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Original quantitative research

Self-reported health impacts of caregiving by age and income among participants of the Canadian 2012 General Social Survey

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Abstract

Introduction: Increases in life expectancy and the underlying age structure of the Canadian population have contributed to dramatic increases in the number of seniors who are caregivers. While caregiving is associated with several adverse health impacts, there is a need to better understand how these impacts might be different among older caregivers, and whether those impacts are modified by socioeconomic status.

Methods: We sought to address these research gaps by using cross-sectional data provided by participants of the 2012 Canadian General Social Survey (GSS). Descriptive analyses were performed to compare the self-reported health impacts that participants attributed to caregiving, and how these varied by age and income. Logistic regression analyses were performed to identify which factors were associated with self-reported impacts on overall health among caregivers 65 years of age and older.

Results: The demographic characteristics of the care-providers varied substantially by age with older caregivers having lower incomes and devoting more time to caregiving relative to those who were younger. The self-reported impacts of caregiving on overall health were greatest among those between the ages of 35 and 64, and this pattern was evident across all income groups. Feelings of loneliness and social isolation as a result of caregiving responsibilities appeared to be mitigated by both greater age and income. However, across all age groups, caregiving was more likely to adversely impact exercise habits, healthy eating, and alcohol consumption than to promote more positive behaviours.

Conclusion: Providing care impacts health behaviours and mental health regardless of age and income. However, our findings suggest that older caregivers (who are most often women)—who provide the most hours of care and on reduced incomes relative to younger caregivers—appear less impacted in terms of health behaviours, perhaps as a result of fewer competing demands relative to younger caregivers. Taken together, these findings suggest that support systems must consider caregiver impacts that vary in complex ways across age, sex, and income.

Keywords: *cross-sectional study, caregiving, health behaviours, health-related quality of life, Canada*

Highlights

- This study was aimed at investigating the social and health impacts of caregiving among senior care providers, and how these impacts differed from younger caregivers.
- The 2012 Canadian General Social Survey was used to analyse self-reported health impacts that participants attributed to caregiving.
- Consistent with previous studies, providing care was found to have detrimental effects on health behaviours related to exercise, diet, and alcohol consumption.
- Among caregivers aged 65 and older, women, compared to men, and those who devoted a greater number of hours to caregiving were more likely to report detrimental impacts on overall health.
- The impacts of caregiving occurred across all income categories. However, although older caregivers were more likely to be in the lowest income group, they reported the least financial hardship due to caregiving.

Introduction

Estimates show that approximately 8 million Canadians 15 years of age and older provide some level of care to family members or friends with a chronic health condition or problem related to aging.[1] The costs associated with providing this care are staggering. For example, in 1996, it was estimated that a total of 276 509 full-time workers would be needed to replace the tasks performed by those providing informal care – an impact estimated to be approximately \$5–6 billion.[2] Likewise, it was estimated that each caregiver, on average, would lose \$1.2 million in current and future earnings and incur approximately \$30 000 in out of pocket

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expenses.[2] The economic toll in Canada has increased substantially since then, due to the rapid growth in the proportion of older adults, which has been fuelled by increases in life expectancy as well as declining fertility rates.[3] Unpaid caregivers, such as family members, tend to provide most of the care for older adults who may be experiencing chronic disease or illness.[4,5]

In addition to the economic costs of caregiving, there can be associated impacts on quality of life. It is well recognized that providing care for a person with a disease, illness, disability, or problem related to aging can be stressful for the care provider.[6] Not only does it require the caregiver to manage their own work, personal and social life (as well as, potentially, the personal and social life of the care recipient), but caring for a family member can also invoke negative emotions related to the fear of losing that person.[7] Several studies have investigated the impacts of caregiving on the psychological health of the caregiver and the general consensus has been that there is a negative relationship between the two.[8-10] A meta-analysis on the psychological impacts of caregiving found that caregivers of older individuals have higher prevalence and incidence of depressive and anxiety disorders compared to non-caregivers.[11] Research in this area has also found that the psychological impacts of providing care vary depending on the sex of the caregiver, as well as the nature of the relationship between the caregiver and the primary care recipient.[12] In addition to psychological impacts experienced by the caregiver, research has also implicated several adverse physical health impacts. For example, caregivers may experience diminished health habits, impaired physiological responses, and even death.[13]

