



Original article

Sex Differences in Home Care Performance: A Population-Based Study



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A B S T R A C T

Background: Home care services play an integral role in promoting independence, reducing hospital admission and readmission rates, and preventing or delaying nursing home admission among older adults. Despite important sex differences in functional status and use of services by recipients of home care, differences in home care performance measures by sex have not been examined.

Objective: To assess sex differences in the quality of publicly funded home care services in Ontario, Canada.

Methods: Validated, publicly reported home care quality indicators derived from the Resident Assessment Instrument for Home Care using the 2009 and 2010 Home Care Reporting System database were assessed for 119,795 Ontario home care clients aged 65 years and older. Unadjusted and risk-adjusted sex differences in performance were examined provincially and by health region.

Results: In unadjusted analyses, there were sex differences in health outcomes on all indicators examined (decline or failure to improve in activities of daily living, cognitive decline, depressive symptoms, and pain control). After risk adjustment, differences were minimal. For example, in unadjusted analyses, 23.1% of women and 18.7% of men reported poorly controlled pain. After risk adjustment, 21.2% of women and 21.6% of men reported poorly controlled pain, with a difference of -0.4% (95% CI, -0.4% to -0.3%). Across health regions risk adjustment eliminated sex differences. There was 1.3-fold to 2.6-fold variation in performance on indicators across health regions.

Conclusions: After risk adjustment, no important sex differences in home care quality indicators were identified. Sizable regional variations observed indicate potential to improve home care outcomes for both women and men. Sex differences in unadjusted analyses demonstrate the value of examining both unadjusted and adjusted outcomes and suggest sex-specific strategies will likely be needed to improve home care quality.

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Formal (i.e., publicly provided) home care services play an integral role in helping older adults preserve independence, remain in the community and delay or avoid institutionalization

(Eloranta, Routasalo, & Arve, 2008; Pearson et al., 2006; Swenson, 1998; Tomita, Yoshimura, & Ikegami, 2010). The importance of publicly provided home care's role in reducing

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hospital readmissions has been widely recognized by policy makers (Health Quality Ontario, 2013a; McCarthy, Johnson, & Audet, 2013). Home care provides a range of services including nursing, personal support to assist with activities of daily living (ADLs) and instrumental ADLs, and rehabilitative therapy. This sector is challenged to meet the complex needs of an aging population. Home care can provide and connect older adults with interventions that slow the progression of functional and cognitive decline or provide adequate pain control (Gitlin, Winter et al., 2006; Gitlin, Hauck, Winter, Dennis, & Schulz, 2006; Gitlin et al., 2009; Rochon et al., 2011).

Older women make up the majority of users of home care services and have higher rates of disability and multimorbidity than men of the same age (Arber & Ginn, 1993; McDonough & Walters, 2001; Plouffe, 2003; Statistics Canada, 2014; Walters, 2004). The typical long-term home care recipient is female, greater than 75 years old, and living alone (Bruce et al., 2002; Dalby et al., 2008; Gitlin, Winter et al., 2006; Landi et al., 2001; Rochon et al., 2011). There are sex differences in the prevalence of common chronic conditions. For example, women have a higher prevalence of hypertension and arthritis compared with men, who have a higher prevalence of cardiovascular disease, stroke, and diabetes (Rochon et al., 2011). Older women are less likely to be living with a caregiver, more likely to have adult children as caregivers than a spouse, and more likely to be caregivers themselves of an aging spouse (Gruneir, Forrester, Camacho, Gill, & Bronskill, 2013). These sex and gender differences influence the need for and outcomes of home care services.

Gender differences in quality of care and access to health care services have been well-documented across many conditions and health care settings. For example, women with diabetes or history of cardiovascular disease are less likely to have adequate cholesterol control than men (Bird et al., 2007; Chou, Scholle et al., 2007; Chou, Wong et al., 2007). It has also been found that older women are less likely to have adequate hypertension control compared with men (Gijssbers van Wijk, van Vliet, & Kolk, 1996; Hendrix, Lackland, & Egan, 2003; Kosiak, Sangl, & Correa-de-Araujo, 2006). Lastly, despite much attention to this problem, gender disparities in hospital care for acute myocardial infarction have persisted (Johnston et al., 2013; Rathore et al., 2005; Vaccarino, Parsons, Every, Barron, & Krumholz, 1999).

Owing to sex differences in disease prevalence and multimorbidity, health and functional status, availability of caregivers, and financial and social circumstances, improving the quality of home care services will require addressing the specific needs of women and men. To our knowledge, no prior studies have assessed sex and gender differences in home care quality. Publicly reported home care quality indicators in both the United States and Canada are not stratified by sex. Thus, it is unknown whether there are disparities in home care performance associated with sex, and the extent to which home care services meet the specific needs of both older women and men. We therefore examined sex differences in the quality and outcomes of home care services using previously validated and publicly reported home care quality indicators. We assessed decline or failure to improve in ADL functioning, decline in cognitive functioning, depressive symptoms, and pain control. We also sought to determine whether there was regional variation in performance on these indicators associated with sex.

