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Home health care for the elderly: associated factors and characteristics of access and health care

ABSTRACT

OBJECTIVE: To assess factors associated with home health care for the elderly and its characteristics based on different care models, the Family Health Strategy and traditional primary care.

METHODS: A population-based cross-sectional study was conducted in a representative sample of 1,593 individuals aged ≥60 years living in the urban area of the city of Bagé, Southern Brazil, in 2008. A multistage sampling was carried out. Data was collected during individual interviews about access to services, providers' involvement, users' satisfaction and health status after care. Poisson regression model was used for estimating crude and adjusted prevalence ratios, their related 95% confidence intervals and p-values (Wald test).

RESULTS: Home health care was statistically associated with prior history of stroke, signs of dementia and disability in activities of daily living. The family was requested 75% of home care visits. Medical doctors provided most of the care in traditional primary care settings while nursing staff provided most care within the Family Health Strategy. Approximately 78% of the elderly received care within 24 hours after the request and 95% of them positively evaluated the care received. Two thirds of the elderly reported improved health status.

CONCLUSIONS: The variables associated with home health care were consistent with fragility indicators included in the Brazilian National Health Policy for the Elderly, reinforcing the role of this strategy for promoting equitable health care to elderly population. Users' satisfaction and the positive impact on their health status confirm home as a setting for providing care.

DESCRIPTORS: Aged. Home Nursing. Family Health Program. Health Services Accessibility. Primary Health Care. Cross-Sectional Studies.

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INTRODUCTION

The implementation of the Family Health Strategy (FHS) in Brazil is an attempt to reorganize primary care,[22] improve access to health care and restore home as a setting for providing care.[12,15] Home health care can reduce hospital costs and humanize health practices.[1,5] Chronic non-communicable diseases associated with population aging can cause limitations with temporary or permanent functional disabilities.[4] It is thus a challenge for managers and society to find alternative care strategies to meet specific demands of the elderly and their families.[3,9]

Despite discussions and the formulation of specific policies for the elderly, changes are still incipient.[21] The release of guidelines for elderly primary care

is an attempt to translate these theoretical discussions into health practices.[4] Although some qualitative studies have explored home health care and hospital care at home,[6,19] in the scope of population there remain gaps on factors associated with care of the elderly at home, access to care and involvement of health providers in these care services.

The present study aimed to assess factors associated with home health care for the elderly and its characteristics based on different care models, the FHS and traditional primary care.

METHODS

Population-based cross-sectional study conducted from July to November 2008. The sample consisted of individuals aged 60 or older living in defined geographical areas of primary health care services in the urban area of the city of Bagé, Southern Brazil. In 2006 the population of this municipality was 122,461 inhabitants, 82% of them living in the urban area.[a] In 2008, there were 15 FHS units with a total of 19 teams covering 51% of the city's urban population. Five care units followed the traditional primary care model covering the remaining 49% of the population. The FHS has been recently implemented in the city and the first team started its operation in 2003.

For studying home health care and its associated factors, it was set a sample of 1,530 individuals with 95% confidence interval and 80% statistical power to detect a minimum relative risk of 1.5 for exposures affecting up to 4% of the population. The final sample size included a 10% increase to compensate for eventual losses and refusals, 15% for confounders and a design effect of around 1.3.

The sample was drawn from urban districts within the coverage area of primary care units. First, there were defined geographical areas of each primary care unit and then they were divided into microareas and its blocks were numbered. The starting point of data collection was randomly selected in each block. Households located on the left were considered eligible. One in every six households was selected for sample dispersion in the area. All elderly living in a household were invited to participate in the study. When it was not possible to conduct an interview after three attempts on different days and times, it was considered a loss/refusal. No replacements were allowed.

A pilot study was carried out to test a pre-coded structured questionnaire. For respondents with partial disability, the questionnaire was administered to a family or primary caregiver. For those respondents with total disability, questions requiring self-reporting were not included.

Home health care – the dependent variable – was defined as a set of services provided at home by health care providers for giving therapeutic support to the elderly and their families. The following question was asked: "<In the last three months> did you receive care at home provided by any of these health providers: doctor? (yes/no); nurse? (yes/no); social worker? (yes/no); physical therapist? (yes/no)".