Although the number of caregivers in many developed countries has increased substantially in recent years, there have been relatively few attempts to characterize the health impacts of providing care using population-based national surveys. A recent population-based survey in the UK[14] found that caregivers, relative to those who did not provide care, were more likely to experience poorer health-related quality of life, as well as anxiety and depression. In a large national US sample, caregivers were found to have lower self-reported quality of life, poorer physical functioning and fewer social contacts.[15] Although other national surveys have been undertaken, these have typically focussed on the impacts of providing care for individuals with specific conditions, such as cancer or stroke. In addition, surveys that have attempted to investigate the health impacts of providing care among caregivers have typically described these impacts using survey questionnaires that solicit information from participants about their overall mental and physical health through widely used and validated instruments that measure general health.[12,16] These studies have not typically included questions that ask participants to provide information about how their caregiving activities specifically impact their health and health behaviours (e.g., physical activity, alcohol consumption). In our view, this important change in questionnaire wording may be more appropriate for capturing the health impacts directly related to providing care.

With dramatic increases in longevity in many countries, including Canada, the structure of the population has changed substantially over the past twenty years.[3] From a caregiving perspective, this implies that the age of the caregiver has also increased substantially, as has the age of the care recipient. Likewise, the economic toll of caregiving also appears to have increased dramatically, including to the caregiver him/herself.[2] Thus, the key objectives of this research were to describe variations in the health impacts of caregiving across age groups (with a particular focus on how caregiving may differentially impact senior caregivers compared to younger caregivers), and across socioeconomic status (i.e., household income) of the caregiver.

Methods and materials

Study population

We used cross-sectional survey data collected from the 2012 General Social Survey (GSS), which is currently the most recent iteration of the GSS to collect data on caregiving (with the 2018 GSS forthcoming). The GSS was first administered in 1985 with the overarching objective to gather data on social trends for the purpose of characterizing changes in the living conditions and well-being of Canadians. The GSS was also designed to inform specific social policy issues.

The 2012 GSS collected information on both caregivers and care receivers. This iteration of the GSS included participants who were 15 years of age and older who lived in private households using Random Digit Dialing (RDD) and Computer Assisted Telephone Interviewing (CATI) methods. The sampling frame excluded individuals who resided in the Yukon, Northwest Territories and Nunavut as well as those who lived full time in institutions. In total, there were 23 093 participants of the 2012 GSS, and the overall participation rate was 65.7%.[17] Unlike previous cycles of the GSS, the 2012 version included new questions on the type and severity of long-term health conditions or disability that individuals received or provided care for. Related to the objectives of these analyses, the 2012 GSS also collected information on the impacts of caregiving on the health behaviours of the caregivers. These include behaviours such as participation in physical and social activities. Data were also collected on respondents' main activities, education, income and other sociodemographic characteristics.[18]

Measures

The 2012 GSS asked participants to specifically indicate to what extent providing caregiving impacted their health over the past 12 months. Social and health impacts that were captured and analysed in the present study included caregiver responses that they were: coping "very well" with caregiving (as opposed to "generally well", "not very well", or "not well at all", combined for analyses), seeking professional help for caregiving (i.e., never vs. once, twice, 2 to 3 times, or 4+ times), experiencing financial hardship due to caregiving (yes vs. no), overall health having suffered from caregiving (yes vs. no), feelings of depression (yes vs. no), and feelings of loneliness and isolation (yes vs. no). Health behaviours that had been impacted by caregiving (e.g., smoking, alcohol use, healthy eating, exercise) were also assessed.

Statistical analyses

All statistical analyses were conducted using the Statistical Analysis Software (SAS, version 9.4, Cary, NC). Descriptive analyses were first conducted to describe the study sample. We extended these analyses to compare the key characteristics (i.e., including age, income, relationship to primary care recipient, underlying condition of primary care recipient, number of people providing care for, and hours of providing care each week) across age groups. The likelihood ratio test was used to compare the distribution of these variables across five age groups of caregivers (15–34, 35–49, 50–64, 65–74, and 75 years of age and older). Similar descriptive analyses were performed to evaluate how caregiving impacted several health-related behaviours, by the age of the caregiver; these behaviours included changes in exercise, eating habits, alcohol consumption, and smoking.