Methods

Setting

This retrospective cohort study used the Home Care Reporting System (HCRS) database from Ontario, Canada. Ontario is Canada's largest province with more than 13 million residents, nearly 2 million of whom are over the age of 65. The province is divided into 14 health planning regions or Local Health Integration Network (LHIN). Publicly funded home care is delivered by home care agencies that are funded and coordinated by regional Community Care Access Centres (CCACs), which are aligned with the LHIN boundaries. There are 14 CCACs in Ontario (Community Care Access Centre, 2014). Publicly funded home care services can be provided on either a short-stay or long-stay basis (service of >60 days), depending on the recipient's goals of care.

Data

This study uses data from the HCRS collected between April 2009 and March 2010. This database is composed of information collected using the Resident Assessment Instrument for Home Care (RAI-HC; Health Quality Ontario, 2013b). The RAI-HC, a clinical assessment tool with good validity and reliability (Hirdes et al., 1999; Hirdes et al., 2008; Landi et al., 2000) and is used for care planning, funding, and quality measurement purposes. The RAI-HC includes items on physical functioning, cognitive performance, and clinical diagnoses that are used to calculate outcome measurements (such as those for mood and physical functioning) (Health Quality Ontario, 2013b). The RAI-HC was adopted for mandatory collection by Ontario CCACs in 2004 (Hirdes et al., 1999) and is administered by care coordinators at the initial assessment and at subsequent 6-month intervals (Health Quality Ontario, 2013b).

Population

The study's population consists of 119,795 Ontario women and men 65 years and older, who were receiving long-stay home care services and assessed by CCAC care coordinators during the study period. Long-stay home care service use was defined as receipt of home care for 60 days or more.

Quality Indicators

The quality indicators used in this study were derived from the RAI-HC which is used in Canada, the United States (including by the Department of Veterans Affairs), and internationally (Hawes, Fries, James, & Guihan, 2007). These indicators developed and validated through a rigorous process by an international group of investigators from Canada, United States, and Japan (Hirdes et al., 2002; Poss et al., 2008; Shaughnessy, Crisler, & Schlenker, 1998), provide a valid and reliable means to evaluate home care with respect to effectiveness (keeping people healthy at home), safety (keeping people safe at home), population health (keeping population healthy at home) and accessibility (access to care and services) (Hirdes et al., 2004).

The quality indicators examined in this study were 1) decline or failure to improve in ADL functioning, 2) decline in cognitive functioning, 3) depressive symptoms, and 4) inadequate pain

control. These four indicators were chosen for reporting in the POWER study, a comprehensive women's health equity report in Ontario, Canada. Indicator selection was done using a rigorous modified Delphi panel process for inclusion using structured criteria including their relevance to assessing disparities associated with gender and socioeconomic position (Shiller & Bierman, 2009). The first two quality indicators measure change over two assessments (typically done about 6 months apart), and the second two indicators measure symptom burden at one assessment. These outcomes have been previously validated (Hirdes et al., 1999; Hirdes et al., 2008; Landi et al., 2000) and are currently publicly reported by the Health Quality Ontario and the Canadian Institute of Health Information (Health Quality Ontario, 2013b; Keepeynews, Capitman, & Rosati, 2004). Detailed definitions for each of the quality indicators can be found in Table 1.

Decline or failure to improve in ADL function was measured as same or worsened ADL performance on the ADL long form relative to performance on the assessment immediately prior (usually approximately 6 months prior) (Hirdes et al., 2004). The ADL long form is embedded into the RAI-HC and has good convergent validity with the Barthel ADL index ($r = 0.74$) (Landi et al., 2000). Decline in cognitive function was measured by the Cognitive Performance Scale at two time points during the 2009–2010 data collection cycle. The Cognitive Performance Scale was originally developed for the nursing home RAI assessment and has been incorporated into the RAI-HC (Landi et al., 2000). The Cognitive Performance Scale has good convergent validity with the Mini-Mental State Examination ($r = 0.81$) (Landi et al., 2000). Decline in cognitive function was measured as recipients who have experienced a decline in cognitive performance between previous and most recent assessment or recipients who experience new cognitive impairment (Hirdes et al., 2004). There are clinical interventions to treat reversible causes of cognitive impairment (i.e., depression, anemia, hypothyroidism, infection) and medications that can improve or maintain functioning among those with mild to moderate cognitive

impairment. This indicator was chosen because individuals with mild or moderate impairment should receive the needed supports and treatment to slow decline.

