

# Indicators of Home Care Use in Urban and Rural Settings\*

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## RÉSUMÉ

Cette étude emploie un modèle longitudinal pour l'examen des différences rurales-urbaines en matière d'utilisation de services de soins à domicile au fil du temps, et s'inspire des données de l'Étude sur la santé et le vieillissement au Manitoba (ESVM). Des paramètres ont été recueillis en 1991-92 sur des adultes de 65 ans et plus, vivant dans la communauté et ne souffrant d'aucun trouble cognitif, qui ne reçoivent pas de services de soins à domicile dans la province du Manitoba, Canada ( $n=855$ ). Le lieu de résidence était classé soit petite ville urbaine ou zone principalement rurale. Un suivi de cinq ans a permis de déterminer l'utilisation subséquente de soins à domicile. Les résidents urbains étaient plus susceptibles de recevoir des soins à domicile que ceux des petites villes ou des zones principalement rurales. Les caractéristiques associées à l'usage étaient différentes selon le lieu de résidence, à l'exception du fonctionnement physique de base et des changements au plan du fonctionnement physique qui ressortaient constamment en raison de leur importance. L'orientation de la recherche ultérieure fait l'objet de discussion.

## ABSTRACT

This study employs a longitudinal design to examine rural-urban differences in home care service use over time, drawing on data from the Manitoba Study of Health and Aging (MSHA). Characteristics of community-dwelling, cognitively intact adults aged 65 years or older not receiving home care services in the province of Manitoba ( $n=855$ ) were collected in 1991/1992. Place of residence was categorized as *urban/small-town zone* or *predominantly rural area*. A 5-year follow-up determined subsequent home care use. Urban residents were more likely to receive home care than those in small-town zones or predominantly rural areas. Characteristics associated with use differed according to place of residence, with the exception of baseline physical functioning and changes in physical functioning that consistently emerged as significant. Directions for future research are discussed.

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Access to health care has been found to be more difficult in rural and remote regions due to greater travel distances to receive or provide health care and problems with recruitment and retention of health care personnel (Kirby, 2002; Romanow, 2002). However, the extent to which access to home care is affected by geographic location is not clear. Shapiro (1986) has reported that urban older adults are more likely to use home care, while Penning (1995) has found the opposite. Allan and Cloutier-Fisher (2006) indicated that individuals in rural small towns have significantly higher home support hours and home nursing care than individuals in urban core areas, but Forbes and Janzen (2004) have found that rural residents are less likely to receive personal care assistance. Still other studies have found that rural/urban location is not an important factor in home care use (Forbes, Morgan, & Janzen, 2006; Hall & Coyte, 2001; Hawranik, 2002). The continued growth in home care signifies its importance within the spectrum of health care services. Therefore, it is essential to clarify whether receipt of this service is affected by place of residence.

Certain population characteristics, such as physical disability and age, have been more consistently identified in the literature as predictors of home care than geographic location. Performance of basic activities of daily living (ADL) and/or instrumental activities of daily living (IADL) emerges as a strong factor associated with home care use (Hall & Coyte, 2001; Hawranik, 2002; Shapiro & Tate, 1997). Similarly, as age increases, so does the likelihood of use (Allan & Cloutier-Fisher, 2006; Hall & Coyte, 2001; Wilkins & Beaudet, 2000). Cognitive status is related to use of some types and to number of home care services (Hawranik, 2002; Shapiro & Tate, 1997), as is the informal support system, such as living arrangement and availability of care from family or friends (Penning, 1995; Shapiro & Tate, 1997; Wilkins & Beaudet, 2000). The degree to which characteristics associated with home care use are similar in rural and urban settings remains open to speculation. Forbes and Janzen (2004) have identified different characteristics associated with home care use by rural and urban adults. Urban residents with restrictions in activities of daily living were more likely to receive home care than those without such limitations; no such differences emerged for rural residents.

