

Maternal reports of child injuries in Canada: trends and patterns by age and gender

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Abstract

Objectives—This study examines gender and age differences in maternal reports of injuries in a cross sectional group of children aged 0–11 years. The cause, nature, body part injured, and location of injury are explored, as are the associations with family socioeconomic indicators and associations with limitations in activities.

Methods—Data for 22 831 children and their families come from cycle 1 of the Canadian National Longitudinal Survey of Children and Youth collected in 1995. Descriptive analyses and χ^2 tests for trends are used to examine injury variations by child gender and age. Logistic regressions are used to examine the relationship between socioeconomic indicators and injury and the associations between injury and limitations in activities.

Results—Consistent with findings from hospital data, boys experience more injuries than girls, and injuries increase with child age. Falls are the most common sources of maternally reported injuries, followed by scalds/poisonings for young children and sports injuries for school aged children. The majority of injuries occur in or around the home for young children, but at school for older children. For maternal reports of childhood injuries, single marital status is a risk factor for boys.

Conclusions—Maternally reported injuries occur in 10% of Canadian children and many of these are associated with limitations in activities. Preventative strategies should take both child age and gender into consideration.

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Keywords: maternal reports; limitations in activities; socioeconomic indicators

In many industrialized countries, unintentional injuries represent the leading cause of death for youth less than 20 years of age.^{1–3} In 1995, injuries were responsible for 57% of all deaths among young Canadians, whereas 5% of deaths were caused by cancer and 2% by infectious disease.⁴ Injury information is primarily supplied by mortality and hospitalization data, which tend to address severe injuries and include limited detail. Information concerning injuries treated in emergency departments, other outpatient settings, and those treated at home or left untreated is often unavailable. These “minor injuries” are often the cause of pain and temporary disability, and may be a

precursor for more serious injuries. Therefore survey data including detailed information on severe and minor childhood injuries are valuable in the assessment of risk factors and conditions with the goal of injury prevention programming.

The types of serious injuries children suffer show distinct patterns across age groups and gender.^{1–7} These patterns reflect exposure to risk, the location and activities where children spend a majority of their time, as well as the child’s level of development.^{7,8} The major cause of non-fatal injuries among infants and young children is falls^{9–11} and sports and recreational activities for older children and adolescents. From birth to 24 years of age boys are more likely to sustain injuries compared with girls, to be hospitalized because of injuries, and to suffer the most severe forms of injury.¹² Gender differences also become more pronounced with age.^{1–7}

Socioeconomic indicators, such as single marital status, low levels of maternal education, and living in conditions of poverty are factors associated with childhood injury.^{13–17} A steep social class gradient in mortality exists for unintentional injury, with children living in low income families being more likely to experience injury than children from higher income families.^{18–20}

The first objective of this study was to describe the characteristics of maternally reported child injury by gender and age, including causes and types of injuries, body parts injured, and locations of injury events. The second objective was to examine the relationships between childhood injury and socioeconomic indicators, such as marital status, household income, and maternal education. The third objective was to examine the association between childhood injury and limitations in daily activities. All three objectives were investigated using data from cycle 1 of the National Longitudinal Survey of Children and Youth (NLSCY).

Methods

SURVEY

The NLSCY is a national prospective study designed to measure child wellbeing, health, and development. It is based on a random probability sample of Canadian residential households of children aged 0–11 years, excluding households situated in remote areas, First Nations Peoples’ reserves, and institutional settings. Sampling frames for cycle 1 of the NLSCY (1995) included a main component based on Statistics Canada’s Monthly Labour Force Survey (excluding the territo-

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ries) and an integrated component based on the 1994 National Population and Health Survey. In total, 15 579 households participated: 12 879 for the main component and 2700 for the integrated component.

The NLSCY response rate was 86.3% (13 439 respondents). Slight underrepresentation of census metropolitan areas, households with both parents aged 40 and over, and households with a parent with eight years or less of education was detected. Sample weights were applied to the data to account for unequal probabilities of selection, non-response (person and household level), and the age and gender distributions of the Canadian population. The current study focuses on a cross sectional sample of children aged 0–11 years from cycle 1 of the NLSCY.