The quality indicators depressive symptoms and inadequate pain control were based on the most recent assessment. Depressive symptoms were measured by reports of sad mood and at least two symptoms of functional depression exhibited up to 5 days a week, almost daily, or daily (Hirdes et al., 2004). Symptoms of functional depression include items such as a feeling of sadness or being depressed, recurrent crying or tearfulness, withdrawal from activities of interest, and reduced social interaction (Hirdes et al., 2004). Inadequate pain control was measured as individuals reporting pain and receiving inadequate pain control on the most recent assessment (Hirdes et al., 2004).

Analysis

Rates for each indicator were calculated to determine performance on each measure, where better home care quality is associated with a lower rate. The home care recipient's postal code was used to stratify by LHIN. All analyses, at both provincial and LHIN levels, were stratified by sex. The unadjusted rates were calculated for each quality indicator using the crude numbers and reflect the observed raw scores. Risk-adjusted rates were calculated using the multivariable regression models currently used for public reporting. Risk adjusters for each indicator are shown in Table 1. All analyses were conducted by the Canadian Institute for Health Information and were performed using SAS version 9.2. This study was approved by the research ethics boards of Sunnybrook Health Sciences Centre and St. Michael's Hospital both in Toronto, Ontario, Canada.

Results

Of the 119,795 Ontario home care recipients, most were 80 years and older (70.6%) and women (69.7%). Before

Table 1
Resident Assessment Instrument for Home Care Home Care Quality

Quality Indicator	Definition (Canadian Institute for Health Information, 2010; Hirdes et al., 2004)	Covariates/Confounders Used in Risk-Adjusted Models
Decline or failure to improve on ADL long form	Numerator: Recipients with some impairment on ADL long form who failed to improve between previous and most recent assessment or recipients who have a new ADL impairment based on ADL long form Denominator: All recipients with at least one reassessment who are not palliative on initial assessment	Difficulty in transfer, cognitive impairment (Cognitive Performance Scale)
Decline in cognitive function (measured using the Cognitive Performance Scale) (Landi et al., 2000)	Numerator: Recipients who have experienced a decline in cognitive performance between previous and most recent assessment or recipients who experience new cognitive impairment Denominator: All long-term recipients with at least one re-assessment	Diagnosis of dementia, bowel incontinence Aged ≥ 75 years
Depressive symptoms	Numerator: Any recipient with sad mood on most recent assessment and ≥ 2 symptoms of functional depression are exhibited ≤ 5 days a week or daily or almost daily Denominator: All recipients	Short-term memory problem Recipient feels he/she has poor health, flare-up of recurrent or chronic problem, primary caregiver expresses feelings of distress, anger or depression, aged ≥ 75 years
Pain control	Numerator: Number of recipients who have pain and are receiving inadequate pain control Denominator: All recipients having pain on most recent assessment	Cognitive impairment (Cognitive Performance Scale)

Abbreviation: ADL, activities of daily living.

