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Prevalence and factors associated with home care among older adults

ABSTRACT

OBJECTIVE: To estimate the prevalence of home care among older adults and to identify associated factors.

METHODS: Population-based cross-sectional study including 598 individuals aged ≥ 60 years. Subjects were selected through a two-stage cluster sampling strategy in the city of Pelotas, Southern Brazil, between 2007 and 2008. Home care was defined as a positive answer to the following question: "Do you have someone here in your home to take care of you?" Data on potential associated factors for home care were collected using a standardized questionnaire. Poisson regression models with robust variance were used in the crude and in the adjusted analyses. The analysis took into account the clustering of the sample.

RESULTS: The prevalence of home care was 49.5% (95%CI: 44.5;54.5). Among those who have a caretaker, 39.5% reported to be cared for by their spouse, while 4.7% of subjects reported having a professional caretaker. In the adjusted analysis, home care was positively associated with male sex, having a partner, increased age and disability for instrumental activities of daily living. Home care was inversely associated with schooling and physical activity levels.

CONCLUSIONS: The high prevalence of home care observed may overburden family members responsible for the most of the care provided. These findings are important for the planning of health interventions aimed the assistance of the elderly and their families. Particular attention should be paid to individuals with advanced age, low educational level and with disability for activities instrumental to daily living.

DESCRIPTORS: Aged. Caregivers. Home Nursing. Personal Autonomy. Family Relations. Socioeconomic Factors. Cross-Sectional Studies.

INTRODUCTION

The demographic and epidemiologic transitions have generated debate on the challenge of finding alternatives for the care of a growing number of older adults. This issue merits special attention in developing countries, where the rapid process of population aging is not accompanied by socioeconomic development.[a]

The more frequent occurrence of chronic diseases,[3] falls[15] and disability,[7] often make these individuals require permanent and continuous care for the adequate clinical management of their diseases and are among the main health concerns related to longevity. Therefore, older adults also use more health services, are more often admitted to hospitals and experience longer stays.[4] To

[a] Organização Mundial da Saúde. Envelhecimento ativo: uma política de saúde. Brasília, DF; 2005.

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generate new findings for living in advanced age, health policies for the elderly must consider certain aspects: functional capacity, the need for autonomy, care and social participation.[16]

The Brazilian health system considers the family as the basic social unit of communities and implements multisector health actions to establish partnerships between health services, the family and the social support network.[14] It is recognized that the informal support system (or the informal care) provided by parents, neighbors, friends or community institutions, still constitute the most important social support mechanism in communities. It is estimated that families provide between 80% and 90% of the care for elderly members, including medical and nursing care, daily tasks such as transportation and domestic activities and purchases, in addition to being responsible for initiating and maintaining connections with health services.[1,8,9]

The literature on social support has not focused much on home care of older adults. Therefore the objective of the present study was to estimate the prevalence of home care provided to the elderly and to identify associated factors.

METHODS

The cross-sectional study was performed with elderly residents in an urban zone of Pelotas municipality, Southern Brazil, from October 2007 to January 2008.

The cluster sampling process was done in two stages, with the primary sample units consisting of census units as defined by the most recent census of the Instituto Brasileiro de Geografia e Estatística [b] and with households as the secondary sample units. The census sectors were listed in increasing order, according to the head of household's average income, and the total number of households was calculated. By dividing the total number of households in the city by the amount of census sectors to be selected, the first value was established, which represented the participating household from the first census sector. The other sectors were systematically listed. On average 11 households were selected per sector, and eligible individuals were ≥ 60 years old.

For data collection, a pre-coded questionnaire was utilized. Interviews were performed face-to-face by 30 trained interviewers. Interviews were considered losses/refusals when they could not be performed after three attempts on different days and times. Data quality control was performed through a second visit to 10% of the sample members and administration of a shortened version of the tool.

The outcome of house care was obtained through a positive or negative response to the following question: "Do you have someone here in your home to take care of you?" The independent variables were sex, age, education, marital status, economic level,[c] tobacco use, body mass index (BMI – corresponding to the categories of underweight/normal, overweight and obese) [17] and self-perceived health (Table 1). The level of physical activity was obtained from the International Physical Activity Questionnaire.[6] The degree of disability for basic activities of daily living was determined by the Katz Index,[11] based on the need of partial or total assistance for at least one basic activity analyzed: eating, bathing, dressing, using the restroom, laying down, getting out of bed and/or chair and control of urination and/or evacuation. Disability in activities essential to daily living was defined according to the Lawton Scale,[13] when partial or total assistance was needed for at least one essential activity investigated: telephone use, use of transport to go to distant locations, making purchases, house cleaning, washing clothes, food preparation, taking medication and managing money. The duration of care provided and the family relationship of the person responsible for the home care were sought by the question: "How many hours does (s)he stay with you?" In cases where the older person was incapable of answering the questionnaire, the information was obtained by proxy as reported by the caregiver.

