

Predicting the Utilization of Child Health Programs/Services by a Cohort of Northern
Ontario Mothers and Children

Gavin Giles

Lakehead University



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Your file *Votre référence*
ISBN: 0-494-10654-9
Our file *Notre référence*
ISBN: 0-494-10654-9

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Abstract

The identification of individuals using health services, from a socio-demographic viewpoint, plays an important role in the effective planning and provision of health services. The purpose of the present study was to explore public health service utilization within a cohort of mothers of children six years of age and younger through the use of verified measures of primary healthcare utilization, such as characteristics of the child, mother, and household, in an attempt to predict public health or physician service use. Bivariate logistic regression was applied to data collected through the Northern Ontario Perinatal and Child Health Survey to examine the use of selected health services. The results of the analyses indicate that factors affecting an individual's decision to use a health service differ according to the service. The age of the child, and location of the household (in a rural or urban setting) were common predictors of both the use of physician services and the majority of the selected public health services in this study. Utilization models for all health services encompassed by this study are presented, however further exploration of the reliability and validity of these models is warranted.

Acknowledgements

I would like to offer my sincere gratitude and appreciation to my supervisor, Dr. William Montelpare, for the help he has given and the encouragement he has offered over the last three years. It has been a pleasure working with him over this period of time. I would also like to express my genuine appreciation to the other members of my advisory committee, for the time and effort they put into their insightful suggestions.

My special thanks are offered to the faculty, staff, and students that I have known at the School of Kinesiology at Lakehead University for their guidance and support.

My family and friends have always been supportive of my endeavors. My parents, Don and Pam, brother, Darren, and close friend, Susan, have always provided love and encouragement for as long as I have known them and for this I thank them above all.

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Introduction

Health services in Ontario are funded by a central governing body known as the Ontario Ministry of Health and Long-term Care. Ontario's Ministry of Health and Long-term Care aids in the provision of both acute and public health services. The availability of acute care and public health services to Ontario's population is important as health service use has a deterministic impact on an individual's health status (Goldstein, Siegel & Boyer, 1984). In general, health service research has primarily focused on acute care services and few studies have observed correlates to utilization of services commonly provided by the public health system (Roberts et al., 2001). The scope of acute care encompasses services commonly performed by physicians or offered by primary health care facilities (e.g. hospitals) that are treatment oriented. Population-based or public health services encompass those offered to the community at large in a prevention role. The abundance of acute care research may be due to a number of possibilities including the availability of funding for acute care health service research. Also, the focus of many health care systems is upon treatment services provided by primary care institutions, instead of prevention services more commonly offered by public health systems.

Health services research that does branch into the public health spectrum has proved to be very influential. Mustard and McCain's (1999) study demonstrated an association between the use of child health programs/services and the health status of Ontario's children. The results of Mustard and McCain's work influenced Canada's First Ministers in their decision to commit funding to promote early childhood development and provide further support for families in need through health services.

In 2002-2003 the Province of Ontario allocated \$276 million to create an Early Years Plan and financially support programs and services within the plan's structure (Ontario Ministry of Community, Family and Children's Services, 2002). The Province of Ontario's "Early Years Plan" included the development of new programs while strengthening existing programs through direct financial support in an effort to improve child health status. This commitment to children's health by the Province of Ontario demonstrated an awareness of the importance of maintaining and improving the health status of Ontario's youth. As a result of such initiatives as the "Early Years Plan", the number of health services available to children and parents has increased. However, this increase in the number of available child health services will not benefit the population if the services are not used. The present study addresses the issue of service utilization of public health services by mothers and children

Statement of Problem

In an effort to gain a better understanding of health service utilization patterns the purpose of this study was to evaluate the extent to which variables, commonly used as predictors of acute care use, are significant parameter estimates of public health program utilization. This study measured government delivered health service use by mothers and children in the perinatal age cohort, across the legislative regions serviced by the eight public health units of Northern Ontario.

Research Hypothesis

It is hypothesized that:

- a) The selected socio-demographic variables will be significant predictors of both acute care and public health service utilization.

- b) The shared agreement between perceived health status and consumer satisfaction will be discernable across categories of health service utilization.

Rationale

The identification of the socio-demographic characteristics of mothers and children who utilize child health services is important from a program planning perspective. By identifying these characteristics child health programs may be created to better meet the needs of the local community as Northern Ontario mothers may require specific delivery formats that differ from the rest of Ontario. Fox, Goldman and Brumfield (1968) illustrated the importance of identifying mothers at higher health risk who did not use available health services. An underlying intention of Fox et al. was to gain an understanding of those mothers in this cohort that did not take advantage of available services. Starfield et al. (1979) also imputed that a lack of utilization of health services may indicate dissatisfaction with the services provided and place the child at risk of failing to attain a basic level of preventive care.

Another important reason to identify socio-demographic characteristics of mothers and children who utilize child health services is based in the economics of health care. Roberts et al. (2001) suggested that specific characteristics of the mother and infant may be related to health service utilization, affecting costs of care particularly in the postpartum period. Also, non-utilization of child health services may create a monetary inefficiency in the provision of these services due to the pre-budgeted nature of health services (Starfield et al., 1979).

Identifying characteristics of mothers who use child health services is also important from a duplication of services perspective. Hemmelgarn, Edouard, Habbick

and Feather (1992) have demonstrated that specific tasks may be duplicated in child health services that are provided by both primary care and public health systems. Therefore, determining the characteristics of mothers and children who currently use Ontario's child health services provided at both the primary care and public health level, through survey-based analyses, would allow the identification of any overlap between user groups.

By identifying socio-demographic characteristics of mothers and children who use child health programs a better understanding of those who utilize these programs may be achieved. Due to specific needs, costs of care and the potential duplication of services research that identifies the user group may help create a more efficient system of child health care. In general, the identification of socio-demographic characteristics of mothers and children who use child health services may allow a higher standard of child health care to be attained by Northern Ontario's child health programs.

Literature Review

Population characteristics and use of health services

An individual's socioeconomic status (SES) and health behaviors interact to produce a variety of health outcomes (American Academy of Pediatrics Committee on Pediatric Research, 2000; Birch, Jerrett & Eyles, 2000; Bradley & Corwyn, 2002; Curtis, Dooley, Lipman, & Feeny, 2001; Ettner & Grzywacz, 2003; Hertzman & Wiens, 1996; Martens, Derksen, Mayer, & Walld, 2002; Mustard & Frohlich, 1995; Newacheck, Jameson, & Halfon, 1994; Roberts, 1997; Rosenberg & Wilson, 2000; Saxena, Eliahoo, & Majeed, 2002; Séguin, Xu, Potvin, Zunzunegui, & Frohlich, 2003). For example, Duncan & Brooks-Gunn (2000) established that children of low income families are more likely to be admitted to the hospital, and demonstrate an increased risk of child mortality. Income and education as independent measures of health outcome, and of health service utilization continue to be studied extensively in socioeconomic status research (Bradley & Corwyn, 2002; Collver, Ten Have & Speare, 1967; Duncan, Daly, McDonough, & Williams, 2002; Frohlich & Mustard, 1996; Martens, Derksen, Mayer, & Walld, 2002; Martens, Frohlich, Carriere, Derksen, & Brownell, 2002; Mustard & Frohlich, 1995; Newacheck, 1992; Rosenberg & Wilson, 2000).

It has been suggested that the current health status of a cohort of adults may reflect income status over their lifetime. For example, individuals who were raised in poverty are more likely to report poorer health status than individuals raised in wealthier families (Smith, Hart, Blane, & Hole, 1998). With reference to child health, research has examined the relationship between household income and child morbidity/mortality (Curtis, Dooley, Lipman, & Feeny, 2001; Martens, Derksen, Mayer, & Walld, 2002;

Newacheck, Jameson, & Halfon, 1994). According to Séguin et al. (2003) the impact of inadequate income on the health of infants in Quebec suggests that infants (those in the first five months of age) from households with less than sufficient income exhibit poorer overall health and higher hospital admission rates. Similarly, Rosenburg and Hanlon (1996) found that higher incomes were associated with greater access to a family physician and increased use of specialty medical services.

The “Low Income Cut-off” (LICO) is a standard socio-economic status indicator which defines a household’s income. LICOs allow a dichotomous division of the household income separating the high income families from the low income families within a predefined cohort. For example, a family, consisting of two adults and two children with an annual household income below \$30,000.00 may be considered to fall below the “income cut-off” value within a reference sample. Yet more important, with respect to health status, families falling below the demarcation point often reflect health status levels at or near families described as “poor”. The LICO standard and poverty status indicators have been employed in several models of health service utilization by Newacheck (1992); Rosenburg and Hanlon (1996); St. Peter, Newacheck and Halfon (1992); Watson and Kemper (1995).

Parental education is another key predictor of child health service utilization. As documented by Case and Paxson (2002) parents strongly influence the amount of health services used by their children. Parent centered decisions are based upon a variety of resources which include the parents’ knowledge of health practices and available programs. It has been hypothesized that the parent’s level of knowledge relates to the highest education level attained by the parent(s). This approach to understanding the

level of knowledge about health (services or practices) within a community is a strategy previously used by many researchers in modeling child health service utilization (Collver, Ten-Have & Speare, 1967; Duncan, Daly, McDonough, & Williams, 2002; Frohlich & Mustard, 1996; Martens, Derksen, Mayer, & Wald, 2002; Bradley & Corwyn, 2002; Martens, Frohlich, Carriere, Derksen, & Brownell, 2002; Mustard & Frohlich, 1995; Newacheck, 1992; Rosenberg & Wilson, 2000). An individual's education and income are not independent determinants of health status (American Academy of Pediatrics Committee on Pediatric Research, 2000). For example, an individual's level of education may contribute to their type of employment, and in turn impact their income and social status.

In addition to income and education, other predictors of child health service utilization have been identified over the last four decades of utilization research. Collver, Ten-Have and Speare's study of 774 obstetric patients from Wayne County Michigan in 1964 attempted to understand the factors that influence the use of maternal health services. They included predictors related to household size, rural/urban dwelling, age of mother, marital status and race. Collver et al.'s study found that higher postpartum clinic attendance rates were associated with women who have 0-1 living children, are over 30 years of age, married, high-school educated, African American, and live within five miles of the county hospital.

Selwyn's study of users and nonusers of child health services in 1978 was undertaken to generate a socioeconomic description of mothers and their children who are less than five years of age and are users or nonusers of child health services in Cali, Columbia. Selwyn also wanted to identify the set of indicators that best distinguished the

users from the nonusers in the sample of 529 mothers and children. Selwyn employed predictors related to rural/urban dwellings, mother's age, family size, and race but unlike Collver et al., did not include marital status. Selwyn's findings indicated that nonusers of child health services were older and had fewer eligible children.

The results of Tessler's (1980) study of the effect of birth order, and family size on children's use of physician services produced significant findings regarding the relationship between a family's size and its utilization of health services. The purpose of Tessler's study was to distinguish between the effects of the number of siblings and the birth order of the children within the family, on the children's use of physician services. Tessler's model included information regarding the number of children in the family, the child's age and sex, the mother's age, mother's education, race, and the presence of chronic problems/disabilities within the child. A cohort of 587 families (1,665 children) was sampled and the results of the study indicated that number of children in the family, children's age, and race of mother were significant predictors of physician utilization.

Janicke, Finney and Riley's (2001) study of children's health care use hypothesized that maternal factors will be significant predictors of children's health care use. Their objective was to answer the question: "What factors best predict children's future health care use?" Janicke et al. created a model that incorporated the age of the mother, age of the child, income of both parents, education of both parents, occupation of both parents, mother's marital status, child's race, number of children at home, child's physical health status (ie. presence of acute, recurring, chronic illness), and mother's perceived level of social support to predict pediatric care utilization. In the sample of 367 children that were the offspring of mothers who were members of the Columbia Medical

Plan (CMP) (an HMO in Maryland) the research team found that more children in the home produced lower rates of health care use.

Another cohort-based study by McCue-Horwitz, Morgenstern and Berkman (1985) which observed the relationship between socioeconomic characteristics and the use of child health services, found that young mothers, young children, smaller households and white families are all significant predictors of greater child health service use. McCue-Horwitz et al. included mother's age, education of mother and her partner, marital status, household size, number of children in family, religion and social stressors in their attempt to model the use of physician services in New Haven, Connecticut. It is noteworthy that in the cohort of 513 households parental life stress was not a significant predictor of the use of child health services. These findings contradict Gortmaker, Eckenrode and Gore's (1982) previous results of their observations of the impact of stress on the utilization of health services.

