



Visual impairment and the use of formal and informal home care in Canada: the Canadian Longitudinal Study on Aging

Rumaisa Aljied, BSc,* Marie-Josée Aubin, MD, MSc, MPH,^{†,‡} Ralf Buhrmann, MD, PhD,[§]
Ellen E. Freeman, PhD*^{†,‡,§,||,1}

ABSTRACT • RÉSUMÉ

Objective: To determine the use of home care services in those with and without visual impairment in Canada.

Design: Population-based cross-sectional study.

Participants: Participants came from the baseline examination of the Canadian Longitudinal Study on Aging Comprehensive Cohort. Inclusion criteria included age between 45 and 85 years, community dwelling, and living near one of the 11 data collection sites across 7 Canadian provinces. People were excluded if they were in an institution, were living on a First Nations reserve, were full-time members of the Canadian Armed Forces, did not speak French or English, or had cognitive impairment.

Methods: Presenting visual acuity was measured using the Early Treatment of Diabetic Retinopathy Study chart at 2 meters. Visual impairment was defined as binocular acuity worse than 20/60. The use of formal, informal, and both types of home care was determined by questionnaire.

Results: For 29 666 participants, the use of any home care was greater in those with visual impairment than in those without (28% vs 12%, respectively, $p < 0.01$). After adjusting for demographics and health, people with visual impairment were more likely to use informal home care (odds ratio [OR]=1.89, 95% CI 1.35–2.63) and formal home care/both types of home care (OR=2.70, 95% CI 1.79–4.07) than those without visual impairment. Marital status was a modifier.

Conclusion: Visual impairment is associated with use of home care services. These findings warrant further exploration and, if confirmed, have major health service implications, given the rising prevalence of visual impairment due to age-related eye diseases.

Objectif: Déterminer le degré d'utilisation des soins à domicile en fonction de la présence ou de l'absence d'une déficience visuelle au Canada.

Nature: Étude transversale basée sur la population.

Participants: Les participants provenaient de la cohorte globale de la collecte de départ de l'Étude longitudinale canadienne sur le vieillissement. Pour être inclus, les sujets devaient être âgés de 45 à 85 ans et vivre dans la collectivité près de l'un des 11 centres de cueillette de données situés dans 7 provinces canadiennes. Les sujets étaient exclus s'ils vivaient dans un établissement public ou privé ou sur une réserve des Premières Nations, s'ils étaient membres à temps plein des Forces armées canadiennes, ne parlaient ni français ni anglais ou présentaient des troubles cognitifs.

Méthodes: L'acuité visuelle a été mesurée à l'aide de l'échelle ETDRS (*Early Treatment of Diabetic Retinopathy Study*) à une distance de 2 mètres. Une déficience visuelle se définissait comme une acuité visuelle binoculaire inférieure à 20/60. On s'est servi d'un questionnaire pour mesurer le recours à des soins à domicile formels, à des soins à domicile informels et à ces deux formes de soins à domicile.

Résultats: Chez 29 666 participants, le recours à une forme quelconque de soins à domicile était plus fréquent en présence de déficience visuelle qu'en l'absence d'une telle déficience (28 % vs 12 %, respectivement; $p < 0,01$). Après ajustement pour tenir compte des données démographiques et de l'état de santé, les personnes qui présentaient une déficience visuelle étaient plus susceptibles de recourir à des soins à domicile informels (rapport de cotes [RC]=1,89; IC à 95 % : 1,35–2,63) de même qu'à des soins à domicile formels ou encore aux 2 formes de soins à domicile (RC=2,70; IC à 95 % : 1,79–4,07) que les sujets qui ne présentaient aucune déficience visuelle. L'état matrimonial était un facteur de modification.

Conclusion: La déficience visuelle est associée à l'utilisation de soins à domicile. Ces données justifient un examen plus approfondi parce que leur confirmation peut avoir des répercussions massives sur le système de santé, compte tenu de la prévalence sans cesse croissante de déficience visuelle secondaire à des troubles oculaires liés à l'âge.

