partners with less than high school education were more unaware than those whose partners had completed all or some high school and those with partners who held a college, university, or graduate degree.

2.2 Accessibility of Community and Health Care Services

To discover which accessibility concerns northern mothers had with perinatal and child health programs and services, they were asked a variety of questions concerning participation barriers, satisfaction rates, services gaps, distance to programs, and availability in their communities.



Barriers to Participation

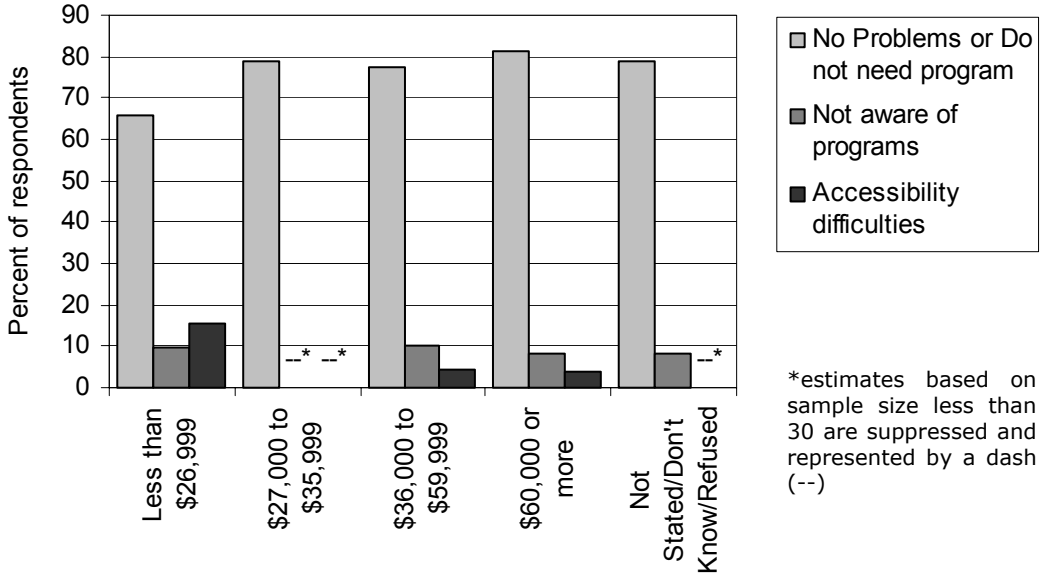
Mothers were asked if they felt any barriers to participation in community and health unit programs. For analysis purposes, 10 barriers initially listed during the interview were grouped into 6 categories.

- No problems or don't need the program
- Don't know enough about it or need more information
- Cost, inconvenient location, transportation are grouped as accessibility
- Hours of operation, job, and no time are grouped as time/operation hours
- Language, lack of child care, and child's health/disability are grouped as family oriented problems
- Other responses have been grouped into other

Responses have been compared according to six SES measures: income, LICO, mother's education, partner's education, language, and partner status. All cross-tabulations and confidence intervals can be found in Appendix B, Tables B.11 to B.16.

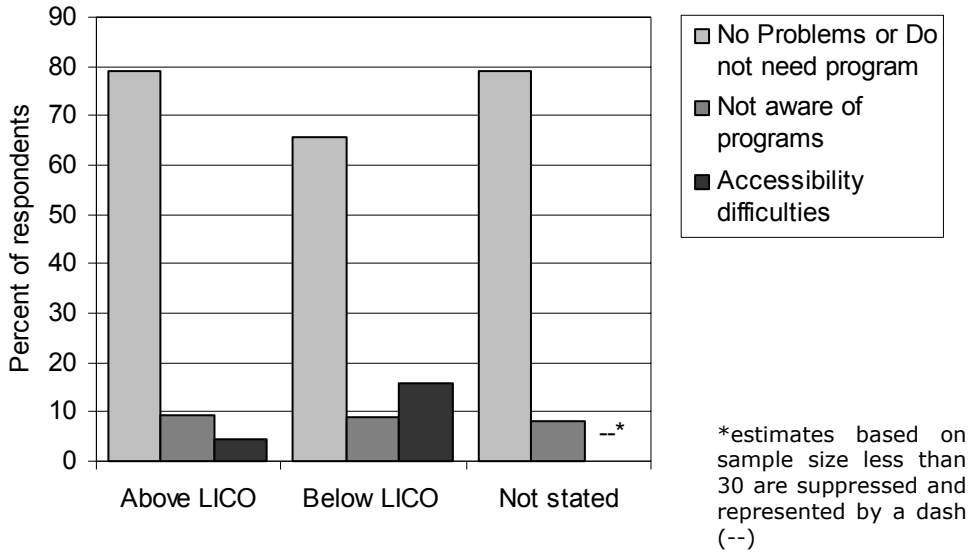
As illustrated in Figure 2.2, mothers in higher income categories reported less of a need for programs than mothers in lower income categories of less than $27,000. Access barriers, which include cost, transportation, and inconvenient location, were more of an issue with lower income mothers. In fact, mothers with family income of less than $27,000 (15%) are 3 to 4 times more likely to report these barriers than those in the two highest income categories (4%).

Figure 2.2 Barriers to program participation by income, all Northern Health Units; 2002



Similar to mothers with low-income levels, respondents below LICO reported more obstacles with accessibility than did those above LICO, while those above LICO (79%) reported needing the programs less or having no problems accessing them than those below LICO (66%). Figure 2.3 illustrates these results.

Figure 2.3 Barriers to program participation by low-income cut off, all Northern Health Units; 2002



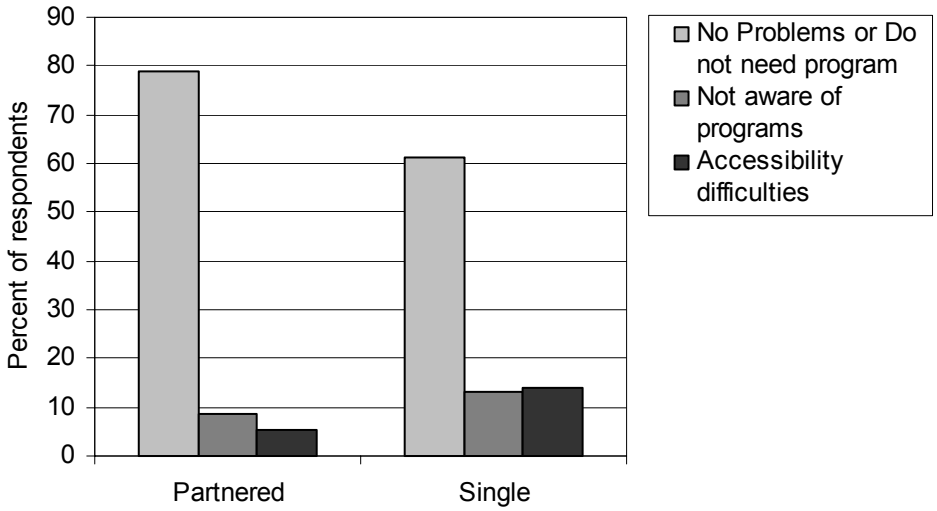
Patterns also emerged with regard to need of services and access according to mother's education level. Mothers with who had completed a post secondary education were more likely to report not needing health unit and community programs and less likely to have faced barriers to participation than mothers with less than a high school education.

The percentage of mothers who reported having no problems or not needing the services was greater for those who had completed a post secondary education (79%). Seventy three percent of the mothers who had completed some or all of high school reported no problems or not needing services. Also, accessibility was more often an obstacle for those with some or all of high school (10%) than those with a college, university, or graduate degree (4%).

Partners' education level and mothers' first spoken language did not yield distinguishable differences in barriers faced by mothers accessing perinatal and child health programs in their communities.

Single mothers were less aware of programs and had more trouble accessing programs than those with partners. A higher percentage of mothers (79%) with partners reported having no problems or not needing services compared to those without partners (61%).