The purpose of Gortmaker et al.'s study was to examine the relationship between stress and the utilization of health services in an effort to gauge the effect of major and minor stresses, associated with daily and major life events, on health service utilization by families. Gortmaker et al. collected information from 96 women with children from a neighborhood in the Boston area regarding stressful life events, household size, education, marital status, income, number of chronic conditions in family, the mother's support network, employment status of mother, and the age of the mother. The results of their study indicate that the number of stressful life events, household size, education of the mother and single parent status were significant predictors of health service utilization.

Alexander and Markowitz's (1986) observation of the relationship between maternal employment and pediatric health care utilization did however find that large household families and mother's reporting a high number of stress days did use pediatrics services to a greater extent. Alexander and Markowitz's use of information related to marital status, mother's education, race, mother's age, child's age, child's sex, child's health status, household size, maternal employment, and maternal stress attempted to model the number of pediatric clinic visits among 210 mother-child participants. Along with household size and stress, Alexander and Markowitz found an association between children of employed mothers who are white and the use of pediatrics services. Finally, Alexander and Markowitz's work also indicates an association between children of unemployed mothers who have less than a high school education, and the use of pediatric clinic services.

Maternal factors affecting a child's health care use were modeled by Watson and Kemper in 1995. This cohort study of 202 preschool aged children hypothesized that maternal substance abuse, depression, and low social support is associated with increased health service utilization (medical visits). This study has been included here because Watson and Kemper's model of child health service use employed information related to child's age, mother's age, marital status, income, mother's education level, and race. Of importance to the present study, Watson and Kemper found that younger children and younger mothers utilized the child health services to a greater extent.

In Cafferata and Kasper's (1985) population-based study of family structure and its impact on children's use of physician services, the researchers used predictors such as maternal employment, partner status and family size. Through the use of these predictors

Cafferata and Kasper attempted to identify physician utilization patterns of children as they relate to the mother's employment and the household's composition (the presence of one or two parents). Using data from the 1977 National Medical Expenditure Survey (NMCES) they found children of mothers who worked part-time and who used physician services utilized these services more than children of mothers who worked full-time. Also, in the 3,354 households sampled, children with two parents in the family structure that utilized physician services used these services more than children from single parent households. As a result of their study, Cafferata and Kasper identified mother's age, sex of child, number of children, and low income status as significantly affecting the chance of utilizing physician services.

Fleming and Charlton (1998) provided further support for Cafferata and Kasper's results regarding the relationship between household structure and health service use. For the sample of 93,356 participants gleaned from the 1991-1992 National Study of Morbidity in General Practice, Fleming and Charlton used information regarding each participant's ethnicity, household composition, economic position, and employment status to identify problems accessing healthcare. Fleming and Charlton also produced support for Cafferata and Kasper's work by finding that children from single adult households consult general practitioners more frequently than children from households with two or more adults.

Woodward et al.'s (1988) study of the use of ambulatory care in Ontario is another example of a population-based study. Using data from the Ontario Child Health Study (OCHS), Woodward et al. attempted to model ambulatory medical care use by employing information such as the child's age and gender, the presence of chronic health

problems in the child, marital status of the mother, local population density, household income relation to the low income cut-off, and family size. In the sample of 1,869 randomly selected participants the age of the child, the mother's education level and size of the local community were the best predictors of health service use.

Newacheck's (1992) study of the characteristics of children with high and low usage of physician services provides further support for Woodward et al.'s findings regarding the size of the local community. Newacheck analyzed data provided by the 1988 National Health Interview Survey's (NHIS) child health supplement for relationships existing between the age of the child, child's gender, race, poverty status, family size and composition, education of mother, population density, maternal use of physician services and the child's use of physician services. Within the population-based sample of 17,110 children younger than 18 years of age Newacheck found younger, white children of smaller families living in a suburban setting, whose mothers had completed some college were more likely to be high users of physician services.

Flores, Bauchner, Feinstein and Nguyen (1999) studied, among other factors, the effect ethnicity had on children's health and use of health services. Their goals were to identify the demographics, health status and the pattern of use of health services in five major American ethnic groups and to determine if ethnic differences in health service utilization can be explained by differences in family income and parental education. The sample of 99,268 children from the 1989-1991 National Health Interview Surveys (NHIS) illustrated that non-white ethnicity was significantly related to fewer physician visits. The results of this population-based study also indicate that the number of

physician visits can be influenced by household income, educational achievements by parents, and the child's age.

As the body of research detailed above indicates, there are numerous characteristics of both the mother and child that contribute to the utilization of child health services. Characteristics such as ethnicity, maternal age and level of education, employment and marital status of the mother, the perceived stress level of the mother, number of children in the household, household income, the age and gender of the child, and the perceived health status of the child emerge from the available research. It is these characteristics that the present study will seek to analyze with respect to child health service utilization.

Child Health Services in Ontario's Public Health System

While much of the aforementioned research has been in a highly credible population-based longitudinal study format, the focus of this research has primarily been on use of acute care/physician-based services in an American context. However, Ontario's healthcare system offers public health services designed to aid children in addition to those that are physician-oriented. Child health services in Ontario have been evolving since the advent of Ontario's Mandatory Health Programs and Services Guidelines in 1989. These program and service guidelines were a result of the previously developed Health Protection and Promotion Act of 1983 (Mandatory Guidelines, pg. 19, 1989). Originally, the guidelines called for public health programs to be implemented under the Healthy Children program standards that would aid children in the local community's physical, mental, emotional and social development.

The 1989 Healthy Children program mandated support for parents and included requirements such as the provision of health education through group sessions, counseling, and consultation with parents and child caregivers (Mandatory Guidelines, pg. 19, 1989). This health education was to provide parents with coping skills and knowledge of proper stress management techniques (Mandatory Guidelines, pg. 19, 1989). In the 1997 version, these program requirements, now under the Child Health component of the Family Health program, remained largely the same but were revised to be more detailed and provide some explanation of how these requirements would be delivered.

Research regarding parent/family support programs has supported the effectiveness of providing information and developing the skills of parents. Cunningham, Bremner and Boyle (1995) found parents in large support groups reported greater improvements in their children's behavioural problems than one-on-one parent training programs. Cunningham et al. also found that group parent programs are more cost effective than individual programs. Telleen, Herzog and Kilbane's (1989) study of the effectiveness of self-help discussion groups and parent education groups found that both interventions were effective stress relievers. Zigler and Black's 1989 overview of the family support movement provided backing for the idea that without support networks, families often endure more adversity. Weissbourd and Kagan's (1989) overview of family support programs indirectly expanded upon Zigler and Black's claim by identifying the increased ability to cope with adversity that parents enrolled in support programs have over those parents not enrolled in such programs. Tresch-Owen and Mulvihill's (1994) research surrounding the implementation of a parent education and

support program identified an increase in the parent's ability to provide a stimulating environment for their child's development.

The 1997 revision of Ontario's Mandatory Health Programs and Services Guidelines also incorporated two new requirements in the Child Health component of the Family Health program. The first, listed in section 2c, required Boards of Health to promote and provide a telephone line for information and consultation services on topics related to child health (Mandatory Guidelines, pg. 33, 1997). Telephone information lines have been proven effective in the delivery of health services. The Hospital for Sick Children in Toronto, Ontario, Canada, implemented a telephone-based support service in 1977 that has been shown to be both an effective advisory service and cost-effective solution to the provision of support services (Wilkins, 1993). Studies conducted by Rush and Kitch (1991), Elmer and Maloni (1988) have also shown parent oriented information lines to be an effective method for providing support and advice to parents

The second new requirement, listed in section 5, requires Boards of Health to plan and implement the Healthy Babies, Healthy Children Program (Mandatory Guidelines, pg. 34, 1997). The Healthy Babies, Healthy Children Program was the first program in Ontario to provide an early intervention strategy for children. Generally characterized as an "early intervention program" the Healthy Babies, Healthy Children program encompasses elements of many smaller mandated programs into one service. Perhaps its greatest contribution to the Ontario child health care mandate is the home visitation component. Research has illustrated the effectiveness of home visitation programs on improving maternal social support, access to services, decreasing maternal psychological distress, improving mental development, reducing accident rates, feeding problems and

illness visits to medical facilities and hospitalizations as well as neglect or abuse of children (Hardy & Streett, 1989; Larson, 1980; Marcenko & Spence, 1994; Powell & Grantham-McGregor, 1989).

In addition to the aforementioned services, clinic services for children such as Well-Baby/Child clinics are offered throughout Ontario's public health system. Well-Baby clinics screen for physical disease and disturbances in parent-child relations, offer parent counseling and immunizations (Gilbert, Feldman, Siegel, Mills, Dunnett & Stoddart, 1984; Hemmelgarn, Edouard, Habbick & Feather, 1992). Effectively conducted by physicians or nurse practitioners (Hoekelman, 1975), Well-Baby services offer parents the chance for an accurate medical opinion regarding their child's health.

A large body of research has demonstrated the effectiveness of health programs and services that are related to those offered by the Province's child health services guidelines. However, few studies have observed the association between utilization of postpartum, child health services and socio-demographic characteristics of the mother or child (Roberts et al., 2001). The most readily available form of research regarding public health services related to child health is intervention based. While the findings of intervention based studies are very useful for validating the appropriateness of such health services as parent support groups, parent information lines, Well Baby clinics, and the Healthy Babies, Healthy Children program, further research regarding the identification of socio-demographic characteristics of those who use and do not use these services is still needed within defined populations such as Northern Ontario.

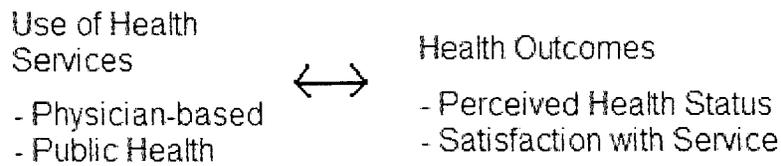
Perceived Health Status, Consumer Satisfaction and Health Service Utilization

According to Shah (1998), determinants of health are related to an individual's health. Determinants such as perceived health status and health service utilization can impact the incidence of morbidity and mortality in a population and have been identified by Health Canada as important in determining the health of Canada's population.

Understanding the relationship between the determinants is vital to understanding a population's health. Goldstein et al. (1984) found an association between an individual's health service utilization patterns and his/her perceived health status. Goldstein et al. sampled 1,210 households in the Los Angeles, California area and found the participants' utilization of health services was positively correlated with their perceived health status. Previous to Goldstein et al.'s work, data from an analysis of information obtained from the Longitudinal Retirement History Survey by Wan (1976) also demonstrated a significant relationship between perceived health status and health service utilization. While both the Wan and Goldstein studies analyzed adult populations, it is expected that similar findings will hold true for a child population.

It is also expected that there is a relationship between perceived health status and consumer satisfaction, as both may be considered outcomes of health service utilization (Andersen, 1995). Andersen's "Emerging Model of Health Behavior" (1995) suggests a cyclic relationship between health service utilization and health outcomes. Figure 1 represents an adapted version of Andersen's theory and demonstrates the relationship between health outcomes, such as perceived health status and satisfaction with services, and health service utilization.

Figure 1. Service utilization and outcome relationship.



(Adapted from Andersen, 1995)

This version of Andersen's expectation is supported by research that has identified a positive relationship between measures of health status and satisfaction with health services (Hall, Feldstein, Fretwell, Rowe & Epstein, 1990). Research on the relationship between health status and satisfaction with services also suggests that changes in health status may produce changes in satisfaction levels (Christensen & Lingle, 1972; Woolley, Kane, Hughes & Wright, 1978). Conversely, a change in an individual's level of satisfaction with health services may be associated with a change in health status (Hall, Milburn & Epstein, 1993).

A relationship between perceived health status, health service utilization, and socioeconomic indicators has been demonstrated in the acute care setting. However, relatively little is known about the relationship between perceived health status, health service utilization and socio-demographic indicators in the field of public health. Data collected through the 2002 Northern Ontario Perinatal and Child Health Survey initiative present a unique opportunity to study the aforementioned relationships, with regard to child health, in Canada's public health system.

Methodology

Statistical Treatment of the Data

Due to the relationship that has been identified by much of the previous research a model building process was employed that aided in understanding the impact specific socio-demographic and health outcome characteristics had on health service utilization (Figure 2). Because of the exploratory nature of this study, responses related to the characteristics listed in Figure 2 were not weighted to generate population estimates. Descriptive analyses were performed to determine the appropriateness of each characteristic as a predictor of health service use.

Figure 2. Characteristics of health service models.

