

HEALTH CARE USE OF INJURED AND NON-INJURED CHILDREN

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ABSTRACT

Objectives: This study reports on patterns of health care use for injured and non-injured children by examining contacts with a variety of medical health care professionals by child age group and gender.

Methods: Descriptive statistics and logistic regressions were used to examine the relationship between injury status and contact with health care professionals. Linear regressions were also used to examine associations between injury status and average number of health care contacts.

Results: Maternal reported childhood injuries are associated with increased use of health care services by various health care professionals as well as overnight hospitalizations. This pattern is consistent for infants and toddlers, preschoolers and school aged children, and remains consistent across both genders.

TABLE 1

	Infants & Toddlers			Preschoolers			School Aged		
	Not Injured (n=6,208) (n=+1,385,126)	Injured (n=631) (n=+129,136)	Odds Ratio* (95% CI) (1.23, 1.89)	Not Injured (n=3,044) (n=+715,184)	Injured (n=343) (n=+70,188)	Odds Ratio* (95% CI) (1.05, 1.81)	Not Injured (n=3,905) (n=+2,027,582)	Injured (n=1,212) (n=+268,488)	Odds Ratio* (95% CI) (1.92, 2.56)
General Practitioner	76	83	1.03	73	78	1.08	65	80	2.22
Pediatrician	38	43	1.30	28	31	1.14	20	24	1.23
Nurse Practitioner	22	21	(1.02, 1.42)	16	16	(0.80, 1.45)	10	13	(1.07, 1.41)
Dentist / Orthodontist	13	18	(0.78, 1.16)	66	65	(0.78, 1.44)	83	86	(1.23, 1.74)
Other Medical	12	22	1.87	20	24	1.20	26	40	1.84
Overnight Visit	8	15	(1.48, 2.38)	4	11	(0.81, 2.57)	3	7	(1.63, 2.98)

* = Sample weighted by sample weight
 ** = Sample weighted by population weight
 Note: Each odds ratio was adjusted for gender, household size, marital status, household income, and maternal levels of education.

TABLE 2

	Injured				Non-injured			
	Infants & Toddlers (n=631) (n=+129,136)	Preschoolers (n=343) (n=+70,188)	School Aged (n=1,212) (n=+268,488)	F (df)	Infants & Toddlers (n=6,208) (n=+1,385,126)	Preschoolers (n=3,905) (n=+2,027,582)	School Aged (n=3,905) (n=+2,027,582)	F (df)
General Practitioner	5.64 ± (0.58)	4.50 ± (0.26)	3.66 ± (3.80)	28.36** (2, 1940)	4.41 ± (4.96)	3.41 ± (3.83)	2.84 ± (3.39)	238.82** (2, 14089)
Pediatrician	3.53 ± (3.58)	4.68 ± (7.75)	0.67 ± (2.05)	7.27** (2, 686)	3.69 ± (5.40)	2.54 ± (2.85)	0.51 ± (1.65)	54.44** (2, 5554)
Nurse Practitioner	2.28 ± (2.43)	1.91 ± (4.05)	0.24 ± (1.32)	0.98 (2, 981)	2.83 ± (4.70)	1.39 ± (1.66)	0.15 ± (0.96)	47.36** (2, 2984)
Dentist / Orthodontist	1.68 ± (1.47)	1.77 ± (1.92)	1.92 ± (1.95)	10.30** (2, 1648)	1.32 ± (0.74)	1.58 ± (0.92)	1.74 ± (1.83)	161.30** (2, 1126)
Other Medical	2.20 ± (2.97)	1.86 ± (1.88)	0.69 ± (1.54)	2.42 (2, 741)	2.26 ± (3.44)	2.30 ± (3.37)	.41 ± (1.30)	23.07** (2, 4102)

** = p < .001
 * = Sample weighted by sample weight
 ** = Sample weighted by population weight

INTRODUCTION

In 1995, injuries were responsible for 57% of all deaths among Canadian children under the age of 20, whereas 5% of deaths were due to cancer and 2% were due to infectious diseases.

Much of the information about the prevalence and causes of unintentional injuries comes from mortality and hospital data, which capture the most severe forms of injury. Mortality data, for example, show that in many industrialized countries, unintentional injuries represent the leading cause of death for children and youth under the age of 20.

For Canadian infants, one hospitalization in 20 is injury related, while the rate increases to 1 in 9 for 1-4 year olds, and 1 in 6 for 5-9 year olds. For 10-14 year olds injuries are the leading cause of hospitalization; almost 1 in 4 hospitalizations are injury related. According to Canada's 1993 General Social Survey, 11% of children aged 0-15 years old sustained an injury severe enough to require a doctor's visit. In contrast to our knowledge of hospital use among injured children, we know relatively little about visits to other medical practitioners.

The impact of injury includes costs and services beyond those offered in hospitals, particularly for those recovering from injury and requiring ongoing treatment from health care providers. Children who have a history of injury experiences are more likely to encounter future injuries and severe injuries requiring medical care. However, we know less about the patterns of health service utilization associated with children who suffer injuries that are cared for in the home and are not seen at the hospital.

RESULTS

Sample

The total sample was almost equally divided between boys (51.1%) and girls (48.9%). Most children lived with one or more siblings (82.9%) and in two parent families (85.4%). Approximately 15% of children lived in female headed households. The majority of children (74%) lived in families with high levels of household income (more than \$30,000) and 8.1% lived in families with low levels of household income (less than \$14,999). The majority of mothers (66%) had more than a high school level of education. Less than a high school level of education was found in 16.3% of mothers.