SAMPLE SELECTION

One child aged 0–11 years was randomly selected from eligible households. Information was obtained from the person most knowledgeable about that child, the mother for 91.3% of households. Of these, 89.9% were the child's biological mother and 1.4% were step, adoptive, or foster mothers. For ease of discussion, the person most knowledgeable will be referred to as the mother. Other children were selected at random, to a maximum of four per household. The mother was asked to complete a general questionnaire, a parent questionnaire, and a child questionnaire, providing basic demographic information about all household members, socioeconomic information about herself and her spouse, and extensive information about the selected children. A cross sectional sample of 22 831 children aged 0–11 years was initially surveyed from November 1994 to June 1995 and will be followed up into adulthood with reassessments every two years.

VARIABLES

Family socioeconomic indicators included marital status (two parent family, single parent family), household income (<\$10 000–14 999; \$15 000–29 999; \$30 000–40 000), and maternal level of education (some high school, completed high school, more than high school).

Limitations of activities assessed current long term conditions or health problems preventing or limiting the child's participation in school, at play, or in other activities (yes/no).

Injury status was assessed by determining if the child had been injured within the past 12 months. Information was also collected about the number of injuries, the nature of injury, the body parts injured, and the cause of injury. Nature of injury included broken/fractured bones, burns/scalds, dislocations/sprains/strains, cuts/scrapes/bruises, or "other" including concussions, poisonings, internal injury, dental injury, and multiple injuries. Body parts included facial, head and neck, upper extremities, lower extremities or "other" including back, spine, trunk, and multiple sites (grouped due to small sample sizes). Cause of injury was grouped into motor vehicle collision, bicycle

accident, fall, sport, scald or poisoning, and an "other" category not specified by the parent.

Covariates included gender and the number of siblings (0, 1+).

ANALYSIS

Descriptive analyses and χ^2 tests for trends were conducted to examine variations by gender and age (infants/toddlers 0–3 years; preschoolers 4–5 years; school aged 6–11 years) for the causes and nature of injuries, body part injured, and location of injuries. Logistic regressions examined associations between socioeconomic indicators and injury status as well as the association of injury status and limitations in daily activities. Sample weights were used for all analyses. Because the sampling method included more than one child per household, number of siblings was included as a covariate in each model to account for a possible type 1 error due to clustering.

Results

DESCRIPTIVE ANALYSIS

The proportion of boys (51%) and girls (49%) in the total sample was similar. The majority of children (74%) lived in families with high household income (>\$30 000) while 8% lived in low household income families (<\$14 999). Fifteen per cent of children lived in single female headed households. The majority of the mothers (66%) had more than a high school level of education while 16% had less than high school.

INJURY STATUS

From the total sample of 22 831 children, 10% (n=2288) were injured in the last 12 months (9% of girls and 11% of boys). For all age groups, female gender was associated with lower rates of injury (odds ratio (OR) 0.78, 95% confidence interval (CI) 0.72 to 0.85). Injuries increased with age (χ^2 (trend, df=1) = 53.22, p<0.05) and were reported in 8% of infants/toddlers, 9% of preschoolers, and 12% of school aged children. School aged children had significantly more injuries than infant/toddlers and preschoolers (p<0.01). There was no significant difference between infants/toddlers and preschoolers.

Further analyses were conducted by gender and age group where sample size allowed. For boys and girls the most common cause of injury was falls, followed by sports injuries (table 1). The most frequent types of injuries were cuts/scrapes/bruises, broken/fractured bones, and dislocations/sprains/strains. Injuries most commonly occurred in the upper extremities, the lower extremities, and the face. Boys experienced significantly more facial injuries and head or neck injuries. Injuries most frequently occurred inside and outside the child's home, and in school or daycare.

