Seniors' health care use

- Over the course of a year, nearly 90% of seniors consult a general practitioner or family doctor, 14% are hospitalized, and 15% receive home care. As well, 92% of seniors report taking at least one type of medication in the past month.

- The number of chronic conditions is the strongest determinant of the frequency with which seniors use health care.

- Once health status and factors such as age and health behaviours are taken into account, differences in education and source of income generally do not affect how often seniors use health care.

Abstract

Objectives
This article describes the use of health care by Canada's senior population: consultations with selected health care providers, medication use, hospitalization and home care.

Data sources
Data are from the 2003 Canadian Community Health Survey and the 2002/03 Hospital Morbidity Database.

Analytical techniques
Cross-tabulations were used to estimate the proportion of seniors who consulted health care professionals, took medications, were hospitalized, and used home care. Linear and multivariate logistic regression models were used to examine associations between health and the number of physician consultations in the past year, the number of medications taken in the past month, and hospitalization and home care use in the past year.

Main results
In 2003, nearly 90% of seniors reported that they had consulted a general practitioner or family doctor in the past year, 92% reported taking at least one type of medication in the past month, 14% had been hospitalized in the past year and 15% had received home care in the past year. Chronic conditions, poor health and severe injury were strongly associated with health care use. In multivariate analysis, socio-economic status was generally not related to seniors' use of health care services.

Keywords
physician consultations, medication use, hospitalization, home care

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While seniors today are generally healthier than those of previous generations, they remain more likely than younger people to have chronic conditions and to suffer from poor health.[1] Not surprisingly then, seniors also require and use more health care services.[2-4]

An extensive body of literature focuses on the determinants of health services use. Early research was based on the hypothesis that using such services depends on a combination of the need for care, an individual's predisposition to seek care, and extrinsic factors that facilitate or impede use.[5-13] More recent studies have found that seniors' use of health care is correlated most strongly with illness;[3,14-19] results of research on the contribution and relative importance of other variables such as socio-economic status and health behaviour have been inconsistent.[7,9,14,15,20-25]

Methods

Data sources

The data are from Statistics Canada's 2003 Canadian Community Health Survey (CCHS) cycle 2.1 and the 2002/03 Hospital Morbidity Database (HMD).

The CCHS covers the household population aged 12 or older in all provinces and territories, except residents of institutions, regular members of the Canadian Armed Forces, and residents of Indian reserves, Canadian Forces bases and some remote areas. The overall response rate was 80.6%; the total sample was 135,573. Data collection began in January 2003 and ended in December of that year. Most interviews were conducted by telephone. A description of the CCHS methodology is available in a published report.[26]

The CCHS sample used for most of the analyses in this article consists of 11,441 men and 17,231 women aged 65 or older. Comparisons with people aged 12 to 64 are based on data collected from 50,759 males and 56,142 females.

Selection of control variables was guided by the literature and the availability of data in the CCHS. The variables selected for the multivariate analyses of factors related to consultations with family doctors/general practitioners (GPs), use of medications, hospitalization and home care included number of chronic illnesses, self-perceived health, activity-limiting injury, age, education, main source of income, body mass index, leisure-time physical activity, smoking, rural/urban residence, and province/territory of residence (see *Definitions*). Not all independent variables were used in every model.

In 2003, information about medication use was collected as a subsample module of the CCHS, meaning that it was administered to a randomly selected subset of the 135,753 CCHS respondents. British Columbia opted to have this module administered to all respondents in that province. A total of 10,353 respondents aged 65 or older were used in the analyses of medication use.

Information about the number of discharges from acute care hospitals in 2002/03, the number of days stayed, and average length of stay is from the Hospital Morbidity Database. The HMD captures administrative, clinical and demographic information about hospital in-patient separations (discharges and deaths) from all acute care and selected chronic care and rehabilitation facilities across Canada, but has only limited information about the personal characteristics and health history of patients. In fiscal year 2002/03, there were 3,099,250 acute care hospital discharge records pertaining to hospitalizations occurring in the patient's province of residence; one-third of them (1,014,666) were hospitalizations of seniors. Less than 2% of HMD records were excluded because they pertained to hospitalizations occurring in non-acute care hospitals and/or outside the patient's province of residence. More detail about the HMD is available in a previously published report.[27]

Analytical techniques

Weighted frequencies and cross-tabulations were used to estimate the proportion of people who: reported that they consulted (in person or over the telephone) selected types of health care providers; had a regular medical doctor; took medications; were hospitalized; and received home care. Averages were calculated for the number of consultations with selected health care providers, medications used, and lengths of hospital stays.

Multivariate linear regression models for each sex were used to assess associations between health and the log number of consultations with family doctors/GPs in the past year and the log number of medications taken in the past month, while controlling for socio-demographic factors and health-related behaviours. The exp(B) is the inverse of the natural log and is the value described in the analysis. The log transformation was done to correct the non-normal distribution.[28] Also, standardized regression coefficients (beta) were used to determine the relative importance of the independent variables to the number of physician consultations and number of medications. Number of consultations with a family doctor/GP and number of medications were log transformed using the natural log. Multivariate logistic regression models for each sex were used to assess the associations between health and hospitalization and receipt of home care, while controlling for socio-demographic factors and health-related behaviours. Results at the $p < 0.05$ level were considered significant. To account for survey design effects, standard errors and coefficients of variation were estimated using the bootstrap technique.[29-31]

To calculate the proportion of seniors by number of hospital stays, linkable hospital discharge records were sorted by valid health insurance number and then assigned a counter to indicate the number of separations per patient. The proportion of people hospitalized was calculated by dividing the number who had been hospitalized by the number of people in the corresponding age group in the population.

Limitations

The analyses are based on cross-sectional data, which permit the observation of associations between variables at one point in time. Neither causality nor the temporal ordering of events can be inferred. The data were collected by self- or proxy-report and are subject to reporting error. To minimize this error in data on chronic conditions, respondents were asked to report only conditions that had been "diagnosed by a health professional." However, no independent source was available to verify if people who reported that they had a chronic condition actually did have the condition. Also, no information was available on the severity of the chronic conditions reported.

The CCHS does not collect information on why respondents consulted health professionals, so it is not possible, for example, to differentiate between treatments, preventive health care visits and prescription renewals.

Self-reports of medication use require accurate recall. Some respondents may have trouble remembering. Because the question asked about classes of drugs (for example, pain relievers), no information is available about the different medications within a particular drug class, and respondents were not asked to distinguish prescription from non-prescription drugs. The frequency with which drugs were taken is not known.

CCHS respondents were not asked why they had been hospitalized, or how many times.

The CCHS does not measure the frequency or duration of home care.

This article, based on data from the Canadian Community Health Survey (CCHS) and the Hospital Morbidity Database (HMD), examines indicators of health in relation to seniors' use of various types of care: consultations with health care professionals, medications, hospitalization and home care (see *Methods*). The analysis also investigates potential associations with two socio-economic variables—education and main source of income—while controlling for the effects of other risk factors that influence health care use: body mass index, physical activity and smoking. Such information is important in the context of a universal health care system that seeks to provide access to care on the basis of health, rather than financial means.