Characteristics	->	Health Service
<u>Child Characteristics</u> Child's age, gender and chronic illness status		Parent support groups
<u>Mother/Household Characteristics</u> Mother's age, education, marital/partner status, employment status, ethnic/cultural background, language first learned, stress level, sense of belong to the community, knowledge of where to go for help, family income, the number of people supported by household/ family income, and household location (rural or urban)	->	Parent information line Breastfeeding clinics/well-Baby/pre-school clinics, Healthy Babies, Healthy Children program
<u>Outcome Characteristics</u> Perceived health status of child (according to the mother), satisfaction with health services		Physician Services

Andersen's Emerging Model of Health Behavior (1995) was used to guide the inclusion of perceived health status and satisfaction indicators. Andersen proposed perceived health status and satisfaction with services may influence health service

utilization. Tests of association and differences were performed to determine how these health outcome measures may be included. The Kappa test was performed to see if a high perceived health status rating was associated with high a satisfaction with services rating and/or if low perceived health status was associated with low satisfaction with services. The McNemar test was also performed to look for differences between the aforementioned levels of the child health status and satisfaction variables. The results of these tests indicated whether or not the health status and satisfaction variables could be entered separately or if one variable could substitute for the other in the regression analyses (Fleiss, 1973). Predictors of health service use were then included in a binomial logistic regression analysis, using the backward stepwise procedure, to develop regression models of the form illustrated in Figure 3.

Figure 3. Model format.

$$\hat{y} = \pm \alpha_1 x_1 \pm \alpha_2 x_2 \dots$$

\hat{y} = dependent variable

α_i = unstandardized parameter estimates

x_i = independent variable

These models allowed the comparison of characteristics associated with the use of health services delivered through traditional physician-based services and public health service programs. This approach was chosen because it begins with an initial explanation of the variance within the dependent measure, using all selected independent variables. The procedure then removes those variables which do not contribute to the explanation of the variance of the dependent variable until a parsimonious set of predictors is reached (Diekhoff, 1992).

The final regression models, used to describe the utilization of health services, were based on selecting the independent variables that achieved at least a $p < 0.10$ according to the Hosmer and Lemeshow Goodness of Fit Statistic (Hosmer & Lemeshow, 1989). A predetermined significance level ($p < 0.05$) was then used to validate the significance of each predictor. The models describing the use of the selected health services were then visually compared to identify common model components.

Results

Using the Statistical Package for the Social Sciences (SPSS) all data were organized through the frequency distribution procedure. Variables that showed a high level of skewness were re-categorized into broader grouping categories in an attempt to increase the robustness of the data and reduce the effect of skewness on the outcome. The categories of many variables were collapsed during this process and new versions of these variables were created (as described in Appendix D).

McNemar and Kappa tests were then performed to test the level of agreement between variables that describe the mother's level of satisfaction with health services and her perception of her child's health status. Regression modeling was used to compare the utilization of health services delivered through traditional physician-based services versus public health service programs.

Sample Description

The sample consisted of 3413 mothers of at least one child between birth and six years of age. The gender distribution of the children included in the study was 52% male and 48% female. The distribution of ages among children in the study was as follows: 21% were less than one year of age, 34% were between one year of age and less than two years of age, 19% were between two and less than four years of age, and 26% were between four and six years of age. According to the child's mother, seven percent of the children represented in this study had been previously diagnosed with a serious illness, disability or special need.

Table 1
Characteristics of the child

Characteristics of Child	Percent (%)	Sub-sample size
<i>Child's age</i>		
Less than 1	21	n = 3413
1	34	
2 and 3	19	
4, 5 and 6	26	
<i>Child Gender</i>		
Male	52	n = 3413
Female	48	
<i>Presence of chronic illness in child</i>		
Yes	7	n = 3366
No	92	

The majority of mothers participating in the survey were between 25 and 34 years of age (59%). The majority of mothers interviewed were of either Canadian, English, or other European origin (67%) and the predominant language that the majority of mothers first learned at home and could still understand was English (78%). Indicators related to the identification of single parent households suggested that approximately 8-9% of the mothers surveyed were single or had no partner (single mother = 8%, no partner = 9%). Mothers caring for a family and working for pay or profit accounted for 38% of the sample. Analyses of the education status of mothers within the sample indicated that 72% of mothers interviewed had received a portion of or completed some form of post-secondary education. Of the mothers interviewed, 14% described their sense of belonging to their local community as very weak or somewhat weak, and 11% of all mothers surveyed strongly disagreed, somewhat disagreed or were neutral when asked if they knew where to go for help in their community if they needed it. Also, 44% of the mothers represented in this sample indicated that they felt no stress when asked about what it felt like to be a parent.

Table 2
Characteristics of the mother

Characteristics of Mother	Percent (%)	Sub-sample size
<i>Mother's age</i> n = 3374		
Under 20	1	
20 to 29	39	
30 to 39	52	
40 or more	7	
<i>Mother's education level</i> n = 3403		
Less than, some or completed high school	28	
Some college or university	12	
Completed college	37	
Completed university or a graduate degree	23	
<i>Marital status</i> n = 3402		
Married	71	
Common-law	17	
Single	8	
Separated/Divorced/Widowed	3	
<i>Partner status</i> n = 3408		
Yes	90	
No	9	
<i>Mother's main activity</i> n = 3402		
Parental/maternity leave	10	
Working for pay or profit	9	
Caring for family	41	
Caring for family and working for pay or profit	37	
Going to school	2	
<i>Ethnic/Cultural background</i> n = 3380		
Canadian/English/Other European Descent	67	
French	24	
Asian	1	
Aboriginal	4	
Other	4	
<i>Mother's language first learned</i> n = 3404		
English	78	
French	17	
Other	5	
<i>Mother's stress level</i> n = 3389		
No stress	44	
Feeling drained and exhausted or tense and anxious	36	
Feeling drained, exhausted, tense and anxious	19	
<i>Mother's sense of belonging to community</i> n = 3374		
Very weak/Somewhat weak	14	
Somewhat strong	50	
Very strong	35	
<i>Mother's knowledge of where to go for help if needed</i> n = 3399		
Strongly Disagree/Somewhat Disagree/Neutral	11	
Somewhat Agree	21	
Strongly Agree	68	

Of the mothers surveyed, 23% indicated their household income was less than \$31,999. Forty percent of the mothers surveyed stated that four people were supported by their family's income and 53% of the mothers in this sample lived in an urban location.

Table 3
Characteristics of the household

Characteristics of Household	Percent (%)	Sub-sample size
<i>Family income</i>		n = 2870
Less than \$17,000	7	
\$17,000 to \$26,999	9	
\$27,000 to \$31,999	6	
\$32,000 to \$35,999	5	
\$36,000 to \$39,999	5	
\$40,000 to \$44,999	5	
\$45,000 to \$49,999	6	
\$50,000 to \$59,999	10	
\$60,000 to \$69,999	9	
\$70,000 to \$79,999	7	
\$80,000 or more	16	
<i>Number supported by family income</i>		n = 3401
2 to 3	39	
4	40	
5 or more	21	
<i>Household location</i>		n = 3413
Rural	46	
Urban	54	

According to the perception of their mothers, five percent of the included children were deemed to be in very poor/poor or satisfactory health. Also, of those mothers who used health services provided by their local health unit, 55% stated that they were very satisfied with the help that they had received from the supports and services available to both themselves and their child.

Table 4

Outcome characteristics

Outcome Characteristics	Percent (%)	Sub-sample size
<i>Perceived health status of child</i>		n = 3412
Very poor/Poor/Satisfactory	5	
Good	19	
Very good	76	
<i>Mother's satisfaction with health services</i>		n = 3275
Very Unsatisfied/Somewhat Unsatisfied/Neutral	13	
Somewhat Satisfied	28	
Very Satisfied	55	

An analysis of the use of selected health services indicated that eight percent of mothers, who indicated that the service was provided close to their home, utilized the parent support group service in the last year. In the same context, 13% of mothers indicated they used some form of a parent information line, 19% indicated they used clinic services (such as breastfeeding clinics, well-Baby/pre-school clinics), 19% said they used services provided by the Healthy Babies, Healthy Children program and 94% of mothers indicated their child had been seen by a doctor in the last 12 months.

Agreement: Perceived Health Status and Mother's Satisfaction with Health Services

The results of the McNemar and Kappa tests for difference and association indicated that a significant difference was shown in the reporting of the two variables according to the McNemar Chi Square statistic ($\chi^2 = 122.55$, $p < 0.05$). The Kappa statistic failed to show a significant level of agreement between the two measures ($\kappa = 0.02$, $p > 0.05$). These findings suggested that the variables which described the mother's perception of her child's health status and the mother's satisfaction with service delivery should each be entered in the regression analysis procedure.

Health Service Utilization Models

The parameter estimates of the variables included in the health service utilization models, created through the regression analyses, are listed in Table 5. When one considers the more stringent selection criteria of $p < 0.05$ it is especially important to note that the physician service utilization model had a greater number of statistically significant predictors than each of the other public health service utilization models.

Table 5
Health service utilization model characteristics

Characteristics	Physician services	Parent support groups	Parent information line	Public health clinic services	Healthy Babies, Healthy Children program
r^2 (Cox & Snell)	0.627	0.449	0.431	0.265	0.378
Step	9	2	9	7	5
Child's age	+0.778***	+0.218***	+0.274***	+0.406***	+0.631***
Child's gender	+0.56***				
Presence of a serious illness, disability or special need within the child					
Mother's age	+0.246*	+0.299**	+0.165*		+0.177*
Mother's knowledge of where to go for help in the community of needed		+0.246*	-0.173*		
Mother's sense of belonging to local community	-0.311**	+0.395***			
Mother's ethnic/cultural heritage		-0.119*			
Mother's first language learned and still understood			+0.220*	-0.193**	
Mother's highest level of education attained				-0.115**	
Mother's main activity	+0.251***				
Mother's marital status		+0.335**	+0.129*		-0.124*
Mother's partner status	+2.140***	-0.845**			
Mother's stress level		-0.229**			-0.126*
Approximate family income from all sources, before taxes	+0.104***				
Total number of people supported by the family's income			+0.341***	+0.267***	+0.278***
Family's dwelling location	-0.437**	+0.328**	-0.475***	+0.381***	
Perceived health status of child (according to mother)	+0.271*		+0.285***		
Mother's satisfaction with the supports and services available to her and her child	-0.225**				+0.204***

Notes: * $p < .10$ ** $p < .05$ *** $p < .01$

Discussion

Predictors of Service Utilization

The first objective of this study was to determine the common variables in models that were used to compare the utilization of health services delivered through traditional physician-based services versus public health service programs. The results of the regression modeling strategy indicate that the child's age, and the location of the household within the public health unit catchment area were common predictors of utilization of almost all selected health services. The identification of the child's age, as a predictor of health service utilization, is consistent with previous studies by Flores, Bauchner, Feinstein & Nguyen (1999); McCue-Horwitz, Morgenstern & Berkman (1985); Woodward et al. (1988); and Watson & Kemper (1995).

Whether or not a family's household was identified as rural or urban appeared to be significantly related to service utilization. With reference to the Healthy Babies, Healthy Children program the significance of the predictor was greater than $p = 0.05$. However, with respect to all other services the coefficient was significant at the $p < 0.05$ level. Given that the Healthy Babies, Healthy Children program sends nurses across each health unit's catchment area the location of each household is irrelevant. Conversely, significant positive predictors indicate that the location of a household in an urban setting contributes to service use. The negative coefficients associated with service use may indicate mothers will use the service even though their proximity to the public health unit may be far, due to the rural location of their home.

In the present study the most common predictors of public health service utilization were marital status, the total number of people supported by the family's

income, a mother's knowledge of where to go for help in the community, and first language learned and still understood,. The combination of mother's knowledge of where to go for help in the community, and first language learned/still understood may indicate the influence communication and intervention delivery methods have on the use of public health services. These results suggest that service awareness campaigns delivered by Northern Ontario public health agencies may influence the use of available public health services.

In previous research by Cafferata & Kasper's (1985) and Heck & Parker (2002), the authors suggested that the number of parents present in the household influenced the use of physician services. Unlike the findings of Cafferata & Kasper (1985); Fleming & Charlton (1998); and Heck & Parker (2002), the variable, "marital status" was not included as a predictor of physician service utilization. However, consistent with previous research, respondents that indicated that they had a partner (i.e. two adults present in the household) were more likely to use physician services.

As noted in the results, the variable "number of individuals supported by family income" appeared as a predictor ($p < 0.1$) in each of the models of public health services utilization, but not the model of physician service utilization. This finding contradicts the findings of Alexander & Markowitz (1986); Cafferata & Kasper (1985); Janicke, Finney & Riley (2001); McCue-Horwitz, Morgenstern & Berkman (1985); and Selwyn (1978). Previous research has shown that the number of children in the household -- a possible proxy for the predictor "number of individuals supported by family income", was a common factor in assessing the use of physician services.

Other Significant Findings

Other factors which were noted to affect the use of the selected health services included, mother's perception of her child's health status, mother's sense of belonging (to the community), main activity (work related), perceived stress, satisfaction with health services and household income.