Figure 2.4 Barriers to program participation by mother's marital status, all Northern Health Units; 2002

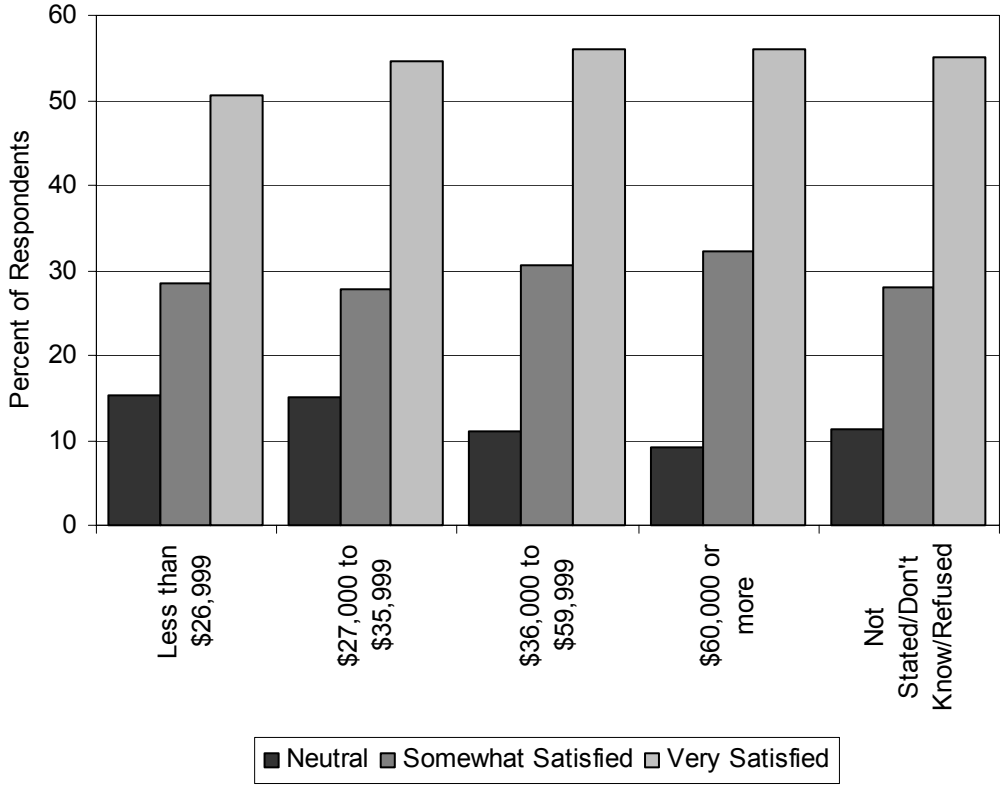


Satisfaction

The survey also asked mothers how satisfied they were with the help they received from the supports and services available to them and their children. Answers were sorted into 4 categories: unsatisfied, neutral, somewhat satisfied, and very satisfied. Satisfaction rates were analyzed according to six SES variables: income, LICO, mother's education, partner's education, language, partner status. All cross-tabulations and confidence intervals can be found in Appendix B, Tables B.17 to B.22.

As illustrated in Figure 2.5, there was an increasing trend in the percentage of mothers who were very satisfied with available support and services with increasing income levels. Since the number of respondents that reported being unsatisfied were too small to report, the Unsatisfied bars have been removed from the graph.

Figure 2.5 Satisfaction with services by income, all Northern Health Units; 2002



A similar pattern was found between satisfaction rates of those above and below LICO as was found with income. Forty seven percent of the respondents living below LICO were very satisfied with supports and services they had received in their communities, while 56% of respondents above LICO were very satisfied.

Satisfaction with the supports and service received for children and mothers did not appear to differ according to mother's education level, partner's education level, or mother's first learned language. Satisfaction was high for all groups. There was, however, a slightly higher percentage of mothers with a partner that were very satisfied with the help received from supports and services available in their communities (56%) than those without a partner (48%).

Improvement Suggestions

Mothers were asked what type of services they would like to see in their communities for their children. A large number of respondents felt satisfied with current services or did not know what other services they would like to have. Of the mothers that did make suggestions, more play centres, recreational services, and daycares were recommended as ways to improve community services, as well as increasing accessibility to available programs. All responses have been categorized,

and are shown below in Table 2.1 along with the frequency distributions for each response category.

Table 2.1 Additional child services wanted in communities, all Northern Health Units; 2002

Response Categories	Description of category	Frequency
Play centre	includes requests for playgrounds, play centres, play groups	222
Recreational programs/centres	includes requests for indoor/outdoor sports and associated facilities	218
Daycare	includes requests for improved daycare and babysitting	128
Improved accessibility to available programs	includes requests for improvements in cost, hours of operation, transportation, age limitations, availability, and a general increase in available programs	127
Artistic/educational programs	includes requests for music, dance, arts & crafts, library services, learning centres, general education and development programs	115
Drop-in centre/parent-child interaction programs	a combination of requests for 'drop-in centres' and 'parent-child interaction programs'	95
Parent support programs	includes requests for programs and centres that provide knowledge regarding child nutrition, breastfeeding, general resources and lactation consultants	76
Specialized services/screening programs	a combination of requests for 'behavioural/emotional support services', 'chronic illness/disorder support services', and 'screening programs for children'	57
Improved acute care medical services	includes requests for improved access to and availability of doctors, dentists, etc.	30
Bilingual programming	includes requests for English and French programming	19
Improved awareness of available programs		17
Don't know		1169
None or Satisfied with current services	a combination of 'none' and 'satisfied with current services' responses	1206
Other		24

Mothers were also asked how current supports and services could be improved. Although the majority of respondents did not respond to this question or did not know how to improve supports and services, some reported that improving awareness and accessibility would help. All responses are summarized in Table 2.2.

Table 2.2 Service improvement suggestions, all Northern Health Units; 2002

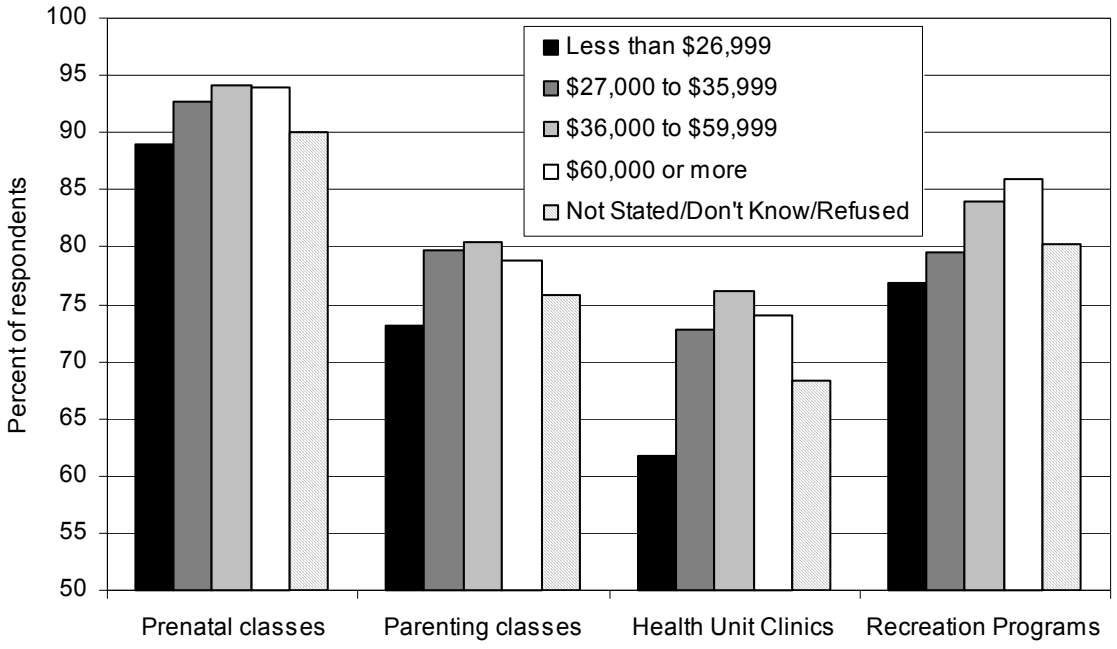
Response Categories	Description of category	Frequency
Improve awareness of current programs		44
Improve accessibility to available programs	includes requests for improvements in cost, hours of operation, transportation, age limitations, availability, and a general increase in available programs	19
Improve acute care medical services	improved access to and availability of doctors, dentists, etc.	16
General improvement		13
General dissatisfaction		11
Other		11
Not stated		3178
Don't know/Never used services	a combination of 'don't know' and 'never used available services' type responses	125

Access to Health Unit and Community Programs

In order to identify whether measures of SES had an effect on reported availability of child and perinatal services, respondents were asked if certain services and programs were available in their communities and/or close to their homes. If a mother felt that a program was not in her community and/or close to her home, it does not necessarily mean that the programs was not there. It could also indicate a lack of awareness of the program. Responses were examined in relation to five SES measures: income, LICO, mother's education, partner's education and language. All cross-tabulations and confidence intervals can be found in Appendix B, Tables B.23 to B.27.

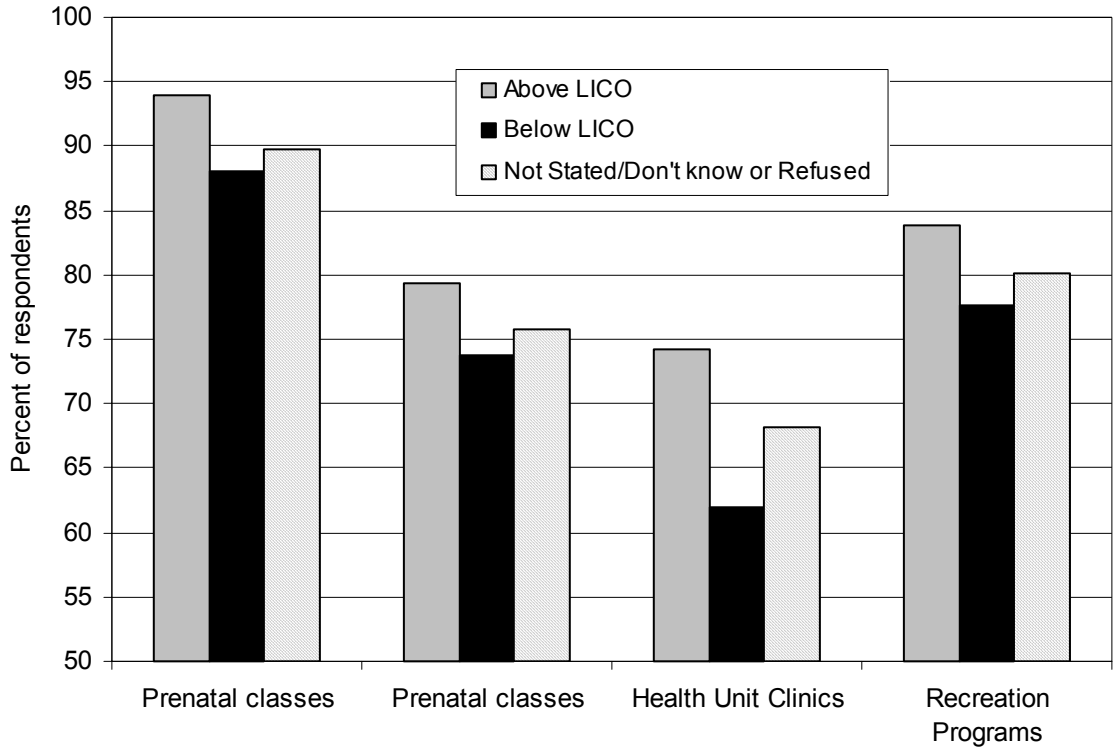
Respondents with lower income generally reported that children's services are less available to them. Illustrated in Figure 2.6, prenatal classes, prenatal classes or parenting classes, health unit clinics for child services, recreation programs, and toy libraries were all reported more available by mothers with higher incomes.