The prevalence of vision loss in older adults in Canada is high.¹ The loss of vision late in life can lead to an increased risk of mobility problems, disability, and entry into long-term care.^{2–4} With adequate home support, however, visually impaired older adults may be able to continue to live at home and have their

needs met with either formal care, which involves a professional, or informal care, which involves unpaid care from family, friends, and neighbours. Hoover and Rotermann reported that, in 2009, 25% of the Canadian population aged 65 years and older received informal or formal care at home.⁵

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Very few studies in the world have examined the use of home care services in those with visual impairment. In Australia, Wang et al. found that visually impaired people had 3.1 times the odds of using municipal support services, such as meal support, home help, or nurse visits, after adjustment for demographics and health (odds ratio [OR] = 3.1, 95% CI 1.8–5.1).⁶ Hong et al. found similar results in Australia using 5-year longitudinal data (OR = 3.3, 95% CI 1.9–5.6).⁷ Similarly, in Northern Ireland, Ke et al. found that patients with worse distance visual acuity were more likely to use formal or informal home care (OR = 2.5, $p < 0.05$).⁸

No studies, to our knowledge, have examined the use of home care in people with and without visual impairment in Canada. Our goal was to use the baseline data of the Canadian Longitudinal Study on Aging (CLSA) to address this knowledge gap. This knowledge will be useful to plan appropriately for the home care needs of the aging visually impaired population.

METHODS

Study Population

This study used baseline data from the CLSA. The complete design of the CLSA is described elsewhere.⁹ In brief, 30 097 adults participated in the CLSA comprehensive study. The following inclusion criteria had to be met in order to be eligible: age between 45 and 85 years, community dwelling, and living within 25–50 km of the 11 data collection sites (Victoria, Vancouver, Surrey, Calgary, Winnipeg, Hamilton, Ottawa, Montreal, Sherbrooke, Halifax, and St. John's) in 7 Canadian provinces. People were excluded from the CLSA if they were in an institution that provided 24-hour nursing care, were living on a First Nations reserve or settlement, were full-time members of the Canadian Armed Forces, did not speak French or English, or had an obvious cognitive impairment as determined by trained interviewers. Participants in the comprehensive cohort completed a 90-minute face-to-face, in-home interview and visited a data collection site where physical assessments were conducted. Written informed consent was obtained from each participant and the study was approved by research ethics boards of the 7 different provinces.

Study Design

Participants were randomly selected between 2011 and 2014 from one of two sources: provincial health registries (14%) or random digit dialing (RDD) (86%). Each randomly chosen eligible person recruited from provincial health registries was sent a consent form to sign and return. For those recruited through RDD, a random sample of landline telephone numbers was selected for a given geographic area. Once a call was answered, eligibility was established and consent was obtained. Stratified sampling was used to ensure adequate representation of different demographic groups. Strata within a province were defined

by age group, sex, and distance from the data collection sites. The response rate for the CLSA was 10%.

Data Collection

Visual acuity

During each participant's initial data collection site visit, a trained assessor evaluated visual acuity. Presenting visual acuity was measured at a 2 m distance using the Early Treatment of Diabetic Retinopathy Study (ETDRS) chart with usual distance correction (if worn) in place.¹⁰ Acuity was scored as the total number of letters read correctly and then converted to the log of the minimum angle of resolution (logMAR units). The definition of visual impairment was presenting visual acuity worse than 20/60 (0.48 logMAR), similar to World Health Organization (WHO) criteria.¹¹

Informal and formal home care

Home care use was assessed by self-report during each participant's 90-minute in-home interview. Participants completed 2 modules on home care service use in the past 12 months. The first module, on formal home care, contained a question on whether the participant received "short-term or long-term professional assistance at home during the past 12 months, because of a health condition or limitation that affects the respondent's daily life." They were then asked about the type(s) of assistance received (personal care, housework, etc.), the amount of assistance (i.e., weeks per year, hours per week), and who paid for the assistance. The second module, on informal home care, contained a question on "short-term or long-term home care provided by family, friends or neighbours during the past 12 months, because of a health condition or limitation that affects the respondent's daily life." Participants were asked to exclude assistance from paid workers or volunteer organizations in this section. Participants were then asked about the type(s) of assistance, the amount of assistance, the number of people providing the assistance, and the relationship of the person who gave the most assistance.