Demographic and socioeconomic variables studied were sex, age (60–74 years; 75 years or older), marital status (married or living with partner; widowed; divorced or never married); literate (yes, no); *per capita* income (in monthly minimum wages [MMWs]: ≤ 1; >1 and <3; ≥ 3) and private health insurance (yes, no). The following variables were used as indicators of morbidity: history of falls in the last year (yes, no); medical diagnosis of hypertension (yes, no); diabetes (yes, no); stroke (yes, no); and cancer (yes, no). The results of Mini-Mental State Examination (MMSE) for screening signs of dementia were categorized into presence or absence based on the level of education.[7] The Geriatric Depression Scale (GDS) was used to assess the presence of depressive symptoms and the results were categorized as: present (score 0–5), and absent (score ≥ 6).[18] Functional disability was assessed using Katz et al[10] and Lawton & Brody scales.[13] The elderly who reported needing help to perform at least one activity were considered disabled. It was also investigated hospitalization in the last four years (none; one; two or more); medical visits in the last three months (none; one; two or more); and if the elderly had been bedridden for the last 30 days (yes, no). Self-perceived health status was categorized as either worse/bad/regular and good/very good.

For characterizing home health care, it was investigated who requested care (the elderly himself/herself; family; friend or neighbor; community health worker [CHW]); how the request was made (the service was called; family member, friend or neighbor personally went to the service; it asked through CHW); waiting time (less than 24 hours; 24 hours or more); health providers involved (doctor; nursing staff; social worker; physical therapist); user's satisfaction with care received (bad; regular; good; very good); and health status after care (remained the same; improved a little; improved a lot; recovered).

The analyses were stratified by area of residence and traditional or FHS care. Poisson regression with robust variance estimates[2] was used to estimate crude and adjusted prevalence ratios with 95% confidence intervals (95% CI). The adjusted analysis sought to control for potential confounding variables in same-level variables and among those of previous levels, and all variables with p≤0.20 remained in the model. A 5% statistical significance level was set. Due to losses

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[a] Datasus. Cadernos dos municípios. Brasília: MS; 2006 [cited 2008 Apr 23]. Available from: http://w3.datasus.gov.br/datasus/datasus.php

Table 1. Characteristics of the study population according to the model of care. City of Bagé, Southern Brazil, 2008.

Variable	Traditional care		Family Health Strategy		Total	
	n = 741	%	n = 852	%	n = 1,593	%
Gender						
Male	260	35.1	333	39.1	593	37.2
Female	481	64.9	519	60.9	1000	62.8
Age (years)						
60–74	483	65.2	613	72.0	1096	68.8
75 or more	258	34.8	239	28.0	497	31.2
Illiteracy						
No	115	15.5	264	31.0	379	23.9
Yes	626	85.5	588	69.0	1214	76.1
Marital status						
Divorced or single	109	14.7	129	15.2	238	15.0
Married	374	50.6	442	51.9	816	51.2
Widowed	257	34.7	281	32.9	538	33.8
Per capita income (MMWs)						
≤1	355	49.2	554	66.0	909	58.2
>1 to 3	243	33.6	250	29.8	493	31.6
>3	124	17.2	35	4.2	159	10.2
Private health insurance						
No	404	54.7	621	73.3	1025	64.6
Yes	335	45.3	226	26.7	561	35.4
Morbidities[a]						
Hypertension	414	55.9	467	54.8	881	55.3
Diabetes	97	13.1	144	16.9	241	15.1
Stroke	70	9.5	87	10.2	157	9.9
Cancer	42	5.7	36	4.2	78	4.9
Dementia	73	10.4	126	15.5	199	13.1
Depression	91	12.9	134	16.6	225	14.9
Falls in the last year	208	28.1	238	28.0	446	28.0
ADL disability	67	9.0	102	12.0	169	10.6
IADL disability	203	27.4	315	37.3	518	32.7
Hospitalization in the last four years						
None	525	70.9	614	72.1	1139	71.5
Once	153	20.7	134	15.7	287	18.0
Two or more times	63	8.5	104	12.2	167	10.5
Medical visits						
None	332	44.8	396	46.5	728	45.7
One	267	36.0	256	30.1	523	32.8
Two or more	142	19.2	200	23.4	342	21.5
Bedridden						
No	684	92.3	761	89.3	1445	90.7
Yes	57	7.7	91	10.7	148	9.3
Self-perceived health status						
Good, very good	435	61.0	471	57.0	906	58.8
Worse, bad, or regular	278	39.0	356	43.0	634	41.2
Home health care						
No	715	96.5	767	90.2	1482	93.2
Yes	26	3.5	83	9.8	109	6.9

MMWs: monthly minimum wages; ADL: activities of daily living; IADL: instrumental activities of daily living.

