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F	too unreliable to be published

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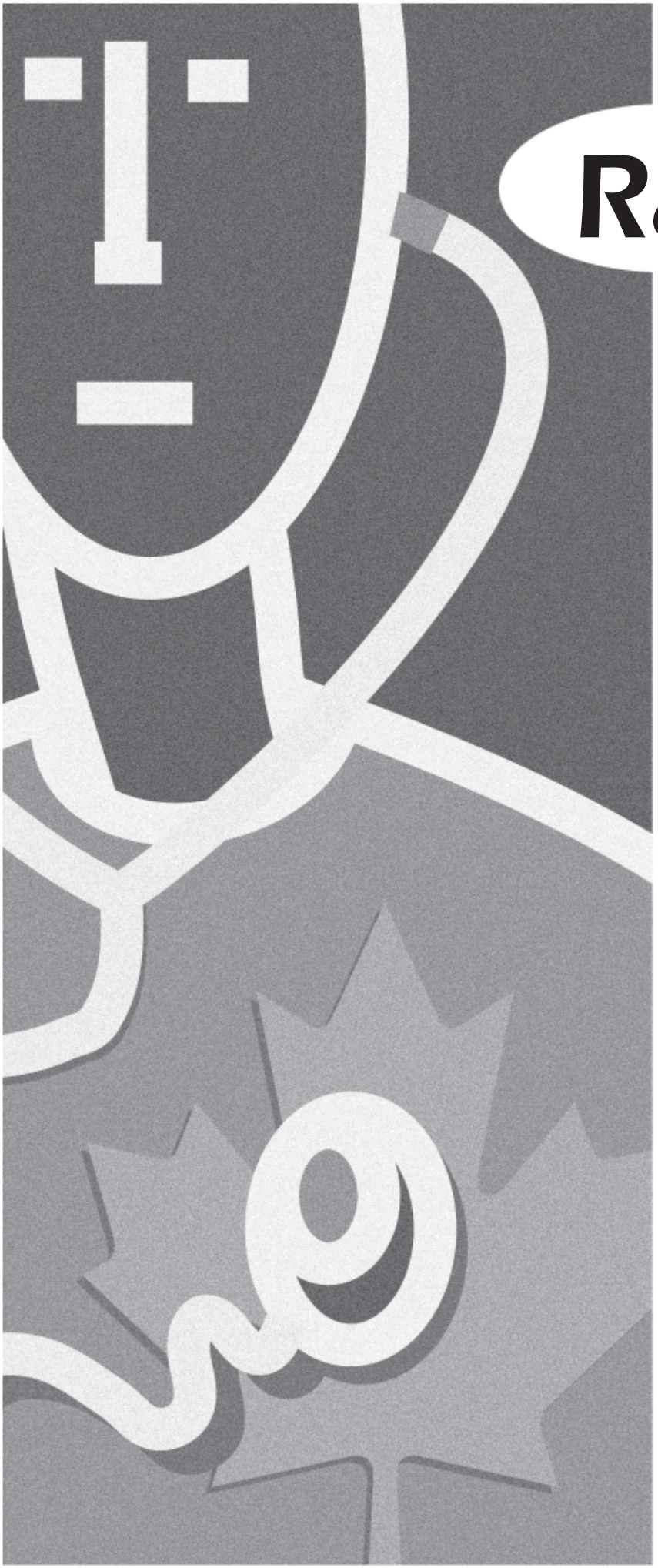

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Non-fatal injuries among Aboriginal Canadians

Michael Tjepkema

Abstract

Objectives

This article compares rates and characteristics of non-fatal injuries among off-reserve Aboriginal persons aged 12 to 64 with those of other Canadians the same ages. Information on injury-caused activity limitations is also presented.

Data sources

Results are based on data from two cycles of Statistics Canada's Canadian Community Health Survey (CCHS), conducted in 2000/01 and 2003. Supplementary information about injuries among children aged 11 or younger is from the 2000/01 National Longitudinal Survey of Children and Youth.

Analytical techniques

Cross-tabulations were used to compare injury rates and injury characteristics of the off-reserve Aboriginal and non-Aboriginal populations in the provinces and territories. Multiple logistic regression models were used to examine differences in rates for non-fatal injuries and injury-caused activity limitations between the two populations when controlling for socio-economic and socio-demographic variables.

Main results

In 2000/01 and 2003, about 20% of the off-reserve Aboriginal population in the provinces reported an injury serious enough to limit their normal activities: 1.4 times higher than that for other provincial residents. For injury-caused activity limitations in the provinces, the rate for the Aboriginal population was 1.7 times higher than that for the non-Aboriginal population. In the territories, injury and injury disability rates did not differ significantly between the two groups.

Key words

disability, health status indicators, indigenous population

Author

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Injuries, which rank fourth among the leading causes of death in Canada,[1] have a tremendous impact on Canadian society. The effect on the economy, for example, is considerable. A 1995/96 study estimated the costs of major unintentional injuries at close to $9 billion.[2] In addition to quantifiable costs, injuries can result in diminished quality of life from emotional anguish, pain, disability and activity limitation.[3]

Although injuries are an important health concern for all Canadians, research has shown that injury has a disproportionate impact on Aboriginal peoples.[4,5] In fact, the burden of unintentional injuries on Aboriginal communities, in terms of deaths, hospitalizations and health care use, is greater than that for many other health problems.[6] For instance, a recent study found injuries to be the leading cause of death for Aboriginal people aged 1 to 44, as well as a major component of disability.[7] Other research has estimated that deaths due to injuries are much higher for Registered Indians in British Columbia than for other residents of the province.[8]

Methods

Data sources

This analysis is based on data from the 2000/01 and 2003 Canadian Community Health Survey (CCHS), conducted by Statistics Canada. The CCHS collects cross-sectional information about the health of Canadians every two years. It covers the household population aged 12 or older in the provinces and territories, except residents of Indian reserves, Canadian Forces bases, and some remote areas. The first cycle (1.1) began in September 2000 and continued over 14 months. Half of the interviews were conducted face-to-face. The response rate was 84.7%, yielding a sample of 131,535 respondents. Cycle 2.1 began in January 2003 and ended in December that year. The response rate was 80.6%; sample size, 135,573. Most interviews were conducted by telephone. A description of the CCHS methodology is available in a published report.[9]

Data for the population aged 12 to 64 living in the provinces and territories who indicated their cultural or racial background were used: 106,411 respondents in 2000/01 and 104,244 in 2003. Respondents who did not indicate their cultural/racial background were excluded (843 in 2000/01; 2,657 in 2003).

Supplementary cross-sectional data for children aged 11 or younger are from the fourth cycle of the National Longitudinal Survey of Children and Youth (NLSCY), conducted in 2000/01. The NLSCY collects information about factors influencing a child's social, emotional and behavioural development and monitors the impact of these factors over time. Information is provided by the person considered most knowledgeable about the child, usually the mother. Cycle 4 of the NLSCY gathered data on 30,307 children aged 0 to 17 in 2000/01. More detail is available in a previously published report.[10]

Information about these surveys, including the CCHS questionnaire, can be found on Statistics Canada's Web site (www.statcan.ca).

Analytical techniques

To improve the reliability of estimates, data from the 2000/01 and 2003 CCHS (cycles 1.1 and 2.1) were combined to compensate for the relatively small number of Aboriginal respondents. Proportions were estimated using the CCHS sample weights, which sum to the target population at the time of data collection (Appendix Tables A and B). Injury rates and injury characteristics are compared between the off-reserve Aboriginal and non-Aboriginal populations with cross-tabulations. Two multiple logistic regression models that controlled for sex, age, urban/rural residence, marital status, household income, education, work status and physical activity were used to compare injury rates between Aboriginal and non-Aboriginal residents in the provinces and territories. The models were run separately by sex and age group. The same technique was used to compare injury-caused activity limitations between the two populations. In total, 16 models were run for non-fatal injuries, and 14 models for injury-caused activity limitations.

In the 2000/01 data used for this analysis, 3,658 respondents indicated that they were Aboriginal persons of North America, and 582 of these reported a combination Aboriginal and non-Aboriginal background. Respondents who did not indicate Aboriginal culture or race were considered non-Aboriginal. In the 2003 CCHS, 4,448 respondents indicated they were Aboriginal, which includes 948 with an Aboriginal–non-Aboriginal background.

To account for survey design effects, standard errors and coefficients of variation were estimated with the bootstrap technique.[13,14] The significance level was set at $p < 0.05$. Rates were not age-standardized; however, when injury and injury-caused activity limitation rates were compared, regression models controlled for differences in age.

According to the 2001 Census, over 70% of the entire Aboriginal population live off-reserve.[11] Yet a recent review of research on Aboriginal Canadians found that Métis, urban Aboriginal and First Nations people not living on reserves are underrepresented in academic research.[12] Furthermore, that same review found that there has been an insufficient number of studies of injury among Aboriginal people, although injuries account for one-third of deaths in that population.[12]

Studies of injuries in the Aboriginal population tend to ignore non-fatal injuries, focussing instead on injury death. The lack of adequate data on injuries among Aboriginal persons is thought to represent a significant barrier to injury prevention programs.[15]

This article attempts to fill a data gap by comparing non-fatal injuries among two Canadian household populations aged 12 to 64: Aboriginal people living off-reserve and non-Aboriginal

Definitions

For this analysis, *Aboriginal* refers only to Aboriginal people living in households in non-reserve areas. The Canadian Community Health Survey (CCHS) asked respondents: "To which ethnic or cultural group(s) did your ancestors belong (for example: French, Scottish, Chinese)?" The next question, which was used to define Aboriginal people for this article was: "People living in Canada come from many different cultural and racial backgrounds. Are you…Aboriginal (North American Indian, Métis, Inuit/Eskimo)?" The question included a list of 12 categories, and multiple responses were permitted. Respondents who said they were members of the Aboriginal peoples of North America were defined as Aboriginal for this analysis (see *Limitations*).

For definitions related to injuries, see *Defining non-fatal injuries*.

Five *age groups* were used: 12 to 19, 20 to 24, 25 to 34, 35 to 44 and 45 to 64. For injury-caused activity limitation, the first two age groups were combined because of the small numbers of respondents reporting such a limitation.

Urban areas are those with a population of 1,000 or more and a population density of 400 people per square kilometre based on the previous census. Areas that do not meet this threshold are considered *rural.*

Marital status was classified as: married or living in a common-law relationship; previously married (divorced, separated or widowed); and never married.

Education was based on the highest level attained: less than secondary graduation, secondary graduation, some postsecondary, and postsecondary graduation.

Worked for the entire past year, worked part of past year, and did not work in past year were used to classify *work status.*

Household income groups were based on the number of people in the household and total household income from all sources in the 12 months before the interview.

Income group	Number of household members	Household income
Lowest	1 to 4	Less than $10,000
	5 or more	Less than $15,000
Lower-middle	1 or 2	$10,000 to $14,999
	3 or 4	$10,000 to $19,999
	5 or more	$15,000 to $29,999
Middle	1 or 2	$15,000 to $29,999
	3 or 4	$20,000 to $39,999
	5 or more	$30,000 to $59,999
Upper-middle	1 or 2	$30,000 to $59,999
	3 or 4	$40,000 to $79,999
	5 or more	$60,000 to $79,999
Highest	1 or 2	$60,000 or more
	3 or more	$80,000 or more

To derive *leisure-time physical activity level,* respondents' energy expenditure (EE) was estimated for each activity they engaged in during leisure time. This was calculated by multiplying the number of times a respondent engaged in an activity over a 12-month period by the average duration in hours and by the energy cost of the activity (kilocalories expended per kilogram of body weight per hour of activity). To calculate an average daily EE for the activity, the estimate was divided by 365. This calculation was repeated for all leisure-time activities reported, and the resulting estimates were summed to provide an aggregate average daily EE. Respondents whose leisure-time EE was below 1.5 kcal/kg/day were considered physically inactive. Respondents with an EE of 1.5 or more kcal/kg/day were considered active.

Canadians. Results are based on combined data from two cycles of the Canadian Community Health Survey (CCHS), conducted in 2000/01 (cycle 1.1) and 2003 (cycle 2.1). Characteristics of non-fatal injuries, as well as health care use for treatment of the injury, are compared between the two groups by province and territory (see *Definitions* and *Defining non-fatal injuries*). More serious injuries that caused long-term activity limitation are also examined (see *Methods* and *Limitations*). A secondary goal is to present supplementary information about who is most likely to be injured within the Aboriginal population (see *Injury risk in the Aboriginal population*), as well as injury data for children aged 11 or younger (see *Injuries among children*).

Higher risk among provincial Aboriginals

According to the 2000/01 and 2003 CCHS, about 20% of Aboriginal persons aged 12 to 64 living off-reserve in the provinces reported having had an injury in the year before the survey interview that was serious enough to limit their normal activities (about 67,000 a year). This was significantly higher than the proportion of other provincial residents who reported such an injury (14%). Although these

Injury risk in the Aboriginal population

The risk of being injured is not equally distributed within a population.[16,17] For example, males are known to have a greater risk of non-fatal injuries than females, and young people compared with old.[18-21] This excludes injuries requiring hospitalization, for which older people also have an increased risk.[22] Few studies have examined who is most susceptible to non-fatal injuries within the off-reserve Aboriginal population in Canada. In other words, do the differences found in non-Aboriginal populations also exist within the Aboriginal population? Based on data from the 2000/01 and 2003 Canadian Community Health Survey (CCHS), Aboriginal people in the provinces had a higher non-fatal injury rate (20%) than their counterparts living in the territories (12%).

While 23% of provincial Aboriginal males sustained a serious injury in a 12-month period, 17% of Aboriginal females had such an injury. The same was true for territorial Aboriginal residents: males had a higher injury rate (17%) than females (9%). These patterns likely reflect males' participation in higher-risk activities (sports, for example) and employment in occupations that carry more risk.[19,23]

Among provincial Aboriginal residents, 26% of 12- to 19-year-olds and 25% of 20- to 24-year-olds reported a serious injury, compared with 15% for those aged 45 to 64. In the territories, the comparable figures were: 14% and 16% for the younger ages versus 10% for the older group.

In both the provinces and territories, Aboriginal people aged 25 to 64 who were single (never married) had a higher rate of serious injury than those who were married or living in common-law relationships. Being physically active also increased the chance of sustaining a serious injury. Other variables, such as urban/rural residence, education, work status, and household income were not associated with injury. Results of research on the association between income and non-fatal injuries have been mixed, with most studies showing either no relationship or a positive association.[18,23-25] These studies may reflect increasing opportunities for more potentially hazardous outdoor and recreational activities as income rises.

In addition to serious injuries, the CCHS asked respondents if they had activity limitations that had lasted or were expected to last at least six months that had been caused by an injury (see *Definitions*). According to CCHS data, Aboriginal people in the provinces had a higher rate of injury-caused activity limitation (12%) than did their counterparts in the territories (8%).

Injury-caused activity limitation was more common among provincial Aboriginal males (14%) than females (10%). This sex difference was also evident in the Aboriginal population in the territories: 11% versus 6%.

Age was also an important factor: more than 17% of provincial Aboriginal people aged 35 to 64 had an injury-caused activity limitation, much higher than the proportions in the younger age groups. A similar pattern was evident for the Aboriginal population in the territories. Even though younger Aboriginal people had an increased risk of serious injury, this finding for injury-caused activity limitation was as expected, given that such limitations are cumulative over a person's life.[18]

In both the provinces and territories, Aboriginal residents aged 25 to 64 who had not worked in the past year had a higher injury-caused activity limitation rate than those who had worked the entire year. This may indicate that they were unable to work because of their limitation.