Specifically, a high rating of the child's health status, according to the mother's perception, was shown to significantly influence the use of the parent information line but was not a significant factor in use of physician services. This finding is inconsistent with utilization models produced by Cafferata and Kasper (1985) and Janicke, Finney and Riley (2001) that indicated the mother's perception of her child's health status was influential in the use of physician-based services.

The use of physician services and the use of parent support groups partly depended on the mother's sense of belonging to her local community. This result is interesting when one considers that the coefficient adjusting for sense of belonging in the physician service utilization model is negative (indicating a negative relationship between sense of belonging and likelihood to seek help from a physician), but the relationship reverses for the coefficient in the parent support group utilization model. The latter finding suggested that the mother who feels included in the community is more likely to use services provided by the local public health unit.

Unlike the research findings of Flores, Bauchner, Feinstein and Nguyen (1999), the main activity of the mother (an employment related measure) and the family's income influenced the use of physician services but had a small impact on the use of the selected public health services. Further cross-tabulations revealed that mothers who stated their

main activity was caring for their family and working for pay or profit and listed their household income as greater than \$80,000 reported the highest frequency of physician service utilization. In the earlier work of Flores, et al (1999) the authors reported that physician visits were positively correlated to individuals from households classified as living in poverty.

The score depicting the mother's perceived stress level was reported here to be an important predictor of the use of parent support groups. However, its absence from the physician service utilization model is inconsistent with the work of Alexander and Markowitz (1986) who found that the stress level of the mother influenced the extent to which physician-based services were used.

The mother's satisfaction with health services was also identified as an important characteristic which influenced the use of physician services and the Healthy Babies, Healthy Children program. The inclusion of this characteristic in models of both physician service use and utilization of the Healthy Babies, Health Children program provides valuable insight about a mother's intention to use a particular health service. The negative coefficient describing the mother's satisfaction with physician service utilization may indicate that although mothers were dissatisfied with physician service utilization they continued to use the service when needed. Conversely, the positive coefficient associated with the Healthy Babies, Healthy Children program indicates the mother used the service because she was satisfied.

Satisfaction, Perceived Health and Service Utilization

The second objective of this study was to determine if there was agreement between a mother's satisfaction with the available health services and her perception of

her child's health status in light of previous work by Andersen (1995). The results of the Kappa and McNemar tests showed that there was no agreement between these variables and therefore each may be considered as independent factors when assessing health service utilization ("mother's satisfaction with health services" occurred in 4 of 5 regression models, "mother's perception of child's health status" included in all five models – Table 5).

According to the theory proposed by Andersen (1995) an individual's use of a health services may be a function of perceived satisfaction with each use of the service. That is, an individual that uses a service and finds it to be a positive experience may be more likely to repeat the use of the selected service. Conversely, an individual that encounters a negative experience associated with the use of a service may be more likely to avoid using the service and may even seek alternative services in the future. Given that the present study used a cross-sectional design to collect data about a mother's use of physician-based or public health-based services, it is not possible from these data to establish intention of mothers to use a selected health service in the future. It is recommended that future research consider a longitudinal approach to data collection in which programs can be evaluated based on a measure of "satisfaction with use of selected services".

Conclusion

The results of the present study indicate that there is limited consistency across models intended to predict the utilization of: i) physician services, ii) parent support groups, iii) parent information lines, iv) health clinic services, and v) the Healthy Babies, Healthy Children program in a cohort of Northern Ontario mothers of children six years of age and younger. While a child's age, and the household location appear to be associated with use of both acute care and public health services; the number of people supported by family income, the mother's perceived level of stress, language skills, and knowledge of where to go for help in the community if needed appear to be more influential in the use of public health services than physician-based services. The results of this study also indicate that no agreement exists between the indicators of a mother's satisfaction with health services used and the mother's perception of her child's health status in this cohort.

The results of the present study need to be further evaluated in terms of validity and reliability among other samples of Northern Ontario mothers and children six years of age and younger. Future research may also seek to further understand the relationship between satisfaction with health services and future use of services due to the limitation of the present study's cross-sectional format. An investigation of this nature may aid the understanding of the relationship between health outcome indicators and use of health services.

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APPENDIX A: GLOSSARY OF TERMS

Glossary of Terms

Prenatal - Existing or occurring before birth

Antenatal - Occurring before birth; prenatal

Perinatal - Of, relating to, or being the period around childbirth, especially the five months before and one month after birth

Postnatal - Of or occurring after birth, especially during the period immediately after birth

Obstetrics - The branch of medicine that deals with the care of women during pregnancy, childbirth, and the recuperative period following delivery.

Postpartum - Of or occurring in the period shortly after childbirth

Pediatrics - a branch of medicine dealing with the development, care, and diseases of children

Perceived Health Status – an individual’s perception of their own health that encompasses biological, psychological and social components (Miilunpalo et al., 1997)

Note: the above definitions are according to Merriam-Webster Online Dictionary (www.m-w.com)

Healthcare services included in investigation:

- a) Parent support groups
- b) Parent information line
- c) Breastfeeding clinics/Well-Baby/Pre-school clinics
- d) Healthy Babies, Healthy Children program

Determinants of health – a group of key factors that determine an individual’s health status. While health service utilization will be the primary determinant of health examined, most key determinants of health status, as outlined by Health Canada, will be included in the analysis.

The determinants of health include: Income and Social Status, Social Support Networks, Education and Literacy, Employment/Working Conditions, Physical environments, Healthy child development, Gender, Culture

Predictors of health service utilization:

Child's gender – child's biological gender

Child's age – child's age at time of NOPCHS interview

Day-care/pre-school/public school enrolment of child – child's enrolment

Child's health status – perceived health status of child according to mother

Presence of a chronic illness, disorder or special need – child has a chronic illness, disorder or special need

Obstacles to utilization of health service – obstacles listed by the mother that prevent utilization of health services

Satisfaction with supports and services – mother's satisfaction with supports and services provided by the local health unit

Ethnic/cultural background – mother's ethnic/cultural background

Mother's age – age of mother at time of NOPCHS interview

Language first spoken and still understood – mother's language first spoken and still understood

Stress level – mother's stress level based on feelings of exhaustion and anxiousness

Mother's perceived health status – mother's subjective assessment of her own health status

Sense of belonging to community – mother's sense of belonging to her community

Main activity – mother's main activity of daily living

Employment status – mother's employment status

Marital status – mother's marital status

Family income – family income from all sources between January 1, 2001 and December 31, 2002

Number supported by family income – number of individuals supported by the given family income

Presence of a partner – mother's indication of the presence of a partner

Rural/urban dwellers – home situated in either an urban or rural setting

Low Income Cutoff - identifies those who are substantially worse-off than the average (not a measure of poverty)

APPENDIX B: NORTHERN ONTARIO PERINATAL AND CHILD HEALTH SURVEY BACKGROUND

Northern Ontario Perinatal and Child Health Survey Background

The data source for this study is the Northern Ontario Perinatal and Child Health Survey (NOPCHS). The Northern Ontario Perinatal and Child Health survey was created by a consortium of northern Ontario health units comprised of representatives from Thunder Bay, Porcupine, Timiskaming, Porcupine, Algoma, Sudbury, North Bay, and Muskoka-Parry Sound as well as other partners. The NOPCHS was a northern Ontario study designed to provide information for health planners to use when planning program strategies for the zero to six year-old child population in northern Ontario.

This survey was sponsored by the First Ministers endorsed, “Early Years program” and was part of the Early Years Perinatal and Child Health Survey Strategies Initiative. This initiative mandated that local survey strategies focus on one or more of the following topics:

- preconception health
- prenatal health
- postpartum health
- child health, growth and development from birth to six
- parenting (Public Health Branch, 2003)

With these broad concepts available to explore, the consortium further refined their focus through consultation with health unit staff, partner agencies, Health Canada, Statistics Canada and others. These consultations combined with a literary review yielded possible questions to include in the survey tool. The question content of the survey was, whenever possible, drawn from existing assessment tools that had previously demonstrated reliability and validity for use in population-based studies. However, since the topic areas were broad, a lengthy questionnaire was created (initial testing indicated a

participant time commitment of 37 minutes for survey completion). Therefore, based on participant considerations and the intention to minimize data collection costs, a strategy was created using a Delphi process to reduce the length of the original questionnaire. The target response time was arbitrarily set at 20 minutes. The Delphi process allowed selection and elimination of particular questions from the survey tool when three consortium members and/or content experts cast votes on a particular question. Results from a principal component analysis created from pre-testing the survey were also used to identify possibly redundant items (NOPCHS: A first look, 2002). Once all revisions were tabulated and the final version of the questionnaire was produced, the Sudbury & District Health Unit Research and Ethics Committee reviewed the survey tool and approved the survey for use (Northern Ontario Perinatal and Child Health Survey Consortium, 2002). The questionnaire was translated into French by an accredited translator prior to use.

Sampling

Originally, the consortium intended to have sample sizes ranging from 550 to 650 participants per health unit (with the lower end for smaller and upper end of the range for larger health units). These sample sizes were determined using the formula of Pagano and Gauvreau with prevalence of 50%, 80% power ($\beta=.20$) and $\alpha=.05$ (Pagano and Gauvreau, 2000). The sample size was determined using the number of households with children aged zero to six as the population base. Population sizes for each health unit's catchment area were based on the 1996 Census. A portion (8%) of the total health unit area population was used to estimate the number of households with children ages zero to six. The original sample size was large enough to permit sub-group analysis. However,

due to various limitations and constraints (eg. resource availability and recruiting difficulties) the sample size was reduced to between 400 and 450 respondents per health unit. Despite the reduction in actual households sampled, the final sample size was sufficient within each health unit area to ensure reliable estimates for the primary questions of interest. Further sub-group analysis, specific cross-tabulations, and age-specific analyses were limited as a result of inadequate sampling (Northern Ontario Perinatal and Child Health Survey Consortium, 2002).

The sample for the NOPCHS was drawn from a process of random digit dialing and from the list of individuals in the Integrated Services for Children Information System (ISCIS) database. The ISCIS database contained contact information for mothers of infants enrolled in the Healthy Babies, Healthy Children program. Contact information for mothers who gave birth between September 2000 and August 2001 were randomly extracted from the ISCIS database. An extraction procedure starting from the last day of the month was used to draw 50 mothers' names for each month. Cases made available from the ISCIS database were excluded if the child was deceased or if the mother did not speak English or French. Each health unit was then responsible for recruiting mothers from the ISCIS database. This recruitment process was aided by the Sudbury Public Health Research and Education Division (PHRED) who developed a method for training home visitors from the Healthy Babies, Healthy Children program on how to recruit potential NOPCHS participants. The individuals on the list of potential NOPCHS participants from the ISCIS database were contacted until a sample rate of 25 participants per birth month were obtained (the number per month was topped up from other months if one month did not yield 25 consents). Sampling of the ISCIS database

produced a total of 300 names per health unit. The names and telephone numbers of those who gave their consent to participate in the NOPCHS survey were then given to Oraclepoll Research Limited. The use of ISCIS contact information was originally thought to be a method for increasing the completion rate of interviews because these potential participants were actually contacted prior to their interview. However, approximately 20% of the sample from the ISCIS database declined to take part in the survey when contacted by Oraclepoll Research Limited. In addition to restrictions resulting from excessive time commitments, mothers may have declined to participate for a variety of reasons.

Random digit dialing (RDD) was another method used to obtain the preferred sample size within each health unit. Telephone numbers were randomly selected from the 807 and 705 area codes of northern Ontario and then compared to the list of participants generated from the ISCIS database. This process was intended to reduce the possibility of duplicating participant contacts. The rationale for this recruiting method was based on the concept that mothers of children age zero to six would have an equal probability of being selected, if they had a phone number. This strategy allowed the randomness of the sample recruiting process to be maintained.

Of the entire NOPCHS sample, 56% were participants recruited from the ISCIS database and 44% from random digit dialing (NOPCHS: A first look, 2002). It is noteworthy, that within some health units, the ISCIS database was used to increase the final sample size beyond the minimum expected. This “extra” sampling resulted in disproportional sample sizes across health units.

The sampled individuals were principal female caregivers (parents/guardians) living in the Northern Ontario health unit regions of Algoma, North Bay, Northwestern, Porcupine, Sudbury, Thunder Bay, Timiskaming. The principal female caregiver was asked to make her responses to the survey for the child in the household that was under seven years of age and who had had the most recent birthday at the time of interview. The survey did not exclude families with adopted children. The final sample for this survey was 3413 participants.

