VOLUME 21, NUMBER 2 - MARCH / APRIL 2018

Revista Brasileira de Geriatria e Gerontologia

Brazilian Journal of Geriatrics and Gerontology

UnATi
Universidade Aberta da Terceira Idade

UERJ
UNIVERSIDADE DO ESTADO DO RIO DE JANEIRO

ISSN 1981-2256

Revista Brasileira de Geriatria e Gerontologia

Brazilian Journal of Geriatrics and Gerontology

VOLUME 21 NUMBER 2 - MARCH/APRIL 2018

Revista Brasileira de Geriatria e Gerontologia é continuação do título *Textos sobre Envelhecimento*, fundado em 1998. Tem por objetivo publicar e disseminar a produção científica no âmbito da Geriatria e Gerontologia, e contribuir para o aprofundamento das questões atinentes ao envelhecimento humano. Categorias de publicação: Artigos originais, Revisões, Relatos, Atualizações e Comunicações breves. Outras categorias podem ser avaliadas, se consideradas relevantes.

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http://dx.doi.org/10.1590/1981-22562018021.180029

Social inequalities in old age. A life of inequality

Public health research has provided us with information that despite its apparent logic is systematically ignored by politicians. It also goes beyond the scope of health professionals, as the social determinants of health can be much more powerful than and extend far beyond biological determinants[1]. Such social conditioners can be more significant than biological conditioners in the context of disease, and also determine and are a key part of healthy behavior. We live in a world of individualized health problems. Health professionals and campaigns and the *vox populi* focus on purely individual messages such as don't smoke, go for a walk and take your medication, as though all our health-related behaviors were decided upon consciously and individually, and ignoring the fact that smoking, walking or taking medication can be linked to factors as diverse as family or work stress, poor education, inadequate infrastructure, little time or lack of money.

The social determinants of health condition us from birth to death, from the pollution of the neighborhood in which we are born (usually greater in areas where those of a lower social status live), which conditions our neuronal development, to the house where we die, where the lack of an elevator, heating or other facilities can condition and reduce our physical and mental health.

The existence of the social determinants of health is nothing new, with Rudolf Carl Virchow establishing their importance in 1847 in his statement that "politics is nothing but medicine at a larger scale"[2].

Among people aged over 65 in Europe today, those from disadvantaged social positions suffer greater limitations in activities of daily living than people from more favored social classes[3], and diabetes and diabetes related-deaths are more prevalent among those from disadvantaged social positions than in people with a more favored social status[4,5]. This can be due to unequal access to healthy foods, social barriers to access to physical exercise, or inequalities in the likelihood of correct treatment. When considering those over 65, one must inevitably think of people who have suffered exposure to social inequality throughout their lives. A common mistake is to think that social inequality in health is synonymous with poverty. This myth was rejected by the Whitehall[6] study, where the existence of a hierarchy based on a social gradient was found in mortality from heart disease among civil servants. Deaths among those with a higher position in the organization were less prevalent than among those of a lower rank, which in turn were less frequent than among those of an even lower rank. The results of this study showed that even among those who already had the basic necessities of life ensured, social position played a key role in the risk of dying or suffering more diseases than others.

Yet if we have known about the social determinants of health for so long, why do we continue to focus on the individual aspects of health? Political impetus is required to change this situation, together with the involvement of society as a whole at all levels. Achieving this is made difficult as the individualist discourse,

which does not consider the causes of the causes, has predominated for many years. In this sense, it is easier to think that a person who drinks alcohol does so because he/she wants to, than to think that it is the urban environment and the continuous exposure to alcohol that ends up conditioning their behavior (such as advertising, offers, discounts, promotions and shop windows). Society has labeled health behaviors as lifestyles of individual choice, forgetting that these behaviors are often conditioned by social determinants.

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http://dx.doi.org/10.1590/1981-22562018021.170185

Prevalence and factors associated with alcohol and tobacco use among non-institutionalized elderly persons

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Abstract

Objective: The present study aims to evaluate the prevalence of and factors associated with the use of tobacco and alcohol among elderly people living in the northern part of the city of Juiz de Fora, Minas Gerais, Brazil. *Method:* A cross-sectional study conducted through a home survey was performed with a sample of 423 elderly citizens. Interviews were conducted through a questionnaire including the Fagerström and Audit-C tests. The data were subjected to descriptive statistical analysis and multinomial regression. *Results:* The prevalence of elderly smokers was 9.0%, 32.0% were former smokers, 26.7% of the sample consumed alcoholic beverages and 3.2% used alcohol and smoked. In the multinomial logistic regression model, the factors that were significantly associated with smoking were the male gender, an age of 60 to 70 years old; the presence of self-reported health problems; while the consumption of alcohol was associated with the male gender and frailty. *Conclusion:* There was a low prevalence of elderly people living in the community who consumed alcoholic beverages and/or were smokers. Such individuals, however, almost exclusively suffered from impaired health and potentially a poor quality of life. Regarding the profile of such elderly persons, there were similarities between the socio-demographic and health variables, suggesting the possibility of a more targeted approach to these individuals.

Keywords: Demographic Aging. Health of the Elderly. Alcoholism. Tabacco Use Disorder.

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Research funding: National Council for Scientific and Technological Development (CNPq) (Process: 480163/2012-0).

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INTRODUCTION

Increased life expectancy is a global phenomenon with a number of repercussions for the care of the elderly, from direct care at home to the need for greater investment in public policies and programs, including the expansion of the basic care network aimed at this population[1,2].

Although aging is a natural process, it also causes various anatomical and functional changes in the body, with effects on health conditions; the elderly may experience gradual cognitive loss and exhibit behavioral and emotional changes[3].

For decades, tobacco consumption was tolerated and even admired. The mass media broadcast cigarette advertisements which reinforced a belief in the beauty, virility and masculinity of smoking, establishing the habit as a lifestyle. Today there is an emphasis on the harmful effects of smoking in television programs and magazine articles and newspapers. The change in the profile of information and media coverage over time is explained by the high morbidity and mortality rate[3,4]. In 2011, smoking was responsible for 147,072 deaths, 2.69 million years of life lost, 157,126 acute myocardial infarctions, 75,663 strokes and 63,753 diagnoses of cancer. The cost to the health system was R$23.37 billion. Monitoring the effects and use of tobacco has become an important strategy for strengthening public health policies[5].

Alcohol consumption is the third biggest cause of illness and premature death worldwide[6]. While various forms of consumption classification exist, the ingestion of alcohol drinks by the elderly can be potentially harmful to health regardless of their pattern (quantity and frequency), even without the formal diagnosis of abuse or dependence[7]. The use of alcohol and drugs by elderly individuals can cause the worsening of their physical and/or mental state, social isolation and cognitive impairment[8].

A Portuguese study showed that 6% to 11% of elderly patients admitted to general hospitals had symptoms of alcohol dependence[9]. The prevalence of smoking among the elderly, meanwhile, is lower than in adults[10], due to the early death of smokers, the cessation of the habit with the onset of diseases and the choice to adhere to healthier behaviors. However, the absolute number of elderly smokers tends to increase with the aging of the population[11].

The deleterious effects of smoking cause a reduction in life expectancy. Female smokers live for 4.47 fewer years than non-smokers, while men who routinely use tobacco have a 5.03-year reduction in life expectancy in comparison with non-smokers. In addition, smoking causes a reduction in quality of life due to the pathological conditions related to the habit[12].

Smoking is particularly associated with consumers of alcoholic drinks[13]. This combination of exposure to risk factors predisposes the subject to significant alterations in visual and cognitive capacity, which cause personal and family suffering and high social costs[8].

However, few data exist in Brazil regarding the prevalence of smoking and alcohol consumption in the elderly population. The present study aims to evaluate the prevalence and factors associated with the use of tobacco and alcohol in a sample of elderly residents of the municipal region of Juiz de Fora (Minas Gerais).

METHOD

A cross-sectional population-based study was performed of non-institutionalized individuals aged 60 years and older living in the northern zone of the city of Juiz de Fora, Minas Gerais, Brazil. The sample is representative of the population of the municipal region, as the north zone is the largest region in the urban area and has the second largest quantitative population, as well as the largest number of neighborhoods and concentration of informal settlements and social programs. The present study originates from the second phase of a longitudinal study, the first phase of which was carried out in 2010[14].

In this second phase of the study, the sample size required was calculated from the study developed in 2010 and data from the 2010 Census. Based on the multiple outcomes investigated in the current stage, the sample size was calculated based on a prevalence of 50%, deff 1.5 (considering the cluster stratification

effect) and a significance level of 95%. The 2010 study was comprised of 420 elderly persons and the participants were selected by random stratified and cluster sampling in multiple stages. The primary units were the census tracts. For the draw, the sectors were grouped into strata defined in accordance with the different modalities of health care to which the population of the sector was assigned, subdivided into primary care (Family Health Strategy (FHS) or traditional), secondary care or areas without coverage. The selection of these sectors was performed independently with probabilities proportional to the size of each stratum.

For the 2014 survey, the calculation of the sample size was estimated from the data of the previous work and the results of the 2010 IBGE census based on the population of the area delimited at the level of census sector disaggregation. There were changes in the quantitative population and in the constitution of these sectors, which required the resizing of the representative probabilistic sample based on stratification and clustering. All the elderly participants of the first phase were visited again. The losses from population dynamics over the four years were compensated for by the oversampling method, respecting the sampling by clusters. Age, gender and level of education were the variables selected to determine the entry of new subjects.

Thus, 248 elderly persons included in the 2010 sample participated in the study, in addition to 175 new elderly persons, and the study was composed of 423 individuals. In cases where elderly persons did not reach the minimum score in the Mini Mental State Exam (MMSE), they were judged incapable of responding to the questionnaire, and their caregiver became the respondent (in this case the questions on self-perception were not answered). In the absence of another respondent, the elderly were excluded from the study.

The questionnaire used was previously standardized and tested through a pilot study with 50 elderly individuals residing in a region other than that selected for this survey, in order to verify the applicability of the instrument and to improve the interviewing technique of the researchers in a practical manner. Data collection took place in the home of the elderly between September 2014 and March 2015. Quality control of the information collected was carried out, in which 10% of the sample was evaluated by a new partial interview.

Alcohol and/or tobacco consumption were considered as the dependent variables. The independent variables were grouped into three blocks: demographic and socioeconomic variables (Block 1: gender, age, schooling, self-reported skin color, marital status, socioeconomic level - Brazilian Association of Research Companies, Classification of 2013); variables related to the health of the elderly (Block 2: self-reported morbidities; frailty, measured according to the Edmonton Scale; suggestion of anxiety and/or depression, according to the Patient Health Questionnaire Scale (PHQ-4); falls) and variables related to the health service (Block 3: use of the Unified Health System - SUS, health plan, satisfaction with the medical health service, medical consultation in the last three months, hospitalization in the last three months, emergency service care in the last three months). The Fagerström Test and the Audit-C, respectively, were used to evaluate and classify the questions on tobacco and alcohol consumption, with both answered only by the elderly themselves.

Data were submitted to descriptive univariate analysis to obtain the frequencies and prevalences of the variables investigated. For the quantitative variables, measures of central tendency and dispersion were calculated. The chi-squared test was used in the bivariate analysis, with Rao-Scott correction. All analyzes were performed in an appropriate module for complex analysis.

The multivariate analysis was based on the proposed theoretical model of determination by hierarchical blocks of variables (Figure 1) to control possible confounding factors. According to literature, the hierarchical blocks were constructed with the demographic and socioeconomic variables included in the first block (distal determinants) included. These were responsible for conditioning the variables of the other levels of associated factors. The second block (composed of intermediate determinants) included questions regarding the health profile of the elderly, while the third block included the variables related to the health services.

Variables that obtained a value of $p \leq 0.10$ were included in the bivariate analysis. The technique of the gradual withdrawal of variables based on significance levels was used, with those that maintained a value of $p < 0.05$ remaining in the final model. To estimate the crude and adjusted odds ratios (OR), the multinomial logistic regression model was used, with a robust estimation of variance and a 95% confidence interval (95% CI). The odds ratio is suitable for this analysis in view of the low frequency of the events of interest in the sample and does not lead to overestimation of the prevalence ratio.

The Guidelines and Regulatory Norms for Research Involving Human Beings were followed, in accordance with Resolution 466/2012 of the National Health Council. The Research Ethics Committee of the Universidade Federal de Juiz de Fora (the Federal University of Juiz de Fora) approved the study (Approval No. 771/916), which was financed by the National Council for Scientific and Technological Development (Process No. 480163/2012-0). All the elderly participants of this research read and signed the Free and Informed Consent Form.

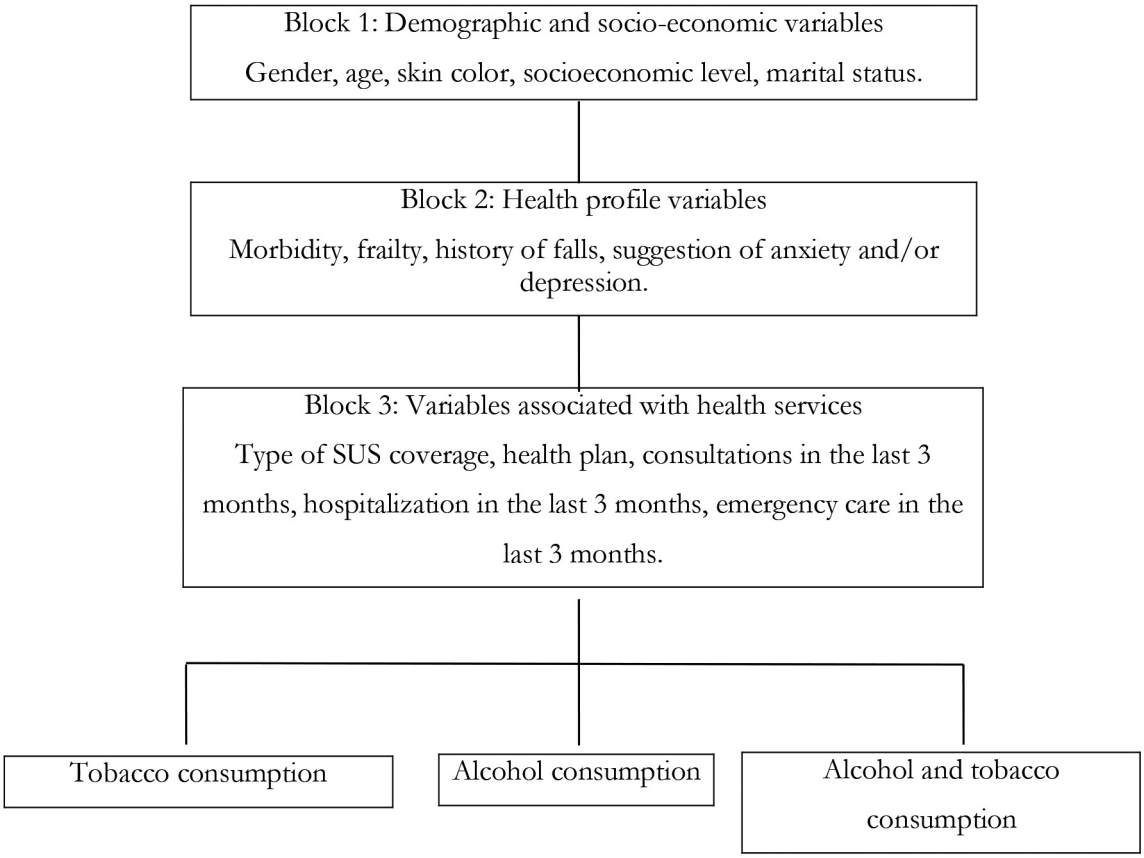

Figure 1. Theoretical research model of the association of independent variables with alcohol and/or tobacco consumption in hierarchical blocks.

RESULTS

A total of 423 questionnaires were analyzed, of which 23 elderly persons were excluded due to a failing score in the MMSE and the absence of another respondent. The final sample consisted of 400 elderly individuals. A total of 315 (78.8%) questionnaires were answered by the elderly themselves while 85 (21.2%) were answered by another respondent. The comparison of the profiles of the elderly according to respondent indicated similarity between the groups, and so the questionnaires were analyzed jointly.

The participants, in terms of their sociodemographic characteristics, were mostly women (64.5%), married or involved in a common-law-marriage (55.8%), self-declared as white (45.5%), with an average gross monthly family income between 1147.00 and 1685.00 reais (59.0%). The mean age was 73.8 years (± 8.0) with 4.2 years of schooling (± 3.4). The presence of comorbidities was reported by 89.0% of the elderly, and 57.8% had some level of frailty (according to the Edmonton Scale). The suggestion of anxiety was identified in 72.7% of the elderly and the suggestion of depression in 77.1% (PHQ-4 Scale). In terms of health services, most of the elderly reported using the Unified Health System (96.5%) and 60.3% had health insurance. Of the elderly who used medical health services, 81.3% were satisfied with the service.

The characteristics of the sample according to the independent variables are described in table 1.

In terms of alcohol consumption, 26.7% of the elderly persons drank alcohol. Of these, according to the Audit-C classification, 78.6% consumed one standard dose while drinking, 83.3% never consumed eight or more standard doses at one time (binge, or heavy, alcohol use) and 5.4% were classified as at risk consumers.

The prevalence of smoking was 9%, of whom 58.3% had smoked for around 31 to 50 years, and the prevalence of ex-smokers was 32%. The Fargeström Test was applied to the elderly smokers who were approved in the MMSE (n=30): 40% smoked their first cigarette of the day between six and 30 minutes after waking; 66.7% did not find not smoking in prohibited areas difficult; 70% stated that the first cigarette in the morning is the one that gives the most satisfaction; 56.7% smoked more in the early morning than during the rest of the day; 63.3% did not smoke when bedridden by illness; and 56.7% smoked less than ten cigarettes per day. In the consumption classification, 23.3% of the elderly persons exhibited a high degree of nicotine dependence. The prevalence of the elderly who used alcoholic beverages and who smoked was 3.2% among those interviewed.

In block-adjusted multivariate analysis, the gender variable was statistically significant ($p<0.05$) for both alcohol consumption and smoking in block 1, while age was statistically significant for smoking only. In block 2, the variables frailty and presence of a self-reported comorbidity were significant for alcohol consumption and smoking, respectively. In block 3 there were no statistically significant variables for any of the outcomes.

Table 2 shows the results following multinomial logistic regression analysis. The male gender variable (adjusted OR=2.14, 95% CI 1.14-4.04/adjusted OR=2.23, 95% CI 1.02-4.88) remained in the final model for alcohol consumption and smoking; the variables age (adjusted OR=20.54, 95% CI 2.69-157.08) and presence of self-reported comorbidities (adjusted OR=0.36, 95% CI 0.13-0.99) remained for smoking; while the presence of frailty variable was maintained (adjusted OR=0.31, 95% CI 0.12-0.80) for the consumption of alcohol.

Table 1. Sample characteristics according to independent variables. Juiz de Fora, Minas Gerais, 2016.

Variables	Alcohol Consumption		Smoking		
	Yes	No	Yes	No	Ex
	n (%)	n (%)	n (%)	n (%)	n (%)
Block 1: Demographic and socioeconomic variables					
Gender					
Male	42 (39.6)	64 (60.4)	13 (9.2)	49 (34.5)	80 (56.3)
Female	42 (20.1)	167 (79.9)	23 (8.9)	187 (72.5)	48 (18.6)
Age					
60 - 70 years	37 (27.2)	99 (72.8)	25 (15.9)	84 (53.5)	48 (30.6)
71 - 80 years	34 (27.4)	90 (72.6)	10 (6.7)	89 (59.7)	50 (33.6)
Over 80 years	13 (23.6)	42 (76.4)	1 (1.1)	63 (67)	30 (31.9)
Schooling					
Illiterate	6 (20.7)	23 (79.3)	6 (12.2)	30 (61.2)	13 (26.5)
1 to 4 years	47 (24)	149 (76)	21 (8.5)	149 (60.1)	78 (31.5)
5 years or more	31 (34.4)	59 (65.6)	9 (8.7)	57 (55.3)	37 (35.9)
Marital Status					
Married or common-law-marriage	49 (27.8)	127 (72.2)	22 (9.9)	118 (52.9)	83 (37.2)
Other	35 (25.2)	104 (74.8)	14 (7.9)	118 (66.7)	45 (25.4)
Socioeconomic Level					
A or B	29 (32.6)	60 (67.4)	7 (6)	67 (57.3)	43 (36.8)
C	48 (26.1)	136 (73.9)	22 (9.3)	142 (60.2)	72 (30.5)
D or E	7 (16.7)	35 (83.3)	7 (14.9)	27 (57.4)	13 (27.7)
Block 2: Variables related to health of elderly person*					
Comorbidities					
Presence	71 (25.4)	208 (74.6)	29 (8.2)	217 (61.1)	109 (30.7)
Absence	13 (36.1)	23 (63.9)	7 (15.6)	19 (42.2)	19 (42.2)
Illnesses of nervous system					
Yes	1 (8.3)	11 (91.7)	2 (11.8)	11 (64.7)	4 (23.5)
No	70 (26.2)	197 (73.8)	27 (8)	206 (60.9)	105 (31.1)
Mental or behavioral disturbances					
Yes	1(4.2)	23 (95.8)	5 (12.5)	31 (77.5)	4 (10)
No	70 (27.5)	185 (72.5)	24 (7.6)	186 (59)	105 (33.3)
Circulatory system diseases					
Yes	56 (27.5)	148 (72.5)	21 (8)	158 (60.5)	82 (31.4)
No	15 (20)	60 (80)	8 (8.5)	59 (62.8)	27 (28.7)
Respiratory system diseases					
Yes	2 (15.4)	11 (84.6)	2 (11.1)	11 (61.1)	5 (27.8)
No	69 (25.9)	197 (74.1)	27 (8)	206 (61.1)	104 (30.9)
Endocrine system diseases					
Yes	15 (19.5)	62 (80.5)	10 (9.8)	61 (59.8)	31 (30.4)
No	56 (27.7)	146 (72.3)	19 (7.5)	156 (61.7)	78 (30.8)

to be continued

Continuation of Table 1

Osteomuscular system diseases					
Yes	16 (20.3)	63 (79.7)	7 (7.4)	61 (64.9)	26 (27.7)
No	55 (27.5)	145 (72.5)	22 (8.4)	156 (59.8)	83 (31.8)
Neoplastic system diseases					
Yes	4 (26.7)	11 (73.3)	0 (0)	15 (68.2)	7 (31.8)
No	67 (25.4)	197 (74.6)	29 (8.7)	202 (60.7)	102 (30.6)
Suggestion of Anxiety					
Yes	18 (20.9)	68 (79.1)	6 (7)	55 (64)	25 (29.1)
No	66 (28.8)	163 (71.2)	24 (10.5)	127 (55.5)	78 (34.1)
Suggestion of Depression					
Yes	11 (15.3)	61 (84.7)	5 (6.9)	47 (65.3)	20 (27.8)
No	73 (30)	170 (70)	25 (10.3)	135 (55.6)	83 (34.2)
Frailty					
Present	7 (11.3)	55 (88.7)	8 (6.8)	70 (59.8)	39 (33.3)
Absent	63 (32.6)	130 (67.4)	21 (9.5)	130 (58.6)	71 (32)
Falls					
Yes	29 (26.9)	79 (73.1)	9 (6.4)	90 (63.8)	42 (29.8)
No	55 (26.6)	152 (73.4)	27 (10.4)	146 (56.4)	86 (33.2)
Continuous use medications					
1 to 4 medications	49 (28.8)	121 (71.2)	22 (10.8)	119 (58.3)	63 (30.9)
More than 4 medications	25 (20.8)	95 (79.2)	9 (5.5)	103 (62.4)	53 (32.1)
Block 3: Variables related to health service					
Use of Unified Health System					
Yes	82 (27)	222 (73)	34 (8.8)	225 (58.4)	126 (32.7)
No	2 (18.2)	9 (81.8)	2 (13.3)	11 (73.3)	2 (13.3)
Health Plan					
Yes	54 (27.8)	140 (72.2)	17 (7.1)	144 (59.8)	80 (33.2)
No	30 (24.8)	91 (75.2)	19 (11.9)	92 (57.9)	48 (30.2)
Hospitalization in previous three months					
Yes	1 (7.7)	12 (92.3)	1 (5.6)	12 (66.7)	5 (27.8)
No	83 (27.5)	219 (72.5)	35 (9.2)	224 (58.6)	123 (32.2)
Need for emergency care in previous three months					
Yes	8 (23.5)	26 (76.5)	5 (11.6)	25 (58.1)	13 (30.2)
No	76 (27)	205 (73)	31 (8.7)	211 (59.1)	115 (32.2)
Medical consultation in previous three months					
Yes	61 (25.3)	180 (74.7)	25 (8.2)	186 (61.2)	93 (30.6)
No	23 (31.1)	51 (68.9)	11 (11.5)	50 (52.1)	35 (8.7)

*excluded or did not respond

Table 2. Consumption of alcohol and tobacco among the elderly population based on final variables. Juiz de Fora, Minas Gerais, 2016.

Variables	Consumption of alcohol		Smoking			
	Yes		Yes		Ex	
	Adjusted OR (CI 95%)	*p*	Adjusted OR (CI 95%)	*p*	Adjusted OR (CI 95%)	*p*
Gender		0.018		0.045		<0.001
Male	2.14 (1.14; 4.04)		2.23 (1.02; 4.88)		6.05 (3.72;9.84)	
Female	1		1		1	
Age				< 0.001		
60 - 70 years			20.54 (2.69; 157.08)			
71 - 80 years			7.37 (0.91; 59.49)			
> 80 years			1			
Comorbidities				0.047		0.224
Presence			0.36 (0.13; 0.99)		0.63 (0.30;1.33)	
Absence			1		1	
Frailty		0.015				
Yes	3.23 (1.25-8.31)					
No	1					

DISCUSSION

The data from this study describe the prevalence of alcohol and/or tobacco use in the city of Juiz de Fora, Minas Gerais. Smoking was more prevalent among men than women, as was alcohol consumption. The main findings regarding alcohol and tobacco consumption in relation to the demographic and socioeconomic variables were the prevalence of the male gender, while the age of 60-70 years variable predominated only in relation to smoking. In terms of the variables regarding health, the presence of frailty was statistically significant for the consumption of alcohol, while the presence of comorbidities was significant in terms of smoking.

A higher prevalence of alcoholics and smokers was found in male individuals in a population study in Brazil[11] and a study in Thailand[15]. Research conducted in the United Kingdom and the United States has also shown that the percentage of alcohol abuse is higher among men[16,17].

Although poorly diagnosed and not adequately assessed, alcohol consumption is common among elderly individuals, and requires attention due to the increasing growth of this age group. Although actions in public health have mainly been aimed at identifying alcoholism among adults and young people, the physical, social, psychological and cognitive consequences of alcohol also affect the elderly. Cognitive disturbances (Alzheimer's and Parkinson's) caused by alcohol are more frequent among elderly people after long periods of consumption[18].

The estimated prevalence of alcohol consumption in this age group is 10% in the community, 14% in hospital emergencies, 18% in hospital admissions, and 23% to 44% in psychiatric units[19]. In the community under study a prevalence of 26.7% of elderly people who drink alcohol was found. It is important to investigate alcohol abuse by the elderly to achieve social and health improvements, as this can become a serious public health problem due to demographic and epidemiological transitions[20].

Sensitivity to the effects of alcohol increases with age: the elderly may start to suffer problems from alcohol even if their consumption pattern remains the same[21].

According to data from Vigitel, the prevalence of smoking in individuals aged 55 to 64 years was 13.5%, whereas the percentage of smokers among those aged

65 and over was 7.7%[22], close to the findings for the population of the present study. Tobacco use is associated with worsening health status and quality of life, as well as being a risk factor for premature mortality and disability due to cardiovascular diseases, chronic obstructive pulmonary disease (COPD) and cancer, among other conditions[23].

In terms of age group, it has been found that smoking is most prevalent in elderly persons aged between 60 and 69 years old[24,25], which agrees with the data of the present study. As age increases, the percentage of smokers decreases[26]. Smoking is currently more prevalent among elderly men[21,24], corroborating with the findings of the present study. Another study indicates a higher prevalence of the habit among elderly women, although these findings come from outpatient clinics which care for individuals who wish to quit smoking, which not only reflects a greater concern on the part of women for caring for their health, but also the seeking out of treatment aimed at stopping smoking[26].

There are currently a number of pharmacological and non-pharmacological strategies to aid with quitting smoking, which may also be an alternative for the elderly[27,28]. No studies have been identified to date on the need for smoking groups exclusive to the elderly, but the participation of this population in quit smoking programs together with other age groups has been suggested, in order to favor the dynamics and the enrichment of the thematic repertoire and allow intergenerational relationships. Older people generally have fewer social ties than young people and adults, so a group approach is preferred, expanding their network of relationships, affective bonds, and interdependent relationships[25].

Older smokers, who have survived the excessive rates of premature death from smoking, tend to be less motivated to quit the habit, underestimate the risks to their health and consider themselves to be relatively immune to tobacco-related harm[29].

A strong association has been found in literature between smoking and alcohol consumption in the elderly[24]. However, few studies have investigated the trends and consequences of smoking and alcohol consumption in this population. A direct association between smoking and alcohol consumption in elderly people with depression has also been found[30]. In the present study, depression was significantly associated with alcohol consumption.

In a study conducted in Minnesota, the presence of frailty in the elderly, especially in the age group between 60 and 79 years, correlated with smoking and sometimes with concerns about alcohol consumption[31]. In the present study, however, the presence of frailty was associated only with alcohol consumption. Frailty is a term commonly used for elderly individuals at risk of precarious outcomes, although the concept is sometimes poorly or variably defined in literature, lacking both a consensual definition and clinical picture[32].

The propensity of an individual to develop alcohol-related diseases is linked to multiple dimensions such as the pattern and duration of consumption, and also in association with physiological, biological, psychological and social factors[33].

Limitations of the present study include potential memory bias, considering the use of self-reporting by the elderly or caregivers, as well as its cross-sectional design, which does not allow the evaluation of temporal relationships or changes in exposure status over time. However, the importance of population-based studies and the minimization of possible selection biases should be emphasized.

CONCLUSION

In the present study the prevalence of smoking was 9%, that of alcohol consumption was 5.4%, and that of the current use of tobacco and alcohol was 3.2%. The profile most associated with the habits in question was elderly, younger and frailer men.

Elderly persons often become more vulnerable to alcohol and tobacco use, and such behavior can gradually result in a major public health problem as the number of older people in the world progressively increases. They are part of a group which suffers from various health problems and uses a number of medications, which, combined with the harmful substances present in tobacco and alcohol, make the elderly more susceptible to interactions, the aggravation of installed conditions and difficulties with recovery and social interaction.

The prevalence of current smoking in the elderly decreases with advancing age, being more prevalent in the 60-70 year age range. The majority of smokers are elderly men rather than elderly women. The prevalence of alcohol consumption is equally distributed among age groups and, according to the alcohol consumption screening test, the majority do not fall within the risk of harmful consumption.

There is a shortage of theoretical instruments that discuss this issue in the elderly, with recent studies prioritizing young and adult smokers and alcohol users. Furthermore, when elderly smokers and/or alcohol users are part of the sample, the results are related to prevalence, with other findings evaluated in a global manner and few investigations considering the trends and consequences of these habits among the elderly population.

Health actions and prevention and intervention policies should be planned using an integrated approach to social, psychological and biological factors, with a view to reducing alcohol abuse and smoking, as well as preventing its harmful effects on health.

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Received: November 20, 2017
Reviewed: February 14, 2018
Accepted: February 23, 2018

http://dx.doi.org/10.1590/1981-22562018021.170143

Impact of hospitalization on the functional capacity of the elderly: A cohort study

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Abstract

Objective: To verify the trajectory of the functional capacity of elderly persons hospitalized due to clinical conditions in a university hospital. *Method:* A descriptive, prospective cohort study was conducted between 2015 and 2016. Elderly patients admitted to the Hospital das Clínicas of Botucatu Medical School (Unesp), Brazil, were evaluated for the functional assessment of basic activities of daily living (BADL) using the Katz scale, nutritional status (body mass index (BMI)) and presence of the Frailty Syndrome (FS) (Fried criteria). A description of the trajectory of functional capacity was carried out at four times: 15 days before admission (T0), at admission (T1), at hospital discharge (T2) and 30 days after discharge (T3). *Results:* 99 elderly people with a mean age of 74 (±7.35) years, 59.6% of whom were male, were evaluated. Of these, 81.8% presented functional independence at T0, 45.5% at T1, 57.6% at T2 and 72.8% at T3. According to their functional trajectories, 28.2% of the elderly lost functional capacity between T0 and T3. There was an association between worsening of functional capacity between T0 and T3 and the FS (RR 4.56; 95% CI 1.70-12.26, p=0.003). *Conclusion:* Elderly patients have worse functional capacity at hospital discharge than before hospitalization. About 28.0% of the elderly had worse functional capacity 30 days after discharge than 15 days before admission. The elderly with Frailty Syndrome have a greater risk for worse functional capacity results 30 days after discharge.