Percentage of off-reserve Aboriginal people reporting a serious injury in past year or injury-caused activity limitation, household population aged 12 to 64, provinces/territories, 2000/01 and 2003 combined

	Serious injury in past year		Injury-caused activity limitation	
	Provinces	Territories	Provinces	Territories
	%	%	%	%
Total	19.7	12.3	12.3	8.4
Sex				
Male	22.9*	16.7*	14.4*	10.7*
Female†	16.9	8.5	10.4	6.3
Age group				
12-19	26.3*	14.3*	…	…
20-24	25.1*	15.6*	…	…
12-24	…	…	5.8*E1	5.2*E1
25-34	18.2	12.8	9.6*	6.8*
35-44	17.7	9.6	19.5	11.1
45-64†	15.0	9.7	16.7	14.1E1
Residence				
Urban†	20.0	14.6	11.6	8.0E1
Rural	18.9	11.0	14.4	8.5
Marital status‡				
Married/Common-law†	15.1	8.0	14.6	10.8
Previously married	16.6	11.1E1	20.3	11.4E2
Never married	21.8*	17.4*	13.8	8.7E1
Education‡				
Less than secondary graduation†	15.8	9.1	15.2	9.4
Secondary graduation	13.1	13.3E2	15.5E1	F
Some postsecondary	16.3E1	13.4E2	16.4E1	F
Postsecondary graduation	19.1	11.9	14.8	12.7
Work status‡				
Worked entire past year	17.5	9.9	11.9	8.3*
Worked part of past year	18.6	13.6	18.9*	11.7
Did not work past year†	14.6	7.9E1	18.0*	13.1
Household income				
Low	18.6	12.2	15.6E1	5.6*E1
Lower-middle	17.0	10.2E2	10.8	7.0E1
Middle	17.5	11.0	12.0	8.0E1
Upper-middle	22.3	13.7E1	12.2	7.1E1
High†	17.9	13.6	15.5	11.6E1
Leisure-time activity				
Active	22.2*	15.5*	11.7	9.5
Inactive†	17.9	10.3	13.2	7.9

Data source: 2000/01 and 2003 Canadian Community Health Survey
† Reference category
‡ Age 25 to 64
** Significantly different from reference category (p < 0.05)*
E1 Coefficient of variation between 16.6% and 25.0%
E2 Coefficient of variation between 25.1% and 33.3%
F Coefficient of variation greater than 33.3%, or sample size less than 10
… Not applicable

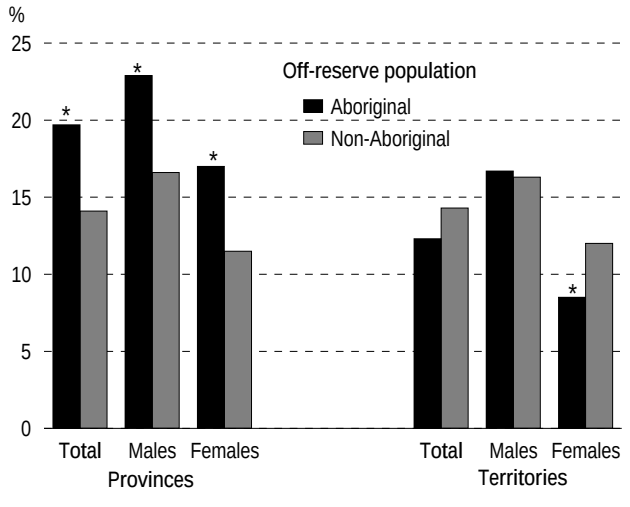
estimates based on CCHS data indicate that provincial Aboriginal people have an injury rate 1.4 times higher than that for other provincial residents, the difference is less than reported elsewhere.[8,26] For example, Registered First Nations people in British Columbia had an injury mortality rate 3.4 times that of other British Columbian residents.[8] Another study found that members of Manitoba's First Nation's population were 3.7 times more likely than other Manitobans to be hospitalized because of an injury.[26] This discrepancy is likely the result of differing definitions of "Aboriginal" status, as well as the severity of injury measured.

The higher injury rate reported by Aboriginal people remained when males and females were analyzed separately (Chart 1). This concurs with research that compared potential years of life lost (PYLL) because of injury and poisoning deaths and concluded that off-reserve Aboriginal males and females had a higher rate of PYLL than their non-Aboriginal counterparts.[5]

A higher proportion of Aboriginal people aged 20 or older reported an injury than did non-Aboriginal individuals of the same ages (Chart 2). Injury rates were similar for both populations in the 12-to-19 age group. This agrees with previous research that found the injury rate for Aboriginal children aged 14 or younger in non-reserve areas was only slightly higher than the figure for other children of the same ages[27] (see *Injuries among children*).

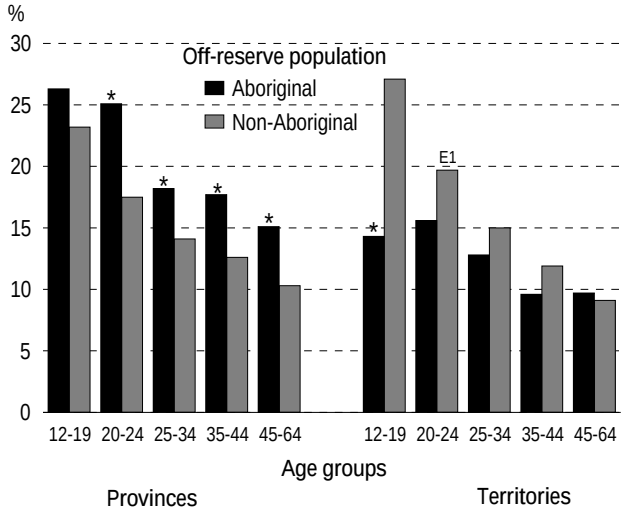
Aboriginal and non-Aboriginal people have different demographic and socio-economic characteristics; for example, Aboriginal persons tend to have lower incomes, less education and higher unemployment. Their population is also younger and disproportionately located in rural areas, the western provinces and the territories.[11,28] These differences might relate to the disparity in injury rates between Aboriginal and non-Aboriginal individuals. To explore such a possibility, the odds of injury for Aboriginal and non-Aboriginal populations were compared while controlling for differences in sex, age, marital status, urban/rural residence, household income, education, work status, and leisure-time physical activity level. The dependent variable was an injury in the past year that affected normal activities (see *Methods*). The higher likelihood of injury for the provincial Aboriginal population

Chart 1
Percentage reporting a serious injury in past year, by sex and Aboriginal status, off-reserve household population aged 12 to 64, provinces/territories, 2000/01 and 2003 combined



Data source: 2000/01 and 2003 Canadian Community Health Survey
** Significantly different from estimate for non-Aboriginal population (p < 0.05)*

Chart 2
Percentage reporting a serious injury in past year, by age group and Aboriginal status, off-reserve household population aged 12 to 64, provinces/territories, 2000/01 and 2003 combined



Data source: 2000/01 and 2003 Canadian Community Health Survey
** Significantly different from estimate for non-Aboriginal population (p < 0.05)*
E1 Coefficient of variation between 16.6% and 25.0%.

Defining non-fatal injuries

This article is based on data from the Canadian Community Health Survey (CCHS). Respondents were asked a series of questions about *non-fatal injuries*, beginning with: "In the past 12 months, were you injured seriously enough to limit your normal activities?" Those who answered "yes" were considered to have a *serious injury*. Respondents who reported at least one such injury were asked to provide information on the most serious one.

Six groups were established for *type of injury*: broken or fractured bone; burn, scald or chemical burn; sprain or strain; cut, puncture, animal bite; scrape, bruise, blister; and "other."

Seven categories describe the *body part* affected: head or neck (excluding eyes); shoulder, arm or elbow; wrist or hand; thigh, leg, knee; ankle or foot; back or spine; and all other body parts.

Respondents were asked about the *location of injury*, and replies were grouped as follows: at home or in surrounding area; school, college or university (excludes sports areas); sports or athletics area (includes school sports areas); street, highway, sidewalk; commercial area (e.g., store, restaurant, office building, transport terminal); industrial or construction area; and all other locations.

The *activity when injured* was determined by asking respondents what they were doing when they sustained the injury: sports or physical exercise (includes school activities); leisure or hobby (includes volunteering); working at a job or business (includes travel to or from work); household chores, other unpaid work or education; and other activities.

The *cause of injury* was determined with two questions: "Was the injury a result of a fall?" and "What caused the injury?" The following eight groups were used: fall; transportation accident; accidentally bumped, pushed, bitten, etc., by person or animal; accidentally struck or crushed by object(s); accidental contact with sharp object, tool or machine or accidental contact with hot object, liquid or gas; overexertion or strenuous movement; physical assault; or any other cause.

Respondents to the 2000/01 CCHS were asked: "Did you receive any medical attention for this injury within 48 hours from a health professional?". In 2003, wording for the treatment question was slightly different: "Did you receive any medical attention for the injury from a health professional in the 48 hours following the injury?" Those who answered "yes" to either question were read a checklist of possible locations: doctor's office, hospital emergency room, walk-in clinic, or "other" locations. Respondents could provide more than one location.

For the 2000/01 CCHS, interviewers read the following preamble regarding *injury-caused activity limitation*: "The next few questions deal with any health limitations which affect your daily activities. In these questions, 'long-term conditions' refer to conditions that "have lasted or are expected to last six months or more." The wording in 2003 was: "The next few questions deal with any *current* limitations in your daily activities caused by a long-term health condition or problem. In these questions, 'long-term conditions' refer to a condition that is expected to last or has already lasted six months or more." The following questions were asked in both survey cycles: "Do you have any difficulty hearing, seeing, communicating, walking, climbing stairs, bending, learning or doing any similar activities?" Does a long-term physical condition or mental condition or health problem reduce the amount or the kind of activity you can do: at home, at work, or at school or other activities (e.g., transportation or leisure)?" Those who answered "yes–often" or "yes–sometimes" to any of these questions were then asked, "Which of the following is the best description of the cause of this condition?" This analysis considers *activity limitations* caused by injury at home, during sports or recreational activities, and related to work or a motor vehicle (2000/01 CCHS), or to an accident at home or work, involving a motor vehicle, or any other type of accident (2003 CCHS).

persisted (data not shown). Even when the same multivariate analysis was run for each sex and age group separately, the difference remained for both men and women, and for all age groups except 12 to 19, among which the odds of injury were similar (data not shown). In other words, differences in selected demographic and socio-economic characteristics do not explain the difference in injury rates between Aboriginal and non-Aboriginal people living in the provinces.

Territories: Aboriginal females have lower injury rate

Based on combined data from the 2000/01 and 2003 CCHS, an estimated 12% of Aboriginal people in the territories reported a serious injury in the 12 months before their survey interview—about 3,500 per year. This was statistically similar to the 14% for other territorial residents (Chart 1). These results contrast with those from another study, which found that Aboriginal people living in the Northwest

Territories had an increased risk of injury mortality compared with other residents.[29] This lack of agreement likely results from the comparison between fatal and non-fatal injuries. Research that used the same definition of injury as this analysis concluded that Aboriginal people in the territories were less likely to report an injury than were other territorial residents.[30]

In the territories, the proportion of males reporting a serious injury did not differ significantly by Aboriginal status. However, a lower proportion of Aboriginal females reported a serious injury than did other female territorial residents (Chart 1). Only Aboriginal people aged 12 to 19 had a reduced risk of sustaining an injury compared with other territorial residents in the same age group; for the other age groups, reports of injuries did not differ significantly between the two populations (Chart 2). The lower likelihood of injury for Aboriginal females and for 12- to 19-year-olds remained when other factors were taken into account (data not shown), suggesting that the characteristics included in these models do not explain the differences in injury rates. Results for men and all other age groups remained statistically similar between the two groups when these other factors were controlled (data not shown).

More than one injury

Some of the individuals who reported a serious injury in the past year had sustained more than one. For example, 22% of injured provincial Aboriginal people reported two or more activity-limiting injuries, as did 21% of other provincial residents. Results for the two territorial population groups were 24% and 25%, respectively.

Types of injuries

CCHS respondents who had been injured were asked for detailed information on their most recent injury; for example, the type, the body part affected, and what they were doing when they were injured (see *Defining non-fatal injuries*). Those who had sustained more than one injury were asked to provide this information for their most serious injury. In the provinces, sprains and strains were the most common injuries among both Aboriginal and non-Aboriginal individuals, but Aboriginal people had a slightly lower proportion (Table 1). Broken or fractured bones and cuts or punctures were also typical injuries for both groups.

Table 1
Characteristics and circumstances of injury, by Aboriginal status, off-reserve household population aged 12 to 64 who sustained a serious injury in past year, provinces/territories, 2000/01 and 2003 combined

	Provinces		Territories	
	Aboriginal	Non-Aboriginal	Aboriginal	Non-Aboriginal
	%	%	%	%
Type of injury				
Sprain or strain	38.7*	43.8	39.1	41.3
Broken or fractured bone	20.5	17.7	21.9	15.8
Cut, puncture, animal bite	14.5	13.1	12.4[E1]	15.3
Scrape, bruise, blister	7.5	5.7	7.1[E1]	8.5[E2]
Burn, scald, chemical burn	2.4[E1]	3.4	F	2.5[E2]
Other	16.4	16.2	17.5[E1]	16.5
Body part				
Ankle or foot	21.2	22.2	25.8	23.6
Wrist or hand	22.7	20.7	15.6[E1]	21.4
Thigh, knee, leg	14.6	14.0	18.8*	12.1
Back or spine	11.5	13.8	10.1[E1]	12.2
Shoulder, arm, elbow	11.2	12.0	12.0[E1]	13.7[E1]
Head or neck (excluding eyes)	7.2[E1]	6.3	8.3[E1]	5.7[E1]
Other	11.6	11.0	9.3[E1]	11.3[E1]
Activity when injured				
Sports or physical exercise	28.0*	33.4	34.3	39.1
Working at job/business	21.2*	26.0	17.1*	25.1
Household chores	14.4	15.7	9.0	13.4[E1]
Leisure or hobby	18.4*	12.8	26.3*	14.5
Other	17.9*	12.2	13.3[E1]	7.9[E2]
Location of injury				
Home or surrounding area	32.2	30.4	28.5	29.3
Sports or athletics area	18.3*	24.9	25.3	29.0
Street, highway, sidewalk	16.1*	11.2	15.8	11.7[E1]
Commercial area	9.6	8.7	4.4*[E2]	9.2[E1]
Industrial or construction area	9.0	8.0	5.4[E1]	6.4[E1]
School area (excluding sports field)	4.6[E1]	5.0	7.5[E2]	5.0[E1]
Other	10.2	11.8	13.0[E1]	9.5
Cause of injury				
Fall	39.3	36.2	37.8	37.4
Overexertion or strenuous movement	15.9*	20.7	21.1	22.2
Accidental contact with sharp/hot object	10.4	12.7	6.2[E1]	9.9
Accidentally struck by object	9.1[E1]	8.4	7.4[E1]	8.6[E1]
Accidentally bumped/bitten by person/animal	6.0[E2]	6.6	9.2[E1]	7.6[E2]
Transportation accident	7.6[E1]	6.4	5.1[E1]	F
Physical assault	5.5*[E2]	1.6	F	F
Other	6.2[E1]	7.4	8.8[E1]	7.6[E1]

Data source: 2000/01 and 2003 Canadian Community Health Survey
Note: Because of rounding, detail may not add to 100%
** Significantly different from non-Aboriginal population ($p < 0.05$)*
E1 Coefficient of variation between 16.6% and 25.0%
E2 Coefficient of variation between 25.1% and 33.3%
F Coefficient of variation greater than 33.3%, or sample size less than 10

Limitations

As with all self-reported data, results from the Canadian Community Health Survey (CCHS) are subject to recall errors and misinterpretation of questions. In addition, cultural differences between Aboriginal and non-Aboriginal people could affect the results. Several studies have shown that cultural groups interpret questions differently and differ in their willingness to respond to sensitive questions,[31-35] but the extent of such reporting biases is unknown.