Contact with health professionals

According to the results of the CCHS, in 2003, nearly all seniors (96%) had a regular doctor (data not shown), and most—88%—had consulted a family doctor/general practitioner (GP) at least once in the past year (Table 1). This figure was significantly above that for people aged 12 to 64, 76% of whom had consulted a doctor in the same period. Seniors were also more likely than younger people to have had contact with other medical doctors, eye specialists or speech/audiology/occupational therapists. Comparatively small proportions of seniors had seen social workers/counsellors, psychologists, chiropractors or alternative health care providers.

Illness has long been shown to be the most important determinant of seniors' doctor visits.[7,9,14,16,17,32-34] And indeed, three measures of health from the CCHS—the presence of chronic conditions, a recent activity-limiting injury and self-reported health—were related to the frequency of physician consultations among community-dwelling seniors (the institutionalized population was not covered by the CCHS).

The more chronic conditions seniors had, the more consultations with a family doctor/general practitioner (GP) they reported. Seniors with at least five chronic conditions averaged more than seven consultations in the previous year; those with no chronic conditions averaged two (Table 2).

Injuries, of course, also play a role in older people's need to consult doctors.[35,36] Seniors who had sustained an activity-limiting injury averaged significantly more consultations with their family doctor/GP than did those who had not been injured.

Self-perceived health is a widely used measure that reflects not only physical health, but also an individual's general sense of well-being.[5,37-39] Seniors who perceived their health as "fair" or "poor" averaged close to seven consultations in the previous year, compared with less than three for those who rated their health as "very good" or "excellent."

At first glance, education and main source of income seemed to be related to the frequency with which seniors contacted doctors. Seniors who had not completed high school averaged more consultations than did those with at least secondary graduation, and men whose income came primarily from social assistance or Old Age Security/ Guaranteed Income Supplement reported more consultations than did senior men who relied on some other income source.

Poor health and socio-economic characteristics, however, are not independent of each other, as socio-economic status is related to health. Yet even when the effects of age, education, main source of income, weight, physical activity, smoking status and geography were taken into account in multivariate analyses, chronic conditions, injury, and self-perceived health were each independently associated with the frequency of doctor consultations (Table 2). By contrast, differences in socio-economic status were no longer statistically significant, supporting the assumption that the higher number of consultations reported by less educated or lower-income individuals reflects poorer health.

Table 1
Percentage who consulted selected health care professionals in past year, by age group and sex, household population aged 12 or older, Canada, 2003

	65+			12-64		
	Total	Men	Women	Total	Men	Women
	%	%	%	%	%	%
Family doctor/General practitioner	88.1*	86.8*	89.2*†	75.5	69.3	81.7
Other medical doctor	33.4*	34.0*	32.9	25.7	19.6	31.8
Eye specialist	56.7*	54.0*	58.8*†	36.2	32.5	39.9
Nurse	11.1	10.9*	11.3*	10.9	8.4	13.3
Chiropractor	8.2*	7.6*	8.6*†	11.8	11.5	12.2
Physiotherapist	8.3	6.9*	9.4†	8.6	7.9	9.3
Alternative health care provider	6.1*	4.2*	7.6*†	13.4	9.3	17.6
Social worker/Counsellor	2.7*	2.2*	3.1*†	5.0	4.1	5.9
Speech/Audiology/ Occupational therapist	2.6*	3.0*	2.4*	1.4	1.5	1.4
Psychologist	0.8*	0.6*E	1.0*	3.3	2.7	3.9

Data source: *2003 Canadian Community Health Survey*
Note: *Differences between sexes for people aged 12-64 not tested for statistical significance.*
† *Significantly different from estimate for men aged 65+ (p < 0.05)*
* *Significantly different from corresponding estimate for people aged 12-64 (p < 0.05)*
E *Coefficient of variation 16.6% to 33.3% (interpret with caution)*

Table 2
Average number of consultations with family doctor/general practitioner in past year and multiple linear regression coefficients relating selected characteristics to number of consultations, by sex, household population aged 65 and older, Canada, 2003

	Men					Women				
	Average number	Multiple linear regression				Average number	Multiple linear regression			
		b	exp(b)	se	beta		b	exp(b)	se	beta
Number of chronic conditions										
None†	1.9	…	…	…	…	2.2	…	…	…	…
1	3.1*	0.29*	1.34	0.030	0.16	3.0*	0.26*	1.30	0.036	0.13
2	4.5*	0.49*	1.63	0.033	0.26	4.0*	0.40*	1.49	0.037	0.21
3	5.3*	0.61*	1.84	0.036	0.28	4.9*	0.51*	1.66	0.038	0.26
4	6.7*	0.74*	2.10	0.045	0.27	5.8*	0.63*	1.87	0.041	0.28
5 or more	7.6*	0.82*	2.28	0.048	0.29	7.0*	0.71*	2.03	0.042	0.33
Activity-limiting injury										
No†	4.3	…	…	…	…	4.5	…	…	…	…
Yes	5.1*	0.12*	1.13	0.038	0.04	5.5*	0.08*	1.08	0.027	0.03
Self-perceived health										
Fair/Poor	6.8*	0.26*	1.29	0.031	0.14	6.9*	0.38*	1.46	0.025	0.21
Good	4.3*	0.16*	1.17	0.023	0.10	4.3*	0.15*	1.16	0.021	0.10
Very good/Excellent†	2.8	…	…	…	…	3.1	…	…	…	…
Age group										
65-74†	3.9	…	…	…	…	4.2	…	…	…	…
75-84	4.9*	0.08*	1.09	0.022	0.05	4.9*	0.02	1.02	0.018	0.01
85+	5.9*	0.21*	1.23	0.046	0.06	5.1*	0.04	1.04	0.032	0.01
Education										
Less than secondary graduation	4.7*	-0.01	0.99	0.021	-0.01	4.7*	-0.03	0.97	0.018	-0.02
Secondary graduation or more†	3.9	…	…	…	…	4.3	…	…	…	…
Main source of income										
Social assistance or Old Age Security and Guaranteed Income Supplement	5.1*	0.04	1.04	0.030	0.02	4.8	0.00	1.00	0.020	0.00
Other†	4.2	…	…	…	…	4.5	…	…	…	…
Body mass index (BMI)										
Underweight (< 18.5)	6.9*	0.19	1.21	0.110	0.03	4.9*	0.05	1.05	0.045	0.01
Normal (18.5-24.9)†	4.0	…	…	…	…	4.3	…	…	…	…
Overweight (25.0-29.9)	4.3	0.03	1.03	0.022	0.02	4.6*	0.03	1.03	0.021	0.02
Obese class I (30.0-34.9)	5.0*	0.10*	1.10	0.037	0.04	5.1*	0.02	1.02	0.029	0.01
Obese class II or III (≥ 35.0)	5.6*	0.12	1.13	0.068	0.02	5.8*	0.06	1.07	0.051	0.01
Leisure-time physical activity										
Active†	3.7	…	…	…	…	3.8	…	…	…	…
Inactive	4.6*	0.05*	1.05	0.022	0.03	4.7*	0.05*	1.06	0.018	0.03
Smoking status										
Never daily smoker†	4.2	…	…	…	…	4.5	…	…	…	…
Former daily smoker (10+ years)	4.5	-0.01	0.99	0.026	-0.01	4.6	0.01	1.01	0.021	0.01
Former daily smoker (< 10 years)	4.5	-0.02	0.98	0.035	-0.01	4.8	-0.01	0.99	0.030	0.00
Current daily smoker	4.1	-0.11*	0.90	0.037	-0.04	4.2	-0.09*	0.92	0.036	-0.03
Province/Territory										
Newfoundland and Labrador	5.4*	0.19*	1.21	0.053	0.02	5.4*	0.23*	1.26	0.038	0.03
Prince Edward Island	4.6	0.09	1.09	0.063	0.01	4.1	0.01	1.01	0.046	0.00
Nova Scotia	5.9*	0.19*	1.21	0.045	0.03	5.3*	0.14*	1.14	0.030	0.02
New Brunswick	5.9E	0.00	1.00	0.056	0.00	4.6	0.04	1.04	0.039	0.01
Québec	2.8*	-0.25*	0.78	0.018	-0.10	3.4*	-0.21*	0.81	0.016	-0.09
Ontario	4.8*	0.07*	1.08	0.014	0.04	5.0*	0.07*	1.07	0.011	0.03
Manitoba	3.8*	-0.08*	1.03	0.035	-0.01	4.5	-0.02	0.98	0.037	0.00
Saskatchewan	4.6	0.03	1.07	0.030	0.00	4.9	0.06*	1.06	0.026	0.01
Alberta	5.4*	0.06	1.07	0.037	0.02	4.3	0.02	1.02	0.026	0.01
British Columbia	4.6	0.12*	1.13	0.020	0.04	5.1*	0.10*	1.11	0.021	0.03
Yukon, Nunavut, Northwest Territories	3.4*	-0.20	0.82	0.126	-0.01	4.2E	-0.17	0.85	0.134	0.00
Intercept		0.69					0.77			
Model information										
r²		0.21					0.18			
Sample size		10,968					16,439			
Dropped because of missing values		473					792			