Keywords: Frail Elderly. Hospitalization. Fragility. Functionality.

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INTRODUCTION

Population aging has resulted in an increase in the number of hospitalized elderly people. In 2016, 24.9% of those hospitalized in the Unified Health System in Brazil were aged over 60 years and 14.2% were over 70[1].

During hospitalization the elderly can experience loss of functional capacity, which may be due to the disease that determined the hospitalization, previous clinical conditions, the procedures to which the elderly person is subjected, the poor adaptation of the health system to aging and to frailty[2-4]. This condition is known as hospital acquired disability (HAD)[5] and can affect from 30 to 60% of hospitalized elderly persons[2,6]. Among the elderly, HAD can interfere with functional independence and quality of life and is a predictor of the greater use of resources and death[5].

Predictors of functional decline during hospitalization include advanced age, sociodemographic characteristics such as ethnicity, pre-existing disabilities, cognitive impairment, delirium, polypharmacy, history of falls, and comorbidity[3,7].

Functional capacity is defined as the ability of the elderly to perform a task that allows them to take care of themselves and to have an independent life in their environment through the performance of basic activities of daily living (BADL)[8]. It can be evaluated by the Katz Scale, even in a hospital environment, as described in a review of literature[9,10].

HAD has serious short-term consequences for patients and their families, as dependent patients require caregivers to live in the home. Studies of functional decline among hospitalized elderly persons are generally limited, as they perform the evaluation only during hospitalization and exclude post-hospital reassessment. Thus, the long-term prognosis of HAD after hospitalization is not fully understood[3].

As HAD has important implications for patients, caregivers and health policymakers, understanding the prevalence and risk factors for this condition among the elderly is important[6].

The present study aimed to verify the trajectory of functional capacity among elderly patients hospitalized in a university hospital by clinical conditions, and its associated factors.

METHOD

A prospective, cohort study was conducted at the Hospital das Clínicas da Faculdade de Medicina de Botucatu-Unesp (the Clinical Hospital of the Botucatu-Unesp Medical School) (HCFMB), a university hospital, from September 2015 to March 2016.

Both the study itself and the Free and Informed Consent Form were approved by the Research Ethics Committee of the Botucatu-Unesp Medical School (approval Nº: 1,140,569).

The following inclusion criteria were applied: patients aged 60 years or over at the time of admission, both genders, hospitalized for clinical conditions. The exclusion criteria were: hospitalization lasting less than 48 hours; situations where information was not obtained within 72 hours after admission; hospitalization in the previous six months; patients who could not maintain dialogue and had no one to provide the information for them, total dependence in BADL 15 days before admission.

The data were collected in three evaluations.

Assessment 1- On the day of inclusion, the data were collected at two time points: Time 0 (T0) - information regarding functional capacity 15 days before admission (baseline) and Time 1 (T1) - assessment of functional capacity, nutritional status, and frailty syndrome criteria. Sociodemographic, clinical and laboratory data were obtained from the patient along with their electronic medical records in relation to the present hospitalization.

Assessment 2- Time 2 (T2) - at hospital discharge or 24 hours before or 48 hours after the same, with assessment of functional capacity.

Assessment 3- Time 3 (T3) – thirty days after hospital discharge, by telephone, regarding functional capacity.

Functional capacity, measured through BADL, was evaluated by the Katz Scale[9], which includes actions related to self-care (bathing, personal hygiene, dressing, feeding oneself, transferring and continence). The total score is formed by the sum of the number of 'yes' answers, where the person is independent. Patients are considered independent when they have 5 and 6 points, partially dependent with 3 or 4 points and highly dependent with 0, 1 or 2 points[11].

Body mass index (BMI) was calculated after measuring weight and height (BMI= weight (kg)/ height (m^2)). BMI was classified according to the Pan American Health Organization: low weight ≤23 kg/ m^2, normal>23 and <28kg/m^2; overweight ≥28 kg/ m^2 and <30 kg/m^2 and obese ≥30 kg/m^2[12].

Frailty was evaluated by the Fried Frailty Phenotype[13], which is composed of five domains: loss of body mass, reduction of energy, muscle weakness (represented by the decrease of grip strength), low level of physical activity, reduction in muscle resistance or endurance. The patient was considered frail if positive for three of the domains, pre-frail when positive for one or two and robust when positive for none.

For each time point (baseline - T0, hospitalization - T1, discharge - T2 and 30 days after discharge - T3), the overall BADL score was created and defined as the number of BADL in which the patient was independent.

Patients were classified into one of seven functional trajectories, based on the evolution of functional capacity, depending on whether they maintained, lost or lost then recovered functionality between baseline and 30 days after hospital discharge. Functional decline between baseline and 30 days after discharge was defined as being independent in fewer BADL 30 days after discharge than at baseline (Figure 1).

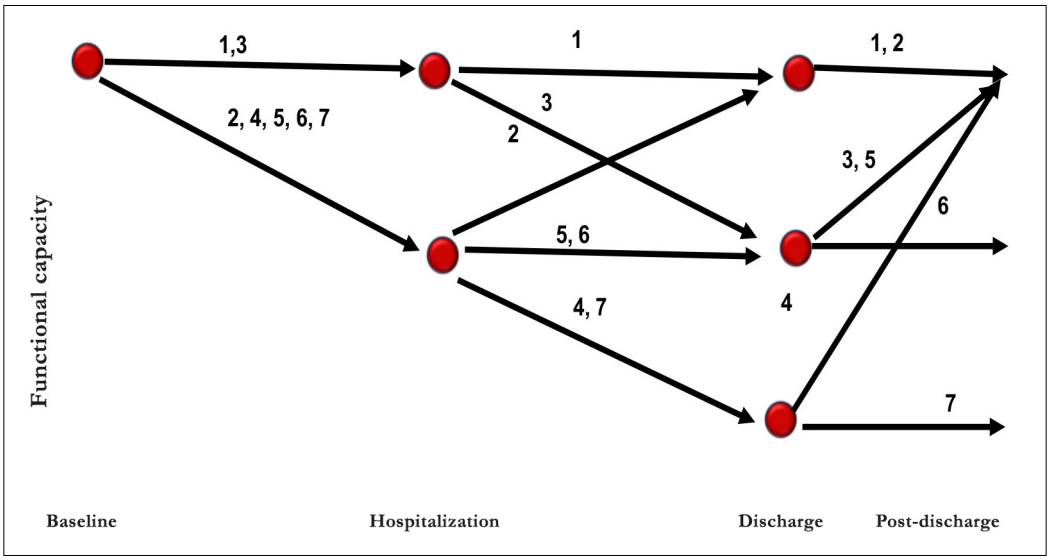


Figure 1. Trajectories of the functional capacity of the sample of elderly patients hospitalized at the HCFMB, São Paulo, 2016.

The first five trajectories included patients who had no decline between baseline and 30 days post-discharge.

The first trajectory included patients who had stable function capacity throughout the period (with no decline through baseline, hospitalization, discharge, and 30 days following discharge)

The second trajectory included patients whose functional capacity decreased between baseline and hospitalization but recovered by discharge and was maintained 30 days after discharge.

The third trajectory included patients who had stable function capacity between baseline and hospitalization, followed by a reduction on discharge which was recovered 30 days after discharge.

The fourth trajectory included patients whose functional capacity for BADL declined between baseline and hospitalization, continued to decline at discharge but had recovered thirty days after discharge.

The fifth trajectory included patients whose BADL functionality declined between baseline and hospitalization and remained poor at discharge but had recovered 30 days after discharge.

The next two trajectories included patients whose BADL functionality declined between baseline and 30 days after discharge.

The sixth trajectory included patients whose BADL functionality declined between baseline and hospitalization and did not recover at discharge or 30 days after discharge.

The seventh trajectory included patients for whom BADL functionality declined between baseline and hospitalization, worsened at discharge and did not recover 30 days after discharge.

The sample was determined using a confidence level of 95% and an accuracy of 5%, based on a prevalence of 7% of elderly patients with worsened functionality during hospitalization identified in a previous study[14]. The sample size was 100 patients.

The data obtained from the application of the instrument and from the medical records were initially described in terms of discrete and continuous quantitative variables. Descriptive analysis was carried out by constructing tables with means and standard deviation for the quantitative variables, due to the normal distribution identified, and tables with frequency and percentage distributions for the qualitative variables.

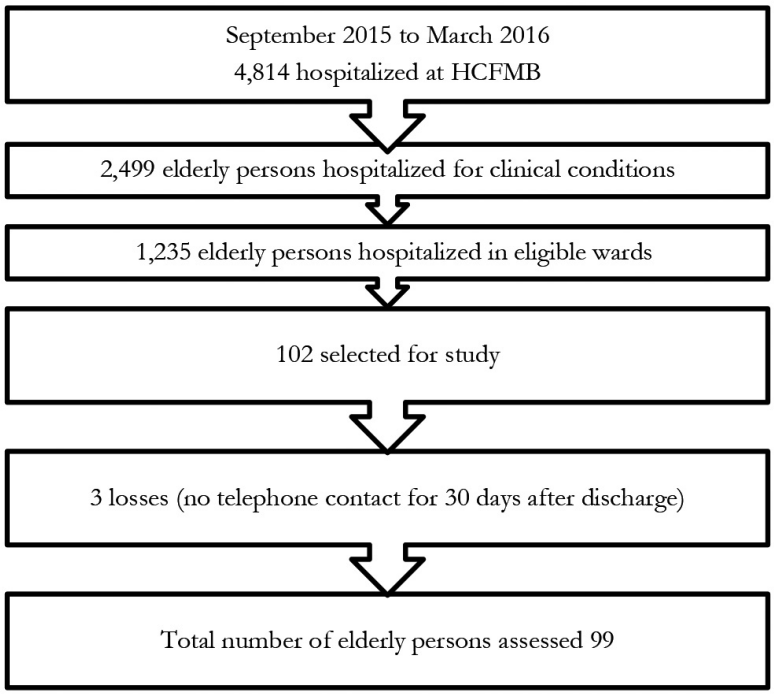
The chi-squared, Anova and Tukey tests were used for comparative analysis between the means of the age groups and the time of hospitalization and the type of functionality trajectory.

The analysis examined the association between loss of functionality and variables transformed into binaries: BMI (<or> 22.9 kg/m^2); frail vs. non-frail (Fried score <3 vs≥ 3); robust vs. non-robust (Fried score <1 vs> 1); use of five more drugs; albumin (<or> 3.5 g/dL); adequate grip strength for BMI and gender. Variables were tested for association by the chi-squared test and the relative risk (RR) test with the outcomes of a declining trajectory between baseline and post-discharge (trajectories 6 and 7). Only the variables whose effect was significant (p<0.05) for the occurrence of the event were maintained. Multivariate analysis with logistic regression was performed using a Stepwise criterion of variable selection. A p value of 0.05 was considered statistically significant.

RESULTS

During the study, 4,814 elderly people were admitted to HCFMB, according to Figure 2, and of these 102 elderly participants were selected. The survey was carried out with 99 elderly people due to three losses in the final evaluation.

The mean age of the 99 individuals assessed was 74 (+7.35) years and 59.6% of the sample was male. The mean length of hospital stay was 5.3 (+3.2) days. The mean BMI was 24.7 (+5.1) kg/m^2, with 38.4% of the sample considered underweight and 39.4% normal weight, and 38.4% were frail (Table 1).



Source: CIMED, 2016.

Figure 2. Patients hospitalized at HCFMB. Botucatu, São Paulo, 2016.

Table 1. Socio-demographic, nutritional and clinical data of 99 elderly patients hospitalized at HCFMB. Botucatu, São Paulo, 2016.

	mean (±sd)
Age (years)	74 (7.35)
BMI (kg/m^2)	24,7 (5.1)
Length of hospitalization (days)	5,3 (3.2)
	n (%)
Gender	
Male	59 (59.6)
Marital status	
Married	61 (61.6)
Profession	
Retired	72 (72.7)
Body Mass Index Classification	
Underweight	38 (38.4)
Normal	39 (39.4)
Overweight	8 (8.1)
Obese	14 (14.1)
Frailty Syndrome (Fried Phenotype)	
Robust	8 (8.1)
Pre-frail	53 (53.5)
Frail	38 (38.4)

The main causes of hospitalization according to ICD-10 were diseases of the circulatory system (23.2%) followed by neoplasia (16.2%), those of the respiratory system (9.1%) and genitourinary diseases (9.1%).

Regarding degree of dependency for BADL, 81.8% of the elderly were functionally independent 15 days before hospitalization; 45.5% at admission (T1); 57.6% at hospital discharge (T2) and 72.8% 30 days after discharge (T3). A total of 10.1% were dependent when hospitalized, 12.1% at T2 and 5.1% at T3.

The prevalence of the trajectories of functional capacity were Trajectory 2 in 31.4% of cases (lost function between T0 and T1 and recovered it at T2 and T3) and Trajectory 6 in 26.3% of cases (BADL functional capacity declined between baseline and hospitalization and was not recovered at discharge or 30 days after discharge). Trajectory 1 had a frequency of 8.1% (n=8), Trajectory 3 10.1% (n=10), Trajectory 4 3% (n=3) and Trajectory 5 20.2% (n=20), while Trajectory 7 had a prevalence of 2% (n=2).

In terms of the analysis of functional trajectory, it was observed that 28.3% of the evaluated elderly persons lost functionality at T3 in comparison with T0 (Trajectories 6 and 7) and that of the 81 who were independent at T0 12.3% evolved to dependence in BADL at T3.

Bivariate analysis of a worsening of functional capacity between T0 and T3 (Trajectories 6 and 7) found an association with frailty (RR 2.27, 95% CI 1.30-3.97) and elderly persons with BMI <22.9 kg/m^2 (RR 1.79, 95% CI 1.10-2.91). In multivariate regression analysis there was an association between a decline in functional capacity and loss between T0 and T3 and grip strength (RR 4.56, 95% CI, 1.70-12.26). (Table 2).

Table 2. Association by bivariate and multivariate analysis of trajectories with worsening of functionality between T0 and T3 in elderly persons hospitalized at HCFMB. Botucatu, São Paulo, 2016.

Decline in functional capacity							
		Bivariate analysis*			Multivariate analysis**		
	n	Relative Risk	CI 95%***	*p*-value	Relative Risk	CI 95%***	*p*-value
Non-robust	91	0.87	0.81–1.00	0.06			
Frail	38	2.27	1.30–3.97	0.001	4.56	1.70–12.26	0.003
BMI* <22.9 kg/m^2	38	1.79	1.10–2.91	0.001	2.51	0.94–6.73	0.06
Albumin <3.5 g/dL	43	0.89	0.32–2.42	0.82			
Inadequate grip strength ****	59	1.85	0.93–3.71	0.05			
Polypharmacy	84	1.08	0.37–3.12	0.88			

*Chi-squared test; **Stepwise criteria for selection of variables; ***CI 95% - Confidence interval of 95%; ****Grip strength inadequate for body mass index and gender.

It was observed that of the 38 patients who were frail at hospitalization 50% lost functional capacity between T0 and T3, and of the 28 who suffered a decline in functional capacity, 19 (67%) were frail. These aspects may explain the high CI for frailty presented in Table 2.

DISCUSSION

This is the first study to evaluate the functional capacity of hospitalized elderly persons in Brazil 30 days after discharge from hospital. Previous Brazilian studies have evaluated this aspect through a cross-sectional approach[15] or at the time of discharge[16].

Most participants (81.8%) were independent at baseline (T0). Previous studies found independence rates between 15 and 73% at this time point[5,16,17]. The rates can differ depending on the population studied and the research location, as was found in a study that found a prevalence of independence in BADL of 75% in patients aged over 55 years[5] and another that evaluated the elderly aged over 65 years and

found that 64% suffered functional decline before hospitalization[14].

The results show that more than one third of the elderly experienced a decline in functional capacity at the time of hospitalization in comparison with their previous state. This finding is similar to previous studies, which showed that 35% to 43% of the elderly lost functionality at the moment of hospitalization, regardless of the causes of such hospitalization and the place of evaluation (general hospital or specialized geriatrics ward)[2,5,16].

At the time of discharge (T2), a third of the patients had suffered a decline in functional capacity for BADL in comparison with their pre-hospitalization state (T0). This decline is described by authors as hospital acquired disability (HAD)[4,5,18]. Previous data show that on average 35% of the elderly do not recover functionality at time of hospital discharge, regardless of the population evaluated and the place of hospitalization[2,16,19,20].

After 30 days of discharge (T3) 28.2% of the elderly had lost functionality and did not return to their previous functional status. A study found that 33% of elderly women experienced functional decline following this period[3].

The factors associated with a worsening of functionality between T0 and T3 in the bivariate analysis were frail elderly individuals and those with a BMI of <22.9 kg/m^2, while multivariate analysis found an association with frailty.

The presence of frailty is described as a risk factor for loss of functional capacity, hospitalization and death in the elderly living in the community[21,22] and death in hospitalized elderly persons[23]. Gregorevic et al.[24], using the Clinical Frailty Scale (CFS) in the evaluation of frailty in hospitalized elderly persons, observed that frail elderly individuals had a greater risk of functional loss, post-discharge institutionalization and death. Similar results were found in a retrospective study of the elderly in England featuring evaluation by the same instrument in which frailty was associated with reduced functionality at hospital discharge[25]. The analysis of the Women's Health and Aging Study I found that frailty, evaluated by the Fried phenotype criteria, was associated with a loss of functional capacity[3]. A study that evaluated the elderly based on two sets of criteria, the CFS and Fried, found that frailty was related to a loss of functional capacity and worse outcomes, such as hospital readmission and death[23]. As in previous studies, it was observed that frailty, evaluated by the Fried criteria, was associated with a loss of functionality.

The causes of functional loss in hospitalized elderly persons are multifactorial and cumulative and include factors such as the cause of hospitalization; advanced age[4,26]; entry diagnosis; previous functional situation; bed rest (resulting in decreased mobility); medical procedures; medicines; cognitive deficit; an acute confusional state and malnutrition[16,18]. There is great variability in the studies in terms of the evaluation of the elderly based on the location of hospitalization: geriatric wards[16] and general hospital[5], reassessment three months after hospital discharge[20], the use of indexes of comorbidity and evaluation of instrumental activities of daily living[2,3,26].

It should be noted that the variables analyzed in the present study are not sufficient to fully understand the functional capacity of the hospitalized elderly, and it is necessary to investigate other unacknowledged domains that make up a broader geriatric evaluation, such as cognitive status; depressive symptoms; nutritional aspects; self-reporting of health; ethnicity; and educational level, among others[7,27]. Another limitation of the present study was the place of hospitalization, a university hospital, where the complexity of hospitalized patients is greater.

An important aspect of the study was the non-exclusion of patients hospitalized with specific diseases.

The medical team assessing the care needs of patients, such as functionality, during hospitalization and the post-discharge period should be aware that many patients will not be able to perform basic self-care or BADL at hospital discharge and after a further 30 days to the same extent as they were before hospitalization.

A randomized clinical trial showed that group exercise and individual physiotherapy reduced functional loss as measured by transference and ambulatory capacity in hospitalized elderly persons[28].

A systematic review has shown that multidisciplinary intervention including exercise can increase the proportion of patients who are discharged to the home and reduces the time and cost of hospitalization for elderly patients[29]

It is important that all health staff observe situations that can limit the mobility of elderly patients such as the prolonged use of catheters and venous access, physical restrictions, prolonged stays in the bed, fear of falling, actions that interrupt nocturnal sleep and the use of psychoactive drugs. Measures such as early ambulation, physiotherapy during hospitalization, early discharge programs, post-discharge hospital care and orientation should be implemented by care services for the elderly[18].

The results obtained in this study pose a series of questions for future research. The causes of HAD are not clarified and it is vital that the etiology of this problem is established. It is important to assess whether the loss of functional capacity acquired in the hospital environment can be prevented with multi-component interventions. The loss of functional capacity prior to hospitalization may be important as a contributor to HAD, and its role must be determined.

CONCLUSION

The present study showed that the functional capacity of elderly patients is worse at discharge from hospital than it is prior to hospitalization. About 28% of the elderly had worse functional capacity 30 days after discharge than 15 days prior to hospitalization. Elderly patients who are frail at admission have a higher risk of worse functional results 30 days after discharge.

It is recommended that the health team assesses functionality during hospitalization and following discharge.

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Received: September 15, 2017
Reviewed: February 13, 2018
Accepted: March 13, 2018

http://dx.doi.org/10.1590/1981-22562018021.170128

Trends in overall mortality and from diseases of the circulatory system in elderly individuals in Rio Branco, Acre, 1980-2012

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Abstract

Objective: To analyze trends in general mortality and circulatory system disease mortality among elderly persons living in the city of Rio Branco, Acre, Brazil, from 1980 to 2012. *Method:* A study of the cause of death of elderly people was carried out from the data available in the Brazilian Mortality Information System. Crude and age-based overall and circulatory system mortality rates were calculated. The trend analyses of these rates were performed using the *JoinPoint Regression* program. *Results:* Despite the reductions in mortality rates, diseases of the circulatory system remained the main cause of death of the elderly in Rio Branco. The decrease in overall mortality rates was higher among elderly women and those aged 70 years or older. There was a tendency for death rates due to diseases of the circulatory system to decline among elderly men and grow among elderly women. *Conclusion:* The mortality rate among the elderly in Rio Branco revealed a declining trend. Deaths from diseases of the circulatory system were the leading cause of death, suggesting that research should be carried out to assess the need for investment to ensure that increased longevity is accompanied by good quality of life.

Keywords: Mortality. Health of the Elderly. Epidemiology. Cardiovascular System. Longevity.

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INTRODUCTION

Until the late 1970s the demographic profile of Brazil was characterized by a predominantly young population, the result of a lengthy period of high fertility. However, changes have occurred to this profile in recent years. One of the clearest signs of this is the narrowing of the base of the population pyramid over time, with significant reductions in the number of children and young people in the total population[1]. This change has also been observed in Rio Branco, where the proportion of under 20s declined from 55.2% (1980 Census) to 39.3% (2010 Census), while those over 60 increased from 4.2% to 6.4% in the same surveys[2].

In population aging it is important to understand the inequalities in mortality among the elderly through studies that consider the epidemiological, demographic and social aspects relevant to this population. Mortality information is one of the main health indicators of a population. Mortality rates and numbers, locations, ages, and major causes of death are crucial to policy debates, planning, interventions, establishing research priorities and developing new technologies. An analysis of trends in causes of death provides an important geographical summary of whether society and public policy is effective in reducing mortality, especially through preventable causes, and where more investment is required. Thus, it can be said that mortality statistics are highly useful[3,4].

In this context, the present article aims to analyze trends in overall mortality and mortality from circulatory diseases in elderly persons living in the municipal region of Rio Branco, Acre, from 1980 to 2012.

METHOD

An ecological study of the mortality data of people aged 60 years and over in Rio Branco, the capital of the state of Acre in the Western Amazon region of Brazil, was performed. According to the 2010 census of the Brazilian Institute of Geography and Statistics (IBGE)[5], the population of Rio Branco was composed of 336,038 inhabitants, 21,577 of whom were over 60 years of age, with a higher proportion of females (53.6%).

Data from the Mortality Information System (MIS)[6], which consolidates all Brazilian deaths, were used. Deaths were coded according to the 9th revision of the International Classification of Diseases (ICD) for the years 1980 to 1995, and the 10th revision for the years 1996 to 2012.

The absolute and relative frequencies of the following variables were analyzed: gender, age group (60 to 69 years, 70 to 79 years and 80 years or more); ethnicity/color (white, brown, black, yellow/Asian-Brazilian or indigenous); marital status (married, single, widowed, separated or other); schooling (zero, 1 to 8 years, 9 to 10 years and 11 years or more of study); place of death (hospital, home, public highway or other); cause of death, and year of death (from 1980 to 2012).

The proportionate mortality by chapter, excluding deaths from ill-defined causes, was calculated from the death data of the elderly (Chapters XVI in ICD-9 and XVIII in ICD-10). The proportion of deaths from the six most frequent episodes in the previous year was compared for 1980, 1996 and 2012.

The crude mortality rate per hundred thousand inhabitants was calculated (ratio between the number of deaths of people aged 60 years and over and the population living in Rio Branco in this age group in the relevant year) along with the specific rates by age group and gender. Age-standardized rates using the direct method were also calculated, using as standard a theoretical world population[7], with the objective of controlling the influence of population aging on the mortality trends.

Analysis of the trend of the mortality rates from circulatory system diseases was also carried out, as this chapter has the highest number of deaths over the entire period. To improve the quality of the data, we used the 50% proportional redistribution adjustment method for deaths with an ill-defined basic cause (codes 780-799 of ICD-9 and R00-R99 of ICD-10), as this correction factor is recommended by the World Health Organization (WHO)[8] for calculations of mortality and has been previously used in Brazil by França et al.[9]. This redistribution maintained the proportion of deaths specified (i.e. by category) in the chapter on diseases of the circulatory system.

Trend analyzes were carried out by calculating the annual percentage change in mortality rates for the elderly for the set of deaths and for the chapter of diseases of the circulatory system using the JoinPoint Regression statistical program (http://surveillance.cancer.gov/joinpoint/). The JoinPoint technique uses log-transformed rates to identify inflection points throughout the period which can describe significant changes in trends through the Annual Percentage Change, which allows the scale of the change of a rate in a given period of time to be determined[10]. In this system, the inflection points correspond to k-1 segments. Statistical significance tests for choosing the best model were based on the Monte Carlo permutation method, considering a value of $p<0.05$.

RESULTS

During the study period (1980 to 2012) there were 44,007 deaths of people aged 60 years of age or older residing in Rio Branco, Acre, of which 62.3% involved men. Among this age group, 35.6% were aged 70 to 79 years and 34.8% were aged 80 years or more. A predominance of brown-skinned individuals, single people, with low schooling and who died in hospital was observed (Table 1).

Table 1. Characterization of deaths of people aged 60 years or mode between 1980 and 2012. Rio Branco, Acre.

Variables*	n (%)
Gender	
Male	27,368 (62.3)
Female	16,579 (37.7)
Age group (years)	
60-69	5,249 (29.7)
70-79	6,287 (35.6)
80 and over	6,144 (34.8)
Ethnicity/color **	
White	4,564 (29.6)
Black	823 (5.3)
Brown	9,739 (63.1)
Yellow/Asian Brazilian	203 (1.3)
Indigenous	94 (0.6)
Marital status	
Married	11,433 (30.5)
Not married	19,082 (50.8)
Widower	5,938 (15.8)
Separated	640 (1.7)
Others	446 (1.2)
Schooling (years of study)	
0	10,801 (58.4)
1 to 8	5,675 (30.7)
9 to 10	1,038 (5.6)
11 or more	643 (3.5)
Place of death	
Hospital	28,919 (66.8)
Home	11,171 (25.8)
Public highway	1,951 (4.5)
Others	1,238 (2.9)
Total deaths	44,007

Source: Mortality Information System (MIS). *The differences in absolute values, in all variables, correspond to the data overlooked in the MIS/DATASUS; **Data from 1996 to 2012, as data from previous years are not available in MIS/DATASUS.

The distribution of deaths by ICD chapter, excluding ill-defined causes, revealed deaths from the circulatory disease chapter as the most frequent in elderly residents in Rio Branco during the studied period. Deaths in this chapter accounted for more than half of those recorded in 1980 (50.6%) and practically one third of those recorded in 2012 (31.2%). There was a change in the percentage of deaths due to diseases of the respiratory system, which were the second most prevalent in 2012, increasing from 11.7% of deaths in 1980 to 19.7%. There was an increase in the percentage of deaths in the endocrine, nutritional and metabolic diseases chapter (from 0.6% to 10.7%) and from external causes (from 3.2% to 4.6%). A different pattern was observed in the chapter on parasitic and infectious diseases, which showed an increase followed by a reduction: from 6.5% (1980) to 10.3% (in 1996) and 4.5% of elderly deaths in 2012 (Table 2).

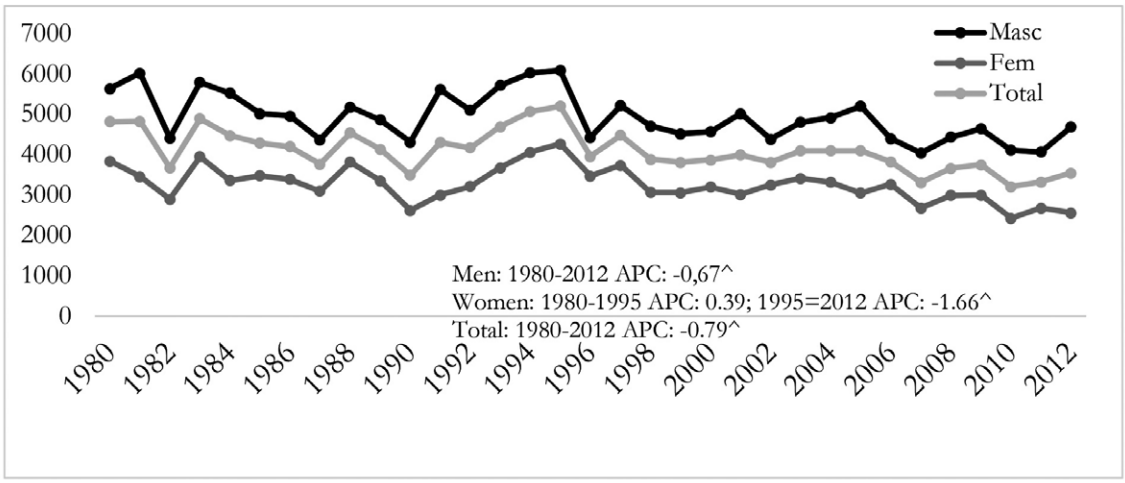
Age-standardized mortality rates oscillated over the period and were always higher among men. For all deaths, the lowest rate was 3,497.49 deaths/100,000 elderly in 1990, and the highest, 5,203.00 deaths/100,000 elderly people in 1995 (Figure 1). The mortality rates by age were higher for more advanced ages in all the years analyzed, exhibiting significant variation in those older than 80 years (Figure 1).

There were 5,789 deaths caused by circulatory system diseases (CSD) in the period studied. The redistribution adjustment methodology used included another 2,442 deaths previously recorded in the chapter on ill-defined causes. Figure 2 shows the behavior of the standardized mortality rates before and after this redistribution, for men, women and both genders. It should be noted that the redistribution was greater at the beginning of the series, becoming less significant from 2006. There was an increasing trend in the overall rate, reflecting the growth in female deaths, while there was a decline in male rates during the period.

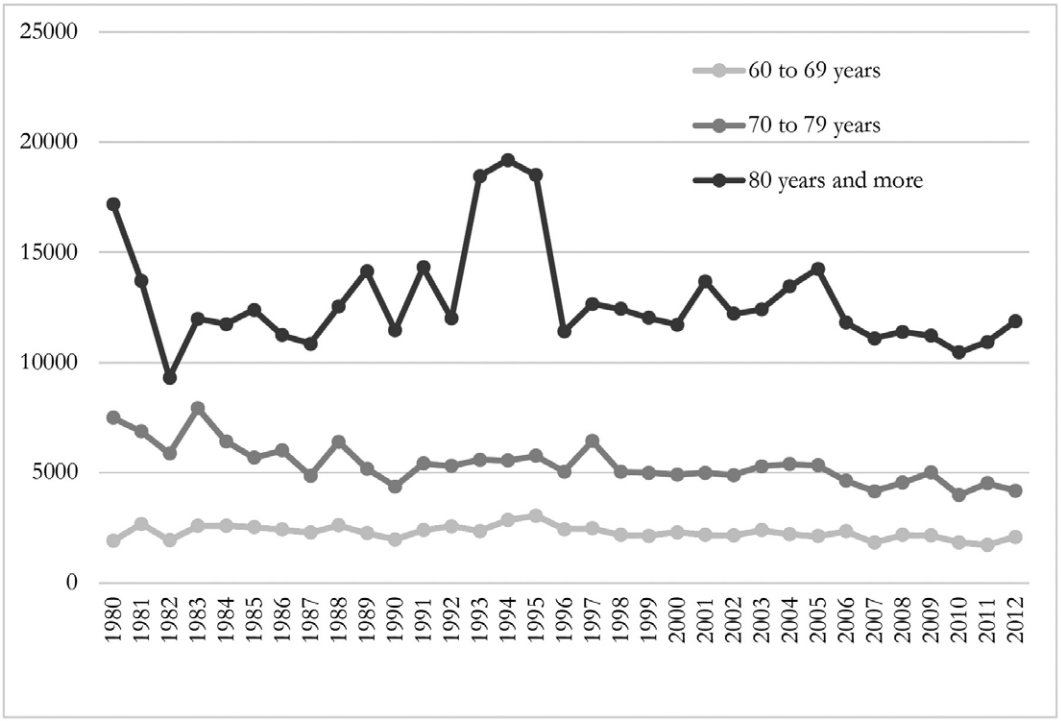
Table 2. Proportional distribution of deaths among elderly persons in 1980, 1996 and 2012. Rio Branco, Acre.