Injury severity was not measured; therefore, injuries with different degrees of severity were grouped together. This may mask associations, as research has shown that more serious injuries have different risk factors than less serious ones.[24]

The CCHS sample size for Aboriginal people is small. This limits the precision of the estimates, and differences between two estimates, and odds ratios must be large to achieve statistical significance. As a result, some differences and odds ratios are large but not significant.

Information on people aged 65 or older could not be included because of the small number of Aboriginal respondents in this age group reporting injury.

The extent to which the Aboriginal respondents in the CCHS represent the entire Canadian off-reserve Aboriginal population is not known. Only respondents who identified their cultural and racial background as "Aboriginal peoples of North America" were considered Aboriginal. Respondents who did not state their cultural and racial background were excluded from the analysis. Some research has shown that respondents' views of their own background change with time.[36,37] There could be many reasons why respondents would choose not to disclose their culture and race.

Combining the three recognized Aboriginal groups, namely North American Indian, Métis and Inuit, is a crude measure of ethnicity,[38] and it would be best to analyze them separately because each group has its own history and culture. Unfortunately, this is not possible with CCHS data.

The Aboriginal population as measured by the CCHS is not strictly comparable with the Aboriginal population measured by the Census (1996, 2001) or the 2001 Aboriginal Peoples Survey (APS) because the definitions of Aboriginal differ. In the Census and APS, an identity concept is used; the CCHS uses a racial/cultural concept. In the Census and APS, Aboriginal Identity refers to people who reported: (1) being North American Indian, Métis, and/or Inuit, and/or (2) having Registered Indian status as defined by the Indian Act, and/or (3) having Band or First Nations membership. The variations in the definition of the Aboriginal population may result in slightly different target populations.

Data from the APS were not used in this analysis because the survey did not collect information on injuries for individuals aged 15 or older. And although questions on activity limitations were asked, the APS did not determine if the activity limitation was caused by an injury.

Data from the 2001 Participation and Activity Limitation Survey (PALS) were not used for this analysis for several reasons. PALS collected information only on injuries that caused an activity limitation. Although it might be possible to use PALS data for analysis on injury-caused activity limitations, PALS did not collect information for the territories, and its definition of an Aboriginal person differs from that used in the CCHS (see *Definitions*). Therefore, to be consistent with definitions throughout the paper, PALS data were not used.

Residual confounding of socio-economic status remains in the logistic regression models that compare injury and injury-caused activity limitation rates between Aboriginal and non-Aboriginal people. Other research has suggested using as many different socio-economic variables as possible to reduce any residual confounding.[25]

No temporal or causal relationships can be inferred, as the CCHS data are cross-sectional.

The body part affected did not differ significantly between the two provincial populations. For both groups, the most common injuries were to the hand or wrist, or the ankle or foot, with each representing at least one-fifth of all injuries.

Twenty-eight percent of injured Aboriginal people said they had sustained their injury during a sports activity or while exercising, and 21% cited a work activity—both significantly lower than the proportions reported by non-Aboriginal residents who were injured. Aboriginals were more likely than other provincial residents to report being injured during leisure/hobby and other activities. For both populations, sports- and work-related injuries were most common, as found in other research.[20]

In general, the territorial Aboriginal population had injury characteristics similar to those of non-Aboriginal residents. A notable exception was the higher proportion of injuries among Aboriginal people that occurred during leisure or hobby

activities (Table 1). Because of small sample sizes, differences must be large to be considered statistically significant (see *Limitations*).

Location and causes

About one-third of injuries occurred in or around the home for the provincial Aboriginal and non-Aboriginal populations alike (Table 1). But Aboriginal people were more likely to report being injured on a street, highway or sidewalk than were other provincial residents (16% versus 11%). About 18% of injuries in the Aboriginal population occurred in sports or athletics areas, less than among the non-Aboriginal group.

Causes of injury were generally similar between Aboriginal and non-Aboriginal people. Falls were the most common, representing 39% of all injuries for the provincial Aboriginal population. The proportion of injuries attributed to overexertion was lower in the Aboriginal population; injuries caused by physical assault, higher.

Majority sought treatment

The majority of people who had a serious injury in the past year had sought treatment from a health care professional within 48 hours, regardless of Aboriginal status or geographic location (Table 2).

In the provinces, Aboriginal people were more likely than non-Aboriginals to have received treatment in an emergency department, and less likely to have been to a doctor's office. In the territories, the situation was reversed: non-Aboriginal individuals were more likely to have been treated in emergency, while Aboriginal people were more likely to have been treated outside hospital. Health care delivery in the territories is likely behind these differences. With the exception of urban areas, in Northern communities, health care is typically delivered in nursing stations or health centres.[30]

Hospital admissions indicate that the injuries sustained by Aboriginal people may have been more severe than those sustained by the non-Aboriginal population. In both the provinces and territories, Aboriginal people who had sought medical help for their injuries were more likely to have been admitted for an overnight stay in the hospital than were their non-Aboriginal counterparts.

Table 2
Treatment of injury and location of treatment, by Aboriginal status, off-reserve household population aged 12 to 64 who sustained a serious injury in past year, provinces/territories, 2000/01 and 2003 combined

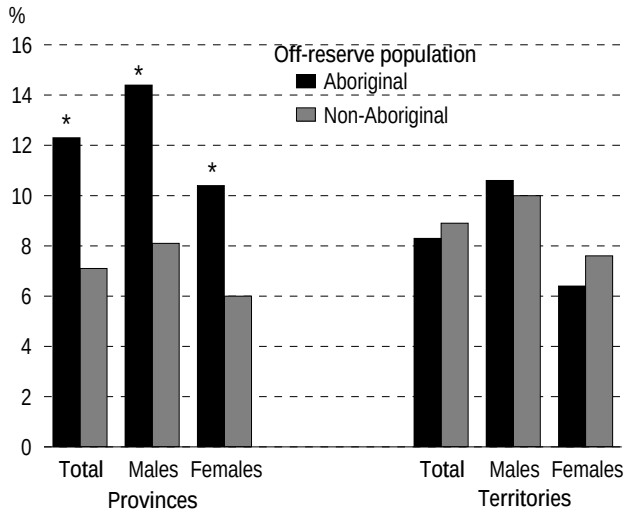
	Provinces		Territories	
	Aboriginal	Non-Aboriginal	Aboriginal	Non-Aboriginal
	%	%	%	%
Treated within 48 hours	65.9	62.3	58.8	60.3
Location of treatment†				
Emergency department	62.2*	54.0	44.5*	58.5
Doctor's office	15.1*	21.1	F	16.5[E1]
Walk-in clinic	13.0[E1]	13.0	F	F
Other location	12.3[E1]	14.3	48.2*	21.6
Admitted overnight to hospital	12.5*[E1]	6.4	15.2*[E1]	8.4[E1]

Data source: 2000/01 and 2003 Canadian Community Health Survey
† Treatment could have been received at more than one location.
** Significantly different from estimate for non-Aboriginal population (p < 0.05)*
E1 Coefficient of variation between 16.6% and 25.0%
F Coefficient of variation greater than 33.3%, or sample size less than 10.

Injury-caused activity limitations

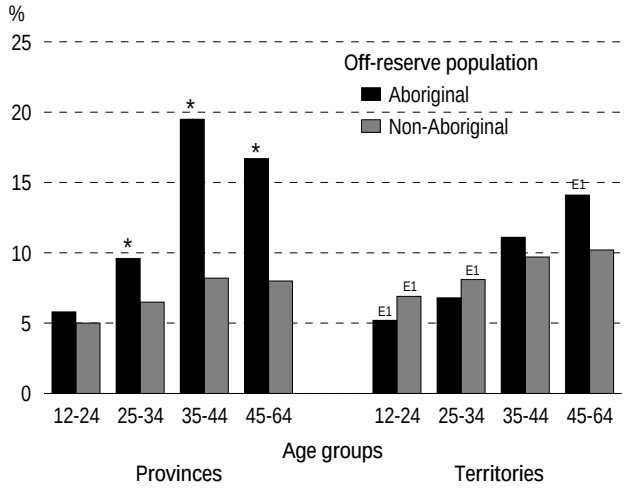
The CCHS asked respondents if they had an activity limitation that had lasted or was expected to last six months or more and that had been caused by an injury (see *Definitions*). According to the 2000/01 and 2003 CCHS, 12% of Aboriginal people living in non-reserve parts of the provinces (an average of 41,400) reported an injury-caused activity limitation. This was 1.7 times higher than the 7% for the non-Aboriginal provincial population. When injury-caused activity limitations were examined by sex, consistently higher rates emerged for the Aboriginal group (Chart 3), a result supported by previous research.[39] In the territories, 8% of Aboriginal residents (an estimated 2,400) had this type of disabling injury—statistically similar to the rate for non-Aboriginal territorial residents. Furthermore, injury-caused activity limitation rates did not differ by sex or by age group in the territories (Charts 3 and 4).

Chart 3
Percentage reporting injury-caused activity limitation, by sex and Aboriginal status, off-reserve household population aged 12 to 64, provinces/territories, 2000/01 and 2003 combined



Data source: 2000/01 and 2003 Canadian Community Health Survey
** Significantly different from estimate for non-Aboriginal population (p < 0.05)*

Chart 4
Percentage reporting injury-caused activity limitation, by age group and Aboriginal status, off-reserve household population aged 12 to 64, provinces/territories, 2000/01 and 2003 combined



Data source: 2000/01 and 2003 Canadian Community Health Survey
** Significantly different from estimate for non-Aboriginal population (p < 0.05)*
E1 Coefficient of variation between 16.6% and 25.0%

In the provinces, though, the disparity between the two populations did differ by age for injury-caused activity limitations, especially in the 35-to-64 age groups. The higher overall likelihood of injury-caused activity limitation for the Aboriginal population held when age, sex, and socio-demographic and socio-economic variables were taken into account, indicating that the disparity in injury-caused activity limitation is not a result of these factors (data not shown). This model was run separately for each sex and age group, and the disparities in the odds of injury-caused activity limitation were present for both sexes and age groups 35 or older. For those aged 12 to 34, injury-caused activity limitations were not significantly different between the two groups (data not shown). The same technique was used for the territories, and no changes were observed (data not shown).

Injuries among children

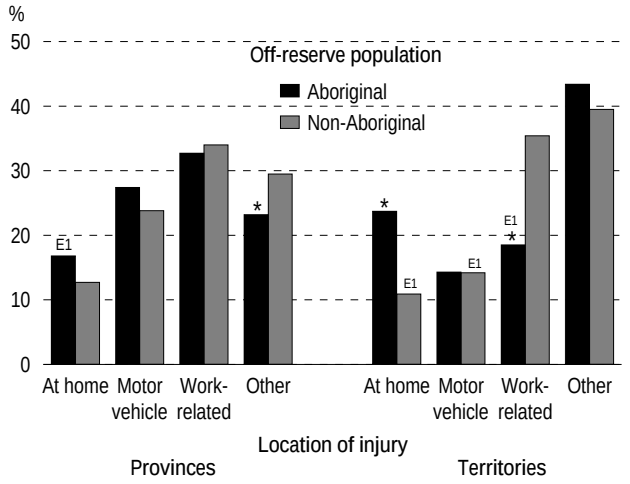
According to the 2000/01 National Longitudinal Survey of Children and Youth (NLSCY) (see *Methods*), about 12% of Aboriginal children aged 11 or younger who lived in non-reserve parts of the provinces had sustained an injury within the past year that was serious enough to require medical attention. This is statistically similar to the 10% reported for provincial non-Aboriginal children, and is consistent with results from another study.[27]

A higher proportion of Aboriginal boys than girls had been injured: 14% compared with 9%, respectively. For both sexes, 9% of children aged 4 or younger had had an injury in the past year, as did 14% in the 5-to-11 age group. At all ages, the proportion of Aboriginal children who had had a serious injury did not differ significantly from the proportion for non-Aboriginal children (data not shown; all estimates for Aboriginal children have coefficients of variation between 16.6% and 33.3%). Because of the small sample of Aboriginal respondents, differences between estimates must be large to be considered statistically significant (see *Limitations*).

The NLSCY asked about injuries such as a "broken bone, bad cut or burn, head injury, poisoning, or a sprained ankle, which occurred in the past 12 months, and were serious enough to require medical attention, by a doctor, nurse or dentist".

Children were identified as Aboriginal based on the respondent's (usually a parent's) answers to: "How would you best describe his/her race or colour?" In the NLSCY, native/Aboriginal people (North American Indian, Métis or Inuit/Eskimo) were considered Aboriginal.

Chart 5
Injury-caused activity limitation, by location of injury and Aboriginal status, off-reserve household population aged 12 to 64, provinces/territories, 2000/01 and 2003 combined



Data source: 2000/01 and 2003 Canadian Community Health Survey
** Significantly different from estimate for non-Aboriginal population (p < 0.05)*
E1 Coefficient of variation between 16.6% and 25.0%

In the territories, 24% of injury-caused activity limitations for the Aboriginal population resulted from an accident at home, significantly higher than the 11% for non-Aboriginals. Injury-caused activity limitations resulting from a work-related injury were much more common among non-Aboriginal respondents (Chart 5).

Concluding remarks

In the early 2000s, the disparity in non-fatal injury rates between Aboriginal and non-Aboriginal people varied depending on sex, age and geographic location. In terms of serious injuries, the disparity in injury rates between Aboriginal and non-Aboriginal people was evident in the provinces, but not in the territories. When examined more closely, though, the nature and circumstances of the injuries did differ between the two groups.