Date source: 2003 Canadian Community Health Survey
Notes: "Missing" categories for education, main source of income, BMI, physical activity and smoking were included in models to maximize sample size, but coefficients are not shown.
† Reference category; reference category for province/territory is Canada (average number of consultations for men was 4.4 and for women, 4.5).
* Significantly different from estimate for reference category (p < 0.05)
E Coefficient of variation 16.6% to 33.3% (interpret with caution)
… Not applicable

Medication use

In 2003, 9 in 10 non-institutionalized seniors had taken at least one type of medication in the past month (Chart 1). On average, they took three different types of medication (data not shown).

Senior women tended to take a wider variety of medications than did senior men. Fully 27% of elderly women reported at least five types of medication, compared with 16% of elderly men.

Drugs commonly used by seniors included non-narcotic pain relievers, blood pressure medication, heart medication, diuretics, and stomach remedies (Table 3). The likelihood of medication use was generally higher for women than for men, although heart medication and drugs to manage diabetes were used by larger shares of men, reflecting the higher prevalence of these diseases in men (data not shown).

The variety of medications taken was, of course, strongly related to illness (Table 4). Seniors with at least five chronic conditions reported having taken an average of five types of medication in the past month, while those with no chronic illnesses averaged one. Similarly, seniors who rated their health as "fair," "poor" or "good" took a broader range of medications than did those in "very good" or "excellent" health. As well,

Table 3
Percentage who took medication in past month, by type of medication and sex, household population aged 65 or older, Canada, 2003

|	Both sexes	Men	Women
	%	%	%
Pain relievers (non-narcotic)	66.7	62.3	70.1*
Blood pressure medication	46.3	41.8	49.9*
Heart medication	22.1	25.1	19.8*
Diuretics	19.5	16.5	21.8*
Stomach remedies	18.8	15.6	21.3*
Thyroid medication	12.8	5.1	18.8*
Cough/Cold remedies	11.6	11.9	11.3
Laxatives	10.6	8.1	12.6*
Sleeping pills	9.1	7.9	10.1*
Diabetes pills	9.1	11.0	7.7*
Asthma medication	7.8	8.2	7.6
Tranquilizers	7.2	4.2	9.6*
Penicillin/Antibiotics	7.1	6.8	7.4
Antidepressants	5.9	5.3	6.3
Allergy medication	5.3	3.5	6.8*
Codeine/Morphine/Demerol (narcotic)	4.5	4.3	4.7
Insulin	2.1	2.6E	1.7
Steroids	1.7	1.4E	1.9
Hormone replacement therapy (female)	...	…	10.8

Data source: *2003 Canadian Community Health Survey*
* Significantly different from estimate for men (p < 0.05)
E Coefficient of variation 16.6% to 33.3% (interpret with caution)
... Not applicable

Chart 1
Percentage distribution of seniors, by number of types of medication taken in past month and sex, household population aged 65 or older, Canada, 2003
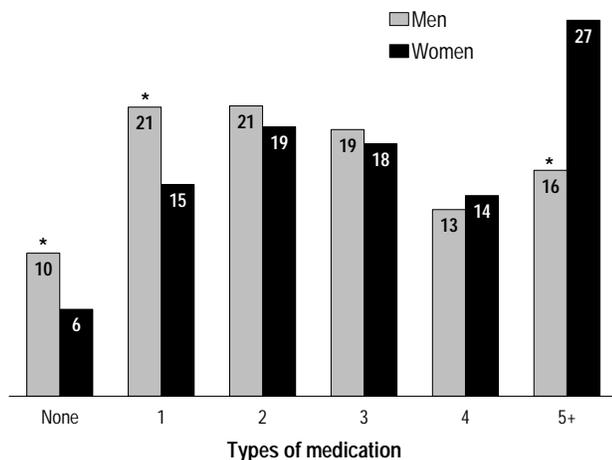
Data source: *2003 Canadian Community Health Survey*
Note: *Because of rounding, detail may not add to totals.*
* Significantly different from estimate for women (p < 0.05)

senior women who had sustained an activity-limiting injury in the past year took more types of medication than did women who had not suffered such an injury. When the effects of demographic, socio-economic and health-related risk factors were taken into account, the number of different medications seniors reported taking remained strongly associated with chronic conditions and self-perceived health. Injury, however, was no longer significantly associated with medication use for either sex.

The number of different drugs seniors reported was generally not related to their education or source of income, except that in multivariate analysis, men with less than secondary graduation took significantly fewer types of medication than did men with more education.