Multiple logistic regression was then used to evaluate age-related differences in a variety of self-reported health and social outcomes due to caregiving. These included coping, feeling lonely or isolated, depression, experiencing financial hardship, seeking professional help for caregiving, and overall impact of caregiving on health. The odds ratios, and their corresponding 95 confidence intervals, were estimated and the youngest age group was set as the reference category (as they would conceivably be in the best overall health). Stratified analyses were done by household income category (< \$40 000, \$40 000–\$99 999, and ≥ \$100 000). The logistic regression models were adjusted for sex, the number of hours in a week the respondent provided care, and the number of individuals cared for.

Lastly, since a key objective of these analyses was to identify what factors among senior caregivers (e.g., sex, number of people cared for, and hours spent caregiving per week) were most predictive of adverse health impacts, we also fit logistic regression models to describe the impacts of sex and caring characteristics on those health impacts. We fit a separate model for each of the three income categories (as above).

Results

Descriptive characteristics of the participants of the General Social Survey are provided in Table 1. In total, 7082 respondents indicated that they provided care to someone with a chronic disease or disability, while 2470 indicated that they provided care for individuals with a problem related to aging. Subsequent analyses were undertaken with these 9552 caregivers as our primary sample.

As seen in Table 2, women accounted for approximately 60% of caregivers, and this was constant across the age groups. However, we observed other notable differences in several characteristics based on the age of the caregiver. A large proportion of caregivers had household incomes that exceeded \$60 000 (46.1%), with younger caregivers (i.e., between 35 and 64) tending to have the highest household incomes. By far, the most commonly reported primary care recipient was the mother of the respondent (28.4%), followed by close friend (11.6%), father (10.7%) and spouse or partner (10.1%). As expected, the relationship with the primary care recipient varied by age. Among older caregivers (65 years +), the spouse or partner was the most common primary care recipient, while among younger caregivers it was their parents or (among the youngest age group) grandparents. Notably, 87% of the caregivers in our sample reported spending 21 hours or less on caregiving, with older caregivers tending to spend more time providing care than those who were younger. Specifically,

TABLE 1
Descriptive characteristics of participants of the 2012 General Social Survey

Characteristics		Participants	%
Sex	Men	9794	42.4
	Women	13 299	57.6
Age-group (y)	15–34	3756	16.3
	35–49	5351	23.2
	50–64	7395	32.0
	65–74	3589	15.5
	75+	3002	13.0
Total household income (\$)	< 10 000	444	1.9
	10 000–29 999	3276	14.2
	30 000–59 999	4989	21.6
	60 000–99 999	4341	18.8
	≥ 100 000	4796	20.8
	Unknown	5247	22.7
Highest attained education	Under high school	4526	19.8
	High school or equivalent	6223	27.2
	Trade certificate	1149	5.0
	College or other non-university	4672	20.4
	University (below Bachelor's degree)	940	4.1
	University (Bachelor's degree)	3582	15.7
	University (above Bachelor's degree)	1769	7.7
Marital status	Married or common-law	13 509	58.6
	Widowed	2651	11.5
	Separated or divorced	2618	14.7
	Single or never married	4724	18.5
Main activity of participant	Working	11 383	49.4
	Retired	6923	30.0
	Student	1351	5.9
	Long-term illness	995	4.3
	Household work	871	3.8
	Caring for children	773	3.4
	Other	797	3.5
Provided care in last year	For individual with chronic disease/disability	7082	30.7
	For individual with problem related to aging	2470	10.7
Received care over last year	For a long-term health condition or disability	2859	12.4
Total participants		23 093	100.0

TABLE 2
Characteristics of participants of the Canadian 2012 General Social Survey who indicated they provided care over the past year to those with a chronic disease, disability, or problem related to aging, stratified by age-group