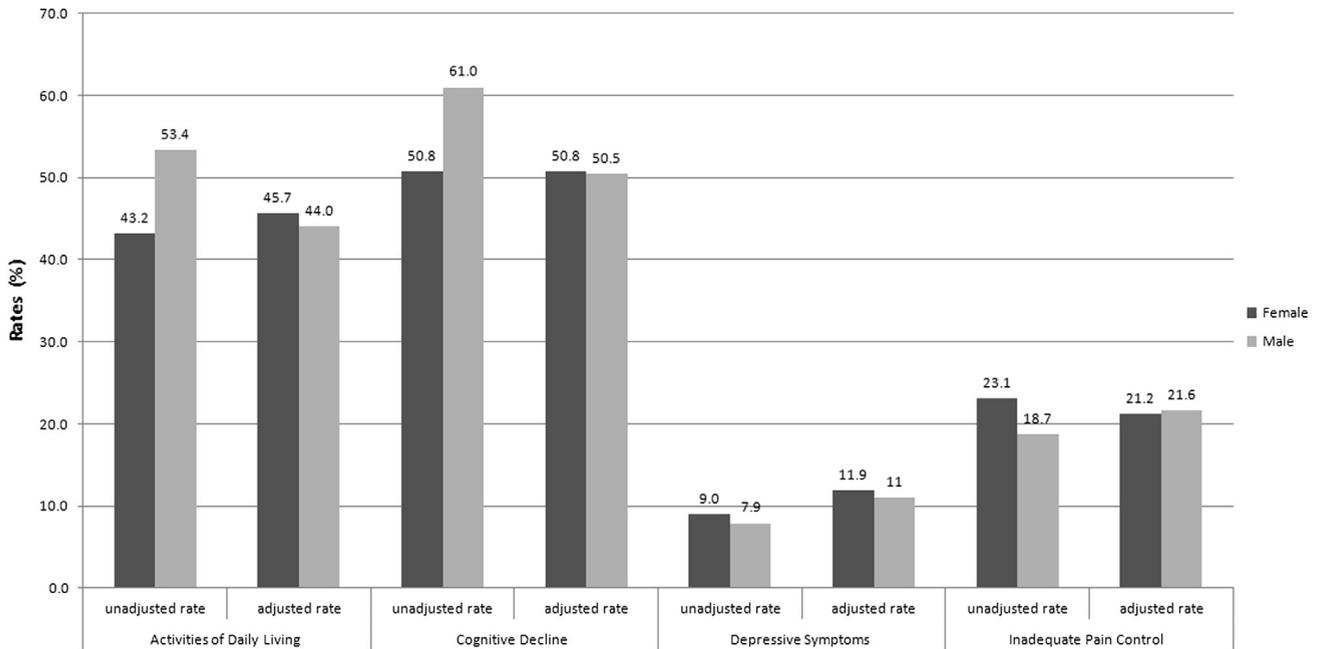


Figure 1. Unadjusted and risk-adjusted rates on home care quality indicators in older adults across Ontario by sex, April 1, 2009, through March 31, 2010.

adjustment, 43.2% of women and 53.4% of men had decline or failure to improve in ADLs. In addition, 50.8% of women and 61.0% of men had a decline in cognitive functioning, 9.0% of women and 7.9% of men reported depressive symptoms, and 23.1% of women and 18.7% of men reported poorly controlled pain (Figure 1).

After risk adjustment, there were no important differences between women and men in outcomes for each indicator examined. After adjusting for difficulty in transfer and cognitive impairment, 45.7% of women and 44% of men showed decline or failure to improve in ADLs, with a difference of 1.7% (95% CI, 1.51%–1.88%). After adjusting for a diagnosis of dementia, bowel incontinence, and age 75 years and older, 50.8% of women and 50.5% of men showed decline in cognitive functioning, with a difference of 1.92% (95% CI, 1.61%–2.22%). After adjusting for short-term memory problems, recipient perception of poor health, flare-up of recurrent or chronic problem, primary caregiver distress, anger or depression, and age 75 years or older, 11.9% of women and 11% of men reported depressive symptoms, with a difference of 0.90% (95% CI, 0.82%–0.98%). After adjusting for cognitive impairment, 21.2% of women and 21.6% of men reported poorly controlled pain, with a difference of -0.4% (95% CI, -0.4% to -0.3% ; Figure 1).

There was regional variation in risk-adjusted rates in outcomes (Table 2). Across health planning regions, there was a 1.5-fold variation in the rate for both women and men reporting a decline or failure to improve in ADL, with a greater percentage of women reporting a decline or failure to improve in ADL. There was a 1.4-fold variation in the rate for both women and men reporting a decline in cognitive functioning. There was a 2.4-fold variation in the rate among women and 2.6-fold variation in the rate among men reporting depressive symptoms with equal reporting between women and men across health planning regions. There was a 1.4-fold variation in the rate among women and 1.3-fold variation in the rate among men reporting inadequate pain control with equal reporting between women and men across health planning regions.

Discussion

Important sex differences in unadjusted analyses were observed on all indicators examined (decline or failure to improve in ADL, cognitive decline, depressive symptoms, and pain control). In unadjusted analyses, women were more likely to experience depressive symptoms and poorly controlled pain, whereas men were more likely to experience a decline or failure to improve in ADL function and a decline in cognitive function. These differences in performance on unadjusted indicators reflect well-known sex and gender differences in health and functional status. However, these differences were nearly all eliminated in risk-adjusted models. The elimination of sex differences on these quality indicators by the factors included in risk adjustment models (such as level of cognitive impairment, difficulty in transfer, primary caregiver distress, and anger or depression) provides important insights into the care of these individuals. These findings can be used to inform gender-sensitive quality improvement interventions aimed at optimizing outcomes in home care for both women and men.