Data Collection

The Computer Assisted Telephone Interview (CATI – a standard survey method) was conducted by Oraclepoll Research Limited. NOPCHS data collection began in March and was completed by July of 2002. Potential participants were contacted by telephone at various times of the day as well as in the evening and on weekends. Mothers who were interested in participating but were unable to complete the survey at the time of the phone call were given the option to suggest a time that best suited their schedule. In all cases, surveyors sought the mother of a child six years of age or under that resided with her. If the surveyor failed to make contact with the household provided from the ISCIS database, a minimum of 15 calls were placed to the number in an attempt to contact the potential household respondent. Interviews were conducted in either English or French, depending on the respondent's mother tongue.

The use of a non-experimental, self-reported, survey research design to provide a descriptive, cross-sectional view of Northern Ontario children aged zero to six provides an accurate representation of this population. This selected research design identifies characteristics and frequencies of events within the representative population. The

intention was to use this design to assist in identifying specific health behaviours/practices, barriers to practice, limits of health promotion information, level of knowledge about issues related to perinatal and child health, and availability/access to health services by survey participants.

Sample weights calculated for the NOPCHS were computed to accurately reflect the population surveyed. The sample weight for the dataset was comprised of two components. The first component was a sample weight calculated to allow the distribution of children's ages zero to six to match each health unit's population distribution and correct for over-representation of younger children in the sample as a result of contacting mothers from the ISGIS database (these mothers had given birth most recently). The second component was a sample weight calculated to account for the proportion of mothers within the health unit catchment area and relate the proportion to the distribution of mothers by health unit area. This sample weight was also calculated to account for under-representation of mothers in large health unit areas. The final sample weight for the dataset was a product of the two sample weights (Northern Ontario Perinatal and Child Health Survey Consortium, 2002).

Limitations of Instrument

Design Limitation

The survey research design is limited by the participants' willingness to report information, accuracy of the information provided, and the participants' understanding of the questions asked. The NOPCHS consortium attempted to address these issues by pilot testing the questionnaire. Even though adjustments were made, the aforementioned limitations may have been a factor in data collection.

Recruitment Method Limitation

The random digit dialing recruitment method posed limitations that include exclusion of mothers who do not have a phone, are living in institutions, and those mothers not willing to participate in telephone-based surveys.

APPENDIX C: TABULATED VERSION OF SELECTED STUDIES

Study	Purpose	Design, Site and Sample Size	Predictors relevant to our study	Outcomes	Contribution
Selwyn (1978)	monitor health service utilization and morbidity patterns	Community survey, Cali Columbia, 529 mothers with children under five years of age	mother's age, family size, education, culture/ethnicity, income	use of physician, hospital, health center services	- non-users were older mothers who had fewer eligible children
Cafferata and Kasper (1985)	observe the ambulatory physician utilization patterns of children	National Medical Care Expenditure Survey, 5,538 children age one to eleven from 3,354 households	maternal employment, partner status, family size	physician use in an ambulatory care setting, total number of visits among children with at least one physician visit and likelihood of telephone contact to physician	<p>- children of mother's who worked part-time and who used physician services utilized physician services more than children of mother's who worked full-time</p> <p>- children with two parents in the family structure, that utilized physician services, used these services more than children from single parent households</p> <p>- mother's age, sex of child, number of children, child's perceived health status, and low income status significantly affect the chance of utilizing physician services</p>

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Study	Purpose	Design, Site and Sample Size	Predictors relevant to our study	Outcomes	Contribution
McCue-Horwitz, Morgenstern and Berkman (1985)	observe the relationship between socioeconomic characteristics and the use of pediatric acute care health services	Interview and medical record check, New Haven (Connecticut), 513 children under 5 years of age	mother's age, education of mother and her partner, marital status, number in household, number of children in family, religion, stress	use of pediatric acute care services	<ul style="list-style-type: none"> - young children use more services than older - young mother's use more services than older - small households use more services than large households - family's with fewer children use more services - white family's use more services than non-white families

Study	Purpose	Design, Site and Sample Size	Predictors relevant to our study	Outcomes	Contribution
Alexander and Markowitz (1986)	observe the relationship between maternal employment and pediatric health care utilization	Interview and medical record review, 210 mothers of children between 18 months and 5 years of age	marital status, mother's education, race, mother's age, child's age, child's sex, child's health status, household size, maternal employment, maternal stress	number of visits to pediatric clinic	<p>- children of employed mothers, from a large household size, who are white, have fair or poor health status' and have mother's reporting high numbers of stress days use pediatrics services to a greater extent</p> <p>- children of unemployed mothers, whose mother's have less than a high school education, are more frequent users of pediatric clinic services</p>
Woodward et al. (1988)	Observe the use of ambulatory medical care services	Ontario Child Health Study, 1,869 participants (ages 4 – 16)	child's age, child's gender, child's health status, presence of chronic health problems in child, single parent family, LICO, family size	use of ambulatory medical care (hospital emergency room, medical doctor's office or hospital outpatient department or clinic)	- young children living in large urban centers with well educated mothers are more frequent users of ambulatory care services

Study	Purpose	Design, Site and Sample Size	Predictors relevant to our study	Outcomes	Contribution
Watson and Kemper (1995)	Observe maternal factors related to child healthcare use	Community survey, Seattle (Washington), 202 preschool children (under five years of age)	child's age, mother's age, marital status, income, mother's education level, race	Visits to children's clinic and emergency room	- young children of young mothers were more frequent users of health services
Fleming and Charlton (1998)	identify problems accessing healthcare that may exist for children from single parent households	Observational study , National Study of Morbidity in General Practice, 93, 356 children between 0 and 15 years of age	ethnicity, living with one or more adults, economic position of parent one year ago, employment status of parent and current or most recent occupation	general practitioner utilization	- children from single adult households consult general practitioners more frequently than children from households with two or more adults
Flores, Bauchner, Feinstein and Nguyen (1999)	- identify the demographics, health status and use of health services in five major American ethnic groups - determine if ethnic differences in health service utilization can be explained by differences in family income and parental education	National Health Interview Survey, 99, 268 children less than 18 years of age	family income, highest level of parental education, child's age and sex, ethnicity	number of physician consultations in the last year	- non-white ethnicity was significantly related to fewer physician visits - households living in poverty, greater educational achievements by parents and young children are significantly associated with greater number of physician visits
Heck and Parker (2002)	- observe the potential differences in healthcare utilization between children of two-parent families and single-mother families	National Health Interview Survey, 71, 428 children under 18 years of age	ethnicity, child's health status, child's age, employment status of mother	number of physician visits in the last year	- children of single mothers with low levels of education had a better ability to access care than children from two parent families with low levels of maternal education

Study	Purpose	Design, Site and Sample Size	Predictors relevant to our study	Outcomes	Contribution
Janicke, Finney and Riley (2001)	- determine the factors that best predict children's future health care use	- interview and medical record check, Maryland, 367 children (5-11 years of age)	age of mother, age of child, income of both parents, education of both parents, occupation of both parents, mother's marital status, child's race, number of children at home, child's physical health status (acute, recurring, chronic illness), mother's social support	number of pediatric care visits	<ul style="list-style-type: none"> - more children in the home produces lower rates of health care use - perceived health status of child was a significant predictor of health care use

APPENDIX D: RE-CATEGORIZED VARIABLES

Variables related to the child's gender and chronic illness status, the mother's partner status, the family's income and household location were left unchanged as frequency analyses of these variables revealed limited skewness.

A variable was created to represent the mother's stress level. This variable was computed through the combination of responses to questions regarding what it felt like to be a parent (variables p5b and p5d). These variables were first re-categorized into positive (strongly agree/agree) and negative (strongly disagree/disagree) responses. Following the re-categorization process the responses were summed based on their response codes. This process produced a measure of the mother's stress level and permitted the identification of mother's with no stress, mother's who felt drained and exhausted or tense and anxious, and mother's who felt, drained, exhausted, tense and anxious.

Variables related to the perceived health status of the child according to the mother (Figure 1), the mother's level of satisfaction with services (Figure 2), knowledge of where to go for help in the community (Figure 3), ethnicity or cultural affiliation (Figure 4), language first learned and still understood (Figure 5), sense of belonging to the local community (Figure 6), education level (Figure 7) and marital status (Figure 8), the number of people supported by the family income (Figure 9), and the child's age (Figure 10) were all re-categorized in an attempt to limit the skewness present within these variables. Also, due to the large response range, the mother's age variable was re-categorized into the follow levels: under 20 years of age, 20 to 29, 30 to 39 and 40 or more.

Figure 1. Re-categorization of variable “d9” (perceived health status of the child according to the mother).

		Percent	Percent	
Valid	Very poor	0.23	5.24	Very poor/Poor/Satisfactory
	Poor	0.62		
	Satisfactory	4.39		
	Good	18.96	18.96	Good
	Very good	75.77	75.77	Very good
Missing	Don't know / refused	0.03	0.03	Don't Know / Refused
Total		100.00	100.00	

Figure 2. Re-categorization of variable “p10” (the mother’s level of satisfaction with services).

		Percent	Percent	
Valid	Very Unsatisfied	1.08	12.77	Very Unsatisfied/Somewhat Unsatisfied/Neutral
	Somewhat Unsatisfied	1.96		
	Neutral	9.73		
	Somewhat Satisfied	27.75	27.75	Somewhat Satisfied
	Very Satisfied	55.44	55.44	Very Satisfied
Missing	Not Stated	0.18	0.18	Not Stated
	Don't know / refused	3.87	3.87	Don't Know / Refused
Total		100.00	100.00	

Figure 3. Re-categorization of variable “p11c” (the mother’s knowledge of where to go for help in the community).

		Percent	Percent	
Valid	Strongly Disagree	1.67	10.64	Strongly Disagree/Somewhat Disagree/Neutral
	Somewhat Disagree	2.31		
	Neutral	6.65		
	Somewhat Agree	21.15	21.15	Somewhat Agree
	Strongly Agree	67.80	67.80	Strongly Agree
Missing	Not Stated	0.18	0.18	Not Stated
	Don't know / refused	0.23	0.23	Don't Know / Refused
Total		100.00	100.00	

Figure 4. Re-categorization of variable "pd2" (the mother's ethnicity or cultural affiliation).

		Percent	Percent	
Valid	Canadian	24.29	66.66	Canadian/English/Other European Descent
	English	16.96		
	German	3.37		
	Scottish	7.15		
	Irish	4.75		
	Italian	4.57		
	Ukrainian	2.26		
	Dutch	1.52		
	Jewish	0.06		
	Polish	1.29		
	Portuguese	0.38		
	Black	0.06		
	French	23.82	23.82	French
	Chinese	0.15	0.62	Asian
	South Asian (e.g. East Indian, Pakistani, Punjabi, Sri Lanka)	0.47		
	North American Indian	3.19	3.96	Aboriginal
	Metis	0.73		
	Inuit/Eskimo	0.03		
	Other - Specify	3.98	3.98	Other
Missing	Refused	0.32	0.32	Refused
	Don't know	0.64	0.64	Don't Know
Total		100.00	100.00	

Figure 5. Re-categorization of variable “pd3” (the language first learned and still understood by the mother).

		Percent	Percent	
Valid	English	78.11	78.11	English
	French	16.76	16.76	French
	Arabic	0.03	4.86	Other
	Chinese	0.03		
	Cree	0.09		
	German	0.73		
	Greek	0.09		
	Hungarian	0.03		
	Italian	1.49		
	Korean	0.03		
	Persian (Farsi)	0.03		
	Polish	0.26		
	Portuguese	0.29		
	Spanish	0.21		
	Tagalog	0.06		
	Ukrainian	0.09		
	Vietnamese	0.06		
	Other - Specify	1.35		
Missing	Refused	0.26	0.26	Refused
Total		100.00	100.00	

Figure 6. Re-categorization of variable “pd5” (the mother’s sense of belonging the local community).

		Percent	Percent	
Valid	Very Weak	2.20	14.12	Very weak/Somewhat weak
	Somewhat Weak	11.92		
	Somewhat Strong	49.96	49.96	Somewhat strong
	Very Strong	34.78	34.78	Very strong
Missing	Don't know / refused	1.14	1.14	Don't Know / Refused
		100.00	100.00	

Figure 7. Re-categorization of variable “pd6” (the highest level of education attained by the mother).

		Percent	Percent	
Valid	Public school - grade	0.79	28.04	Less than, some or completed high school
	High school - grade	27.25		
	Some College	9.29	12.28	Some college or university
	Some University	2.99		
	Completed College	36.86	36.86	Completed college
	Completed University	17.46	22.53	Completed university or a graduate degree
	Postgraduate Degree	5.07		
Missing	Don't know / refused	0.29	0.29	Don't Know/Refused
Total		100.00	100.00	

Figure 8. Re-categorization of variable “pd10” (the mother’s marital status).