Characteristics		Age of caregiver (in years)												p^a
		15–34 1476 caregivers		*35–49 2336 caregivers*		*50–64 3822 caregivers*		*65–74 1316 caregivers*		*75+ 602 caregivers*		*Total 9552 caregivers*		
		n	%	n	%	n	%	n	%	n	%	n	%	
Sex	Men	586	39.7	979	41.9	1492	39.0	452	41.7	178	36.6	3837	40.2	0.09
	Women	890	60.3	1357	58.1	2330	61.0	631	58.3	308	63.4	5715	59.8	
Income ($)	< 30 000	146	13.6	213	10.8	441	11.5	250	19.0	155	25.8	1205	12.6	< 0.001
	30 000 - 59 999	238	22.2	393	19.9	843	22.1	415	31.5	194	32.2	2083	21.8	
	60 000 - 99 999	321	29.9	560	28.3	859	22.5	247	18.8	65	10.8	2052	21.5	
	≥ 100 000	369	34.4	811	41.0	998	26.1	141	10.7	27	4.5	2346	24.6	
	Unknown	402	–	359	–	681	–	263	–	161	–	1866	19.5	
Relationship to the primary care recipient	Spouse	27	1.9	115	5.1	320	8.7	256	20.4	208	38.2	926	10.1	< 0.001
	Mother	234	16.4	740	32.6	1404	38.0	223	17.9	8	1.5	2609	28.4	
	Father	150	10.5	374	16.5	427	11.6	31	2.5	0	0.0	982	10.7	
	Mother-in-law	50	3.5	152	6.7	303	8.2	62	4.9	5	0.9	572	6.2	
	Father-in-law	17	1.2	78	3.4	124	3.4	15	1.2	1	0.2	235	2.6	
	Grandparent	555	39.0	135	5.9	7	0.2	0	0.0	0	0	697	7.6	
	Sibling	65	4.6	75	3.3	182	5.0	109	8.7	54	9.9	485	5.3	
	Child	41	1.8	153	6.7	184	5.0	77	5.1	35	6.4	490	5.4	
	Neighbour	46	3.2	81	3.6	142	3.8	89	7.0	45	8.2	403	4.4	
	Close friend	117	8.2	191	8.4	367	9.9	253	20.2	142	26.1	1070	11.6	
	Other	122	8.6	178	7.8	235	6.4	139	11.1	47	8.6	721	7.8	
	Missing	52	–	64	–	127	–	62	–	57	–	362	–	
Hours per week	< 7	1004	72.2	1517	69.0	2288	64.4	726	52.5	274	55.5	5809	66.0	< 0.001
	7 to < 21	282	20.3	457	20.8	785	22.1	219	18.9	101	20.5	1844	21.0	
	21 to < 48	66	4.7	125	5.7	281	7.9	99	8.5	48	9.7	619	7.0	
	48 to < 96	30	2.2	48	2.2	95	2.7	46	4.0	33	6.7	252	2.9	
	96+	9	0.7	51	2.3	106	3.0	71	6.1	38	7.7	275	3.1	
	Missing	85	–	138	–	267	–	155	–	108	–	753	–	
Condition	Cancer	138	9.8	317	4.1	380	10.3	165	13.2	58	10.9	1058	11.6	< 0.001
	Cardiovascular	121	8.6	220	9.8	392	10.7	109	8.7	70	13.1	912	10.0	
	Diabetes	51	3.6	88	3.9	90	2.5	24	1.9	14	2.6	267	2.9	
	Mental Illness	109	7.7	180	8.0	205	5.6	165	13.2	24	4.5	599	6.6	
	Dementia	53	3.8	115	5.1	294	8.0	106	8.5	56	10.5	624	6.8	
	Neurological	88	6.2	114	5.1	159	4.3	81	6.5	24	4.5	446	4.9	
	Aging	396	28.1	586	26.0	1193	32.5	314	25.2	118	22.1	2607	28.6	
	Eye	27	1.9	40	1.8	92	2.5	40	3.2	27	5.1	226	2.5	
	Injury	74	5.3	68	3.0	122	3.3	48	3.9	18	3.4	330	3.6	
	Arthritis	50	3.6	86	3.8	152	4.1	52	4.2	24	4.5	367	4.0	
	Dev. delay	40	2.8	68	3.0	66	1.8	32	2.6	6	1.1	212	2.3	
	Other	163	11.6	373	16.5	529	14.4	111	8.9	65	12.2	1472	16.1	
	Missing	66	–	81	–	148	–	69	–	68	–	432	–	
Number of people providing care for	One	785	55.0	1239	54.2	2189	59.1	838	66.3	380	69.6	5426	58.5	< 0.001
	Two	385	27.0	696	30.5	984	26.6	241	19.2	85	15.5	2391	25.9	
	Three or more	258	18.1	351	15.4	532	14.4	182	14.5	81	14.8	1404	15.2	
	Missing	48	–	50	–	117	–	60	–	56	–	432	–	

[a] *p*-value testing for differences in distribution of classification variable across 5 age groups based on likelihood ratio chi-square statistic.

approximately 14% of caregivers who were 75 years of age and older reported spending at least 48 hours per week on caregiving activities. The corresponding percentage for those under 50 years of age was less than 5%. Younger caregivers (i.e., under 50), however, were more likely to provide care to more than one individual. Across all age groups, "aging" was the most common condition for which caregivers provided care, when compared to specific diseases or injury.