For the categorical variables, a 95% confidence interval (95%CI) was used, in addition to measures of centrality, amplitude and standard deviation (SD) for numerical values. In the crude and adjusted analysis, a Poisson regression model with a robust variance was utilized, and the results were expressed in terms of prevalence.[2] The data analysis accounted for the cluster sampling design and the hierarchy of factors possibly associated with outcome. A backward selection strategy and significance level of $p \leq 0.20$ were adopted for statistical modeling to improve consistency in the model, and p values ≤ 0.05 were considered statistically significant. The effect of sampling design on the outcome of home care was 1.50 and considered in statistical analysis by the "svy" command in the Stata software.

Given the number of individuals in each category and the prevalence of home care, the study power could identify prevalence rate ratios above 1.3 as potential risk factors. All the calculations were done *a posteriori* with an alpha error of 5% and a power of 80%.

EpiInfo version 6.04d was utilized for the double entry of data and verification of possible inconsistencies. The data analysis was done with Stata, version 9.0.

[b] Instituto Brasileiro de Geografia e Estatística. Cartograma municipal dos setores censitários: situação 2000. Rio de Janeiro; 2000. [CD-ROM].
[c] Associação Brasileira de Empresas de Pesquisa. Critério de Classificação Econômica Brasil. São Paulo; 2003[cited 2007 Jun 16]. Available from: http://www.abep.org/codigosguias/ABEP_CCEB_2003.pdf

The study protocol was approved by the Ethics Research Committee of the Faculdade de Medicina da Universidade Federal de Pelotas (Process 084/2007).

RESULTS

Of the 644 eligible elderly people, 46 were losses or refusals, corresponding to a non-response percentage of 7.1%. Of the 598 people interviewed, 91.8% answered the questionnaire alone, and the others were helped by a caregiver or somebody else responsible for the elderly person.

The majority of elderly people was woman (69.2%), with an age from 60 to 104 years (mean=70.4, SD=8.7). Formal education was absent among 18.6% of the elderly. The majority of the interviewed (51.6%) had a companion, did not smoke (56.8%), presented overweight (41.7%), was inactive (53.9%) and reported their health as regular (42.4%). The occurrence of functional disability was present in 26.8% and 28.8% of the elderly, respectively. The characteristics of the total sample and stratified by sex are presented in Table 1.

The prevalence of home care was 49.5% (95%CI: 44.5;54.5). Figure 1 describes the caretaker, predominantly a spouse. The option of a contracted caretaker was reported by 4.7% of the individuals in the sample. Regarding the duration of home care, the median was 24 hours/day. When categorized, the variable for duration of care showed the following distribution: until ten hours (5.7%), 11 to 20 hours (12.8%), 21 to 24 hours (65.3%) and without established hours (16.2%).

In the crude analysis, it was observed that care provided in the home was significantly associated with: male sex, having a spouse and with disability in basic and essential activities of daily living. A direct association was also observed with home care and age, and an inverse relationship was seen with education, level of physical activity and self-perceived health (Table 2).

In the adjusted analysis, men showed a 44% greater probability than women of being cared for in their home (Table 2). Age and disability in activities essential to daily living maintained direct associations with the outcome, after adjusting for potential confounding factors (p<0.001). Individuals with a companion had a 1.5 times greater probability of home care than people who live without a companion. Education (p<0.001) and level of physical activity (p=0.008) were inversely associated with the occurrence of home care.

There was an interaction observed between sex and age group for the occurrence of home care (Figure 2). Men from 60 to 69 years had a 1.9 times greater probability of reporting home care when compared to women of the same age group (95%CI 1.48;2.52). Among men from 70 to 79 years, the probability decreased to 1.72 (95%CI 1.30;2.27) compared to women in their seventies. Among the elderly aged ≥ 80 years, no statistically significant difference was observed between the sexes (p=0.26).