Demographics and health

Sociodemographic variables, such as age, sex, marital status, being a veteran, and household income, were collected from each participant during the in-home interview. A variety of comorbid conditions were evaluated by questionnaire. Participants were asked about a physician's diagnosis of the following conditions: diabetes, heart disease, stroke, peripheral vascular disease, Parkinson's disease, osteoarthritis of the knee, osteoarthritis of the hip, asthma, cancer, or back problems. Depression was ascertained using Center for Epidemiologic Studies Depression Scale—Revised (CESD-R-10), a 10-item self-report scale.¹² CESD-R-10 scores equal or greater than 10 were used to indicate depressive symptoms. A sum of these 10 self-reported conditions plus depression as measured using the CESD-R-10 was used in analyses as a comorbidity score.

Statistical Analyses

A 3-category home care outcome was created: (i) no home care, (ii) informal home care only, (iii) formal home care only or formal and informal home care together. This last group was combined into one category because of the relative infrequency of formal home care in our sample. Differences between the home care groups were tested in preliminary analyses by the χ^2 test for categorical variables and the t-test for continuous variables. Multinomial regression was used to adjust for potential confounders. The potential confounders we considered included variables found in previous research to be associated with either visual impairment or home care use and included age, sex, marital status, household income, being a veteran, province of residence, and the sum of comorbid conditions.^{1,13,14} Variables that were thought to possibly modify the association between vision and home care were used for stratification (e.g., sex, marital status, living alone). Obvious differences in the ORs between strata were then tested for statistical significance by the creation of interaction terms in the multinomial regression model. The complex survey design was accounted for in all analyses by using the primary sampling unit, sample weight, and strata variables within the SVY commands in STATA Version 15 (College Station, TX).

RESULTS

Of the 29 666 who had data on visual acuity (98.6%), 8.4% reported using informal care, 1.8% reported using formal care, and 2.0% reported using both types of care. In Table 1, the use of home care is compared by whether participants had visual impairment ($n = 417$) or not ($n = 29\ 249$). Adjusting for the complex survey design, 1.1% (95% CI 1.0–1.2) had visual impairment using the WHO threshold of 20/60. Visually impaired people were older, had a lower household income, were more likely to be not living with a partner, were more likely to be veterans, and had more comorbidities ($p < 0.05$).

Visually impaired people reported using more home care of any type than those without visual impairment (28% vs 12%) ($p < 0.01$). They also reported using more weeks per year of informal care than people without visual impairment ($p < 0.01$). There were no statistically significant differences in the number of weeks per year of formal care, the hours per week of formal or informal care used, or the number of people who provided informal care between those with and without visual impairment ($p > 0.05$).

The types of formal and informal home care received are shown in Figures 1 and 2. The types of formal care most received by people with visual impairment were help with housework, transportation, and medical care (Fig. 1). Of those who received formal care, 49% paid the entire cost, 10% paid part of the cost, and 41% had no out-of-pocket costs. The types of informal care most received by people with visual impairment were help with transportation, housework, and meal delivery (Fig. 2). Informal care was most often provided by a spouse (50%), son or daughter (16%), or friend (10%).

Due to the small numbers of people using formal care, we combined those using formal care with those using both types of care. Those not using care, those using informal care only, and those using either formal care or both types of care are compared in Table 2. Compared to those without visual impairment, people with visual impairment were more likely to use informal care (15.1% vs 8.3%) and formal/both types of care (13.3% vs 3.7%) ($p < 0.01$). There were also statistically significant differences between the care groups in age, sex, household income, marital status, veteran status, comorbidity score, and province ($p < 0.05$).

A multinomial regression model was used to examine the relationship between visual impairment and use of care (Table 3). The unadjusted OR for visual impairment was 2.23 (95% CI 1.64–3.04) for informal care and 4.41 (95% CI 3.14–6.17) for formal care. After adjusting for demographic and health variables, those with visual impairment were still more likely to use informal care (OR = 1.89, 95% CI 1.35–2.63). Other variables related to using informal care included female sex, lower household income, a higher comorbidity score, and province ($p < 0.05$). People with visual impairment were also more likely to use formal care only or both types of care after adjustment (OR = 2.70, 95% CI 1.79–4.07). Other variables related to formal care or both types of care included older age, female sex, lower household income, not living with a partner, veteran status, a higher comorbidity score, and province ($p < 0.05$).