The divergent findings for home care use among rural and urban populations indicate that further attention to regional utilization of home care is warranted. The approach to such an examination needs to be sensitive to the diversity in rural communities, which is well recognized but less often critically applied. Allan and Cloutier-Fisher (2006) suggest that a geographical

study of health service use should go beyond an urban/rural dichotomy to understand better the needs and patterns in service use. The purpose of this study is to examine the relationship between geographic residence and home care use, using a longitudinal design. Attention focuses on differences in the likelihood of home care service use by older adults in urban, small-town, and rural settings and on whether characteristics associated with use differ by setting.

## Methods

Data are from the Manitoba Study of Health and Aging (MSHA), an expansion of the Canadian Study of Health and Aging (Canadian Study of Health and Aging Working Group, 1994) (see Manitoba Study of Health and Aging Research Group [1995] for details). At baseline (1991/1992), a total of 1,763 community-dwelling individuals aged 65 and over completed an in-person screening interview. At Time 2 (1996/1997), participants were contacted for a follow-up interview. At both interviews, cognitive status was assessed using the Modified Mini-Mental State examination (3MS), and individuals scoring 78 out of a possible 100 were considered cognitively intact (Teng & Chui, 1987). The current analysis is restricted to respondents who (a) reported no use of public home care at baseline; (b) screened as cognitively intact at baseline; and (c) completed a follow-up interview at Time 2. A total of 855 older adults met these criteria.

### Measures

#### *Home Care Utilization at Time 2*

Respondents were asked about their use of home care services in the last 6 months. Use/non-use of each service (nursing, homemaker, attendant/orderly, social worker/counsellor/psychologist) was examined; these services also were combined into a dichotomous variable of overall use/non-use.

#### *Baseline and Change Characteristics*

Baseline socio-demographic characteristics included age, gender, living arrangement, and years of education. The measure of urban/rural residence was based on Beale codes (United States, General Accounting Office, 1989) modified for Canada (Statistics Canada, 2001). Census subdivisions were classified, according to their 1991 populations (Statistics Canada, 1992), as *urban* areas (population > 19,999); *small-town* zones (population 2,500–19,999); and *predominantly rural* regions (population < 2,500). Respondents were assigned to one of the three groups based on their place of residence. Health characteristics at baseline included physical functioning and depression.

Physical functioning was measured using the OARS Multidimensional Functional Assessment Questionnaire (Fillenbaum, 1988); a dichotomy of *excellent/good* functioning versus *mild, moderate, severe, and total* impairment was used. A dichotomy of *no depression* versus *possible depression* was used, based on the 20-item Centre for Epidemiologic Studies Depression (CES-D) scale (Radloff, 1977), with a cut-off score of 16 or higher indicating possible depression (McDowell & Newell, 1996).

Changes in four characteristics from baseline to Time 2 were examined. Change in living arrangement was measured to identify older adults who had begun living alone by Time 2. A change in physical functioning was scored as *stable/improved* versus *declined*. Individuals who remained *intact* were compared to those who became *impaired* (3MS score < 78 at Time 2). The change in depression was dichotomized as *stable/improved* versus a change from *no depression* to *possible depression*.

#### Data Analysis

Cross-tabulations and *t* tests were used initially to examine the relationships between sample characteristics and home care use. With the exception of age and gender, only characteristics significant at  $p < 0.10$  at the bivariate level were included in multivariate analyses (available upon request). As well, the relatively small numbers of respondents residing in small-town and predominantly rural areas necessitated combining them into one group for the multivariate analyses. Two logistic regression models were developed for the total sample: the urban sample only, and the rural sample only. In Model 1, baseline characteristics were entered as a block. In Model 2, these variables were entered first, followed by the four change variables as a block. Data analysis was performed using SPSS 11.5.

## Results

Over one half of the respondents (60%) were urban residents, 17 per cent resided in small towns, and 23 per cent lived in predominantly rural areas (Table 1). Age ranged from 65 to 91 years, with a mean of 75 years. Sample characteristics did not differ significantly by geographic residence, with the exception of education, a change in cognitive functioning over time, and a change in depression (Table 1).