Table 4
Average number of types of medication taken in past month and multiple linear regression coefficients relating selected characteristics to number of types of medication taken, by sex, household population aged 65 or older, Canada, 2003

	Men					Women				
	Average number	Multiple linear regression				Average number	Multiple linear regression			
		b	exp(b)	se	beta		b	exp(b)	se	beta
Number of chronic conditions										
None†	1.3	…	…	…	…	1.3	…	…	…	…
1	1.9*	0.24*	1.28	0.055	0.19	2.2*	0.34*	1.40	0.053	0.25
2	2.6*	0.44*	1.56	0.055	0.34	2.8*	0.49*	1.63	0.052	0.38
3	3.3*	0.61*	1.84	0.061	0.40	3.5*	0.64*	1.90	0.051	0.45
4	3.6*	0.71*	2.03	0.062	0.38	4.4*	0.81*	2.25	0.054	0.50
5 or more	4.8*	0.86*	2.37	0.061	0.44	5.3*	0.95*	2.59	0.054	0.63
Activity-limiting injury										
Yes	2.8	-0.04	0.96	0.045	-0.02	3.9*	0.05	1.05	0.040	0.03
No†	2.7	…	…	…	…	3.2	…	…	…	…
Self-perceived health										
Fair/Poor	3.6*	0.17*	1.19	0.037	0.14	4.5*	0.17*	1.19	0.033	0.14
Good	2.7*	0.07	1.07	0.037	0.06	3.3*	0.07*	1.07	0.031	0.06
Very good/Excellent†	2.0	…	…	…	…	2.5	…	…	…	…
Age group										
65-74†	2.5	…	…	…	…	3.1	…	…	…	…
75-84	2.9*	0.04	1.04	0.029	0.04	3.5*	0.01	1.01	0.025	0.01
85+	3.1*	0.00	1.00	0.057	0.00	3.5*	-0.02	0.98	0.032	-0.01
Education										
Less than secondary graduation	2.7	-0.12*	0.89	0.029	-0.11	3.4	-0.01	0.99	0.026	-0.01
Secondary graduation or more†	2.7	…	…	…	…	3.1	…	…	…	…
Main source of income										
Social assistance or Old Age Security and Guaranteed Income Supplement	2.8	-0.01	0.99	0.035	-0.01	3.6*	0.03	1.03	0.023	0.02
Other†	2.7	…	…	…	…	3.2	…	…	…	…
Body mass index										
Underweight (< 18.5)	2.8E	0.02	1.02	0.151	0.00	3.3	-0.03	0.97	0.058	-0.01
Normal (18.5-24.9)†	2.5	…	…	…	…	3.0	…	…	…	…
Overweight (25.0-29.9)	2.7	0.00	1.00	0.031	0.00	3.3*	0.05	1.05	0.028	0.04
Obese class I (30.0-34.9)	3.0*	0.07	1.07	0.046	0.04	4.2*	0.12*	1.13	0.031	0.07
Obese class II or III (≥ 35.0)	3.6*	0.12*	1.13	0.056	0.03	4.2*	0.06	1.06	0.067	0.02
Leisure-time physical activity										
Active†	2.4	…	…	…	…	2.8	…	…	…	…
Inactive	2.9*	0.06*	1.06	0.029	0.05	3.5*	0.02	1.02	0.025	0.02
Smoking status										
Never daily smoker†	2.4	…	…	…	…	3.1	…	…	…	…
Former daily smoker (10+ years)	2.9*	0.06	1.06	0.032	0.05	3.7*	0.08*	1.08	0.023	0.06
Former daily smoker (< 10 years)	3.0*	0.03	1.03	0.043	0.02	3.7*	0.06	1.06	0.036	0.03
Current daily smoker	2.3	-0.10	0.90	0.062	-0.05	3.2	-0.02	0.98	0.043	-0.01
Province/Territory										
Newfoundland and Labrador	2.5	-0.03	0.97	0.049	0.00	3.3	0.02	1.02	0.051	0.00
Prince Edward Island	2.7	0.00	1.00	0.055	0.00	3.2	0.05	1.05	0.038	0.00
Nova Scotia	2.9	0.00	1.00	0.045	0.00	3.6*	0.02	1.02	0.032	0.00
New Brunswick	3.0	0.12*	1.13	0.039	0.02	3.4	0.06	1.06	0.038	0.01
Québec	2.5	-0.02	0.98	0.026	-0.01	3.2	-0.02	0.98	0.020	-0.01
Ontario	2.8	0.02	1.02	0.017	0.01	3.4	0.02	1.02	0.016	0.01
Manitoba	2.4	-0.07	0.93	0.049	-0.02	3.0*	-0.08*	0.92	0.037	-0.02
Saskatchewan	2.6	-0.02	0.98	0.046	0.00	3.2	-0.02	0.98	0.034	-0.01
Alberta	2.6	-0.04	0.96	0.037	-0.01	3.0*	0.00	1.00	0.031	0.00
British Columbia	2.6	0.01	1.01	0.019	0.00	3.2	0.00	1.00	0.017	0.00
Yukon, Nunavut, NorthwestTerritories	2.7	0.07	1.07	0.063	0.00	2.8*	-0.10	0.90	0.063	0.00
Intercept		0.68					0.64			
Model information										
r²		0.32					0.37			
Sample size		3,857					5,794			
Dropped because of missing values		282					420			

Data source: 2003 Canadian Community Health Survey
Notes: "Missing" categories for education, main source of income, BMI, physical activity and smoking were included in model, but coefficients are not shown.
† Reference category; reference category for province/territory is Canada (average number of types of medication taken by men was 2.7, and by women, 3.3).
* Significantly different from estimate for reference category (p < 0.05)
… Not applicable

Definitions

Respondents to the Canadian Community Health Survey (CCHS) were asked about their contacts with *health care professionals* during the past 12 months: "Not counting when you were an overnight patient, 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 family doctor or general practitioner (GP), an eye specialist, any other medical doctor (such as a surgeon, allergist, orthopedist, gynecologist or psychiatrist), a nurse for care or advice, a chiropractor, a physiotherapist, a social worker or counsellor, a psychologist or a speech, audiology or occupational therapist?"

Respondents were asked if they had "a regular medical doctor."

Respondents were asked about their use of the following types of *medication* in the month before the interview: pain relievers (non-narcotic); tranquillizers; diet pills, antidepressants; codeine, Demerol or morphine (narcotic); allergy medications; asthma medications; cough or cold remedies; penicillin or other antibiotics; medicine for the heart; medicine for high blood pressure; medication for thyroid; diuretics or water pills; steroids; insulin; pills to control diabetes; sleeping pills; stomach remedies; laxatives; hormones for menopause or aging symptoms; and any other prescription or over-the-counter medication. Respondents were not asked to identify their medications as prescription or non-prescription. For the bivariate and multivariate analyses, the number of types of medication used was treated as a continuous variable.

CCHS data on *hospitalization* were collected by a yes/no question: "In the past 12 months, have you been a patient overnight in a hospital, nursing home or convalescent home?" For ease of reference, hospitals, nursing homes, or convalescent homes are referred to collectively as "hospitals" in this analysis; however, it is not possible to determine which type of institution was actually used. CCHS data on hospitalization were used in bivariate tabulations and multivariate models.

The Hospital Morbidity Database (HMD) was used to calculate the proportion of people hospitalized. As well, *average length of hospital stay* was calculated from the HMD. The number of days of hospitalization was divided by the number of patient records in each age group.