Health Care Utilization

The percentage of children who reported any contact with health care professionals by age group and injury status is shown in Table 1. Also shown in Table 1 are the results of the logistic regression analyses. Injured children of all age groups were more likely to have consulted with a variety of medical practitioners.

METHODS

Survey:

Data for this study come from Cycle 1 of the National Longitudinal Survey of Children and Youth (NLSCY) collected in 1995. The NLSCY is a national prospective study designed to measure child well being, health and development and is based on a random probability sample of Canadian residential households of children aged 0-11 years. Sample weights were applied to the data to take sampling features into account including unequal probabilities of selection, non-response (person and household level), and an adjustment making the age and gender distributions of the sample correspond to the age and gender distributions of the Canadian population.

Sample Selection:

In each eligible household, one index child was randomly selected. The mother of the selected child was asked to complete a general questionnaire, a parent questionnaire, and a child questionnaire. These questionnaires asked for basic demographic information about all household members, socio-economic information about the mother and her spouse, and extensive information about the selected child. As a result, a cross sectional sample of 22,831 children aged 0-11 years was initially surveyed from November 1994 to June 1995.

Variables:

Injury Status: Mothers reported whether the child was injured in the past 12 months (yes/no).

Health Care Use: Mothers reported on children's health care utilization by specifying the number of consultations with each type of the following health professionals: general practitioner, pediatrician, nurse practitioner, dentist/orthodontist, welfare or case worker, other medical professional (not specified), and other specialist (e.g. social worker, speech therapist). Mothers were also asked about children's hospitalizations (yes/no).

Covariates: Gender (male, female), number of siblings (0,1+), marital status (two parent, single parent family), household income (low, middle, and high), and maternal level of education (some high school, completed high school, more than high school) were entered as covariates.

ANALYSES

To examine patterns of health care use by injured and non-injured children, descriptive statistics were calculated by age group and injury status. Logistic regressions were used to examine the relationship between injury status (independent variable) and reports of any contacts with each type of health care professional (dependent variable) in the past year. Linear regressions were used to examine the relationship between injury status (independent variable) and the average number of contacts with each type of health care professional (dependent variable) in the past year. Both regression analyses adjusted for the covariates. Additionally, differences were examined by child age group (infants/toddlers, aged 0-3 years; preschoolers, 4-5 years; and school aged children, 6-11 years) and separately for boys and girls.

DISCUSSION

The purpose of this study was to describe the association between maternal reports of childhood injuries and visits to health care professionals in a cross-section of a nationally representative sample of Canadian children aged 0-11 years.

Injured children were more likely than non-injured children to have visited a variety of medical practitioners and to have made more numerous visits to general practitioners, pediatricians, dentists and orthodontists as well as other medical practitioners. Children who had suffered injuries were also twice as likely to have spent a night in the hospital. It was not possible to determine from the NLSCY data whether health care use was specifically due to injury incidents. However, the relatively higher use of a variety of health services by the injured compared to the non-injured and the consistent pattern by child age group and gender indicate that increased use may be attributable to injury.

Maternal reports of childhood injuries are associated with the increased use of health care services. This pattern is consistent for infants/toddlers, preschoolers, and school aged children, and across both genders. Our analyses show that larger differences exist between injured and non-injured boys than injured and non-injured girls. Injured boys are more likely to visit dentists and nurses and to make more numerous visits to pediatricians, dentists, and other medical professionals. These results demonstrate the importance of examining maternal reported injuries, not only those that get treated in hospitals and emergency rooms. Injuries that are treated at home or those that go untreated may be considered less severe than those that get medical attention in the hospital. However, maternal reported injuries that are likely to be treated in the home are associated with increased visits with medical practitioners and this pattern holds true for children of various age groups.

Injured infants and toddlers had an increased likelihood of having consulted general practitioners, pediatricians, dentists and orthodontists, and other medical specialists and were also more likely to have spent an overnight visit at the hospital as compared to uninjured infants and toddlers.

Injured preschoolers were more likely to have had one or more contacts with general practitioners and were more than twice as likely to have spent a night at the hospital than uninjured preschoolers.

School aged children who were injured were more than twice as likely to have had contact with a general practitioner, and were more likely to have consulted with pediatricians, nurse practitioners, dentists or orthodontists, and "other" medical specialists as well as more than twice as likely to have spent a night at the hospital as compared to children who were not injured.

For both injured and non-injured children, the mean number of visits to general practitioners, pediatricians, and dentists and orthodontists also varied by child age group [see Table 2]. The number of visits to general practitioners was inversely

related to the age of the child, with injured infants and toddlers making the most frequent visits. Injured preschoolers made the most frequent contact with pediatricians, followed by infants and toddlers, and school aged children. Patterns for visits with dentists and orthodontists by child age were similar for injured and non-injured children. The mean number of visits increased as child age increased.

Linear regression results [see Table 3] showed that injured infants and toddlers had a higher than average number of contacts with general practitioners and dentists than uninjured infants and toddlers. Preschoolers had a higher number of contacts with general practitioners, pediatricians, and dentists than uninjured preschoolers. Injured children of school age had more visits to general practitioners.

The association between injury status and child gender in relation to any contact with health care professionals indicated that injured boys were more likely to have a visit with a dentist or a nurse and made more numerous visits to pediatricians, dentists, and other medical professionals. These associations were not significantly different for injured as compared to non-injured girls.