After stratifying (Table 4 and Fig. 3), visual impairment was not related to informal care in those who were unmarried/not living with a partner (OR = 1.09, 95% CI 0.63–1.89), but visual impairment was related to informal care in those who were married/living with a partner (OR = 2.33, 95% CI 1.55–3.49). Visual impairment was associated with formal/both types of care in those who were unmarried/not living with a partner (OR = 2.44, 95% CI 1.40–4.24) and in those who were married/living with a partner (OR = 2.91, 95% CI 1.59–5.31). The interaction term between visual impairment and marital status was statistically significant for the informal care outcome ($p = 0.029$). Interaction terms between visual impairment and sex and visual impairment and living alone were not statistically significant ($p > 0.05$).

DISCUSSION

We found that, of the Canadians aged 45–85 years, 28% of people with visual impairment were receiving formal and/or informal home care compared to 12% of those without visual impairment. Much of that care was informal care from family, friends, and neighbours, such as housework, transportation, and meal delivery. After adjustment for demographic and health factors, people with visual impairment had 1.89 times (95% CI 1.35–2.63) the odds of receiving informal care and 2.70 times (95% CI 1.79–4.07) the odds of receiving formal care, either alone or in combination with informal care. Of those who received formal care,

Table 1—Frequency of care and demographic/health variables by visual impairment status

	Visual Impairment, %/Mean (SE), n = 417	No Visual Impairment, %/Mean (SE), n = 29 249	P*
Home care use			
Used no home care (n = 25 717)	71.6%	88.0%	<0.001
Used any home care (n = 3923)	28.4%	12.0%	
Used formal home care (n = 669)	4.0%	1.8%	
Used informal home care (n = 2525)	15.1%	8.3%	
Used both types of home care (n = 729)	9.3%	1.9%	
Intensity of care use			
# weeks/year getting formal care (n = 1389)	27.6 (3.4)	21.2 (0.6)	0.063
# hours/week getting formal care (n = 1379)	5.0 (1.0)	4.7 (0.3)	0.740
# weeks/year getting informal care (n = 3224)	28.8 (3.0)	15.7 (0.4)	<0.001
# hours/week getting informal care (n = 3177)	8.3 (1.2)	10.4 (0.3)	0.155
# people providing informal care (n = 3248)	3.0 (0.5)	2.8 (0.1)	0.745
Sociodemographic variables			
Age, years (n = 29 666)	66.3 (0.8)	59.3 (0.1)	<0.001
Female sex (n = 29 666)	56.0%	50.7%	0.054
Household Income <\$20 000/Year (n = 29 666)	9.0%	3.9%	<0.001
Not living with a partner	33.9%	23.2%	<0.001
Veteran	11.4%	7.9%	0.025
Comorbidity score (n = 28 088)	1.5 (0.1)	1.2 (0.0)	<0.001

*P-values from the χ^2 test or from logistic regression model; all models accounted for the complex survey design.

49% paid the entire cost themselves, whereas 10% paid part of the cost.

We also found for the first time, to our knowledge, that the association between visual impairment and home care was modified by marital status. There was no association between visual impairment and informal care in those who were unmarried/not living with a partner. This would imply that the lack of a partner in the household removes a frequent source of informal care support for those with visual impairment. Indeed, we found that the most frequent source of informal care was from a spouse (50%).

Our results were similar to the results of studies done in Australia and Northern Ireland.^{6–8} People with visual impairment may require home care because of difficulty with transportation, doing household tasks such as getting groceries, self-care activities such as shaving or putting on makeup, cooking, taking medications, or home maintenance.^{15,16} Getting help with some of these tasks can allow a person to continue to live

independently and forego long-term residential care facilities. Low vision rehabilitation can help a visually impaired person relearn how to do these tasks with limited vision, but participation can be low and the process takes time and commitment.^{16,17}

Older adults with visual impairment who do not have adequate support or resources to live at home may end up in residential care homes. In fact, prior studies have found that people with visual impairment have a higher risk of entering residential care homes.^{2,18,19} Residential care can be extremely expensive at tens of thousands of dollars per year depending on your income and the level of public assistance available. Some evidence has shown that home care reduces the risk of entry into long-term residential care.²⁰