CCHS respondents were asked about *home care*: "Have you received any home care services in the past 12 months, with the cost being entirely or partially covered by government?" and "Have you received any other home care services in the past 12 months, with the cost not covered by government (for example, care provided by a spouse or friends)?" Three sources of home care were identified: informal, formal and mixed (a combination of both). Informal assistance is performed by family, friends and neighbours. Formal help is provided by employees of profit or not-for-profit organizations, government, and volunteers. When both types of assistance were received, the senior was considered to have "mixed" help. An "other" category was used for the 1% of cases that could not be classified.

To determine the presence of *chronic conditions*, respondents were asked if they had "any long-term health conditions that had lasted or were expected to last six months or more that had been diagnosed by a health professional." A checklist of the following conditions was read: Alzheimer's disease or other dementia, arthritis or rheumatism, back problems (excluding arthritis), bowel disorders, cancer, cataracts, chemical sensitivities, diabetes, fibromyalgia, heart disease, high blood pressure, migraine, chronic obstructive pulmonary disorder (COPD) or emphysema, asthma, chronic bronchitis, effects of stroke, stomach or intestinal ulcers, thyroid condition, and urinary incontinence. To examine doctor consultations, medication use, hospitalization, and home care in relation to the number of chronic conditions present, respondents were categorized as having 0, 1, 2, 3, 4, or 5 or more of these conditions.

To measure the occurrence of *activity-limiting injuries*, respondents were asked: "In the past 12 months, did you have any injuries that were serious enough to limit your normal activities?"

Self-perceived health was based on the question: "In general, would you say your health is excellent, very good, good, fair or poor?" The five response categories were combined into three: very good/excellent, good, and fair/poor.

Three senior *age groups* were used in this analysis: 65 to 74, 75 to 84, and 85 or older. The age ranges for non-seniors were 12 to 64 when CCHS data were used, and 0 to 64 when the Hospital Morbidity Database was used.

Respondents were grouped into two *education* categories based on the highest level attained: less than secondary graduation and secondary graduation or more. A "missing" category was used in the multivariate analyses to retain as many cases as possible.

In older people, many of whom are retired, current income may not be a reliable indicator of socio-economic status. To identify people of limited means, respondents were asked about their main source of income: wages and salaries; income from self-employment; dividends and interest (for example, on bonds or savings); Employment Insurance; Worker's Compensation; Canada or Québec Pension Plan benefits; retirement pension, superannuation and annuities; Old Age Security and Guaranteed Income Supplement; Child Tax Benefit; provincial or municipal social assistance or welfare; child support; alimony; other (rental income or scholarships, for example); or none. Respondents who cited Old Age Security and Guaranteed Income Supplement or provincial/municipal social assistance or welfare were grouped and compared with an "other" category containing those relying on other income sources.

Living arrangements were defined to reflect two situations: living alone and living with others, including a spouse.

Body mass index (BMI), which was calculated by dividing weight in kilograms by the square of height in metres, was grouped into six categories: underweight (BMI less than 18.5), normal (18.5 to 24.9), overweight (25.0 to 29.9), obese class I (30.0 to 34.9), obese class II and III combined (35.0 or more), and missing. The "missing" category was necessary to retain as many cases as possible in the multivariate analysis.

Physical activity refers to activity during leisure time. Respondents were classified into three groups based on total energy expenditure during leisure time: active (average daily energy expenditure of at least 1.5 kilocalories/kilogram/day); inactive (less than 1.5 kcal/kg/day); and missing. Again, a "missing" category was necessary to retain as many cases as possible for the multivariate analysis. Total energy expenditure during leisure time was calculated from the reported frequency and duration of all of a respondent's leisure-time physical activities in the three months before the 2003 CCHS interview and the metabolic energy demand of each activity, which was independently established.[40]

Smoking was based on responses to the following questions: "Have you ever smoked a whole cigarette?", "In your lifetime, have you smoked a total of 100 or more cigarettes (about four packs)?", "At the present time, do you smoke cigarettes daily, occasionally or not at all?", and "At what age did you stop smoking (cigarettes) daily?" For this analysis, respondents were divided into five categories: current daily smoker, former daily smoker who quit 10 or more years ago, former daily smoker who quit less than 10 years ago, never daily smoker, and missing.
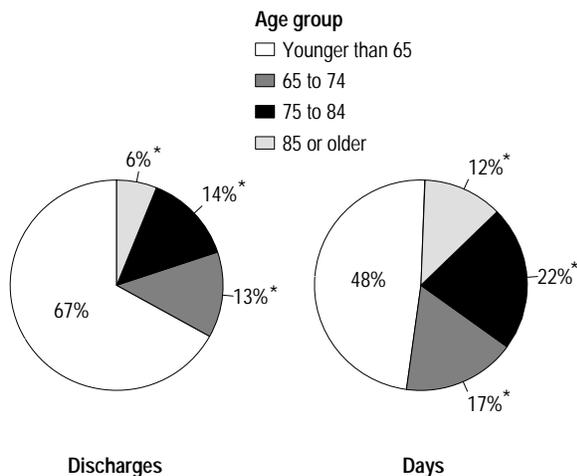
Residence was defined as rural or urban. Urban areas are built-up areas with a population concentration of 1,000 or more and a population density of 400 or more per square kilometre, based on 2001 Census population counts.

Province/Territory consists of a separate variable for each province and a combined variable representing residence in any of the three territories.

Hospital admission

Seniors make up just 13% of the Canadian population, but account for a third of all acute-care hospitalizations and almost half of all hospital days (Chart 2).
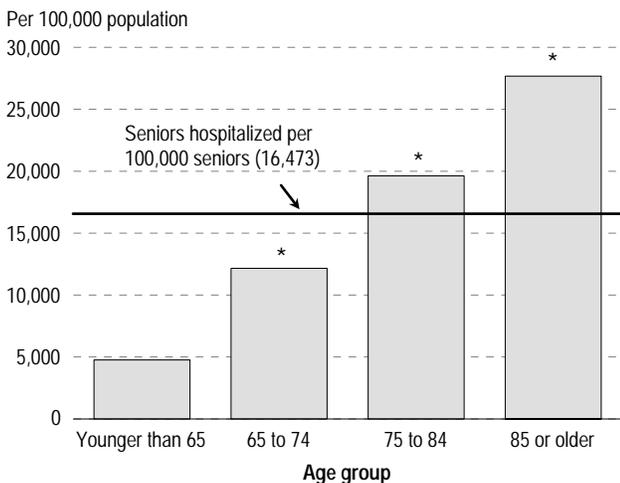
Chart 2
Percentage distribution of hospital discharges and days, by age group, Canada, 2002/03

Age group
☐ Younger than 65
▨ 65 to 74
■ 75 to 84
▨ 85 or older

6%*
14%*
67%
13%*

12%*
48%
22%*
17%*

Discharges   **Days**

Data source: 2002/03 Hospital Morbidity Database
* Significantly different from estimate for younger-than-65 age group (p < 0.05).