Figure 2.6 Access to child and perinatal programs by income, all Northern Health Units; 2002



Similarly, respondents above LICO felt that they had more of the listed perinatal and child services and programs close to where they live. Prenatal classes, parenting course or prenatal classes, health unit clinics for child services, and recreation services and programs were all reported to be close to respondents' homes more often than those below LICO. (Figure 2.7)

Figure 2.7 Access to child and perinatal programs by low-income cut off, all Northern Health Units; 2002



Mother's education level also appeared to have an effect on how accessible perinatal and child programs were perceived to be. A lower percentage of mothers with high school education felt prenatal classes, parenting courses/prenatal classes, family resource centres, and recreation services and programs were available near them when compared to those who held college, university, or graduate degrees. Mothers with high school education also felt toy libraries were close to their homes less often (61%) than those with some college or university (70%) and those who had completed a college, university, or graduate degree (70%).

Although some similar trends were observed for some services, partner's education level did not have as much of an effect on access to perinatal and child health programs and services as mother's education.

The number of mothers who reported that parenting courses/prenatal classes and health unit clinics for children were available close to their homes was greater for English or French mothers than for those whose first language was not English or French. Almost ten percent more respondents first speaking English reported a family resource centre close to their homes (55%) than mothers who spoke a language other than French (46%). French-speaking mothers reported parent support groups close to their homes (58.8%) more often than those who spoke a

language other than French or English (48%). French-speaking mothers also reported having toy libraries close to their homes (72%) more often than English-speaking mothers (67%)

2.3 Utilization of community and health care services

The correlation of socioeconomic status (SES) to specific health behaviours and practices has already been documented in the literature review. To examine the extent to which SES measures affect utilization practices, which in turn affect health outcomes, mothers were asked a variety of questions about which child and perinatal services they used.

Physician Utilization

To examine physician utilization, mothers were asked if they had a family physician and if the target child had seen a physician within the past year. Responses have been cross-tabulated with six measures of SES: income, low-income cut off (LICO), mother's education, partner's education, language, and partner status. All point estimates with confidence intervals can be found Appendix B, Tables B.28 to B.33.

Having a family physician varied according to some SES measures. Although over 90% of mothers of the lowest income category, less than $27,000, reported having a family physician, about 95% of mothers with higher incomes reported to have a family physician. Similarly, mothers living below the LICO reported having a family physician less often (91%) than mothers living above the LICO (95%). Partner's education level influenced whether a mother reported having a family physician as well. Mothers with partners with less than a high school education (83%) had a family physician less than partners with more education (95%). Mother's education level, language, and partner status did not affect whether a mother had a family physician.

An examination of whether the target child had seen a physician in the past 12 months only revealed a difference between mothers above and below the LICO. Ninety-two percent of mothers above the LICO reported that their child saw a physician in the past year, while 86% of mothers below the LICO stated that their child had seen a physician. Income, mother's and partner's education levels, language, and partner status did not appear to affect whether the target child saw a physician in the past 12 months.

Prenatal Service Utilization

To examine prenatal service utilization, mothers were asked if they attended prenatal classes and after how many months of pregnancy did they seek prenatal

care. Responses have been cross-tabulated with six measures of SES: income, LICO, mother's education, partner's education, language, and partner status. All point estimates with confidence intervals can be found Appendix B, Tables B.28 to B.33.

Roughly half of mothers attended prenatal classes, however, attendance varied according to some measures of SES. Mothers below the LICO (36%) went for prenatal care less than mothers above the LICO (51%). Both mother's and partner's education level did have an impact on attendance of prenatal classes. Lower education levels of both the mother and partner resulted in approximately a 10% decrease in attendance of prenatal classes.

Mother's income level slightly impacted the amount of time in pregnancy before first seeking prenatal care. More low-income mothers (12%) waited until between 4 and 6 months before seeking prenatal care than higher income mothers (8%). An examination of the LICO index and mother's language did not reveal differences in duration before first seeking prenatal care.

Education levels of the mothers and partners affected how long mothers waited before first seeking prenatal care. Mothers with higher education levels (90%) sought prenatal care within the first 3 months of pregnancy more often than mothers with lower education levels (85%). Likewise, more mothers with lower educations (13%) sought prenatal care between 4-6 months than higher educated women (8%). An examination of partner's education revealed similar trends. Almost 20% more mothers with partners with a higher education first sought prenatal care within 3 months of pregnancy than those with partners having less than a high school education.

Respondents with a partner reported first going to perinatal care within the first 3 months of pregnancy more often (89%) than those without a partner (84%).

More single mothers waited until between month 4 and 6 of pregnancy before seeking prenatal care (15%) than those who had a partner (9%).

Health Unit and Community Program Utilization

Utilization data for health unit and community services and programs were also obtained from respondents. Utilization of services such as parent support groups, recreational programs, and food banks were examined according to six measures of SES: income, LICO, mother's education, partner's education, language, and partner status. All point estimates with confidence intervals can be found Appendix B, Tables B.34 to B.36, if not presented below. Analysis of health unit level utilization indicators can be found in Appendix D. (However, the analyses are not presented by health unit level where the sample sizes were too small for cross-tabulations.)

Income influenced program utilization for the majority of the listed programs and services. Utilization of parent support groups, visit programs (Healthy Babies, Healthy Children), and food banks was higher for families in the lowest income

category compared to higher income categories. On the other hand, there was a trend for increased use of recreational services and programs for children as income increased. Library services and toy libraries were also reportedly used more by families with greater than $60,000 than families with less than $27,000 in family income. Table 2.3 presents the results of use of health unit and community programs by income. For all programs except food banks, the amount of mothers who reported to use the programs are presented.

Table 2.3 Use of health unit and community programs by income, all Northern Health Units; 2002

Program use		Income				
		Less than $27,000	$27,000 - $35,999	$36,000 - $59,000	$60,000 or more	Not stated/ Don't know / Refused
Parenting courses, Prenatal courses						
Yes	% of sample	18.6	17.9	15.6	18.3	17.4
	(Upper and Lower C.L.)	(14.8 – 22.4)	(13.4 – 22.4)	(12.8 – 18.4)	(15.7 – 20.9)	(13.8 – 21.0)
Parent support groups						
Yes	% of sample	19.1	--*	9.4	13.2	15.9
	(Upper and Lower C.L.)	(14.6 – 23.6)		(6.8 – 12.0)	(10.5 – 15.9)	(11.9 – 19.9)
Parent information line						
Yes	% of sample	12.4	13.1	12.8	10.6	12.1
	(Upper and Lower C.L.)	(9.6 – 15.2)	(9.5 – 16.7)	(10.5 – 15.1)	(8.8 – 12.4)	(9.3 – 14.9)
Family resource centre						
Yes	% of sample	22.8	19.7	18.6	22.3	18.6
	(Upper and Lower C.L.)	(18.0 – 27.6)	(14.2 – 25.2)	(15.0 – 22.2)	(19.0 – 25.6)	(14.1 – 23.1)
Home visits – such as, Health Babies, Healthy Children						
Yes	% of sample	20.1	14.0	11.9	12.4	11.7
	(Upper and Lower C.L.)	(16.7 – 23.5)	(10.4 – 17.6)	(9.7 – 14.1)	(10.5 – 14.3)	(9 – 14.4)
Health unit clinics for child services such as Breastfeeding clinics, Well-baby/pre-school clinic						
Yes	% of sample	19.9	16.5	19.3	19.0	18.3
	(Upper and Lower C.L.)	(15.7 – 24.1)	(12.0 – 21.0)	(16.2 – 22.4)	(16.3 – 21.7)	(14.4 – 22.2)
Recreational services and programs for children						
Yes	% of sample	51.1	52.5	62.2	76.8	58.8

	(Upper and Lower C.L.)	(46.3 – 55.9)	(46.7 – 58.3)	(58.6 – 65.8)	(74.1 – 79.5)	(54.3 – 63.3)
Library services (for or, with your child						
Yes	% of sample	48.4	53.4	52.1	59.9	59.2
	(Upper and Lower C.L.)	(44.2 – 52.6)	(48.2 – 58.6)	(48.7 – 55.5)	(57.0 – 62.8)	(55.1 – 63.3)
Toy library						
Yes	% of sample	30.0	32.6	37.8	39.4	38.5
	(Upper and Lower C.L.)	(25.3 – 34.7)	(26.7 – 38.5)	(33.7 – 41.9)	(36.0 – 42.8)	(33.7 – 43.3)
Food bank						
No	% of sample	83.5	97.4	98.5	98.8	94.2
	(Upper and Lower C.L.)	(80.3 – 86.7)	(95.7 – 99.1)	(97.7 – 99.3)	(98.2 – 99.4)	(92.2 – 96.2)
*estimates based on sample size less than 30 are suppressed and represented by a dash (--)						

Examination of the use of four of the listed health unit and community programs by LICO resulted in differences between groups. Home visits (Healthy Babies, Healthy Children) and food banks were used less by families above LICO than families below LICO. Recreational services and programs for children and library services for mothers and children were used more by above LICO families than below LICO families. Table 2.4 displays the results of health unit and community program use by LICO.