Quality indicators are used for different purposes. When used for quality improvement, the unadjusted differences reflect important differences in need among the populations served. Improving health outcomes requires interventions that address these differences. Risk adjustment, although required to compare quality of care among providers in a fair manner, may mask important sex and gender differences that need to be addressed to optimize care. For example, our study found that more women experience inadequately controlled pain and more men experience a decline in cognitive function. Furthermore, these indicators were developed to measure the performance of home care agencies. It is the responsibility of these agencies to assess patients and provide the needed services to optimize functioning and prevent decline. Therefore, on a population basis, these indicators reflect the overall quality of care and appropriateness of services provided. An agency that performs

Table 2
Risk-Adjusted Rates on Home Care Quality Indicators in Older Adults Across Ontario by Health Planning Region and Sex, April 1, 2009, Through March 31, 2010

Health Planning Regions	Quality Indicator							
	Decline/Failure to Improve in ADL [†] (%)		Decline in Cognitive Functioning [†] (%)		Depressive Symptoms [‡] (%)		Inadequate Pain Control [§] (%)	
	Women	Men	Women	Men	Women	Men	Women	Men
1	44.9	43.0	44.8	42.8	7.2	6.5	21.6	22.0
2	39.5	38.1	49.3	47.6	10.8	9.7	19.3	19.6
3	55.1	52.3	54.2	50.2	10.3	9.2	20.8	21.3
4	49.0	46.9	52.7	50.8	10.7	9.9	22.0	22.4
5	59.3	57.0	62.1	60.8	13.8	13.3	20.3	20.5
6	51.6	48.9	49.2	46.8	9.7	9.1	21.6	21.9
7	51.2	50.1	56.5	55.5	15.7	14.9	23.0	23.2
8	45.4	43.5	50.3	47.6	17.5	16.7	22.9	23.5
9	45.3	44.1	56.1	54.2	12.2	11.4	21.0	21.3
10	49.3	47.4	54.2	51.4	8.2	7.3	22.5	23.0
11	42.7	42.1	59.0	58.8	10.1	9.2	21.0	21.2
12	44.4	43.2	58.1	54.8	10.8	9.6	19.8	20.1
13	39.2	38.3	47.3	46.7	9.3	8.3	17.2	17.6
14	44.6	40.2	50.6	45.5	10.3	9.2	21.8	22.9
Variation across regions (fold)	1.5	1.5	1.4	1.4	2.4	2.6	1.4	1.3

Abbreviation: ADL, activities of daily living.

All *p*-values across health planning regions and comparing women and men were less than 0.05.

* Adjusted for difficulty in transfer and cognitive impairment.

† Adjusted for diagnosis of dementia, bowel incontinence and aged ≥ 75 years.

‡ Adjusted for short-term memory problem, recipient feels he/she has poor health, flare-up of recurrent or chronic problem, primary caregiver expresses feelings of distress, anger or depression, and aged ≥ 75 years.

§ Adjusted for cognitive impairment.

poorly on these indicators may need to reassess the mix of services they are providing.

Women comprise the majority of home care recipients and this difference increases with age. Women are more likely to live alone or be caregivers influencing their need for services (Gruneir et al., 2013; Landi et al., 2001). In Ontario, 13% of women age 65 to 79 receive home care services compared with 9% of men. For those aged 80 and older, 37% of women compared with 24% of men receive home care services (Rochon et al., 2011). Women comprised 69.7% the study's population (83,497 women and 36,298 men). Therefore, improving the quality and outcomes of home care services at the population level will require specifically addressing the needs of older women. Given differences between older women and men receiving home care services in patterns of illness, health and functional status, and social and economic circumstances, it is likely that gender sensitive interventions will be needed to optimize health outcomes.

Within individual health planning regions, risk adjustment eliminated sex differences in performance on the quality indicators. However, important variations in quality indicators across regions were observed for all indicators examined. For example, within older female home care recipients, reporting of depressive symptoms differed by 2.4-fold, depending on the region in which an individual received home care. Furthermore, Region 8 had the highest percentage of home care recipients reporting depressive symptoms and inadequately controlled pain in both women and men. Region 5 had the highest percentage of home care recipients reporting decline or failure to improve in ADLs and cognitive decline in both women and men. Thus, although a gold standard level of optimal performance on these indicators is not known, observed differences suggest considerable potential to improve care.

Differences between regions in geography, populations, and availability of resources contribute to the regional variations observed. Of the 14 regions, 2 are urban, 5 are rural, and 7 are mixed (Local Health Integration Network, 2013). Furthermore,

some regions have large immigrant populations, which create the additional challenge of providing culturally relevant care (Local Health Integration Network, 2013). Across regions other challenges, including travel time, and the availability of health care personnel and services influence the types, mix, and intensity of services provided, as well as health outcomes. Ontario, which covers approximately 416,000 square miles, is larger than France and there are geographic differences in approaches to health and health care in urban, rural, and remote communities. Home care agencies are responsible for their budgets and allocation of services. These quality indicators provide important information that can be used to target and tailor interventions locally to optimize care. Stratifying these indicators by sex can help agencies to address the specific needs of older women and men. Gender differences associated with geography and ethnicity will need to be addressed in designing interventions to improve home care performance.