As indicated by the higher injury-caused activity limitation rate, the impact of injuries is greater for the provincial Aboriginal population than for other provincial residents. Specifically, the provincial Aboriginal population had a higher rate, a disparity that appears after age 24. In the territories, injuries had a similar impact on both the Aboriginal and non-Aboriginal populations. This is only part of the picture, as previous research has concluded that the Aboriginal population in the territories has a higher injury mortality rate than other territorial residents.[29]

The higher injury and injury-caused activity limitation rates experienced by the provincial Aboriginal population underscore just how prevalent injuries are in this group, as well as the impact they can have— information that may be useful to injury prevention programs. ●

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Appendix

Table A

Distribution of selected characteristics, off-reserve Aboriginal household population aged 12 to 64, provinces/territories, 2000/01 and 2003 combined

	Provinces						Territories		
	Male			Female			Both sexes		
	Sample size	Estimated population		Sample size	Estimated population		Sample size	Estimated population	
		'000	%		'000	%		'000	%
Total	2,328	319	100.0	3,022	360	100.0	2,014	57	100.0
Injury in past year									
Yes	515	73	22.9	482	61	16.9	255	7	12.3
No	1,812	246	77.1	2,539	299	83.0	1,758	50	87.7
Missing	1	F	F	1	F	F	1	F	F
Injury-caused activity limitation									
Yes	305	46	14.3	270	37	10.3	155	5	8.3
No	2,008	272	85.1	2,716	320	89.1	1,847	52	91.1
Missing	15	F	F	36	2[E1]	0.6[E1]	12	F	0.5[E2]
Age group									
12-19	604	67	21.0	602	68	18.9	539	15	25.7
20-24	200	37	11.6	332	41	11.5	220	7	12.7
25-34	475	68	21.4	753	84	23.5	487	13	22.8
35-44	436	67	20.9	600	84	23.2	402	12	21.1
45-64	613	80	25.1	735	82	22.9	366	10	17.6
Residence									
Urban	1,529	240	75.3	2,082	280	78.0	744	21	36.5
Rural	799	79	24.7	940	79	22.0	1,270	36	63.5
Marital status (age 25 to 64)									
Married/Common-law	880	139	64.5	1,027	143	57.0	698	23	64.4
Previously married	239	25	11.6	479	49	19.7	159	3	9.3
Never married	401	50	23.3	576	58	23.1	395	9	26.1
Missing	4	F	F	6	F	F	3	F	F
Education (age 25 to 64)									
Less than secondary graduation	526	69	32.3	667	71	28.6	636	18	50.0
Secondary graduation	250	38	17.5	310	40	15.9	91	3	7.4
Some postsecondary	137	20	9.4	241	32	12.9	85	2	6.2
Postsecondary graduation	559	81	37.5	825	101	40.2	422	12	34.3
Missing	52	7[E1]	3.3[E1]	45	6[E2]	2.5[E2]	21	F	2.1[E1]
Work status (age 25 to 64)									
Worked entire past year	758	116	53.8	828	96	38.6	594	17	48.5
Worked part of past year	426	55	25.7	488	64	25.6	402	12	32.9
Did not work past year	301	40	18.4	727	85	34.0	241	6	17.0
Missing	39	4[E2]	2.0[E2]	45	5[E2]	1.8[E2]	18	F	1.6[E1]
Household income									
Low	208	22	6.8	328	30	8.3	267	7	12.0
Lower-middle	287	40	12.7	618	62	17.3	331	9	16.1
Middle	487	71	22.3	690	82	22.7	446	13	23.1
Upper-middle	620	86	26.8	620	86	23.9	404	11	18.6
High	382	57	17.8	321	48	13.4	332	11	18.4
Not stated	344	44	13.7	445	52	14.4	234	7	11.8
Leisure-time activity									
Active	1,315	172	54.0	1,496	176	48.8	869	26	45.8
Inactive	856	120	37.7	1,434	170	47.3	999	27	46.5
Missing	157	27	8.4	92	14	3.9	146	4	7.7

Data source: 2000/01 and 2003 Canadian Community Health Survey
Note: Because of rounding, detail may not add to totals. Also, estimated population would be approximately double the Canadian population because two different cycles were combined.
E1 Coefficient of variation between 16.6% and 25.0%
E2 Coefficient of variation between 25.1% and 33.3%
F Coefficient of variation greater than 33.3%, or sample size less than 10

Table B

Distribution of selected characteristics, non-Aboriginal household population aged 12 to 64, provinces/territories, 2000/01 and 2003 combined

	Provinces						Territories		
	Male			Female			Both sexes		
	Sample size	Estimated population		Sample size	Estimated population		Sample size	Estimated population	
		'000	%		'000	%		'000	%
Total	95,114	21,684	100.0	104,650	21,573	100.0	2,690	82	100.0
Injury in past year									
Yes	16,332	3,609	16.6	12,752	2,486	11.5	388	12	14.3
No	78,749	18,075	83.3	91,861	19,078	88.4	2,302	70	85.7
Missing	33	F	F	37	9[E1]	0.0[E1]			
Injury-caused activity limitation									
Yes	8,351	1,746	8.0	6,671	1,289	6.0	222	7	8.9
No	86,363	19,863	91.6	97,414	20,171	93.5	2,456	74	90.8
Missing	400	84	0.4	565	113	0.5	12	F	F
Age group									
12-19	17,055	3,228	14.9	16,598	3,065	14.2	341	11	13.5
20-24	6,036	2,101	9.7	7,176	2,018	9.4	178	7	8.4
25-34	16,175	3,994	18.4	18,993	3,975	18.4	591	17	20.8
35-44	21,298	5,139	23.7	22,480	5,093	23.6	651	21	25.2
45-64	34,550	7,230	33.3	39,403	7,422	34.4	929	26	32.1
Residence									
Urban	69,610	17,603	81.1	78,338	17,698	82.0	2,006	62	75.8
Rural	25,504	4,090	18.9	26,312	3,874	18.0	684	20	24.2
Marital status (age 25 to 64)									
Married/Common-law	48,168	12,116	74.0	53,582	12,100	73.4	1,315	46	72.3
Previously married	8,998	1,288	7.9	15,108	2,188	13.3	310	6	9.5
Never married	14,759	2,946	18.0	12,040	2,180	13.2	539	11	17.9
Missing	98	15	0.1	146	23	0.1	7	F	F
Education (age 25 to 64)									
Less than secondary graduation	13,686	2,605	15.9	13,559	2,475	15.0	244	7	11.0
Secondary graduation	13,089	2,956	18.1	16,338	3,404	20.6	287	9	14.1
Some postsecondary	4,644	1,054	6.4	5,577	1,106	6.7	136	4	6.0
Postsecondary graduation	39,510	9,462	57.8	44,492	9,289	56.3	1,472	43	66.7
Missing	1,094	286	1.7	910	216	1.3	32	1[E1]	2.2[E1]
Work status (age 25 to 64)									
Worked entire past year	48,031	11,440	69.9	43,569	9,168	55.6	1,495	44	68.5
Worked part of past year	14,593	3,121	19.1	16,670	3,413	20.7	502	15	23.4
Did not work past year	8,764	1,660	10.1	19,907	3,765	22.8	157	5	7.2
Missing	635	143	0.9	730	145	0.9	17	F	0.8[E2]
Household income									
Low	3,282	580	2.7	4,592	707	3.3	71	2	2.7
Lower-middle	4,466	923	4.3	7,665	1,315	6.1	95	3	3.1
Middle	15,290	3,343	15.4	19,740	3,737	17.3	271	8	10.2
Upper-middle	31,769	6,811	31.4	33,705	6,748	31.3	626	18	21.7
High	30,407	7,763	35.8	26,180	6,409	29.7	1,373	42	51.7
Not stated	9,900	2,273	10.5	12,768	2,657	12.3	254	9	10.6
Leisure-time activity									
Active	49,037	10,839	50.0	51,285	10,029	46.5	1,415	43	53.1
Inactive	40,564	9,459	43.6	50,841	10,823	50.2	1,139	33	40.5
Missing	5,513	1,395	6.4	2,524	720	3.3	136	5	6.5

Data source: 2000/01 and 2003 Canadian Community Health Survey
Note: Because of rounding, detail may not add to totals. Also, estimated population would be approximately double the Canadian population because two different cycles were combined.
E1 Coefficient of variation between 16.6% and 25.0%
E2 Coefficient of variation between 25.1% and 33.3%
F Coefficient of variation greater than 33.3%, or sample size less than 10

Breastfeeding practices

Wayne J. Millar and Heather Maclean

Abstract

Objectives

This article examines demographic and socio-economic factors associated with breastfeeding among women aged 15 to 55 in 2003 who had had a baby in the previous five years.

Data sources

The data are from Statistics Canada's 2003 Canadian Community Health Survey (CCHS). Supplementary information is from earlier national and regional surveys.

Analytical techniques

The analysis is based on information provided by 7,266 women aged 15 to 55 who had had a baby in the previous five years. Cross-tabulations were used to estimate the proportions who breastfed their most recent child and those who did so exclusively for at least six months, by age, marital status, education, household income, rural/urban residence, immigrant status and province. Multiple logistic regression was used to estimate the association of these characteristics with the prevalence and duration of breastfeeding and of exclusive breastfeeding.

Main results

In 2003, an estimated 85% of mothers reported that they had attempted to breastfeed, up markedly from around 25% in the mid-1960s. However, 17% had breastfed exclusively for at least six months. The likelihood of exclusive breastfeeding varied substantially by province. It rose with the mother's age and tended to be more common among those who lived in urban areas and who were college/university graduates.

Key words

infant nutrition, infant welfare, infant care, maternal behaviour

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The World Health Organization has described breastfeeding as "an unequalled way of providing ideal food for the healthy growth and development of infants."[1] Epidemiological studies suggest that breastfeeding may be protective against gastrointestinal infections,[2,3] otitis media,[4,5] allergies[6] and respiratory infections,[7-9] and that it is associated with lower rates of Type 2 diabetes.[10,11] Recent American research has shown breastfeeding to be related to a reduction in risk for post-neonatal death.[12]

Exclusive breastfeeding is the practice of feeding an infant only breast milk, without the addition of water, breast milk substitutes, other liquids or solid foods. The most recent guidelines from the Public Health Agency of Canada, revised in 2004 to align with those of the World Health Organization, state: "Exclusive breastfeeding is recommended for the first six months of life, as it provides all the nutrients, growth factors and immunological components a healthy term infant needs."[6] Previously, Health Canada had recommended a minimum of four months of exclusive breastfeeding.[11]

With data from Statistics Canada's 2003 Canadian Community Health Survey (CCHS), it is possible to estimate the proportion of mothers whose breastfeeding practices conformed with these recommendations (see *Methods* and *Definitions*). This article describes the prevalence and duration of breastfeeding among women aged 15 to 55 in 2003 who had had a baby in the previous five years. Factors associated with starting to breastfeed and with breastfeeding exclusively for at least six months are examined, along with reasons for not starting and reasons for stopping.

Few hit the target

According to the 2003 CCHS, the majority of Canadian women who had had a baby in the previous five years—85%—had attempted to breastfeed the infant. This was a fundamental change from the mid-1960s when the comparable percentage was around 25% (see *Trends in breastfeeding*).

At the time of their CCHS interview, 16% of the women who had given birth within the previous five years were still breastfeeding (data not shown). Among those who had stopped, fewer than half had

Methods

Data sources

Most of the analysis in this article is based on data from cycle 2.1 of Statistics Canada's Canadian Community Health Survey (CCHS), which was conducted from January through December of 2003. The CCHS covers the non-institutionalized household population aged 12 or older in all provinces and territories, except residents of Indian reserves, Canadian Forces Bases, and some remote areas. The sample size was 135,573, and the response rate was 80.6%. The sample size for the population analyzed in this article—women aged 15 to 55 who had had a baby in the previous five years—was 7,266, weighted to represent 1.4 million women in the 10 provinces (Appendix Tables A and B). More detail about the sample design of the CCHS is available in a previously published report.[13]

Supplemental data used to trace trends in breastfeeding initiation were obtained from various national and regional health surveys.[14-16]

Analytical techniques

Cross-tabulations were used to estimate the proportion of women who breastfed their most recently born child and the proportion who did so exclusively for at least six months, by the mother's age, marital status, education, household income, immigrant status, rural/urban residence and province. Multivariate logistic regression was used to estimate the association of these characteristics with the prevalence and duration of breastfeeding. For ease of presentation, unadjusted prevalence estimates are shown alongside adjusted odds ratios. To account for the multi-stage sample design of the survey, the bootstrap technique was used to calculate confidence intervals and coefficients of variation and for testing the statistical significance of differences.[17,18] A significance level of $p < 0.05$ was applied in all cases.[19]

Limitations

Because the data collected by the CCHS are cross-sectional, no temporal or causal relationships between variables can be inferred from this analysis. As well, the data are self-reported; no other sources were available to verify if mothers actually did breastfeed and for how long.

The question about duration of breastfeeding applied only to mothers who were no longer breastfeeding when they were interviewed for the CCHS. About 16% of all women who had had a baby in the previous five years were still breastfeeding when the survey was conducted and so could not be included in the analysis of duration.

There were some discrepancies between stated duration of exclusive breastfeeding and the time when other foods were introduced. For this analysis, inconsistent responses were deleted.

The demographic and socio-economic characteristics of the mothers—the independent variables in the analysis—pertained to 2003. These characteristics might have been different when their last child was born, which could have been as many as five years earlier. For instance, a mother's marital status, educational attainment, household income and place of residence could have changed since she had her baby. This could affect the strength of some associations between various factors and the likelihood of breastfeeding.

While there is a possibility of recall bias, an assessment of breastfeeding studies suggested that the data are valid and reliable.[20]

Although vitamin D supplementation is recommended for all women who breastfeed, the CCHS question was asked only of women who had exclusively breastfed for more than one week.

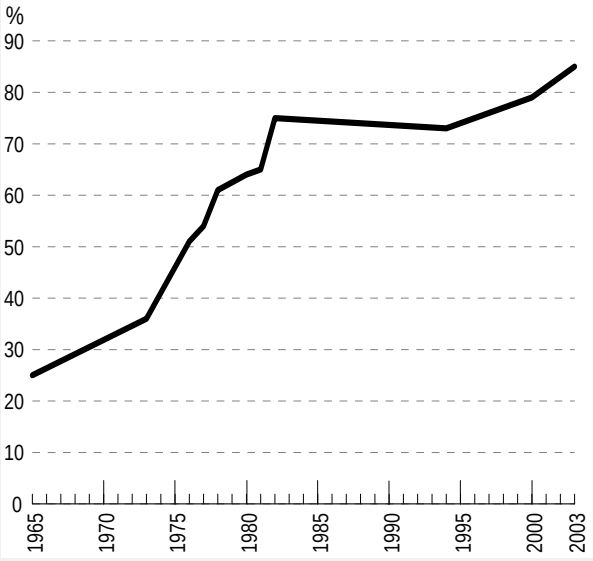
breastfed for at least six months and of these, fewer than half again had done so exclusively. Thus, the breastfeeding practices of just 17% of the women who had had a baby in the previous five years (and were no longer breastfeeding) matched the 2001 World Health Organization and 2004 Health Canada recommendation of exclusive breastfeeding for at least six months. The previous Health Canada recommendation (2001) had been exclusive breastfeeding for four months, a target that was met by 37% of the CCHS respondents.

Trends in breastfeeding

The estimated 85% of mothers who, according to the results of the 2003 Canadian Community Health Survey, attempted to breastfeed their infant is a marked increase since the mid-1960s. In that era, only about 25% of mothers breastfed their baby during their hospital stay.[15] By the 1980s, an estimated 62% of mothers had at least initiated breastfeeding,[14] and in the early 1990s, the figure had risen to almost 75%.[21,22]

Because of classification inconsistencies between surveys, only a general sense of trends in breastfeeding duration is possible. Nonetheless, the results of several national surveys suggest that the length of time mothers breastfeed has been increasing.[14,15,22]

Percentage of mothers who initiated breastfeeding, selected years, 1965 to 2003

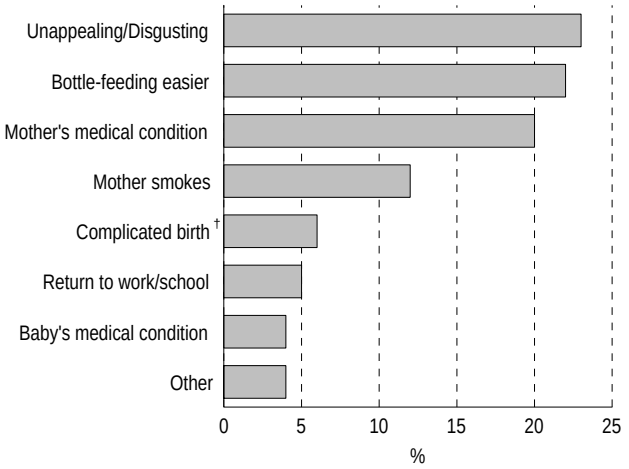


Data sources: References 14, 15, 16; 2000/01 and 2003 Canadian Community Health Survey

Why not?