Most home care is given as informal care, that is, from family and friends. Satisfaction with informal care by the recipient can be high. However, literature indicates that informal care can lead to caregiver burden,^{21–23} including financial strain,

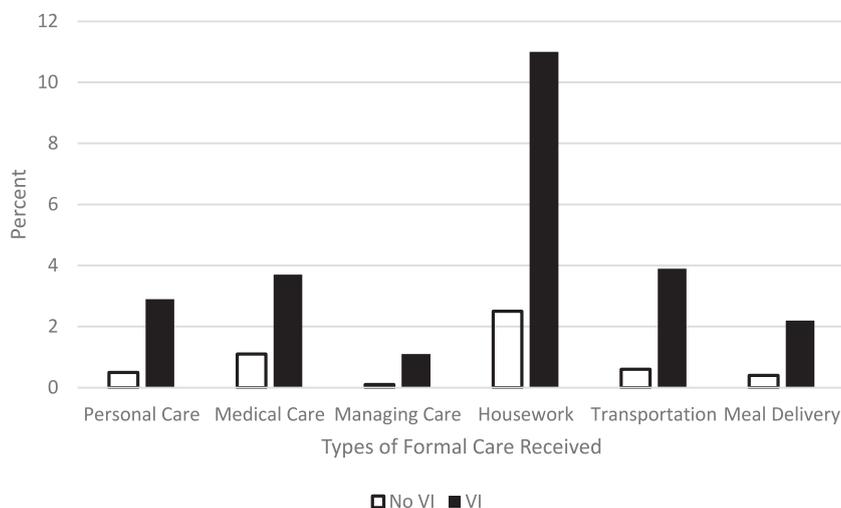


Fig. 1—The types of formal care received by visual impairment status. Housework was the type of formal care most commonly received.

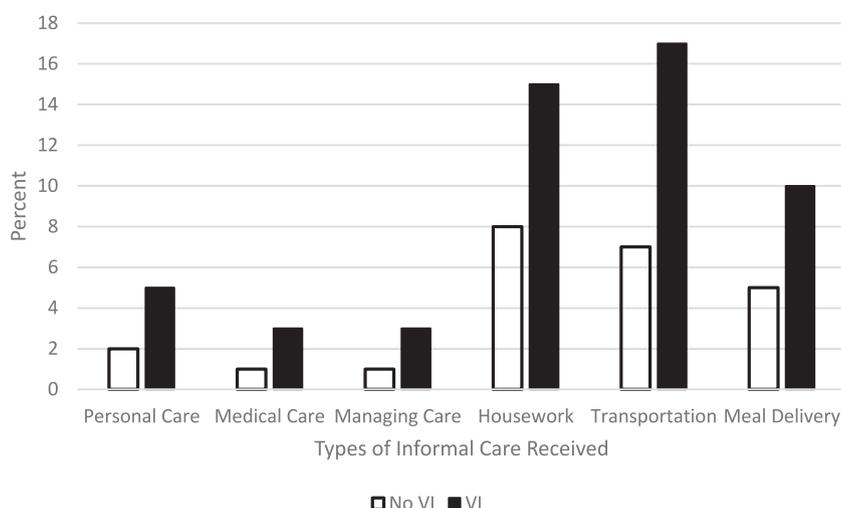


Fig. 2—The types of informal care received by visual impairment status. Transportation and house were the types of informal care most commonly received by people with visual impairment.

depression, sleep disruption, physical morbidity, and even excess mortality. Furthermore, if the care recipient feels that the care is poor quality, the recipient is at a higher risk of depression.²⁴ The ability to supplement informal home care with formal home care may help to alleviate caregiver burden and may help the care recipient to retain some autonomy.