		Percent	Percent	
Valid	Married	71.11	71.11	Married
	Common-law	17.11	17.11	Common-law
	Single	8.23	8.23	Single
	Separated	2.46	3.22	Separated/Divorced/Widowed
	Divorced	0.70		
	Widowed	0.06		
Missing	Not Stated	0.23	0.23	Not Stated
	Don't know / refused	0.09	0.09	Don't Know / Refused
Total		100.00	100.00	

Figure 9. Re-categorization of variable “o_pd11” (the number of people supported by the family income).

		Percent	Percent	
Valid	2	6.15	38.59	2 to 3
	3	32.43		
	4	40.23	40.23	4
	5	15.47	20.83	5 or more
	6	3.72		
	7	1.14		
	8	0.23		
	9	0.15		
	11	0.06		
	14	0.06		
Missing	Not Stated	0.23	0.23	Not Stated
	Don't know / refused	0.12	0.12	Don't Know/Refused
Total		100.00	100.00	

Figure 10. Re-categorization of variable “d_age” (the child’s age).

		Percent	Percent	
Valid	0	21	21	Less than 1
	1	34	34	1
	2	10	19	2 and 3
	3	9		
	4	10	26	4, 5 and 6
	5	8		
	6	8		
		100	100	

APPENDIX E: THE NORTHERN ONTARIO PERINATAL AND CHILD HEALTH SURVEY

AREA

North Bay and District Health Unit.....	1
Northwestern Health Unit.....	2
Sudbury District Health Unit.....	3
Timiskaming Health Unit.....	4
Algoma Health Unit.....	5
Thunder Bay Health Unit.....	6
Porcupine Health Unit.....	7
Parry Sound / Muskoka Health Unit.....	8

Hello, my name is { ... } from the research firm Oraclepoll on behalf of the <AREA>

Health Unit. The Health Unit is conducting a telephone survey of parents who have children under the age of 7. The purpose of the survey is to find out more about the health and well-being of young children, and to assist in planning future services for our children. You are being contacted today either because you agreed to have the health unit give us your number or because your telephone number was selected randomly. 1.

To take part in this survey, you must be the mother of a child 6 years of age or under who lives with you. Do you have at least one child aged 6 or under living with you now? NO
 à The interviews are only for mothers who have children aged 6 and under living with them. Thank you for your time. Good-bye. . YES à [If male answered telephone] This

survey is for mothers of children 6 years of age or under. May I please speak to the child's mother? Hello, my name is _____ from the research firm Oraclepoll on behalf of the _____ Health Unit. The Health Unit is conducting a telephone survey of parents who have children under the age of 7. The purpose of the survey is to find out more about the health and well being of young children, and to assist in planning future services for our children. You are being

contacted today either because you agreed to have the health unit give us your number or because your telephone number was selected randomly. Your participation in the survey is voluntary. If you decide not to participate in the interview, your decision does not affect the services you would receive from the Health Unit in any way. You also have the right to refuse to answer any question or to stop the interview at any time. Your answers to the questions will be completely confidential and no one will be able to link your name to the answers you give. The survey will take about 20 minutes to complete.

2. Are you willing to participate in our survey?

- Yes (continue survey).....01
 - No children 6 or under.....02 => END
 - Refused.....03 => END
 - No answer.....04 => END
 - Fax Machine / Bad Number05 => END
 - Other Language06 => END
 - Business Number / Not in service07 => END
 - Not available now.....08 => CB
 - Willing to do survey, but not now09 => CB
- «INTRO »

7: **D2**
 1.1 What are the four digits of your postal code?

9: **D2B**
 1.2 How old is the child in the household who is under age 7 and has had the most recent birthday (First child)
 No.....1 I => D3
 Open2 O

13:		D3
1.3 In what month is his / her birthday?		
January	1	
February	2	
March	3	
April	4	
May	5	
June	6	
July	7	
August	8	
September	9	
October	10	
November	11	
December	12	

14:		D3B
1.3 And in what year was he/she born in?		
1995.....	1	
1996.....	2	
1997.....	3	
1998.....	4	
1999.....	5	
2000.....	6	
2001.....	7	
2002.....	8	

15:		D3C
The majority of this survey will be focusing on this child? _____(May I refer to the child by their first name) YES-RECORD NAME / NO CONTINUE		

16:		D4
1.4 Is <D3C> male or female		
Male.....	1	
Female	2	

17:		D5A
1.5 What is the weight of <D3C> (in pounds)		

18:		D5B
What is <D3C> Height?		

19:		D7
1.7Does <D3C> currently attend:		
Day Care.....	1	
Pre-School	2	
Public school (kindergarten).....	3	
None	4	

20: **D8**

1.8 How many hours per week does <D3C> attend school

=> D9

si D7=4

21: **D9**

1.9 In general, would you say <D3C> health is:

- Very poor..... 1
- Poor 2
- Satisfactory..... 3
- Good 4
- Very good..... 5
- Don't know / refused..... 99

22: **F1**

2a.1 How were you feeding <D3C> in the first 48 hours after his/her birth

- Breast Feeding..... 1
- Bottle Feeding 2
- Both 3

23: **F2**

2a.2 Do you have a family doctor?

- Yes..... 1
- No..... 2

24: **F3IA**

Did you receive support for the way you chose to feed <d3c> (i.e. breast or bottle) from the following people?

2a.3i Your baby's doctor

- Yes..... 1
- No 2

25: **F3IB**

Was your baby's doctor....

=> F3IIA

si F3IA=2

- Not at all Helpful..... 1
- Not very Helpful..... 2
- Moderately Helpful 3
- Somewhat helpful..... 4
- Very helpful..... 5
- Don't know / refused..... 99

36: **F3VII**

Did you receive support for the way you chose to feed <d3c> (i.e. breast or bottle) from the following people?

2a.3viiSpouse/partner

Yes.....1
No.....2

37: **F3V3B**

Was your spouse / partner..

=> F3V4A
si F3VII=2

Not at all Helpful.....1
Not very Helpful.....2
Moderately Helpful3
Somewhat helpful.....4
Very helpful.....5
Don't know / refused.....99

38: **F3V4A**

Did you receive support for the way you chose to feed <d3c> (i.e. breast or bottle) from the following people?

2a.3viiiFamily/close friends

Yes.....1
No.....2

39: **F3V4B**

Was your Family/close friends..

=> F3IXA
si F3V4A=2

Not at all Helpful.....1
Not very Helpful.....2
Moderately Helpful3
Somewhat helpful.....4
Very helpful.....5
Don't know / refused.....99

42: **F3XA**

Did you receive support for the way you chose to feed <d3c> (i.e. breast or bottle) from the following people?

2a.3xLactation Consultant

Yes.....1
No.....2

43:

F3XB

Was your Lactation Consultant..

=> F4

si F3XA=2

Not at all Helpful	1
Not very Helpful.....	2
Moderately Helpful	3
Somewhat helpful.....	4
Very helpful.....	5
Don't know / refused.....	99

44:

F4

Accept multiple responses

2a.4 We are interested in the reasons that women choose to breast feed. Please tell us why you chose to breast feed <D3C>

=> F7

si F1=2

Benefits for baby (antibodies, less infections).....	1
Benefits for self (postpartum recovery; weight loss).....	2
Convenience	3
Bonding	4
Successful previous experience	5
Support from partner	6
Other.....	7 O

45:

F5A

2a.5i Please use a scale of 1 to 5, where 1 is not at all comfortable and 5 is very comfortable. Upon hospital discharge (or if not born in hospital, shortly after the birth of the child), how would you describe your level of comfort with:

2a.5i. positioning of baby at breast

Not at all comfortable.....	1
Not very comfortable.....	2
Moderately comfortable	3
Somewhat comfortable.....	4
Very comfortable.....	5
Don't know / refused.....	99

46:

F5B

2a.5i Please use a scale of 1 to 5, where 1 is not at all comfortable and 5 is very comfortable. Upon hospital discharge (or if not born in hospital, shortly after the birth of _____), how would you describe your level of comfort with:

2a.5ii. baby's latching (baby's mouth joining the breast)

Not at all comfortable.....	1
Not very comfortable.....	2
Moderately comfortable	3
Somewhat comfortable.....	4
Very comfortable.....	5
Don't know / refused.....	99

47:

F5C

2a.5i Please use a scale of 1 to 5, where 1 is not at all comfortable and 5 is very comfortable. Upon hospital discharge (or if not born in hospital, shortly after the birth of _____), how would you describe your level of comfort with:

- 2a.5iii. recognizing baby's cues
- Not at all comfortable.....1
 - Not very comfortable.....2
 - Moderately comfortable3
 - Somewhat comfortable.....4
 - Very comfortable.....5
 - Don't know / refused.....99

48:

F5D

2a.5i Please use a scale of 1 to 5, where 1 is not at all comfortable and 5 is very comfortable. Upon hospital discharge (or if not born in hospital, shortly after the birth of _____), how would you describe your level of comfort with:

- 2a.5iv. recognizing signs that the baby is feeding adequately
- Not at all comfortable.....1
 - Not very comfortable.....2
 - Moderately comfortable3
 - Somewhat comfortable.....4
 - Very comfortable.....5
 - Don't know / refused.....99

49:

F6A

2a.6i. How confident you felt about breastfeeding when you were discharged from hospital (or if not born in hospital, shortly after the birth of the child)?

- Not at all confident.....1
- Not very confident.....2
- Somewhat confident.....3
- Confident.....4
- Very confident.....5
- Don't know / refused.....99

50:

F6B

2a.6ii. How confident would you feel in recognizing signs indicating that you should seek help?

- Not at all comfortable.....1
- Not very comfortable.....2
- Moderately comfortable3
- Somewhat comfortable.....4
- Very comfortable.....5
- Don't know / refused.....99

51:

F7

2a.7 Why did you decide to bottle feed

=> H1
si F1=1,3

52: **F8**

2a.8 Were you shown how to prepare formula while in hospital or by midwife?

- Yes.....1
 No.....2

53: **F9**

2a.9 How confident did you feel about feeding your baby when you were discharged from hospital (or if not born in hospital, shortly after the birth of the child?)

- Not at all confident.....1
 Not very confident.....2
 Somewhat confident.....3
 Confident.....4
 Very Confident.....5
 Don't know / refused.....99

54: **H1**

2b.1 For how long did you breast feed ?

=> H12
 si F1=2

55: **H2A**

2b.2.i Please indicate the length of time (in months) for the following items: Breast feeding only

56: **H2B**

2b.2.ii Please indicate the length of time (in months) for the following items: Breast feeding with formula supplements

57: **H2C**

2b.2.iii Please indicate the length of time (in months) for the following items: Breast feeding, and bottle feeding using expressed milk

58: **H2D**

2b.2.vi. Please indicate the length of time (in months) for the following items: Bottle feeding only (never breastfed)

59: **H3**

2b.3 Did you have any problems at home with breastfeeding?

- Yes.....1
 No.....2 => H5

60: **H3B**

- 2b.3a What was(were) the problem(s) (check all that apply)
- Baby fussy/crying.....1
 - Baby had jaundice (yellow skin).....2
 - Baby dehydrated.....3
 - Baby too sleepy.....4
 - Worried you did not have enough milk.....5
 - Sore nipples.....6
 - Mastitis (breast infection).....7
 - Thrush.....8
 - Other (please specify).....9 O

61: **H4**

- 2b.4Did you seek help from anyone?
- Yes.....1
 - No.....2 => H5

62: **H4B**

- Who did you seek help from? (check all that apply)
- The breast feeding help line1
 - Friend, family member2
 - Your doctor/midwife/nurse practitioner/obstetrician.....3
 - Baby's doctor4
 - Public health nurse5
 - Lactation consultant6

63: **H5**

- 2b.5Do you still breastfeed <d3c> now?
- Yes.....1 => H8
 - No.....2

64: **H6**

- What is the main reason you stopped
- Not enough milk.....01
 - Inconvenience / fatigue.....02
 - Difficulty with Breastfeeding techniques.....03
 - Sore nipples / engorged breasts / mastitis.....04
 - Illness.....05
 - Planned to stop at this time.....06
 - Child weaned him / herself.....07
 - Advice of doctor.....08
 - Returned to work / school.....09
 - Advice of partner.....10
 - Formula feeding preferable.....11
 - Wanted to drink alcohol.....12
 - Lack of support (please specify).....14 O
 - Other (Please specify).....15 O

65: **H7**
 2b.7 From the list above, which was the most important reason you stopped breastfeeding?

66: **H9**
 2b.9 Were you able to continue breastfeeding for the length of time you intended?
 Yes.....1 => H10A
 No.....2

67: **H9B**
 What would have helped you to continue breastfeeding longer?