Table 2.4 Use of Health unit and community programs by low-income cut off, all Northern Health Units; 2002

Program use		LICO		
		Above LICO	Below LICO	Not Stated/ Don't know/ Refused
Parenting courses, Prenatal Classes				
Yes	% of sample	17.8	15.8	17.6
	(Lower and Upper C.L.)	(16.1 – 19.5)	(12.0 – 19.6)	(14.0 – 21.2)
Parent support groups				
Yes	% of sample	11.9	17.7	15.8
	(Lower and Upper C.L.)	(10.0 – 13.7)	(13.1 – 22.3)	(11.9 – 19.7)
Parent Information Line				
Yes	% of sample	12.3	9.7	12.1
	(Lower and	(10.9 – 13.7)	(7.0 – 12.4)	(9.3 – 14.9)

	Upper C.L.)			
Family resource centre				
Yes	% of sample	21.2	20.2	18.5
	(Lower and Upper C.L.)	(19.0 – 23.4)	(15.2 – 25.2)	(14.0 – 23.0)
Home visits – such as, Health Babies, Healthy Children				
Yes	% of sample	12.8	19.2	11.8
	(Lower and Upper C.L.)	(11.4 – 14.2)	(15.7 – 22.7)	(9.1 – 14.5)
Health unit clinics for child services – such as, Well-baby/pre-school clinic				
Yes	% of sample	18.9	19.7	18.2
	(Lower and Upper C.L.)	(17.1 – 20.7)	(15.2 – 24.2)	(14.3 – 22.1)
Recreational services and programs for children				
Yes	% of sample	67.3	52.4	58.6
	(Lower and Upper C.L.)	(65.2 – 69.4)	(47.3 – 57.5)	(54.1 – 63.1)
Library services for, or with your child				
Yes	% of sample	56.1	47.0	59.3
	(Lower and Upper C.L.)	(54.1 – 58.1)	(42.5 – 51.5)	(55.2 – 63.4)
Toy Library				
Yes	% of sample	37.3	31.8	38.5
	(Upper and Lower C.L.)	(34.9 – 39.7)	(26.8 – 36.8)	(33.7 – 43.3)
Food Bank				
No	% of sample	98.5	81.1	94.0
	(Lower and Upper C.L.)	(98.0 – 99.0)	(77.5 – 84.7)	(92.2 – 96.2)

Mothers who had a post graduate education used recreational programs, library services, and toy libraries more often than mothers with high school educations. Similarly, family resource centres and toy libraries were reported to be used by a greater percent of mothers when their partners had completed a post secondary education compared to mothers with partners having a high school education. Recreational services and programs were also used more by mothers with partners

with post graduate educations (71%) than partners with lower educations (54%-59%). Also, there was a trend for reported food bank use to decline as the partner's education increased.

Mother's first language did not appear to be an important factor in the utilization of health unit and community services. There were, however, two exceptions. A lower percentage of mothers who first spoke French report using recreational services and programs (57%) than mothers who first spoke English (65%). In addition, library services were utilized more by mothers who first spoke a language other than French or English (63%), than French (50%) or English (56%).

The presence of a partner did not appear to influence use of services with the exception of parent support groups and food banks. Among mothers with partners, 12% reported using parent support groups, compared to 20% of single mothers. Among mothers without partners, 16% used food banks, compared to only 3% of mothers with partners.

PART 3 – FOOD SECURITY AND NUTRITION

Mothers were asked to provide information regarding food security and nutrition practices for themselves and the target child. All results represent weighted estimates as outlined in the Methodology section. Frequencies are expressed as percentages of the total sample for Northern Ontario. Sample sizes of less than 30 are suppressed and presented by a dash (--). Point estimates for frequency distributions and cross-tabulations are presented with 95% confidence limits (C.L.).

All responses have been cross-tabulated with measures of socioeconomic status (SES). To examine health conditions across income levels, approximate family income and low-income cut off (LICO) were used (see Methodology for LICO calculations). Education was measured by both mother's and partner's last completed level of schooling. Partner status indicates whether the respondent was with or without a partner.

To determine if there were statistically significant differences the 95% confidence intervals were examined for overlap. If the intervals overlapped, there was no statistically significant difference between the two indicators being compared.

Graphs are presented in the text for where significant differences were found. All point estimates with confidence intervals can be found in tables in Appendix E, if not presented below.

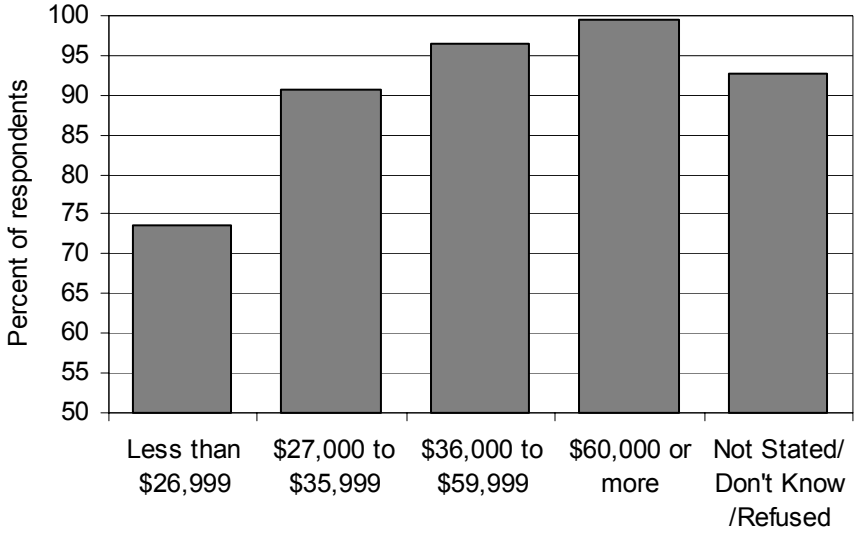
Food Security

To calculate food security, the United States Department of Agricultures' Guide to Measuring Household Food Security[62] was used (see Methodology section for calculations). Families who were food secure had "access by all people at all times to enough food for an active, healthy life."[62] Families who had "limited or uncertain availability of nutritionally adequate and safe foods or limited or uncertain ability to acquire acceptable foods in socially acceptable ways"[62] were deemed food insecure. Responses have been cross-tabulated with five measures of SES: income, LICO, mother's education, partner's education, and partner status. All point estimates with confidence intervals can be found Tables E.1 and E.2 in Appendix E, if not presented below.

Figure 3.1 demonstrates that income has a positive impact food security. Only three out of four families with less than $27,000 were food secure. By contrast, more than nine out of ten families making more than $27,000 were food secure.

Not surprisingly, there was also a trend for food bank use to drop as income increased.

Figure 3.1 Food security by income, all Northern Health Units; 2002



Similarly, families living below LICO (29%) reported being food insecure 9 to 10 times as often as those living above LICO (3%). Approximately one in five low-income families reported using a food bank while less than 2% of families above LICO reported using a food bank. (Table 3.1)

Table 3.1 Food security by low-income cut off, all Northern Health Units; 2002

Food security		LICO		
		Above LICO	Below LICO	Not Stated/Don't know or Refused
Food Security Index				
Food Secure	% of sample	96.9	71.3	92.5
	(Lower and Upper C.L.)	(96.2 – 97.6)	(67.3 – 75.3)	(90.3 – 94.7)
Food Insecure	% of sample	3.1	28.8	7.5
	(Lower and Upper C.L.)	(2.4 – 3.8)	(24.7 – 32.9)	(5.3 – 9.7)
Have you used a food bank in the last year?				
No	% of sample	98.5	81.1	94.2
	(Lower and Upper C.L.)	(98.0 – 99.0)	(77.5 – 84.7)	(92.2 – 96.2)
* estimates based on sample size less than 30 are suppressed and represented by a dash (--)				

Mothers' education level also had an effect on food security. Mothers with a college, university or graduate degree are more likely to be food secure than those with some university or college or those who had high school education. (Table 3.2).