Analyses by age groups suggested that falls were the most common cause of injury for each age group (table 1) but decreased as children got older (χ^2 (trend, df=1) = 72.83, p<0.01). Cuts/scrapes/bruises were the most common types of injuries for all ages, followed by

Table 1 Cause, nature, body part, and location of injury by gender and child age

| | Boys (%) (n=11 677) | Girls (%) (n=11 154) | Infants and toddlers (%) (n=7545) | Preschoolers (%) (n=3909) | School aged (%) (n=11 378) |
|---------------------------------------------------------|------------------------|-------------------------|-----------------------------------------|------------------------------|-------------------------------|
| Cause of injury | | | | | |
| Motor vehicle | 1† | 2† | 1† | 3† | 1† |
| Bicycle | 6 | 4 | 2† | 4† | 6 |
| Fall | 50 | 53 | 63 | 61 | 43** |
| Sport | 15 | 16 | 2† | 2† | 26 |
| Scald/poisoning | 8 | 7 | 11 | 7†** | 6 |
| "Other" not specified by parent | 21 | 18 | 21 | 23 | 18 |
| Nature of injury | | | | | |
| Broken/fractured bones | 22 | 27 | 13 | 19 | 30** |
| Burn/scald | 5 | 4 | 8 | 3† | 3** |
| Dislocation/sprain/strain | 12 | 19 | 13 | 8† | 19** |
| Cut/scrape/bruise | 45 | 34 | 50 | 51 | 33** |
| "Other"‡ | 16 | 16 | 16 | 19 | 15 |
| Body part injured | | | | | |
| Facial | 22 | 17* | 31 | 28 | 12 |
| Head or neck | 18 | 12* | 23 | 27 | 9 |
| Upper extremities | 34 | 40 | 29 | 28 | 42 |
| Lower extremities | 23 | 26 | 14 | 14 | 32 |
| "Other" includes back, spine, trunk, and multiple sites | 3 | 5 | 3† | 3† | 5 |
| Location of injury | | | | | |
| Own home | 31 | 33 | 63 | 35 | 17** |
| Outside home | 20 | 21 | 12 | 32 | 21 |
| In or around private residence | 10 | 8 | 10 | 11 | 8 |
| School/day care | 16 | 15 | 4† | 8† | 23 |
| Sports facility | 8 | 10 | 1† | 2† | 15 |
| "Other" category not specified by parent | 15 | 13 | 10 | 12 | 16 |

*p<0.05, **p<0.01, significance levels for χ^2 tests of trend.

†Sample size <30, estimates may be unreliable.

‡"Other" category includes concussion, poison, internal injury, dental injury, multiple injuries, and other not specified by parent.

broken/fractured bones and dislocations/sprains/strains. The number of cuts/scrapes/bruises (χ^2 (trend, df=1) = 65.72, p<0.01) and burns/scalds (χ^2 (trend, df=1) = 19.39, p<0.01) decreased as children got older. However, more severe injuries such as broken/fractured bones increased with age (χ^2 (trend, df=1) = 78.25, p<0.01) occurring more frequently in school aged children than in the younger age groups.

Facial injuries were most common for infant/toddlers and preschoolers, followed by injuries to the upper extremities and injuries to the head and neck. School aged children sustained the majority of injuries to the upper and lower extremities, followed by the face. Injuries to the youngest groups of children occurred inside and outside the home, while the home was less frequently associated with injuries among older children (χ^2 (trend, df=1) = 413.62, p<0.01). For school aged children injuries more frequently occurred at school or at daycare.

FAMILY SOCIOECONOMIC INDICATORS

Single female headed families (OR 1.28, 95% CI 1.11 to 1.47), household incomes of \$15–29 999 (OR 1.24, 95% CI 1.02 to 1.52), and maternal levels of education greater than high school (OR 1.14, 95% CI 1.04 to 1.25) were associated with an increased risk of injury for the total group.

Boys living in single female headed families were at greater risk of injury, but for girls injury was associated with high levels of maternal education (table 2). Girls were less likely to be injured regardless of age compared with boys. Maternal levels of education greater than high school were associated with increased risk of injury among school aged children.