Information from the Hospital Morbidity Database (HMD) shows that in 2002/03, the hospitalization rate of seniors was close to 16,500 per 100,000 population aged 65 or older, compared with about 5,000 per 100,000 for people younger than 65 (Chart 3). Among seniors, the likelihood of hospitalization rose with age

from 12,000 per 100,000 aged 65 to 74 to about 28,000 per 100,000 aged 85 or older.

Repeat admissions are also more common among seniors than among younger people. About a third of senior men and women who were hospitalized in 2002/03 were admitted more than once that year: nearly 20% were admitted twice, and 12% at least three times (data not shown).

Once seniors are in hospital, they typically spend more time there than do younger people. In 2002/03, seniors' average length of stay was nearly 11 days, compared with 5 days for patients younger than 65 (data not shown). And the older seniors were, the longer their hospital stays: at ages 65 to 74, the average stay was about 9 days; at age 85 or older, around two weeks (data not shown).

Detailed information about health, socio-economic and health-related risk factors associated with hospitalization is not available from the HMD. Such data are collected by the Canadian Community Health Survey (CCHS), but pertain only to seniors living in the community; the institutionalized population is excluded.

As might be expected, the CCHS data show that seniors' likelihood of being hospitalized was closely tied to chronic conditions, injury and self-perceived health. In 2003, 27% of community-dwelling seniors with five or more chronic conditions reported that they had been hospitalized in the previous year, whereas the figure was 6% among those with no conditions (Chart 4). As well, about 25% of seniors who had suffered an activity-limiting injury in the previous year

Chart 3
Proportion of people hospitalized, by age group, Canada, 2002/03

Per 100,000 population

Seniors hospitalized per 100,000 seniors (16,473)

	Younger than 65	65 to 74	75 to 84	85 or older

Age group

Data source: 2002/03 Hospital Morbidity Database
Note: Based on linkable records for 1,962,409 uniquely identified patients.
* Significantly different from estimate for younger-than-65 age group (p < 0.05)

Chart 4
Percentage hospitalized in past year, by number of chronic conditions, household population aged 65 or older, Canada, 2003

6 — 0
9* — 1
12* — 2
16* — 3
19* — 4
27* — 5 or more

Number of chronic conditions
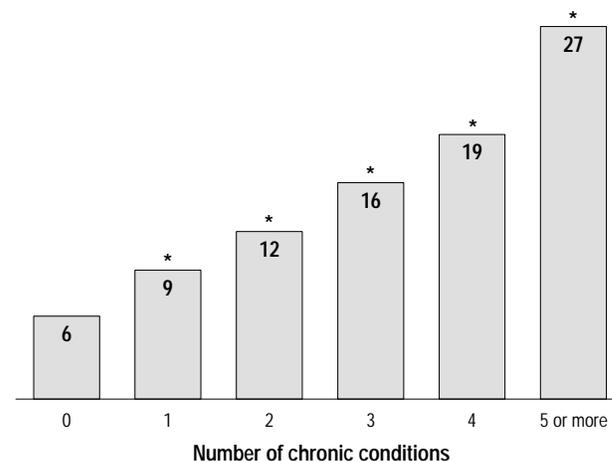
Data source: 2003 Canadian Community Health Survey
* Significantly higher than estimate for preceding category (p < 0.05)

Table 5

Percentages and adjusted odds ratios for hospitalization in past 12 months, by sex and selected characteristics, household population aged 65 or older, Canada, 2003

	Men				Women		
	%	**Adjusted odds ratio**	**95% confidence interval**		**%**	**Adjusted odds ratio**	**95% confidence interval**
Number of chronic conditions							
None†	6.8	1.0	…		5.1ᴱ	1.0	…
1	9.9*	1.3	0.9, 1.9		8.9*	1.7*	1.1, 2.5
2	13.9*	1.6*	1.2, 2.3		10.9*	1.8*	1.2, 2.6
3	18.4*	2.1*	1.5, 2.9		14.1*	2.1*	1.4, 3.1
4	23.2*	2.6*	1.8, 3.7		17.3*	2.3*	1.6, 3.4
5 or more	30.7*	3.2*	2.3, 4.6		25.7*	3.2*	2.1, 4.9
Activity-limiting injury							
No†	14.3	1.0	…		12.6	1.0	…
Yes	24.3*	1.8*	1.3, 2.3		25.9*	2.1*	1.7, 2.5
Self-perceived health							
Fair/Poor	27.1*	2.4*	1.9, 3.0		24.2*	2.3*	1.9, 2.8
Good	13.7*	1.5*	1.2, 1.8		12.2*	1.3*	1.1, 1.6
Very good/Excellent†	8.2	1.0	…		7.7	1.0	…
Has regular doctor							
Yes†	15.3	1.0	…		14.0	1.0	…
No	9.2*ᴱ	0.6*	0.4, 0.9		10.4*	0.8	0.6, 1.1
Age group							
65-74†	13.6	1.0	…		10.8	1.0	…
75-84	16.5*	1.0	0.8, 1.2		17.1*	1.4*	1.2, 1.6
85+	23.3*	1.3	0.9, 1.8		18.9*	1.4*	1.1, 1.7
Education							
Less than secondary graduation	16.0*	0.9	0.8, 1.1		15.0*	1.0	0.8, 1.1
Secondary graduation or more†	13.8	1.0	…		12.5	1.0	…
Main source of income							
Social assistance or Old Age Security and Guaranteed Income Supplement	18.9*	1.2	1.0, 1.5		15.5*	1.1	1.0, 1.3
Other†	14.1	1.0	…		12.9	1.0	…
Living arrangements							
Alone	16.9*	1.2*	1.0, 1.4		15.1*	1.1	1.0, 1.3
With others†	14.7	1.0	…		13.1	1.0	…
Body mass index (BMI)							
Underweight (< 18.5)	30.3*ᴱ	1.5	0.9, 2.8		22.0*	1.3	0.9, 1.8
Normal (18.5-24.9)†	15.5	1.0	…		12.8	1.0	…
Overweight (25.0-29.9)	14.0	0.9	0.7, 1.1		13.0	1.0	0.8, 1.1
Obese (class I) (30.0-34.9)	15.0	0.8	0.6, 1.0		16.7*	1.1	0.9, 1.4
Obese (class II or III) (≥ 35.0)	18.4	0.9	0.6, 1.3		19.4*	1.5*	1.0, 2.2
Leisure-time physical activity							
Active†	10.5	1.0	…		9.3	1.0	…
Inactive	17.5*	1.5*	1.2, 1.8		14.8*	1.2*	1.0, 1.5
Smoking status							
Never daily smoker†	13.2	1.0	…		12.8	1.0	…
Former daily smoker (10+ years)	14.8	1.0	0.8, 1.3		14.4	1.1	0.9, 1.3
Former daily smoker (< 10 years)	21.0*	1.4*	1.1, 1.9		20.3*	1.6*	1.3, 2.1
Current daily smoker	14.8	0.9	0.7, 1.2		12.5	1.0	0.7, 1.3
Area of residence							
Urban†	15.0	1.0	…		13.9	1.0	…
Rural	15.4	1.0	0.8, 1.2		13.6	1.0	0.8, 1.1
Province/Territory							
Newfoundland and Labrador	17.5	1.2	0.8, 1.7		14.2	1.0	0.7, 1.6
Prince Edward Island	19.6ᴱ	1.3	0.8, 2.1		14.3ᴱ	1.0	0.7, 1.6
Nova Scotia	15.3	0.9	0.6, 1.2		14.6	1.0	0.8, 1.3
New Brunswick	22.8*	1.4*	1.1, 1.9		18.6*	1.5*	1.2, 2.0
Québec	15.8	1.1	1.0, 1.3		15.4*	1.2*	1.0, 1.3
Ontario	14.0	0.9*	0.8, 1.0		12.3ᴱ	0.9*	0.8, 0.9
Manitoba	15.8	1.0	0.8, 1.4		13.7	1.0	0.8, 1.3
Saskatchewan	15.9	1.0	0.8, 1.3		17.4*	1.2*	1.0, 1.5
Alberta	15.6	1.1	0.8, 1.4		12.8	1.0	0.8, 1.3
British Columbia	14.1	0.9	0.8, 1.1		13.9	1.0	0.8, 1.2
Yukon, Nunavut, Northwest Territories	27.3ᴱ	2.2*	1.1, 4.7		F	1.2	0.4, 3.2