Table 3.2 Food security by mothers' education, all Northern Health Units; 2002

Food security		Mothers' Education			
		Less than high school	Some or completed high school	Some college or university	Completed college or university or a graduate degree
Food Security Index					
Food Secure	% of sample	--*	85.7	87.2	97.0
	(Lower and Upper C.L.)		(83.4 – 88.0)	(84.1 – 90.3)	(96.3 – 97.7)
Food Insecure	% of sample	--*	14.3	12.8	3.0
	(Lower and Upper C.L.)		(12.0 – 16.6)	(9.7 – 15.9)	(2.3 – 3.7)
Have you used a food bank in the last year?					
No	% of sample	--*	89.6	95.1	98.3
	(Lower and Upper C.L.)		(87.6 – 91.6)	(93.1 – 97.1)	(97.7 – 98.9)
* estimates based on sample size less than 30 are suppressed and represented by a dash (--)					

Partner's education level had a similar effect on food security as mother's education level. Ninety eight percent of respondents with partners having college, university, or graduate degrees reported being food secure, which is more often than any other education level, where reported food security was between 85% and 91%. There was also a trend for food bank use to drop as partner's education increased.

Single mothers had decreased food security and increased food bank use than mothers with partners. In fact, there was an 18% difference between the food security level of mothers with partners and single mothers. Food bank use was almost five times higher for mothers without a partner than for mothers with a partner. (Table 3.3)

Table 3.3 Food security by partner status, all Northern Health Units; 2002

Food security		Partner Status	
		Have a partner	Single
Food Security Index			
Food Secure	% of sample	94.4	77.2
	(Lower and Upper C.L.)	(93.6 – 95.2)	(72.9 – 81.5)
Food Insecure	% of sample	5.6	22.8
	(Lower and Upper C.L.)	(4.8 – 6.4)	(18.5 – 27.1)
Have you used a food bank in the last year?			
No	% of sample	96.7	84.5
	(Lower and Upper C.L.)	(96.1 – 97.3)	(80.7 – 88.3)

Table 3.4 presents food security at the individual health unit level, compared to all northern health units. There was little variation between the different areas across the north.

Table 3.4 Food Security, Health Unit level; 2002

Food Security		AHU	MPSHU	NBDHU	NWHU	PHU	SDHU	TBDHU	THU	NORTH
Food Secure	% of sample	92.4	91.3	94.0	94.3	93.6	91.6	92.1	91.8	92.5
Food Insecure	% of sample	7.6	8.7[E]	--*	--*	--*	8.4	7.9	8.2[E]	7.5

* estimates based on sample size less than 30 are suppressed and represented by a dash (--)

E - data with a coefficient of variation (CV) from 16.6% to 33.3% are identified by an (E) and should be interpreted with caution

Nutrition

To determine if SES measures affected nutrition practices, two nutrition questions were cross-tabulated with five measures of SES, including: income, LICO, mother's education, partner's education and partner status. Mothers were asked how often their child usually had 3 main meals – breakfast, lunch, and supper as well as 2-3 between meal snacks. The second question asked if their child enjoyed a wide variety of foods. Analyses of these two questions by SES measures are presented below. All point estimates with confidence intervals can be found Table E.3 in Appendix E, if not presented below.

Income level influenced whether a child had three main meals plus snacks but did not appear to influence whether a child enjoyed a variety of foods. A higher percentage of children from families with income over $36,000 had 3 main meals plus snacks 5 to 7 days a week than those from families with income less than $36,000 (Table 3.5).

Table 3.5 Child nutrition indicators by income, all Northern Health units; 2002

Nutrition		Income				
		Less than $27,000	$27,000 - $35,999	$36,000 - $59,999	$60,000 or more	Not stated/ Don't Know/ Refused
My child usually has 3 main meals – breakfast, lunch and supper as well as 2-3 between-meal snacks.						
5-6 times a week or more	% of sample	86.5	86.7	93.1	95.2	91.9
	(Lower and Upper C.L.)	(83.2 – 89.8)	(82.5 – 90.9)	(91.0 – 95.2)	(93.7 – 96.7)	(89.3 – 94.5)
3-4 times a week or less	% of sample	13.5	--*	--*	--*	--*
	(Lower and Upper C.L.)	(10.2 – 16.8)				
My child enjoys a variety of foods.						
Always or Almost Always	% of sample	73.0	78.6	75.3	76.0	80.1
	(Lower and Upper C.L.)	(68.7 – 77.3)	(73.6 – 83.6)	(71.8 – 78.8)	(73.1 – 78.9)	(76.3 – 83.9)
Sometimes / Hardly ever / Never	% of sample	27.0	21.4	24.7	24.0	19.9
	(Lower and Upper C.L.)	(22.7 – 31.3)	(16.4 – 26.4)	(21.2 – 28.2)	(21.1 – 26.9)	(16.1 – 23.7)
*estimates based on sample size less than 30 are suppressed and represented by a dash (--)						

Similarly, 9% percent less children from above LICO homes had 3 main meals plus snacks 4 times a week or less when compared to children from below LICO homes. No differences were noted for variety of food reported eaten by children above and below the LICO.

Table 3.6 Child nutrition indicators by low-income cut off, all Northern Health units; 2002

Nutrition		LICO		
		Above LICO	Below LICO	Not Stated/Don't know or Refused
My child usually has 3 main meals – breakfast, lunch and supper as well as 2-3 between-meal snacks.				
5-6 times a week or more	% of sample	93.5	84.5	91.7
	(Lower and Upper C.L.)	(92.3 – 94.7)	(80.7 – 88.3)	(89.1 – 94.3)
3-4 times a week or less	% of sample	6.5	15.5	--*
	(Lower and Upper C.L.)	(5.3 – 7.7)	(11.75 – 19.3)	
My child enjoys a variety of foods.				
Always or Almost Always	% of sample	76.0	73.6	80.0
	(Lower and Upper C.L.)	(74.0 – 78.0)	(69.0 – 78.2)	(76.2 – 83.8)
Sometimes/ Hardly ever/ Never	% of sample	24.0	26.4	20.0
	(Lower and Upper C.L.)	(22.0 – 26.0)	(21.8 – 31.0)	(16.2 – 23.8)
* estimates based on sample size less than 30 are suppressed and represented by a dash (--)				

Mothers' education level influenced whether a child had 3 main meals and between meal snacks. Ninety four percent of mothers with the highest education rating reported that their children had 3 main meals plus snacks, while 89% of those with high school educations or completed some college or university reported the same. The variety of child's food intake did not differ by mother's education level (Table 3.7).

Table 3.7 Child nutrition indicators by mother's education, all Northern Health units; 2002

Nutrition		Mother's Education			
		Less than high school	Some or completed high school	Some college or university	Completed college or university or a graduate degree
My child usually has 3 main meals – breakfast, lunch and supper as well as 2-3 between-meal snacks.					
5-6 times a week or more	% of sample	--*	89.4	89.2	93.9
	(Lower and Upper C.L.)		(87.0 – 91.8)	(86.0 – 92.4)	(92.7 – 95.1)
3-4 times a week or less	% of sample	--*	10.6	--*	6.1
	(Lower and Upper C.L.)		(8.2 – 13.0)		(4.9 – 7.3)
My child enjoys a variety of foods.					
Always or Almost Always	% of sample	--*	72.8	76.8	77.9
	(Lower and Upper C.L.)		(69.4 – 76.2)	(72.5 – 81.1)	(75.7 – 80.1)
Sometimes / Hardly ever / Never	% of sample	--*	27.2	23.2	22.1
	(Lower and Upper C.L.)		(23.8 – 30.6)	(18.9 – 27.5)	(19.9 – 24.3)
* estimates based on sample size less than 30 are suppressed and represented by a dash (--)					

Analysis of nutrition indicators by partner's education level did not show significant differences.

As illustrated in Table 3.8, mothers with partners were more likely to report that their children enjoyed a variety of food than mothers without partners.

Table 3.8 Child nutrition indicators by partner status for all Northern Health units; 2002

Nutrition		Partner Status	
		Have a partner	Single
My child usually has 3 main meals – breakfast, lunch and supper as well as 2-3 between-meal snacks.			
5-6 times a week or more	% of sample	92.5	87.9
	(Lower and Upper C.L.)	(91.4 – 93.6)	(84.1 – 91.7)
3-4 times a week or less	% of sample	7.5	--*
	(Lower and Upper C.L.)	(6.4 – 8.6)	
My child enjoys a variety of foods.			
Always or Almost Always	% of sample	77.2	70.0
	(Lower and Upper C.L.)	(75.4 – 79.0)	(64.8 – 75.2)
Sometimes / Hardly ever / Never	% of sample	22.8	30.0
	(Lower and Upper C.L.)	(21.0 – 24.6)	(24.8 – 35.2)

*estimates based on sample size less than 30 are suppressed and represented by a dash (--)

PART 4 – BREASTFEEDING

Respondents were asked to provide information regarding initiation and duration of breastfeeding. All results represent weighted estimates as outlined in the methods section. Frequencies are expressed as percentages of the total sample for Northern Ontario. Sample sizes of less than 30 are suppressed and presented by a dash (--). Point estimates for frequency distributions and cross-tabulations are presented with 95% confidence limits (C.L.).

All responses have been cross-tabulated with measures of socioeconomic status (SES). To examine health conditions across income levels, approximate family income and low-income cut off (LICO) were used (see Methodology for LICO calculations). Education was measured by mother's last completed level of schooling. Partner status indicates whether the respondent was with or without a partner.