Single female headship was associated with a greater likelihood of childhood injury for all ages. Medium and high levels of income were

associated with an increased risk of injury for boys, with the highest risks for infants/toddlers and preschoolers. Maternal levels of education greater than high school were associated with an increased risk of injury for school aged children, with the risk of injury increasing by 29% for school aged boys (table 3).

Single female headship was not associated with an increased risk of injury among girls. Although not significant, high levels of household income may serve as a protective factor for female infants/toddlers and preschoolers, but as a risk factor for school aged girls. Levels of maternal education greater than high school were associated with higher risks of injuries for girls of all ages, but effects did not reach significance (table 3).

LIMITATIONS IN ACTIVITIES

In the total sample, 3.9% of children had limitations in their daily activities, and those injured were more likely to experience limitations (OR 1.28, 95% CI 0.98 to 1.64 for boys and OR 1.46, 95% CI 1.06 to 2.03 for girls). Injuries were significantly associated with limitations in daily activities for school aged children (OR 1.54, 95% CI 1.22 to 1.95) but not for preschoolers or infants/toddlers.

When gender and age groups were examined, injuries were associated with limitations in activities for boys of preschool and school age. This effect was significant for school aged boys (OR 0.57, 95% CI 0.25 to 1.30 for infants/toddlers; OR 1.49, 95% CI 0.83 to 2.69 for preschoolers; and OR 1.38, 95% CI 1.01 to 1.88 for school aged). Similarly, injuries were associated with limitations in daily activities for school aged girls (OR 0.44, 95% CI 0.13 to 1.48 for infants/toddlers; OR 0.33, 95% CI 0.05 to 2.18 for preschoolers; and OR 1.85, 95% CI 1.29 to 2.64 for school aged girls).

Table 2 Odds ratios (OR) and confidence intervals (CI) by injury status, gender, and age groups