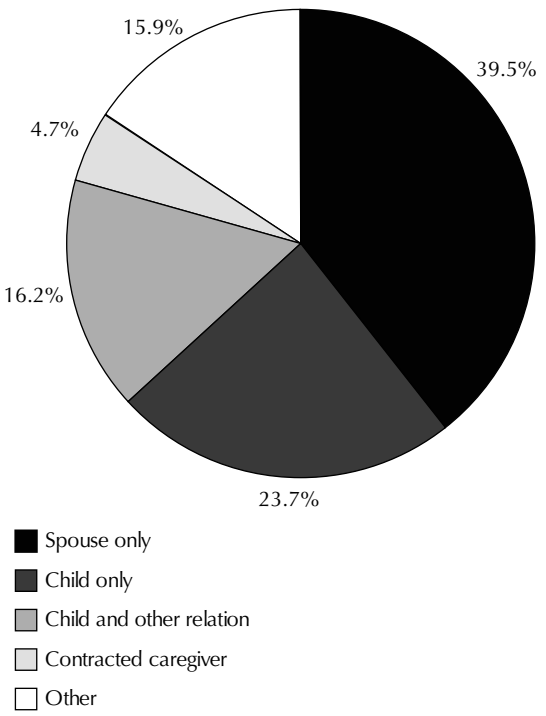

Figure 1. Characteristics of caregivers for the elderly. Pelotas, Southern Brazil, 2008.

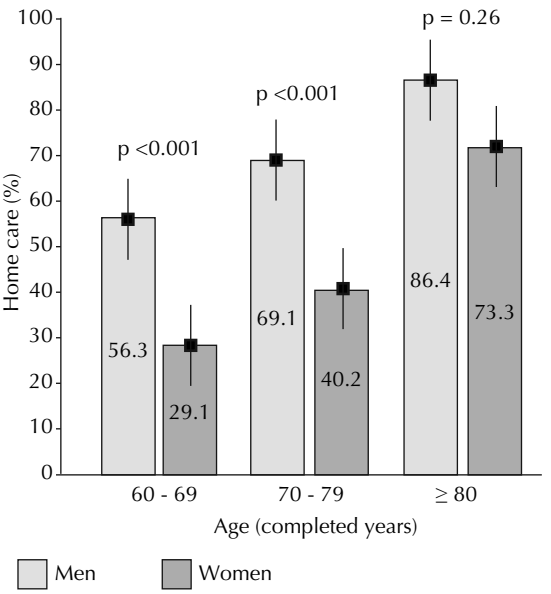

Figure 2. Prevalence of informal home care, according to sex and age group. The p value was obtained by Fisher's exact test. Pelotas, Southern Brazil, 2008.

Table 1. Sample distribution by sex, according to independent variables. Pelotas, Southern Brazil, 2008.

Variable	Men (n= 222)		Women (n= 376)		Total (n=598)	
	n	%	n	%	n	%
Age (years)						
60 – 69	119	53.6	199	52.9	318	53.2
70 – 79	81	36.5	102	27.1	183	30.6
≥ 80	22	9.9	75	20.0	97	16.2
Education (years completed)						
0	22	9.9	89	23.7	111	18.6
1 to 4	69	31.1	122	32.6	191	32.0
5 to 8	70	31.5	95	25.3	165	27.6
≥ 9	61	27.5	69	18.4	130	21.8
Current marital status						
With companion	178	80.2	130	34.7	308	51.6
Without companion	44	19.8	245	65.3	289	48.4
Economic level in quintiles[a]						
1st quintile (poorer)	37	17.1	83	22.6	120	20.5
2nd quintile	43	19.8	91	24.7	134	22.9
3rd quintile	41	18.9	74	20.1	115	19.7
4th quintile	54	24.8	59	16.0	113	19.3
5th quintile (richer)	42	19.4	61	16.6	103	17.6
Tobacco use						
Never smoker	72	32.4	268	71.2	340	56.8
Current smoker	41	18.5	39	10.4	80	13.4
Former smoker	109	49.1	69	18.4	178	29.8
Body mass index (kg/m2)[b]						
≤ 24.9	80	37.6	109	39.2	189	38.5
25.0 to 29.9	94	44.1	111	39.9	205	41.7
≥ 30.0	39	18.3	58	20.9	97	19.8
Physical activity level (min/wk)						
Inactive (0 min/wk)	120	54.6	201	53.6	321	53.9
Low activity (≤ 149 min/wk)	28	12.7	45	12.0	73	12.3
Active (≥ 150 min/wk)	72	32.7	129	34.4	201	33.8
Disability in BADL						
Yes	49	22.1	111	29.5	160	26.8
No	173	77.9	265	70.5	438	73.2
Disability in EADL						
Yes	53	23.9	119	31.7	172	28.8
No	169	76.1	256	68.3	425	71.2
Self-perception of health						
Excellent/very good	22	10.0	50	13.4	72	12.1
Good	86	38.9	114	30.7	200	33.7
Regular	93	42.0	157	42.2	250	42.2
Poor	20	9.1	51	13.7	71	12.0