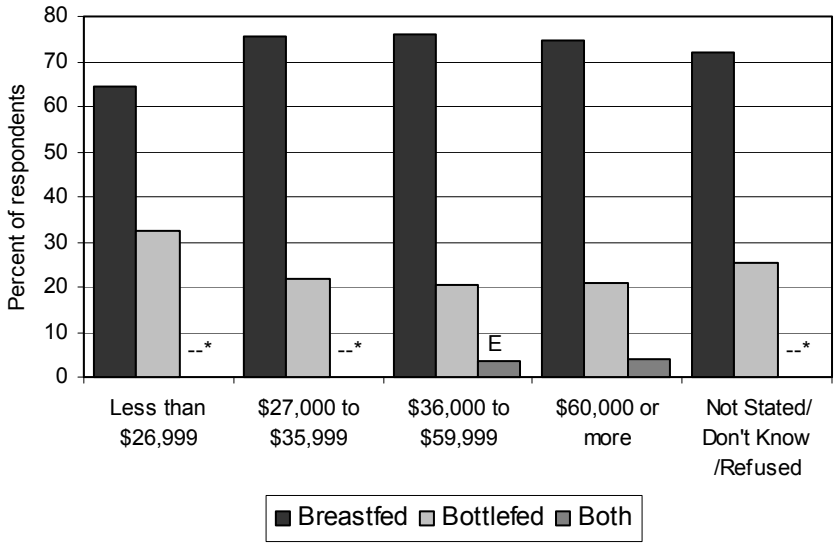
To determine if there were statistically significant differences, the 95% confidence intervals were examined for overlap. If the intervals overlapped, there was no statistically significant difference between the two indicators being compared.

Breastfeeding Initiation

Mothers were asked how they fed the target child within the first 48 hours after birth. The analysis was done according to income, LICO, mother's education, partner's education, and partner status. Graphs are presented in the text for where significant differences were found. All point estimates with confidence intervals can be found in tables in Tables E.4 to E.8 in Appendix E.

As indicated in Figure 4.1 mothers with an income of less than $27,000, were less likely to have initiated breastfeeding than mothers with an income of $27,000 or more.

Figure 4.1 Breastfeeding indicators by income, all Northern Health Units; 2002



* estimates based on sample size less than 30 are suppressed and represented by a dash (--)

[E] data with a coefficient of variation (CV) from 16.6% to 33.3% are identified by an (E) and should be interpreted with caution

Similarly, breastfeeding was initiated more often by women living above the LICO (75%) than women living below the LICO (64%). Consequently, mothers below LICO were more likely to bottle-feed their child the first 48 hours after birth than mothers above LICO. (Table 4.1)

Table 4.1 Breastfeeding indicators by low-income cut off, all Northern Health Units; 2002

Breastfeeding indicators		LICO		
		Above LICO	Below LICO	Not Stated/Don't know or Refused
How were you feeding him/her in the first 48 hours after his/her birth?				
Breast Feeding	% of sample	75.0	64.0	72.3
	(Lower and Upper C.L.)	(73.3 – 76.7)	(59.7 – 68.3)	(68.6 – 76.0)
Bottle Feeding	% of sample	21.4	32.5	25.4
	(Lower and Upper C.L.)	(19.7 – 23.1)	(28.3 – 36.7)	(21.8 – 29.0)
Both	% of sample	3.6	--*	--*
	(Lower and Upper C.L.)	(2.8 – 4.4)		
* estimates based on sample size less than 30 are suppressed and represented by a dash (--)				

A trend was identified between feeding method within the first 48 hours and mother's education level. As mothers' education increased, so did the tendency to breastfeed. Similarly, mothers with high school education were more likely to bottle-feed, compared to mothers having a college, university or graduate level education. Table 4.2 shows the results of breastfeeding indicators by mothers' education level.

Table 4.2 Breastfeeding indicators by mothers' education, all Northern Health Units; 2002

Breastfeeding indicators		Mother's Education			
		Less than high school	Some or completed high school	Some college or university	Completed college or university or a graduate degree
How were you feeding him/her in the first 48 hours after his/her birth?					
Breast Feeding	% of sample	--*	65.2	71.3	77.2
	(Lower and Upper C.L.)		(62.1 – 68.3)	(67.2 – 75.4)	(75.4 – 79.0)
Bottle Feeding	% of sample	--*	31.5	24.1	19.6
	(Lower and Upper C.L.)		(28.5 – 34.5)	(20.2 – 28.0)	(17.9 – 21.3)
Both	% of sample	--*	--*	--*	3.2
	(Lower and Upper C.L.)				(2.4 – 4.0)
* estimates based on sample size less than 30 are suppressed and represented by a dash (--)					

An examination of breastfeeding initiation by partner's education level reveals findings similar to that of mother's education level. Seventy percent of respondents with partners having completed all or some high school reported initiating breastfeeding. The group of mothers with the highest incidence of breastfeeding initiation was with those who had a partner that had completed some college or university (80%). Among mothers with partners who completed college, university or a graduate degree, 76% breastfed for the first 48 hours after birth.

As illustrated in Table 4.3, whether a mother had a partner or not influenced breastfeeding initiation rates. Twelve percent more mothers with partners initiated breastfeeding that mothers with out partners.

Table 4.3 Breastfeeding indicators by partner status, all Northern Health Units; 2002

Breastfeeding indicators		Partner Status	
		Have a partner	Single
How were you feeding him/her in the first 48 hours after his/her birth?			
Breast Feeding	% of sample	74.4	62.3
	(Lower and Upper C.L.)	(72.8 – 76.0)	(57.3 – 67.3)
Bottle Feeding	% of sample	22.4	34.4
	(Lower and Upper C.L.)	(20.9 – 23.9)	(29.5 – 39.3)
Both	% of sample	3.2	--*
	(Lower and Upper C.L.)	(2.6 - 3.8)	
* estimates based on sample size less than 30 are suppressed and represented by a dash (--)			

Breastfeeding Duration

Mothers were asked how many months they breastfed their child. The analysis has been done according to income, LICO, mother's education, partner's education, and partner status. All point estimates with confidence intervals can be found in tables in Appendix E, Tables E.4 to E.8. Duration of breastfeeding was not affected by family income level, LICO, mother's education, and partner status, with approximately 70% of mothers initiating breastfeeding. The partner's education level was the only measure of SES that influenced breastfeeding duration rates. Mothers with partners with high school educations were more likely to breastfeed for 6 months or less (76%) than mothers whose partners had a higher level of education (68%).

PART 5 – INJURY

Respondents were asked to provide information regarding injuries and treatment location of the target child. All results represent weighted estimates as outlined in the methods section. Frequencies are expressed as percentages of the total sample for Northern Ontario. Sample sizes of less than 30 are suppressed and presented by a dash (--). Point estimates for frequency distributions and cross-tabulations are presented with 95% confidence limits (C.L.).

All responses have been cross-tabulated with measures of socioeconomic status (SES). To examine health conditions across income levels, approximate family income and low-income cut off (LICO) were used (see Methodology for LICO calculations). Education was measured by mother's last completed level of schooling. Partner status indicates whether the respondent was with or without a partner.

To determine if there were statistically significant differences the 95% confidence intervals were examined for overlap. If the intervals overlapped, there was no statistically significant difference between the two indicators being compared.

Mothers were asked if their child had a fall requiring medical care within the past year, and if so, where the child received medical care. Due to small sample sizes of children requiring medical care from a fall, individual breakdowns of care location by each socioeconomic variable were not possible, with the exception of those seeking hospital care. Graphs are presented in the text for where significant differences were found. All point estimates with confidence intervals can be found in tables in Appendix E, Tables E.9 to E.12, if not presented below.

Table 5.1 shows the frequencies of where injured children were taken for care. Of the children reporting injuries in the past year, the majority of them, about 80%, were brought to the hospital for medical care.

Table 5.1 Location of medical care for injury, all Northern Health Units

Where did he/she receive medical care (for the most recent injury)?*	Yes (%)
Hospital	79.4
Walk in Clinic	8.1
Doctors office	10.5
Other	2.0

* Note - Respondents could indicate treatment was received at more than one listed site.

Income was not demonstrated to be a determinant of childhood injuries from falls in Northern Ontario. Across all income categories the rate of falls requiring medical attention and hospital care for those injuries are similar. Eighty six percent of injured children from families with less than $27,000 in family income went to the hospital for care, while 80% injured children from families with $60,000 or more in family income sought care at the hospital. Similarly, families living above and below LICO had comparable injury rates and hospital care rates for injury.

Mother's education and partner's education did not appear to influence the rate of falls requiring medical attention for their children. In addition, education levels did not influence whether mothers brought their injured children to a hospital or other medical treatment facility for falls.

Table 5.2 shows that children whose mothers do not have a partner had greater rates of falls requiring medical attention in the past year. There were no reported differences in whether the child was taken to the hospital for care for his or her most recent injury.