| Population characteristic | Gender | | | | | | Age group | | | | | | | | |
|---------------------------|-----------------|---------------------|---------------------|------------------|---------------------|---------------------|-------------------------------|---------------------|---------------------|-----------------------|---------------------|---------------------|------------------------|---------------------|--|
| | Boys (n=11 677) | | | Girls (n=11 154) | | | Infants and toddlers (n=7545) | | | Preschoolers (n=3909) | | | School aged (n=11 378) | | |
| | % Injured* | OR (95% CI) | | % Injured* | OR (95% CI) | | % Injured* | OR (95% CI) | | % Injured* | OR (95% CI) | | % Injured* | OR (95% CI) | |
| Gender | | | | | | | | | | | | | | | |
| Boys | N/A | N/A | N/A | N/A | N/A | N/A | 9.3 | Ref | Ref | 9.7 | Ref | Ref | 12.7 | Ref | |
| Girls | | | | | | | 7.4 | 0.76 (0.66 to 0.91) | 0.78 (0.62 to 0.98) | 7.8 | 0.78 (0.62 to 0.98) | 0.78 (0.62 to 0.98) | 10.4 | 0.78 (0.69 to 0.88) | |
| No of siblings | | | | | | | | | | | | | | | |
| 0 | 10.5 | Ref | 1.10 (0.94 to 1.2) | 9.0 | Ref | 1.01 (0.85 to 1.21) | 8.7 | Ref | Ref | 9.1 | Ref | Ref | 12.2 | Ref | |
| 1+ | 11.4 | 1.10 (0.94 to 1.2) | | 9.1 | 1.01 (0.85 to 1.21) | | 8.4 | 0.96 (0.81 to 1.15) | 0.98 (0.70 to 1.37) | 8.9 | 0.98 (0.70 to 1.37) | 0.96 (0.79 to 1.17) | 11.6 | 0.96 (0.79 to 1.17) | |
| Marital status | | | | | | | | | | | | | | | |
| Two parent family | 10.6 | Ref | 1.66 (1.38 to 1.99) | 9.2 | Ref | 0.91 (0.73 to 1.13) | 8.3 | Ref | Ref | 8.9 | Ref | Ref | 11.4 | Ref | |
| Single female headship | 14.9 | 1.66 (1.38 to 1.99) | | 8.2 | 0.91 (0.73 to 1.13) | | 9.6 | 1.25 (0.95 to 1.64) | 1.27 (0.85 to 1.89) | 9.3 | 1.27 (0.85 to 1.89) | 1.19 (0.99 to 1.43) | 13.4 | 1.19 (0.99 to 1.43) | |
| Income level | | | | | | | | | | | | | | | |
| <\$10 000–14 999 (low) | 10.3 | Ref | 1.10 (0.66 to 1.85) | 8.0 | Ref | 1.21 (0.91 to 1.61) | 8.1 | Ref | Ref | 7.8 | Ref | Ref | 11.1 | Ref | |
| 15–29 999 (middle) | 12.7 | 1.10 (0.66 to 1.85) | | 8.6 | 1.21 (0.91 to 1.61) | | 8.9 | 1.21 (0.86 to 1.70) | 1.12 (0.67 to 1.87) | 7.9 | 1.12 (0.67 to 1.87) | 1.21 (0.91 to 1.60) | 13.2 | 1.21 (0.91 to 1.60) | |
| 30–\$40 000+ (high) | 11.0 | 1.38 (0.82 to 2.33) | | 9.3 | 0.99 (0.74 to 1.31) | | 8.4 | 1.20 (0.86 to 1.68) | 1.40 (0.83 to 2.35) | 9.3 | 1.40 (0.83 to 2.35) | 1.03 (0.78 to 1.37) | 11.4 | 1.03 (0.78 to 1.37) | |
| Education level | | | | | | | | | | | | | | | |
| ≤ High school | 10.7 | Ref | 1.12 (0.98 to 1.27) | 8.2 | Ref | 1.17 (1.01 to 1.35) | 8.6 | Ref | Ref | 8.1 | Ref | Ref | 10.3 | Ref | |
| > High school | 11.6 | 1.12 (0.98 to 1.27) | | 9.5 | 1.17 (1.01 to 1.35) | | 8.5 | 0.99 (0.83 to 1.19) | 0.99 (0.83 to 1.19) | 9.5 | 1.16 (0.91 to 1.49) | 1.24 (1.09 to 1.41) | 12.4 | 1.24 (1.09 to 1.41) | |

*Note: each OR was adjusted for the other variables in this table.
Ref refers to reference category.

Table 3 Odds ratios (OR) and confidence intervals (CI) by injury status for boys and girls by age group