#### Home Care Utilization

At Time 2, 14 per cent of the respondents reported that they had used at least one of the four home care

services. Urban residents (16%) were more likely to do so than their small-town (11%) or predominantly rural (9%) counterparts ( $p = 0.019$ ). Homemaker services were used by 11 per cent of urban residents and fewer than 5 per cent of small-town and predominantly rural residents ( $p = 0.004$ ). There were no differences for nursing services (6% urban, 4% small town, 3% predominantly rural sample;  $p = 0.171$ ) or for attendant/orderly services (6% urban, 4% small town, 6% predominantly rural;  $p = 0.604$ ). Too few participants (1%) used social worker/counsellor/psychologist services to allow for an examination of geographical differences.

#### Characteristics Associated with Home Care Use

For the total sample, living in an urban setting, being older, and having some limitations in physical functioning at baseline were associated with the use of home care 5 years later (Model 1, Table 2). When change characteristics were added, becoming cognitively impaired, experiencing a decline in physical functioning, and beginning to show possible depression by Time 2 were also associated with a greater likelihood of using home care at Time 2 (Model 2, Table 2). Among the rural residents, being older, having more education, and having limitations in physical functioning were significantly related to subsequent home care use (Model 1, Table 2). When change characteristics were added, having more education, having poorer physical functioning at baseline, becoming cognitively impaired, and experiencing physical decline were associated with an increased likelihood of home care use (Model 2: Table 2).

## Discussion

Using a longitudinal design, this study examines rural–urban differences in home care use and in the user characteristics associated with home care use. Consistent with previous research (Shapiro, 1986), geographic location played a role in home care use, as urban residents were significantly more likely to become home care users than were their small-town or predominantly rural counterparts. In addition, residents in urban areas were more likely to use some types of home care services than were those in rural areas, a difference also reported by Forbes and Janzen (2004).

Some characteristics associated with home care use were similar across rural and urban settings, while others were not. Physical functioning at baseline, as well as change over time, were the strongest predictors of use, irrespective of place of residence. The impact of cognitive status, depression, age, and

**Table 1: Sample characteristics at baseline and changes in characteristics by Time 2 for total sample and by geographic residence (percents)**

Characteristics	Total (N = 855)	Urban (n = 509)	Small-Town Zones(n = 150)	Predominantly Rural Areas(n = 196)	p value
<b>Baseline Characteristics</b>					
Geographic Residence					
Urban	59.5				
Small-town zones	17.5	N/A	N/A	N/A	N/A
Predominantly rural areas	22.9				
Gender					
Male	40.5	39.1	40.0	44.4	
Female	59.5	60.9	60.0	55.6	0.436
Age					
65–69	22.0	24.6	20.7	16.3	
70–74	26.0	23.6	28.7	30.1	
75–79	29.9	29.7	29.3	31.1	
80 and over	22.1	22.2	21.3	22.4	0.276
Education <sup>a</sup>					
Less than 10 years	42.1	30.4	55.0	62.6	
10 years or more	57.9	69.6	45.0	37.4	0.000
Living Arrangement					
Lives with others	63.9	64.0	64.7	62.8	
Lives alone	36.1	36.0	35.3	37.2	0.926
Physical Functioning					
Excellent/Good	79.5	79.2	83.3	77.6	
Mild/Total impairment	20.5	20.8	16.7	22.4	0.398
Depression (CES-D)					
No depression	92.3	91.5	92.7	93.9	
Possible depression	7.7	8.5	7.3	6.1	0.569
Cognitive Functioning Intact	100.0	100.0	100.0	100.0	
<b>Change in Characteristics by Time 2</b>					
Living Arrangement					
Stable/Now with others	88.1	87.2	88.0	90.3	
Began living alone	11.9	12.8	12.0	9.7	0.528
Cognitive Functioning					
Remains intact	85.7	88.8	82.7	80.1	
Intact to impaired	14.3	11.2	17.3	19.9	0.006
Physical Functioning					
Stable/Improved	73.5	75.0	72.7	69.9	
Declined	26.5	25.0	27.3	30.1	0.371
Depression (CES-D)					
Stable/Improved	89.4	87.2	95.9	90.2	
Not depressed to depressed	10.6	12.8	4.1	9.8	0.010

<sup>a</sup> The sample sizes are 851 for total, 507 for urban, 149 for small-town zones, and 195 for predominantly rural areas due to missing values.

education varied across settings. Of note is the finding that urban older adults with fewer years of education were less likely to use home care than those with more education, whereas the pattern was reversed among rural residents. Forbes and Janzen (2004) also found this rural–urban difference and suggested that higher levels of education might be required in rural areas for negotiating the health care system and knowing how to access it.