Chapter of deaths*	1980	1996	2012
	n (%)	n (%)	n (%)
Chapter I - Infectious and parasitic diseases	10 (6.5)	37 (10.3)	38 (4.5)
Chapter II - Neoplasms (tumors)	30 (19.5)	46 (12.8)	157 (18.5)
Chapter IV - Nutritional and Metabolic Endocrine Diseases	1 (0.6)	31 (8.7)	91 (10.7)
Chapter IX - Diseases of the circulatory system	78 (50.6)	143 (39.9)	264 (31.2)
Chapter X - Diseases of the respiratory system	18 (11.7)	55 (15.4)	167 (19.7)
Chapter XX - External causes of morbidity and mortality	5 (3.2)	13 (3.6)	39 (4.6)
Other chapters	12 (7.8)	12 (9.3)	67 (10.8)
Total	154 (100)	358 (100)	847 (100)

Source: Mortality Information System (MIS). *Except ill-defined causes. International Classification of Disease (ICD – 9 and ICD-10).



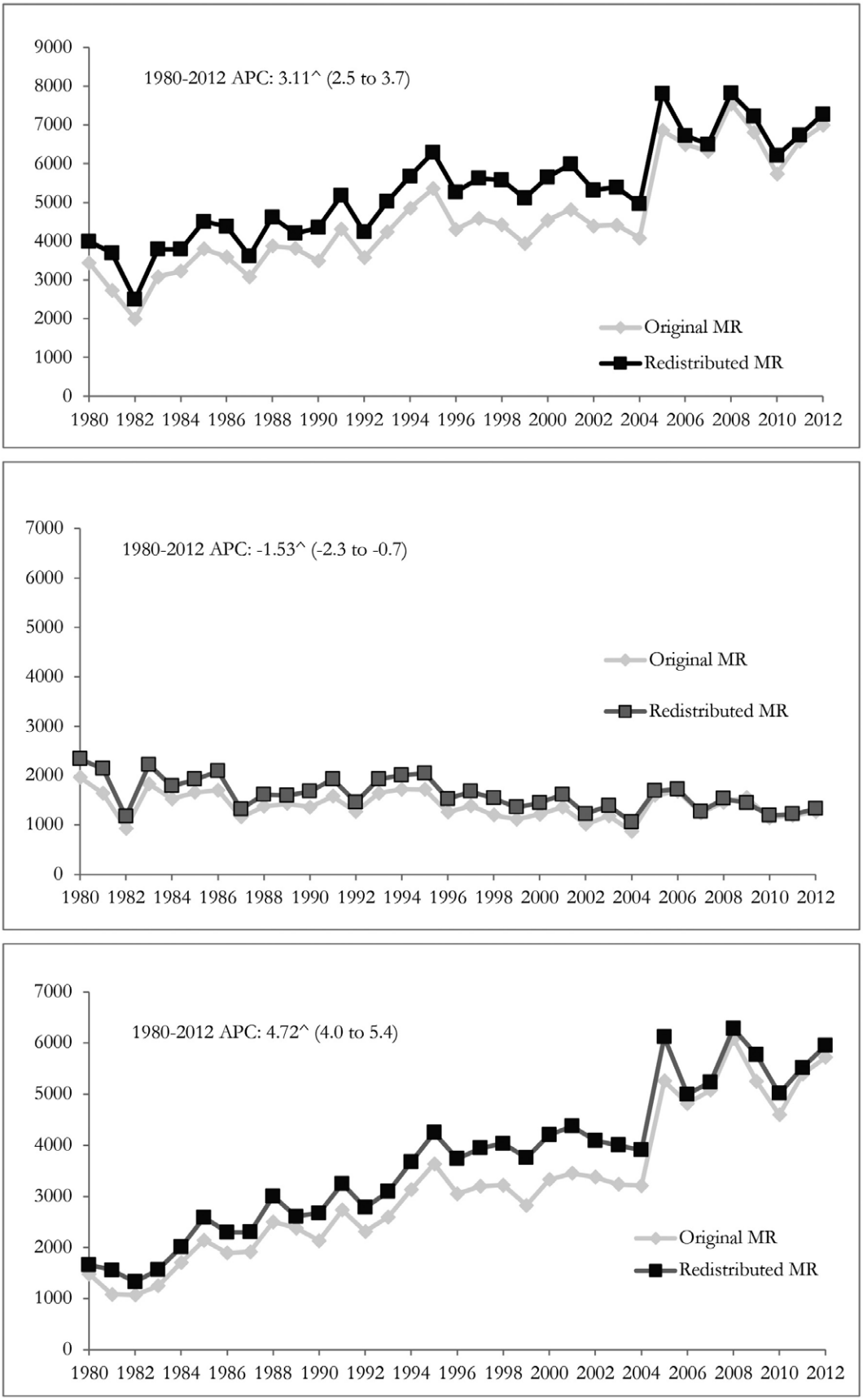
Overall mortality rate standardized by age, according to gender.



Annual mortality rate by age range.

Source: Mortality Information System (MIS). Mortality rate standardized by global population

Figure 1. Mortality rate among elderly persons from 1980 to 2012. Rio Branco, Acre.



Source: Mortality Information System (MIS). APC= annual percentage change ^p-value <0.05; Mortality rate standardized by global population.

Figure 2. Mortality rates standardized by disease of the circulatory system, original and redistributed from deaths due to ill-defined causes, both genders. Rio Branco, Acre, 1980-2012.

The overall age-specific mortality rate over the whole period was higher among elderly persons aged 80 or over, with a significant increase from 2005. In Rio Branco, the mortality among the elderly group exhibited a declining trend in all age groups, in both genders, except for women in the age group of 80 years and over, between 1982 and 1988. The APC for both genders in this range was an increase of 3.5% per year from 1982 to 1993, with statistical significance, in comparison with a more significant variation in women in the same range from 1982 to 1988 (APC=12.2% pa), followed by a small reduction (-0.7% pa) in subsequent years (Table 3).

Table 3. Annual percentage variation (APC) of general mortality rates and circulatory diseases in the elderly according to sex and age group. Rio Branco, Acre, 1980-2012.

Gender Age range	1st Trend		2nd Trend		3rd Trend	
	Period	APC ($CI_{95\%}$)	Period	APC ($CI_{95\%}$)	Period	APC ($CI_{95\%}$)
Overall mortality						
Men						
60 to 69	1980-2012	-0,6 (-1,0; -0,1)				
70 to 79	1980-2012	-0,7 (-0,3; -3,2)				
80 and over	1980-1993	-1,4 (-1,1; 4,0)[a]	1993-2012	-1,9 (-3,2; -0,4)		
Women						
60 to 69	1980-1995	2,2 (0,3; 4,2)	1995-2012	-2,0 (-3,5; -0,5)		
70 to 79	1980-2012	-1,8 (-2,4; -1,3)				
80 and over	1980-1982	-43,6 (-64,7; -9,9)	1982-1988	12,2 (1,0; 24,5)	1988-2012	-0,7 (-1,7; -0,3)[a]
Both						
60 to 69	1980-2012	-0.6 (-6.0; -1.0)				
70 to 79	1980-2012	-1.3 (-1.7; -0.9)				
80 and over	1980-1982	-23.0(-45.4; 8.6)[a]	1982-1993	3.5 (0.7; 6.3)	1993-2012	-1.6 (-2.7; -0.7)
Mortality from diseases of the circulatory system						
Men						
60 to 69	1980-2012	-0.89 (-1.7; -0.1)				
70 to 79	1980-1982	-24.74 (-50.9;15.3)[a]	1982-2012	-1.05 (-1.9; -0.2)		
80 and over	1980-1992	-1.62 (-2.7; -0.5)				
Women						
60 to 69	1980-1983	2.70 (1.7; 3.7)				
70 to 79	1980-2012	2.37 (1.5; 3.2)				
80 and over	1980-1996	5.32 (4.4; 6.3)				
Both						
60 to 69	1980-1983	1.29 (0.6; 2.0)				
70 to 79	1980-1996	1.03 (0.4; 1.7)				
80 and over	1980-2012	3.86 (3.1; 4.6)				

Fonte: Mortality Information System (MIS). Mortality rate standardized by global population; All *p*-value <0.001 except [a] *p*-value >0.05.

Table 3 also shows the predominance of a decline in mortality rates caused by CSD in men and women over the entire period. Analysis by age group revealed a difference in behavior, although overall there was an increasing trend, especially in the last age stratum (APC of 3.86; $CI_{95\%}$ 3.1 to 4.6), despite the discrepancy in magnitude between the genders and age groups. The percentage of mortality due to CSD among elderly men aged 80 years or more declined by 1.62 per year from 1980 to 2012, while among elderly women there was an annual increase of 5.32 in the same period, both with statistical significance.

The most frequent specific causes in 2012 were: stroke (n=48, 18.2%), acute myocardial infarction (AMI) (n=43; 16.3%), sequelae of cerebrovascular disease (n=32, 12.1%), heart failure (n=17, 6.4%) and hypertensive heart disease (n=16, 6.1%). In all the specific causes of CSD, the highest number of deaths in both genders occurred in the age group of 80 years and over, with the exception of stroke deaths in men, which were higher in the 70-79 age group, and by AMI in the same age stratum, for both genders (male: n =11, 36.7%, female: n=5, 38.5%).

DISCUSSION

The mortality rate of the elderly in Rio Branco was greatest in males in every year analyzed and among those aged 80 years old or older. However, there was a declining trend in overall mortality for both genders. The chapter with the highest number of deaths was CSD, with an increasing trend over this period, in a pronounced manner for women, especially those aged 80 or over.

In recent decades in Brazil the age distribution of mortality exhibited a significant change, with a decline in infant deaths and an increase in the elderly proportion from 38% in 1980 to 60% in 2007. However, even with increased longevity there is still a lack of information on how and from what people die of at more advanced ages, according to Mathias et al.[11].

The greater proportion of male deaths in the overall mortality rates found in the present study were also observed in Recife (Pernambuco)[12], where higher rates were found in elderly men (mean 5.44 deaths/100,000 inhabitants) than in elderly women (mean of 3.73 deaths/100,000 inhabitants) between the years 1996 to 2007. The paradoxical phenomenon of male and female survival observed in modern human societies, in which women experience greater longevity than men, results from both biological and environmental differences that include behavioral, cultural, and social factors[13-15].

Several studies have considered both greater longevity and better quality of life in aging, with the prolongation of telomeres - a structure consisting of repeated filaments of proteins and DNA that make up the ends of the chromosomes[13,15]. The genetic advantages of women can be attributed to the difference in the reverse transcription of human telomeres (hTERT) that can be stimulated by the female hormone estrogen. This results in an increase in telomerase and longer telomeres, and consequently greater longevity than in men[15]. Another genetic advantage can be attributed to the X chromosome, which contains DNA repair genes. As women have two, they have an advantage over men (XY) in the event that the X chromosome is damaged[14-17]. Moreover, studies have demonstrated the advantages of genetic variants associated with longevity for both greater numbers of children and maternity at an advanced age (over 33 years of age). In this way, the survival of women can be an evolutionary mechanism or selective pressure through the choice of genetic variants that facilitate survival for a longer time, even after the age in which reproduction ceases[16,17].

It is therefore important to point out that there are biological aspects that can determine the trend of greater longevity in women, and that it is not merely a demographic phenomenon. In addition, it is known that women use health services more, enabling earlier diagnosis and treatment, which may result in lower mortality[18].

The annual percentage changes in overall mortality in the years studied in Rio Branco were more significant in women aged 80 years and over, with a decrease of 43.6% between 1980 and 1982, followed by those from 60 to 69 years (APC of -2.0). In men, the most significant variation was also in the age group of older than 79 years (APC = -1.9) as of 1993. This pattern of expressive declines in mortality rates in the elderly was also found in studies in the northeast and in the southeast of Brazil[12,19,20].

The distribution of causes of death in Rio Branco corroborates the profile described by Miranda et al.[21], which indicated a predominance in Brazil between 1998 to 2013 of diseases of the circulatory system, neoplasms and those of the respiratory system, with an increase in deaths due to endocrine diseases. In the present study a decline in mortality from CSD over time was observed. A study conducted in Rio Grande do Norte between 2001 and 2011 found that CSD were the main cause of death in the age groups of 60-69 years (32.8%) and 80 years or older (35.3%). The second most important chapter was that of neoplasms (22.9%) among elderly persons from 60 to 69 years and those aged 80 or older (10.0%). Diseases of the digestive tract and external causes represented significant percentages of proportional mortality among younger elderly persons, whereas ill-defined and respiratory diseases were more significant among the longest-lived[19].

Similar to the mortality of the elderly in Rio Branco, a study carried out in the state of Mato Grosso with data from 1986 to 2006 found higher rates of mortality due to CSD in men and in older individuals. On the other hand, it found that, for almost all elderly age groups, deaths due to CSD declined by approximately 10% for both genders[22].

Similar results were found in other Brazilian studies on mortality in the elderly caused by various diseases of the circulatory system [23-26].

Garritano et al.[24], when discussing the reduction in mortality rates due to strokes, indicated that this decline is related to the incidence and lethality of the disease, and that this explanation may extend to other CSD as they have similar risk factors and pathological mechanisms. The incidence is linked to risk factors such as hypertension, diabetes, obesity, smoking, low human development index (HDI), among others, while the lethality depends on the effectiveness of the treatment instituted.

Brazil is a large country, with significant inequality between regions and scarce resources allocated to public health. As a result, the most recommended procedures are not always available for the population in various localities[24]. For Mansur and Favarato,[27] the progressive reduction in mortality in Brazil due to cardiovascular disease is more related to improvements in the quality of life of the population from birth than access to high technology services and procedures, which should be restricted to high-risk cases, where they are more effective. Although these aspects were not the object of the present study, they are believed to be related to the reduction of the mortality rate due to CSD in Rio Branco. It is therefore necessary to carry out other studies to verify such findings.

A study with data from 26 European Union countries[28] from 1980 to 2009 found that, to a greater or lesser extent, there was a reduction in the mortality rate due to coronary disease in most countries and in all age groups, across both genders. However, recent increases have been observed in younger age groups in a small number of countries. The authors drew attention to the prevalence or permanence of important risk factors such as: smoking, obesity and diabetes at relatively high levels by European standards.

However, there was a reduction in mortality among the longest-lived, which may be the result of mortality from delayed, rather than avoided, coronary disease, with the reduction in mortality in the 65-74 age group, for example, partially offset by a lower reduction among older people. The mean APC for the full range of years in individuals aged 65 years and over was 22.3% among men and 22.2% among women [28].

Declining trends in overall mortality and deaths from CSD were found among the elderly in Rio Branco in the present study, although there were differences in the period, in age groups and in genders. This type of finding raises important implications for public policies.

In Brazil, the challenges for health are well-known due to the failings of the Unified Health System (SUS), as alerted to by Oliveira et al.[19], which has not achieved full universal coverage and still presents geographical gaps in the provision of health services of medium and high complexity and is not prepared to deal with the morbidities that will become more prevalent with the increase of the elderly population.

According to the National Health Survey (PNS)[18], 45% of the Brazilian population has chronic noncommunicable diseases (CNCD) and use twice as many health services as those who

do not have such illnesses. In another population survey[29] conducted in Rio Branco in 2007, 11.9% of the sample was composed of elderly people, and 76.7% of the participants reported having at least one of the 18 morbidities investigated. The most frequently reported diseases were spine (30.8%), arterial hypertension (28.3%) and depression (19.0%).

The increase in the proportion of the elderly can generate a significant increase of the costs of hospitalizations of SUS. A study comparing hospitalization data from 2000 and 2010 reports that this increase stems from the most prevalent group of diseases in this age group, such as circulatory diseases and neoplasms, which were responsible for explaining, respectively, 110% and 31.4% of the increase in total hospitalization costs in Brazil in this period[30]. This scenario highlights the scale of investment needed to address diseases of advanced ages and the gaps in care, protection, healthy aging and integration of the elderly into society. The area of health must restructure funding sources and management processes to adequately address the issues associated with greater population longevity and overall system operation[19].

However, it should be noted that the overall aging process itself, as evidenced by aggregate analysis data, with a trend of declining rates over the years, is also the result of improvements in public health policies, with a greater focus on the expansion of primary health care, especially since the 1994 implementation of the Family Health Program, as well as the creation of the National Primary Care Policy, the National Health Promotion Policy, the National Health Policy for the Elderly, and others. Borim et al.[31], when analyzing the factors associated with the mortality of the elderly in Campinas, São Paulo, between 2008 and 2009, reinforced that strategies based on specific primary and secondary care directed at priority groups can have a positive impact on the reduction of mortality among the elderly.

In Rio Branco, the Municipal Policy on the Rights of the Elderly was only created in 2008. However, the activities of the control and treatment of chronic non-communicable diseases, such as arterial hypertension and diabetes, were the first to be implemented in the municipality, along with the Family Health Strategy, in the 1990s. These actions may explain some of the data on the reduction of death by CSD, as well as the overall mortality reduction data, together with the creation of the Hospital for the Elderly in 2004, as a reference for the specialized care and expansion of the health care network of the elderly (http://noticias.terra.com.br/brasil/noticias/0,,OI289961-EI1194,00-Lula+inaugura+hospital+para+idosos+no+Norte.html).

It is therefore important that population projections adopt strategies that consider the reduction of mortality among the elderly, and that health and social security policies are adopted that guarantee adequate living conditions for this part of the population, which presents a characteristic of growth and expectation of greater survival.

The results found should be analyzed with the care inherent to ecological studies. One limitation cited in studies using data based on death reports is the accuracy of mortality statistics. However, it is noteworthy that the data of the present study are the official data of the Ministry of Health and that several studies have been carried out evidencing the quality, functionality and coverage[31-33] of the MIS. Specifically in relation to Acre, data on the causes of death were classified as satisfactory by a study that evaluated the mortality statistics of Brazilian states in the year 2000[32]. In 2011, the coverage of the MIS in Acre was 90.0%, slightly lower than the rate for Brazil (96.1%)[33].

On the other hand, a strength of the present study is the zeal of the authors in performing the proportional redistribution of the ill-defined causes of death into the CSD chapter to carry out the analysis of mortality trends, according to the methodological proposal recommended by the WHO[8]. Moreover, the MIS is an important data source that can contribute to the epidemiological profile of a population. The evaluation of the level of health can be made by indicators that use, for the most part, the mortality data of a population to indirectly assess the health of a community[34].

CONCLUSION

In summary, mortality from circulatory system diseases (CSD) remained the main cause of death among the elderly in Rio Branco between 1980 and 2012, and the mortality rate among men was greater

than that among women for all age groups. It was also concluded that, in the capital of Acre, one of the component states of the Western Amazon, the general mortality trends of the elderly population show a declining trend over time.

It is suggested that other studies are carried out, based on the information generated by this article, to identify the origins of the declining mortality rate and to evaluate whether, over time, the primary and secondary prevention of CSD and/or improvement of the socioeconomic conditions of the population were more effective. In addition, the results indicate that the overall mortality of the elderly exhibits a declining trend in Rio Branco. The volume and proportion of older people in this region may therefore increase, leading to a need for investment to ensure longevity accompanied by quality of life.

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Received: August 09, 2017
Reviewed: January 14, 2018
Accepted: February 02, 2018

http://dx.doi.org/10.1590/1981-22562018021.170133

Promoting health among the elderly: actions in primary health care

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Abstract

Objective: To identify health promotion actions carried out by professionals in the Family Health Strategy in relation to elderly people. *Method:* An exploratory study with a qualitative approach was performed in Juazeiro do Norte, Ceará, Brazil, with 19 professionals. A recorded, fully transcribed semi-structured interview was used after authorization by the ethics committee under number 501 675. The discussions were analyzed using Content Analysis, organized into thematic categories. *Results:* Actions of a collective nature were identified, such as activities in groups, meetings, conversation circles, lectures and guidance in the waiting room. Other directed actions were used, such as guidelines during individual consultations and referral to specialized services. *Conclusion:* The need for the discussion of health promotion and actions in relation to old age was highlighted, with debate and reflection on this theme required locally, along with the need to build a network of support for the health of the elderly in a shared manner among professionals, managers and the community.

Keywords: Health of the Elderly. Health Education. Health Promotion. Primary Health Care. Family Health.

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INTRODUCTION

Population aging can be considered an achievement for Brazil, with improvements in health conditions leading to an increase in life expectancy and a reduction in mortality, especially infant mortality, and fertility until they are at similar levels to developed countries. Little planning has been carried out to deal with this situation, however, and the lack of conditions for active and healthy population aging in most of Brazil affects the quality of life of the elderly[1].

Such lack of planning represents a major problem as individuals age without the proper care for their new physical and mental condition. This directly affects their well-being and, consequently, their quality of life, as aging with the perception of good health is related to the capacity to engage in self-care activities, express positive emotions and satisfaction with economic and/or social conditions and changes in habits[2].

According to the Pan American Health Organization (PAHO), human aging can be understood as a sequential, natural, individual, irreversible, universal, cumulative, continuous and non-pathological process, with the gradual and progressive reduction of functional and cognitive capacity resulting from the process of senescence and senility[3]. Understanding this concept and incorporating it into daily professional practice is fundamental to providing care to the elderly population to ensure they perform an active and reflective role in society, with rights and duties, and participate in decision making on their health/illness process.

Greater longevity and longer life expectancy depend, among other factors, on lifestyle (obesity, sedentarism, smoking, stress), the environment (housing conditions, urbanization), genetic inheritance (related diseases) and the organization of health services (access and adequate care). Longevity is a reality in Brazil, both in relation to the number of elderly people and the increase in life expectancy, resulting in the need for structured public policies that meet the needs of this age group[4].

Demographic transition is consequently a challenge for health, especially in Brazil, whose status as a developing country means the phenomenon occurs in a scenario of poverty and great social inequalities, in a large territory marked by economic, social and cultural differences. In addition, the health care model in Brazil is still based on curative actions, with the predominance of the medical model and a work process organized by spontaneous demand, and is therefore insufficient to meet the needs of the elderly population[5].

There is therefore a need for strategies aimed at this population, especially in the health sector[6,7], in which professionals and managers are prepared to receive and respond to the psychological, physical, socioeconomic and cultural needs of the elderly, based on public policy proposals for an active and healthy aging, as set out in the guidelines on care, operation and management and related policies incorporated within the Unified Health System (SUS), such as the National Health Policy for the Elderly.

Primary Health Care (PHC) in Brazil demands political, economic and institutional decision-making, with significant investment in its expansion and the improvement of health care for individuals in territories covered by Family Health Strategy (FHS) teams. This investment is based on the central concept of health promotion to bring about a transformation in the inter/multidisciplinary work process through networks of integrated health care[6].

In Brazil, despite successful experiences with the implementation of the FHS[8], the disease-centered view persists, especially in relation to the elderly population. This is evidenced by outpatient clinics focused on spontaneous demand, home visits restricted to the treatment of chronic diseases and consultations for the follow-up of hypertension and diabetes, with the biomedical model of health care prevailing. In the municipality studied, strategies aimed at promoting health through the work of multidisciplinary teams, supported by the policies of the Ministry of Health, have not yet been incorporated, especially in relation to the elderly.

Medina et al.[9] suggest that there is a lack of studies that problematize or evaluate the nature and effectiveness of health promotion actions developed in PHC, specifically in the Family Strategy. Based on these reflections, the aim of the present study was

to identify the actions of health promotion for the elderly population carried out by FHS professionals in Juazeiro do Norte, Ceará, Brazil.

METHOD

All ethical and legal precepts on research involving human beings have been respected, in compliance with Resolution Nº 466/2012. The study was registered on the Brazil Platform and submitted to the Ethics Research Committee of the Universidade Estadual do Ceará (Ceará State University) (UECE), and were approved under approval nº 501.675.

An exploratory study with a qualitative approach was carried out, from the comprehensive perspective of the reality experienced in the daily life of the FHS, which is a potentiator of health promotion for the elderly.

The study was carried out in the FHS of the municipal region of Juazeiro do Norte, located in the Metropolitan Region of Cariri in the south of the state of Ceará, Brazil.

Juazeiro do Norte has an area of 141 km² and an urbanization rate of 95.3%, with a population of 249,939 inhabitants, of which 14% are aged 60 years and over. The PHC of this municipal region is organized into six districts, with 64 FHS teams, offering coverage of 86.96%, 34 modality I Oral Health Teams (OHT) (without a Dental Hygiene Technician - DHT) and 530 Community Health Agents (CHA)[10].

The study was conducted in district V, which has thirteen FHS[11] teams, totaling 25 professionals, including doctors, nurses and dentists. The choice for this location was based on the fact that it has the greatest number of people aged 60 years or over in the municipal region.

A total of 19 higher-education qualified professionals (four doctors, nine nurses and six dentists) met the following eligibility criteria: to be a professional with a higher-education qualification and have worked for at least one year in the unit. The exclusion criteria were: professionals with a higher-education level qualification who, even including the time of the application process, had worked in the unit for less than a year or were absent from work for any reason.

Three nurses were subsequently excluded due to temporary absence from work, and three doctors refused to participate in the study.

Data collection was carried out in January and February of 2014 by means of a semi-structured interview script, following the consent of the institution and the participants, given by the signing of a Free and Informed Consent Form (FICF). The interviews were previously scheduled at an agreed date, time and place. They had an average duration of 22 minutes. Questions were raised about work carried out involving actions to promote the health of the elderly. The observations and impressions of the researchers were recorded in a field diary. The discourses were identified with the names of angels for the differentiation of the empirical data.

The data was analyzed using the Content Analysis (CA) approach proposed by Bardin[12]. As the interviews were carried out they were transcribed in full and organized based on the CA phases, through pre-analysis, material exploration, treatment of results, inference and interpretation. The organization of material was carried out via thematic categorization, with the evidence grouped into three categories, namely: collective actions of health promotion: empowerment or imposition of health practices; Waiting room: a space for dialogue to promote health? and Individual consultation as an action for the promotion of health: a reality to be overcome.

The criteria for reports of qualitative studies, present in the COREQ - Consolidated criteria for reporting qualitative research[12] checklist were considered for the elaboration of this manuscript.

RESULTS

In summary the collective actions were described, such as group activities, meetings, discussion circles, lectures and waiting room orientations, as well as specific actions such as orientation during individual consultation and referral to specialized services.

Collective actions of health promotion: empowerment or imposition of health practices?

Among the collective actions to promote the health of the elderly, health groups, working continuously, and in some teams, sporadically, were mentioned, as can be seen in the following reports:

> "We have a group. [...] On Mondays, Wednesdays and Fridays, it existed well before the Family Health Support Nucleus (FHSC), an Elderly Persons Group, which does physical activities and celebrates special occasions, such as Mother's Day, Father's Day, Day for Older Persons, they went to Caldas (the Balneário do Caldas resort in Barbalha, Ceará), [...] Festa Junina Parties, Christmas. [...] We even do walks with them, and we rely on FHSC professionals to provide support and guidance as well". (DINIEL).

> "There is a health worker who works with this specific group, she promotes and carries out events and celebrates special occasions, with the support of the team, such as São João, she organized transportation with the city council and took them to Caldas (a resort in the city of Barbalha). [...] It isn't a systematic or formal group, because it isn't fixed, but it is an initiative that we look on positively because the results are positive, from their feedback, there are benefits for the individual, with the elderly saying how it changed their lives, even though the initiatives are unsystematic [...]". (HAMON).

The participation of the Family Health Support Center (FHSC) and the CHA is essential to carry out the actions of the health groups mentioned. Even if be non-systematic, as the second statement explains, the benefits of these experiences are clear, as they involve themes and activities that are important for the maintenance of health, such as walking and accident prevention, and recreational and leisure activities such as celebrations of specific dates, which are important in the regional and national calendar, and visits to public places.

It was not discussed how the evaluations of these moments are performed by the FHS, as the groups were carried out sporadically, unsystematically and without any evaluation instruments. There was also a lack of discussion about the understanding of health/disease, culture, the need to prevent violence (in its various forms), sustainable development, or the culture of peace, among others, leading to a dependence on issues related to the control and treatment of chronic noncommunicable diseases.

Waiting room: a space for dialogue to promote health?

The health professionals interviewed emphasized the implementation of actions to promote the health of the elderly in the reception areas of the Family Health Units (FHU), which are "Waiting Rooms" where "chat" type group actions are carried out, focusing on a previously decided theme or with an open approach to the dialogue and questions of the target audience, focusing on health education as a strategy to promote health in this physical space.

The speakers described the use of the Waiting Room for actions of health promotion, however, due to the spontaneous demands on the service, also referred to the lack of suitable spaces for the organization of other more elaborate actions. They therefore demonstrate difficulties when carrying out such activities due to the characteristics of the environment, as shown in the following discourse:

> "[...] we take advantage of times when the team is doing something (waiting room) and we talk with them". (Anael).

> "[...] it often takes place in the waiting room, explaining what Is hypertension, what is diabetes, how to treat them, so we stay in the waiting room". (Leo).

> "[...] what we do in the waiting room [...] is about getting attention in a crowded space, which has a lot of people together and they really pay attention!" (Barman).

The spaces of the health units can be considered as places for dialogue in the health education process and thus for the promotion of health. It is, however, possible to reflect on the purpose of these moments in the "waiting room", as what is it that the users are "waiting" for, exactly? Reflection, dialogue, the exchange of knowledge on a subject? How do professionals organize this moment of "waiting" for it to become a place for health education?

Health education should include the active participation of the community and of the group focused on practical activities. It should provide information on health and health education, which is essential knowledge for improving the individual and collective quality of life of participants in the process.

Individual consultation as an action for the promotion of health: a reality to be overcome

The breakup of the individual health model is not yet an absolute reality. In the midst of attitudes that seek change, we still perceive resistance and the dominance of curative actions, combining actions of health education to promote the health of the elderly, through orientation in individual consultations with an emphasis on disease and the prevention of complications, as well as referral to specialized services, as can be seen in the following discourses:

> "The health promotion that we provide is only guidance and referral! So far, we have offered talks specifically for elderly persons". (Dumah).

> "Honestly? No! When they come for appointments, we really try to see what we can do [...]". (Barman).

> "We do, to be honest, as I'm here every day at the clinic to oversee control of blood pressure, diabetes". (Rahmiel).

In this study the conception of actions predominantly based in individual clinical consultation was not limited to doctors, as the other professionals interviewed also described the predominance of individual appointments over the collective experience, as can be verified in the following discourses:

> "[...] We still offer orientations in nursing consultations and the patient has access to medical consultations, but no more than this, and in these nursing orientations, [...] they are actions in the general sense, they are not specifically aimed at this group". (Adonai).

> "[...] there is a very high demand for treatment of hypertension and diabetes, and as a nurse I end up carrying out the treatment, and dealing with the risks they involve, if they do not get the treatment right, more in this area. [...] I instruct them to obey the medical and nursing guidelines, the question of self-care, but specific to other areas [...]". (Baraquiel).

The participants revealed that, even in an individual manner, the contents covered in clinical consultation are relevant to the health of the individual. The explanation of issues related to disease was notable, especially in relation to Systemic Arterial Hypertension and Diabetes, the most prevalent illnesses among the geriatric population; and the connotation of "obedience", where the subject must follow the instructions of the professional providing care. This translates into a health education based on orders, which is far removed from the dimension of the active participation of users of the health system, which is the basis for the promotion of health.

Some of the reports presented demonstrated the lack of health promotion actions, specifically with and for elderly persons. It should be noted that the interviewees had spent more than five years in the FHS (at the time of the study), suggesting the creation of a bond and knowledge of the local reality, resulting in strategies to tackle health promotion.

> "There are no activities where I work". (Amitiel).

> "At the moment we aren't doing anything!" (Michael).

> "Honestly, no! [...] As a team, no! I have never carried out any health promotion activities. Not even with the FHSC. I have no experience of joint actions, none!". (Nanael).

> "Not collectively, no. Very few, I really think we need more". (Rahmiel).

The lack of integrated work damages the health promotion of the elderly, leading to reflections about the need for change in the work process of the FHS, as can be seen in the discourse below. Although some

professionals accept the need to change this reality, certain impediments related to the work process and management, with overlapping areas of care, explain the difficulties.

> "[...] we had some time, some meetings, reviewing our work process and we planned meetings, and to work, to expand a little, not only in the area of education, but also the individual approach, which is most often carried out in consultations, to expand it to other times like meetings in the waiting room, to really carry it out, to form a specific group, but unfortunately it hasn't happened, people are still in ideas stage, we are trying to get together to reorganize and do it". (Kalaziel).

> "I don't remember! Nothing was done this year. Dentistry is very focused on childhood, you know? We need to improve, to focus more on all ages, not only children". (Minil).

> "No! We focus more on schools. [...] I've never taken part in any action with the elderly! We haven't reached that stage yet!". (Rafael).