Table 5.2 Injury indicators by partner status, all Northern Health Units; 2002

Injury Indicators		Partner Status	
		Had a partner	Single
Has he/she had a fall requiring medical attention during the past year?			
Yes	% of sample	8.5	15.4
	(Lower and Upper C.L.)	(7.5 – 9.5)	(11.7 - 19.1)
No	% of sample	91.5	84.6
	(Lower and Upper C.L.)	(90.5 – 92.5)	(80.9 – 88.3)
Did he/she receive medical care at a hospital (for the most recent injury)?			
Yes	% of sample	84.5	80.4
	(Lower and Upper C.L.)	(80.1 – 88.9)	(70.0 – 90.8)
No	% of sample	15.5	--*
	(Lower and Upper C.L.)	(11.1 – 19.9)	
* estimates based on sample size less than 30 are suppressed and represented by a dash (--)			

SECTION V: DISCUSSION

DEMOGRAPHIC PROFILE

A comparison of the weighted NOPCHS dataset was conducted with the community profiles information from Statistics Canada, Census 2001[64] in order to determine whether the survey sample was representative of the Northern Ontario communities. The NOPCHS sample of mothers had a higher level of education than Northern Ontario females as a whole. Household income levels for the NOPCHS sample varied in their representation to the Northern communities. Of particular note, the NOPCHS sample had a lower portion of the $80,000 or more income category across all participating health units compared to the census data. Analysis of the representation of both English and French first languages by health units indicated a lower proportion of French speaking mothers in the NOPCHS sample. Finally, a comparison of marital status categories between weighted NOPCHS data and 2001 Census data indicated a higher proportion of common-law couples (with the exception of findings in the Thunder Bay Health Unit catchment area), and a lower proportion of lone parent families across all Northern Ontario health unit catchment areas when compared to census data.

ACCESS, AWARENESS, AND UTILIZATION

To discover what contributing factors affected Northern Ontario families' awareness of, accessibility to and utilization of health care services selected SES indicators were analyzed. These include: income, low-income cut off (LICO), mother's and partner's education level, and mother's first language. Partner involvement was also taken into account for some of the analysis.

First, looking at awareness of community and health unit services, the NOPCHS data revealed that mothers' first language, as well as mothers' and partners' education levels had an impact on whether or not mothers knew where to go for help. Mothers with a higher level of education or with partners with a high level of education were more aware of the programs than those with less education. However, there was one exception that is difficult to interpret. In families who had partners with less than a high school education, awareness of where to get help appeared to be increased. Interestingly, it was also found that mothers whose first language was neither French nor English were most aware of where to go for help.

Further analysis of specific community health programs demonstrated that LICO, partner's education level and partner involvement also had an impact. Families living above LICO were more aware of such programs as Breastfeeding Mentorship Programs than those families living below LICO. Meanwhile, the lower the partner's

education level, the lower was the awareness of programs such as Well Baby Drop-Ins, Parent Child Info Line, and Breastfeeding Mentorship Programs.

Turning to the issue of accessibility, NOPCHS data showed that many SES measures impacted on barriers faced by mothers (ie. as lack of transportation). Similar to Fuller & Gallagher's study[49] which found that low income mothers encountered many barriers to prenatal care, mothers in Northern Ontario with lower incomes and mothers living below LICO reported facing more obstacles to participation in health unit and community programs. Families living above LICO also felt less of a need for the health care programs, or had no problems whatsoever.

The NOPCHS data also revealed that single mothers felt greater barriers accessing community and health unit perinatal and child services. In terms of mothers' education level, it was shown that the lower the education, the more of a problem there was with accessibility.

In regards to satisfaction with available services, income, LICO and partner status proved to have an effect. Families with higher income and those living above LICO had increased satisfaction rates with health services. In contrast, mothers without a partner had decreased satisfaction rates. This dissatisfaction felt by the single parents may be a result of their perceived barriers to accessibility, which as stated above were higher among mothers with no partner.

Accessibility to available programs was influenced by income, LICO, education level of mother and partner, as well as language. Those families with lower incomes or living below LICO reported that less services were physically close to their homes. In addition, as education levels fell, fewer mothers felt they had services available in their communities, although this evidence was more strongly correlated with the mother's education than the partner's. Reported availability to programs is considerably higher for mothers who first learned English or French. Furthermore, mothers who first learned French reported more toy libraries close to their homes than mothers who first learned English.

NOPCHS data also revealed that many variables had an effect on utilization of perinatal and child health services, including income, LICO, mother's and partner's education, first language and partner status. Similar to the Rosenberg & Hanlon[48] study, it was shown that mothers with lower annual incomes were less likely to have a family physician and to seek out prenatal care later in their pregnancy.

In addition, lower income families reported using programs such as food banks, parent support groups and home visitation programs more often than families with higher income. This trend was also noted in previous studies.[38,39] Meanwhile, families with higher income used such programs as recreational services, library services and toy libraries more often than lower income families.

The LICO index gave further insight into the effect economic status had on program utilization. Families living above LICO reported having a family physician, having

their child visit a physician within the past twelve months, and having used prenatal classes more often than families living below LICO, coinciding with previous studies.[48,52] Similar to family income levels, families living below LICO were seen to use home visitation programs and food banks more often, while families living above LICO used recreational, library and children services more often. These findings suggest that lower income families, or families living below LICO, will more often use basic services for help and survival, while higher income families and families living above LICO utilize programs more often for leisure, and education.

The education level of the mother and mother's partner had minor effects on program utilization. The more education mothers received, the greater the use of recreational services. As partner's education level increased, so did the child's use of library services and toy libraries, while use of family resource centres and food banks decreased. Also, mothers with partners with higher education levels tended to seek out prenatal care earlier on in the pregnancy, which is similar to the results from Hollander.[52]

First language did not appear to have a major influence on program utilization. It was noted that children of mothers whose first language was French used recreational programs less often than children of mothers whose first language was English or other languages. This may indicate a lack of French oriented recreational programs. Also, children of mothers who first learned a language other than French or English used library services more often than those children whose mothers first learned English or French.

The final factor shown to affect program utilization is partner status. The literature suggests that children in single parent homes would have a tendency to visit doctors on a more frequent basis,[65] however this relationship was not observed in the Northern Ontario study. As found in other studies, [52] families with single parents had a tendency to wait longer in their pregnancy before seeking prenatal care. Single parents also used parent support groups and food banks more often than those families with a partner.

In conclusion, it is apparent that the SES variables of income, LICO, education, language, as well as partner status need to be addressed when considering families' access, awareness and ultimately the utilization of community and health care facilities and programs. It is vital that families concerns be addressed to help maximize their use and satisfaction with the services that are available to them. Ongoing efforts should be made to tailor programs and services to meet the needs identified since families most in need often face more barriers. Although most NOPCHS respondents stated that they indeed felt satisfied by the services provided, suggestions were made to create more play centres, recreational services and daycares. There was also a call to increase awareness of and accessibility to these services.

FOOD SECURITY AND NUTRITION

The NOPCHS provides insights into the effect of SES on household food security and nutritional practices of families in Northern Ontario. The influence of annual income, LICO, the involvement of a partner, as well as the education levels of the mother and partner were highlighted.

The NOPCHS revealed that income, LICO, and the educational level of both the mother and partner affected food security. Not unexpectedly, it was noted that families with lower incomes and those living below LICO had lower food security levels. Similarly, as mother's and partner's education levels decreased, food insecurity was more likely. These results are congruent with previous findings by McIntyre et al.,[56] Alaimo et al.,[37] Casey et al.,[57] and Tarasuk.[39]

Following trends reported in other studies,[38,39] income, LICO, education levels, as well as partner involvement, was shown to affect food bank usage. As the income and education declined, the likelihood of food bank usage increased. Also, single parent homes and families below LICO were more likely to use food banks.

Food Security did not vary much between health unit areas in Northern Ontario, with all areas reporting between 91% and 94% of children being food secure. The fact that 6 to 9% of children face food security is still a serious concern.

Results from the NOPCHS showed that the income, LICO and education level of the mother affected eating patterns. Children in families with lower income levels and living below LICO were shown to eat three meals plus snacks less often than children in higher income levels or above LICO groups.

In addition, children whose mother had a higher education level ate more frequently than those living in a family where the mothers were less educated. According to research, it was anticipated that the education level of the partner would have played a greater influence on the eating patterns of the children,[54] however, the NOPCHS finding suggests that the mother's education plays the more influential role in Northern Ontario.

Finally, the only factor found to affect the variety of food children enjoyed to eat was the presence of a partner. The survey revealed that the children living with mothers with a partner enjoyed eating a variety of food, where as children in single parent homes enjoyed a more limited variety of foods. This counteracts studies by Crooks[54] and James et al.,[44] which suggested that income, LICO and education levels would have played a greater role in variety of foods consumed.

In conclusion, this report demonstrated that there are many factors influencing the nutritional status of children in Northern Ontario. Most notably, income and LICO were shown to affect the families' food security levels, food bank usage and the frequency with which children ate. The education levels also played a role, showing

effects on food security, food bank use and children's eating patterns. Lastly, partner status played a role in influencing the variety of food that children enjoyed eating and single parent families were seen to use food banks on a more frequent basis. Interventions should be considered that address these various factors and that assist in eliminating the nutritional challenges faced by the children of Northern Ontario.