Caregivers indicated that providing care adversely impacted several of their health behaviours (Table 3). In general, these reported impacts were greater among middle-aged caregivers. For example, among those aged 35–49, 32.4% of caregivers indicated that their exercise had decreased due to caregiving, 19% indicated that their eating habits had become less healthy, and 5.3% had increased their alcohol consumption. In contrast, the corresponding estimates among those who were 65 years of age and older included that 20.8% had decreased exercise, 10.8% reported less healthy eating, and only 1.9% had increased their alcohol consumption due to caregiving. Changes in smoking behaviour (either increased or decreased) were relatively unchanged among all age groups.

In Table 4, we present the odds ratios to describe differences in the self-reported impacts of caregiving on social and health outcomes by age group and total household income. Given the aging demographic of caregivers, the health of the oldest caregivers—those over 75 years of age—was of particular interest. Overall, caregivers who were 75 years and older reported that they were coping 'very well' with caregiving when compared to the youngest age group—those under 35 years of age (OR = 1.47; 95% CI = 1.15–1.87). This pattern was observed across all income groups, though not statistically significant in all cases. Older caregivers were also less likely to experience financial hardships due to caregiving. Specifically, the odds ratio of reported financial hardship among caregivers 75 years of age and older relative those who were under 35 was 0.29 (95% CI = 0.16–0.50). However, the odds ratios in Table 4 also reveal differences across different income categories. Among older caregivers in the lowest income grouping (< $40 000), caregivers who were 75 years of age or older were most likely to indicate that they felt depressed due to caregiving when compared to those under 35 years of age (OR = 1.56; 95% CI = 0.84–2.92), although this difference was not statistically significant.

Finally, we performed logistic regression analyses to better understand which characteristics, specifically among caregivers 65 years of age and older, were related to an increased likelihood that caregiving had impacted their overall health (Table 5). In all income groups, women were far more likely than males to have had their overall health impacted by caregiving. However, although not statistically significant, this was especially the case among those with household incomes of greater than $100 000. Specifically, the odds ratio for having overall health suffer due to caregiving among women was 2.67 (95% CI = 0.81–8.44) when compared to men. Finally, not surprisingly, the number of hours per week spent caregiving was also a very strong predictor of having overall health suffer across all income groups.

TABLE 3
Self-reported impacts of caregiving on health-related behaviours, by age-group, among participants of the 2012 General Social Survey

Has caregiving impacted the following characteristics?		Age of caregiver (in years)							
		15–34		35–49		50–64		≥ 65	
		n	%	n	%	n	%	n	%
Exercise	No change	752	78.9	1009	63.6	1795	66.2	957	75.8
	Increase in exercise	35	3.7	62	3.9	106	3.9	43	3.4
	Decrease in exercise	166	17.4	514	32.4	812	30.0	263	20.8
Eating habits	No change	792	83.1	1213	76.1	2123	77.7	1090	85.0
	More healthy eating	48	5.0	76	4.8	148	5.5	53	4.1
	Less healthy eating	113	11.9	305	19.1	462	17.0	139	10.8
Alcohol	No change	785	82.0	1253	78.3	2098	76.2	852	65.8
	Don't drink	122	12.7	231	14.4	516	18.8	404	31.2
	Increased drinking	28	2.9	85	5.3	101	3.7	25	1.9
	Decreased drinking	15	1.6	23	1.4	22	0.8	6	0.5
	Stopped use	6	0.1	4	0.2	12	0.4	4	0.3
	Started drinking	1	0.0	5	0.3	3	0.1	3	0.2
Smoking	No change	554	57.9	824	51.4	1223	44.4	349	27.0
	Don't smoke	341	36.0	681	42.5	1361	29.5	917	70.9
	Increased smoking	33	3.5	54	3.4	95	3.5	8	0.6
	Decreased smoking	11	1.2	25	1.6	40	1.5	12	0.9
	Stopped smoking	13	1.4	10	0.6	23	0.8	4	0.3
	Started smoking	4	0.4	8	0.5	10	0.4	3	0.2

Note: *p*-value testing for differences in distribution of classification variable across 4 age groups based on likelihood ratio chi-square statistic were all statistically significant ($p < 0.05$).