There were statistically significant differences in the reported use of home care by province even after adjustment for demographic differences. In Canada, there is some variability between the provinces in what types of home care are publicly covered and how the care is delivered.²⁵ For example,

a report in 2009 by the Canadian Home Care Association described the co-payments and income testing required for formal home care services. At that time, Manitoba, Ontario, and Quebec did not require co-payments or income testing for formal home care for those who had been assessed as needing it.²⁵ The other provinces in the CLSA did have some degree of co-payments or income testing. In addition to the cost of formal home care, other barriers can include problems with long wait times, inadequate support, and unavailability of service in rural areas. Veterans were more likely to use formal home care. This may be in part because they have no-cost

	No Care, %/Mean (SE), n = 25 717	Informal Care, %/Mean (SE), n = 2525	Formal Only or Both Types, %/Mean (SE), n = 1398	P
N = 29 666				
Visual impairment				<0.001
No (n = 29 249)	88.0	8.3	3.7	
Yes (n = 417)	71.6	15.1	13.3	
Age (n = 29 666)	59.1 (0.06)	59.7 (0.2)	65.7 (0.4)	<0.001
Sex				<0.001
Male (n = 14 587)	90.3	6.9	2.9	
Female (n = 15 079)	85.4	9.9	4.7	
Household income				<0.001
\$100K or more (n = 10 225)	90.9	6.8	2.2	
\$50K–\$100K (n = 9777)	87.9	8.6	3.5	
\$20K–\$50K (n = 6232)	84.0	10.1	6.0	
Less than \$20K (n = 1519)	74.3	13.4	12.4	
Refused/don't know (n = 1913)	84.7	10.2	5.1	<0.001
Marital status				<0.001
Married/living with partner (n = 20 405)	89.1	8.1	2.8	
Single (n = 2594)	85.5	8.6	5.9	
Divorced or separated (n = 3898)	84.3	9.4	6.3	
Widowed (n = 2761)	79.9	10.0	10.1	
Veteran				0.013
No (n = 26 963)	87.9	8.4	3.7	
Yes (n = 2695)	87.2	7.9	5.0	
Comorbidity score (n = 28 088)	1.1 (0.0)	1.7 (0.0)	2.2 (0.1)	<0.001
Province				<0.001
Alberta (n = 2957)	89.4	8.2	2.4	
British Columbia (n = 6254)	87.1	9.2	3.6	
Manitoba (n = 3113)	86.7	9.7	3.5	
Newfoundland & Labrador (n = 2214)	88.4	8.1	3.5	
Nova Scotia (n = 3078)	83.9	11.9	4.2	
Ontario (n = 6418)	90.2	6.7	3.1	
Quebec (n = 6063)	87.6	7.0	5.4	

Table 3—Adjusted relationship between visual impairment and use of care from multinomial regression model

n = 28 052	Informal Care vs No Care		Formal or Both vs No Care	
	Odds Ratio	95% CI	Odds Ratio	95% CI
Visual impairment				
No	1.00		1.00	
Yes	1.89	1.35–2.63	2.70	1.79–4.07
Age	0.99	0.98–0.99	1.04	1.03–1.05
Female sex	1.42	1.28–1.58	1.52	1.31–1.78
Household income				
\$100K or more	1.00		1.00	
\$50K–\$100K	1.20	1.06–1.37	0.87	0.71–1.07
\$20K–\$50K	1.39	1.18–1.63	0.93	0.74–1.16
Less than \$20K	1.86	1.46–2.38	1.67	1.25–2.23
Refused or don't know	1.35	1.07–1.69	0.84	0.62–1.14
Marital status				
Married/living partner	1.00		1.00	
Single	0.84	0.69–1.01	1.69	1.34–2.13
Divorced or separated	0.86	0.73–1.01	1.56	1.27–1.90
Widowed	0.95	0.80–1.13	1.58	1.30–1.92
Veteran	1.04	0.86–1.27	1.46	1.16–1.83
Comorbidity score	1.49	1.43–1.54	1.67	1.60–1.74
Province				
Alberta	1.00		1.00	
British Columbia	1.08	0.88–1.32	1.49	1.09–2.05
Manitoba	1.11	0.89–1.39	1.32	0.94–1.87
Newfoundland & Labrador	0.92	0.71–1.19	1.38	0.93–2.03
Nova Scotia	1.41	1.12–1.76	1.77	1.25–2.50
Ontario	0.76	0.61–0.93	1.20	0.88–1.65
Quebec	0.82	0.66–1.01	2.02	1.47–2.79

Table 4—Adjusted multinomial regression model on relationship between visual impairment and home care stratified by marital status

Strata	Exposure	Informal Care vs No Care		Formal or Both vs No Care	
		Odds Ratio	95% CI	Odds Ratio	95% CI
Not married/living with partner (n = 8588)	Visual impairment				
	No	1.00		1.00	
Married/living with partner (n = 19 464)	Visual impairment				
	No	1.09	0.63–1.89	2.44	1.40–4.24
	Yes	2.33	1.55–3.49	2.91	1.59–5.31

Adjusted for age, sex, household income, veteran status, comorbidity score, and province. Interaction term *P*-value for informal care model = 0.029.