Data source: *20003 Canadian Community Health Survey*
Notes: *Based on 10,990 male and 16,563 female respondents; 451 male and 668 female respondents were excluded from analyses because of missing data. Missing categories for education, main source of income, BMI, physical activity and smoking were included in models, but odds ratios are not shown. Because of rounding, some odds ratios with 1.0 as the lower/upper confidence limit were statistically significant.*
† Reference category; reference category for province/territory is Canada (15.0% of men and 13.9% of women were hospitalized).
* Significantly different from estimate for reference category (p < 0.05)
E Coefficient of variation 16.6% to 33.3% (interpret with caution)
F Coefficient of variation greater than 33.3% (suppressed because of extreme sampling variability)
⋯ Not applicable

had been admitted to hospital, compared with around 13% of those who had not been injured. And about 25% of seniors who reported their health as "fair" or "poor" had been hospitalized, compared with 8% of those who judged their health to be "very good" or "excellent." Even allowing for the effects of other potentially influential variables, chronic conditions, injury and self-perceived health remained strongly associated with the likelihood that seniors would be hospitalized (Table 5).

Relatively high percentages of seniors with less than secondary graduation or who reported social assistance or Old Age Security and the Guaranteed Income Supplement as their main source of income had been hospitalized. However, when these factors were considered along with variables reflecting health in multivariate models, neither education nor source of income was significantly related to hospitalization. This suggests that the higher likelihood of hospitalization for seniors with lower education or limited means reflects their higher prevalence of conditions requiring care.

Home care

In 2003, 15% or 566,500 non-institutionalized seniors reported receiving home care (Table 6). The services included nursing care, other health care, personal care, everyday housework, meal preparation or delivery, shopping and respite care. Sources of care were formal providers, such as nurses and homemakers, and/or informal providers such as family, friends, or neighbours.

The percentage receiving home care rose from 8% at ages 65 to 74 to 42% at 85 or older (Chart 5). At every age, women were more likely than men to receive home care. Factors associated with being female, such as living arrangements and needing help with

Chart 5
Percentage who received home care in past year, by age group and sex, household population aged 65 or older, Canada, 2003
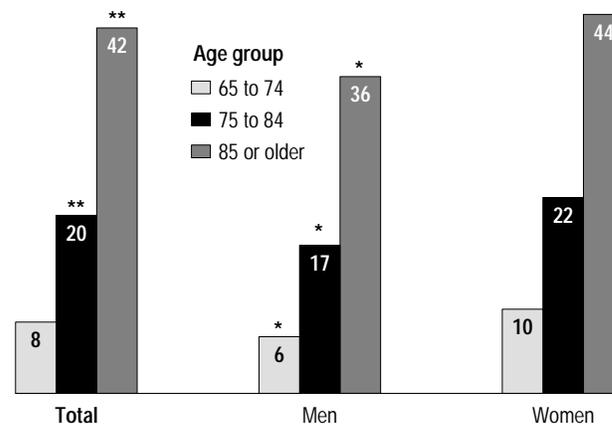
Data source: 2003 Canadian Community Health Survey
Note: Differences between age groups not tested for each sex.
* Significantly different from estimate for women (p < 0.05)
** Significantly different from estimate for 65-to-74 age group (p < 0.05)

activities of daily living, likely account for much of this difference.[41,42] For example, for both sexes, a higher percentage of those living alone than those living with others received home care, and elderly women were more likely than elderly men to live alone (data not shown).

More than half of seniors who reported home care (57%) received that care exclusively from formal sources (Chart 6). Another 28% relied on family, friends and neighbours, while the remaining 15% received both types of assistance. It is possible,

Table 6
Number and percentage who received home care in past year, by sex and source of care, household population age 65 or older, Canada, 2003

Source of care	Total		Men		Women	
	'000	%	'000	%	'000	%
Total	566.5	15.0	193.5	11.7*	373.0	17.6
Formal only	321.7	8.5	114.6	6.9*	207.2	9.8
Informal only	155.8	4.1	51.9	3.1*	103.9	4.9
Mixed	84.7	2.2	26.5	1.6*	58.2	2.7
Other	4.3	0.1E	F	F	3.6E	0.2E

Data source: 2003 Canadian Community Health Survey
Note: Because of rounding, detail may not sum to totals.
* Significantly different from estimate for women (p < 0.05)
E Coefficient of variation 16.6% to 33.3% (interpret with caution)
F Coefficient of variation greater than 33.3% (suppressed because of extreme sampling variability)

Chart 6
Percentage distribution of source of care reported by household population aged 65 or older receiving home care, Canada, 2002/03
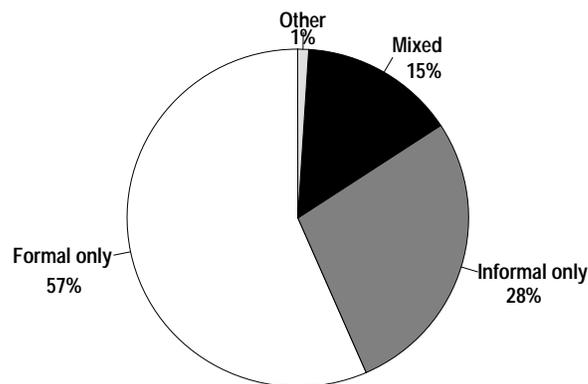
Data source: 2003 Canadian Community Health Survey
Note: Because of rounding, detail does not sum to 100%.