TABLE 4
Adjusted odds ratios in relation to self-reported impacts of caregiving on health, by age and total household income

Self-reported impact on health	Age group	Low income (< $40 000)		Middle income ($40 000–$99 999)		High income (> $100 000)		All caregivers	
		OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
Coping 'very well' with caregiving	15–34	1.0		1.0		1.0		1.0	
	35–49	0.85	0.56–1.28	0.80	0.60–1.05	0.75	0.51–1.03	0.73	0.62–0.86
	50–64	0.84	0.58–1.21	0.93	0.72–1.20	0.69	0.51–0.94	0.80	0.69–0.93
	65–74	1.00	0.67–1.49	1.14	0.83–1.55	1.12	0.69–1.83	1.00	0.83–1.21
	75+	1.69	1.07–2.67	1.45	0.94–2.23	1.15	0.39–3.41	1.47	1.15–1.87
Overall health suffered from caregiving	15–34	1.0		1.0		1.0		1.0	
	35–49	1.62	0.91–2.88	2.56	1.69–3.85	2.79	1.63–4.78	2.73	2.12–3.51
	50–64	2.78	1.66–4.65	2.45	1.66–3.62	2.59	1.52–4.39	2.82	2.22–3.58
	65–74	1.98	1.14–3.45	1.81	1.15–2.87	1.48	0.67–3.28	2.06	1.55–2.72
	75+	1.20	0.63–2.72	1.52	0.81–2.84	1.63	0.30–8.93	1.66	1.17–2.35
Seek professional help for caregiving	15–34	1.0		1.0		1.0		1.0	
	35–49	1.78	1.03–3.08	1.07	0.73–1.56	1.42	0.87–2.34	1.25	1.00–1.57
	50–64	2.08	1.26–3.44	1.40	1.00–1.98	1.47	0.91–2.37	1.43	1.17–1.77
	65–74	1.51	0.87–2.60	0.90	0.58–1.38	0.98	0.46–2.10	1.12	0.87–1.45
	75+	0.68	0.35–1.33	1.08	0.61–1.93	0.92	0.17–4.94	0.85	0.61–1.20
Feel lonely or isolated from caregiving	15–34	1.0		1.0		1.0		1.0	
	35–49	1.84	1.08–3.16	1.90	1.28–2.82	2.09	1.24–3.52	2.36	1.85–3.01
	50–64	2.51	1.54–4.09	1.75	1.20–2.54	1.64	0.98–2.75	2.13	1.69–2.68
	65–74	1.57	0.92–2.67	1.06	0.67–1.68	0.83	0.35–1.94	1.46	1.10–1.93
	75+	1.34	0.73–2.46	1.64	0.91–2.94	0.80	0.09–6.77	1.83	1.30–2.57
Feel depressed from caregiving	15–34	1.0		1.0		1.0		1.0	
	35–49	0.69	0.41–1.14	0.61	0.42–0.89	0.57	0.35–0.94	0.57	0.45–0.71
	50–64	0.50	0.32–0.78	0.57	0.40–0.81	0.50	0.31–0.83	0.52	0.42–0.64
	65–74	0.77	0.47–1.28	0.74	0.48–1.13	0.80	0.38–1.70	0.70	0.54–0.90
	75+	1.56	0.84–2.92	0.54	0.32–0.93	n.e		0.81	0.58–1.13
Experience financial hardship due to caregiving	15–34	1.0		1.0		1.0		1.0	
	35–49	1.54	0.83–2.85	1.16	0.74–1.82	1.39	0.65–2.98	1.10	0.83–1.48
	50–64	1.45	0.83–2.56	0.71	0.46–1.10	1.05	0.49–2.24	0.91	0.83–1.48
	65–74	0.71	0.37–1.36	0.27	0.14–0.51	0.59	0.17–2.06	0.51	0.36–0.73
	75+	0.32	0.13–0.80	0.20	0.07–0.53	n.e.		0.29	0.16–0.50

Abbreviation: n.e., not estimable.
Note: Adjusted for sex, number of hours of caregiving, and number of individuals cared for.