| Population characteristic | Preschoolers (n=1876) | | | | | | School aged (n=5500) | | | | | | | | |
|---------------------------|-------------------------------|---------------------|---------------------|---------------------|---------------------|-----|----------------------|---------------------|---------------------|---------------------|---------------------|-----|---------------------|--|--|
| | Infants and toddlers (n=3630) | | | Boys OR (95% CI) | | | Girls OR (95% CI) | | | Boys OR (95% CI) | | | Girls OR (95% CI) | | |
| | Boys OR (95% CI) | Girls OR (95% CI) | | Boys OR (95% CI) | Girls OR (95% CI) | | Boys OR (95% CI) | Girls OR (95% CI) | | Boys OR (95% CI) | Girls OR (95% CI) | | | | |
| No of siblings | | | | | | | | | | | | | | | |
| 0 | Ref | Ref | 1.05 (0.83 to 1.33) | Ref | 0.88 (0.67 to 1.15) | Ref | 0.77 (0.50 to 1.18) | Ref | 1.41 (0.79 to 2.52) | Ref | 1.06 (0.82 to 1.38) | Ref | 0.86 (0.64 to 1.15) | | |
| 1+ | 1.05 (0.83 to 1.33) | 0.88 (0.67 to 1.15) | | 0.77 (0.50 to 1.18) | 1.41 (0.79 to 2.52) | | 1.47 (0.72 to 3.00) | 1.23 (0.85 to 1.76) | | 1.06 (0.82 to 1.38) | 0.86 (0.64 to 1.15) | | | | |
| Marital status | | | | | | | | | | | | | | | |
| Two parent family | Ref | Ref | 1.59 (1.13 to 2.24) | Ref | 0.82 (0.52 to 1.32) | Ref | 1.59 (0.94 to 2.70) | Ref | 1.00 (0.55 to 1.83) | Ref | 1.60 (1.25 to 2.04) | Ref | 0.84 (0.63 to 1.11) | | |
| Single female headship | 1.59 (1.13 to 2.24) | 0.82 (0.52 to 1.32) | | 0.82 (0.52 to 1.32) | 1.00 (0.55 to 1.83) | | 1.00 (0.55 to 1.83) | 0.84 (0.63 to 1.11) | | 1.60 (1.25 to 2.04) | 0.84 (0.63 to 1.11) | | | | |
| Income level | | | | | | | | | | | | | | | |
| <\$10 000–14 999 (low) | Ref | Ref | 1.65 (1.05 to 2.58) | Ref | 0.75 (0.44 to 1.27) | Ref | 1.47 (0.72 to 3.00) | Ref | 0.81 (0.39 to 1.71) | Ref | 1.23 (0.85 to 1.76) | Ref | 1.17 (0.74 to 1.83) | | |
| 15–29 999 (middle) | 1.65 (1.05 to 2.58) | 0.75 (0.44 to 1.27) | | 0.75 (0.44 to 1.27) | 0.81 (0.39 to 1.71) | | 0.81 (0.39 to 1.71) | 1.17 (0.74 to 1.83) | | 1.23 (0.85 to 1.76) | 1.17 (0.74 to 1.83) | | | | |
| 30–\$40 000+ (high) | 1.48 (0.94 to 2.34) | 0.87 (0.55 to 1.44) | | 0.87 (0.55 to 1.44) | 0.85 (0.41 to 1.78) | | 2.14 (1.03 to 4.43) | 1.04 (0.67 to 1.62) | | 1.06 (0.73 to 1.55) | 1.04 (0.67 to 1.62) | | | | |
| Education level | | | | | | | | | | | | | | | |
| ≤ High school | Ref | Ref | 0.88 (0.69 to 1.12) | Ref | 1.15 (0.87 to 1.53) | Ref | 1.08 (0.78 to 1.49) | Ref | 1.32 (0.90 to 1.95) | Ref | 1.29 (1.09 to 1.54) | Ref | 1.18 (0.98 to 1.42) | | |
| > High school | 0.88 (0.69 to 1.12) | 1.15 (0.87 to 1.53) | | 1.15 (0.87 to 1.53) | 1.32 (0.90 to 1.95) | | 1.08 (0.78 to 1.49) | 1.18 (0.98 to 1.42) | | 1.29 (1.09 to 1.54) | 1.18 (0.98 to 1.42) | | | | |

*Note: each OR was adjusted for the other variables in this table.
Ref refers to reference category.

Discussion

The most numerous childhood injuries are minor injuries, and children who experience numerous mild injuries are likely to experience more severe injuries over time.^{13 14} The ability to prevent childhood injury by targeting specific risk factors will affect societal resources, including health care use and missed school days for children and missed workdays for parents.

The strength of survey data is in the collection of detailed injury information about minor injuries not requiring hospitalization. This information is rarely available from other sources. Although maternally reported injuries in the NLSCY are not limited to minor injuries, the majority of the injuries reported were minor in nature. This study examined the patterns and risk factors associated with injuries occurring over a 12 month period using cross sectional data of a nationally representative sample of Canadian children aged 0–11 years. Information included the cause, type, incidence, and prevalence of injuries.