68: **H8**
 Please indicate your level of agreement with the following statement using the scale of strongly disagree, somewhat disagree, somewhat agree or strongly agree
 2b.8 The expectations that I had about breast feeding were the same as what I actually experienced
 Strongly disagree.....1
 Somewhat disagree.....2
 Somewhat agree3
 Strongly agree.....4
 Don't know / refused.....99

69: **H10A**
 2b.10 How comfortable do or did you feel breastfeeding in the following situations.
 For each area, please use the scale where one is not at all comfortable and five is very comfortable.
 2b.10.i In Malls
 Not at all comfortable.....1
 Not very comfortable.....2
 Moderately comfortable3
 Somewhat comfortable.....4
 Very comfortable.....5
 N/A.....98
 Don't know / refused.....99

70:

H10B

2b.10 How comfortable do or did you feel breastfeeding in the following situations. For each area, please use the scale where one is not at all comfortable and five is very comfortable.

2b.10.ii In Restaurants

Not at all comfortable.....	1
Not very comfortable.....	2
Moderately comfortable.....	3
Somewhat comfortable.....	4
Very comfortable.....	5
N/A.....	98
Don't know / refused.....	99

73:

H10E

2b.10 How comfortable do or did you feel breastfeeding in the following situations. For each area, please use the scale where one is not at all comfortable and five is very comfortable.

2b.10.v In the Workplace

Not at all comfortable.....	1
Not very comfortable.....	2
Moderately comfortable.....	3
Somewhat comfortable.....	4
Very comfortable.....	5
N/A.....	98
Don't know / refused.....	99

74:

H10F

2b.10 How comfortable do or did you feel breastfeeding in the following situations. For each area, please use the scale where one is not at all comfortable and five is very comfortable.

2b.10.vi In the presence of close family

Not at all comfortable.....	1
Not very comfortable.....	2
Moderately comfortable.....	3
Somewhat comfortable.....	4
Very comfortable.....	5
N/A.....	98
Don't know / refused.....	99

77:

H11A

2b.11 How important is it for mothers who breast feed or express milk to have a special place in . . . READ SCALE

2b.11.i Malls

Not at all important.....	1
Not very important.....	2
Somewhat important.....	3
Very important.....	4
Don't know / refused.....	99

78: **H11B**

2b.11 How important is it for mothers who breast feed or express milk to have a special place in . . . READ SCALE

2b.11.ii Restaurants

Not at all important.....	1
Not very important	2
Somewhat important.....	3
Very important	4
Don't know / refused.....	99

79: **H11C (I)**

2b.11 How important is it for mothers who breast feed or express milk to have a special place in . . . READ SCALE

2b.11.iii Recreational Facilities

Not at all important.....	1
Not very important	2
Somewhat important.....	3
Very important	4
Don't know / refused.....	99

80: **H11D**

2b.11 How important is it for mothers who breast feed or express milk to have a special place in . . . READ SCALE

2b.11.iv The Workplace

Not at all important.....	1
Not very important	2
Somewhat important.....	3
Very important	4
Don't know / refused.....	99

81: **H12**

2b.12 Did you smoke during your last pregnancy?

Yes.....	1	
No.....	2	=> H13A

82: **H12B**

2b.12.i How many cigarettes did you usually smoke each day?

83: **H13A**

2b.13 Did you smoke when you were breast-feeding (your last baby)?

=> H14
si F1=2

Yes.....	1	
No.....	2	=> H14

84: **H13B**

2b.13.i How many cigarettes did you usually smoke each day?

85: **H14**

2b.14 Did anyone regularly smoke in your presence during or after the pregnancy
(about 6 months after)?

Yes.....1
No.....2

86: **M1**

2c.1 Were prenatal classes available in your community?

Yes.....1
No.....2 => MIC
Unsure3 => MIC

87: **M1B**

2c.1i Did you attend prenatal classes?

Yes.....1
No.....2

89: **M2**

2c.2 Who was your Main health care provider during your pregnancy?

Family doctor1
Midwife2
Obstetrician3
Nurse practitioner4
No one or no consistent person5
Other (Please specify).....6 O

90: **M3**

2c.3 After how many months of pregnancy did you first go for prenatal care?

1 month.....01
2 month.....02
3 month.....03
4 month.....04
5 month.....05
6 month.....06
7 month.....07
8 month.....08
9 month.....09
10 month.....10
11 month.....11
12 month.....12

92:

M5

2c.5 Do you feel that you understood what to expect from labour and birth? Please respond using the scale where one is where you did not understand at all and five is you understood very well.

- Not at all understood 1
- Did not understand 2
- Somewhat understood 3
- Understood 4
- Understood very well 5
- Don't know / refused..... 99

95:

M7

2c.7 Do you feel you understood the signs/symptoms of pre-term labour? Rate this on a scale from 1 to 5 with 1 being not at all and 5 being well enough.

- Not at all 1
- 2
- Somewhat 3
- 4
- Well enough 5
- Don't know / refused..... 99

96:

M8

2c.8 During your pregnancy, were you aware of, or did you become aware of, any of the following community resources: (check all that apply)

- Public health nursing visits/telephone calls 1
- Healthy Babies/Healthy Children program 2
- Well Baby Drop-Ins offered by the Health Unit..... 3
- Parent Child Information Line (if available) at your Health Unit..... 4
- Breast feeding Support Drop-Ins 5
- Breast feeding Mentor-ship Program 6
- Other (please specify)..... 7 O

98:

CF3

Now I'm going to read you several statements that people have made about their food situation. For these statements, please tell me whether the statement was often true, sometimes true, or never true for (you/your household) in the last 12 months, that is, since last (name of current month). CFSM 3. "The food that we bought just didn't last, and we didn't have money to get more." Was that often, sometimes, or never true for your household in the last 12 months?

- Often True 1
- Sometimes True..... 2
- Never True..... 3
- Don't know / refused..... 99
- Not applicable..... 98

99:

CF4

CFSM 4. "We couldn't afford to eat balanced meals." Was that often, sometimes, or never true for your household in the last 12 months?

Often True	1
Sometimes True.....	2
Never True.....	3
Don't know / refused.....	99
Not applicable.....	98

103:

CF8

CFSM 8. In the last 12 months, since last (name of current month), 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?

=> A1
 si CF2=3,98,99 AND CF3=3,98,99 AND CF4=3,98,99 AND CF5=3,98,99 AND
 CF6=3,98,99

Yes.....	1	
No	2	=> CF9
Don't know / refused.....	99	=> CF9
Not Applicable	98	=> CF9

104:

CF8B

CFSM 8a. How often did this happen--almost every month, some months but not every month, or in only 1 or 2 months?

Almost every month	1
Some months but not every month.....	2
Only 1 or 2 months	3
Don't know / refused.....	99
Not applicable.....	98

105:

CF9

CFSM 9. In the last 12 months, did you ever eat less than you felt you should because there wasn't enough money to buy food?

Yes.....	1
No	2
Don't know / refused.....	99
Not Applicable	98

106:

CF10

CFSM 10. In the last 12 months, were you every hungry but didn't eat because you couldn't afford enough food?

Yes.....	1
No	2
Don't know / refused.....	99
Not Applicable	98

115:	A1
3b.1 Have you ever heard of or read about folic acid?	
Yes.....	1
No.....	2 => N1

116:	A2
3b.2 From what source of information have you heard or read about Folic Acid?	
GP/family physician/nurse practitioner	1
Nurse	2
Public health nurse	3
Midwife	4
Obstetrician/Gynecologist	5
Nutritionist/Dietician	6
Pharmacist	7
Books.....	8
Brochure/pamphlet	9
Health food store	10
Family/friends	11
Internet	12
Newspaper/magazines	13
Prenatal classes.....	14
Radio	15
School.....	16
Television	17
Other (please specify).....	18 O

117:	A3
3b.3 Do you / did you feel that you know/knew enough about folic acid to decide whether or not you should be taking it?	
Yes.....	1
No.....	2

121:	A5
<i>Accept only one response</i>	
3b.5 For folic acid to prevent birth defects, should a woman start taking it	
Before conception.....	1
Once pregnancy is confirmed.....	2
In her second trimester (4-6 mths).....	3
In her third trimester (7-9 mths)	4
Don't know	5

123:	A7
3b.7 Are you currently taking a daily multi-vitamin supplement?	
Yes.....	1
No.....	2 => N1

125:

N1

I am now going to a series of statements. 3c.1 My child usually has 3 main meals - breakfast, lunch, supper as well as 2-3 between-meal snacks. ASKED TO RESPONDENT WITH CHILD 2-6 YEARS OF AGE

=> I1
si D3B=7,8

- Everyday.....1
- 5-6 times a week.....2
- 3-4 times a week.....3
- Less than 3 times a week.....4
- Never.....5
- Don't know.....99

126:

N2

3c.2 My child enjoys a wide variety of foods. ASKED TO RESPONDENT WITH CHILD 2-6 YEARS OF AGE

- Always.....1
- Almost always.....2
- Sometimes.....3
- Hardly ever.....4
- Never.....5
- Don't know.....99

130:

I1

4.1Has <d3c> had a fall requiring medical attention during the past year?

- Yes.....1
- No.....2

131:

I2

4.2Where did he/she receive medical care (for the most recent injury)? Check all that apply here.

=> I6
si I1=2

- Hospital.....1
- Walk in Clinic.....2
- Doctors office.....3
- Other (Please specify).....4 O

133:

I4

4.4What kind of injury was it?

- Cut.....1
- Sprain / strain.....2
- Bruises.....3
- Broken Bones.....4
- Other (please specify).....5 O

134: **I5A**

- 4.5 Where did the fall occur?
- From the highchair/chair1
 - From the crib/bed2
 - From another piece of furniture.....3
 - Stairs.....4
 - From playground equipment5
 - Other.....6 O

135: **I5B**

- 4.5i Where was the equipment located?
- Home1
 - School.....2
 - Daycare.....3
 - Local Playground4
 - Other (Please specify).....5 O

137: **I6**

- 4.6 Has <d3c> ever been treated for an accidental poisoning?
- Yes.....1
 - No.....2 => I10

138: **I7**

- 4.7 Where was your child treated for the most recent incident of accidental poisoning?
- Hospital1
 - Walk-in clinic2
 - Doctor's office3
 - Other (Please Specify).....4 O

139: **I8**

- 4.8 What type of substance was consumed?
- Alcohol.....1
 - Medication.....2
 - Vitamins3
 - Household Cleaners.....4
 - Other (please specify).....5 O

141: **I10**

- Check all that apply*
- 4.10 Where are your medications, cleaners, etc. stored?
- High, out of children's reach.....1
 - In locked cabinets2
 - Unlocked cabin.....3
 - Cupboards.....4
 - Other (please specify).....5 O

142:	I11
4.11 When you go somewhere by car, does your child use a car seat or a booster?	
Yes, a car seat.....	1
Yes, a booster	2
No.....	3
Not applicable.....	4

143:	I13
4.13 When you go somewhere in the car with your child how often is he/she buckled (in the car seat or booster)?	
Always.....	1
Usually	2
About half the time.....	3
Occasionally	4
Hardly ever or not at all.....	5
Don't know	99
Not applicable.....	98

144:	I14A
4.14 When you go somewhere by car, how often does your child sit in the back seat? Is it...	
Always.....	1
Usually	2
About half the time.....	3
Occasionally	4
Hardly ever or not at all.....	5
Don't know	99
Not applicable.....	98

145:	I14B
4.14.1 (If child sits in the back seat) If your child is the only child in the back seat, where in the back seat does your child sit?	
Always in the centre seat.....	1
Always in the side seat	2
Sometimes in the centre, sometimes at the side	3

146:	I15
Now I would like to ask you some questions about protection from the sun.	
4.15 How often does <d3c> wear a hat to protect against the sun when he/she goes outside? Would you say...	
Always.....	1
Usually	2
About half the time.....	3
Occasionally	4
Hardly ever or not at all.....	5
Don't know	99

147:	I16
4.16 How often does wear sun block when he/she goes outside? Would you say...	
Always.....	1
Usually	2
About half the time.....	3
Occasionally	4
Hardly ever or not at all.....	5
Don't know	99
Not applicable.....	98

149:	I17A
4.17 Does your child always wear a helmet in the following situations?	
4.17.i When riding a tricycle?	
Yes.....	1
No.....	2
Not applicable.....	99

150:	I17B
4.17 Does your child always wear a helmet in the following situations?	
4.17.ii When riding a bicycle by him or herself?	
Yes.....	1
No.....	2
Not applicable.....	99

151:	I17C
4.17 Does your child always wear a helmet in the following situations?	
4.17.iii When riding as a passenger on the back of a bicycle?	
Yes.....	1
No.....	2
Not applicable.....	99

152:	R1
5.1 Next we would like to ask you a few questions about asthma. Has <d3c> ever been diagnosed with Asthma or a specific respiratory disorder?	
Yes.....	1
No.....	2 => P1

153:	R2
5.2 How old was he/she when first diagnosed?	
1 year old.....	1
2 years old	2
3 years old	3
4 years old	4
5 years old	5
6 years old	6
Don't know / refused.....	99

154: **R3**

5.3 During the past 12 months has your practitioner or someone in your practitioner's office given you or any member of your household advice about how to prevent your child's asthma attacks?