Discussion

Our analyses of the 2012 General Social Survey (GSS) highlight important features of Canadian caregivers. They also extend previous analyses of the 2012 GSS by presenting more detailed data among older caregivers.[1] The data from the 2012 survey suggest that approximately 20% of Canadian caregivers are 65 years and older. Of these, approximately 31% are aged 75 years and older, approximately 30% of them provide care to a spouse, 32% provide care to more than one individual, and approximately 11% are spending at least 48 hours a week providing that care. Among caregivers 65 years of age and older, women and those who devoted a greater number of hours to caregiving were also most likely to report detrimental impacts on overall health. Given the projected increase in the Canadian population of older adults, coupled with anticipated increases in life expectancy, the associated impacts will grow substantially. A comparison with previous data presented by Cranswick and Dosnick using the 2007 GSS reveals how dramatic the shift in the age distribution of Canadian caregivers was in a 5-year interval.[19] In 2007, among caregivers 45 years of age and older, 24% of these individuals were 65 years of age and older. In contrast, in 2012, among caregivers 45 years of age and older, 41% of these individuals were 65 years of age and older. We can only expect this percentage to rise.

Importantly, the 2012 GSS also allowed us to examine the self-reported health impacts of caregiving itself. Previous research has reported differences in general self-reported

TABLE 5
Coefficients from logistic model with outcome "has overall health suffered as a result of caregiving?", among caregivers 65 years of age and older (n = 1918), by income

Covariate		Household income					
		< $40 000		$40 000–99 999		> $100 000	
		OR	95% CI	OR	95% CI	OR	95% CI
Sex	Male	1.0		1.0		1.0	
	Female	1.65	0.97–2.79	2.15	1.28–3.64	2.67	0.81–8.44
Individuals cared for	One	1.0		1.0		1.0	
	Two or more	0.93	0.55–1.83	1.20	0.72–2.04	1.03	0.07–2.63
Hours per week of providing care	2–6	1.0		1.0		1.0	
	7–20	1.85	1.01–3.38	3.36	1.81–6.24	1.11	0.27–5.21
	21–48	2.16	1.01–4.59	5.91	2.76–12.62	2.30	0.38–14.16
	48+	4.90	2.70–8.89	7.89	3.63–17.13	4.36	0.97–19.46

Note: *p*-value testing for differences in distribution of classification variable across the 3 income groups based on likelihood ratio chi-square statistic were all statistically significant.

physical and mental health between caregivers and non-caregivers who participated in the 2012 GSS.[20] For example, among those who provided care for someone with a problem related to aging, 24.8% reported being in excellent physical health compared to 21.6% who did not provide care. Conversely, 27% of caregivers reported that their mental health was excellent compared to 33% who did not provide care and reported excellent mental health. However, by looking at the overall health of caregivers we may miss important physical and mental health impacts that potentially result from stressors or fatigue associated with providing care itself. Our analyses suggest that the oldest caregivers were coping well with caregiving, perhaps due to less financial hardship and therefore the ability to pay for additional professional support. However, among the oldest caregivers in the lowest income category, mental health issues associated with caregiving—specifically, depression—may be of concern. Indeed, in every other age group (i.e., under 75) in this income category, the OR was < 1, which provided a striking contrast to those over 75 years of age (OR = 1.56). Of course, given that the sample size for this oldest age group was small compared to the others, further work should be done to provide additional evidence of this pattern.

Also, in line with earlier research,[21] all caregivers noted that they experienced social isolation or feelings of loneliness as a result of their caregiving responsibilities, although this appeared to be mitigated by both greater age and income. The inconsistencies between caregivers' reports of overall health in previous analyses of the 2012 GSS and the health-related impacts of caregiving highlighted here indicate the need for survey questions that specifically target impacts of the caregiving role. Alternatively, these findings might also suggest that the health-related impacts of caregiving can be distinct from overall health outcomes, perhaps due to other resources (e.g., income, social support) in caregiver's lives that have health-enhancing effects.[6]