DISCUSSION

A study showed that support groups, notably "Educational Groups", were more efficient not only for the transmission of pre-established knowledge, but also through the large number of topics addressed, allowing the group to garner knowledge and information and achieve emancipation, meeting the individual and collective needs of the participants. In this study, the work of Support Groups for the elderly was not mentioned as a strategy for the promotion of health for this age group[13].

Efforts should be made to foster the capacity of independence of participants. One point to consider is leisure activities, as these experiences are important for the participants. Health professionals should encourage the autonomy of the elderly so that they can promote leisure activities for themselves, and not become dependent on the healthcare team that cares for them. Teams should rethink their care practices, whether in the FHS or in other spaces, promoting the interconnection of clinical and social sciences and epidemiology[14].

In addition, it is necessary to rethink the normative culture in the practice of health education, where centralized rules and norms are established that require actions to be carried out exactly as oriented, and which are handed down in an authoritarian and vertical manner. "Education" therefore implies a context of responsibility for the user in their health and way of life[15].

Among the discourses, the FHU waiting room, referred to as a space for health promotion actions, may have several configurations, and can be a corridor or a place to wait for consultations, in which sounds and several dynamic movements occur; it can be the most active part of the FHU, and it is important, in carrying out any activities, to seek to focus attention so that the objective is reached. The waiting room can also be set up in a space reserved for group work and, due to the long wait for an appointment, be a time for reception to take place. It is considered a privileged space for educational groups, where the large number of people of different age groups and health profiles who are anxiously awaiting care allows such groups to be carried out, making waiting times useful and easing potential concerns about the consultation[16,17].

Nevertheless, the activities developed in the waiting room should go beyond taking advantage of the spontaneous demands of the FHU and orientations about disease which are often delivered in a decontextualized way, so that the individual with diabetes and/or arterial hypertension experiences the process of becoming ill in a singular mode. The work of professionals with users in these spaces should have a problematizing perspective, involving active listening, establishing relationships that go beyond random encounters. At this juncture, it is necessary to establish dialogic relationships, producing meanings, in the encounter between different knowledges[18,19].

It is considered that health promotion actions anchored in health education should seek to transform reality, whose participants are co-participants, and where dialogue is a way to break the traditional and hegemonic model rooted in disease, opening space for collective empowerment.

Health education is one of the main devices to make health promotion feasible and effective,

as it strengthens the development of individual and collective responsibility for the prevention of health problems[13].

Thus, in a study conducted with doctors, it was found that the health promotion actions carried out by such professionals were aimed at a clinical approach, with prevention prescribed from diets and exercises[20].

Even with practices considered emancipatory and participatory in the ESF, there is evidence of a posture of submission of users who remain in the models of conduct and prescription. In the historical process of care relationships, medicine exercises a power that is concentrated in diagnosis and therapeutic interventions, creating a technical-scientific authority. In this context, users enter the service in a state of dependency and alienation, waiting for answers and solutions[21].

While eradicating this model, allowing active listening and giving a voice to the user is a challenge in any life cycle, it is especially urgent in the elderly phase, given the needs of this population for the consolidation of strategies to improve quality of life and not just the prolongation of life.

The FHS should therefore aim to reorient health services through intersectoral practices and actions. Barriers to such advances exist, such as the fragmentation of the work process and the fragility of the work of care networks. In spite of the elaborated and effective management documents which result from the recognition of the need to improve care for the elderly, such as the National Policy for the Health of the Elderly, the National Immunization Program, the Statute of the Elderly, the Pact for Health, among others, qualitative and quantitative advances are still required in geriatric and gerontological health in PHC[22,23].

In addition, PHC workers are responsible for health promotion actions, breaking the vertical, immediate and disease-centered health care model. Health education is one of the proposals for this dialogue, and it is important to invest in management and in the FHS, so as not to risk of perpetuating an authoritarian, medicalized and oppressive model of health care[24,25], emphasizing that promoting the health of the elderly prompts the insertion of these practices quickly, in view of the population profile.

The limitations of this study include the impossibility of the generalization of the results, given the regional delimitation of the research and the specific territory of analysis. However, the singularities highlighted by the different social actors in the reality of the FHS reveal a rich universe of possibilities for understanding the daily demands of this network through the clinical practices of the teams in relation to the social vulnerabilities involving this community space.

CONCLUSION

Participants reported the occurrence of health promotion actions in a sporadic, unplanned manner, which could result in discontinuous actions of promotion, with a possibility of low impact for this community and territory.

Actions of health promotion, anchored in the practice of health education, should seek to transform reality, with the participants in these experiences acting as co-participants.

A lack of integration can result in dehumanized, fragmented care centered only on the illness and not on the individual and family. Meetings between professionals were emphasized as an important part of the teamwork process, but, ended up not taking place, requiring reflection on the part of the management and teams of the FHS, as PHC workers are responsible for taking part in these actions, using methodologies that allow dialogue and combat the medicalized model which still predominates in work spaces.

Based on this discussion, there is an urgent need to build a health support network for the elderly, shared by professionals, managers and the community, in order to organize services so that health promotion actions can take place in an appropriate manner, allowing elderly persons to receive skilled services at all levels of care to meet their needs.

The present study recommends contributions to the area of health and nursing in view of the need

to consider the care territory of the FHS, which lacks devices that expose its functioning, question its logic and constitute a symbolic field to reassign practices in daily care. It is therefore possible to construct new health practices, with the perspective of identifying other forms of doing and caring, in the context of the unveiling of daily suffering and confrontation, where clinical care recognizes these limits and conditions of life and breaks with the instituted manner to intervene in the territory of health, strengthening actions of health promotion in the community.

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Received: August 24, 2017
Reviewed: January 06, 2018
Accepted: February 06, 2018

http://dx.doi.org/10.1590/1981-22562018021.170154

Profile of elderly persons with metabolic syndrome and factors associated with possible drug interactions

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Abstract

Objectives: To describe the sociodemographic, clinical and pharmacotherapy characteristics of elderly persons with metabolic syndrome and to identify factors associated with drug interactions among these individuals. *Method:* A quantitative, analytical and transversal study was carried out among 263 elderly people with metabolic syndrome in the urban area of Uberaba, Minas Gerais, Brazil. Possible drug interactions were identified and classified according to the Micromedex® DrugReax System. The chi-squared test and the multiple logistic regression model were used for analysis ($p<0.05$). *Results:* The majority of the individuals were female (70.7%); aged 60 to 74 years (72.3%); lived with a spouse/partner (63.9%); had some schooling (74.1%); an individual monthly income of ≤ one minimum wage (77.1%); lived with others (88.2%); had five or more morbidities (89.7%) and exhibited polypharmacy (73.0%); used potentially inappropriate medications (54.4%) and had possible drug interactions (75.3%). Associated with the possible presence of drug interactions were: age range ($p=0.005$), polypharmacy ($p<0.001$) and use of potentially inappropriate medications ($p=0.006$). *Conclusion:* Possible drug interactions were associated with increased age, polypharmacy and the use of potentially inappropriate medications. This study contributes to knowledge of these possible interactions among elderly people with metabolic syndrome, and as such can be considered an important tool for planning actions to ensure the safety of these individuals who, due to the complexity of their treatment, use multiple medications.

Keywords: Drug Interactions. Health of the Elderly. Metabolic Syndrome X. Drug Utilization.

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INTRODUCTION

Metabolic Syndrome (MS) consists of the concomitance of metabolic and hemodynamic disorders, such as hyperglycemia, systemic arterial hypertension (SAH), abdominal obesity and dyslipidemia. It becomes more prevalent as age increases and among individuals with a determined disease, such as type 2 diabetes mellitus (DM2) and SAH[1].

Increasingly prevalent, MS is present in approximately 20 to 30% of the adult population, with a significant increase from 60 years of age when it affects almost 60% of the global population[2]. Among the elderly population in regions of Brazil, prevalence varies from 18 to 64.1%[3-5]. Population aging has brought about an increase in the prevalence of MS in the global population[4]. This syndrome is therefore of great importance among the elderly population, as it is directly related to the increase in death rates due to cardiovascular events, mobility disorders, cognitive deficit and depression in this group[3].

Elderly patients with MS are more susceptible to the occurrence of polypharmacy, which consists of the concomitant use of five or more drugs[6] and is associated with a higher risk of use of potentially inappropriate medications (PIM) and the occurrence of adverse events related to medications and drug interactions (DI), resulting in increased hospitalization and mortality in this population[7].

The presence of DI is one of the main risks involved in the use of drugs by the elderly[8]. The physiological changes that occur with the aging process, the presence of chronic diseases and the large number of medications used by this population, can mask the occurrence of DI, which can be confused with the worsening of health status or treatment ineffectiveness[7].

In the study conducted among elderly persons in the community in Timóteo (Minas Gerais), the prevalence of DI was 55.6%[9]. In a survey conducted in Scotland, the prevalence among the elderly was 34.1%[10]. These percentages indicate that DI among the elderly is a public health problem and must be carefully monitored.[7].

DI is the pharmacological or clinical response that arises from the interference of the action of a particular drug, food or any chemical on the effect of another drug, administered prior or concomitantly to the first medication[11]. It can be classified according to severity, such as: severe when potentially resulting in life-threatening and/or irreversible damage, requiring urgent medical intervention to minimize adverse effects; moderate when they can cause a worsening of the patient's clinical condition and/or may require additional treatment, hospitalization, or if the patient is already hospitalized, lead to longer hospitalization; and minor when the clinical effects are mild and the consequences may result in discomfort for the individual but do not require major changes in therapy[12].

Thus, DI may compromise patient safety, making it necessary to evaluate and monitor drug therapy in the elderly. The use of adequate tools that facilitate the identification of the occurrence of possible DI can contribute to the efficiency of pharmacological prescription, such as the Micromedex® DrugReax System, which is available online and free of charge[12,13].

In Brazil, there is a lack of knowledge about the occurrence of DI among outpatients[14]. The present study is therefore important as when caring for patients, health professionals should consider the relationship between costs and benefits based on scientific evidence.

In view of the above, the present study aims to describe the sociodemographic, clinical and pharmacotherapy characteristics of elderly persons with metabolic syndrome and to identify factors associated with possible drug interactions among these individuals.

METHOD

A study with a quantitative, analytical, transverse and observational approach was carried out. A sample of the elderly diagnosed with MS at the Metabolic Syndrome outpatient clinic of the Universidade Federal do Triângulo Mineiro (UFTM) was collected from January 2011 to December 2014, totaling 964

elderly people. The sample size calculation considered a prevalence of adhesion of 56%[15], a precision of 6% and a confidence interval of 95%, resulting in a sample of 263 subjects, who were selected by means of a random draw. For the present study, the inclusion criteria were an age of 60 years or over, having been diagnosed with MS at the UFTM Metabolic Syndrome outpatient clinic in accordance with the criteria of the International Diabetes Federation[16]; and residing in the urban area of Uberaba, Minas Gerais. The exclusion criteria were to have suffered cognitive decline as evaluated by the Mini-Mental State Exam (MMSE), translated and validated for Brazil[17], which provides information on different cognitive parameters based on the following cut-off points: ≤13 for illiterates, ≤18 for a medium level of schooling (one to 11 years) and ≤26 for a high level of schooling (<11 years)[12]; have communication problems such as deafness (not corrected with the assistance of devices) and serious speech disorders.

Data collection was performed from January to March 2015 and the data were obtained through home interviews conducted by a previously trained interviewer (including training on ethical research issues).

An instrument prepared by the researchers of the Research Group on Public Health/UFTM was used to obtain sociodemographic data. The number of morbidities was obtained through data relating to the 26 items included in the Brazilian Questionnaire on Functional and Multidimensional Assessment[18].

The use of regular medications was determined through the question "Could you show me the medications you are currently using?" The elderly persons were asked to provide the packaging of the medicines and the prescription. Also registered were: the pharmaceutical form of the drugs, the amount consumed and the number of ingestions per day. A pilot study was carried out to verify the adequacy of the instrument developed by the authors to collect the data relating to medications in regular use. The analysis of the medical prescriptions of the elderly was based on the following parameters: existence of polypharmacy; presence of possible DI (drug-drug), use of PIM and self-medication data. Polypharmacy was considered to be the simultaneous use of five or more drugs[6]. The presence of possible DI (drug-drug) was identified and classified according to severity (severe, moderate and minor), according to Micromedex's DrugReax System®. This tool is recognized worldwide and is ideal for health professionals who require unbiased information. It is also supported by systematic reviews about medications[12,13]. The updated version of the Beers criteria of 2012 was used for the evaluation of PIM, with the PIM and the classes to be avoided in the elderly identified[19]. Data on self-medication were obtained through the question: "Do you take medicines on your own?"; if yes, "Which medicines?" Home remedies, teas, herbal and homeopathic treatment were not considered.

The sociodemographic variables considered were: gender (female, male); age group (60 to 74, 75 or more); schooling (no schooling, schooling); income (≤1 minimum wage, >1 minimum wage); living arrangements (alone, with others); marital status (with partner, without partner). The clinical variables were: number of self-reported morbidities (0 to 4, 5 or more); polypharmacy (yes, no); possible DI (yes, no); self-medication (yes, no) and PIM (yes, no).

The following statistical analyzes were performed: descriptive and bivariate using the chi-squared test, prevalence ratios and odds ratios for categorical variables. The variables that met the criterion of $p<0.1$ were included in the multiple logistic regression model with a significance level (α) of 95%. The factors associated with the presence of possible DI were identified using the multiple logistic regression model (saturated model), considering a significance level of 5% ($p<0.05$) and a 95% confidence interval (CI).

To verify the factors associated with the presence of possible DI, the following variables were considered as predictors: gender; age group; number of morbidities; polypharmacy, self-medication and use of PIM.

The present study is part of a larger project titled: Pharmacotherapy and factors associated with adherence to treatment in elderly persons with metabolic syndrome, approved by the Ethics Committee in Research with Human Beings Universidade Federal do Triângulo Mineiro, under nº 950.675. Following approval, the participants of this research were contacted in their homes,

where the objectives and the Form of Free and Informed Consent were presented and pertinent information was provided. Only after the consent of the interviewee and signature of the said consent form was the interview conducted, following the precepts established by Ministry of Health Resolution 466/12[20].

RESULTS

In all, 282 individuals were approached to compose the study sample. Of these, nine exclusions occurred (four because of cognitive decline and five because they were not found after three attempts) and there were ten losses (one incomplete interview, three deaths and six refusals) (Figure 1).

Among the elderly persons interviewed (263), the majority were female (186, 70.7%); aged 60 to 74 years (190, 72.3%); had a partner (168; 63.9%); some schooling (195, 74.1%); an individual monthly income of up to one minimum wage (205, 77.1%) and lived with others (232, 88.2%). Table 1 shows the sociodemographic variables of the elderly with MS.

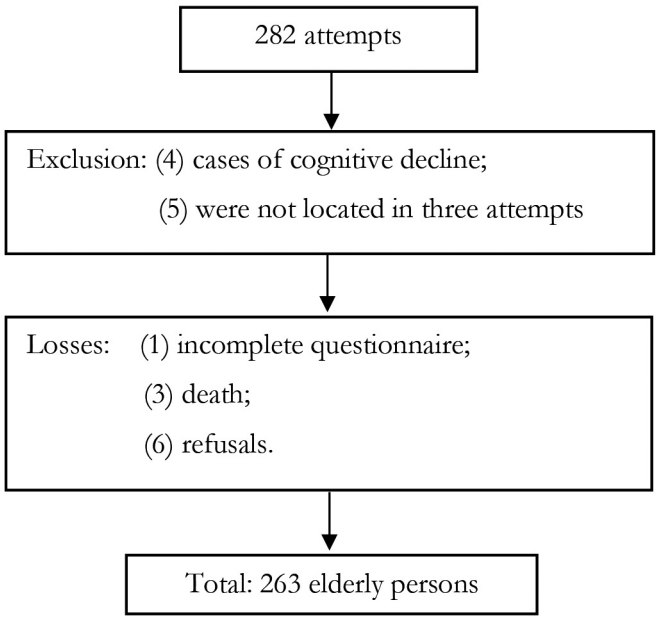

Figure 1. Sample composition. Uberaba, Minas Gerais, 2015.

Table 1. Distribution of frequency of sociodemographic variables among elderly persons with metabolic syndrome. Uberaba, Minas Gerais, 2015.

Variables	n (%)
Gender	
Male	77 (29.3)
Female	186 (70.7)
Age group (years)	
60-74	190 (72.3)
75 or more	73 (27.7)
Marital status	
With partner	168 (63.9)
Without partner	95 (36.6)

to be continued

Continuation of Table 1

Variables	n (%)
Education	
No schooling	68 (25.9)
With schooling	195 (74.1)
Income (in minimum salaries) *	
<1	205 (77.1)
>1	58 (22.1)
Living arrangement	
Lives alone	31 (11.8)
Lives with others	232 (88.2)

*Minimum salary in 2015 (R$ 788.00).

Among the five criteria for the diagnosis of MS according to the International Diabetes Federation[16], the highest percentages of disorders were abdominal circumference (263; 100.0%), which is the primary criteria for the diagnosis of MS; and fasting glycemia, in which 241 (91.6%) of elderly persons had levels over 100 mg/dL. Systemic blood pressure was next, with 168 (63.9%) individuals having levels above those considered normal (≥130x85mmHg). In terms of lipid profile, 180 individuals (68.4%) had altered HDL-C levels (men below 50mg/dL and women below 40mg/dL) and 120 individuals (45.6%) had triglycerides levels above 150mg/dL.

A total of 236 (89.7%) elderly persons had five or more morbidities. With respect to polypharmacy, 192 (73.0%) used five or more drugs. Regarding self-medication, 85 (32.3%) reported taking medicines on their own. It was found that 143 (54.4%) elderly patients used PIM. Of these, 78 (54.5%) used one, 49 (34.3%) two, and 16 (11.2%) from three to seven.

The presence of potential DI was identified in 198 (75.3%) elderly persons. Of these, 56 (27.9%) were classified as minor, 128 (63.7%) as moderate and 17 (8.4%) as severe. Of the minor DI, the most frequent combination in the present study was that of Sodium Levothyroxine and Simvastatin (28; 50.0%). In the moderate group, the most frequent association was between Acetylsalicylic Acid and Enalapril (27; 21.0%), while of the severe interactions the association between Amlodipine and Simvastatin was most frequent (4; 23.5%) (Table 2).

The possible DI identified in the prescriptions and their clinical implications, according to Drug-Reax®[8,13], are set out in Table 2.

Higher prevalences of potential DI were found in elderly women (146; 78.1%), those aged 75 years or more (72; 98.6%), those with five or more morbidities (Table 1), those with polypharmacy (178, 93.2%), and those who performed self-medication (73, 85.9%) and used PIM (135, 94.4%).

The variables of the preliminary bivariate analysis submitted to multivariate analysis in the multiple binomial logistic regression model were: gender (p=0.46), age group (p<0.001), number of morbidities (p<0.001), polypharmacy (p<0.001), self-medication (p=0.006), PIM use (p<0.001).

The presence of polypharmacy (p<0.001) and the use of PIM (p=0.006) were consolidated factors associated with the presence of potential DI among elderly persons with MS aged 75 years or more (p=0.005) (Table 4).

Table 2. Distribution of possible adverse drug interaction events and the frequency of possible drug interactions, according to Drug-Reax®, identified in the prescriptions of elderly persons with metabolic syndrome. Uberaba, Minas Gerais, 2015.

Severity level of drug interaction	Possible adverse effects of drug interaction	n (%)
Minor drug interaction		
Sodium Levothyroxine and Simvastatin	Reduces the effect of thyroid hormone	28 (50.0)
Acetylsalicylic Acid and Carvedilol	Reduces antihypertensive effects	18 (32.1)
Acetylsalicylic Acid and Omeprazole	Decreases the bioavailability of aspirin	10 (17.9)
Moderate Drug Interaction		
Acetylsalicylic Acid and Enalapril	Decreases the effectiveness of Enalapril	27 (21.0)
Acetylsalicylic Acid and Glibenclamide	Excessive hypoglycemia	21 (16.5)
Acetylsalicylic Acid and Hydrochlorothiazide	Decreases the effectiveness of the diuretic	21 (16.5)
Metformin and Enalapril	Hyperkalemic lactic acidosis	19 (14.9)
Hydrochlorothiazide and Enalapril	Postural hypotension	19 (14.9)
Glibenclamide and Enalapril	Excessive hypoglycemia	10 (7.8)
Hydrochlorothiazide and Captopril	Postural hypotension	6 (4.5)
Hydrochlorothiazide and Diclofenac	Reduces antihypertensive effect	5 (3.9)
Severe Drug Interaction		
Amlodipine and Simvastatin	Risk of myopathy	4 (23.5)
Acetylsalicylic Acid and Fluoxetine	Increased risk of bleeding	2 (11.7)
Acetylsalicylic Acid and Sertraline	Increased risk of bleeding	2 (11.7)
Allopurinol and Captopril	Hypersensitivity reaction	1 (5.9)
Allopurinol and Enalapril	Hypersensitivity reaction	1 (5.9)
Spironolactone and Enalapril	Hyperkalemia	1 (5.9)
Hydrochlorothiazide and Digoxin	Risk of digitalis intoxication	1 (5.9)
Acetylsalicylic Acid and Warfarin	Increased risk of bleeding	1 (5.9)
Spironolactone and Digoxin	Risk of digitalis intoxication	1 (5.9)
Amiodarone and Simvastatin	Increased risk of myopathy	1 (5.9)
Clopidogrel and Acetylsalicylic Acid	Increased risk of bleeding	1 (5.9)
Propranolol and Clonidine	Increased risk of myopathy	1 (5.9)

Table 3. Distribution of sociodemographic, clinical and pharmacotherapy variables of elderly persons with metabolic syndrome, according to the presence of potential drug interactions. Uberaba, Minas Gerais, 2015.

Variables	Presence of DI	Absence of DI					
	n (%)	n (%)	PR*	(CI)**	OR***	(CI)**	*p*****
Sex							
Male	51 (67.1)	25 (35.9)	0.85	(0.72-1.02)	0.57	(0.31-1.03)	0.046
Female	146 (78.1)	41 (21.9)					
Age group							
75 or more	72 (98.6)	1 (1.4)	0.27	(0.00-0.19)	0.66	(0.60-0.74)	0.000
60-74	125 (65.8)	65 (34.2)					
Number of morbidities							
5 or more	190 (80.5)	46 (19.5)	3.10	(1.63-5.89)	11.80	(4.70-29.58)	0.000
0 to 4	7 (25.9)	20 (74.1)					

to be continued

Continuation of Table 3

Variables	Presence of DI	Absence of DI					
	n (%)	n (%)	PR*	(CI)**	OR***	(CI)**	*p*****
Polypharmacy							
Yes	178 (93.2)	13 (6.8)	3.53	(2.39-5.20)	38.19	(17.69-82.42)	0.000
No	19 (26.4)	53 (73.6)					
Self-medication							
Yes	73 (85.9)	12 (14.1)	1.23	(1.08-1.40)	2.64	(1.33-5.27)	0.006
No	124 (69.7)	54 (30.3)					
Potentially inappropriate drug							
Yes	135 (94.4)	8 (5.6)	1.82	(7.10-35.06)	15.78	(1.53-2.18)	0.000
No	62 (51.7)	58 (48.3)					

*PR: Prevalence ratio; **CI: Confidence interval; ***OR: Odds Ratio; ****p<0.05, chi-squared.

Table 4. Multiple logistic regression model for the variables associated with the presence of potential drug interactions among the elderly with metabolic syndrome. Uberaba, Minas Gerais, 2015.

Variables	OR*	CI95%**	*p****
Women	1.29	(0.49–3.42)	0.597
Aged 75 years and over	21.71	(2.54-185.66)	0.005
Five or more morbidities	0.61	(0.17–2.18)	0.447
Presence of polypharmacy	0.08	(0.03–0.20)	0.000
Self-medication	0.54	(0.21–1.43)	0.221
Use of PIM****	0.24	(0.08–0.66)	0.006

*OR: Odds Ratio; **CI: Confidence interval; ***p<0.05, in multiple logistic regression model; **** Potentially inappropriate drug.

DISCUSSION

The higher percentage of female subjects is consistent with investigations among elderly people with MS[3,4]. As women attend health services more, they are more likely to be diagnosed and treated for possible morbidities, including MS. In addition, the hormonal changes that occur in menopause make them more susceptible to increased waist circumference and the risk of cardiovascular diseases[1].

In terms of age, a study conducted among elderly persons residing in the community in São Paulo found that those aged 60 to 69 years were approximately 11 times more likely to have MS (OR=10.945; p<0.001)[22]. Therefore, younger people should be advised of the risks of cardiovascular diseases, since morbidity can affect their quality of life and damage their health during aging[22]. This finding will help health teams to prioritize health promotion and actions that prevent disease with the aim of keeping these elderly people independent as long as possible.

Regarding marital status, partners can play a key role in health care, as they can contribute to the continuity of treatment, through encouragement, health care and assistance with physical activities and medication[15].

In the present study, the higher percentages of MS among elderly persons with some education are consistent with a survey conducted among elderly people with this condition living in the community in Porto Alegre (Rio Grande do Sul) (91.7%)[15]. Schooling can interfere with the understanding of therapeutic behaviors and learning about self-care, such as problems with drug use and dieting. Health professionals must communicate effectively with the elderly and their families through clear and objective

language about the care needed to improve the health of this population[15].

It is noteworthy that 38.3% of elderly persons in Brazil have a monthly income between half and one minimum wage[23], which can contribute to the understanding of the results found. The low income of the elderly in this study represents a challenge for maintaining basic needs and health care. Income is considered a factor that influences access to health services, as well as income satisfaction[21]. In this context, actions in public health should be appropriate for the economic conditions of the elderly, seeking effective and quality treatment.

The living arrangement data of the present study diverged from that of a survey of elderly people from a specialist outpatient clinic in Vitória (Espirito Santo), where the majority lived alone (32.3%)[24]. It is important to study the composition of the households in which the elderly live, as other relatives can help with transportation, medical care and domestic services, as well as providing company and emotional support for both parties[24].

In relation to the components of MS, there are divergences between the present study and investigations among elderly people with MS living in the community in Porto Alegre (Rio Grande do Sul), where SAH was the most frequent component (83.6%)[15]; and a study carried out in the north of Finland, in which SAH was also the most prevalent component, among both women (89.0%) and men (91.8%)[25]. It is important to observe the relationship of the various risk factors associated with cardiovascular events, such as changes in glycemia, elevated triglycerides, abdominal obesity and increased values of systemic arterial pressure.

The number of self-reported morbidities in the present study was higher than that of the elderly resident in the community in Bagé (Rio Grande do Sul), in which 50.0% of respondents reported having two or more morbidities[26], although the diagnosis of MS was not specified. The higher values found in the present study can be attributed, in part, to the characteristics of the group, namely elderly persons with MS. It is noteworthy that no studies of the number of self-reported morbidities of elderly persons with MS were found in Brazilian or non-Brazilian literature.

Brazilian studies have identified a prevalence of polypharmacy of between 11.0% and 71.1%, with the highest frequency among elderly persons with MS[27-30]. The higher prevalence of chronic illnesses among elderly persons leads to an ongoing increase in the consumption of medications in this age range. The practice of polypharmacy is therefore often necessary. However, the use of multiple medications increases the risk of DI. Therefore, the implications of this consumption need to be measured and evaluated for their risks/benefits[8].

In the present study, the prevalence of the practice of self-medication is similar to a study of the elderly living in the community in Goiânia (Goias) (35.7%)[31]. Lower values were identified in a study the among elderly from the community in Recife (Pernambuco) (6.7%)[28] and higher prevalances were found in a study with elderly in the community of Teresina (Piaui) (62.5%)[30]. The elderly population carries out self-medication to treat some symptoms such as headaches; and studies indicate that easy access to these drugs is a contributing factor to this practice[31]. The improper use of medications has consequences for the life and health of the elderly, such as delayed treatment, failure to achieve the expected results, aggravation of the signs and symptoms of the diseases, and potentiating adverse drug reactions caused by greater use of the medication than is required[30,31].

The percentage of PIM found in this study was similar to that among elderly persons in the community of Ibiraiaras (Rio Grande do Sul) (44.7%)[30]. This value is higher than the studies among elderly in the community in the city of São Paulo (28.0%)[7], and in Goiânia (Goiás) (24.6%), in which the drugs considered to be inappropriate were long-acting benzodiazepines (34.2%) and antidepressants (16.0%)[31]. A study developed in India identified greater values than the present study (87.3%)[32]. However, the diagnosis of MS was not reported in any of the aforementioned surveys. There is evidence that the prescription of PIM is associated with the triggering of DI and hospitalizations and, when combined with the presence of comorbidities and polypharmacy, exposes the elderly to a high risk of mortality[7]. The lack of cost-effective therapeutic alternatives with a safer profile for these individuals in public health adds to this risk[27].

The frequency of potential DI did not differ from that described in scientific literature. These values can vary greatly and high prevalence is found among the elderly[9,33].

The medications most frequently involved in DI are those used in the everyday management of the chronic diseases of the elderly. These conditions require constant monitoring, since their effects can worsen the clinical condition of the elderly, which may result in the need for additional treatment, hospitalization, costs to the health system, or if the elderly person is already hospitalized, lead to a longer hospitalization period. One way to address this is by selecting drugs that do not produce interactions, however, if there is no such possibility, the drugs that interact with each other should be monitored[27].

Similar results in relation to the severity of DI were obtained in studies of the elderly in the community in Ribeirão Preto (São Paulo)[33], in Timóteo (Minas Gerais)[9], and among elderly patients attending the geriatric outpatient clinic at the Hospital Universitário de Belém (Pará), in which the majority had moderate severity.

Studies developed in the states of São Paulo[33] and Minas Gerais[9] obtained divergent data regarding the most frequent DI. In the former, the most frequent severe DI was between the medicines Amlodipine and Simvastatin (15.0%) and the most common moderate DI was between Acetylsalicylic Acid and Enalapril (42.5%). In the second study, the most frequent severe DI involved Amlodipine and Simvastatin (26.7%), the most common moderate DI was between Acetylsalicylic Acid and Hydrochlorothiazide (26.7%) and the most prevalent mild DI was between Amlodipine and Ibuprofen (21.7%).

DI are frequent and need to be prevented, especially in the elderly, who are more sensitive to the therapeutic and toxic effects of medications[27]. Thus, understanding the interactions between the medicines indicated for the control of MS allows such risks to be avoided and safer medications to be prioritized, with less risk of triggering undesirable effects and allowing better therapeutic responses[34].

The clinical conditions of individuals and the number and characteristics of the drugs are related to the severity and prevalence of possible DI[33]. The association between the presence of possible DI and age found in the present study diverged from an investigation of elderly persons living in the community in the city of Rio de Janeiro[11]. The relationship between increasing age and the occurrence of DI deserves further investigation[10,11], as the aging process may contribute to the increase in the prevalence of chronic diseases, which causes the elderly to use more drugs[7], resulting in a greater possibility of DI[10,27].

The treatment of MS is complex, as it requires the use of several drugs, which increases the risk of DI[34]. The association between polypharmacy and the occurrence of DI corroborates other Brazilian studies[11,33]. Thus, as DI is a constant risk, especially among elderly people who use polypharmacy, knowledge about the subject is vital in order to avoid greater risks to the health of these individuals[11].

Polypharmacy is associated with the risk of the use of PIM, which increases the risk of DI among the elderly, who are more vulnerable due to their pharmacokinetic and pharmacodynamic characteristics[35]. The use of PIM and the presence of DI are factors that are directly related to the quality of life of the elderly, either acting alone or in association with physiological changes and comorbidities, which reinforces the need for evaluation of the therapeutic plan, since the greater the number of drugs prescribed, the greater the risk of the use of PIM and exposure to DI[35]. It is essential to assess the risks and benefits related to prescribed pharmacotherapy, with doses monitored and/or reduced, as many interactions may reduce the effectiveness of medications[27].

Thus, health professionals should be aware of information about DI and propose appropriate interventions when necessary. It is also the responsibility of these professionals to use the available literature in relation to DI and to individualize recommendations based on the specific characteristics of each elderly person[35].

The results of the present study are useful for the development of mechanisms to evaluate the prescription process in order to reduce failings in the pharmacotherapy of the elderly. Misuse of medicines in the elderly is a significant public health

problem as it exposes them to the potential risks of medication. Health professionals can improve care through the implementation of protocols and procedures that aim to minimize and avoid inadequacies in prescriptions.

Limitations of the present study include the non-evaluation of clinical symptoms related to the presence of potential DI or PIM use, since the data were collected in a single period, which did not allow follow-up monitoring of related clinical symptoms.

CONCLUSION

In the present study the majority of respondents were female; aged 60 to 74 years; lived with a partner; had some schooling; an individual monthly income of up to one minimum wage and lived with others; presented five or more morbidities; used five or more drugs; took medicines on their own; used potentially inappropriate drugs and had potential drug interactions.