Home care is one component of the continuum of care provided to the community-dwelling older population. Outcomes of care for the indicators assessed will also be influenced by the clinical care provided. Communication and coordination between home care and primary care is not always present, or when present often suboptimal (Brown, McAvay, Raue, Moses, & Bruce, 2003; Chappell & Hollander, 2011). Integration and coordination of care between primary care and home care is currently a target of health care reform and could play an important role in optimizing outcomes. Integrated care models have been proposed and seek to improve the communication between home care and primary care to better address the needs of home care recipients (Chappell & Hollander, 2011). A Canadian study that linked primary care physicians with home care coordinators for defined communities resulted in better anticipatory care with fewer health crises and improved patient experience with no significant increase cost to the health care system (Korabek, Slauenwhite, Rosenau, & Ross, 2004). Furthermore, integrated care models for home care have shown to improve ADLs and

reduce decline in cognitive impairment (Bernabei et al., 1998). A better understanding is needed of the contribution of care coordination across settings of care to optimize outcomes assessed.

A number of limitations are noted. The RAI-HC quality indicators are outcome measures and we do not have information on the processes of care that led to these outcomes. Thus, these analyses do not provide information on the factors that lead to variation in quality of care across health regions. Future work should examine the relationship between performance on these indicators and services received. Second, this study focused on long-stay home care recipients and we do not examine outcomes in short-stay recipients, including individuals receiving home services for post-acute care or rehabilitative purposes. Third, we do not have data on supplemental, privately provided home care services or informal care that could potentially influence these outcomes. Fourth, the depression and pain indicators are based on the most recent assessment to reflect outcomes of care. Additional indicators that measure change in these symptoms would be of value. Finally, the RAI-HC was not developed to assess gender disparities, and may not capture important factors that influence gender differences in home care. These indicators were selected for inclusion in the POWER Study because of their importance and relevance to the health of older women (Rochon et al., 2011). More work is needed to develop gender sensitive indicators for home care. Despite these limitations, the RAI-HC has many strengths, and these indicators are used for public reporting both provincially and nationally in Canada. Many jurisdictions have also adopted the RAI-HC and collect clinical and administrative data similar to Ontario.

Implications for Policy and/or Practice

Home care plays an essential role in supporting community-dwelling older adults by providing services that maintain independence and delay or avoid institutionalization. Efforts to improve coordination and communication between primary care and home care are needed to improve care quality for older adults living in the community. Older women comprise the majority of long-stay home care users and have different needs than men. Sex differences in unadjusted analyses demonstrate the value of examining both unadjusted and adjusted outcomes and suggest sex specific strategies will likely be needed to improve home care quality.

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At the time that this study was conducted, Dr. Gruneir was a Scientist at Women's College Hospital but has since re-located to the University of Alberta.