In addition, we found that the impacts of caregiving on health behaviours differed by age group. Middle-aged caregivers (i.e., between 35 to 64 years of age) reported that caregiving adversely impacted their participation in physical activity, healthy eating, and alcohol consumption, to a greater extent than did younger or older caregivers. The differential impacts of caregiving on physical activity patterns by age may be a reflection, in part, of competing responsibilities including occupation and simultaneously caring for one's children—the "sandwich generation".[22] Other recent work has also found that caregiving negatively impacted participation in valued activities.[23] Specifically, caregivers providing substantial help with health care were 5 times more likely to experience participation restrictions in valued activities. Elsewhere, analyses of the 2009 US Behavioral Risk Factor Surveillance System found that caregiving was associated with increased smoking, obesity, and physical inactivity.[24] Like our analyses, they too found that impacts on physical activity were more pronounced among younger caregivers. Among those under 65 years of age, they found that those who were sedentary had an odds ratio of being a caregiver of 1.45 (95% CI = 1.09–1.94) when compared to those who were physically active. This odds ratio decreased to 1.03 (95% CI = 0.71–1.50) among individuals 65 years of age and older. In contrast, among those aged 65 and older they found that those who drank alcohol were less likely to be a caregiver (OR = 0.63; 95% CI = 0.44–0.90) relative to those who did not. However, these data are limited due to their cross-sectional nature, which does not allow for determination of whether these behaviours changed due to taking on caregiving responsibilities. The data from the 2012 General Social Survey are helpful in this regard, given questions highlighting change in health behaviours; for example, while relatively few respondents indicated that their smoking behaviours had changed because of caregiving, much of this change was increased use.

Strengths and limitations

There are several important strengths of the GSS that should be noted. The sampling scheme of GSS was designed to yield estimates that were representative of the Canadian population. As well, unlike previous surveys, the GSS specifically asked respondents to indicate to what extent caregiving itself impacted several different health conditions and behaviours, which may present differently than self-reported health in general. This is an important consideration to consider when framing similar future survey questionnaires for caregivers. The GSS also collected information on an extensive series of other socio-demographic characteristics including income, by which we were able to stratify some of the social and health impacts of caregiving to gain a clearer picture of the socio-economic toll of caregiving for the care providers themselves.

Despite these strengths, however, there are also limitations. It is possible that some of the presented findings may be biased due to participation rates and the reliance on a telephone sampling strategy. The tabulated participation rate was 65.7%[25] and as participation in telephone surveys is typically influenced by sociodemographic and lifestyle factors, it is not straightforward to generalize these findings to the Canadian population. Our analyses were also limited in some situations by a relatively small number of caregivers, particularly in the older age ranges. Although there were approximately 1900 caregivers who were 65 years of age and older, our analyses for some health measures that were less prevalent may have been limited by this sample size, and when stratified analyses were undertaken.

While this study demonstrates that caregiving is associated with several health behaviours and mental health outcomes, it is also important to acknowledge the limitations of cross-sectional studies. However, the questions that directly ask about whether caregiving has impacts on health outcomes provide a distinct advantage over other surveys that have examined these topics. Nonetheless, prospective cohort studies are ultimately needed to understand to what extent caregiving impacts the risk of developing chronic conditions over time. Record linkage processes will provide such an opportunity to examine these impacts among participants of the GSS and are recommended once sufficient follow-up time has accrued.

Conclusion

In conclusion, our findings show that various negative self-reported health outcomes are reported by caregivers, particularly by those under 65 years of age. Moreover, the social and health impacts of caregiving occurred across all income categories. Consistent with previous studies, providing care was found to have detrimental effects on health behaviours related to exercise, diet, and alcohol consumption. However, among caregivers 65 years of age and older, women and those who devoted a greater number of hours to caregiving were most likely to report detrimental impacts on overall health. Our findings should be interpreted cautiously due to the reliance on self-reported, cross-sectional data and participation bias. Nonetheless, the findings of our study are consistent with previous epidemiological investigations, and provide guidance for future research on caregiving, particularly regarding the health impacts of caregiving itself. Our analyses suggest that providing care impacts health behaviours and mental health regardless of age and income, with few exceptions. However, older caregivers (who are most often women), who provide the most hours of care and on reduced incomes relative to younger caregivers, appear to be less impacted in terms of health behaviours, perhaps as a result of fewer competing demands relative to younger caregivers (i.e., the sandwich generation) or due to cohort effects in which older adults may be less likely to be forthcoming with health concerns or simply less engaged with some health-related behaviours to begin with (e.g., frequency of smoking or alcohol consumption). Nonetheless, these findings suggest that support systems for caregivers must consider variations based on age, sex, and income.

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Conflicts of interest

None to declare.

Authors' contributions and statement

Design and conceptualization: RY, PV, NK, SP.

Acquisition and analysis of data: PV; interpretation of data: PV, RY.

Drafting and revising paper: PV, RY, NK, SP.

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