The presence of potential drug interactions among elderly persons with metabolic syndrome was associated with an age of 75 years or older, polypharmacy and the use of potentially inappropriate medications.

The present study therefore contributes to knowledge of drug interactions among elderly persons with metabolic syndrome, representing an important tool for the planning of actions to ensure the safety of those individuals who use multiple medications due to the complexity of the treatment of this syndrome.

ACKNOWLEDGEMENTS

The authors would like to thank the Ministry of Education, the Coordination for the Improvement of Higher Education Personnel (CAPES), the Research Support Foundation of Minas Gerais (FAPEMIG) and the Universidade Federal do Triângulo Mineiro (UFTM).

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Received: September, 2017
Reviewed: February 05, 2018
Accepted: March 03, 2018

http://dx.doi.org/10.1590/1981-22562018021.170187

Quality of life and time since diagnosis of Diabetes Mellitus among the elderly

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Abstract

Objectives: To evaluate the quality of life of the elderly with Diabetes *Mellitus* and to relate the time since diagnosis of diabetes with the quality of life of elderly persons receiving care at a basic health unit. *Method:* A cross-sectional quantitative study carried out in a Basic Health Unit with 196 elderly persons. For data collection, three instruments were used: one structured (sociodemographic and clinical variables) and the Whoqol-bref and Whoqol-old, with scores ranging from 0 to 100. Descriptive statistical analysis, Student's T-test and Pearson's correlation were performed. *Results:* Of the 196 diabetic patients, the majority were male (54.6%) with a mean age of 67.5 (±6.5) years. The mean time since diagnosis of Diabetes *Mellitus* was 9.1 years. The domains of the Whoqol-bref with the highest scores, indicating better quality of life, were *Social Relations* and *Psychological*, while a worse quality of life was observed in *Environment*. The facets of the Whoqol-old with the best scores were: *Intimacy* and *Past, Present and Future Activities*, and the worst was *Death and Dying*. The domains associated with one another were *Physical* and *Psychological, Physical* and *Social Relations*, and *Psychological* and *Environmental*. The associated aspects were *Past, Present and Future Activities* and *Social Participation*. Elderly persons with more than ten years of Diabetes *Mellitus* had worse quality of life scores in *Physical* (p=0.001), *Social relations* (p=0.002), and in the *Autonomy* (p=0.0012), *Social Participation* (p=0.041) and *Death and Dying* (p=0.001) facets. *Conclusion:* The time of diagnosis of Diabetes *Mellitus* was negatively associated with the quality of life of the elderly, with worse scores in most domains and facets of the Whoqol.

Keywords: Quality of Life. Elderly. Diabetes *Mellitus*. Primary Health Care. Geriatric Nursing.

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INTRODUCTION

Diabetes *Mellitus* (D*M*) is a chronic non-transmissible metabolic disease of multifactorial origin. It is characterized by the permanent elevation of glycemic levels due to the absence or incapacity of insulin to perform its physiological function, generating a series of complications and dysfunctions of the essential organs. It is considered a worldwide epidemic and a public health problem, with growing global prevalence. World Health Organization estimates of D*M* suggest that the disease accounted for 1.4 million deaths in 2011. They also state that there will be a 69% increase in the number of adults with D*M* in developing countries and 20% in developed countries between 2010 and 2030. By 2025, the expectation is that 350 million people will be affected by the disease, of whom 18.5 million will live in Brazil[1,2].

Research in Brazil has found incidences of D*M* among the elderly ranging from 18.6 to 23.5%. The increase in the life expectancy of the elderly, when associated with inadequate living habits, results in a higher incidence of chronic diseases, notably *DM,* in this population[3-5].

As well as being expensive to control and treat, D*M* also has a deleterious effect on the quality of life (QoL) of the elderly. Several factors can influence the QoL of such patients with D*M*, such as insulin use, age, gender, income, education, complications of the disease, psychological factors, knowledge of the disease and type of health care, among others[1,6-11]. It is also evident that better glycemic control is associated with improved QoL. Constant hyperglycemia and long-term D*M* are factors associated with complications, which can affect about 50% of the patients and occur around ten years after the diagnosis of the disease[1,12].

QoL in this context is defined broadly and with different interpretations. In the present study we applied the definition of the World Health Organization (WHO) which defines QOL as the perception of the individual of their position in life, in the context of the culture and value systems in which they live in relation to their goals, expectations, standards and concerns[13,14].

D*M* is a progressive disease in which the state of health of affected individuals, especially the elderly, tends to deteriorate over time, especially after ten years of living with the disease, when the complications derived from poor glycemic control, which may negatively affect their QoL, can appear[4,9,11]. D*M* has a significant physical and emotional impact, culminating in the reduction of the autonomy and self-confidence of these individuals, altering their self-perception so that they see themselves as unable to fulfill their objectives, thus reducing their QoL[1,4,12,14]. The theme of QoL in elderly patients with D*M* has already been investigated in many studies[6-12], but there is still a lack of research that compare the QoL of the elderly after living with the disease for a decade. The present study therefore proposes to associate the duration of D*M* and the QoL of these patients, and the interaction between the domains of QoL, aiming to guide future care of diabetes among the elderly, mainly in the primary health care offered to these individuals.

In view of the above, the present study aimed to evaluate the quality of life of the elderly with Diabetes *Mellitus* (D*M*) and to relate the time since the diagnosis of D*M* to the quality of life of elderly persons receiving care in a basic health unit of the Distrito Federal (the Federal District) in Brazil. The study also sought to identify a relationship between the domains and facets of the instruments used to measure quality.

METHOD

A quantitative, descriptive, exploratory and cross-sectional study was carried out in a Basic Health Unit (BHU) of the Distrito Federal, Brazil.

The study population consisted of elderly individuals who met the following inclusion criteria: age 60 or older and enrolled in the Diabetic Group of the BHU. Approximately 500 elderly people were enrolled in this group and considering a margin of error of 5% and a confidence level of 95%, a representative sample of 218 elderly people was calculated. All the elderly persons were invited to participate in the study, which resulted in a convenience sample of 202 elderly individuals who agreed to participate in the research.

The exclusion criterion considered was the medical diagnosis of mental and psychiatric disorders that would prevent the elderly from answering the questions of the instruments. Of the 202 elderly persons, six who met the exclusion criterion were excluded from the study, giving a final sample of 196 individuals.

The elderly were initially approached in the BHU during the Diabetics Group meetings and were informed of the objective of the research and invited to participate in the study. Data collection took place after the signing of a Free and Informed Consent Form between August and December 2016.

Three instruments were used for data collection: a structured questionnaire, composed of closed questions, aimed at identifying the socioeconomic and demographic profile of the elderly (age, gender, income, marital status, schooling and occupation), life habits (smoking, sedentary lifestyle and dietary control) and clinical conditions (time since diagnosis of Diabetes *Mellitus*, insulin use, visual changes and self-reported foot injuries) with the objective of characterizing the population involved. The second instrument was the World Health Organization Quality of Life – BREF (WHOQOL-BREF) and the third was the World Health Organization Quality of Life Assessment for Older Adults (WHOQOL-OLD), both validated for Brazil, which were applied by the researchers to avoid influencing the responses of the individual. The instruments were applied in a single meeting with each elderly person, in privacy. The reading of the questionnaires was carried out together with the elderly persons and their answers were recorded by the researchers, who were previously trained for this task.

The WHOQOL-BREF, considered a generic instrument, consists of four domains: *Physical, Psychological, Social Relationships* and *Environment*[15]. The WHOQOL-OLD, a specific instrument for the elderly, is composed of six facets: *Sensory Abilities, Autonomy, Past, Present and Future Activities, Social Participation, Death and Dying* and *Intimacy*. The scores of both instruments vary from 0 to 100, with the highest value corresponding to the best quality of life[16].

The interviews underwent revision and codification. The data collected were processed into a database by two people, using the double entry system. Inconsistencies between the two databases, if any, were corrected following consultation with the original interview. The questionnaires were consolidated with the respective syntaxes. The WHOQOL-BREF domains and WHOQOL-OLD facets were analyzed separately.

The Cronbach's alpha coefficient was calculated to evaluate the homogeneity of the items of the instruments. To analyze the normality of the variables the Kolmogorov-Smirnov test was applied. The Student's t-test was used to verify the differences between the means of the QoL measures. For the analysis of the relationship between the different domains and facets analyzed, the Pearson correlation was used, observing the amplitude of the relationship. This measure ranges from -1 (perfect negative correlation) to +1 (perfect positive correlation), as well as 0 (absence of correlation). Correlations greater than 0.50 (moderate and strong correlation) were considered. The significance level considered was $p \leq 0.05$.

The project was approved by the Research Ethics Committee of the Health Department of the Distrito Federal under approval nº 251.361 and CAEE nº 14557613.1.0000.5553.

RESULTS

A total of 196 diabetic patients were interviewed, most of whom were male, aged 67.5 (±6.5) years, single, with one to five years of schooling, an income of up to one minimum wage (MW) and were retirees (Table 1).

The average time of diabetes mellitus (D*M*) among the patients was 9.1 (±6.2) years (Minimum: 1 year, Maximum: 40 years). Most did not use insulin and were not smokers or sedentary. The majority reported not having control diets, said they suffered from visual disorders and did not have foot injuries (Table 1).

Table 1. Sociodemographic and clinical variables of elderly persons with Diabetes *Mellitus* (N=196). Brasília, DF, 2017.

Variables	n (%)	Variables	n (%)
Gender		Uses insulin	
Female	89 (45.4)	Yes	64 (32.7)
Male	107 (54.6)	No	132 (67.3)
Age (years)		Smoking	
60-70	143 (73.0)	Yes	26 (13.3)
71-80	42 (21.4)	No	170 (86.7)
> 80	11 (5.6)		
Marital status		Alcohol abuse	
Unmarried	80 (40.8)	Yes	18 (9.2)
Married	58 (29.6)	No	178 (90.8)
Widower	24 (12.2)		
Divorced	34 (17.4)		
Education		Physical activity	
Illiterate	38 (19.3)	Yes	84 (42.9)
1-5 years	144 (73.5)	No	112 (57.1)
6-9 years	13 (6.7)		
> 9 years	1 (0.5)		
Monthly Income (minimum wage)		Dietary Control	
up to 1	120 (61.2)	Yes	67 (34.2)
between 1 and 3	57 (29.1)	No	129 (65.8)
> 4	19 (9.7)		
Occupation		Visual disorders	
Unemployed	41 (20.9)	Yes	146 (74.5)
Retired	124 (63.3)	No	50 (25.5)
Others	31 (15.8)	Foot injuries	
		Yes	34 (17.3)
		No	162 (82.7)

In the evaluation of the QOL of the elderly with D*M* it was observed that the Whoqol-bref domains with the highest scores were: *Social relationships* (M=66.70 ±20.95) and *Psychological* (M=60.18±14.89), while the lowest scoring domain was *Environment* (M=55.89±15.77). The Whoqol-old facets with the highest scores were: *Intimacy* (M=69.51±23.48) and *Past, Present and Future Activities* (M=66.10±18.22), while the lowest scoring was *Death and Dying* (M=55.58±31.97) (Table 2).

The evaluation of the internal consistency of the instruments for the evaluation of QoL using Cronbach's Alpha Coefficient revealed homogeneity of the domains and facets (Table 2).

Table 3 shows the relationship between the domains and facets analyzed. The domains with the greatest strength of association were *Physical* and *Psychological* (r=0.53), *Physical* and *Social Relation*ships (r=0.54) and *Psychological* and *Environmental* (r=0.52). In the relationships between the facets, many significant associations were evident (p<0.01), but those most closely associated with one another and with moderate correlation were *Past, Present and Future Activities* and *Social Participation* (r=0.57) (Table 3).

Table 2. Cronbach's reliability measures of the Whoqol-bref domains and Whoqol-old facets of elderly persons with Diabetes *Mellitus* (N=196). Brasília, DF, 2017.

WHOQOL-Bref Domains	M (±sd)	Mín./Max.	Cronbach's Alpha
Physical	58.47 (±14.36)	25.00/96.43	0.731
Psychological	60.18 (±14.89)	20.83/91.67	0.716
Social Relationships	66.7 (±20.95)	8.33/100.00	0.739
Environment	55.89 (±15.77)	12.5/93.75	0.750
WHOQOL-Old Facets			
Sensory abilities	63.58 (±23.66)	0.00/100.00	0.746
Autonomy	57.97 (±18.08)	6.25/100.00	0.777
Past. Present and future activities	66.1 (±18.22)	6.25/100.00	0.757
Social participation	60.14 (±19.27)	6.25/100.00	0.765
Death and dying	55.58 (±31.97)	0.00/100.00	0.782
Intimacy	69.51 (±23.48)	0.00/100.00	0.781

Min/Max: minimum/maximum.

Table 3. Matrix of correlation between Whoqol-bref domains and Whoqol-old facets of elderly persons with Diabetes *Mellitus* (N=196). Brasília, DF, 2017.

WHOQOL Bref Domains	1	2	3	4		
1. Physical	1.00					
2. Psychological	0.53**	1.00				
3. Social relationships	0.54**	0.50**	1.00			
4. Environment	0.40**	0.52**	0.46**	1.00		
WHOQOL Old Facets	1	2	3	4	5	6
1. Sensory abilities	1.00					
2. Autonomy	0.21**	1.00				
3. Past. present and future activities	0.09	0.46**	1.00			
4. Social participation	0.23**	0.40**	0.57**	1.00		
5. Death and dying	0.20**	0.11	-0.02	0.15*	1.00	
6. Intimacy	-0.05	0.06	0.33**	018**	-0.09	1.00

**p<0.01; *p<0.05 – Pearson's Correlation.

The results shown in Figure 1 illustrate the associations between QoL and time since diagnosis of Diabetes *Mellitus* (DM). The domains with a significant statistical difference between the scores obtained based on time with D*M* were *Physical* (p=0.001) and *Social Relationships* (p=0.002), with elderly persons who had been diagnosed with D*M* more than ten years ago having worse QoL scores in these domains than elderly persons who had had the disease for less than ten years. The *Physical* domain had the lowest mean (57.3), while the *Social Relationships* domain exhibited the greatest variation between the two groups (13.3), with the mean scores higher in those with less than ten years of D*M*.

In the comparison of QoL assessed by the Whoqol-old among the elderly based on the time since diagnosis with D*M,* the facets *Autonomy* (p=0.012), *Social Participation* (p=0.041) and *Death and Dying* (p=0.001) revealed statistical differences between the scores of the two groups, as shown in Figure 2. The elderly persons with more than ten years since D*M* diagnosis had lower QoL scores in these facets. The *Death and Dying* facet presented the greatest discrepancy between the values based on the duration of D*M*.

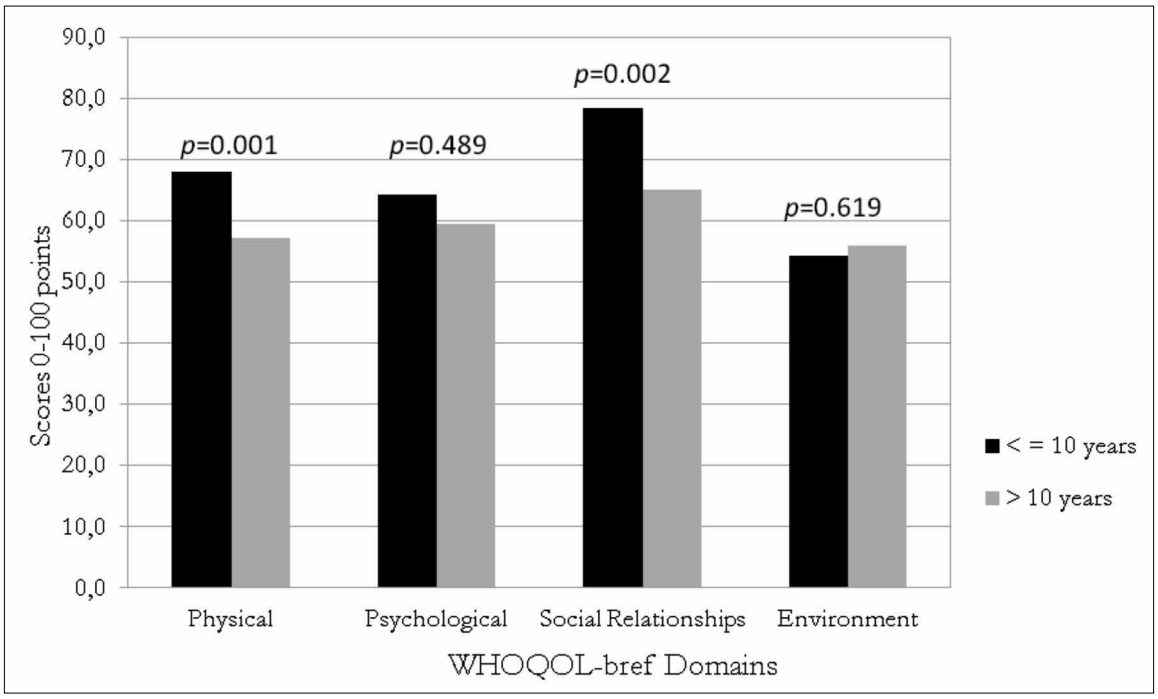

Figure 1. Means of elderly persons based on time with Diabetes *Mellitus* (N=196). Brasília, DF, 2017.

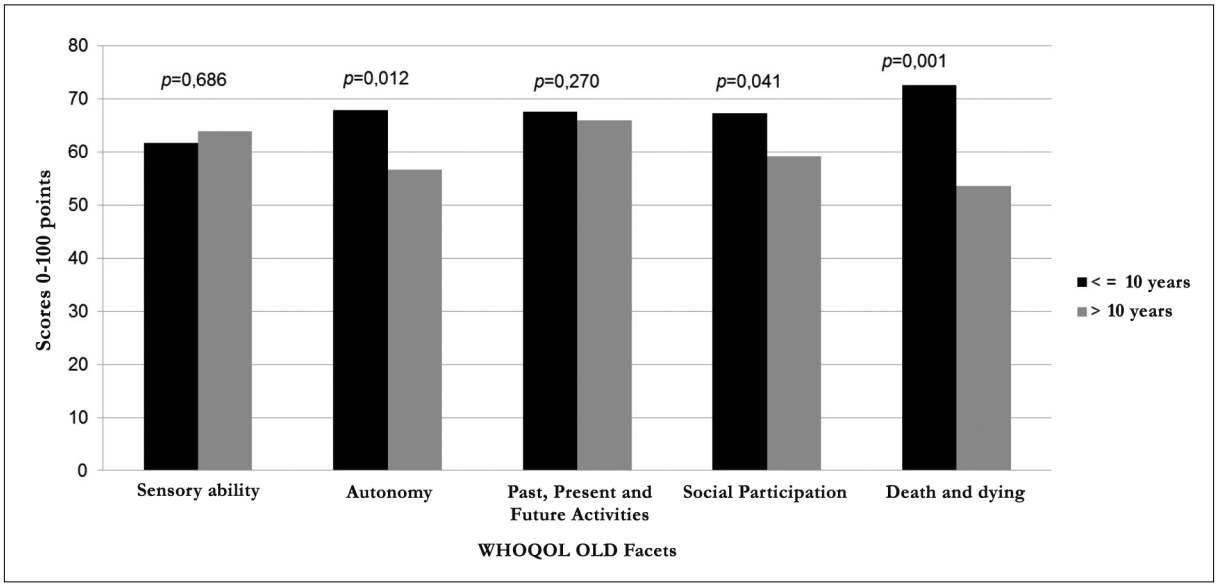

Figure 2. Average of Whoqol-old facets of elderly persons according to the time of Diabetes *Mellitus* (N=196). Brasília, DF, 2017.

DISCUSSION

The sociodemographic characterization revealed a predominance of male elderly persons, aged between 60 and 70 years, who were single and had little schooling, a low income and were retirees. Similar results were found in other studies in relation to age, schooling, income and retirement status[3,8-10]. In contrast, other studies found a predominance of females and married individuals[3,7-9].

Regarding life habits and time of D*M*, the elderly had an average of less than 10 years with D*M*, were sedentary, non-smokers and abused alcohol, but said they did not have controlled diets. The majority reported visual disorders and had no foot injuries.

The time since diagnosis found in the present study corroborated with the result of other studies carried out with elderly persons in Piauí[8] and Fortaleza[10]. Inappropriate behavior were also found in other studies[9,10,12]. The importance of healthy living habits for both the physical and mental health of the elderly, resulting in a better quality of life, should be emphasized. Therefore, intervention processes are recommended for health professionals who perform preventive, educational and health care activities for the elderly[9].

The domains of the Whoqol-bref with the highest QoL scores, and consequently the highest satisfaction of the elderly persons in relation to their health, were *Social Relationships* followed by *Psychological*. This finding was similar to other studies which also found the highest mean scores in the *Social Relationships* domain[11,17-19].

Despite their illness, the elderly persons felt socially supported and said that they had good social relationships. This may be related to the activities carried out by the nurses of the health unit, who organized meetings, trips and opportunities for social interaction with friends in order to promote the participation of the elderly in social groups. These activities are provided for the elderly persons who participated in the Diabetes Group of UBS, thus demonstrating the satisfaction of the elderly with their presence in this group.

The *Psychological* domain assesses issues related to positive and negative feelings, concentration, self-esteem, appearance, spirituality and personal beliefs. Although the study revealed higher scores in the *Psychological* domain, it is known that feelings are part of the process of adaptation of the individual to chronic disease, which can compromise their psychological state, especially as the elderly are told from the beginning of treatment that D*M* has no cure but can only be controlled. In addition, warnings about possible complications can result in negative feelings and expectations for the future, which exacerbates this aspect in the evaluation of QoL[20].

In contrast, a lower score was observed in the *Environment* domain, illustrating the low satisfaction of this population group with the environment in which they live, a result similar to that found in another study with elderly people with D*M* in Uberaba (Minas Gerais)[7] and with elderly people with D*M* in the rural part of Bahia[11]. Another study conducted with 277 elderly people in the Distrito Federal also resulted in low QoL scores in the *Environment* domain, which may be related to the fact that the elderly do not feel safe and protected in their home environment[9]. Good housing conditions, physical security, financial resources, transportation, and the acquisition of consumer goods, among other factors, may be associated with improved quality of life[11].

The Whoqol-old facets with the best scores were: *Intimacy* and *Past, Present and Future Activities*, while the lowest score was in *Death and Dying*. It was notable that the standard deviations in these facets were high, revealing the significant variation in the responses of the elderly.

The *Intimacy* facet evaluates the ability of the elderly persons to relate to other people[16]. The low number of widowed and divorced elderly persons may have affected this finding, as we believe that the loss of a spouse or partner can influence living with another person and intimate relationships. The elderly were also satisfied with their achievements throughout life and what they still desire. In contrast, a difficulty in accepting death in some elderly was observed in this study.

A study of 51 elderly people with D*M* in Campina Grande (São Paulo) also showed better QoL scores in the *Past, Present and Future Activities*, emphasizing that the elderly persons have aspirations that may not have been achieved and that encourage feelings of hope, although a lower QoL was observed in the *Sensory Ability* domain[21].

In the analysis of the relationships between the domains, those with a good correlation were the *Physical* domain with *Social Relationships* and the *Psychological* domain with *Environment*. It is understood that good physical health benefits social relationships. D*M* predisposes the elderly to acute and chronic complications which can make them feel physically frail. It is worth mentioning that the majority of participants in this study were sedentary, did not have a controlled diet and reported visual disorders, which may negatively impact physical aspects and consequently affect their social relations.

The relationship between *Psychology* and the *Environment* can be explained by the fact that the region where the study was carried out has high levels of violence, and that the majority of the elderly interviewed had an income of up to one minimum wage, living in areas with precarious, unsafe environments with unpaved roads, where they do not leave the house alone and are more susceptible to social isolation and depression.

In terms of the correlation between facets, there was a good correlation between *Past, Present and Future Activities* and *Social Participation*. This result shows that the satisfaction of the elderly with their life achievements and future expectations is closely linked to their social participation. This fact may be related to the chronicity of the disease and the complications that interfere in the independence of elderly persons with D*M*, limiting the accomplishment of pleasurable activities, and thus bringing insecurity about the future. It is important that politicians and health professionals are aware that people living with a chronic condition, especially D*M*, suffer not only the burden of disease but also a social burden, as social isolation can be highly detrimental to overall well-being[22].

In the present study, the time since the diagnosis of diabetes was found to be a highly influential variable on QoL. The scores of most of the domains and facets of the QoL instruments declined as time spent with D*M* increased.

The domains which demonstrated a significant statistical difference between scores based on time since diagnosis with D*M* were the *Physical* and *Social Relationships*, with the elderly persons with more than ten years of D*M* diagnosis having lower QoL scores in these domains than those with less than ten years of illness. The results of the present study corroborate a study conducted in Pakistan with 501 diabetics which found that patients with more than ten years of diabetes had lower scores in all domains, indicating a decrease in QoL as time with D*M* increaed[23]. Another study identified the impact of D*M* duration on QoL when evaluating 201 elderly people in Montes Claros (Minas Gerais), finding that a time since D*M* diagnosis of over ten years negatively influenced the QoL of the elderly[24].

Still in this sense, in comparing QOL as evaluated by the Whoqol-old based on time of diagnosis of D*M* it was evident that the *Autonomy, Social Participation*, and *Death and Dying* facets presented statistical differences, with elderly persons with more than ten years of diagnosis of D*M* having lower QoL scores in these facets.

Autonomy and social participation diminish over the years due to the greater impairment caused by the disease. With more than ten years of illness patients with D*M* may have greater physical limitations, intensity of pain and discomfort, with a negative affect on their daily life and even increasing feelings of sadness, social isolation and fear of death. In addition, the loss of autonomy and decision-making power may influence self-esteem and lead to disregard for health, reducing self-care and thus favoring the appearance of chronic complications from the disease[25-29].

It is noteworthy that in this study 17.3% of diabetics had foot injuries, which may reflect a decrease in autonomy and social participation as a consequence of decreased mobility associated with vascular or neuropathic pain.

Duration of disease is a relevant variable, as it has an inverse relationship with adherence to treatment. The longer the diagnosis, the lower the prevalence of adherence to treatment of users, and the greater the risk of harm resulting from unsatisfactory metabolic control and, consequently, a deterioration in QoL[29].

One of the limitations of the present study was its cross-sectional design, which did not allow the follow-up monitoring of the elderly to identify causal factors, and also the fact that it did not incorporate a control group for comparison. Another limitation was the representativeness of the sample, as the calculated sample size was not achieved.

CONCLUSION

The present study identified a better QoL in the *Social Relationships* and *Psychological* domains and in the *Intimacy* and *Past, Present and Future Activities* facets. A worse QoL among the elderly, meanwhile, was observed in the *Environment* domain and in the *Death and Dying* facet.

Regarding the impact of time since diagnosis with D*M* on the QoL of these elderly individuals, the results of this study found a worse QoL in the *Physical, Psychological* and *Social Relationships* domains and in the *Autonomy, Past, Present and Future Activities, Social Participation* and *Death and Dying* facets in elderly persons with more than ten years of D*M*.

The present study is relevant as it can guide health professionals who work mainly in primary care in the control and prevention of D*M* complications. Care for such elderly persons should be organized to promote a better QoL as the main problems related to the time since the diagnosis of the disease have been identified.

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Received: November 21, 2017
Reviewed: February 08, 2018
Accepted: February 27, 2018

http://dx.doi.org/10.1590/1981-22562018021.170137

Training of nursing students in integrated care for the elderly

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Abstract

Objective: To analyze training in integrated health care for the elderly from the perspective of nursing students. *Method:* A descriptive and exploratory study with a qualitative approach was carried out using the action research method with the participation of 24 nursing students from a university center in Piauí, Brazil. Data were obtained through semi-structured interviews and submitted to content analysis. *Results:* Two thematic categories emerged: *Perspectives on aging, violence and sexuality* and *A holistic approach to the elderly: integrating training and care. Conclusion:* The perspective of the students on integrated care for the elderly is fragmented, stemming from the limitations of the training process for such care.

Keywords: Elderly. Nursing. Integrality in Health. Education, Nursing.

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Research funding: National Council for Scientific and Technological Development (CNPq) and Ministry of Science and Technology (MCT). Scientific Initiation Scholarship Program, nº 142706/2016-7.

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INTRODUCTION

The quantitative increase in the number of elderly people presents major challenges to public health, requiring public policy interventions to address the needs of the population[1]. The issue is a priority for nursing science, justifying research that helps improve the quality of life of the elderly.

The initial training of nurses plays a key part in this process due to its significance for future actions and the construction of the skills necessary for the efficient performance of the role. This training should seek to meet the new paradigms of care, in which students comprehend the human being in an integrated manner, establishing contact with the social environment, as well as recognizing themselves as a subject in the process of training people, providing a range of knowledge for the criteria of a broad, complex and socially conscious education[2].

However, even though the skills and abilities necessary for integrated and humanitarian care are indispensable in the training of nurses, studies have identified a lack of preparation for action from the perspective of integrated health care[3]. As important as the training of students is the need to address the situations of professionals already active in the labor market, minimizing the effects of their inadequate training and seeking ways to ensure that their working practices meet the challenges posed for the implementation of the Unified Health System, especially in the area of primary health care[4,5].

The nursing student should therefore understand all the phenomena and vulnerabilities related to the elderly, with an emphasis on violence and sexuality, which can significantly influence and affect the life of these individuals.

However, the discussions about sexuality and violence related to the elderly during nursing training does not take into account the scale of the issue in society in recent years, due to reduced timetables which do not allow the nurse to provide qualified and grounded care in the prevention and promotion of health.

The present study therefore attempts to address the gaps in training regarding the aging process and its repercussions for health care. Its relevance is amplified when we consider the growing demand for professionals with suitable training to attend the elderly segment, coupled with the lack of professionals with such training.

To guide the study the following research question was chosen: *are nursing students adequately trained in integrated health care for the elderly*? Based on this question, the objective was to analyze training in the integrated health care of the elderly from the perspective of nursing students.

METHOD

A descriptive and exploratory study with a qualitative approach was carried out in a University Center located in a state capital of the northeast region of Brazil. Twenty-four students from the undergraduate nursing course were selected due to being correctly enrolled in the institution and attending the Elderly Health module. All students under the age of 18 who were on health leave during the period of data collection were excluded.

The context of the problem was surveyed prior to data collection, with the intention of identifying emerging issues and themes in the curriculum from the perspective of the nursing students themselves. This meeting took place in the university center with the presence of researchers and students who discussed the teaching plan of the elderly health subject offered in the nursing course of the institution. At the end of the meeting, it was concluded in consensus that the content on violence and sexuality needed to be broadened in order to prepare the student for the integrated care of the elderly.

The discipline mentioned is offered by the institution in the seventh period of the undergraduate nursing course with a timetable of 80 class hours. The teaching plan of the course includes contents aimed at the care of the elderly in the health-disease process, focused on the diagnosis, planning and evaluation of nursing care at the levels of prevention, promotion, rehabilitation and rehabilitation of the individual.

After this stage data were collected between May and June of 2016 through the action research methodology, which was chosen as it allows knowledge to be generated, experiences to be

obtained, contributions to be made to the discussion and the debate on the issues addressed to be extended[6]. At this stage, the students were invited to participate in the investigation. Once they had accepted they were informed about the study and a Free and Informed Consent Form was read and signed by all the participants. The researchers then conducted three thematic seminars which took place during the last theoretical meetings of the discipline. Each seminar lasted an average of one hour and thirty minutes and the themes were planned based on the main focus of the research so that the objectives of the study were achieved and a contribution to the training of future nurses was ensured through the methodology applied.

After the seminars, interviews were recorded at a private site using a semi-structured thematic guide to collect information, guided by the following questions: What is your view on aging? What is the meaning of violence against the elderly for you? How do you treat the sexuality of the elderly? What is the importance of your training in terms of intervening and providing integrated care in relation to the mentioned phenomena? The interview is one of the techniques most used in studies with qualitative approaches, from the collection of information to verbal communication[7].

The data produced were transcribed in full and analyzed by the Content Analysis Technique, which is based on three stages: pre-analysis, material exploration, data processing and inference of the results[8].

The results show the excerpts from the reports. As a way of preserving anonymity, "S" was added, which represents "student", and a number that indicates the sequence of the interview conducted: (S1), (S2), (S3).

This study is part of the research project "Training of the nursing student for the integrated care of the elderly in the light of social representations" and was approved by a research bid invitation and funded by the National Council for Research and Technological Development (CNPq). The development of the study met the national and international norms of ethics in research involving human beings, according to the Research Ethics Committee, under approval nº 1.541.127.

RESULTS

Of the 24 participants in the survey 18 were women and the mean age was 23 years. All were enrolled in the health of the elderly discipline, and most did not participate in any university extension project with a thematic approach.

The analysis of the content of the speeches that emerged from the interviews resulted in the identification of two thematic categories: Perspectives on aging, violence and sexuality and a Holistic approach to the elderly: integrating training and care.