Table 7

Percentages and adjusted odds ratios for receiving home care in past year, by sex and selected characteristics, household population aged 65 or older, Canada, 2003

	Men			Women		
	%	Adjusted odds ratio	95% confidence interval	%	Adjusted odds ratio	95% confidence interval
Number of chronic conditions						
None†	4.7	1.0	…	5.6	1.0	…
1	7.6*	1.4	0.9, 2.1	9.2*	1.5*	1.0, 2.1
2	9.2*	1.2	0.8, 1.9	14.3*	2.0*	1.4, 2.9
3	14.3*	1.6*	1.1, 2.5	17.8*	2.2*	1.6, 3.1
4	19.1*	2.0*	1.3, 3.1	21.9*	2.1*	1.5, 3.0
5 or more	26.6*	2.3*	1.5, 3.7	33.8*	3.1*	2.2, 4.4
Activity-limiting injury						
Yes	17.4*	1.3	1.0, 1.8	30.4*	1.6*	1.3, 2.0
No†	11.2	1.0	…	16.3	1.0	…
Self-perceived health						
Fair/Poor	23.7*	2.0*	1.5, 2.7	33.5*	2.6*	2.1, 3.1
Good	9.5*	1.3*	1.0, 1.8	14.2*	1.2*	1.0, 1.5
Very good/Excellent†	5.5	1.0	…	9.0	1.0	…
Hospitalized in past year						
Yes	36.4*	5.5*	4.3, 7.1	46.1*	4.0*	3.4, 4.7
No†	7.3	1.0	…	13.0	1.0	…
Age group						
65-74†	6.5	1.0	…	9.7	1.0	…
75-84	17.5*	2.7*	2.2, 3.4	22.5*	2.1*	1.8, 2.4
85+	36.4*	6.1*	4.2, 8.7	44.5*	5.7*	4.5, 7.1
Education						
Less than secondary graduation	13.4*	1.1	0.9, 1.4	19.4*	0.9	0.8, 1.1
Secondary graduation or more†	9.5	1.0	…	15.2	1.0	…
Main source of income						
Social assistance or Old Age Security and Guaranteed Income Supplement	17.0*	1.2	0.9, 1.6	20.9*	1.1	0.9, 1.3
Other†	10.6	1.0	…	16.0	1.0	…
Living arrangements						
Alone	16.9*	1.8*	1.4, 2.2	21.8*	1.5*	1.3, 1.7
With others†	10.8	1.0	…	14.9	1.0	…
Body mass index (BMI)						
Underweight (< 18.5)	40.3*	3.4*	1.8, 6.4	29.5*	1.1	0.8, 1.6
Normal (18.5-24.9)†	12.1	1.0	…	16.4	1.0	…
Overweight (25.0-29.9)	10.1*	1.0	0.8, 1.2	15.8	1.0	0.8, 1.1
Obese class I (30.0-34.9)	11.9	1.1	0.8, 1.5	19.7*	1.1	0.9, 1.4
Obese class II or III (≥ 35.0)	13.7E	1.3	0.8, 2.1	24.9*	1.6*	1.1, 2.3
Leisure-time physical activity						
Active†	5.3	1.0	…	7.9	1.0	…
Inactive	13.8*	2.0*	1.6, 2.6	20.3*	1.9*	1.6, 2.3
Smoking status						
Never daily smoker†	10.2	1.0	…	17.5	1.0	…
Former daily smoker (10+ years)	12.2	1.0	0.8, 1.4	17.4	1.0	0.8, 1.2
Former daily smoker (< 10 years)	13.2	0.9	0.6, 1.3	20.5*	1.2	0.9, 1.6
Current daily smoker	11.3	0.9	0.6, 1.3	15.3	1.0	0.8, 1.2
Area of residence						
Urban†	12.1	1.0	…	17.6	1.0	…
Rural	10.4	0.8*	0.6, 1.0	17.6	1.1	0.9, 1.3
Province/Territory						
Newfoundland and Labrador	11.5E	0.9	0.5, 1.4	15.6	0.8	0.6, 1.3
Prince Edward Island	11.9E	0.6	0.3, 1.2	20.4	1.1	0.8, 1.7
Nova Scotia	17.7*	1.6*	1.1, 2.3	22.9*	1.2	0.9, 1.5
New Brunswick	20.0*	1.4	1.0, 2.0	21.4	1.1	0.9, 1.5
Québec	11.4	1.0	0.8, 1.2	16.7	0.9	0.8, 1.1
Ontario	11.4	1.0	0.9, 1.2	17.2	1.0	0.9, 1.1
Manitoba	9.7	0.6*	0.4, 0.9	17.8	0.9	0.7, 1.2
Saskatchewan	11.7	0.8	0.6, 1.2	18.4	0.9	0.7, 1.1
Alberta	11.4	0.9	0.7, 1.3	15.9	0.9	0.8, 1.1
British Columbia	10.8	1.0	0.8, 1.2	19.1	1.1	1.0, 1.3
Yukon, Nunavut, Northwest Territories	26.7E *	3.0*	1.3, 7.3	31.6E *	3.5*	1.9, 6.6

Data source: 20003 Canadian Community Health Survey

Notes: Based on 10,983 male and 16,545 female respondents; 458 male and 686 female respondents were excluded from analyses because of missing data. "Missing" categories for education, main source of income, BMI, physical activity and smoking were included in models, but odds ratios are not shown. Because of rounding, some odds ratios with 1.0 as the lower/upper confidence limit were statistically significant.

† Reference category; reference category for province/territory is Canada (men 11.7% and women 17.6% received home care).

E Coefficient of variation 16.6% to 33.3% (interpret with caution)

* Significantly different from reference category (p < 0.05)

… Not applicable

however, that some informal care, from a spouse for instance, was not reported, because it is perceived as part of the usual support provided to family members.

Other research, focusing on the *amount* of care received from each type of provider, revealed that more than half the total hours of help time came from informal sources.[43] Seniors who depended exclusively on formal sources reported fewer hours of care a week than did those assisted by informal sources alone or those getting help from mixed sources.

As might be expected, poor health was an important determinant of receiving home care. Around a quarter of senior men (27%) and a third (34%) of senior women with five or more chronic conditions had received home care in the past year, compared with about 5% of those who reported no chronic conditions (Table 7). Home care was also more likely to be reported by seniors who had suffered an activity-limiting injury, compared with those who had not been injured, and by those who described their health as "fair," "poor" or "good," compared with those in better health. When the effects of the other variables were taken into account in a multivariate model, the odds of receiving home care were significantly high among seniors with multiple chronic conditions, a serious injury (women), or poor, fair or good health.

Relatively high proportions of seniors with less education (13% of men and 19% of women) and lower income (17% of men and 21% of women) received home care. However, when the effects of the other variables were taken into account, education and main source of income were not significantly associated with receiving home care.

Concluding remarks

In relation to their numbers in the population, seniors are heavy users of health care services. This is largely a reflection of the decline in health that often accompanies advancing age.

Not surprisingly, the number of chronic conditions was the strongest determinant of the frequency with which seniors consulted physicians and used medications. Having chronic conditions also increased the likelihood of being hospitalized and receiving home care. As well, injury and fair or poor self-perceived health contributed substantially to health care use.

When these indicators of health and the other variables were considered, differences in seniors' level of education or main source of income generally were no longer significantly associated with their use of health care resources. Thus, seniors' use of doctors, medications, hospitals and home care was determined by their health, not by their education or financial means. ■

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