Table 2. Crude and adjusted analysis between home health care and demographic and socioeconomic variables, morbidities, functional capacity, utilization of health services and self-perceived health status by model of care. City of Bagé, Southern Brazil, 2008.

Variable	Traditional care (n=741)					Family Health Strategy (n=852)				
		Crude analysis		Adjusted analysis			Crude analysis		Adjusted analysis	
	%	PR (95% CI)	p-value	PR (95% CI)	p-value	%	PR (95% CI)	p-value	PR (95% CI)	p-value
Gender[a]			0.714		0.378			0.203		0.563
Male	3.9	1		1		8.1	1		1	
Female	3.3	0.9 (0.40;1.88)		0.66 (0.27;1.64)		10.8	1.4 (0.86;2.06)		1.14 (0.72;1.80)	
Age[a] (years)			0.016		0.096			< 0.001		< 0.001
60–74	2.3	1		1		6.7	1		1	
75 or more	5.8	2.6 (1.19;5.48)		2.04 (0.88;4.74)		17.6	2.6 (1.75;3.92)		2.20 (1.44;3.35)	
Marital status[a]			0.052		0.158			0.022		0.257
Divorced or single	1.8	1		1		5.4	1		1	
Married	2.4	1.31 (0.29;5.99)		0.99 (0.23 ;4.47)		8.6	1.58 (0.72;3.46)		1.66 (0.77;3.61)	
Widowed	5.8	3.18 (0.74;13.69)		2.28 (0.49;10.57)		13.5	2.49 (1.14;5.42)		1.92 (0.88;4.17)	
Illiteracy[a]			0.985		0.689			0.002		0.047
No	3.5	1.0 (0.35;2.82)		1.24 (0.42; 3.67)		14.1	1.9 (1.25;2.82)		1.54 (1.01;2.37)	
Yes	3.5	1		1		7.7	1		1	
Per capita income[a] (MMWs)			< 0.001		0.001*			0.402		0.722*
≤1	1.9	1		1		10.7	1		1	
>1 to 3	2.9	1.5 (0.52;4.11)		1.51 (0.54;4.27)		7.6	0.7 (0.44;1.17)		0.82 (0.50;1.35)	
>3	9.7	4.9 (1.98;12.19)		5.18 (2.07;12.93)		8.6	0.8 (0.26;2.43)		1.27 (0.42;3.86)	
Private health insurance[a]			0.042		0.442			0.774		0.818
No	2.2	1		1		10.0	1		1	
Yes	5.1	2.3 (1.03;5.05)		1.40 (0.59;3.29)		9.3	0.9 (0.58;1.49)		0.94 (0.57;1.55)	
Hypertension[b]			0.849		0.751			0.009		0.188
No	3.4	1		1		6.8	1		1	
Yes	3.6	1.1 (0.50;2.31)		1.16 (0.45;3.05)		12.2	1.9 (1.16;2.81)		1.42 (0.84;2.41)	
Diabetes[b]			0.128		0.356			0.012		0.283
No	3.1	1		1		8.6	1		1	
Yes	6.2	2.1 (0.82;4.83)		1.64 (0.58;4.64)		15.4	1.9 (1.13;2.81)		1.31 (0.80;2.12)	