Perspectives on aging, violence and sexuality

During the interviews, students referred to aging as a natural condition that results in physical and social changes for the elderly. They also reflected that this event represents a major achievement, that the health sector is responsible for providing quality of life to this population, and that the academy should encourage students and promote training to improve care:

> "Old age is a great achievement, it is an inevitable process and inherent in the human will, it is part of the biological cycle and has repercussions on the functional and physiological capacity of the body" (S2).

> "[...] It is a phase of life with many physical and social changes that occurs when you have a lot of experience" (S10).

> "The elderly need special health care, we need to understand the physiological process of old age, diseases and other common factors of this phase" (S20).

> "[...] it is very important that the professional is adequately trained to provide quality nursing care" (S23).

Regarding violence against the elderly, participants reported that this occurs due to the increase in the number of elderly people, and that they are vulnerable to abuse, meaning attention and care is required to defend this population. They demonstrated that there are gaps in the training process, and that the undergraduate course should devote more time to

training in this area, in order to enable nurses to dispense the quality care and assistance:

> "[...] violence is very common, we have to be alert to it" (S11).

> "[...] I Know victims of violence, it's sad. I think the situation is getting worse because there are more old people, so the violence grows as well" (S15).

> "It's a major problem, especially in health, as is as the cost of special care" (S22).

> "Our course should talk more about this, it could fit in a number of disciplines, I think it's important, you never know when you're going to come across it, we should study it more" (S7).

They said that the sexuality of the elderly is something negative and labeled with stereotypes. Their statements also infer the difficulty in approaching the subject with the elderly, a reflection of the culture in which older persons are seen as being asexual and of training that is lacking in terms of approaching sexuality during the undergraduate course, thus precluding the acquisition of complete understanding of the subject by the student:

> "[...] the elderly have no sex life, we need to inform them about the risk they are exposed to and seek to educate them about sexuality" (S1).

> "[...] a lack of information, the subject isn't really dealt with, I believe it will be difficult for me to deal with and I think it should be studied more" (S21).

> "[...] it can make people uncomfortable" (S17).

> "[...] the knowledge we acquire on the undergraduate course isn't enough" (S18).

A holistic approach to the elderly: integrating training and care

This category contains information on the integrated care of the elderly. The participants showed that it is extremely important to understand the aspects that permeate aging, above all sexuality, in a way that is capable of providing a holistic approach to the health care of the elderly, but also revealed that these subjects are insufficiently addressed in vocational training.

> "[...] the knowledge that we acquire about violence is very important, as we need this to care for the elderly in a broad way" (S10).

> "[...] sexuality also covers the need to express and receive affection, not just the sexual act" (S9).

> "It is very important to deal with sexuality in the life of the elderly, because they need affection, everyone needs it, from hugs, kisses" (S7).

> "[...] think that this part should be more addressed more, this topic should be explored with seminars and lectures during the course" (S16).

> "[...] the undergraduate course doesn't deal with this subject, as it was hardly debated at all in my training" (S17).

Thus, the statements reveal that the graduate course has an important role in the training of students, so that they acquire the knowledge, skills and competences necessary for the integrated care of the elderly:

> "[...] it is very important that the professional is adequately trained to provide quality nursing care" (S3).

> "[...] we can care for them with better knowledge [...]" (S13).

> "[...] knowledge about these issues is important, as the elderly population is growing, we need to acquire skills" (S2).

> "[...] training is extremely important for the care of the elderly" (S8).

DISCUSSION

Understanding the perspective of undergraduate students in nursing on aspects relating to aging is of fundamental importance in the context of academic training, as such knowledge allows the highlighting of key elements in the reality of this

group and contributing to change in this scenario. By understanding these perspectives, it is possible to express the most suitable way of acting with elderly people who need integrated and humanized attention.

In this study, students described the same perception described in the literature, in which aging is an inevitable event for every human being and may or may not be associated with the establishment and accumulation of diseases. It cannot, however, be seen only as a disease, but a stage of life with its own characteristics and values, in which changes occur in the individual, in terms of their bodily structure, their metabolism, their biochemical balance, their immune system, their nutrition, their mechanical functions and their emotional, intellectual and communicative conditions[9,10].

It is understood that the change in the age pyramid in Brazil means that vocational health training should enable the student to understand and attend to the specific needs of the elderly, as population aging is a global reality that demands effective interventions to ensure the senescence of the population[11-13].

Health promotion and primary and secondary prevention of diseases in old age are the most cost-effective ways of achieving the reduction of morbidity. The importance of training health professionals, however, should be emphasized in undergraduate and continuing education courses[14].

In undergraduate courses, disciplines are offered that address the health of the elderly, but there is a concentration of contents centered on the biomedical model[12].

Dispensing comprehensive care for the elderly does not only involve healing and rehabilitation, but especially in primary care, involves other aspects that must be attended to. When asked about the demands of elderly care, students in the present study referred to violence and sexuality as aspects that need attention. They considered that exposure to violence was due to vulnerability caused by age and represented the elderly as asexual, with this representation reflecting on the social and cultural aspects determined by society. They described the limitations in their academic training, as little is discussed about sexuality and violence against the elderly in their course, hindering integrated care in these aspects.

Studies state that during their undergraduate course, students are not encouraged to apply specific knowledge and concepts related to the integrated health of the elderly in their care dynamics. It is therefore important to develop academic activities that not only inform the students about aging, but also train professionals capable of respecting the limits and peculiarities of this stage of life, allowing them to recognize the physical, emotional and social changes of the elderly[14].

The importance of providing academic training based on integrality and interdisciplinarity is therefore highlighted. This will allow the construction of questioning and participative care within public health policies, using the knowledge learnt on the undergraduate course to support the well-being of the population, establishing a dialogue between the diversity of knowledges that students encounter in daily life[15].

The National Curricular Guidelines of the undergraduate nursing course currently emphasize that nurses must be able to intervene on problems that influence the health-disease process, identifying health risk factors and promoting the holistic care of the human being, including in the mental health field[16].

However, the existence of these guidelines does not guarantee, in practice, an integrated service for the elderly. This fact can be observed in some realities of the Family Health Strategy, in which care for the elderly refers to reductionist actions, focused on diseases such as hypertension and diabetes, and does not consider other dimensions such as sexuality[17,18].

Stereotypes associated with aging and the elderly are commonly addressed in the literature. They are symbolic representations that, mainly due to the lack of knowledge regarding the phenomenon of aging, are generally manifested in a negative manner by society and substantially limit the understanding of the aging process, simultaneously contributing to building and maintaining representations, stereotypes and the myths regarding the elderly. In this sense, behaviors expected by society are strongly influenced by media,

television, print or digital vehicles that could transmit more positive models of old age, with the intention of reducing stereotypes and prejudices[19].

In this sociocultural scenario of prejudice related to the process of aging, there is another taboo issue: sexuality in old age. This is often treated as inappropriate, based on the stereotype that the elderly are devoid of sexual desire and practices, with men labeled as impotent and women as devoid of physical attraction. Coupled with this idea, some elderly people cannot exercise their sexuality without taboos. They are often resistant to the use of condoms and can even renounce and hide their sexuality so as not to feel discriminated against[18,20].

The attitudes that we adopt towards the elderly and the way we relate to them directly conditions the way they view old age and the whole process of aging. In this manner, if we have positive and stimulating attitudes, we will encourage their integration into society, while negative attitudes can contribute to their discomfort and the feeling of being a burden upon others.

Regarding violence against the elderly, a study of print media, social representations and violence against the elderly shows that the construction of social representations of violence, mistreatment and neglect of the elderly is anchored in the achievements obtained by this population, governed by the Statute of the Elderly. These gains were objectified in the social actions of political power, in the dictates of science, in the dimensions of violent acts and in the achievements, defense and care of the elderly[21].

Regarding the care given to these elderly people, a study reveals significant weaknesses in the implementation of public policies for the elderly, with some health professionals considering themselves as not being responsible for the listening, support, care and guidance of elderly persons with a history of violence; believing that they should only act on physical injuries and let their colleagues, psychologists and social workers, respond to the situation of violence[22,23].

In literature, there are few research studies on how future health professionals, namely university students, consider sexuality in old age. The data are focused on professionals or the elderly, dealing with the main aspects of epidemiology, perceptions of the sexuality of the elderly and the early diagnosis of HIV in the elderly population[24].

The investigation of the knowledge and attitudes of students of health in relation to sexuality in old age is relevant and is based on the need to think about the broader training of these future professionals for care in different areas. Often, due to the lack of reflection on the practices and multidimensional nature of aging, these students graduate with somewhat misrepresented notions, which will lead them to consider the elderly as a homogeneous category, generalize about their physical and cognitive capacity, and apply the inappropriate use of instruments, instructions and equipment during the performance of their professional duties.

The limitations of this study include the restriction of the number of participants and of scenarios applied, which limits the scope of the results to the reality of the participants and their sample, composed only of a higher education institution, thus preventing the generalization of the results.

CONCLUSION

The study revealed that nursing students consider aging, violence and sexuality as aspects that integrate the daily life of the elderly, with a significant impact on the quality of life of this population. Limitations were observed in the training process of care for the elderly, leading to repercussions for the integrated care of the graduating students.

It is believed that this study allows for discussions and reflections on nursing training courses, creating a space of interface between health and education by uniting theoretical and practical elements of nursing knowledge relating to gerontology and geriatrics, resulting in suitable training for professionals.

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Received: September 20, 2017
Reviewed: January 11, 2018
Accepted: February 08, 2018

http://dx.doi.org/10.1590/1981-22562018021.170155

Burden, profile and care: caregivers of socially vulnerable elderly persons

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Abstract

Objectives: To compare burden and sociodemographic profile and to analyze the care needs of caregivers of elderly persons enrolled in Social Care Referral Centers in a municipal region in the interior of the state of São Paulo, Brazil. *Method:* A cross-sectional, quantitative-qualitative study was carried out. A sociodemographic questionnaire, the Zarit Burden Scale and three open questions regarding care needs were applied. The quantitative data were analyzed by descriptive statistics and the correlation test. The hermeneutic-dialectic referential was applied and the qualitative data were analyzed by the content analysis technique. *Results:* A total of 86 caregivers participated in the study. The majority were female (71.7%), had a mean age of 56.5 (sd=14.9) years, suffered burden and lived in vulnerable neighborhoods. With regard to care, the provision of support for activities of daily living, difficulties in caring and the help of other relatives were identified. Burden negatively correlated with age range and schooling (r=-0.11; r=-0.87). *Conclusion:* Guidance and the acquisition of caring skills remain unprovided by the resources and services that exist in vulnerable contexts, and resolutive support strategies are lacking in public facilities.

Keyword: Caregiver, Family. Social Vulnerability. Elderly.

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Research funding: Coordination of Improvement of Higher Level Personnel (Capes). Master's Degree Scholarship.

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INTRODUCTION

Increased life expectancy affects the health conditions, morbidity and functional limitations of the elderly, increasing the incidence of illnesses and disabilities, with possible alterations in physical, cognitive and emotional dependence, generating a need for permanent care[1]. Whether physical or cognitive in nature, dependence means that the elderly require dedicated care to meet their specific needs[2].

Caregivers of elderly persons are those who assume responsibility for care, offering support and assistance to individuals in need. An "informal caregiver" is defined as a person who provides unpaid care while a "formal caregiver" is someone with professional preparation and training[3]. Family caregivers assume this role through the initiative or denomination of the family group, according to three factors: kinship, gender and physical and affective proximity. A family caregiver is defined as a person responsible for the care of the elderly, who receives no remuneration and who has cared for the patient for at least three months, for a minimum of four hours a day and at least three times a week[4].

Throughout the care of the elderly, many informal caregivers experience restrictions in their personal lives due to assuming the responsibility of caring and performing tasks in an uninterrupted manner. They can face situations of attrition, resulting in the loss of affective and professional relationships and limitations in social networks of conviviality and leisure, which can lead to burden[5]. Burden can influence the development of psychiatric, physical, emotional and social symptoms and medication use. In addition, caring can affect the financial situation of the caregiver and compromise the quality of care offered[6].

Level of burden is directly related to the degree of dependence of the elderly person[7]. Literature shows that the home represents a privileged space for care, characterized by concern for the integrality and uniqueness of the human being, the valorization of relationships and respect for others, with the family participating in and providing the necessary support[8]. In this context, however, there are concerns over the scarcity of support services. Family members, as the source of support, use their own efforts and resources to provide care and, in many cases, have demands placed on them that represent a burden[9].

In a context of social vulnerability, the quality of care is characterized by social and economic aspects and can be a synonym for social risk, frailty and precariousness. Schooling, as an indicator of vulnerability, can limit social and economic mobility, as well as affecting levels of productivity and income, which can hamper the ability of caregivers to acquire information and perform everyday tasks, as the act of caring involves the fulfilment of medical prescriptions, the administration of medication, professional guidance and the seeking of resources in the public system[10].

There are still gaps in scientific literature in terms of studies that investigate the burden of caregivers in situations of social vulnerability. A study carried out with 140 elderly caregivers in Manguinhos (Rio de Janeiro), characterized as a region of extreme socio-environmental vulnerability, found that 41.6% of caregivers suffered burden[11]. Thus, primary care services in the public health and social protection systems must use this knowledge to promote interventions that address the specific needs of caregivers in a context of social vulnerability, as social characteristics affect health, generating adverse exposures and risks.

The present study aimed to compare burden and sociodemographic profile and to analyze the care needs of caregivers of elderly persons enrolled in Social Care Referral Centers (SCRC) in a municipal region in the São Paulo countryside. We therefore sought to interpret the contradictions that emerge in the act of caring from the discourse of the caregivers.

METHOD

A descriptive, cross-sectional study with a quantitative-qualitative approach was carried out. The interviews were carried out with 86 elderly caregivers enrolled in five SCRC in the municipality of São Carlos, São Paulo, Brazil.

The inclusion criterion for participation in the study was to be a caregiver of an elderly person registered at the SCRC, whether a family member or

not. For the identification of social vulnerability, the São Paulo Social Vulnerability Index was used, which classifies census tracts according to socioeconomic and demographic dimensions, with the former covering the schooling and the income of the head of household and the latter including the age of the head of household and the presence of children aged up to four years in the home. The classification of social vulnerability is divided into six groups: no vulnerability, very low, low, medium, high and very high vulnerability[12].

The municipal region of São Carlos, which has a population of 221,950 inhabitants, is served by five SCRC distributed in regions of low, very low and high vulnerability[13]. The five SCRC were identified as I, II, III, IV and V. SCRC I, II and III were located in regions with high vulnerability, SCRC IV in a region of low vulnerability and SCRC V in a very low vulnerability area[12].

Data was collected by accessing all the existing medical records available and selecting those which related to elderly persons, giving a total of 1,451 records. After identifying the name, age and address of such persons, an active search was performed and 1,118 individuals were excluded as follows: 679 (46.7%) were not found in the aforementioned registered addresses or had changed their address or resided in areas outside the SCRC, and 439 (57.0%) representing losses due to refusal to participate, death, withdrawal or the fact that the elderly persons lived alone and could not understand or answer the questions. It was decided not to perform a sample calculation and to perform an active search with all the elderly that were registered in the system. Of the 333 elderly persons who were eligible, 86 had caregivers.

The interviews were conducted from Monday to Friday, during working hours, from August 2012 to August 2016. The average duration of each interview was 45 minutes. The interview was carried out by students of the undergraduate course in Gerontology of the Universidade Federal de São Carlos (UFSCar), who were previously trained to standardize the data collected.

Data collection involved instruments for sociodemographic characterization previously constructed by the researchers, the Zarit Burden Scale and three open questions regarding the needs of care, also developed by the researchers.

The sociodemographic instrument involved questions relating to: gender; age; marital status; schooling; current occupation; income; form of obtaining income and degree of kinship with the elderly. The Zarit Burden Scale developed by Zarit et al. in 1980 and translated and validated for Brazil by Scazufca in 2002 was used to evaluate caregiver burden[14]. The scale has 22 multiple choice questions and answers can vary from 0 to 88 points, with the higher the score the greater the burden. As such, 61 to 88 points correspond to severe burden; 41 to 60 points moderate to severe burden; 21 to 40 indicate mild to moderate burden and less than 21 points no or minimal burden. The open questions related to care needs were: "describe the care activities you perform for the elderly"; "what are the main difficulties and/or limitations that you find when providing care?"; "does anyone else assist with care?" For the interpretative reading of the open questions, the "hermeneutic-dialectical" methodological approach was used, with the aim of interpreting the existence of conflicts, tensions and contradictions in the act of caring[15].

Data were analyzed in a descriptive and univariate manner. The numerical variables were explored by the descriptive measures of centrality (mean, median) and dispersion (minimum, maximum and standard deviation). Categorical variables were explored by absolute and percentage simple frequencies. The correlation of burden with the numerical variables was analyzed according to Spearman's correlation coefficient. The Zarit Burden Scale used in the present study obtained a Cronbach's alpha score of 0.85 indicating satisfactory reliability, and a value approximate to that of Scazufca (0.8714). A *p*-value of <0.05 was adopted.

The qualitative analysis was performed based on Bardin content analysis. This approach has its origins in the field of social investigations and refers to techniques that allow the making of replicable and valid inferences about the data of a given context and an encrypted interpretation of the material to be obtained. It is understood as the search for meaning or meanings in a document. Bardin[16] describes content analysis as a set of communication analysis techniques that use systematic procedures and objectives to describe the content of indicator

messages – whether quantitative or not – that allow the inference of knowledge regarding the conditions of production of these messages[16]. The pre-exploration of the material was performed in the first phase, analyzing all the responses of the participants regarding care. Subsequently, the significant units for analysis were selected. Explicit words and phrases in the answers were identified. In the third and last phase, the thematic units were categorized, or in other words, classified and regrouped by theme, according to the degree of intimacy or proximity.

The ethical precepts of Resolution 466/12 of the National Health Council were followed. The present study used and broadened the database of the study entitled: "The Frailty of the Elderly and the Basic Social Care System" approved by the UFSCar Research Ethics Committee, approval number: 72182 in 14/08/12, CAAE: 00867312.8.0000.5504. At the time of starting the present study, this database included data from the elderly and caregivers of SCRC I, II and V. The present study included data from SCRC III and IV, approved by the UFSCar Ethics Research Committee, approval nº 1785874 on 21/10/16, CAAE: 57857016.0.0000.5504. The aforementioned database includes the data of 247 elderly persons and 86 caregivers, and only data from the caregivers was used.

RESULTS

Of the 86 elderly caregivers interviewed in this study, 71.7% were female. The mean age of the caregivers was 56.5 (+14.9) years. Regarding marital status, 65.1% of the interviewees had partners, while the most prevalent level of schooling was 1 to 4 years. In relation to current occupation, 61.6% reported working at home, while 33.7% worked or had a part-time occupation such as: domestic worker/cleaner (11.6%); general assistant (5.8%); rural worker (2.3%); bricklayer (2.3%); kitchen assistant (2.3%); seamstress (2.3%); production assistant (2.3%); waitress (1.1%); mechanic (1.1%); salesperson (1.1%) and hairdresser (1.1%). In terms of income, 54.2% had an income lower than the minimum wage (R$880) in the form of a public or private pension. In relation to the degree of kinship with the elderly, 40.7% of caregivers were spouses, while 39.5% were daughters. As for the vulnerability of the neighborhood where the caretakers lived, 43.1% lived in neighborhoods with very low vulnerability.

A total of 67.4% of the interviewees exhibited burden, with 43.1% suffering mild to moderate burden, 19.7% moderate to severe burden and 4.6% severe burden. Female caregivers, aged between 60 and 69 years, with partners, low levels of schooling, who worked at home and did not declare their income, were identified as burdened and lived in vulnerable regions.

Regarding care needs, the analysis of content revealed the following units of analysis: care activities performed for the elderly; difficulties and/or limitations encountered in care and the assistance of another person in providing care.

Activities of care provided for the elderly person

The activities reported were grouped into the thematic categories *Basic Activities of Daily Living* (BADL) and *Instrumental Activities of Daily Living* (IADL). The main BADL and IADL activities reported by the caregivers were: food preparation (60.4%); housework (51.1%); accompanying the elderly to the doctor (51.1%); bathing (39.5%); seeking, purchasing and administering medications (36.0%); managing money (18.6%); receiving public or private pension (17.4%) and diaper changing (17.4%). Some caregivers performed activities that could contribute to an improvement in the elderly person, such as leisure activities (3.48%); exercise for the legs (2.3%); going out in a wheelchair (2.3%); (2.3%) and sunbathing (2.3%), according to the reports of the caregivers:

> "I give him a bath, I shave him, I change his diaper, I prepare the food and I feed him ... I give him medicines, I move him from the bed to the wheelchair and I take him out to get some sun" (C2).

> "I help with bathing, I prepare meals, I take them to the doctor and I give them medication" (C6).

> "I give them a bath, I make food, I clean the house, I collect the pension and I iron clothes" (C37).

> "I tidy the house, get medicines and collect the pension" (C43).

Difficulties and/or limitations found in care

Of the interviewees, 55.8% of caregivers reported experiencing difficulties when providing care. In this unit of analysis two thematic categories appeared. One described the difficulties and limitations related to the *Objective Dimension of Care*, in which the responses of the caregivers described difficulties when providing care, such as physical exertion (20.9%) in the transference of the elderly, when bathing and when changing diapers, as described below:

> "difficulties when moving him as he's bedridden, he's very heavy" (C8).

> "they can't move any of their limbs" (C33).

Other limitations identified were "caregiver health problems" such as prolapsed bladder, labyrinthitis and orthopedic deformities that generated pain and discomfort in the execution of care. Another thematic category was the *Subjective Dimension of Care*, in which the emotional burden of care and its difficulties were reported by the caregivers, such as: "emotional disturbance" (9.3%) and the difficulty of having "no social life" (9.3%). The following sections reveal the difficulties encountered by caregivers:

> "I have to beg him to eat... he wakes me up in the middle of the night to take medicine" (C16).

> "I get really stressed, it's not easy... they keep asking the same things" (C27).

> "I can't take it anymore, it's like looking after a child" (C29).

Help from other people in care

Of the participants interviewed, 55.8% reported that they received help from another person and 44.1% said they did not. In this unit of analysis, the *Family Support* category stood out, as most of the responses indicated family members as the providers of assistance in care when needed (44.1%). In this context, the daughters of the main caregiver (17.4%), followed by the sisters (12.8%) and the children (8.13%) of caregivers were the most prevalent. As for the main caregiver's activities, bathing (29.0%), food preparation (19.7%) and accompanying the elderly person on visits to the doctor (12.8%) were the most important.

Burden correlated negatively with age and schooling. Table 1 shows the data from the present study.

Table 1. Sociodemographic and care profile of caregivers of elderly persons registered with SCRC. São Carlos, São Paulo, 2016.

Variable	n (%)	Mean (sd)	[Min-Max]	Absence of burden (%)	Burden (%)	Correlational analysis	*p*-value
Gender							
Women	62 (71.7)			18 (21.0)	44 (50.7)		
Men	24 (27.9)			3 (3.5)	21 (24.4)		
Age (in years)		56.9 (14.9)	20-85			-0.11	0.922
Age group (years)							
20-39	10 (11.6)			4 (4.7)	6 (7.1)		
40-49	14 (16.3)			5 (5.9)	9 (10.6)		
50-59	16 (18.6)			5 (5.9)	11 (12.9)		
60-69	27 (31.4)			7 (8.2)	20 (23.5)		
70-79	14 (16.3)			4 (4.7)	10 (11.8)		
80-89	5 (5.8)			3 (3.5)	2 (2.3)		
Marital status							
With partner	56 (65.1)			14 (17.9)	42 (47.2)		
No partner	30 (34.8)			7 (5.1)	19 (29.7)		

to be continued

Continuation of Table 1

Variable	n (%)	Mean (sd)	[Min-Max]	Absence of burden (%)	Burden (%)	Correlational analysis	*p*-value
Schooling (in years)		5.9 (4.1)	0-15			-0.87	0.425
Illiterate	4 (4.4)			0	4 (4.4)		
1 to 4	74 (85.9)			54 (62.7)	20 (23.2)		
5 to 8	8 (9.3)			1 (1.1)	7 (8.2)		
Current Occupation							
Occupation	29 (33.7)			13 (15.1)	16 (18.6)		
No occupation	4 (4.7)			0	4 (4.7)		
Works at home	53 (61.6)			15 (17.4)	38 (44.2)		
Individual income							
Not declared	36 (41.9)			9 (10.6)	26 (31.3)		
None	4 (4.7)			4 (4.7)	0		
Less than 1 MS	44 (54.2)			11 (13)	33 (41.2)		
1 MS	2 (2.4)			0	2 (2.4)		
Income							
Own salary	13 (15.1)			8 (9.3)	5 (5.8)		
Spouse's wage or pension	18 (20.9)			6 (7.0)	12 (14.0)		
Private or public pension	37 (43.0)			12 (14.0)	25 (29.1)		
Receives from children	7 (8.1)			1 (1.2)	6 (7.0)		
Benefit	9 (10.5)			0	9 (10.5)		
Citizen income	2 (2.3)			14 (16.3)	21 (24.4)		
Degree of kinship							
Spouse	35 (40.7)			14 (16.3)	21 (24.4)		
Daughter	34 (39.5)			8 (9.3)	26 (30.2)		
Son	6 (7.0)			0	6 (7.0)		
Others	11 (12.8)			6 (7.0)	5 (5.8)		
Social vulnerability							
High (SCRC I, II and III)	34 (39.6)						
Low (SCRC IV)	15 (17.4)			12 (14.0)	22 (25.6)		
Very low (SCRC V)	37 (43.1)			9 (10.5)	6 (7.0)		
Burden				7 (8.1)	30 (34.9)		
No burden	28 (32.5)						
Burden	58 (67.4)						
Care activities							
BADL							
Feeding	52 (60.4)						
Bathing	34 (39.5)						
IADL							
Housework	44 (51.1)						
Accompany to doctor	44 (51.1)						

to be continued

Continuation of Table 1

Variable	n (%)	Mean (sd)	[Min-Max]	Absence of burden (%)	Burden (%)	Correlational analysis	*p*-value
Limitations of care							
Reported difficulty	56 (20.9)						
Physical exertion	18 (21.0)						
Reported no difficulty	30 (35.0)						
Help with care							
Reported receiving help	48 (55.8)						
Relatives	38 (44.1)						
Reported not receiving help	38 (44.1)						

sd: standard-deviation; MS: minimum salary (R$880); BADL: basic activities of daily living; IADL: instrumental activities of daily living; *p*-value<0.05

DISCUSSION

Data from the present study revealed that the majority of caregivers were women (71.7%), while male caregivers made up 27.9% of the sample. There was a predominance of caregivers with some degree of kinship with the elderly, a mean age of 56.9 (+14.9) years, schooling of one to four years and income of less than one minimum wage.

Literature indicates that care tends to be carried out by women, who tend to perform the role of mother and provide care for their relatives and in most cases are thereby assigned the responsibility of primary caregiver[3]. Caregivers are rarely men, as caring involves tasks considered to be feminine, which are learnt throughout life.

Schooling is an important indicator as a criterion for identifying the level of social vulnerability of a given region. Of the caregivers interviewed, the majority had low levels of schooling, which can affect the care provided to the elderly person. Schooling, being an indicator of vulnerability, contributes to the limitations of social and economic mobility of people as well as affecting levels of productivity and income, which can compromise caregivers when seeking information and resources in public systems[10]. Santos-Orlandi et al.[17] emphasize that social vulnerability is one of the factors that contribute to a lack of individual, family and social resources to meet the needs of the people.

A minimum salary income or below, followed by a low level of education among caregivers, often results from the fact that caregivers have to leave their jobs to care for their relatives. Literature shows that low schooling can influence the performance of care activities, such as help with medication, accompanying patients to doctor's appointments, and the ability to receive and communicate medical guidance. From this perspective, the higher the level of schooling, the better the quality of care provided[18]. In addition, Yamashita et al.[5] found that a lack of income from an occupation outside the home leads caregivers to assume the leading role in providing care.

The data from this study showed that the income obtained is most commonly through a state or public pension followed by the salary of a spouse or partner. The low use of public resources by vulnerable populations is noteworthy, with low levels of income received through the Continuous Cash Benefit program (BPC) – granted to the elderly or to persons with disabilities who do not have sufficient means to support themselves – and Citizen Income Support – a state program for the transfer of income and financial support to families with a monthly per capita income of up to half the minimum wage[19]. This is worrying as elderly persons often become the main source of income of their family units in vulnerable sectors of the Brazilian population[20].

Most of the caregivers interviewed in this study had some degree of kinship with the elderly, with the proximity and affective relationship between the caregiver and the elderly person contributing to the process of insertion and adaptation of the caregiver in this role. When care is performed by a caregiver with a close family relationship the chances of negative feelings arising are lower. The negative effects on the caregiver when caring for a family member at home may not be as apparent, with many caregivers saying they did not experience difficulty in performing their roles, perhaps because of a sense of recognition of said role and the positive aspects of performing care[21]. Literature shows that caring for a loved one can be more meaningful and rewarding than the social difficulties generated in the caring process. On the other hand, care provided through obligation can result in burden and consequently make the process exhausting[5].

There was a high prevalence of caregivers with burden at all levels of social vulnerability in the present study. The overall mean burden of the family caregivers in the present study was similar to other studies with caregivers of elderly persons living in the community[22-25]. A systematic review found that family caregivers suffer burden due to performing several roles and exposure to multiple factors that lead to attrition. The lack of choice in becoming a caregiver was the most frequent feature in these studies, due to the difficulties families have in resolving the problem of care, which subsequently often falls to a single member[26].

Social vulnerability can vary according to socioeconomic criteria of a given population and can be used as a synonym of social risk, frailty and precariousness[27]. Social factors that are related to the individual, such as educational level, family members, marital status, the influences of the neighborhood in which one lives, individual life histories, cultural differences and social position should also be considered[28]. Vulnerability is therefore related to the structural factors of society in terms of inequality of income, education and access to services, and is a suitable concept for understanding the dynamics of the process of social inequality in developing countries[29]. In this context, caregivers of the elderly in a context of vulnerability have specific needs arising from their socio-family characteristics, which are peculiar to this group.

Caregiver burden is an indicator of negative impact that can affect the physical, psychological, emotional and financial state and cause mental health outcomes[30,31]. Caregivers are often not ready to assume all the responsibilities thrust upon them without support. They are faced with unexpected situations and require suitable guidance to perform their tasks.

Elderly caregivers undergo constant changes due to the care they provide, with less time for leisure and social activities, which may worsen when the care is provided in a context of vulnerability and can cause depression, anxiety, dissatisfaction with life, the aggravation of illness and risk of disease[17]. Technical, psychological and financial support, guidance, working in groups and the accompanying and monitoring of these caregivers in the public system is required.

In this study caregivers helped the elderly with basic and instrumental activities of daily living. The independence of the elderly person is closely linked to their ability to perform daily activities without assistance, autonomy, freedom and decision-making capacity[7]. Although the aging process is not associated with the loss of independence and autonomy, literature indicates that functional capacity is an indicator of the health of the elderly population, when there may be a greater risk of limitations and needs for care. Functional incapacity indicates the risk of hospitalization and institutionalization among the elderly[32]. In the context of social vulnerability, the low levels of schooling and income of caregivers imply difficulties in the management of care and access to and obtaining specialized services.

Regarding the limitation of care, a portion of the caregivers interviewed in this study reported having difficulties in providing care. According to research, in order for home care to be performed effectively, the preparation of the caregiver is fundamental; processes of training and guidance should be provided by basic care services. Information on care should be disseminated and distributed to all stakeholders involved to guarantee the care provided at home[33].

In the present study, 55.8% of the caregivers reported that they received help from other relatives when performing care. In general, informal care is expected to be carried out by family members, with this characteristic influenced by cultural and religious norms[34]. In the context of vulnerability, low incomes limit support for care or ways of paying for this service. There is a need for policies and initiatives that support caregivers and which care for the elderly. As the health profiles of populations change, care systems need to be reassessed to ensure that they reach older people with more complex needs, as well as their caregivers. In this sense, identifications and interventions to eradicate, prevent or reverse burden must be included in SCRC strategies. These centers can prevent the breaking of links and promote autonomy and sociability in the family and community context, considering the heterogeneity of values, beliefs and identities through actions of a protective and proactive nature[35]. Social care teams need to familiarize themselves with the conditions of aging, optimize services and consider social support for the elderly, including care and long-term assistance, since these services have a broad scope and knowledge of the context in which they are inserted.

Studies in basic social protection services are suggested, as these are considered the gateway of users to the care system and are therefore the closest contact with the population and understand their specific needs and limitations. There is subsequently a need for the system to empower teams to monitor and support families. Literature still presents gaps regarding studies that verify the burden of caregivers of the elderly in different contexts of social vulnerability. As a limitation of the study, it should be highlighted that the cross-sectional design used does not allow causality to be established, and the sample size may limit the generalization of the results.