BREASTFEEDING PRACTICES

As stated in the literature review by Dennis,[41] the World Health Organization, among others, recommends exclusive breastfeeding of infants until 6 months of age. Our research shows that Northern Ontario mothers at higher income levels and mothers with higher education levels are more likely to initiate breastfeeding than mothers with less income and education. Having a partner was also positively associated with breastfeeding initiation during the first 48 hours after birth. Therefore, in Northern Ontario, SES influences the initiation of breastfeeding in the first 48 hours after giving birth.

The duration of breastfeeding increased as the partner's education level increased. However, it was the only measure of SES that appeared to influence breastfeeding duration, which differs from previous research suggestions, that both income and mothers' education level affects duration.[41,42] Income, LICO, mothers' education level, and partner status did not appear to affect duration of breastfeeding for Northern Ontario mothers.

INJURY

Childhood injury data from the NOPCHS survey has been examined by three SES variables: income, LICO, and education (mother and partner). Unlike findings by Laing and Logan,[44] and Brownell, Friesen and Mayer,[60] the current sample of Northern Ontario children did not have differing injury rates depending on family income. Both reported family income and LICO did not appear to affect whether a child had a fall requiring medical attention in the last 12 months. Education levels of both mother and partner also did not affect childhood falls requiring medical attention. Previous research on the mother's education and general risk of childhood injuries has shown that risk increases as mother's education decreases.[45]

The only indicator of SES that did influence children's injury rates from falls was whether or not a mother had a partner. Children of mothers with partners were likely to have falls that required medical attention less often in the past year than children of mothers without partners. This could indicate a need to pay special attention to single parent families when designing childhood injury prevention programs in Northern Ontario.

The majority of Northern mothers brought their child to the hospital for the child's most recent injury. Income, education, and partner status did not affect the mother's choice in location of medical care for the child's most recent injury. Although Rosenberg and Hanlon[48] found low-income families utilized emergency

hospital services more, there were no differences in the Northern Ontario sample. This may be due to the fact that the survey question asks about hospitalization from an injury, unlike Rosenberg and Hanlon's research that shows that low-income families utilize emergency services for all types of health problems more often than higher income families.

IMPLICATIONS

The results of this report bring to light important implications for social and economic planning. This report shows that income disparity in Northern Ontario is potentially having an adverse affect on the health conditions and behaviours of residents, and most importantly, Northern Ontario children. Not surprisingly, it was found that Northern Ontario communities top the list of areas in Ontario with the largest income disparities.[66] Therefore, it is not only northern communities and local governments that need to take income levels and disparities into account when designing and evaluating policies and programs, but also the provincial and national governments and agencies.

At the local level, attempts to alleviate burden and increase accessibility to health services would help reduce some of the barriers of low-income families, families with low education levels, and single parent families. Programs that make special attempts and are successful in reaching these populations should be evaluated for initiatives that can be applied to other programs.

Lower education levels of mothers and their partners are also affecting the health conditions and behaviours of their children. Health promotion campaigns and programs must make special efforts to make their campaigns and programs suitable to parents with lower education levels.

Single mothers reported facing more barriers, lower satisfaction with community supports, less (and later) use of prenatal services, less food security, less variety in the child's diet, and less breastfeeding initiation rates. It is important to cater to needs of single parents and the unique challenges they face.

SECTION VI: CONCLUSIONS

The Determinants of Child Health report sheds light on how determinants of health affect access, awareness, and utilization of perinatal and child health services in Northern Ontario. It also highlights how determinants of health influence certain health practices.

The results of this report help to examine how programs and services can be improved to reach mothers and children from all socioeconomic levels, and thus, enable health units and community partners in the design and implementation of programs to address the needs of Northern Ontario mothers and their children.

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APPENDIX A: SUMMARY OF FOCUS GROUP MEETINGS

DISCUSSION OF SPECIFIC DETERMINANT OF HEALTH SUBGROUPS:

Parent Education

- Two distinct interpretations of parent education were identified as determinants of child health:

    1) formal education and general schooling, and

    2) parent education and knowledge of specifically health related behaviours, services, resources, etc.

- Parent education was linked to income and health practices such as nutrition and injury prevention.
- It is important to consider the difference between *actual* knowledge and education levels and parents' *perceptions* of their own knowledge. This will give us a better idea of how to target services and is related to the idea of client "teachability"

Specific areas to address through analysis of survey data:

- Do parents know about the services that are available to them?
- Which variables predict parents' knowledge of resources and healthy practices?

Family Income

- Family income was linked to nutrition, program access and utilization, parental stress, neighbourhood/community variables
- Family income is a key determinant of social inclusion/exclusion, i.e. the types of activities, stimuli, environment that children are exposed to. Families' experiences of social inclusion influences healthy child development.
- The group was interested in how different families cope with low incomes: Are some better able to make healthy lifestyle choices?
- Current systems of social assistance do not foster autonomy and independence. This may impact the self-esteem of both parents and children.

Specific areas to address through analysis of survey data:

- Are there significant differences in the ways in which families manage low incomes within income demographics?
- Which variables predict positive coping strategies?

Employment

- Unemployment has an impact on parents' self-esteem which may have an impact on the well-being of children
- Working conditions such as long hours, contract work, multiple jobs, and lack of job security influence parents' time with their families and the nature of parent child interactions
- Employment and work scheduling may affect access to health services
- Children may experience disruptions of routine, caregivers, etc. because of the demands of parents' work
- Increasing numbers of employees do not receive health benefits and this may have an impact on children's access to health care services
- Little value is placed on the role of family caregiver/homemaker. There is often pressure for women to enter/re-enter the workforce as opposed to stay at home with children/families
- Participants were interested in the influence of employment commitments on women's reasons for stopping breastfeeding

Specific areas to address through analysis of survey data:

- What are the impacts of different *types* of parental employment on child health and access to health services?

Child Care

- Increasing numbers of women and children are affected by poverty
- There are few numbers of subsidized child care spots available for low-income families
- Social assistance programs demand that women work in order to receive financial assistance and yet do not provide families with access to child care
- Child care services need to address the determinants of child health in their programming. These include:
    - Activities that foster healthy behaviours in children
    - Activities that support parents' maintenance of their children's health
    - Healthy meals and snacks
    - Safe and stimulating play/work environments

Specific areas to address through analysis of survey data:

- What are the correlations between utilization of child care services and child health?

Parent Nutrition Practices

- Parent nutrition practices were linked to variables such as ethnicity, income, education and exposure to media
- It is important to investigate parents' knowledge and understanding of healthy nutrition
- Parents convey healthy eating messages to their children through a variety of mechanisms including role modeling. Is there a discrepancy between parents' instructions and parents' practices?
- Increasingly, families do not eat together because of busy lifestyles, work commitments. This may have an impact on children's nutrition levels and health.
- The group was interested in investigating the links between population demographics and the knowledge and use of folic acid.

Specific areas to address through analysis of survey data:

- What correlations exist between nutrition practices and variables such as ethnicity, income, formal education and types of employment?
- What correlations exist between parents' knowledge of healthy eating practices and variables such as ethnicity, income, formal education and types of employment?
- One limitation of the survey is that is asks questions related to food security and does not investigate the nutritional value of foods that are being consumed.

Parent Support

- The focus group was interested in discussing many aspects of parent support including: availability, accessibility and the influence of demographics such as income, ethnicity, and employment status as predictors of program utilization.
- Services of interest included: parenting education classes, health care services, child care, and recreational opportunities
- The group identified that the data obtained through this study cannot be used to identify informal, lay-support systems such as friends, neighbours etc. Some women may have reported that they have not used certain services, however, this does not necessarily mean that they have an unmet need.
- One way to gain insight into these informal sources of parental support may be through participant responses to the question: How would you describe your sense of belonging to your community?
- The group brought attention to the significance of personality type as a predictor of program utilization. Certain types of people are not comfortable using public services – How can service providers reach this population?

Specific areas to address through analysis of survey data:

- What were the reported obstacles to accessing support services?

- In what ways are parents satisfied with existing services?
- What, if any, correlation exists between respondents' demographics, i.e. income, ethnicity, employment status, and place of residence and their use parent support services.
- It will be important to remain aware of certain limitations of the data such as: the ability to assess of respondents' need for services, and the level of informal support available to respondents.

Personal Health Practices (auto safety, use of helmets)

- Participants were interested in investigating the correlation between respondent demographics, i.e. education, income, etc. and rates and types of childhood injuries
- One limitation of the data is that is does not provide much information related to respondent environment, housing etc. These variables may be significant predictors of injuries.

Other Points of Interest

- The focus group identified links between most of the determinant of health subgroups. The information which would be most useful to them would identify the following:
    - The correlation between respondent demographics and program awareness, utilization and the obstacles to accessing services
    - Preferred methods of parent support, including characteristics of service providers/programs
    - Barriers to accessing and utilizing parent support resources
    - Parent attitudes regarding program utilization
    - Existing ways in which parents receive health related information
- The group recognized the importance of culture and ethnicity with regards to the diversity of health perceptions and practices.
- There is interest in the ways in which being a single mother interacts with the other determinant subgroups and the resulting impact on child health.
- One focus group participated in an "elimination round" of determinant of health subgroups. They were each asked to select the one variable that they were least interested in investigating further. The variables identified were:
- Auto safety practices
- Child's use of helmets
- Asthma (because much research has been done in this field)
- Single parent

- Breastfeeding support (because it would be included in the subgroup: Support for feeding method)
- Biology & genetic endowment
- Work scheduling