References

- Arber, S., & Ginn, J. (1993). Gender and inequalities in health in later life. *Social Science & Medicine*, 36(1), 33–46.
- Bernabei, R., Landi, F., Gambassi, G., Sgadari, A., Zuccala, G., Mor, V., ... Carbonin, P. (1998). Randomised trial of impact of model of integrated care and case management for older people living in the community. *BMJ*, 316(7141), 1348–1351.
- Bird, C. E., Fremont, A. M., Bierman, A. S., Wickstrom, S., Shah, M., Rector, T., ... Escarce, J. J. (2007). Does quality of care for cardiovascular disease and diabetes differ by gender for enrollees in managed care plans? *Women's Health Issues*, 17(3), 131–138.
- Brown, E. L., McAvay, G., Raue, P. J., Moses, S., & Bruce, M. L. (2003). Recognition of depression among elderly recipients of home care services. *Psychiatric Services*, 54(2), 208–213.
- Bruce, M. L., McAvay, G. J., Raue, P. J., Brown, E. L., Meyers, B. S., Keohane, D. J., ... Weber, C. (2002). Major depression in elderly home health care patients. *American Journal of Psychiatry*, 159(8), 1367–1374.
- Canadian Institute for Health Information. (2010). *Home care reporting system quality indicators: Risk adjustment methodology*. Ottawa: Canadian Institute for Health Information.
- Community Care Access Centre. (2014). *Find your CCAC*. Retrieved December 7, 2014, from Community Care Access Centre website: <http://healthcareathome.ca/>.
- Chappell, N. L., & Hollander, M. J. (2011). An evidence-based policy prescription for an aging population. *Healthcare Papers*, 11(1), 8–18.
- Chou, A. F., Scholle, S. H., Weisman, C. S., Bierman, A. S., Correa-de-Araujo, R., & Mosca, L. (2007). Gender disparities in the quality of cardiovascular disease care in private managed care plans. *Women's Health Issues*, 17(3), 120–130.
- Chou, A. F., Wong, L., Weisman, C. S., Chan, S., Bierman, A. S., Correa-de-Araujo, R., & Scholle, S. H. (2007). Gender disparities in cardiovascular disease care among commercial and Medicare managed care plans. *Women's Health Issues*, 17(3), 139–149.
- Dalby, D. M., Hirdes, J. P., Hogan, D. B., Patten, S. B., Beck, C. A., Rabinowitz, T., & Maxwell, C. J. (2008). Potentially inappropriate management of depressive symptoms among Ontario home care clients. *International Journal of Geriatric Psychiatry*, 23(6), 650–659.
- Eloranta, S., Routasalo, P., & Arve, S. (2008). Personal resources supporting living at home as described by older home care clients. *International Journal of Nursing Practice*, 14(4), 308–314.
- Gijsbers van Wijk, C. M., van Vliet, K. P., & Kolk, A. M. (1996). Gender perspectives and quality of care: Towards appropriate and adequate health care for women. *Social Science & Medicine* (1982), 43(5), 707–720.
- Gitlin, L. N., Hauck, W. W., Dennis, M. P., Winter, L., Hodgson, N., & Schinfeld, S. (2009). Long-term effect on mortality of a home intervention that reduces functional difficulties in older adults: Results from a randomized trial. *Journal of the American Geriatrics Society*, 57(3), 476–481.
- Gitlin, L. N., Hauck, W. W., Winter, L., Dennis, M. P., & Schulz, R. (2006). Effect of an in-home occupational and physical therapy intervention on reducing mortality in functionally vulnerable older people: Preliminary findings. *Journal of the American Geriatrics Society*, 54(6), 950–955.
- Gitlin, L. N., Winter, L., Dennis, M. P., Corcoran, M., Schinfeld, S., & Hauck, W. W. (2006). A randomized trial of a multicomponent home intervention to reduce functional difficulties in older adults. *Journal of the American Geriatrics Society*, 54(5), 809–816.
- Gruneir, A., Forrester, J., Camacho, X., Gill, S. S., & Bronskill, S. E. (2013). Gender differences in home care clients and admission to long-term care in Ontario, Canada: A population-based retrospective cohort study. *BMC Geriatrics*, 13, 48, 2318–13–48.
- Hawes, C., Fries, B. E., James, M., & Guihan, M. (2007). Prospects and pitfalls: Use of the RAI-HC assessment by the department of veterans affairs for home care clients. *Gerontologist*, 47(3), 378–387.
- Health Quality Ontario. (2013a). *Home care*. Retrieved January 30, 2013, from Health Quality Ontario website: <http://www.hqontario.ca/public-reporting/home-care>.
- Health Quality Ontario. (2013b). *Information about home care indicators*. Retrieved January 30, 2013, from Health Quality Ontario website: <http://www.hqontario.ca/public-reporting/home-care/information-about-quality-indicators>.
- Hendrix, K. H., Lackland, D. T., & Egan, B. M. (2003). Cardiovascular risk factor control and treatment patterns in primary care. *Managed Care Interface*, 16(11), 21–26.
- Hirdes, J. P., Fries, B. E., Morris, J. N., Ikegami, N., Zimmerman, D., Dalby, D. M., ... Jones, R. (2004). Home care quality indicators (HCQIs) based on the MDS-HC. *Gerontologist*, 44(5), 665–679.
- Hirdes, J. P., Fries, B. E., Morris, J. N., Steel, K., Mor, V., Frijters, D., ... Jonsson, P. (1999). Integrated health information systems based on the RAI/MDS series of instruments. *Healthcare Management Forum/Canadian College of Health Service Executives*, 12(4), 30–40.
- Hirdes, J. P., Ljunggren, G., Morris, J. N., Frijters, D. H., Finne Soveri, H., Gray, L., ... Gilgen, R. (2008). Reliability of the interRAI suite of assessment instruments: A 12-country study of an integrated health information system. *BMC Health Services Research*, 8(1), 277.
- Hirdes, J. P., Smith, T. F., Rabinowitz, T., Yamauchi, K., Perez, E., Telegdi, N. C., ... Resident Assessment Instrument-Mental Health Group (2002). The Resident Assessment Instrument-Mental Health (RAI-MH): Inter-rater reliability and convergent validity. *Journal of Behavioral Health Services & Research*, 29(4), 419–432.
- Johnston, N., Bornefalk-Hermansson, A., Schenck-Gustafsson, K., Held, C., Goodman, S. G., Yan, A. T., & Bierman, A. S. (2013). Do clinical factors explain persistent sex disparities in the use of acute reperfusion therapy in STEMI in