To be continued

Table 2 continuation

Variable	Traditional care (n=741)					Family Health Strategy (n=852)				
		Crude analysis		Adjusted analysis			Crude analysis		Adjusted analysis	
	%	PR (95% CI)	p-value	PR (95% CI)	p-value	%	PR (95% CI)	p-value	PR (95% CI)	p-value
Stroke[b]			< 0.001		0.003			< 0.001		0.001
No	2.7	1		1		7.5	1		1	
Yes	11.4	4.3 (1.92;9.45)		3.94 (1.57 ;9.88)		29.9	4.0 (2.66;6.01)		2.33 (1.41;3.85)	
Cancer[b]			0.034		0.03			0.146		0.591
No	3.2	1		1		9.5	1		1	
Yes	9.5	3.0 (1.09;8.38)		4.07 (1.41;14.48)		16.7	1.8 (0.82;3.77)		1.27 (0.53;3.06)	
Dementia[b]			0.035		0.002			< 0.001		0.048
No	2.4	1		1		6.6	1		1	
Yes	6.8	2.9 (1.08;7.69)		4.49 (1.71;11.81)		22.2	3.4 (2.19;5.19)		1.69 (1.01;2.85)	
Depression[b]			0.399		0.142			< 0.001		0.001
No	2.8	1		1		6.1	1		1	
Yes	4.4	1.6 (0.54;4.60)		0.45 (0.15 ;1.31)		20.1	3.3 (2.11;5.18)		2.14 (1.35;3.39)	
Falls in the last year[b]			0.755		0.455			0.001		0.018
No	3.4	1		1		7.5	1		1	
Yes	3.8	1.1 (0.50;2.58)		1.41 (0.57;3.46)		15.1	2.0 (1.33;3.02)		1.74 (1.09;2.76)	
ADL disability[c]			< 0.001		0.691			< 0.001		0.008
No	2.2	1		1		5.7	1		1	
Yes	16.4	7.4 (3.53;15.41)		1.20 (0.49;2.98)		39.2	6.8 (4.67;9.95)		2.19 (1.23;3.92)	
IADL disability[c]			< 0.001		< 0.001			< 0.001		< 0.001
No	0.7	1		1		3.2	1		1	
Yes	10.8	14.6 (5.08;41.81)		10.35 (3.25;32.94)		20.9	6.5 (3.88;10.87)		3.20 (1.68;6.10)	
Hospitalization[d]			0.002		0.789 *			< 0.001		0.054 *
None	1.9	1		1		5.6	1		1	
Once	6.5	3.4 (1.45;8.09)		1.77 (0.71;4.39)		19.4	3.5 (2.17;5.63)		2.23 (1.33;3.75)	
Two times or more	9.5	5.0 (1.88;13.3)		0.84 (0.26;2.69)		22.3	4.0 (2.47;6.55)		1.65 (0.88;3.09)	

To be continued

Table 2 continuation

Variable	Traditional care (n=741)					Family Health Strategy (n=852)				
	%	Crude analysis PR (95% CI)	p-value	Adjusted analysis PR (95% CI)	p-value	%	Crude analysis PR (95% CI)	p-value	Adjusted analysis PR (95% CI)	p-value
Medical visits[d]			< 0.001		0.079*			< 0.001		0.456*
None	1.8	1		1		4.8	1		1	
Once	3.4	1.9 (0.67;5.18)		1.60 (0.49;5.16)		14.5	3.0 (1.77;5.12)		1.16 (0.67;2.01)	
Two times or more	7.8	4.3 (1.62;11.37)		2.49 (0.89;6.96)		13.6	2.8 (1.61;4.95)		0.67 (0.32;1.43)	
Bedridden[d]			< 0.001		0.056			< 0.001		0.001
No	2.6	1		1		6.8	1		1	
Yes	14.0	5.3 (2.42;11.73)		2.44 (0.98;6.11)		34.4	5.0 (3.42;7.42)		2.49 (1.45;4.17)	
Self-perceived health status[d]			0.713		0.962			< 0.001		0.423
Good, very good	2.8	1		1		5.3	1		1	
Very poor, poor, fair	3.2	1.2 (0.50;2.75)		1.02 (0.39;2.65)		13.6	2.6 (1.61;4.06)		1.25 (0.72;2.16)	

* Wald test for linear trend; ADL: activities of daily living; IADL: instrumental activities of daily living; MMWs: monthly minimum wages; [a] Analysis adjusted for variables of level 1; [b] Analysis adjusted for same-level variables and variables of level 1; [c] Analysis adjusted for same-level variables and variables of levels 1 e 2; [d] Analysis adjusted for same-level variables and variables of levels 1, 2 and 3.

related to home health care characteristics, we chose to present data in a descriptive manner, without resorting to hypothesis testing. Data analysis was performed using Stata, version 10.0.