CONCLUSION

The present study demonstrates the existence of burden among caregivers and found that this phenomenon correlated negatively with age and schooling. The care needs were evidenced by means of thematic analysis, namely: assistance in basic and instrumental activities of daily life; existence of tensions and difficulties in the task of caring and help from family members in care activities.

The findings can contribute to the re-adaptation and redirection of public policies that provide formal support for family caregivers, with a view to integrating primary care services into actions for the execution of care. The results found draw the attention of public health administrators to the need to understand the profile and degree of burden and activities related to care, as the actors involved in the care process will become elderly in the medium term, which may lead to greater difficulty in providing care and consequently influence burden and have consequences for both the caregiver and the elderly. It is worth highlighting that investigations in a context of vulnerability allow the needs of the population to be identified *in loco*, as well as the understanding of determinants related to health, especially in those with multiple and interactive problems arising from their social context.

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Received: September 27, 2017
Reviewed: February 27, 2018
Accepted: March 29, 2018

http://dx.doi.org/10.1590/1981-22562018021.170170

Sociodemographic profile and quality of life of caregivers of elderly people with dementia

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Abstract

Objective: To analyze the association between sociodemographic profile, health profile and the quality of life of caregivers of elderly people diagnosed with dementia. *Method:* A cross-sectional study was carried out in a geriatric outpatient unit with 35 elderly caregivers diagnosed with dementia. A socio-demographic and health characterization form was used as well as the WHOQOL-bref scale. To verify the association of the variables, the Spearman or Pearson correlation tests were applied, according to the normality of the data. *Results:* A moderate association between caregiver age and quality of life was found, as well as between total time of care and quality of life, which reveals that the care provided to the elderly with dementia has repercussions on the quality of life. The domains of the WHOQOL-bref with the highest means were *Social* and *Physical Relations*, and those with lower mean values were *Psychological* and *Environmental*. *Conclusion:* The identification of conditions that influence the quality of life of caregivers of elderly people with dementia allows actions to promote, protect and recover the health and well-being of those who provide care to be established, so that this care is both for themselves and for the elderly.

Keywords: Caregivers. Dementia. Nursing. Elderly. Quality of Life.

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INTRODUCTION

Dementia is a set of clinical signs and symptoms characterized by memory, language, behavioral difficulties which has consequences in the planning and performance of activities of daily living[1].

There are several types of dementia, of which Alzheimer's Disease is the most prevalent among the elderly (60-70%), followed by vascular dementia, Lewy body dementia and frontotemporal dementias[2].

Around 24 million elderly people had some type of dementia in 2001, a figure that is expected to double every 20 years, to 42 million in 2020 and 81 million in 2040[3].

As it is a chronic and limiting disease, elderly persons experience difficulties in carrying out their daily activities, making them increasingly dependent on additional care. A study conducted in North America has found that people with dementia need at least 8.5 hours of daily care, with care ranging from 17.5 to 41.5 hours daily in moderate to severe conditions[4].

This care is often provided by caregivers, who represent the link between the elderly, the family and health services. A caregiver is defined as the person who is responsible for caring for an elderly person who depends on assistance from the health services for their hygiene, medication, domestic and social activities, regardless of the absence or presence of a family bond or remuneration[5].

In view of the incapacitating conditions caused by dementia, caregivers become part of the family context of the elderly person, assuming responsibility for activities that were previously performed by the elderly individual themselves, such as daily care, home care, account management and basic care activities[6].

The execution of administrative and care activities are factors that impair the quality of life of caregivers. This is defined as a person's perception of the position of their life relative to the cultural values of the place where they live, in addition to their goals, expectations, standards and concerns[7].

The hours spent on care, the lack of information and support, the degree of fatigue and the day to day activities performed are defined as some factors that contribute to intensifying caregiver burden[8].

Caregivers of elderly persons diagnosed with dementia are more likely to develop psychiatric symptoms, physical, social and financial problems, hypertension, arterial, thyroid, osteoporosis, digestive and respiratory disorders, anxiety, insomnia and depression[9].

Health problems arise from the impact of tasks performed by caregivers, often without proper guidance or support from others, and the accumulation of activities affects their own personal lives[8].

Considering the increase in the aging population and the diversity in care relationships, the need to identify and understand factors related to the quality of life of caregivers of elderly people with dementia should be highlighted. The present study is therefore based on the following question: what is the association between socio-demographic profile and characteristics and the quality of life of caregivers of elderly persons with dementia?

The objective of the study was to analyze the association between the sociodemographic profile, characteristics of care and quality of life of caregivers of elderly persons diagnosed with dementia.

METHOD

A cross-sectional quantitative study was conducted at a geriatric outpatient clinic for elderly care linked to a public university, located in the city of Niterói in the state of Rio de Janeiro.

The inclusion criteria adopted were that the care recipient and their caregiver receive care from the Health Care Center for the Elderly and their Caregivers; that the caregiver is aged over 18 years old; is a formal and/or informal caregiver for an elderly person with dementia; has been the primary caregiver for at least six months. The exclusion criteria were sporadic attendance at the Health Care Center for the Elderly and their Caregivers and the

presence of a communication disturbance that made it difficult to perform the tests.

The research population was caregivers of elderly people with dementia receiving care through the outpatient nursing clinic and was composed of 81 active caregivers from the program. Of these, 22 caregivers reported that they were unavailable for nursing appointments, 14 caregivers were not located through their registered phone numbers, and ten caregivers did not meet the inclusion criteria.

The sample size was calculated by the Gpower 3.1 software package to achieve a power of 0.8 and a significance level of 0.05. The sample consisted of all caregivers of elderly people with dementia who participated in the nursing consultations and met the established criteria, resulting in a total of 35 participants.

The data collection period was from November 2016 to April 2017. The technique used to collect data from the caregivers of elderly people with dementia was a structured interview of exploratory character performed during the nursing appointment, using an instrument created and pre-tested by the researchers to record the sociodemographic and health characteristics of the caregivers.

For the characterization of sociodemographic and health status, the following data was recorded: age; caregiver category (formal/informal); gender; schooling; marital status; professional activity; family income; cohabitation with the elderly; division of care; degree of kinship with the elderly; health problems; continuous use of medication and psychotherapy.

The WHOQOL-bref scale was used to measure quality of life. This scale has 26 questions, with Likert-type scales from zero to five. The questions are divided into four domains (*Physical, Environmental, Psychological and Social Relationships*). Their results initially varied from four to 20 and were then converted to a scale of 0 to 100%. In this way, the higher the value, the better was the quality of life.

The instruments were completed after the conclusion of the nursing appointment, through invitation, reading and a signing of a Free and Informed Consent Form. The interview was held in a reserved location and the participants' anonymity was preserved.

For the analysis of the data, a spreadsheet was constructed with double entry of the data which was then validated for comparisons. The variables gender, age, category, total time providing care, division of care and cohabitation with the elderly person were then imported into the statistical software to perform the statistical tests.

For all tests, a level of significance of $p \leq 0.05$ was adopted. To analyze the normality of the data the Shapiro-Wilk test was applied. The variables gender, caregiver category, division of care and cohabitation were presented in comparative forms in relation to the quality of life scores. For the association between the variables age and quality of life, the Pearson Correlation Test (data with normal distribution) was used and to associate the total time providing care and quality of life the Spearman's Correlation Test (non-normal distributed data) was used. Both tests allow the relationship between two quantitative variables to be established.

The study was approved by the Research Ethics Committee of the Hospital Universitário Antônio Pedro (HUAP) of the Universidade Federal Fluminense (UFF) under number 1.740.880, in accordance with Resolution nº 466/2012 of the National Health Council. Two copies of a Free and Informed Consent Form were signed by the participants.

RESULTS

The sample of the present study consisted of 35 caregivers of elderly people with dementia. Table 1 shows the descriptive sociodemographic analysis of the sample and Table 2 illustrates the characteristics of the type of care provided by caregivers.

Table 1. Sociodemographic profile of sample. Niterói, Rio de Janeiro, 2017.

Variable	n (%)
Gender	
Female	32 (91.4)
Male	3 (8.6)
Age years)	
<60	19 (54.3)
≥60	16 (45.7)
Marital status	
Unmarried	7 (20.0)
Married	23 (65.7)
Divorced	4 (11.4)
Widower	1 (2.8)
Schooling (years)	
0	1 (2.8)
1–4	2 (5.7)
5–9	4 (11.4)
10–12	20 (57.2)
≥12	8 (22.9)
Income (minimum salary)*	
1 to 3	22 (62.8)
4 to 6	12 (34.3)
≥7	1 (2.8)
Professional activity	
Yes	14 (40.0)
No	21 (60.0)

*2017 minimum salary: R$937.00.

Table 2. Characteristics of care provided by caregivers of elderly persons with dementia. Niterói, Rio de Janeiro, 2017.

Variable	n (%)
Type of caregiver	
Informal/Family member	27 (77.1)
Formal	8 (22.9)
Relationship	
Spouse	9 (20.0)
Son/daughter	14 (20.0)
Brother/sister	2 (58.0)
Grandson/granddaughter	1 (7.0)
Nephew/niece	1 (3.0)
Daily workload (hours)	
4-7	7 (20.0)
≥8	28 (80.0)
Division of care	
Yes	19 (54.3)
No	16 (45.7)

to be continued

Continuation of Table 2

Variable	n (%)
Lives with elderly person	
Yes	19 (54.3)
No	16 (45.7)
Total time spent caring (years)	
≤4	22 (62.8)
≥5	13 (37.2)

In terms of health profile, 85.7% of the caregivers had a chronic health problem (self-reported variable), with the most frequent illnesses being: spinal problems (33.3%); systemic arterial hypertension (28.2%); diabetes mellitus (12.8%) and depression (7.7%). Less frequent illnesses (2.6%) were: hypothyroidism; asthma; endometriosis; respiratory allergies; arthrosis and heart disease.

Regarding the continuous use of medication, 12.3% did not use medications and 65.7% used some medication. Among the most frequent drug classes were analgesics, hypoglycemic agents and antidepressants.

About 34.0% of caregivers stated that they undergone psychotherapy, while 65.7% said they had never undergone any kind of psychotherapeutic treatment.

The results in relation to quality of life, measured by the WHOQOL-bref scale, were stratified according to the four domains, as shown in Table 3, which describes a score from 0 to 100 in percentage values.

Table 3. Scores relating to the domains and facets of the WHOQOL-bref of the participants. Niterói, Rio de Janeiro, 2017.

Domain/Facet	Score (%)
Physical	62.2
Pain and discomfort	65.7
Energy and fatigue	65.7
Sleep and rest	50.0
Mobility	81.4
Daily activities	65.0
Medication dependence	47.9
Work capacity	60.0
Positive feelings	40.7
Psychological	61.1
Self esteem	69.3
Negative feelings	63.6
Spirituality/religion/beliefs	58.6
Social relationships	63.1
Personal relationships	62.9
Support and social support	68.6
Sexual activity	57.9

continua

Continuation of Table 3

Environment	51.8
Physical security and protection	52.9
Home environment	67.9
Financial resources	42.9
Health care	40.0
New information/skills	63.4
Recreation and leisure	32.1
Physical environment	65.7
Transport	46.4
Self-assessment of quality of life	61.8
General quality of life	58.8

From the results presented in Table 4, it can be seen that of the four domains, the two with the highest scores are *Social Relationships* (63.1%) and *Physical* (62.2%). *Psychological* (61.1%) and *Environment* (51.8%), meanwhile, had the lowest scores.

Regarding the self-assessment of quality of life, based on the questions *How would you evaluate your quality of life?* and *How satisfied are you with your health?*, an average of 61.8% was obtained. In the first question, the response *neither good nor bad* (48.6%) predominated, and in the second the *satisfied* response was the most frequent (42.9%). The majority of participants assessed their quality of life as fair, since there were few cases of complete dissatisfaction or complete satisfaction.

In the *Physical* domain, mobility was the highest rated facet, with 18 of the 35 participants (51.4%) reporting that their locomotion capacity was very good. The worst rated question related to physical pain, with 13 (37.1%) saying that pain prevented them from carrying out activities to some degree.

In the *Psychological* domain, the worst evaluated question was in relation to negative feelings, where 16 (45.7%) of the participants reported that they sometimes have feelings such as bad moods, despair, anxiety and depression, and seven (20.0%) saying that they often have negative feelings. The best evaluated question was physical appearance, with 15 (42.8%) stated that they completely accepted their physical appearance.

In the *Social Relationships* domain, the question on sex life had the lowest evaluation, with 11 (31.4%) saying that they were neither satisfied nor dissatisfied. The support received from friends received the highest evaluation, with 20 (57.1%) individuals answering they were satisfied.

In the *Environment* domain the lowest evaluation was related to recreation and leisure, with 13 (37.1%) of the participants reporting that they had very little opportunity for leisure. Residence was the best evaluated question, with 17 (48.5%) answering that they were satisfied with the conditions of the place where they lived.

Table 4 indicates the overall quality of life score among the evaluated categories.

The results show that female caregivers had better quality of life scores than men, as did older persons who had provided care for longer. There was no difference between the categories of caregivers, and a minimum difference between those who divided care and those who did not or did not cohabit with the elderly.

The Pearson's correlation test was used to verify the association between age and quality of life, while Spearman's correlation test was used to verify the association between total time of care and quality of life and family income and quality of life, as shown in Table 5.

Table 4. General quality of life score in categories. Niterói, Rio de Janeiro, 2017.

Variables	Overall quality of life score (%)
Gender	
Female	84.4
Male	80.0
Age	
<60	82.5
≥60	85.0
Category	
Informal/family	83.7
Formal	83.7
Time spent as caregiver (years)	
<5	80.6
≥5	89.3
Division of care	
Yes	85.0
No	81.8
Cohabits with elderly person	
Yes	84.4
No	85.2

Table 5. Correlation tests between quality of life, age, total time of care and family income. Niterói, Rio de Janeiro, 2017.

Variable	Quality of Life	
	r	*p*
Age of caregiver	0.399**	0.018*
Time providing care	0.395***	0.019*
Family income	-0.38***	0.828

*Correlation significant at level of 0.05 (bilateral); **Pearson's correlation test; ***Spearman's correlation test.

Through the analysis of the results it can be seen that there is a moderate and significant association between the age of the caregiver and the time spent providing care and quality of life, with older caregivers and those who had provided care for longer having a better quality of life score.

DISCUSSION

The profile of the elderly caregivers resembles the results of other surveys. In the present study, female caregivers with an average age of 57.51 (±11.96), who were daughters, married and had a high school education predominated. The fact that women are primarily responsible for care can be explained by the historical differences between the genders. Men are seen as the main provider of income and financial expenditure, while women are responsible for the care of the household and family members, despite current changes in the labor market[10,11].

Regarding the age of the participants, a profile of elderly persons caring for other elderly persons was found, corroborating findings in literature. This age group is seen as a transition phase with several changes due to aging, leading to a greater need for psychobiological attention, which is hampered by the task of caring, characterized by the performance of complex, delicate and burdensome activities[10].

In the present study, it was found that younger caregivers had lower quality of life scores than elderly caregivers. This fact can be explained by the impacts caused by care on the personal, social, professional and health life of the individual, with older caregivers having different professional and social needs than their younger counterparts, who require restructuring in all aspects of their lives when providing care, and as a result suffer a decline in quality of life.

In terms of the relationship between age and quality of life, health promotion actions involving both elderly and non-elderly groups should be considered. Despite their different characteristics and needs, both demonstrate frailty in physical and emotional health, which are involved in the task of providing care.

The choice of a family member as a caregiver usually arises from an obligation on the part of the children/spouses or financial necessity. In an integrative review carried out in 2015, the articles analyzed identified the prevalence of a family bond between the elderly person and the caregiver, and listed factors that influenced the choice of the main caregiver, such as: affective proximity, physical coexistence, cohabitation, free time and financial conditions[12].

In relation to the activity of caregiver, cohabitation with the elderly person (62.8%) should be highlighted. Living in the same household as the elderly person generates greater daily workload when providing care, and consequently the performance of, assistance with and supervision of more tasks.

In a survey carried out at a Health School unit in São Paulo, all the family caregivers cohabited with the elderly persons with dementia. The researchers affirmed that when dividing the same residence there is a necessity to alter daily routines, based on the context of life of both the caregivers and the elderly persons. This change requires that caregivers are available to perform their role on a full-time basis and are forced to redefine their personal projects and social relationships[6].

In the present study, the division of care with another person was present in 54.29% of the participants, which was similar to another study[13]. The division of care offers a better quality of support for the elderly through a collaboration between people arising from love, affection and concern which consecutively reduces the negative effects of stress[14].

In terms of the facets of the WHOQOL-bref scale, the question referring to recreation and leisure had an average score of 32.14%, which was well below half. This is related to the type of care provided, such as the hours of care, cohabitation and the division of care. Caregivers who have such characteristics tend to spend more time performing tasks of caring for the elderly, resulting in a lack of time for themselves due to the demands of care.

Although the participants had some form of disease and made continuous use of some medication, satisfaction in relation to their own health predominated (42.86%), data which was similar to a previous study[15]. Studies have indicated that caregivers tend to present psychic manifestations and deterioration in physical health and the immune system, respiratory problems, heart diseases and osteoporosis[12,15]. There is still no consensus on the relationship between health problems and quality of life, however, as it is considered subjective.

The *Social Relation*ships domain, which was the best evaluated of the domains, involves issues related to sex life, personal relationships, and social support. Of these, the greatest dissatisfaction was in sex life and the greatest satisfaction was with social support.

The support provided by third parties to caregivers corroborates the fact that the division of care predominates and has a positive effect in comparison with those who do not divide care. The articulation between caregivers, family and the community is fundamental, allowing the integration of material and emotional needs, which contributes to quality of life[16].

In cases where there is no support from others, the physical, mental and social health of caregivers is impaired, which can affect the quality of care provided. In order to provide a support network the issues relating to caregivers must be identified and evaluated, including their physical, emotional and financial conditions[17].

The domain with the worst evaluation was *Environment*, which was also the case in a survey carried out with 66 caregivers of dependent elderly

people in the state of São Paulo[18]. The facets with the lowest scores were recreation and leisure, health care, financial resources and means of transportation. These four issues are linked to each other, where care, often uninterrupted, and financial difficulties, impede or hinder the performance of leisure activities and satisfaction with the health service and means of transportation. Leisure, when absent or infrequent, results from the restriction of the elderly persons to their homes, requiring the constant presence of someone, usually the caregiver, to accompany them.

At the beginning of an illness there is greater integration among the family and friends of the elderly, but this characteristic tends to change as the disease progresses, so that the caregiver ends up alone in the domestic sphere of care. Lack of leisure along with home confinement leads to caregiver burden, affecting their capacities and leading to isolation, lifestyle changes, and personal dissatisfaction[19].

A negative financial situation can also generate caregiver burden, resulting in difficulty with or the impossibility of (re)insertion in the labor market[19]. Financial difficulties are considered a strong predictor of tension for caregivers, as poor social conditions hamper the implementation of solutions to protect and elevate the health levels of the elderly[20].

The care provided by caregivers can change the paradigm from one of pleasure to obligation, meaning that one's personal occupation is no longer for oneself but for another, generating daily disruption and burden[20].

One limitation of the present study is the size of the sample, due to the difficulty of contacting the elderly and their caregivers, as most of the medical records were out of date, which made it difficult to select the possible participants of the research.

CONCLUSION

The present study analyzed the profile of caregivers of elderly persons with dementia and its association with quality of life, with a significant relationship found between age and total time spent providing care and quality of life. The other associations and comparisons did not exhibit significant statistical values but were sufficient to suggest the need for discussions about the variables and quality of life issues.

It is important to emphasize that nurses, in providing care for all cycles of life, are responsible for dealing with the needs of both elderly persons with dementia and their caregivers. Seeing caregivers as links of care and identifying their characteristics and care conditions as possible conditioning factors that can alter the entire structure of their lives, and consequently defining the areas that require greater care and intervention, in order to provide better quality of life for caregivers, will result in such attention being transferred to the care to be provided to the elderly, constituting an integration between elderly person-caregiver-health professional.

With regard to the other health professionals who deal with patients with dementia, it is essential to understand the reality of the care provided, so that the elderly person-caregiver binomial can be fully addressed, through the elaboration of specific strategies for the promotion, prevention and recovery of health, as both such individuals undergo restructuring in all aspects of their life.

Finally, longitudinal studies are recommended so that caregivers can be accompanied for a longer period of time and allow the thorough evaluation of the independent variables.

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Recebido: October 31, 2017
Revisado: February 18, 2018
Aprovado: March 21, 2018

http://dx.doi.org/10.1590/1981-22562018021.170126

The perception of the elderly about suffering related to frailty

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Abstract

Objective: To understand how elderly persons perceive subjective aspects linked to current and other life experiences related to the process of becoming frail. *Method:* A qualitative study, anchored in interpretative anthropology, was performed. The elderly were selected from the FIBRA Network database from those classified as robust or pre-frail, according to the frailty phenotype of Fried et al., in Belo Horizonte, Minas Gerais, Brazil in 2009. We interviewed 15 elderly people of different genders, ages, income, religion and functional status, in 2016. In data collection and analysis, the "signs, meanings and actions" analysis model was used, which allows the understanding of the elements that are significant for a population to read a given situation and to position themselves in relation to it. *Results:* From the analysis the following categories emerged: a) suffering throughout life and b) suffering and the resources to deal with them. *Conclusion:* The interviewees described sufferings of different aspects that constitute their life, from birth to aging, according to experiences related to pain, loss and learning. The perception of current frailty refers to their life history, marked by physical or mental suffering, whether insidious or temporary - as well as illnesses, how they manifest themselves today, and a lack of financial resources and urban security. The narratives bring us closer to the perception of frailty as being constitutive of human beings, who can easily break.

Keywords: Frail Elderly. Perception. Fragility. Medical Anthropology.

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Research funding: Fundação de Amparo à Pesquisa de Minas Gerais (Minas Gerais Research Support Foundation) (FAPEMIG) (APQ-00703-17), Conselho Nacional de Desenvolvimento Científico e Tecnológico (National Council of Scientific and Technological Development) (CNPq). Research grant - 303372/2014-1.

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INTRODUCTION

Frailty is a clinical condition in which the individual's vulnerability to dependence or mortality increases in the face of a stressor event[1]. Several groups of researchers have reached the consensus that this multifactorial medical syndrome can be potentially tracked, prevented or treated with specific actions; and that all individuals over 70 years of age or with unintentional weight loss should be assessed.

A major conceptual framework is the frailty phenotype proposed by Fried et al.[2], which is based on five criteria: unintentional weight loss, self-reported exhaustion, physical weakness, reduced gait speed, and poor levels of physical activity. The presence of three or more criteria configures frailty; one or two, pre-frailty and the absence of all three defines a robust person. According to the literature, the prevalence of the syndrome is higher among women and increases with age - ranging from 2.5% among the elderly aged between 60 and 70 years, to more than 30% among octogenarians[1]. In Brazil, based on the same criteria, a cross-sectional, multidisciplinary and multicenter epidemiological study was carried out to investigate the profile and prevalence of this syndrome in the elderly and its associated factors - the Rede de Estudo sobre Fragilidade em Idosos Brasileiros (the Study Network on Frailty Among the Brazilian Elderly) (FIBRA network). The study comprised four centers: the Universidade Federal de Minas Gerais, the Universidade de Campinas, Universidade de São Paulo-Ribeirão Preto and the Universidade do Estado do Rio de Janeiro. Among elderly persons in Belo Horizonte, the prevalence of frailty was 8.7%[3].

When investigated in its physical sphere, studies with a notably biomedical and positivist approach describe how the process of becoming frail, although dynamic, usually follows a unidirectional logic: from the robust stage, through pre-frail, culminating in frail. A better understanding of how these transitions occur could support care, prevention and intervention[4].

In the search for a broader understanding of what constitutes the frailty of an elderly person, other issues should be considered, namely the cultural, psychic and social, which are interrelated and variable from individual to individual[5]. They also include subjective issues about health, disease and the discomforts that people experience throughout life.

The experience of frailty also includes an existential perspective, in which the individual suffers when faced with their own finitude[6] in the face of the contingencies of life. This highlights the importance of social determinants in the way people age[7], considering that disorders, whether physical or psychological, are only accessible through cultural mediation[8].

The present work aims to understand how elderly persons perceive subjective aspects related to current and other suffering experienced during life that relate to the process of becoming frail.

METHOD

This qualitative approach, anchored in Interpretive Anthropology, assumes culture as a constellation of meanings that becomes the map from which people in a group read each life situation. This understanding made it possible to distinguish between "disease", or the biological process of becoming sick, and "illness", which corresponds to a local cultural construction and to which each person assigns their own meaning[10]. In addition, it is important to consider that the set of values and practices that configure biomedical knowledge can diverge from the set of values and practices that constitutes local popular culture, including the experience of life in the world of the users of the services[11].

In 2009, the 601 elderly participants of the Belo Horizonte Center of the FIBRA Network were evaluated and classified as robust, pre-frail or frail, according to the frailty phenotype of Fried et al.[2]. After 24 months of follow-up all 40 elderly individuals considered frail at baseline were then reassessed[4]. Eighteen (45%) had died or exhibited processes of dementia and reduced physical frailty that made it impossible to conduct interviews. Therefore only those classified as *robust* or *pre-frail* were invited to participate in the present study, carried out six years after initial data collection, as the group of elderly considered frail would probably no longer be eligible for interviews.

The choice of the FIBRA Network was due to the possibility of access to a group of elderly people who had already been investigated on the subject. However, since the scope of the research penetrated the subjective sphere of this process of becoming frail, the methodology used was different from that of FIBRA, which was based on objective physical measurements. The elderly identified as *pre-frail* and *robust* were randomly selected from the list of participants in the FIBRA network. To guarantee the heterogeneity of the participants, people of different genders, ages, incomes, religions, functional conditions and places of residence in regions of the city with disparate Human Development Index (HDI) levels were included[12]. Those who presented severe sequelae or some other reason that would not enable them to respond and participate in an interview were not eligible for the study.

All were contacted by telephone and a home interview was scheduled. They were Informed about the study and, after signing the Term of Free and Informed Consent, were interviewed in person. The saturation criterion regulated the sample size[13].

In the interviews, no concepts of frailty were presented and/or explained to the elderly, since the aim was to understand the participants' perceptions about this phenomenon and to identify in the reports of their experiences if they somehow coincided with the proposed criteria in the frailty phenotype of Fried et al.[2]. All the elderly were encouraged to talk about life and about themselves, more specifically about their health conditions, what their discomforts are, and how they deal with them.

Data collection and analysis were based on the "Signs, meanings and actions" model[9] that allows the understanding of the significant elements that a population employs to read a given situation and to position itself in relation to it. This methodology starts from the pragmatics, observing the behaviors of the social actors, which allows the forms of interpretation of a concrete situation to be understood. The reports allow the reconstruction of the behaviors, the meanings given to them and the practices assumed from this[9]. The interpretation seeks to identify the central semiological configurations, in an intertextual context, from the reading of personal narratives in the context of the great cultural narratives[9]. This model allows a greater systematization of the different elements of the context (such as social dynamics, central cultural codes and the concept of the person) that effectively intervene in the identification of what is problematic, in the decision to treat a problem or not and in the choice of the appropriate therapist[9]. In this perspective, one leaves the reified object of medicine - the disease - and enters in its place, the subject, considered as a citizen of law who is capable of reflexivity and choosing how to live his or her life[10].

All the interviews were recorded, transcribed, carefully read and reread and a categorization of the narratives was performed.

This study is part of the "Frailty in the elderly: perceptions, cultural mediation, coping and care", approved by the Ethics Committee of the Instituto René Rachou/Fiocruz (CAE: 49173415.8.0000.5091).

RESULTS AND DISCUSSION

Fifteen elderly persons (69-86 years) were interviewed, two of whom were also caregivers of their disabled husbands.

Two categories emerged from the analysis: *Suffering during the course of life*; *Illness and lack of resources.*

Suffering during the course of life

In this category, respondents reported suffering from personal and family events that occurred abruptly or insidiously throughout their lives. One interviewee described her experience of the break from reality that resulted in her early retirement and the stigma she carries to this day:

> "When I was 30 and I had my third daughter, (...) I took a break, (...) and I suffered so much, and at the time I was doing a master's degree away from work, (...) when I came back, I was forced to retire." (...) "I suffered so much bulling because of my life away from work, in the academic life, you can't imagine what it was like."; "there's a lot of prejudice, a real stigma, everyone calls you crazy. I really suffered from this " (E8, F, 72).

For Graham et al.[14], the stigma comes from a process whereby certain individuals and groups of people are made to feel ashamed, excluded and discriminated against. The way a person who has been through a crisis, a psychiatric disorder, is labeled brings a series of sufferings that take various forms, limiting the possibilities of living comfortably with themselves and others[15]. If the crisis and outbreak are the result of a process of social pressures, in a specific individual context, medical and psychotherapeutic treatment can produce effective results. However, they should in no way add to other sufferings arising from the reinforcement of stigmatization and/or iatrogenesis originating from normatizing perspectives - suffering which can be as or more painful than the psychiatric condition itself (disease process).

According to Cabral[16], there are contexts in which different types of suffering are repeated and continue, becoming part of day to day life, so that they are very difficult to digest. An excess of information that affect the entire person and cannot be removed or explained, and which immobilize the creative possibilities. This generates states that imply feelings of powerlessness to deal with a suffocating daily life. In turn, relatives of those who suffer from a "mental illness" demonstrate feelings such as shame and embarrassment, sadness and pity when dealing with the person; and fear that the person will exhibit aggressive behavior[17]. The stigma is present in society, in the family itself, and the person can introject it. A person considered to be "sick" may be frowned upon or pointed out as being in crisis due to behavior that, if it were present – in exactly the same way - in another person who is considered "normal", would not be seen as problematic. Ferreira et al.[18] emphasize that internalized stigma have negative repercussions on health – the individual self-discriminates, self-recriminates, feels guilty for having had the crisis, or for "being this way".

Losses of family members and other events - identified by respondents as acute suffering that persists to the present - included separation from parents in childhood, the death of a child and widowhood. This man recounts childhood loss arising from his mother's illness - at a time when there were no resources to treat tuberculosis:

> "(...) I suffered because my mother and father, who in 1947, when they had seven children... had to give their children away because my mother became tubercular. (...) So I left home, at age five, and did not come back (...) I was becoming a very dependent person." (E12, M, 74).

Many difficulties were described: the move from rural areas to Belo Horizonte, a lack of housing, food restrictions due to a lack of money, disease - "spots on the lung" (the speaker had never smoked); toxoplasmosis, having lost 50% of sight in one eye and 90% in another, which led to early retirement at age 40 on medical advice. The existential process of this man can be understood as a succession of sufferings, in accordance with what Kleinman describes as "the pain of living" – a life where pain is a constant background and/or foreground, and which occurs in chronic patients.

Among the sufferings that result from the loss of very significant persons, two women emphasized the death of a child and widowhood:

> "As soon as he left the church, (...) he said: um, my arm hurts. Then he said, let me sit here, (...) when he did so, he fell back, he died. Ah, my boy ... ah, this little piece of me, I won't tell you anymore." (E1, F, 83 years).

> "Because I lost my husband ... I lived in the country, so I was very worried because I was going to be without my husband and my children, because the three of them lived here. Then my son said; 'No mom, you're not going to be alone, you're going to live with one of us in Belo Horizonte', so I came, I lived here ... four years with my other son ... and I've been with her longer". (E2, F, 83 years).

Changes in roles and family arrangements are related to the process of becoming frail. Widowhood can contribute to the onset of frailty, especially for men, as well as creating new family arrangements[20]. In Brazil, there is an increase in the number of multigenerational households: most often due to the needs of the younger members, who still depend financially on the elderly. However, the notion of reciprocity of care between parents and children, or grandparents and grandchildren, and the expectation that the elderly will be cared for by these family members may not transpire in old age[21].

Thus, another condition related to the process of fragilization was the act of caring for dependent elderly people. Because of the need for care, an elderly person may be taken to live with one of their children, usually a daughter. A woman who cares fondly for her mother explains:

> "Family is not what we want, it's what we have. (...) you have to live together, but you don't talk about it, you don't try to fix it, because you can't, that's the way it is. "(...) But my mother suffers from it (...)." (E5, F caregiver E2,83).

While this woman expresses her suffering as translated into feelings of resentment and anger about the husband she cares for:

> "I neglected myself to look after my husband. (...) I stopped doing my physical activities, going out, dancing, I gave up everything - because of my husband. (...) My marvelous husband, because he had a heart attack, is diabetic, ... aren't you, sir? (...) I take good care of you, right?? (E10, F, 72).