The emergence of differences between urban and rural residents in home care utilization patterns and in the user characteristics associated with home care

utilization raises several questions. These differences are interesting, given that the Manitoba Home Care Program is a provincially funded, regionally delivered program that maintains the same eligibility criteria and provides the same basic services across the province. The extent to which the rural–urban differences reported here reflect differential assessment for receiving services and the influence of structural and supply factors on access to and availability of home care (e.g., funding, staffing levels, recruitment, retention, and geographic distance) requires further attention. An examination of the

**Table 2: Factors associated with home care use at Time 2**

Baseline Characteristics	Total Sample		Urban		Rural	
	Model 1 OR (95% CI)	Model 2 OR (95% CI)	Model 1 OR (95% CI)	Model 2 OR (95% CI)	Model 1 OR (95% CI)	Model 2 OR (95% CI)
Geographic Residence <sup>a</sup>						
Urban	2.52 (1.39–4.57)**	2.92 (1.55–5.51)***	—	—	—	—
Small-town zone	1.51 (0.71–3.20)	1.95 (0.89–4.27)	—	—	—	—
Age	1.11 (1.07–1.15)***	1.07 (1.03–1.11)***	1.14 (1.09–1.20)***	1.10 (1.04–1.16)***	1.08 (1.01–1.15)*	1.04 (0.97–1.11)
Gender	0.81 (0.50–1.32)	0.62 (0.36–1.05)	0.61 (0.33–1.12)	0.41 (0.21–0.80)**	1.15 (0.46–2.88)	1.08 (0.41–2.84)
Education	0.82 (0.52–1.28)	0.97 (0.59–1.57)	0.49 (0.29–0.83)**	0.52 (0.29–0.94)*	2.22 (1.02–4.85)*	2.90 (1.23–6.84)*
Living Arrangement	0.93 (0.58–1.49)	0.74 (0.45–1.23)	0.90 (0.50–1.62)	0.67 (0.35–1.29)	1.23 (0.53–2.84)	1.03 (0.43–2.48)
Physical Functioning	3.39 (2.13–5.40)***	11.65 (5.90–23.01)***	2.97 (1.66–5.30)***	11.46 (5.04–26.07)***	4.68 (2.05–10.69)***	13.53 (3.53–51.84)***
Depression (CES-D)	1.70 (0.87–3.39)	1.54 (0.74–3.19)	2.12 (0.94–4.77)	1.97 (0.82–4.71)	1.62 (0.42–6.30)	1.44 (0.35–6.00)
Change Characteristics						
Cognitive Functioning	—	1.86 (1.08–3.21)*	—	1.37 (0.65–2.88)	—	2.54 (1.06–6.09)*
Physical Functioning	—	6.82 (3.55–13.10)***	—	7.79 (3.58–16.98)***	—	6.13 (1.61–23.32)**
Depression	—	2.08 (1.13–3.82)*	—	2.65 (1.28–5.48)**	—	1.74 (0.49–6.15)

\* p < 0.05; \*\* p < 0.01; \*\*\* p < 0.001

<sup>a</sup> Reference group is those living in predominantly rural areas.

reasons for, the type of, and the sequencing of home care use is needed to understand how and why services are being used in different locations.

The importance of the diversity of rural communities must be recognized. Recent Canadian research (Keefe et al., 2004) has highlighted the variation in rural communities and in their supportiveness towards older residents. Additional research is needed to provide an in-depth examination of variations in home care service availability, access, assessment, and use in rural and remote communities as well as in different types of rural and urban settings.