The study was approved by the Research Ethics Committee of Faculdade de Medicina da Universidade Federal de Pelotas (Protocol No. 15/08, 2008). Ethical principles were followed and all participants signed an informed consent form.

RESULTS

We identified 1,713 elderly, of which 1,593 participated in the study. The response rate was 93% with 4% losses and 3% refusals.

Women accounted for about two thirds of the sample. A third was widowed and 50% were married or living with a partner. Among those receiving traditional health care, a higher proportion were 75 years old or more, earned more than three MMWs and had private health insurance. In both models of care, traditional and FHS, the elderly had similar prevalence of medical diagnosis of hypertension (55%), stroke (10%) and history of falls in the last year (28%). Those who received FHS care had higher rates of diabetes, dementia, depression; disability in basic and instrumental activities of daily living; history of hospitalization in the last four years; and being bedridden in the last 30 days. Overall, in both models of care, about 41% of the elderly negatively rated their health status. The prevalence of home health care was 4% and 10% in areas of traditional and FHS care, respectively (Table 1).

In the crude analysis, in both areas, home health care was statistically associated with age, prior history of stroke, dementia, disability in basic and instrumental activities of daily living; hospitalization in the last four years; medical visits in the last three months, and being bedridden in the last 30 days. In areas of traditional care, being widowed, with an income greater than three MMWs, private health insurance and history of cancer increased the likelihood of receiving home health care. In FHS areas, home care was higher among illiterate elderly with a medical diagnosis of hypertension, diabetes, signs of depression, history of falls in the last year and self-perceived health status as worse, bad or regular (Table 2).

After adjustment in areas of traditional care, income remained positively associated with care. Those with an incomes grater than three MMWs were 5.2 times more likely to receive home health care compared to those with up to one minimum wage. This likelihood was four times higher among those elderly with history of stroke, cancer and signs of dementia. Those with functional disabilities in activities of daily living were 10.4 times more likely to receive health care at home compared to those with no disability (Table 2).

After adjustment in areas of FHS care, the likelihood of receiving home health care increased by 2.2 times for those aged 75 or more. Those illiterate were 50% more likely to receive home care. History of stroke, signs of dementia, depression, history of falls and presence of functional disability remained significantly associated with home health care after adjustment. The likelihood of receiving home health care was 3.2 times higher for those with disability in instrumental activities of daily living. Being hospitalized at least once in the last four years and bedridden in the last 30 days increased 2.2 and 2.5 times the likelihood of receiving home care, respectively. Self-perceived health status lost its association with the outcome after adjustment (Table 2).

Regardless of the care model, the family requested home health care in 75% of cases (traditional care: n=19/25; FHS care: n=45/60), followed by neighbors or friends (10%). The request was made by the elderly himself/herself in 16% in traditional care areas (n=4/25) and 3% in FHS areas (n=2/60). Service request was made by phone in 49% of cases (n=42/85) at a different proportion in both areas (traditional=76%; FHS=38%). In FHS areas, service was requested through CHW in 23% of cases (n=14/60). In both models of care, services were provided in less than 24 hours in 78% (n = 60/77).

Medical doctors were involved in about 40% of visits (traditional=10/26; FHS=34/83). Nursing staff were involved in 70% (n=59/83) in FHS areas and 35% (n=9/26) in traditional care areas. Social workers were involved in 12% of visits (n=10/83) in FHS areas and in one visit in traditional care areas. Physical therapists provided care 27% of visits (n=7/26) in traditional areas and 4% (n=3/83) in FHS areas.

The assessment of care and services was similar regardless of the care model. Care was "very good" in 53% (n=51/96) and "good" in 42% (n=40/96) of the elderly studied. After care, 21% of the elderly (n=20/94) reported that their health status remained the same, 37% (n=35/94) reported that it improved a little, and 29% (n=27/94) that it improved a lot. Recovery was reported in 13% (n=12/94) of cases.

DISCUSSION

Different factors were associated with home health care among the elderly studied. However, regardless of the care model, these factors are consistent with indicators set as priority in the Brazilian National Health Policy for the Elderly[b] and World Health Organization recommendations.[c] Common factors included history of stroke, signs of dementia and disability in instrumental activities of daily living. In FHS areas, a greater proportion of factors were associated with age, education level, depression, history of falls in the last year, disability in basic activities of daily living, hospitalization and being bedridden.