[a] Wealth score used by the Brazilian Association of Research Companies.
[b] Variable with the most number of ignored values for men and women: 9 and 100, respectively.
BADL: Basic activities of daily life; EADL: Essential activities in daily life.

Table 2. Crude and adjusted analysis of home care among the elderly, according to independent variables. Pelotas, Southern Brazil, 2008.

Variable	Home care (%)	Crude analysis		Adjusted analysis	
		PR (95%CI)	p	PR (95%CI)	p
Section 1: Sociodemographic variables					
Sex			< 0.001		< 0.001
Male	64.0	1.56 (1.37;1.79)		1.44 (1.23;1.69)	
Female	41.0	1		1	
Age (completed years)			< 0.001*		< 0.001*
60 to 69	39.3	1		1	
70 to 79	53.0	1.34 (1.11;1.64)		1.28 (1.06;1.54)	
≥80	76.3	1.94 (1.61;2.34)		1.67 (1.54;2.56)	
Education (completed years)			< 0.001*		< 0.001*
0	63.1	1.82 (1.36;2.43)		1.97 (1.43;2.71)	
1 to 4	49.7	1.44 (1.07;1.93)		1.50 (1.12;2.02)	
5 to 8	51.5	1.49 (1.11;2.00)		1.55 (1.18;2.03)	
≥9	34.6	1		1	
Marital status			< 0.001		< 0.001
With a companion	58.4	1.47 (1.24;1.74)		1.54 (1.28;1.84)	
Without a companion	39.8	1		1	
Economic level[a]			0.99*		0.20*
1st quintile (poorer)	41.7	1.10 (0.77;1.57)		0.89 (0.61;1.29)	
2nd quintile	52.2	1.38 (1.05;1.81)		1.11 (0.83;1.50)	
3rd quintile	56.5	1.49 (1.08;2.07)		1.24 (0.88;1.75)	
4th quintile	57.5	1.52 (1.15;2.00)		1.24 (0.93;1.63)	
5th quintile (richer)	37.9	1		1	
Section 2: Behavioral variables					
Tobacco use			0.16		0.35
Never smoker	46.2	1		1	
Current smoker	50.0	1.08 (0.85;1.38)		1.19 (0.94;1.51)	
Former smoker	55.6	1.20 (0.99;1.46)		1.11 (0.90;1.37)	
Body mass index (kg/m^2)			0.51*		0.81*
≤ 24.9	48.7	1		1	
25.0 a 29.9	46.8	0.96 (0.77;1.20)		0.95 (0.79;1.15)	
≥ 30.0	44.3	0.91 (0.69;1.21)		1.06 (0.81;1.38)	
Level of physical activity (min/wk)			< 0.001*		0.008*
Inactive (0 min/wk)	59.5	1.57 (1.26;1.97)		1.33 (1.07;1.68)	
Low activity (≤ 149 min/wk)	37.0	0.98 (0.72;1.32)		0.96 (0.72;1.28)	
Active (≥ 150 min/wk)	37.8	1		1	
Section 3: Health outcomes					
Disability in BADL			< 0.001		0.10
Yes	67.5	1.57 (1.33;1.87)		1.16 (0.97;1.38)	
No	42.9	1		1	
Disability in EADL			< 0.001		< 0.001
Yes	77.9	2.06 (1.73;2.44)		1.75 (1.45;2.10)	
No	37.9	1		1	
Section 4: Subjective analysis of health					
Self-perception of health			< 0.001*		0.46*
Excellent/very good	36.1	1		1	
Good	42.0	1.16 (0.80;1.69)		0.95 (0.69;1.31)	
Regular	53.2	1.47 (1.05;2.06)		1.07 (0.79;1.46)	
Poor		1.87 (1.34;2.62)		1.01 (0.74;1.39)	

* Linear trend.
[a] Wealth score used by the Brazilian Association of Research Companies
BADL: Basic activities of daily life; EADL: Essential activities in daily life

DISCUSSION

The prevalence of home care (49.5%) was less than the findings reported in other works.[9,10] Nonetheless, this comparison should be restricted to specific issues, such as target population, as well as criteria for the definition of home care. A considerable portion of studies opt to investigate the existence of informal home care among elderly that are already debilitated or living with chronic diseases. For example, in studies of individuals with Alzheimer[9] and cerebral vascular accident,[10] respective prevalences of 78% and 98% for informal home care been reported.