- Yes.....1
- No.....2

159: **R7**

5.7 For the last 4 month period that <d3c> was in school , how many days of school did <d3c> miss because of his/her asthma? Please specify:_____

160: **P1**

6.1 Has your child seen a doctor in the last 12 months?

- Yes.....1
- No.....2
- Not applicable.....98

161: **P2**

6.2 Has your child been checked by a dentist in the last 12 months?

- Yes.....1
- No.....2
- Not applicable.....98

163: **P4**

6.4 Has your child been diagnosed with any serious illness, disability or special needs?

- Yes.....1 => P4B
- No.....2 => +2
- Not applicable.....98 => +2

164: **P4B**

Please specify what your child has been diagnosed with regarding serious illness, disability or special needs?

166: **P5B**

6.5 Next are statements about what it feels like to be a parent. Please let me know if you strongly disagree, disagree, agree, or strongly agree with each statement.

b) Parenting leaves you feeling drained and exhausted.

- Strongly disagree.....1
- Disagree.....2
- Agree.....3
- Strongly agree.....4
- Don't know / refused.....99

168:

P5D

6.5 Next are statements about what it feels like to be a parent. Please let me know if you strongly disagree, disagree, agree, or strongly agree with each statement.

d) Being a parent makes you tense and anxious.

Strongly disagree	1
Disagree	2
Agree	3
Strongly agree	4
Don't know / refused	99

171:

PN6A

6.6 Just about all children break the rules or do things that they are not supposed to. Also, parents react in different ways. Please tell me how often you do each of the following when <d3c> breaks the rules or does things that he/she is not supposed to. How often do you:

a) Tell him/her to stop?

=> P6A
si D3B=7,8

Never	1
Rarely	2
Sometimes	3
Often	4
Always	5
Don't know / refused	99

172:

PN6B

6.6 Just about all children break the rules or do things that they are not supposed to. Also, parents react in different ways. Please tell me how often you do each of the following when <d3c> breaks the rules or does things that he/she is not supposed to. How often do you:

b) Ignore it, do nothing?

Never	1
Rarely	2
Sometimes	3
Often	4
Always	5
Don't know / refused	99

173:

PN6C

6.6 Just about all children break the rules or do things that they are not supposed to. Also, parents react in different ways. Please tell me how often you do each of the following when <d3c> breaks the rules or does things that he/she is not supposed to. How often do you:

c) Raise your voice, scold or yell at him/her?

Never	1
Rarely	2
Sometimes	3
Often	4
Always	5
Don't know / refused	99

174:

PN6D

6.6 Just about all children break the rules or do things that they are not supposed to. Also, parents react in different ways. Please tell me how often you do each of the following when <d3c> breaks the rules or does things that he/she is not supposed to. How often do you:

d) Calmly discuss the problem?

Never	1
Rarely	2
Sometimes	3
Often.....	4
Always.....	5
Don't know / refused.....	99

175:

PN6E

6.6 Just about all children break the rules or do things that they are not supposed to. Also, parents react in different ways. Please tell me how often you do each of the following when <d3c> breaks the rules or does things that he/she is not supposed to. How often do you:

e) Describe alternative ways of behaving that are acceptable?

Never	1
Rarely	2
Sometimes	3
Often.....	4
Always.....	5
Don't know / refused.....	99

176:

PN6F

6.6 Just about all children break the rules or do things that they are not supposed to. Also, parents react in different ways. Please tell me how often you do each of the following when <d3c> breaks the rules or does things that he/she is not supposed to. How often do you:

f) Take away privileges or put him/her in his/her room?

Never	1
Rarely	2
Sometimes	3
Often.....	4
Always.....	5
Don't know / refused.....	99

186:

P6C2

Have you used services for children with emotional or behavioral problems in the last year

Yes.....	1	
No.....	2	=> P6C4

189:

P6D

Are Recreational services and programs for children available close to where you live

Yes.....	1	
No.....	2	=> P6E

232:

P6N4

For these programs we have just mentioned do you feel there are any obstacles for your participation in them

- No Problems1
- Don't need it2
- Don't know enough about it/need more information3
- Don't like the program4
- Cost5
- Inconvenient Location6
- Transportation7
- Hours of operation8
- Language9
- Lack of child care10
- Job11
- Child's health/disability12
- Other (please specify).....13 O

233:

P9

6.9What other services for children age 0-6 would you like to have in your community?

234:

P10

6.10How satisfied are you with the help that you receive from the supports and services available to you and your child? Please use a 1 to 5 scale where 1 is very unsatisfied and 5 is very satisfied.

- Very Unsatisfied1
- Somewhat Unsatisfied2
- Neutral3
- Somewhat Satisfied4
- Very Satisfied5
- Don't know / refused99

235:

P10B

6.10b How can supports and services be improved?

=> P11A
si P10=3,4,5

238:

P11C

6.11I am going to read some statements and I'd like you to rate how much you agree with them on a scale of 1 to 5, where 1 is that you strongly disagree and 5 is that you strongly agree.

6.11iii I know where to go for help in my community if I need it

- Strongly Disagree1
- Somewhat disagree2
- Neutral3
- Somewhat agree4
- Strongly agree5
- Don't know / refused99

250: **P13A**

6.13 Have you had any of the following child care related problems during the past year?

6.13i cost of care

Yes.....1
No.....2

251: **P13B**

6.13 Have you had any of the following child care related problems during the past year?

6.13ii finding temporary care

Yes.....1
No.....2

256: **P13G**

6.13 Have you had any of the following child care related problems during the past year?

6.13vii-scheduling childcare to match work schedule

Yes.....1
No.....2

258: **P13I**

6.13 Have you had any of the following child care related problems during the past year?

6.13ix Not applicable - I haven't needed childcare

Yes.....1
No.....2

260: **P14B**

6.14i Are children exposed to cigarette smoke in the home?

Yes.....1
No.....2

261: **P15**

6.15 Is smoking allowed in your car?

Yes.....1
No.....2 => P15C
Not applicable / no car.....3 => P15C

262: **P15B**

Are children exposed to cigarette smoke in the car

Yes.....1
No.....2

265:

P16

READ

6.16 Which of the following services, if any, did you receive from the Healthy Babies, Healthy Children Program?

- 48 hour post discharge phone call from a public health nurse.....1
- Home visit from a public health nurse after the birth of your baby.....2
- Ongoing services from the Health Babies Healthy Children program3
- Other, please specify:4

266:

PD1

Now I would like to ask a few general background questions that will help us to know about the people who responded to our survey. 7.1 What is your date of birth? ____ Month ____ Year

7.2 To which ethnic or cultural group(s) did your ancestors belong? (For example: French, Scottish, Chinese). Interviewer: Mark all that apply If "Canadian" is the only response, probe. If the respondent hesitates, do not suggest Canadian.

- Canadian.....1
- French.....2
- English.....3
- German.....4
- Scottish.....5
- Irish.....6
- Italian.....7
- Ukrainian.....8
- Dutch.....9
- Chinese.....10
- Jewish.....11
- Polish.....12
- Portuguese.....13
- South Asian (e.g. East Indian, Pakistani, Punjabi, Sri Lankan).....14
- Black.....15
- North American Indian.....16
- Métis.....17
- Inuit/Eskimo.....18
- Other - Specify19

268:

PD3

7.3 What is the language that you first learned at home in childhood and can still understand?

English.....	1
French.....	2
Arabic.....	3
Chinese.....	4
Cree.....	5
German.....	6
Greek.....	7
Hungarian.....	8
Italian.....	9
Korean.....	10
Persian (Farsi).....	11
Polish.....	12
Portuguese.....	13
Punjabi.....	14
Spanish.....	15
Tagalog.....	16
Ukrainian.....	17
Vietnamese.....	18
Other specify.....	19 O

269:

PD4

7.4 In general, would you say your health is[READ]

Very poor.....	1
Poor.....	2
Satisfactory.....	3
Good.....	4
Very Good.....	5
Don't know / refused.....	06

270:

PD5

7.5 How would you describe your sense of belonging to your local community?

Would you say it is:

Very weak.....	1
Somewhat weak.....	2
Somewhat strong.....	3
Very strong.....	4
Don't know / refused.....	99

271:

PD6

7.6 What is the last year you completed at school, college or university?

No formal schooling.....	1
Public school - grade _____.....	2
High school - grade _____.....	3
Some college.....	4
Some university.....	5
Completed college.....	6
Completed university (one degree).....	7
Postgraduate degree.....	8
Don't know / refused.....	99

272:

PD7

7.7 What do you consider to be your current main activity? (for example, working for pay, caring for family) (DO NOT READ, MARK ONE ONLY)

Parental/maternity leave.....	1	
Working for pay or profit.....	2	
Caring for family.....	3	=> PD10
Caring for family and working for pay or profit.....	4	
Going to school.....	5	=> PD10
Recovering from illness/disability.....	6	=> PD10
Looking for work.....	7	=> PD10
Retired.....	8	=> PD10
Other (please describe).....	9	O => PD10
Don't know / refused.....	99	=> PD10

274:

PD8B

7.8 How flexible is your workplace in terms of ... Would you say flexible, somewhat flexible or not at all flexible.
Being able to leave early for a family reason

Not at all flexible.....	1
Somewhat flexible.....	2
Flexible.....	3
Don't know / refused.....	99

276:

PD8D

7.8 How flexible is your workplace in terms of ... Would you say flexible, somewhat flexible or not at all flexible.
Breast feeding arrangements at work

Not at all flexible.....	1
Somewhat flexible.....	2
Flexible.....	3
Don't know / refused.....	99

280:

PD9

7.9 Last week, did you work at a job or a business? Please include part-time jobs, seasonal work, contract work, self-employment, baby-sitting and any other paid work, regardless of the number of hours worked.

- Yes.....1
- No.....2
- Permanently unable to work.....3
- Don't Know or Refused.....99

281:

PD10

7.10 What is your present marital status? Are you:

- Married.....1
- Common-law.....2
- Single.....3
- Separated.....4
- Divorced.....5
- Widowed.....6
- Don't know / refused.....99

282:

PD11

7.11 How many people in total are supported by your family's income?

283:

PD12

7.12 What was your approximate family income from all sources, before taxes during the previous year January 1, 2001 to December 31, 2001?

- Less than \$17,000.....1
- \$17,000 to \$26,999.....2
- \$27,000 to \$31,999.....3
- \$32,000 to \$35,999.....4
- \$36,000 to \$39,999.....5
- \$40,000 to \$44,999.....6
- \$45,000 to \$49,999.....7
- \$50,000 to \$59,999.....8
- \$60,000 to \$69,999.....9
- \$70,000 to \$79,999.....10
- \$80,000 or more.....11
- Don't know / refused.....99

284:

PD13

7.13 Do you have a partner?

- Yes.....1
- No.....2 => END
- Don't know / refused.....99 => END

285:

PD14

7.14 What was the last year your partner completed at school, college or university?

- No formal schooling1
- Public school - grade ____2
- High school - grade ____3
- Some college4
- Some university5
- Completed college6
- Completed university (one degree)7
- Postgraduate degree8

286:

PD15

7.15 Last week, did your partner work at a job or a business? Please include part-time jobs, seasonal work, contract work, self-employment, baby-sitting and any other paid work, regardless of the number of hours worked.

- Yes1
- No2
- Permanently unable to work3
- Don't Know or Refused99

287:

PD16

7.16 Which of the following main activity/activities does your partner do?

- Parental/maternity leave1
- Working for pay or profit2
- Caring for family3
- Caring for family and working for pay or profit4
- Going to school5
- Recovering from illness/disability6
- Looking for work7
- Retired8
- Other (please describe)9 O

288:

INT99

end of interview; time: \$T \$D \$H

Call Result

Completed CO D => END

289:

INT

<i>End of Interview: time: \$T</i>	<i>\$D</i>	<i>\$H</i>	
Result of the call			
Yes (continue survey).....	01	N	
No children 6 or under.....	02	N	
Refused.....	03	N	
No answer.....	04	N	
Fax Machine.....	05	N	
Other Language.....	06	N	
Business Number.....	07	N	
Not available now.....	08	N	
Willing to do survey, but not now	09		=> CB
Completed	CO	N	
Incomplete survey (will continue later).....	11		=> CB
Incomplete survey (Does not want to continue).....	12		=> END