Care provided in FHS was able to reduce social inequities. In these areas, a higher prevalence of home health care provided to elderly with per capita income up to one minimum monthly wage and with no health insurance suggests that FHS allowed reduce in the short run inequality in health service access. A positive association with income in traditional care areas was also reported in an American study on the utilization of formal and informal care among elderly with functional disabilities.[11] However, this association was not found in FHS areas, which reinforces the importance of demographic factors and conditions that can potentially cause functional disability for home health care provision.

The population aging issue stresses longer longevity with independence. Conditions such as stroke sequelae are markers of the need for care. They are preventable with proper management of hypertension, diabetes, cardiovascular disease, combined with physical activity. Similarly, physical therapy has an important role in the recovery of movement and autonomy. In traditional care areas, those with a history of stroke were four times more likely to receive home health care compared to those with no history of stroke. In FHS areas, they were 2.3 times more likely to receive care.

In the city of Bagé, signs of dementia were a major marker of home health care, regardless of area of residence. Given the large number of conditions associated with aging, the older elderly would be more likely to need home health care and dementia is a major factor in planning care in this population group.[14] In FHS areas, age (75 years or more) and signs of dementia were factors associated with home health care, even after adjustments for demographic, socioeconomic and morbidity variables. In Spain, sequelae of stroke and dementia accounted for 43% and 27%, respectively, of the demand for care in the first year of operation of a support team for home health care for elderly.[16]

Another important cause of immobility is the history of falls. Health providers should develop initiatives to reduce falls. In the present study, the prevalence of falls was similar (28%) in both care areas; however, after adjustment, it remained associated with home health care only in FHS areas. A study with individuals aged 65 or more living in the South and Northeast Brazil reported a 35% prevalence of falls. Among the elderly who have suffered falls, 12% had fractures, reinforcing its importance from a public health perspective.[20]

[b] Ministério da Saúde. Portaria nº 2.528, de 19 de outubro de 2006. Aprova a Política Nacional de Saúde da Pessoa Idosa. Brasília, DF; 2006.
[c] Organização Mundial da Saúde. Envelhecimento ativo: uma política de saúde. Brasília, DF; 2005 [cited 2010 Jun 25]. Available from: http://www.prosaude.org/publicacoes /diversos/envelhecimento_ativo.pdf

Among the providers involved with care, it should be noted the great involvement of nursing staff in FHS areas. In countries where the aging process has been longer, nurses play a central role in the management of home care.[8] In Brazil, the management of home health care should include a multidisciplinary care team comprising doctors, nurses, physical therapists, social workers, nutritionists, psychologists, speech therapists, occupational therapists, pharmacists, nursing assistants, and also train these providers to deal with this new demographic and epidemiological reality including home as a setting for providing care.[1]

The family has a major role in making home health care feasible. However, given current changes in family structure, future generations will likely require additional care that the family will not be able to provide. This will increase the involvement of the State, especially at the municipal level where home health care is provided.

The number of losses may be a limitation of the study, especially regarding answers to the variables who requested care, how the request was made, and waiting time. Still, there was a pattern that could be further explored.

The study findings suggest that home health care provision was adequate, strengthening the factors set as priority in the Brazilian National Health Policy for the Elderly. The fact that the prevalence of home health care is higher in the FHS is consistent with the socioeconomic and morbidity profile of the population attended and service provision in these areas. This strategy allowed access to care, stressing its importance for providing care to those people who are unable to get to health services. Users' satisfaction with the care received is an indicator of quality of care.

The proportion of elderly caregivers to other elderly tends to grow as life expectancy increases.[17] Social support network and adequacy of home environment should be further investigated. Promotion of physical activity can improve people's balance and gait and reduce the risk of falls. Projects that assess urban infrastructure in terms of transportation, traffic, accessibility to public buildings and recreational areas may help create environments that facilitate movement of elderly people with disabilities and reduce their dependence. This set of initiatives should be developed using interdisciplinary and intersectoral approaches for building environments free of architectural barriers and appropriate to future generations.

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