**References**

Allan, D., & Cloutier-Fisher, D. (2006). Health service utilization among older adults in British Columbia: Making sense of geography. *Canadian Journal on Aging, 25*(2), 219–232.

Canadian Study of Health and Aging Working Group (1994). Canadian Study of Health and Aging: Study methods and prevalence of dementia. *Canadian Medical Association Journal, 150*, 899–913.

Fillenbaum, G.C. (1988). *Multidimensional functional assessment of older adults: The Duke Older American Resources and Services procedure*. Hillsdale, NJ: Lawrence Erlbaum.

Forbes, D.A., & Janzen, B.L. (2004). Comparison of rural and urban users and non-users of home care in Canada. *Canadian Journal of Rural Medicine, 9*, 227–235.

Forbes, D.A., Morgan, D., & Janzen, B.L. (2006). Rural and urban Canadians with dementia: Use of health care services. *Canadian Journal on Aging, 25*(3), 321–330.

Hall, R., & Coyte, P. (2001). Determinants of home care utilization: Who uses home care in Ontario? *Canadian Journal on Aging, 2*(2), 175–192.

Hawranik, P. (2002). Inhome service use by caregivers and their elders: Does cognitive status make a difference? *Canadian Journal on Aging, 21*(2), 257–271.

Keefe, J., Fancey, P., Keating, N., Frederick, J., Eales, J., & Dobbs, B. (2004). *Caring contexts of rural seniors: Phase 1—Technical report*. Edmonton, AB: University of Alberta. Retrieved 16 Aug. 2007 from [http://www.msvu.ca/mdcaging/PDFs/Technical%20report%20FINAL\\_Feb02.pdf](http://www.msvu.ca/mdcaging/PDFs/Technical%20report%20FINAL_Feb02.pdf).

Kirby, M.J. (2002). *The health of Canadians: The federal role: Vol. 6. Recommendations for reform*. Ottawa: Standing Senate Committee on Social Affairs, Science and Technology.

Manitoba Study of Health and Aging Research Group (1995). *Manitoba Study of Health and Aging final*

- report: Technical section. Winnipeg, MB: University of Manitoba, Centre on Aging.
- McDowell, I., & Newell, C. (1996). *Measuring health: A guide to rating scales and questionnaires*. (2nd ed.). New York: Oxford University Press.
- Penning, M.J. (1995). Cognitive impairment, caregiver burden, and the utilization of home health services. *Journal of Aging and Health, 7*, 233–253.
- Radloff, L. (1977). The CES-D scale: A self-report depression scale for research in the general population. *Applied Psychological Measurement, 1*, 385–401.
- Romanow, R.J. (2002). *Building on values: The future of health care in Canada*. Ottawa: Commission on the Future of Health Care in Canada.
- Shapiro, E. (1986). Patterns and predictors of home care use by the elderly when need is the sole basis for admission. *Home Health Care Services Quarterly, 7*, 29–44.
- Shapiro, E., & Tate, R.B. (1997). The use and cost of community care services by elders with unimpaired cognitive function, with cognitive impairment/no dementia and with dementia. *Canadian Journal on Aging, 16*, 665–681.
- Statistics Canada. (1992). Profile of census divisions and subdivisions in Manitoba, Part A. *1991 Census of Canada* (Catalogue No. 95-358). Ottawa: Supply and Services Canada.
- Statistics Canada. (2001). *Statistical methods: Definitions of concepts and variables*. Retrieved 19 September 2002 from <http://www.statcan.ca/english/concepts/definitions>.
- Teng, E.L., & Chui, H.C. (1987). The Modified Mini-Mental State (3MS) examination. *Journal of Clinical Psychiatry, 48*, 314–318.
- United States, General Accounting Office (1989). *Rural development programs that focus on rural American and its economic development*. Washington, DC: Author.
- Wilkins, K., & Beaudet, M.P. (2000). Changes in social support in relation to seniors' use of home care. *Health Reports, 11*, 39–47.