- Sweden and Canada? *European Heart Journal Acute Cardiovascular Care*, 2(4), 350–358.
- Keepnews, D., Capitan, J. A., & Rosati, R. J. (2004). Measuring patient-level clinical outcomes of home health care. *Journal of Nursing Scholarship*, 36(1), 79–85.
- Korabek, B., Slauenwhite, C., Rosenau, P., & Ross, L. (2004). Innovations in seniors' care: Home care/physician partnership. *Nursing Leadership*, 17(3), 65–78.
- Kosiak, B., Sangl, J., & Correa-de-Araujo, R. (2006). Quality of health care for older women: What do we know? *Women's Health Issues*, 16(2), 89–99.
- Landi, F., Onder, G., Cattel, C., Gambassi, G., Lattanzio, F., Cesari, M., ... Silvernet-HC Study Group (2001). Functional status and clinical correlates in cognitively impaired community-living older people. *Journal of Geriatric Psychiatry and Neurology*, 14(1), 21–27.
- Landi, F., Tua, E., Onder, G., Carrara, B., Sgadari, A., Rinaldi, C., ... SILVERNET-HC Study Group of Bergamo (2000). Minimum data set for home care: A valid instrument to assess frail older people living in the community. *Medical Care*, 38(12), 1184–1190.
- Local Health Integration Network. (2013). *Ontario's local health integration networks*. Retrieved May 6, 2013, from Local Health Integration Network website: <http://www.lhins.on.ca/home.aspx>.
- McCarthy, D., Johnson, M. B., & Audet, A. M. (2013). Recasting readmissions by placing the hospital role in community context. *JAMA*, 309(4), 351–352.
- McDonough, P., & Walters, V. (2001). Gender and health: Reassessing patterns and explanations. *Social Science & Medicine*, 52(4), 547–559.
- Pearson, S., Inglis, S. C., McLennan, S. N., Brennan, L., Russell, M., Wilkinson, D., ... Stewart, S. (2006). Prolonged effects of a home-based intervention in patients with chronic illness. *Archives of Internal Medicine*, 166(6), 645–650.
- Plouffe, L. A. (2003). Addressing social and gender inequalities in health among seniors in Canada. *Cadernos De Saude Publica*, 19(3), 855–860.
- Poss, J. W., Jutan, N. M., Hirdes, J. P., Fries, B. E., Morris, J. N., Teare, G. F., & Reidel, K. (2008). A review of evidence on the reliability and validity of minimum data set data. *Healthcare Management Forum*, 21(1), 33–39.
- Rathore, S. S., Foody, J. M., Wang, Y., Herrin, J., Masoudi, F. A., Havranek, E. P., ... Krumholz, H. M. (2005). Sex, quality of care, and outcomes of elderly patients hospitalized with heart failure: Findings from the national heart failure project. *American Heart Journal*, 149(1), 121–128.
- Rochon, P., Bronskill, S., Gruneir, A., Liu, B., Johns, A., Lo, A., & Bierman, A. S. (2011). Older Women's health. In A. S. Bierman (Ed.), *Project for an Ontario Women's health evidence-based report*. Retrieved from POWER study website: <http://powerstudy.ca/wp-content/uploads/downloads/2012/10/Supplement-OlderWomensHealthReport.pdf>.
- Shaughnessy, P. W., Crisler, K. S., & Schlenker, R. E. (1998). Outcome-based quality improvement in home health care: The OASIS indicators. *Quality Management in Health Care*, 7(1), 58–67.
- Shiller, S., & Bierman, A. (2009). Introduction to the POWER study. In A. S. Bierman (Ed.), *Project for an Ontario Women's health evidence-based report*. Retrieved from POWER study website: <http://powerstudy.ca/wp-content/uploads/downloads/2013/01/Chapter1-Introduction.pdf>.
- Statistics Canada. (2014). *Population projections*. Retrieved December 7, 2014, from Statistics Canada website: <http://www.statcan.gc.ca/daily-quotidien/140917/dq140917a-eng.htm>.
- Swenson, M. M. (1998). The meaning of home to five elderly women. *Health Care for Women International*, 19(5), 381–393.
- Tomita, N., Yoshimura, K., & Ikegami, N. (2010). Impact of home and community-based services on hospitalisation and institutionalisation among individuals eligible for long-term care insurance in Japan. *BMC Health Services Research*, 10, 345.
- Vaccarino, V., Parsons, L., Every, N. R., Barron, H. V., & Krumholz, H. M. (1999). Sex-based differences in early mortality after myocardial infarction. National Registry of Myocardial Infarction 2 Participants. *New England Journal of Medicine*, 341(4), 217–225.
- Walters, V. (2004). The social context of women's health. *BMC Women's Health*, 4(Suppl 1), S2.

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