A sizeable proportion of mothers—15%—did not breastfeed. The reasons mentioned most frequently were that breastfeeding was "unappealing" or "disgusting" (23%) and that "bottle-feeding was easier" (22%) (Chart 1). A medical condition was cited by 20% of mothers, and 12% said that they smoked. Only about 5% of women said that a return to work or school prevented them from breastfeeding.

Chart 1
Main reason for not breastfeeding, women aged 15 to 55 in 2003 who had a baby in previous five years, Canada excluding territories



Data source: 2003 Canadian Community Health Survey
Note: Based on 1,213 women who had a baby in previous five years and did not breastfeed.
† Caesarean, premature or multiple

Most start

The likelihood that a mother had attempted to breastfeed was associated with several demographic and socio-economic factors.

While a solid majority (81%) of mothers younger than 25 had tried to breastfeed, this was low compared with rates at older ages (Table 1). As well, the prevalence of breastfeeding initiation was lower among women who were not married than among those who were married or in a common-law relationship.

The proportion of women who had started breastfeeding tended to rise with education and household income. Just 71% of women with less than secondary graduation had started breastfeeding,

compared with 89% of those who were postsecondary graduates. Similarly, the breastfeeding initiation rate was 74% for women in the lowest income households, but 89% among those in the highest.

Starting to breastfeed varied with urban/rural residence and immigrant status. Women in urban areas were more likely to initiate breastfeeding than were those in rural areas: 86% versus 80%. And 92% of mothers who identified themselves as immigrants had breastfed their most recent child, compared with 83% of non-immigrants.

Breastfeeding initiation rates were relatively low in Atlantic Canada and Québec and high in Ontario and the western provinces. The percentages ranged from 63% in Newfoundland to 93% in British Columbia. The results of two national surveys in the early 1980s had shown similar provincial patterns, with rates rising steadily from east to west.[14] The persistence of these differences may, to some degree, reflect intergenerational influences.[23] On issues such as breastfeeding, new mothers may seek the advice of their own mothers. If a relatively small proportion of the previous generation of women breastfed, it would be less likely to be a social norm.[24]

Of course, many of the variables that are associated with high or low rates of starting to breastfeed are themselves interrelated. For instance, very young mothers may have little education and may be more likely to live in lower-income households. Similarly, substantial proportions of immigrants settle in large urban areas. When all

Definitions

Female respondents to the 2003 Canadian Community Health Survey (CCHS) who were the birth parent of a child younger than 5 were asked: "Did you breastfeed or try to breastfeed your baby, even if only for a short time?" Although some women may have had more than one baby during the previous five years, their responses applied to the most recent birth.

Those who did not breastfeed were asked the main reason why they did not.

Women who had breastfed their last baby, but were not doing so at the time of their CCHS interview, were asked: "For how long did you breastfeed?" For this analysis, two duration categories were defined: less than 6 months and 6 months or more. These women were also asked the main reason they stopped breastfeeding.

Exclusive breastfeeding refers to an infant receiving only breast milk, without any additional liquid (even water) or solid food. The *duration of exclusive breastfeeding* is the length of time before the introduction of solid foods or other liquids. The prevalence of exclusive breastfeeding for six months or more, as recommended by the World Health Organization and Health Canada, was based on mothers who had breastfed but were no longer doing so at the time of their CCHS interview, plus those who had never breastfed, plus those still breastfeeding but not exclusively. Women still exclusively breastfeeding when they were interviewed were not included.

Mothers who had breastfed exclusively for at least one week were asked: "During the time when your baby was only fed breast milk, did you give the baby a vitamin supplement containing vitamin D?"

The mother's *age* in 2003 was grouped into four categories: younger than 25, 25 to 29, 30 to 34, and 35 or older. In the multivariate logistic models, age was used as a continuous variable.

The mother's *education* in 2003 was categorized as less than secondary graduation, secondary graduation, some postsecondary, and postsecondary graduation.

Marital status in 2003 was defined as married (including common-law) or not married (never married, divorced, separated or widowed).

Household income groups were based on the number of people in the household and total household income from all sources in the 12 months before the 2003 interview.

Household income group	People in household	Total household income
Lowest	1 or 2	Less than $15,000
	3 or 4	Less than $20,000
	5 or more	Less than $30,000
Lower-middle	1 or 2	$15,000 to $29,999
	3 or 4	$20,000 to $39,999
	5 or more	$30,000 to $59,999
Upper-middle	1 or 2	$30,000 to $59,999
	3 or 4	$40,000 to $79,999
	5 or more	$60,000 to $79,999
Highest	1 or 2	$60,000 or more
	3 or more	$80,000 or more

Residence in 2003 was defined as urban or rural.

To identify *immigrant status*, respondents were asked if they had been born a Canadian citizen.

Table 1
Prevalence of and adjusted odds ratios for initiating breastfeeding, women aged 15 to 55 who had a baby in previous five years, by selected characteristics in 2003, Canada excluding territories

	Estimated number who had had baby '000	Initiated breastfeeding		
		Prevalence %	Adjusted odds ratio	95% confidence interval
Total	1,400	85	...	...
Age group			0.98§	0.96, 1.00
< 25	152	81†	...	...
25-29	342	84	...	...
30-34	454	86	...	...
35+	451	85	...	...
Marital status				
Married	1,213	86†	1.22	0.92, 1.62
Not married‡	185	77†	1.00	...
Education				
Less than secondary graduation‡	139	71†	1.00	...
Secondary graduation	273	79†	1.40	0.97, 2.00
Some postsecondary	104	79†	1.48	0.99, 2.22
Postsecondary graduation	869	89†	3.05*	2.17, 4.29
Household income				
Lowest‡	152	74†	1.00	...
Lower-middle	298	82	1.30	0.90, 1.87
Upper-middle	453	86	1.54*	1.07, 2.21
Highest	384	89†	1.73*	1.14, 2.64
Immigrant status				
Immigrant	315	92†	2.12*	1.46, 3.08
Non-immigrant‡	1,072	83†	1.00	...
Residence				
Rural‡	247	80†	1.00	...
Urban	1,153	86†	0.99	0.77, 1.28
Province				
Newfoundland and Labrador	23	63†	0.34*	0.22, 0.52
Prince Edward Island	7	77	0.62	0.37, 1.03
Nova Scotia	45	76†	0.58*	0.39, 0.86
New Brunswick	33	64†	0.35*	0.24, 0.51
Québec	294	76†	0.51*	0.39, 0.67
Ontario‡	560	87†	1.00	...
Manitoba	53	89†	1.45	0.97, 2.18
Saskatchewan	47	86	1.31	0.85, 2.01
Alberta	166	90†	1.80*	1.16, 2.79
British Columbia	171	93†	2.35*	1.54, 3.57

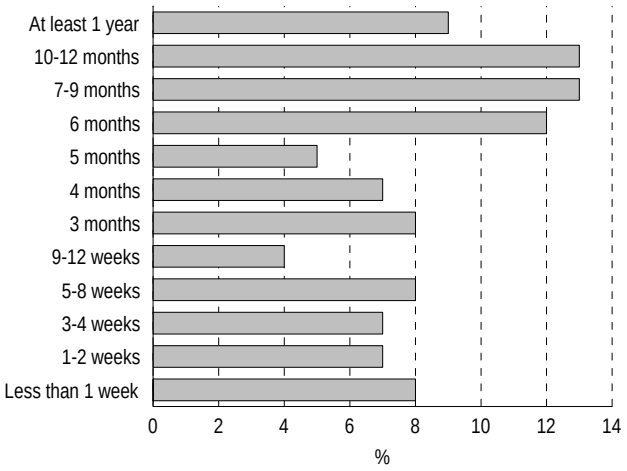
Data source: 2003 Canadian Community Health Survey
Note: Based on 7,156 women who had a baby in previous five years and for whom breastfeeding information was available. "Missing" categories for education, household income, and immigrant status were included in model to maximize sample size, but prevalences and odds ratios are not shown. Because of rounding, detail may not add to total.
† Significantly different from value for total (p < 0.05)
‡ Reference category
§ Treated as continuous variable
** Significantly different from reference category (p < 0.05)*
... Not applicable

these variables were considered simultaneously in a multivariate model, education, household income, immigrant status and province of residence remained significantly associated with the likelihood that a woman would initiate breastfeeding. Marital status and rural/urban residence were no longer significant.

Drop-out rate

Among the women who had breastfed their most recent child but were no longer doing so at the time of their CCHS interview, 22% had stopped within the first month (Chart 2). Close to half (47%) had breastfed for six months or more.

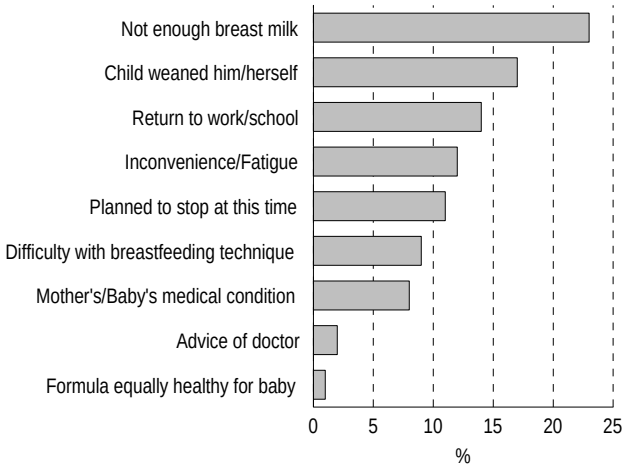
Chart 2
Age of child at cessation of breastfeeding, women aged 15 to 55 in 2003 who had a baby in previous five years, Canada excluding territories



Data source: 2003 Canadian Community Health Survey
Note: Based on 5,124 women who had breastfed baby, but were no longer doing so at time of CCHS interview.

Overall, the most common reasons for stopping were not enough milk (23%), child weaned itself (17%), mother returned to work or school (14%), and inconvenience/fatigue (12%) (Chart 3). Reasons for cessation, however, varied with the duration of breastfeeding. For women who had breastfed less than six months, not enough milk was cited most often (31%), followed by inconvenience/fatigue (15%), difficulties with technique (13%), and medical problems of mother or baby (11%) (data not shown).

Chart 3
Main reason for stopping breastfeeding, women aged 15 to 55 in 2003 who had a baby in previous five years, Canada excluding territories



Data source: 2003 Canadian Community Health Survey
Note: Based on 5,124 women who had breastfed baby, but were no longer doing so at time of CCHS interview

Reasons for stopping also differed by household income. Women in higher income households (20%) were less likely than those at lower income levels (30%) to state that not enough milk was a factor. On the other hand, return to work or school was offered as a reason by 19% of mothers in high-income households, compared with 7% of those in low-income households (data not shown).

Exclusive breastfeeding

Fewer than half the women who had breastfed their most recent baby did so for six months or more, and less than half of them had breastfed exclusively. In fact, as a percentage of the women who had had a baby in the five years before the 2003 CCHS, just 17% had breastfed exclusively for at least six months (Table 2).

Generally, the characteristics associated with starting to breastfeed were also associated with exclusive breastfeeding for six or more months. The likelihood of exclusive breastfeeding tended to rise with the mother's age, education and household income. It was more common among married than single women, immigrant than non-immigrant women, and urban than rural women. The

Table 2
Prevalence of and adjusted odds ratios for exclusive breastfeeding at least 6 months, women aged 15 to 55 who had a baby in previous five years, by selected characteristics in 2003, Canada excluding territories

	Estimated number who had baby excluding mothers still exclusively breastfeeding '000	Breastfed exclusively at least 6 months		
		Prev-alence %	Adjusted odds ratio	95% confidence interval
Total	1,319	17	...	...
Age group			1.05*§	1.04, 1.07
< 25	140	8†	...	...
25-29	323	15†	...	...
30-34	421	18	...	...
35+	435	21†	...	...
Marital status				
Married	1,140	18†	1.09	0.82, 1.44
Not married‡	179	14†	1.00	...
Education				
Less than secondary graduation‡	131	11†	1.00	...
Secondary graduation	260	15	1.14	0.76, 1.71
Some postsecondary	99	15	1.26	0.78, 2.04
Postsecondary graduation	815	19†	1.46*	1.00, 2.12
Household income				
Lowest‡	145	13†	1.00	...
Lower-middle	278	18	1.18	0.81, 1.71
Upper-middle	435	16	0.95	0.65, 1.37
Highest	360	19	0.96	0.66, 1.42
Immigrant status				
Immigrant	293	20†	1.07	0.84, 1.37
Non-immigrant‡	1,016	16†	1.00	...
Residence				
Rural‡	235	13†	1.00	...
Urban	1,083	18†	1.29*	1.03, 1.60
Province				
Newfoundland and Labrador	22	9†E2	0.54	0.28, 1.04
Prince Edward Island	7	12E2	0.74	0.37, 1.46
Nova Scotia	43	14E1	0.91	0.57, 1.47
New Brunswick	32	8†E1	0.52*	0.30, 0.91
Québec	281	10†	0.53*	0.39, 0.73
Ontario‡	532	18	1.00	...
Manitoba	51	18	1.23	0.79, 1.91
Saskatchewan	44	18	1.29	0.94, 1.77
Alberta	151	22†	1.38*	1.05, 1.81
British Columbia	156	28†	1.80*	1.38, 2.33

Data source: 2003 Canadian Community Health Survey
Note: Based on 6,802 women who had a baby in previous five years, including those who did not breastfeed, but excluding those still breastfeeding exclusively at the time of CCHS interview. "Missing" categories for education, household income, and immigrant status were included in model to maximize sample size, but prevalences and odds ratios are not shown. Because of rounding, detail may not add to total.
† Significantly different from value for total (p < 0.05)
‡ Reference category
§ Treated as continuous variable
** Significantly different from reference category (p < 0.05)*
E1 Coefficient of variation 16.6% to 25.0%
E2 Coefficient of variation 25.1% to 33.3%
... Not applicable

percentages of mothers who breastfed exclusively were high in British Columbia and Alberta, and low in New Brunswick, Newfoundland and Québec.

When the potential interrelationships between these factors were taken into account, only age, education, urban/rural residence and province were significantly associated with exclusive breastfeeding for at least six months. The odds increased with the mother's age and were significantly high among college/university graduates; the odds were significantly low among women in rural areas. Compared with women in Ontario, those in Alberta and British Columbia had high odds of exclusive breastfeeding for at least six months, while those in New Brunswick and Québec had significantly low odds.

Vitamin D

Infants who are breastfed exclusively may be at risk of vitamin D deficiency, and in extreme cases, rickets.[25] Primarily because of the northern latitude, a vitamin D supplement is recommended for all breastfed infants in Canada.[6,11] Even so, only about half of mothers who had breastfed exclusively for at least six months reported that they had given their baby a vitamin D supplement (data not shown).