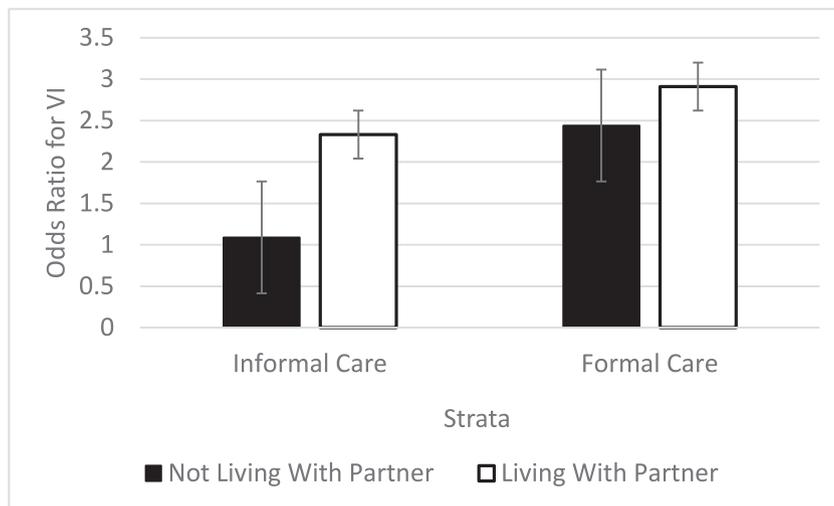


Fig. 3—The associations between visual impairment and home care by relationship status. There is an interaction such that visual impairment is only associated with informal care in those living with a partner.

federal health coverage for formal home care that can supplement provincial coverage.

To conclude, people with visual impairment are more likely to use home care services. This may help to keep them out of residential care so that they can live more autonomously. Given that the prevalence of visual impairment is expected to increase, the demand for home care services may rise as well. If our results are confirmed with longitudinal research, governments and families may need to prepare and plan for this increased demand.

SUPPLEMENTARY MATERIALS

Supplementary material associated with this article can be found in the online version at doi:10.1016/j.jcjo.2018.10.018.