Our findings based on maternally reported injuries are similar to those reported for more severe forms of injury, such as injury related deaths.²¹ Boys experience more injuries than girls and gender differences increase, as children get older. Boys are more likely to be seen in emergency rooms, more likely to be hospitalized due to injury, and are also more likely to suffer the most severe forms of injury.^{1 6 7 12} Gender differences may be attributable to boys displaying higher activity levels,^{22–24} engaging in more injury risk behaviours,^{6 13 25} rating injuries as less severe, and attributing injuries to bad luck rather than to their own behaviour.^{26 27} Believing that injury results from external causes may deter boys from changing their behaviour or taking precautions to reduce risks in future situations.

Based on maternal reports, the most common forms of injuries for all children are falls. The frequency of falls indicates a developmental pattern, decreasing as children age. This finding is consistent with US studies of emergency room data where the activities leading to non-fatal injuries also vary by child age. Falls represent the major source of severe, non-fatal injuries requiring emergency visits for infants and young children.^{9–11} However, sports and recreational activities are responsible for more emergency visits among school aged children and adolescents.

Patterns of injury reflect both the location and activities where children spend a majority of their time, as well as children's developmental level. As children get older, non-fatal injuries tend to be more severe and are less likely to occur in the home. In this study, 52% of maternally reported injuries occur in or around the home. This proportion is comparable to the reported number of non-fatal severe injuries (44.8%) that occur in the home for children aged 0–20 years.^{12 28} The location of injury changes as children spend more time outside the home, particularly during leisure or recreational activities.²⁹ For older children,

maternal reports of injuries may be underestimated because injuries occurring at school or at daycare may not be reported to parents.³⁰

This study found single female headship and maternal education greater than high school to be risk factors for childhood injury. Numerous studies have found maternal education to be inversely associated with risk of injury,¹⁵ knowledge of risk hazards, and safety behaviours.^{16 17} Contrary to studies reporting higher rates of severe childhood injuries with impoverished socioeconomic conditions,^{15 18–20} household income was not found to be associated with injury status. Poverty may only be associated with fatal or severe injuries that result in hospitalization. Alternately, poor and less educated families may be under-reporting injuries. A correlation between single female headed families and economic disadvantaged may be influencing these findings. Both single female headship and high household income being associated with injury appears to be inconsistent. However, it is possible that these variables measure different aspects of socioeconomic status, with the former indicating a non-parental care situation, and the latter capturing a different dimension.

LIMITATIONS

Retrospective maternal recall may err on the side of under-reporting compared with bi-weekly reporting or reporting by school aged children.³⁰ Parents are also more likely to under-report their sons' compared with their daughters' injuries²⁷ as boys are less likely to inform their parents. Another limitation of this study is that the data were cross sectional. It is therefore difficult to establish the temporal relationship between injuries and limitations in activities, as mothers did not report if limitations were due to an injury event. Future research, however, should use longitudinal data to assess the direct impact of injuries on the limitations in activities and long term disabilities of children.

Implications for prevention

Minor injuries occur in approximately 10% of Canadian children and should not be ignored. Children who suffer injuries, particularly older children, are likely to have limitations in daily activities and to experience increased hospitalizations. Many minor injuries occur in the home and are due to falls and scalds/poisonings, suggesting that parental education in injury prevention skills and child development are important aspects of injury reduction. Parents need to accurately assess children's abilities to judge dangerous situations. The availability and accessibility of information and safe proofing materials for the home would reduce the number of injuries occurring in the home.^{31 32} Findings also suggest that higher household income is associated with minor injuries, whereas low socioeconomic status has been associated with more severe injuries. Therefore the affordability of safety devices may not be the issue, but accessibility, implementation, and the proper use of safety devices is

important in the prevention of minor childhood injuries.

Sports are frequent causes of injury among school aged children, suggesting that children need to be protected while participating in sporting activities and that sporting environments need to be made safe. Developmental differences in the cause of injury, nature of injury, and body part injured suggest that preventative strategies such as product modifications, educational interventions, and environmental, legislative, and public health policies should take children's developmental level into account. Since injuries occurring away from the home increase with child age, prevention strategies such as education for parents and children need to increase safety knowledge and encourage injury prevention behaviours for children when they are away from home. Policies promoting safe play and safe sporting areas would also be of benefit.

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