Concluding remarks

According to the results of the 2003 Canadian Community Health Survey, an overwhelming majority of mothers—85%—attempted to breastfeed their most recent baby. But while most mothers started to breastfeed, many stopped within the first month, and fewer than half breastfed for at least six months. And of those, just half breastfed exclusively. Thus, the breastfeeding practices of 17% of recent mothers conformed to the current recommendations of the World Health Organization and the Public Health Agency of Canada.

The relatively low percentage of Canadian mothers whose breastfeeding practices matched the current recommendations is a challenge for public health. The sharp drop in breastfeeding within a few weeks of leaving hospital suggests a lack of reinforcement in the family or community. A number of studies have called on health care professionals to provide consistent, clear information about breastfeeding and support throughout pregnancy, childbirth and the postpartum period.[11,26-30] According to the Canadian Expert Advisory Panel on Exclusive Breastfeeding, implementation of the most recent recommendations requires "the provision of adequate social support to breastfeeding women by increasing community, public health, hospital and workplace efforts."[6]

The striking provincial disparities in breastfeeding rates are noteworthy. Whether they reflect differences in the provision of hospital and public health services, or the interplay of complex cultural, social, psychological, and economic factors is beyond the scope of this analysis. Closer scrutiny of provincial differences might provide insight into the role of health professionals, media and social networks on both the decision to attempt to breastfeed and the decision to stop. ●

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Appendix

Table A
Selected indicators of breastfeeding, women who had a baby in previous five years, Canada excluding territories, 2003

	Sample size	Estimated population	
		'000	%
Total	7,266	1,400	100
Did not breastfeed	1,213	212	15†
Initiated breastfeeding	6,034	1,183	85†
Still breastfeeding	910	194	16‡
Finished breastfeeding	5,124	989	84‡
Breastfed 6+ months	2,355	467	47§
Breastfed exclusively 6+ months	1,139	226	17††

Data source: 2003 Canadian Community Health Survey
† The denominator is women who had a baby.
‡ The denominator is women who initiated breastfeeding.
§ The denominator is women who had completed breastfeeding.
†† The denominator is women who had a baby. Women who were still breastfeeding and who had not added liquid or solid food to the baby's diet were excluded.

Table B
Selected characteristics of women who had a baby in previous five years, Canada excluding territories, 2003

	Sample size	Estimated population	
		'000	%
Total	7,266	1,400	100
Age			
<25	919	152	10.9
25-29	1,903	341	24.4
30-34	2,397	454	32.5
35+	2,047	451	32.3
Marital status			
Married	5,800	1,213	86.7
Not married	1,461	185	13.2
Missing	5	1	0.1
Education			
Less than secondary graduation	863	139	9.9
Secondary graduation	1,440	273	19.5
Some postsecondary	553	104	7.4
Postsecondary graduation	4,370	869	62.1
Missing	40	15	1.0
Household income			
Lowest	1,065	152	10.8
Lower-middle	1,610	298	21.3
Upper-middle	2,357	453	32.4
Highest	1,728	384	27.4
Missing	506	113	8.1
Immigrant status			
Immigrant	995	315	22.5
Non-immigrant	6,257	1,072	76.6
Missing	54	13	0.9
Residence			
Rural	1,773	247	17.7
Urban	5,493	1,153	82.4
Province			
Newfoundland and Labrador	234	23	1.6
Prince Edward Island	144	7	0.5
Nova Scotia	262	45	3.2
New Brunswick	241	33	2.4
Quebec	1,337	294	21.0
Ontario	2,437	560	40.0
Manitoba	467	53	3.8
Saskatchewan	476	47	3.4
Alberta	879	166	11.9
British Columbia	789	171	12.2

Data source: 2003 Canadian Community Health Survey


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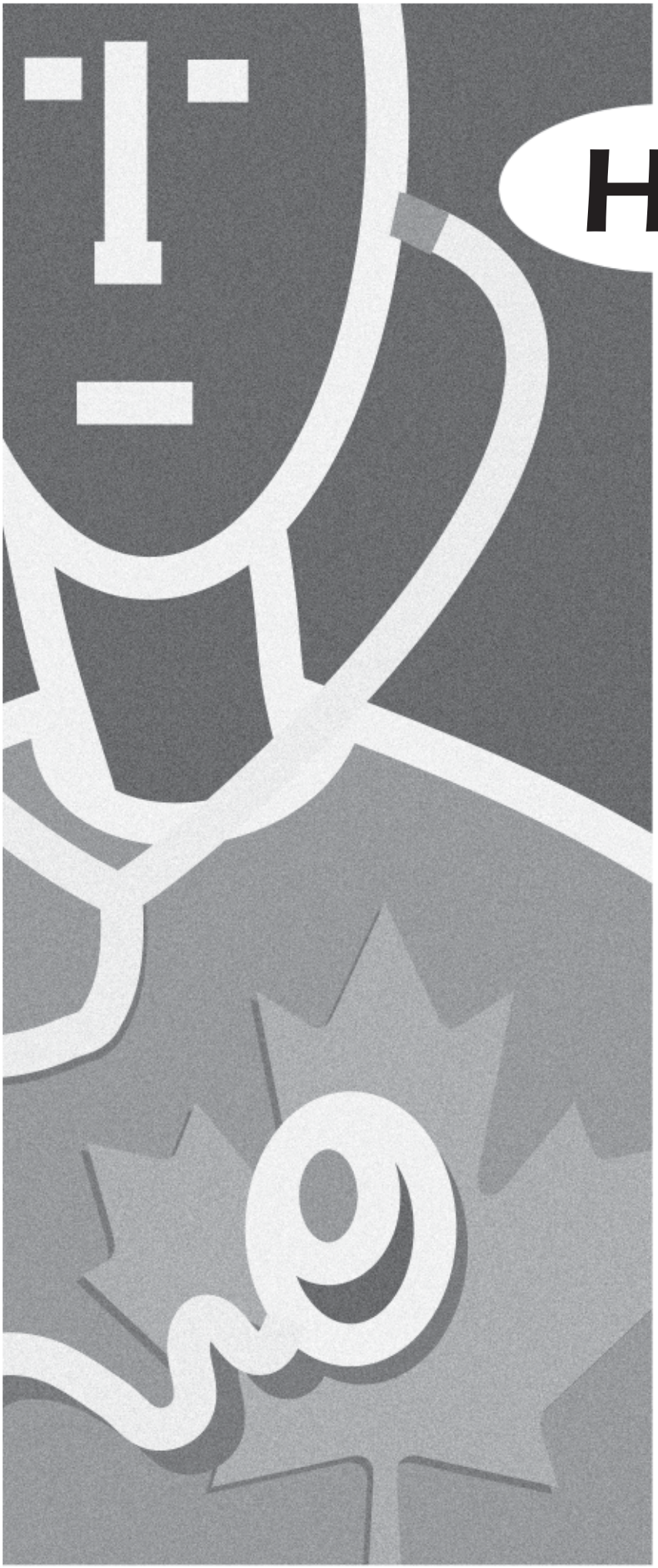

Health Matters

Short, descriptive reports, presenting recent information from surveys and administrative databases


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PASSENGERS OF INTOXICATED DRIVERS

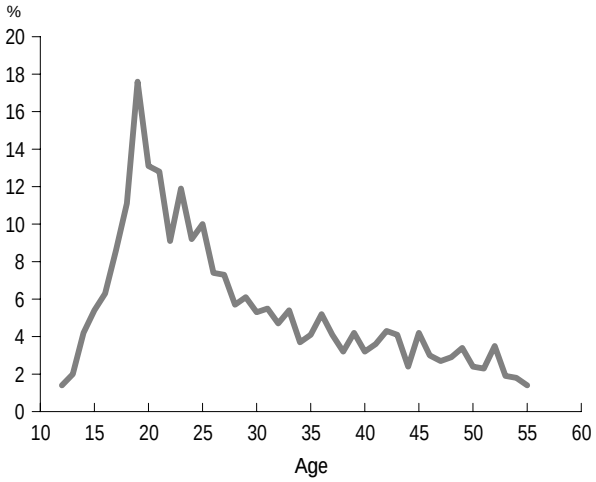
by Claudio E. Pérez

According to data from the Canadian Community Health Survey (CCHS), in 2000/01, a relatively small proportion of Canadians reported being in a vehicle driven by someone who had had too much to drink. Just over 4% of people aged 12 or older in the six provinces for which data are available (Prince Edward Island, Nova Scotia, Québec, Ontario, Alberta and British Columbia) said they had been passengers of drivers whom they perceived as having had too much to drink. A slight majority of these passengers were male (57%) (data not shown). The likelihood of riding with an intoxicated driver was highest at ages 15 to 29, with the proportion peaking at 18% for respondents aged 19.

Reporting provinces

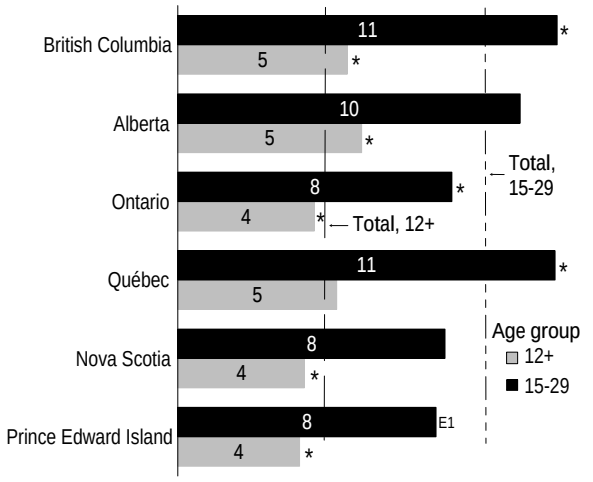
In British Columbia and Alberta, the percentages of people aged 12 or older who had been passengers of a drunk driver were significantly higher than the average of the six reporting provinces. Also, British Columbia and Québec stood out with higher-than-average proportions of young people aged 15 to 29 who had been in vehicles with a drunk driver. The result for British Columbia contrasts with other findings for the province, which generally has a healthy and low-risk profile. For example, smoking prevalence in BC is the lowest in the country, and physical activity rates are among the highest (data not shown).

Percentage of people who had been passengers of drunk driver in past year—by age



Data source: 2000/01 Canadian Community Health Survey (Prince Edward Island, Nova Scotia, Québec, Ontario, Alberta, British Columbia)

Percentage of people who had been passengers of drunk driver in past year—by province and age group



Data source: 2000/01 Canadian Community Health Survey (Prince Edward Island, Nova Scotia, Québec, Ontario, Alberta, British Columbia)
** Significantly different from average of six reporting provinces*
E1 Coefficient of variation between 16.6% and 25.0%

Risky behaviours

Getting into a car with a driver who seems to be drunk can certainly be risky. Young people who did so were also likely to engage in other behaviours that carry health-related risks such as smoking, heavy drinking, or sex with multiple partners. People aged 15 to 29 were four times as likely (17% versus 4%) to drink an average of at least three alcoholic beverages a day if they reported having been a passenger of a drunk driver. They were also more likely to be smokers, and to have had four or more sexual partners in the last year.

The Questions

Information from the "drinking and driving module" of the 2000/01 Canadian Community Health Survey (CCHS) was used for this analysis. This module, which was optional, was chosen by all the health regions in the following provinces: Prince Edward Island, Nova Scotia, Québec, Ontario, Alberta and British Columbia. To identify *passengers of a drunk driver*, respondents in these provinces were asked, "In the past 12 months, have you been a passenger with a driver who had too much to drink?"

Several aspects of *risky behaviour* are available from the CCHS. All respondents were asked about drinking and smoking. Those who said they smoked cigarettes daily or occasionally were considered *smokers*. If respondents answered "yes" to "During the past 12 months, have you had a drink of beer, wine, liquor or any other alcoholic beverage?", average *daily alcohol consumption* was established. Those who said they had consumed alcohol were asked, "How often in the past 12 months have you had five or more drinks on one occasion?"

Respondents who reported consuming five or more drinks per occasion at least once a month during the past year were asked several other questions to determine *alcohol dependence*. "In the past 12 months, . . .

- have you ever been drunk or hung-over while at work or school or while taking care of children?"
- were you ever in a situation while drunk or hung-over that increased your chances of getting hurt? (For example, driving a boat, using guns, crossing against traffic, or during sports)"
- have you had any emotional or psychological problems because of alcohol use, such as feeling uninterested in things, depressed or suspicious of people?"
- have you had such a strong desire or urge to drink alcohol that you could not resist it or could not think of anything else?"
- have you had a period of a month or more when you spent a great deal of time getting drunk or being hung-over?"
- did you ever drink much more or for a longer period of time than you intended?"
- did you ever find that you had to drink more alcohol than usual to get the same effect or that the same amount of alcohol had less effect on you than usual?"

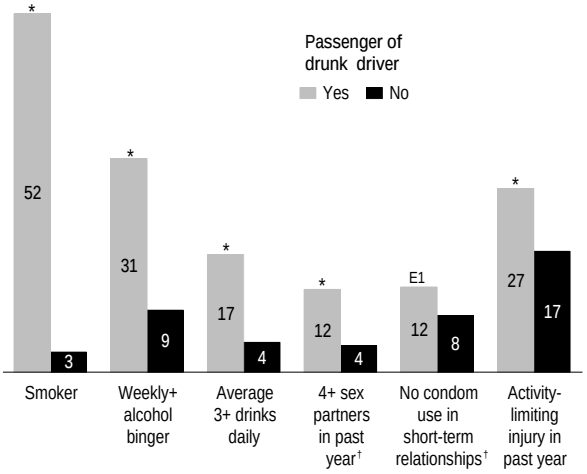
Respondents aged 15 to 59 in Prince Edward Island, Ontario and Alberta were asked about *sexual behaviour*, beginning with "Have you ever had sexual intercourse?" Those with more than two sexual partners in the past year were asked about the duration of the relationships and condom use. People who reported having a relationship of less than 12 months with one partner were also asked about frequency of condom use.

Respondents were asked if they had a valid driver's licence for a car, van, truck or motorcycle and, if so, if they ever go out with friends/family intending to consume alcohol themselves. They were then asked about arrangements for a *designated driver*.

Alcohol dependence

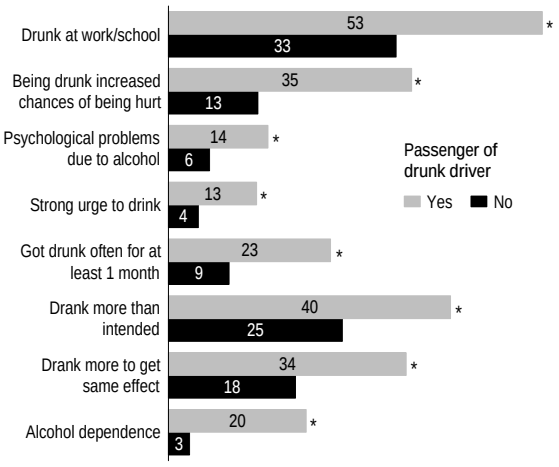
Over half (53%) of 15- to 19-year-olds who had been in a vehicle with an intoxicated driver had been

Percentage of 15- to 29-year-olds reporting selected behaviours



Data source: 2000/01 Canadian Community Health Survey (Prince Edward Island, Nova Scotia, Québec, Ontario, Alberta, British Columbia)
† Asked only in Prince Edward Island, Ontario, Alberta
** Significantly different from estimate for "no" category ($p < 0.05$)*
E1 Coefficient of variation between 16.6% and 25.0%

Percentage of 15- to 29-year-olds reporting selected alcohol-related behaviours and experiences



Data source: 2000/01 Canadian Community Health Survey (Prince Edward Island, Nova Scotia, Ontario, Alberta, British Columbia)
** Significantly different from estimate for "no" category ($p < 0.05$)*

drunk or hung-over themselves while at work or school, and 40% had, on occasion, consumed more alcohol than they had originally intended. This compares with 33% and 25%, respectively, among those who did not report being in a vehicle with an intoxicated driver in the past year. The proportions indicating a probable alcohol dependence were 20% among those who had driven with a drunk driver and 3% among those who had not.