A considerable proportion of older people report being the caretaker for their spouse, and the option of a contracted caretaker was rarely reported by these individuals. A study[10] performed in São Paulo, Southeastern Brazil, with adults who lost their independence found results similar to this study, showing that care was mostly provided by women (93%), mostly wives (44%) and daughters (31%). Another study,[8] performed in Canada with people living with chronic diseases, shows that families provided 78% of general care. Among adult accident victims age 50 or greater, 98% of caretakers were family members.[10] The agreement between the results demonstrates the important role of family in home care provided to the elderly.

Older adults with disabilities in activities essential to daily living showed a strong association with the receipt of home care, even after adjusting for potential confounding factors. This association was not observed in the case of disabilities for basic activities in daily living, which demonstrated significance in the crude analysis, but the effect reduced when adjusting for disability within the essential domain in the hierarchical analysis model. In the National Policy for Health of Elderly People,[d] individuals that present difficulty in performing essential activities are considered at risk of developing fragility related to diminished functional capacity and increased dependence for activities of daily living and utilization of health services. More vulnerable elderly adults, therefore, require specific attention by health professionals.

In the present study, an association was not observed between economic level and home care. By investigating every manifestation of home care reported by the elderly, this study found a considerable proportion of elderly in lower economic levels, who were informally cared for by family members. Therefore the economic component that could influence the contracting of formal caregivers was weakened. A study[12] performed in the United States showed that the utilization of formal care increases and the utilization of informal care decreases according to increased income of the elderly.

The association of home care with lower physical activity levels, as well as disability in activities essential to daily living, should be interpreted with caution. Since this is a cross-sectional study, causes and effects can not be distinguished, which impedes the development of hypotheses based on causal mechanisms. Nonetheless, the study findings reinforce the importance of physical activity as a marker for independence, autonomy and better health and quality of life among elderly, since it is known that regular physical activity plays an important role in the prevention of obesity, arterial hypertension, depression, osteoporosis, cognitive deficit and premature mortality. [5,e]

In the study by Kemper,[12] the number of disabilities in activities of daily living was strongly associated with the probability of receiving home care, principally provided by family members residing in the same house. The probability of receiving informal care was 37% greater for elderly that needed assistance in five basic activities of daily living compared to those that did not require assistance.

One of this study's strong points is the representativeness of the sample of older adults, since a large part of studies investigate home care in individuals with specific characteristics, such as presence of chronic disease or disability. In addition, the small percentage of loses/refusals and data collection with the help of the caregiver in cases where the older adult was unable to respond to questions, helped reduce the possibility of selection bias and contributed to internal validity. Among the limitations, not including institutionalized individuals in the study may have underestimated the prevalence of the outcome studied. Nonetheless, this decision was taken due to the logistics of fieldwork. Also, according to the Municipal Health Department of Pelotas, there are approximately 400 institutionalized adults, which is only 1% of the older age group in the municipality.

In conclusion, the high prevalence of home care (49.5%) and the probable overburdening of family members, responsible for the majority of care provided, are important indicators for the planning of health actions directed to the elderly and their family members. Support programs can be directed to the main caregiver or even to various family members and can be operationalized through individual or group meetings, involving the exchange of experiences

[d] Ministério da Saúde. Portaria nº 2.528, de 19 de outubro de 2006. Aprova a Política Nacional de Saúde da Pessoa Idosa. *Diario Oficial Uniao* 13 dez 1999; Seção 1:20 [cited 2010 Aug 1]. Available from: http://portal.saude.gov.br/portal/arquivos/pdf/2528%20aprova%20a%20politica%20nacional%20de%20saude%20da%20pessoa%20idosa.pdf

[e] United States. Department of Health and Human Services. Physical activity guidelines for Americans: be active, healthy, and happy! Washington, DC: Services TSoHaH; 2008.

and the provision of practical advice regarding care procedures. Specific attention should be directed to individuals, who share the characteristics of the study participants that experienced a greater occurrence of home care: advanced age, low education and disability in activities essential to daily living.

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