REFERENCES

- Aljied R, Aubin MJ, Buhrmann R, Sabeti S, Freeman EE. Prevalence and determinants of visual impairment in Canada: cross-sectional data from the Canadian Longitudinal Study on Aging. *Can J Ophthalmol*. 2018;53:291–7.
- Wang JJ, Mitchell P, Cumming RG, Smith W. Blue Mountains Eye Study. Visual impairment and nursing home placement in older Australians: the Blue Mountains Eye Study. *Ophthalmic Epidemiol*. 2003;10:3–13.
- Popescu M, Boisjoly H, Schmaltz H, et al. Age-related eye disease and mobility limitations in older adults. *Invest Ophthalmol Vis Sci*. 2011;52:7168–74.
- Dunlop DD, Manheim LM, Sohn MW, Liu X, Chang RW. Incidence of functional limitation in older adults: the impact of gender, race, and chronic conditions. *Arch Phys Med Rehabil*. 2002;83:964–71.
- Hoover M, Rotermann M. Seniors' use of and unmet needs for home care, 2009. *Health Rep*. 2012;23:55–60.
- Wang JJ, Mitchell P, Smith W, Cumming RG, Attebo K. Impact of visual impairment on use of community support services by elderly persons: the Blue Mountains Eye Study. *Invest Ophthalmol Vis Sci*. 1999;40:12–9.
- Hong T, Mitchell P, Burlutsky G, Fong CS, Rochtchina E, Wang JJ. Visual impairment and subsequent use of support services among older people: longitudinal findings from the Blue Mountains Eye Study. *Am J Ophthalmol*. 2013;156:393–9e1.
- Ke KM, Montgomery AM, Stevenson M, O'Neill C, Chakravarthy U. Formal and informal care utilisation amongst elderly persons with visual impairment. *Br J Ophthalmol*. 2007;91:1279–81.
- Raina PS, Wolfson C, Kirkland SA, et al. The Canadian longitudinal study on aging (CLSA). *Can J Aging*. 2009;28:221–9.
- Lovie-Kitchin JE. Validity and reliability of visual acuity measurements. *Ophthalmic Physiol Opt*. 1988;8:363–70.
- WHO. Change the Definition of Blindness. <http://www.who.int/blindness/Change%20the%20Definition%20of%20Blindness.pdf>.
- Andresen EM, Malmgren JA, Carter WB, Patrick DL. Screening for depression in well older adults: evaluation of a short form of the CES-D (Center for Epidemiologic Studies Depression Scale). *Am J Prev Med*. 1994;10:77–84.
- Brooks MS, Laditka SB, Laditka JN. Long-term effects of military service on mental health among veterans of the Vietnam War era. *Mil Med*. 2008;173:570–5.
- Kempen GI, Suurmeijer TP. Factors influencing professional home care utilization among the elderly. *Soc Sci Med*. 1991;32:77–81.
- Windham BG, Griswold ME, Fried LP, Rubin GS, Xue QL, Carlson MC. Impaired vision and the ability to take medications. *J Am Geriatr Soc*. 2005;53:1179–90.
- Walter C, Althouse R, Humble H, Smith W, Odom JV. Vision rehabilitation: recipients' perceived efficacy of rehabilitation. *Ophthalmic Epidemiol*. 2007;14:103–11.
- Mwambwe A, Wittich W, Freeman EE. Disparities in awareness and use of low vision rehabilitation. *Can J Ophthalmol*. 2009;44:686–91.
- Braunseis F, Deutsch T, Frese T, Sandholzer H. The risk for nursing home admission (NHA) did not change in ten years—a prospective cohort study with five-year follow-up. *Arch Gerontol Geriatr*. 2012;54:e63–7.
- Klein BE, Moss SE, Klein R, Lee KE, Cruickshanks KJ. Associations of visual function with physical outcomes and limitations 5 years later in an older population: the Beaver Dam eye study. *Ophthalmology*. 2003;110:644–50.
- Boaz RF, Muller CF. Predicting the risk of “permanent” nursing home residence: the role of community help as indicated by family helpers and prior living arrangements. *Health Serv Res*. 1994;29:391–414.
- Braich PS, Jackson M, Knohl SJ, Bhoiwal D, Gandham SB, Almeida D. Burden and depression in caregivers of blind patients in New York state. *Ophthalmic Epidemiol*. 2016;23:162–70.
- Kuriakose RK, Khan Z, Almeida DRP, Braich PS. Depression and burden among the caregivers of visually impaired patients: a systematic review. *Int Ophthalmol*. 2017;37:767–77.
- Shahly V, Chatterji S, Gruber MJ, et al. Cross-national differences in the prevalence and correlates of burden among older family caregivers in the World Health Organization World Mental Health (WMH) Surveys. *Psychol Med*. 2013;43:865–79.
- Wolff JL, Agree EM. Depression among recipients of informal care: the effects of reciprocity, respect, and adequacy of support. *J Gerontol B Psychol Sci Soc Sci*. 2004;59:S173–80.
- Canadian Healthcare Association. Home Care in Canada: From the Margins to the Mainstream Ottawa. Canadian Healthcare Association; 2009 http://www.healthcarecan.ca/wp-content/themes/camyno/assets/document/PolicyDocs/2009/External/EN/HomeCareCanada_MarginsMainstream_EN.pdf.

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From the *School of Epidemiology and Public Health, University of Ottawa, Ottawa, Ont; †Department of Ophthalmology, Université de Montréal, Montreal, Que; ‡Maisonneuve-Rosemont Hospital, Montreal, Que; §Department of Ophthalmology, University of Ottawa, Ottawa, Ont; ||Ottawa Hospital Research Institute, Ottawa, Ont.

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Correspondence to Ellen Freeman, PhD, 600 Peter Morand Crescent, Office 301H, School of Epidemiology and Public Health, University of Ottawa, Ottawa, Ont. K1G5Z3. eeffreeman@gmail.com