Designated drivers

Close to two-thirds (65%) of licensed drivers aged 16 or older reported "always" arranging for a designated driver when going out with family or friends to a place where alcohol would be consumed. Another 12% said "most of the time," and 3%,"sometimes." However, 19% said they "rarely" or "never" have a designated driver.

At ages 16 to 29, 67% claimed to "always" arrange for a designated driver. This may partly reflect the obligation that some jurisdictions have placed on young drivers; for example, for a few years after obtaining a driver's licence, they must have no more than a zero blood alcohol content while driving.[1]

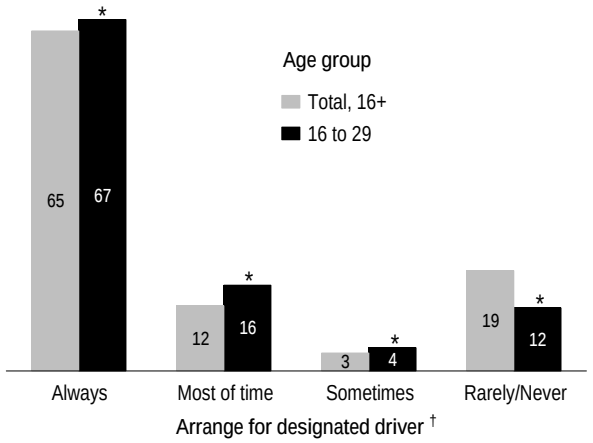
Data source

The data are from the first cycle of the Canadian Community Health Survey (CCHS), conducted from September 2000 through October 2001.[2] All estimates are based on the most recent data available on passengers of drivers whom they perceived as having had too much to drink.

The CCHS is a general health survey that covers the household population aged 12 or older. It does not include residents of Indian reserves, Canadian Forces bases, and some remote areas. The overall response rate for cycle 1 was 85%; the total sample size was 131,535.

Variance on estimates, and on differences between estimates, was calculated using the bootstrap technique, which accounts for the complex sampling design of the survey.[3,4]

Percentage of people arranging for designated driver



Data source: 2000/01 Canadian Community Health Survey (data available for Prince Edward Island, Nova Scotia, Québec, Ontario, Alberta, British Columbia)
† Population who had driver's licence and reported going out with plans to consume alcohol
** Significantly different from estimate for total ($p < 0.05$)*

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USE OF ALTERNATIVE HEALTH CARE

by Jungwee Park

In 2003, 20% of Canadians aged 12 or older—5.4 million people—reported using some type of alternative or complementary health care (Table A). This estimate is based on data from the Canadian Community Health Survey (CCHS), which included questions about consultations with "alternative health care providers" and chiropractors in the 12 months before the survey interview. The 2003 figure confirms a trend toward increased use of complementary/alternative care.[1,2] In 1994/95, about 15% of Canadians aged 18 or older had used alternative care.[1]

Many consulted chiropractors

Consultations with chiropractors were most common (11%), followed by massage therapists (8%), then acupuncturists (2%) and homeopaths or naturopaths (2%).

Regardless of the type of alternative treatment, women were more likely than men to report having had a consultation in the past year. For example, the proportion of women who said they had used the services of a massage therapist was twice that for men (10% versus 5%).

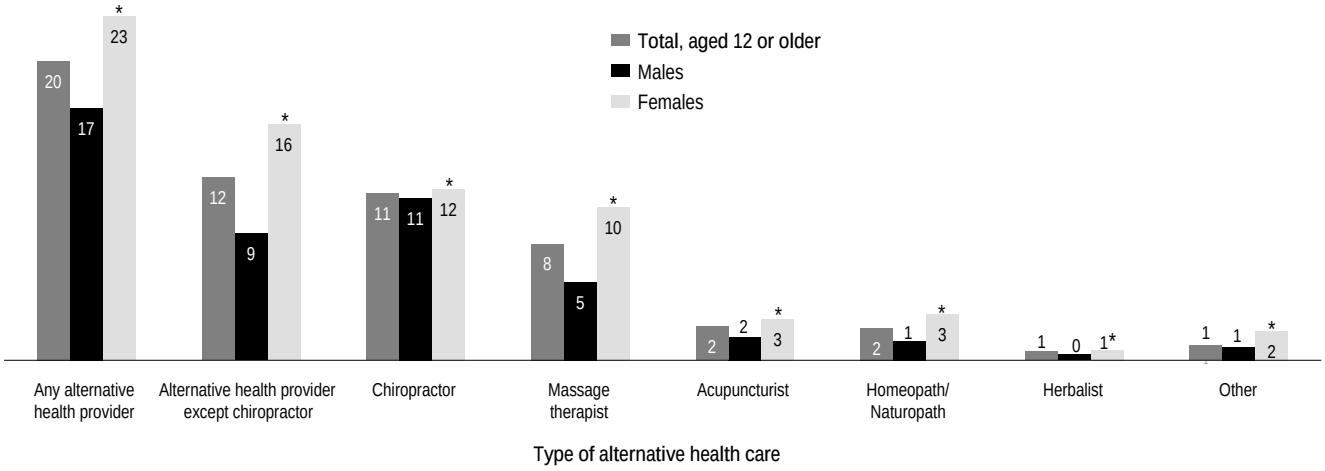
The age groups most likely to use alternative health care spanned mid-life, ranging from 25 to 64. The young (aged 12 to 24) and seniors (65 or older) were less likely to have used such care.

Use higher in western provinces

The use of alternative health care was high in British Columbia, Alberta, Saskatchewan and Manitoba, compared with the national level, and low in the Atlantic provinces and Nunavut. In the west, between 13% and 18% of residents reported consultations with chiropractors, compared with less than 5% in the Atlantic.

Provincial differences partly reflect variations in health benefits available in the provinces, as well as different regulatory policies.[3] For example, Manitoba Health covers up to 12 chiropractor visits per year,[4] while chiropractors are not listed among insured services in the Newfoundland and Labrador Medical Care Plan.[5]

Percentage of people reporting alternative health care consultations in past year, by sex



Data source: 2003 Canadian Community Health Survey
**Significantly higher than estimate for males ($p < 0.05$)*

Coverage for alternative health care services is not consistent across Canada,[3] and payment rates change regularly,[6] resulting in out-of-pocket expenses for many. Recently, some private insurers have begun to offer limited coverage for such services.[6] Thus, people with health insurance coverage beyond that provided by their provincial medical plans may be more inclined to use alternative health care. Specific information is not available from the CCHS, but other research has found extended coverage to be most common in the 35-to-44 and 45-to-64 age groups, in Saskatchewan and Manitoba, and among people with higher incomes.[7]

Related to income and education

Because the costs of many types of alternative health care are, at most, only partially covered by provincial programs, it is not surprising that the use of such services rose with income. While 26% of individuals in the highest household income group had used alternative care in 2003, only 13% of those in the lowest income group had done so.

Paralleling income, individuals with the highest education tend to visit alternative practitioners more often. More than a quarter (26%) of postsecondary graduates used some kind of alternative or complementary health care in 2003, compared with 16% of people with less than secondary graduation.

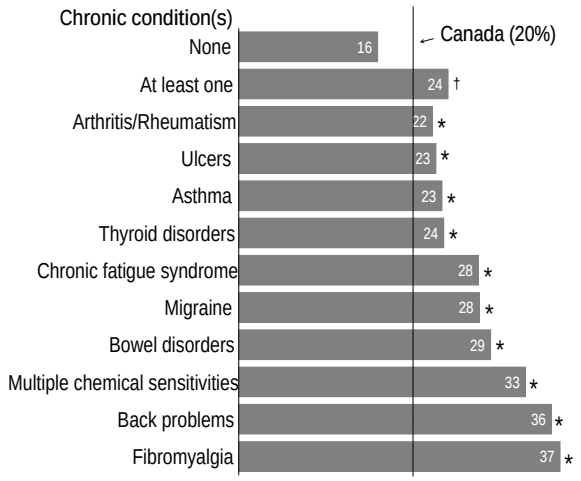
The Questions

The Canadian Community Health Survey asked: "In the past 12 months, have you seen or talked to an alternative health care provider such as an acupuncturist, homeopath or massage therapist about your physical, emotional or mental health?" Those who answered "yes" were asked what type of practitioner had been consulted or visited. Chiropractors were not listed among the alternative health care providers. Information about them was sought in another question: "In the past 12 months, how many times have you seen or talked on the telephone, about your physical, emotional, or mental health with a chiropractor?"

Chronic conditions, higher use

In 2003, about one-quarter of people who reported having at least one diagnosed chronic condition had consulted an alternative practitioner. This contrasts with 16% of people who did not report any chronic conditions covered by the survey. More than 30% of individuals with fibromyalgia, back problems or multiple chemical sensitivities had had alternative care consultations. Use was also relatively high among those with bowel disorders, migraine, chronic fatigue syndrome, thyroid disorders, asthma, ulcers, or arthritis or rheumatism.

Percentage of people reporting alternative health care consultations in past year, by presence of selected chronic conditions



Data source: 2003 Canadian Community Health Survey
** Significantly higher than estimate for Canada ($p < 0.05$)*
† Significantly higher than estimate for people with no chronic conditions ($p < 0.05$)

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Data source

The estimates of alternative health care use are based on data from Cycle 2.1 of the Canadian Community Health Survey (CCHS), conducted in 2003. The survey collected information from 135,573 individuals aged 12 or older. The target population was household residents aged 12 or older in all provinces and territories, but excluded Indian reserves, full-time members of the Canadian Armed Forces, health care institutions and some remote areas.

To account for survey design effects, standard errors and coefficients of variation on all estimates and differences between estimates were estimated using the bootstrap techniques.[8,9] A significance level of $p < 0.05$ was applied in all cases.

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Table A

Percentage of people aged 12 or older reporting alternative health care consultations in past year, by selected characteristics, Canada, 2003

	Any alternative care		Alternative care (except chiropractors)		Chiro-practor		Massage therapist		Acu-puncturist		Homeopath/ Naturopath		Herbalist		Other	
	'000	%	'000	%	'000	%	'000	%	'000	%	'000	%	'000	%	'000	%
Total	5,373	20.3	3,288	12.4	3,002	11.3	2,093	7.9	597	2.3	579	2.2	148	0.6	386	1.5
Sex																
Males	2,232	17.1	1,127	8.6	1,438	11.0	696	5.3	215	1.6	167	1.3	50	0.4	119	0.9
Females	3,141	23.3†	2,162	16.0†	1,564	11.6†	1,397	10.4†	382	2.8†	412	3.1†	98	0.7†	267	2.0†
Age group																
12-24	773	14.1*	415	7.6*	456	8.3*	269	4.9*	59	1.1*	76	1.4*	15E1	0.3*E1	40	0.7*
25-44	2,373	25.2*	1,561	16.5*	1,271	13.5*	1,091	11.6*	230	2.4*	250	2.7*	64	0.7*	177	1.9*
45-64	1,744	22.2*	1,082	13.8*	967	12.3*	633	8.1	238	3.0*	210	2.7*	54	0.7*	145	1.9*
65+	483	12.8*	230	6.1*	309	8.2*	99	2.6*	70	1.8*	43	1.1*	15	0.4*	24	0.6*
Household income																
Lowest	266	13.2*	159	7.9*	145	7.2*	77	3.8*	38	1.9*	32	1.6*	17E1	0.9*E1	22	1.1*
Lower-middle	704	16.1*	396	9.1*	414	9.5*	206	4.7*	82	1.9*	78	1.8*	32	0.7	68	1.6
Upper-middle	1,604	21.1	972	12.8	902	11.9	605	8.0*	183	2.4	176	2.3	40	0.5	114	1.5
Highest	2,072	25.5*	1,350	16.6*	1,111	13.7*	955	11.8*	202	2.5*	221	2.7*	39	0.5*	139	1.7
Education‡																
Less than secondary graduation	880	16.4*	402	8.5*	578	10.0*	213	4.5*	90	2.1*	73	1.4*	23E2	0.4*E2	44	1.0*
Secondary graduation	917	21.4*	517	12.4*	558	13.0	331	8.0*	90	2.2*	86	2.0*	27	0.7	55	1.4*
Some postsecondary	420	24.9	250	14.7	245	15.1*	162	9.5	48	2.6	40	2.2*	13E1	1.0E1	28	1.9
Postsecondary graduation	3,059	26.4*	2,058	18.0*	1,571	13.5*	1,350	12.0*	360	3.1*	372	3.3*	82	0.7	244	2.2*
Province/Territory																
Newfoundland and Labrador	36	7.8*	22	4.8*	20	4.4*	16	3.4*	4E1	0.9*E1	3E1	0.7*E1	F	F	2E2	0.4*E2
Prince Edward Island	11	9.6*	8	6.9*	5	4.3*	4	3.1*	4E1	3.2E1	2E2	1.6E2	F	F	F	F
Nova Scotia	80	10.0*	59	7.4*	31	3.9*	37	4.6*	17E1	2.1E1	9E1	1.1*E1	F	F	4E1	0.6*E1
New Brunswick	73	11.4*	52	8.2*	30	4.7*	32	5.1*	14	2.2	8E1	1.2*E1	F	F	5E1	0.8*E1
Québec	1,240	19.5*	824	13.0*	560	8.8*	473	7.4*	156	2.4	159	2.5*	14E1	0.2*E1	167	2.6*
Ontario	1,971	19.2*	1,174	11.4*	1,154	11.2	761	7.4*	192	1.9*	230	2.2	52	0.5	96	0.9*
Manitoba	234	25.7*	115	12.6	160	17.5*	88	9.7*	14	1.6*	12	1.3*	6E1	0.7E1	7E1	0.8*E1
Saskatchewan	207	26.0*	130	16.3*	122	15.3*	101	12.6*	18	2.3	8	1.0*	6E1	0.7E1	9	1.1*
Alberta	712	27.5*	415	16.0*	461	17.8*	306	11.8*	64	2.5	50	1.9	25	1.0*	29	1.1*
British Columbia	796	22.6*	479	13.6*	454	12.9*	269	7.7	112	3.2*	97	2.8*	42	1.2*	65	1.8*
Yukon	6	22.9	4	16.9*	2	8.0*	2E1	8.5E1	1E1	4.7*E1	1E2	2.3E2	1E1	2.6*E1	1E1	4.0*E1
Northwest Territories	6	17.9	4	13.1	3	9.0	3	9.2	1E2	1.6E2	F	F	F	F	F	F
Nunavut	1E1	3.9*E1	0	3.3*	F	F	0E1	2.4*E1	F	F	F	F	F	F	F	F

Data source: 2003 Canadian Community Health Survey
Note : Because of rounding to nearest thousand, some population estimates are shown as 0.
† Significantly higher than estimate for males (p < 0.05)
** Significantly different from estimate for total (p < 0.05)*
‡ For people aged 25 to 64
E1 Coefficient of variation 16.6% to 25.0%
E2 Coefficient of variation 25.1% to 33.3%
F Coefficient of variation greater than 33.3% or sample size less than 10

ASTHMA

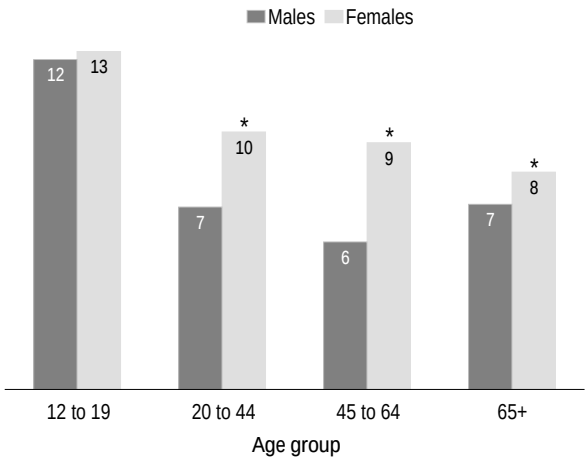
by Yue Chen, Helen Johansen, Satha Thillaiampalam and Christie Sambell

Asthma is a chronic disease, the symptoms of which include cough, shortness of breath, chest tightness and wheeze. Symptoms and attacks (episodes of more severe shortness of breath) usually occur after viral respiratory infections, exercise, or exposure to allergens, irritant fumes or gases.[1] These exposures cause inflammation of the airway wall and abnormal narrowing of the airways, which lead to asthma symptoms. Possible risk factors include a family history of allergies, low birth weight, respiratory distress syndrome, frequent respiratory infections, high exposure to airborne allergens in early childhood, and exposure to tobacco smoke.[2,3] Among adults, asthma may result from workplace exposure or concurrent exposure to infectious agents, allergens and pollution.[2]

Prevalence

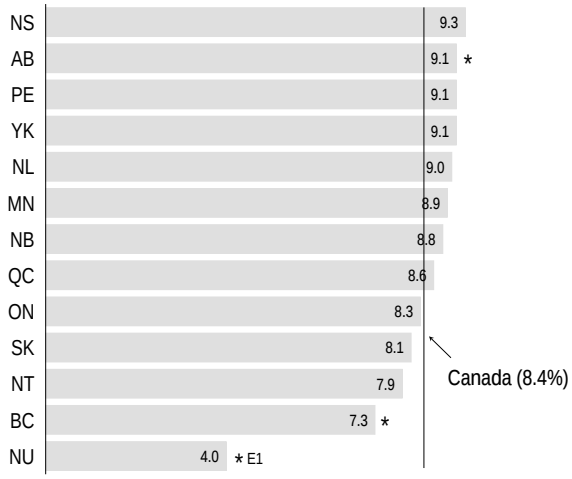
According to the 2003 Canadian Community Health Survey, 8.4% of the population aged 12 or older—9.6% of females and 7.1% of males—reported having been diagnosed with asthma (Table A). This represents over 2 million people. Prevalence was similar for boys and girls during the teen years (12.2% and 12.6%, respectively). At older ages, rates decreased for both sexes, and women were more likely than men to report having asthma. While children and teens have the highest prevalence of asthma, the number of people affected is actually higher among adults.

Percentage of population† with asthma



Data source: 2003 Canadian Community Health Survey
† Aged 12 or older
** Significantly different from estimate for males (p < 0.05)*

Percentage of population† with asthma, by province/territory



Data source: 2003 Canadian Community Health Survey
† Aged 12 or older
** Significantly different from estimate for Canada*
E1 Coefficient of variation between 16.6% and 25.0%

Few provincial/territorial differences

In 2003, the prevalence of asthma varied little by province or territory. Only Alberta's prevalence significantly exceeded the national figure. Low rates were reported by residents of British Columbia and Nunavut.

Quality of life

An asthma attack, with its accompanying feelings of suffocation, breathlessness and loss of control, is frightening and potentially life-threatening. Of people who reported having asthma in 2003, 48% of males and 60% of females also reported experiencing

asthma symptoms or asthma attacks in the past 12 months. The likelihood of having had an attack was relatively low among teenagers and the elderly. By contrast, the likelihood was significantly elevated for people with asthma in the 20-to-44 age range, and for women with asthma who were aged 45 to 64.

Most people with asthma had taken medication to control the condition in the previous 12 months: 68% of males and 78% of females.

Asthma can affect quality of life, as it often results in time away from school, work, or other activities. An analysis of 1996/97 data showed that 35% of people with asthma reported having been restricted in their daily activities in the previous year: 22% for one to five days, and 13% for more than five days.[4] Over half of people with asthma had frequent symptoms, including wheezing, shortness of breath or fatigue, either daily (14%) or several times a month (37%).

Percentage of population with asthma who had symptoms or attacks in past 12 months

	Total	Males	Females
	%	%	%
Total	54.9	48.2	59.8†
12-19	42.7*	37.1*	48.5*†
20-44	61.1*	56.0*	64.7*†
45-64	57.9*	47.2	64.1*†
65+	46.2*	42.9*	48.5*

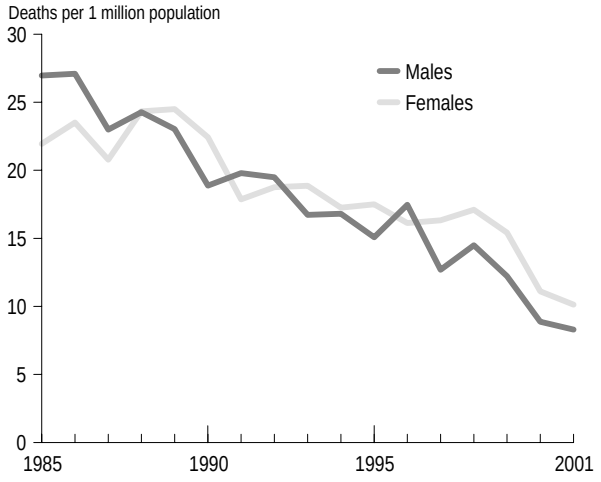
Data source: 2003 Canadian Community Health Survey
** Significantly different from estimate for column total ($p < 0.05$)*
† Significantly different from estimate for males ($p < 0.05$)

Hospital admissions and readmissions

In the three-year period between April 1998 and March 2001, close to 80,000 people were admitted to hospital for asthma. Hospitalization rates were highest among young children and seniors. In childhood, boys were at greater risk of hospitalization for asthma than were girls. This sex difference diminished during adolescence, and among adults, women were at greater risk. The disparity in hospitalization rates between men and women was greatest before age 50 and gradually narrowed among the elderly.

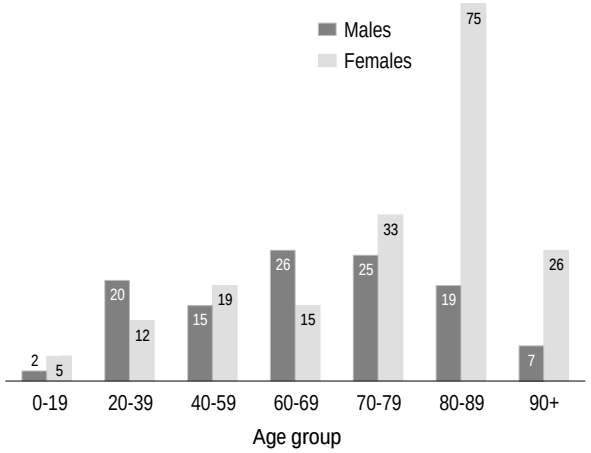
Because asthma is a chronic disease, readmissions to hospital for the condition are relatively common. Among the asthma patients admitted between April 1, 1998 and and March 31, 2001, those younger than age 1 were most likely to have had more than one hospital stay during the period. Readmission rates for women were also high in the 15-to-19 and 45-to-49 age groups, while for men, readmission rates tended to rise from their thirties through their fifties. Similar patterns were found in analyses of data for the 1994/95 to 1996/97 period.[5,6]

Age-standardized asthma mortality rates, 1985 to 2001



Data source: Canadian Mortality Database

Number of asthma deaths, 2001



Data source: Canadian Mortality Database

Deaths uncommon

Few people die of asthma, and for both sexes, age-standardized asthma mortality rates have declined sharply since 1985. In 2001, a total of 299 deaths were attributed to asthma. After age 70, considerably more women than men die of the disease, a reflection of the higher asthma mortality rate among older women and the fact that at older ages, women outnumber men.

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The Questions

Estimates of the prevalence of *asthma* among Canadians aged 12 or older are based on responses to questions in the 2003 Canadian Community Health Survey. Respondents were asked about certain chronic health conditions that had lasted or were expected to last six months or more and that had been diagnosed by a health professional. If they answered "yes" to "Do you have asthma?", they were then asked:

- "Have you had any asthma symptoms or asthma attacks in the past 12 months?"
- "In the past 12 months, have you taken any medicine for asthma such as inhalers, nebulizers, pills, liquids or injections?"

Data sources

Canadian Community Health Survey, Cycle 2.1

The estimates of asthma prevalence are based on data from the second cycle of the Canadian Community Health Survey (CCHS), conducted from January through December 2003. The CCHS is a general health survey that covers the population aged 12 or older who were living in private households. It does not include residents of Indian reserves, Canadian Forces bases, and some remote areas. The overall response rate for the second cycle was 80.6%; the total sample size was 135,573.

Estimates were weighted to represent the 2000 Canadian population aged 12 or older. Variance on estimates and on differences between estimates, was calculated using the bootstrap technique which accounts for the complex sampling design of the survey.[7,8]

Health Person-oriented Information Database

Information on hospitalization is based on hospital records for each province for the fiscal years 1998/99 to 2000/01, which were linked using patient identification numbers. The information is based on fiscal years beginning on April 1. The cause of hospitalization was coded and tabulated according to the *International Classification of Diseases, Ninth Revision* (ICD-9).[9] An asthma hospitalization was defined as an admission for which the first diagnosis was coded as asthma (ICD-9 code: 493).

Canadian Mortality Database

Information on deaths attributed to asthma was obtained from the Canadian Mortality Database. This data source, compiled from information provided by the vital statistics registrar in each province and territory, is maintained by Statistics Canada. The ICD-10 codes used for asthma in 2000/2001 were J45 to J46.

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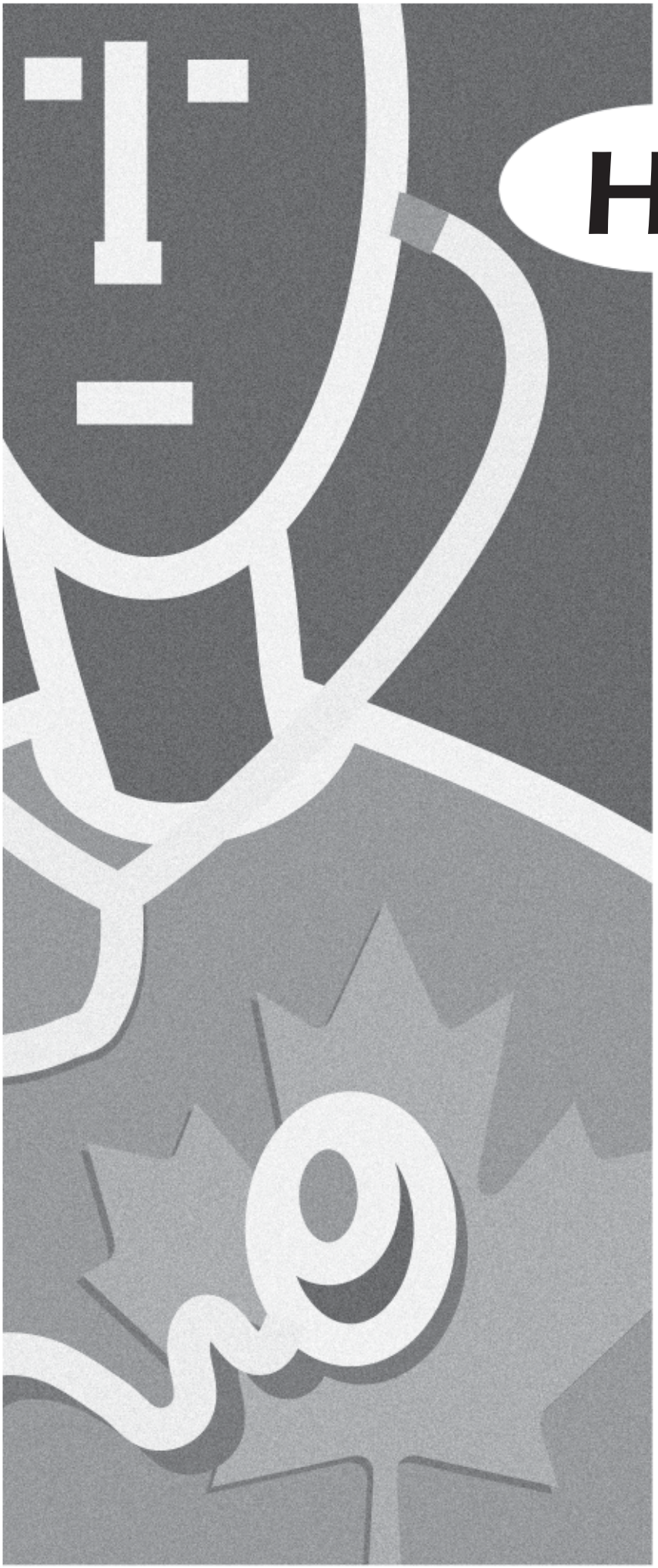
Table A

Prevalence of asthma, by sex and province, household population aged 12 or older, Canada, 2003

	Total		Males		Females	
	'000	%	'000	%	'000	%
Total	2,227	8.4	933	7.1	1,294	9.6†
Age group						
12-19	411.7	12.4*	208.0	12.2*	203.7	12.6*
20-44	950.3	8.2	395.4	6.8*	554.8	9.6†
45-64	578.0	7.4*	214.5	5.5*	363.4	9.2†
65+	286.8	7.6*	114.9	6.9	172.0	8.1*†
Province/Territory						
Newfoundland and Labrador	41.5	9.0	20.1	8.9	21.4	9.2
Prince Edward Island	10.9	9.1	4.4	7.6	6.5	10.6
Nova Scotia	73.9	9.3	30.1	7.8	43.8	10.7†
New Brunswick	56.2	8.8	22.6	7.2	33.6	10.3†
Québec	544.7	8.6	228.0	7.3	316.8	9.8†
Ontario	855.8	8.3	345.4	6.8	510.3	9.8†
Manitoba	81.2	8.9	35.2	7.8	46.0	9.9
Saskatchewan	64.4	8.1	27.1	6.9	37.2	9.2†
Alberta	236.6	9.1*	104.0	8.0	132.6	10.3†
British Columbia	256.0	7.3*	113.5	6.6	142.5	8.0*†
Yukon	2.3	9.1	0.8E1	6.8E1	1.4	11.4†
Northwest Territories	2.7	7.9	1.3E1	7.4E1	1.4E1	8.4E1
Nunavut	0.6E1	4.0*E1	F	F	0.4E1	5.9*E1

Data source: 2003 Canadian Community Health Survey
** Significantly different from estimate for column total ($p < 0.05$)*
† Significantly different from estimate for males ($p < 0.05$)
E1 Coefficient of variation 16.6 to 25.0%
F Coefficient of variation greater than 33.3%



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