Throughout the interview, she makes it clear that she needs to "care" for someone she does not love and blames the husband for the unhappiness - her and hers - in a repetitive and torturous way. The husband can do nothing except listen to her angry discourse: he is so frail that in a sense he is helpless even in relation to his wife. The relational climate is distressing, the lack of love fills the verbal and nonverbal expressions of the couple. The physical environment, a small apartment, is full, with two children, a daughter-in-law, and several teen grandchildren. The marital conflict is overflowing.

In the specific case of elderly caregivers, inserted in contexts of high vulnerability, conditions for care are even more critical, since the lack of social support and institutional care policies affect social cohesion and the ability of families to respond to adverse situations. These contexts can further weaken the health of caregivers, as well as compromising the quality of life of all involved[1].

In old age, family conflicts gain visibility and are exposed and revealed. The family, as a complex interactive system, demands constant accommodations, depending on external stressors and changes in internal relationship patterns[22]. In the family, reality is defined by a story that has been told from generation to generation - constituted by language, socially modified, and passed on member-to-member, as verbal and gestural, verbal and non-verbal. Each family group creates its mythology, which is constituted as rules for life, existential guidelines followed by each member without being clearly aware that they are doing so. A person, in this context, can – from their reflections – follow the guidelines and/or build their own paths, with greater or lesser degrees of freedom[22]. In each family, frailty in old age overflows as an outcome of the entire personal construction, embedded in the particular family narrative that is based on a common cultural context.

Illnesses and a lack of resources

In this category, the interviewees identified several types of diseases that appear in the narratives (arthrosis, cancer, heart disease, hypertension, Alzheimer's, poor vision and hearing, falls, pain, among others) and the presence or lack of resources influences this process.

This man says that his physical health is good, but he has a psychological illness:

> "Now there are diseases that are psychological, as I have for example, I am a victim, for example, from time to time I have a deep sadness, something is missing." (E12, M, 74).

Other chronic diseases were reported by a man and a woman:

> "My health is ... so-so ... I have chronic myeloid leukemia, it's under control, do you know what it is? I've already had prostate surgery ... it's ... within the limits ... I'm having treatment ... but it's under control ... all of them ... that's the way it is..." (E4, M, 69).

> "I'm 74 years old, and I've been hospitalized three times for heart problems. (...) (...) I was shocked, and so on, but ... we don't check out early." (E11, F, 74).

It is known that the presence of comorbidities and frailty are is interrelated[4] and should be highlighted in the health care of the elderly. However, in these extracts, the interviewees discuss how a lack of resources compromises this care:

> "... everything is very expensive, with just one salary. (...) I have grandchildren, children, I have a daughter who has been unemployed for eight months, my brother [who lives with her and suffers from mental illness] doesn't work. It's just my salary. And I help my granddaughter, who lives in São Paulo, to pay the rent (...). And I help another one who lives nearby (...) the electricity bill and the water bill are late. " (E11, F, 74).

> "It's difficult. I can't pay anyone to help me (take care of my husband with Alzheimer's). I earn the minimum wage. I do odd jobs to help out. But my salary is our only fixed income. "(E1, F, 83).

In all interviews it was found that in order to deal with the sufferings and limitations that relate to frailty, the category of material resources is fundamental as a basis of support to guarantee care. A woman explains the suffering that occurs because she cannot afford to comfort her husband or herself:

> "He's off work, he's sick. (...) I take care of him too ... The boys help me take care of him ... I couldn't bear to buy diapers for him, and I went to the Social Services and I managed to get food – no, not food, supplements, gloves and wet wipes. (...) I want to get what I can, because I can't stand washing the bed linen anymore ... one day he's fine, another he's not, that's the way it is." (E1, F, 83).

In the sample population there is a lack of material, emotional and social resources to cope with chronic care. It is a topic that deserves further study and demands solutions, agreeing with the conclusions of Giacomin and Firmo[23]: The creation and implementation of a long-term care policy for the elderly in Brazil is essential.

In addition, the idealized conception that the elderly should be able to preserve their health, branding themselves as a "failure" due to their own frailty, becomes a cruel corollary of the view that aging equals illness. At the same time the ideology of "do it yourself" relieves the family, the state and society from the responsibility of providing favorable conditions for care and protection in old age[23]. The blame for the disease, from a normative perspective, characterizes in part the biomedical approach – which seeks to provide a form of care and treatment, but can become a type of violence and coercion, which is also evident from the research of Moraes et al.[24].

Two elderly persons emphasized the fact that they modified their daily activities due to the lack of safety in the city:

> "Moving around the city without a car, having to take the bus, rude people in the street, is a health risk, to my own health, so I decided to stop. (...) You can't go out in the street (...) So, I try to lead a quieter life (...) (E12, M, 74).

> " Life outside the home is different from life at home – so we end up spending more time at home than going out, which is no good" (E10, F, 72).

The interviewees perceived the city as a source of risk. The lack of financial resources and urban safety were pointed out as a source of discomfort that hinders a good quality of life and compromises the health of individuals, which corroborates the study of Danielewicz et al.[25].

Respondents did not at any time use the terms "frailty", "frail" or "becoming frail". They speak of a world of their own, the experiential world, which constitutes an anthropological reality - historical, social, psychic, of the elderly human being. If the frailty phenotype proposed by Fried et al.[2] was used as a reference, the elderly emphasized only two of the five proposed criteria: the aspects of mobility and loss of energy - which is translated as "lack of enthusiasm", as in these excerpts:

> "I have noticed, a decline, a ... over the years, that I'm lose my ability to do things every day. And with every year that passes my physical activities are more limited (...) It was easier to move. Because, when you get to my age, I think my balance is not what it was. I do not know if it's because of wear and tear." (E10, F, 72).

> "I was really down in the dumps. But now I'm feeling better (...). I was feeling very low". (E2, F, 83)

The marking of the passage of time corresponds to a "natural" process of becoming frail that is confused with old age, which is almost always associated with illness and debilitation, ideas that are part of the Western historical imaginary[23,24]. Although it is accepted that there are "elderly diseases ", when they describe their difficulty in understanding why certain diseases do not have medical treatment, a lack of pharmacological and biomedical resources is used to as an explanation to solve the experience of sickness and sadness of old people. The pain that medicine does not heal can also be understood as the "pain of living"[19] and the characteristic of frailty of human beings and our "essence of glass""[6].

Moraes et al.[24] confirm that the elderly perceive biomedical knowledge to be lacking, seeing it as a knowledge that doctors prescribe but which does not value the experience of the person. It does not provide true care, therefore, because it does not account for the suffering that goes beyond the diagnoses and treatment protocols, as well as naturalizing illness as being synonymous with old age. Kleinman[19] explains this distance between biomedicine and the daily life of the "patient". The medical academy and the local life of the elderly are distinct worlds, just as the perception about health and disease differs in different cultures.

Suffering is part of living, in the history of every person, in every stage of life. However, it is only when one listens and understands, from the approach of standing alongside the individual[19], that strategies can be sought to deal with such discomforts and try, if possible, to overcome them.

CONCLUSION

Although it is not possible to achieve a univocal concept of frailty, the interviewees narrate the sufferings undergone in different aspects that constitute their life, from birth to aging, according to experiences that represent pain, loss, learning. The perception of current frailty refers to one's life history, marked by physical or mental suffering, insidious or temporary - as well as the illnesses, the way they are today, and the lack of financial resources and urban security.

The narratives bring us closer to the perception of frailty as being constitutive of human beings – which can easily break. In aging, the perception of oneself as frail increases - although frailty is always present from birth. By feeling that one is the bearer of a "nature" that can shatter, the awareness of the importance of caring grows, and the possibility of realizing more comprehensive syntheses of life itself.

Careful listening to the experiences of the elderly enables health care and health promotion strategies to become more respectful and effective, ensuring greater adherence to proposals that promote good quality of life. In this sense, the importance of constructing educational resources, training health professionals, supporting families, and of insertion into cultural manifestations - at a broad social level – is evident, with the optimization of resources that contribute to a more real, humanized and broader development of the elderly and their richness and creative potential - so that the quality of life of older persons improves.

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Received: August 08, 2017
Reviewed: November 18, 2017
Accepted: February 08, 2018

http://dx.doi.org/10.1590/1981-22562018021.170100

Anemia and the frailty syndrome amongst the elderly living in the community: a systematic review

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Abstract

Objective: To evaluate the association between anemia and the onset of the frailty syndrome amongst the elderly living in the community. *Method:* A systematic literature review of articles from the MEDLINE and LILACS databases published in English, Spanish and Portuguese over the last ten years was carried out. Articles were included in accordance with the *Preferred Reporting Items for Systematic Reviews and Meta-Analyses* (PRISMA) guidelines. *Results:* The search identified 193 studies. After deleting duplicated articles and applying the exclusion criteria only seven articles remained. Three articles used standardized criteria to define frailty, whereas four evaluated functional capacity as a synonym for the frailty syndrome. *Conclusion:* Anemia was related to a worsening of functional capacity and to the presence of the frailty syndrome in elderly persons living in the community. However, the risk of bias in the studies was high in relation to the selection of the criteria and instruments used to assess and define frailty.

Keywords: Anemia. Frayl Elderly. Sarcopenia. Muscle Strength. Wallking Speed.

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Research funding: National Council for Scientific and Technological Development (CNPq) (CMFA - 1A Research Grant) and Research Support Foundation of the State of Minas Gerais (FAPEMIG) (Projeto CDSAPQ-0078415).

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INTRODUCTION

Aging is accompanied by physiological factors that can cause reduced functional capacity. When combined with chronic degenerative diseases, functional dependence can be a determinant for the deterioration of quality of life[1,2]. The gastrointestinal system and bone marrow also suffer during aging, leading to a greater frequency of anemia in this population[1].

According to the World Health Organization, anemia is defined as a concentration of hemoglobin of <120g/l for women and <130g/l for men[3]. The prevalence of anemia increases with age and has been reported in more than 20% of elderly persons aged 85 years or more, over 10% of elderly persons living in the community and in around 50% of institutionalized elderly persons[4]. The reduction of hemoglobin may be due to nutritional deficiency, chronic inflammation or unexplained factors[5]. Anemia is associated with reduced mobility, cognitive ability and quality of life and increased mortality. Some studies have associated the reduction of hemoglobin levels with the development of the frailty syndrome[6,7].

Frailty is a clinical syndrome that leads to multisystem decline and reduced energy reserves and homeostatic balancing ability following a destabilizing event. It is multifactorial and associated with immunosenescence and inflammatory processes[3,8]. Immunosenescence is accompanied by dysregulation of the immune system and an increase in the production of inflammatory cytokines (IL-6, TNF-alpha, IL-1), producing a chronic low-grade inflammatory state. The mechanism by which the increase of inflammatory cytokines leads to the development of the frailty syndrome is still uncertain, but evidence indicates the catabolic action of this mediator[9]. The criteria that define frailty are controversial; the most used are decreased muscle strength, exhaustion, reduced gait speed, reduced physical activity and unintentional weight loss[9]. However, some authors suggest the inclusion of other criteria such as nutrition, comorbidities and socioeconomic aspects[3,8]. The establishment of precise criteria and the standardization of instruments that evaluate frailty are important for the diagnosis of the condition and for preventive interventions that can delay or prevent the progression of the syndrome, preserving functional independence for longer[10,11].

The probable association between the frailty syndrome and anemia is of great importance to the area of geriatrics, as these are common phenomena in this population and when combined may present a more serious clinical outcome[3].

The aim of this study was to evaluate, through a systematic literature review, the association between anemia and the frailty syndrome in elderly persons living in the community.

METHOD

The literature review used the MEDLINE and LILACS databases to search for articles in English, Spanish and Portuguese. As the concept of frailty has been established in literature in the last decade, the review was limited to publications from the last 10 years . The selected descriptors were: frail, elderly, anemia, sarcopenia, motor activity, muscle strength, mobility limitation, walking. Articles with the key words in the titles or abstracts and published by September 2016 were sought. The search strategy and the Boolean descriptors and operators was as follows:

tw: [anemia AND ("Capacidade funcional" OR funcionalidade OR "Independencia funcional" OR "Atividade funcional" OR "capacidad funcional" OR funcionalidad OR "independencia funcional" OR "actividad funcional" OR "Functional capacity" OR functionality OR "functional independence" OR "functional activity" OR sarcopenia OR "Motor Activity" OR "Actividad Motora" OR "Atividade Motora" OR "Muscle Strength" OR "Fuerza Muscular" OR "Força Muscular" OR "Mobility Limitation" OR "Limitación de la Movilidad" OR "Limitação da Mobilidade" OR “walking” OR “caminata” OR “caminhada” OR “frail elderly”)] AND (instance:"regional") AND [limit:("aged") AND la: ("en" OR "es" OR "pt") AND year_cluster:("2013" OR "2014" OR "2009" OR "2008" OR "2012" OR "2015" OR "2007" OR "2010" OR "2006" OR "2011" OR "2016")].

Observational-type studies addressing anemia, frailty and/or functional capacity in the elderly living in the community were adopted as inclusion criteria. Articles that approached hospitalized or institutionalized elderly people undergoing cancer treatment in the postoperative period and with serious diseases such as rheumatologic, renal, cardiac and pulmonary insufficiency, were excluded. The selection and qualification of articles were carried out by two independent reviewers following the inclusion criteria. In the case of disagreement, the articles were read and discussed together. The review followed the specific methodological guidelines for observational studies[12]. To select the data of the articles, the Preferred Reporting Items for Systematic Reviews and Meta-Analyzes (PRISMA) criteria were applied, and for the analysis of the selected articles an instrument was elaborated based on the population, exposure/intervention, control and outcome (PECO) domains[13].

The assessment of the risk of bias in the articles included in the analysis was performed using an adapted version of the Newcastle-Ottawa Scale (Chart 1). The original scale evaluates the quality of observational studies and contains eight items that analyze three dimensions, with several options for each item. In this review, the questions were adjusted to investigate exposure and outcome (frailty syndrome), and the risk of bias was divided as follows: low, uncertain, and high risk[14].

This review was registered with the International Prospective Register of Systematic Review (PROSPERO) under number CRD42017057567.

Chart 1. Adaptation of Newcastle-Ottawa Scale for evaluation of quality of studies. Belo Horizonte, Minas Gerais, 2017.

Exposure	a) Secure record + primary measures * (low risk of bias)
Obtaining the independent variables	b) Structured interview + primary measures, without knowledge of the outcome * (low risk of bias)
	c) Interview with knowledge of the outcome (high risk of bias)
	d) Non-secure sources and self-assessment (high risk of bias)
	e) Does not describe clearly (uncertain risk of bias)
Outcome	
Is the assessment of frailty adequate?	a) Yes, (low risk of bias)
	b) Yes, according to Fried et al. with some modifications (2 or 1 components) (uncertain risk of bias)
	c) Yes, according to Fried et al., with many modifications (3 or more components) (high risk of bias)
	d) No, describes as functional capacity (high risk of bias)
Sample representativeness	a) Representative of the local population * (low risk of bias)
	b) Possibility of selection bias (high risk of bias)
	c) Does not clearly describe (uncertain risk of bias)
Selection of participants	a) Community * (low risk of bias)
	b) Does not clearly describe (uncertain risk of bias)
Definition of the control group	a) No previous history of the syndrome * (low risk of bias)
	b) Does not clearly describe (uncertain risk of bias)

* Represents an item with the classification of low risk of bias.

RESULTS

This review identified 193 articles in the Medline (96) and Lilacs (97) databases. After the elimination of eight duplicate articles, 32 articles were selected according to the inclusion criteria. Of the 32 eligible articles, 25 were excluded for being review articles, clinical trials, or treatment and other studies where frailty was not the primary outcome. In the end, only seven studies met all the inclusion criteria.

Figure 1 shows the flow chart of the identification and selection of articles for the systematic review.

The descriptions and evaluations of the selected studies are presented in Charts 2 and 3. The articles were separated according to the definitions of the frailty syndrome employed.

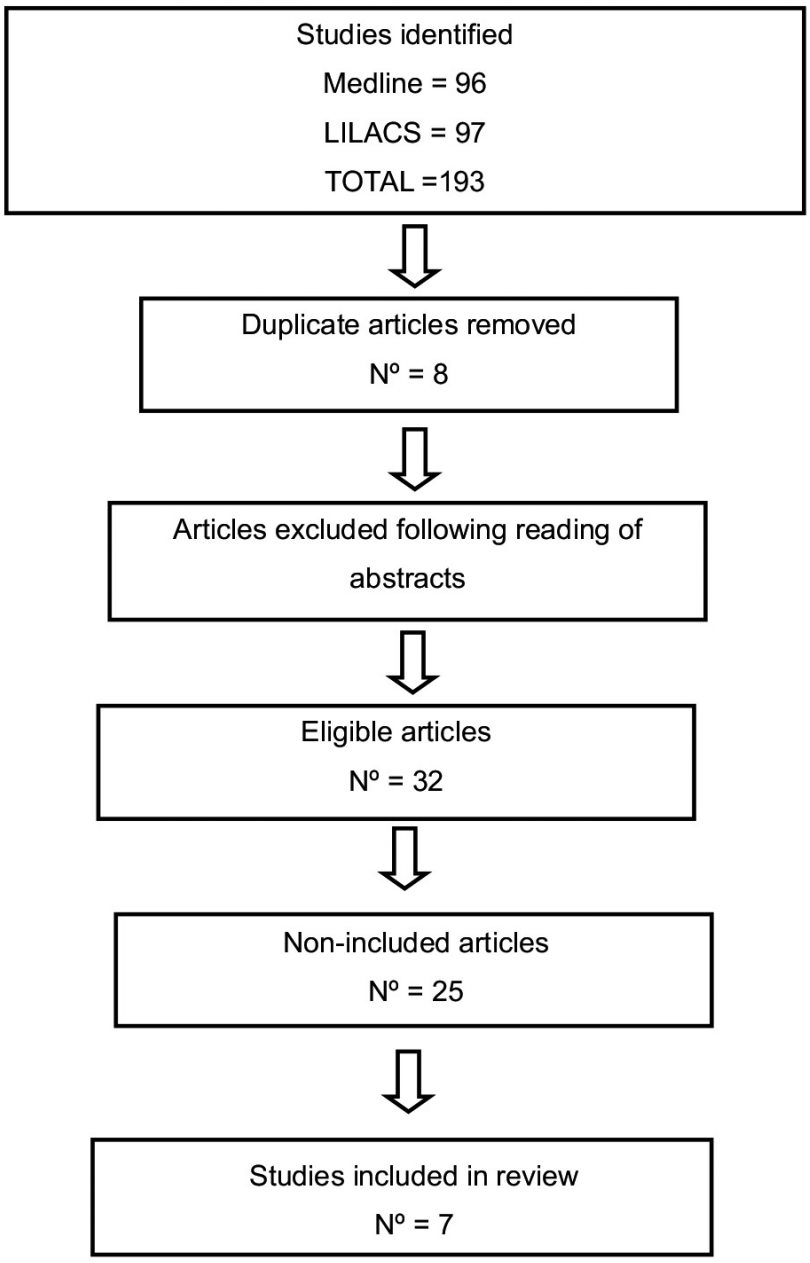

Figure 1. Flowchart of phases of review in accordance with PRISMA criteria. Belo Horizonte, Minas Gerais, 2017.

Chart 2. Anemia and Frailty Syndrome (defined criteria). Belo Horizonte, Minas Gerais, 2017.

Author(s)	Type and objective of study	Participants and measure of frailty	Result	Outcome
Corona et al. (2014)	Cross-sectional study based on SABE. The objective was to evaluate the association between anemia, hemoglobin and frailty.	1345 participants. Complete frailty criteria (Fried) not used.	2.5-fold increase in probability of frailty. 12mg /dlHb = 30%. Women = 25%. 14mg/dlHb. Frailty: men = 10% and women <10%.	Positive association between anemia and frailty.
Silva et al. (2014)	Cross-sectional study based on FIBER. The objective was to evaluate the association between frailty, inflammatory markers and hemoglobin.	255 participants. Frailty assessed with WHAS criteria.	Reduction of hemoglobin associated with frailty, sarcopenia, and weight loss.	Positive for the association between anemia and frailty in women.
Llibre et al. (2014)	Longitudinal study based on the Cuban cohort. The objective was to identify the prevalence and incidence of frailty, risk factors (anemia) and incidence of functional dependence.	2813 participants. Frailty criteria (Fried) were modified.	Greater frailty in women (educational level and marital status as protective factor for frailty).	Anemia as a risk factor for the prevalence of frailty (prevalence rate of 1.64% – CI (1.23 – 2.20).

Chart 3. Anemia and functional capacity. Belo Horizonte, Minas Gerais, 2017.

Author(s)	Type of study and objective	Participants and measure of functional capacity	Results	Outcome
Patel et al. (2007)	Longitudinal study based on 15% of the cohort Health Aging and Body compositional study (ABC). The objective was to check whether functional changes varied in the presence of anemia among black and white skinned persons, and to observe differences between cut-off points for anemia.	2,601 participants. Evaluation of mobility through self-reporting. Functional changes: walking, climbing stairs and activities of daily living.	Hemoglobin levels vary according to skin color/ ethnicity.	The presence of anemia is associated with a higher risk (2 to 3 times) of mortality and functional disability in white elderly persons. In black elderly persons functional capacity is greater, suggesting that the cut-off point for this group should be lower.

to be continued

Continuation of Chart 3

Author(s)	Type of study and objective	Participants and measure of functional capacity	Results	Outcome
Haslamet et al. (2012)	Cross-sectional study based on the Georgia Centenarian Study (GCS). The objective was to evaluate the association between anemia and functional capacity in elderly people.	244 participants. Physical function measured through handgrip strength and knee extension, instrumental activities of daily living (SPPB).	Centenarian elderly persons with anemia exhibited greater loss of muscle strength, but there was no difference in activities of daily living. The sample was not described. High mortality rate among elderly people.	Anemic centenarian elderly persons exhibited a reduction in grip and lower limb strength with no impact on activities of daily living.
Contreras et al. (2015)	Longitudinal study based on Octabaix cohort. The objective was to analyze the prevalence of anemia in the elderly and the association with mortality after 3 years of follow-up.	328 participants. Tests used: Barthel, Lawton, Tinetti scale - POMA.	Higher mortality in anemic elderly persons, who had a worse perception of quality of life.	Higher mortality in anemic elderly, who had a worse perception of quality of life. Presence of an association between anemia and physical function.
Liu et al. (2015)	Cross-sectional study based on Rugão cohort. The objective was to evaluate the association between anemia and mortality in elderly individuals aged 95 years or older.	435 participants. Tests: basic and instrumental activities of daily living, squatting, ability to raise hands above head level. Non-detailed evaluation tools.	Anemia associated with all causes of mortality. Women with anemia were more physically dependent than men.	Presence of association between anemia and physical function.

The concepts and criteria of the frailty syndrome diverged between the studies. Of the seven articles included, three used standardized criteria for the definition of frailty[15-17] while four studies evaluated functional capacity as a synonym for frailty syndrome[18-21].

The review found a consensus that anemia is independently related to worsening functional capacity and frailty syndrome. However, there was great variability in relation to the criteria and instruments used for functional evaluation and characterization of this syndrome.

DISCUSSION

Despite the importance of the theme, this systematic review identified few studies that related anemia and the frailty syndrome in elderly persons living the community.

All seven observational articles that were included in this systematic review found an association between anemia and the development of frailty or the worsening of functional capacity. However, a high risk of bias in the evaluation and definition of the frailty syndrome was found by the adapted Newcastle-

Ottawa scale. Of the seven studies included, only one presented a low risk of bias in the evaluation criterion for the identification of this syndrome. This fact is explained by the variety and non-standardization of the criteria and instruments used to define frailty and may limit the interpretation of the association between anemia and this syndrome (Chart 4). Another important issue is the fact that many authors consider functional capacity and frailty to be synonyms, even though both can occur in isolation [18-21].

Chart 4. Assessment of bias risk according to the adaptation of the Newcastle-Ottawa Scale. Belo Horizonte, Minas Gerais, 2017.

Article (year)	Obtaining the independent variables	Evaluation of frailty	Representativeness of samples	Selection of participants	Definition of the control group or cohort
Corona et al. (2014)	U	H	U	L	-
Silva et al.(2014)	U	L	U	L	-
Llibre et al.(2014)	L	U	U	L	L
Patel et al.(2007)	L	H	U	L	L
Haslamet et al. (2012)	U	H	U	L	-
Contreras et al.(2015)	L	H	U	L	L
Liu et al(2015)	U	H	U	L	-

Classification of items: H - high risk of bias; B - low risk of bias; I - uncertain risk of bias.

The study conducted by Corona et al.[15] evaluated the association between anemia, hemoglobin and the frailty syndrome. Anemic individuals were 2.5 times more likely to develop frailty. However, the criteria proposed by Fried were not fully complied with[15]. The study from the FIBRA network, meanwhile, identified a relationship between hemoglobin reduction, frailty, sarcopenia and weight loss, using the Women's Health and Aging Study (WHAS) criteria for frailty[16].

In a sample of 2813 Cuban elderly persons the assessment of cognitive status was added to the frailty criteria proposed by Fried. Anemia was an important risk factor for the prevalence of frailty (a prevalence rate of 1.64% (Confidence Interval 1.23 - 2.20))[17].

In a longitudinal study of 2,601 elderly people, Patel et al. evaluated whether functional changes (walking, climbing stairs and activities of daily living) varied in the presence of anemia among black and white skinned people. A decline in functional performance was observed in the presence of anemia. Considering the cutoff point for anemia proposed by the WHO, white anemic elderly individuals presented more functional alterations than black elderly persons. The results suggest adaptations to the cutoff point for the diagnosis of anemia specific for each skin color[18].

A longitudinal study with three years of follow-up assessment evaluated functional capacity in anemic elderly persons using the Barthel and Lawton Indexes and the Performance Oriented Mobility Assessment (POMA). The authors found a higher mortality rate and worse perception of quality of life and functional capacity in anemic elderly persons[19].

Two studies with centenarian elderly persons found an association between anemia and the decline of functional capacity. The studies used different assessment instruments and did not define the criteria for the frailty syndrome[20,21]. The number of nonagenarian or older elderly persons is increasing rapidly around the world, but longitudinal studies in this age group are rare due to the greater number of comorbidities and a high mortality rate[20,21].

Decreased functional capacity in the elderly can be associated with numerous multidimensional

factors which determine the degree of dependence of the population and can lead to frailty. Various instruments exist for the measurement of muscle strength, balance, activities, and instruments of daily living. The studies in this review present tests and instruments for assessing functional capacity, such as the Lawton scale and the step climbing, gait speed, squat, handgrip and lower limb strength and balance tests, and the Short Physical Performance Battery (SPPB).

The frailty syndrome is complex and involves deterioration in multiple physiological domains, including strength and muscle mass, flexibility, balance, coordination and cardiovascular function[22]. The inclusion of other criteria for the definition of frailty syndrome, such as socioeconomic factors, nutritional factors and comorbidities, such as the presence of anemia, has been previously discussed[23]. However, there is still no explicit agreement as to how to diagnose the syndrome or an instrument to assist in the prior identification of adverse events. The model most widely used around the world is that proposed by Fried et al. It is composed of five biological items: unintentional weight loss in the last year, reduced handgrip strength, slow gait, exhaustion and low physical activity. Elderly persons are considered frail when they present three or more of these criteria[10]. Therefore, the lack of a conceptual and methodological criterion to define a frail elderly persons makes it difficult to evaluate and compare the studies evaluated.

Only one study of this review associated the increase of inflammatory markers, the presence of anemia and the frailty syndrome[16]. The inflammatory state is part of the immunosenescence process and is directly related to age. This process is characterized by an increase in inflammatory cytokines such as IL-6, IL-1, TNF-alpha and IFN-gamma. These cytokines are directly related to increasing age and the development of inflammatory anemia. Anemia and the frailty syndrome may share this pathophysiological mechanism of the inflammation process, and so anemia may trigger the frailty syndrome and vice versa[23,24].

CONCLUSION

Anemia was related to a decline in functional capacity and to the presence of the frailty syndrome in the elderly persons living in the community. However, the definition and criteria used to assess frailty differed between studies, and caution is required in the interpretation of these results.

The heterogeneity of the studies makes it difficult to verify evidence and generalize the data of the association between anemia and the frailty syndrome in elderly residents of the community.

New studies should be carried out with greater methodological rigor and standardization of the instruments and criteria used to allow a statistical comparison between anemia and frailty.

Early identification of anemic and/or frail elders will allow interventions to prevent or delay the "anemia-frailty" interaction, leading to an improvement in the quality of life of these elderly people.

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Received: July 08, 2017
Reviewed: January 26, 2018
Accepted: February 26, 2018

http://dx.doi.org/10.1590/1981-22562018021.170169

Shared decision-making when choosing the feeding method of patients with severe dementia: a systematic review

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Abstract

Objectives: To evaluate whether the use of a support tool for shared decision-making in the choice of feeding method for patients with severe dementia can benefit the patient/caregiver dyad, and to evaluate the quality of the decision-making process. *Method*: A search was performed in the Medline, LILACS, IBECS, SciELO, WHOLIS databases for randomized controlled trials, whether double-blind or otherwise, and quasi-experimental, cohort, case-control, or cross-sectional observational studies in Portuguese, Spanish, English and French. *Results*: Eight articles were found that showed that the use of a decision support tool, as an aid for the shared decision-making method, is beneficial as it reduces decisional conflict and increases the knowledge of caregivers about the subject. The quality of the decision-making process is unsatisfactory due to the low frequency of discussions between caregivers and the health team and the poor evaluation of caregivers about the participation of the team in the decision-making process. *Conclusion:* Decision support tools provide benefits for caregivers/patients undergoing the difficult task of deciding about feeding methods. Findings suggest that the current quality of decision-making is inadequate.

Keywords: Dementia. Deglutition Disorders. Decision Making. Decision Support Techniques.

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INTRODUCTION

Dementia is important in the context of population aging due to its impact on the mental and physical health of patients and their relatives. Regardless of type (such as Alzheimer's, vascular or frontotemporal), the course of the condition is always progressive and incurable, and the advanced stages are very similar: the patient is restricted to bed with little or no verbal communication, is unable to recognize their closest relatives, incontinent, has feeding difficulties and requires care when taking care of themselves[1-3].

At this stage, feeding-related problems are common and include oral dysphagia, pharyngeal dysphagia (causing food aspiration) or the refusal of food, resulting weight loss and reduced food and fluid intake[1]. At this stage, there are two possible paths to follow: feeding and hydrating the patient through a tube or continuing to feed them orally with assistance.

Since 1997, when the first study[4] compared the use of oral feeding in elderly institutionalized patients with recent progression to severe dementia using a prospective cohort sample and found no difference in survival, the discussion surrounding the feeding of these patients has become gradually more important.

The accumulation of information on the subject has subsequently led entities such as the American Geriatrics Society[5], the American Board of Internal Medicine Foundation and the American Academy of Hospice and Palliative Medicine[6] to advise against the use of a tube for the feeding and hydration of patients with severe dementia. Choosing between the two paths remains difficult, however, since the act of feeding surpasses merely technical concepts. The need for decisions regarding health to be made by a caregiver for another person adds further complexity to the situation.

The scenario described is a prototypical situation for shared decision making. This can be understood as an approach where the health professional and the patient (or their representative), in order to carry out the decision-making process, share information regarding the best available scientific evidence. This assists the patient or caregiver when evaluating the available options, their respective risks and benefits and weighing them according to their values[7,8].

Shared decision making can be facilitated by what is known as a patient decision aid (PDA), translated into Portuguese as *apoio à decisao*. This instrument aims to serve as a reference in the process of counseling the patient or caregiver by presenting the available options in a balanced manner and guiding them in shared decision making in a specific health-related situation[9,10].

The present study aims to evaluate whether the use of a shared decision support instrument to choose the feeding method in patients with severe dementia brings benefit to the patient/caregiver dyad in terms of the outcomes (i) reduction of decisional conflict and (ii) increased caregiver knowledge on the topic. A secondary objective was to evaluate the quality of the decision sharing in this scenario, as measured by the frequency of family conversations with the health provider and by the evaluation of these discussions by the family.

METHOD

The PICO strategy (Population, Intervention, Comparator and Outcome) was used to search for the articles as follows: P- patient with severe dementia/ caregiver of a patient with feeding problems in the imminence of deciding the method of feeding; I- shared decision-making using PDA; C- usual care or no shared decision strategy; O- decisional conflict, increased caregiver knowledge, frequency of conversations about feeding method options, evaluation of family members of the quality of the decision-making process.

The search was carried out on the Medline database via PubMed on August 24, 2017 using the following descriptors: ("shared decision making" or "decision aid") AND (“dementia” or “tube feeding" or "gastrostomy" or "hand feeding") limited to the English, Portuguese, Spanish and French languages. Another search was carried out in the LILACS, IBECS, SciELO, WHOLIS databases, via the Virtual Health Library (VHL) on August 30, 2017. The descriptors ("shared decision making" or "*tomada de decisões*" or "*toma de decisiones*" or "decision aid" or "*técnicas de apoyo para la decisión*" or "*técnicas de apoio para a decisão*") AND (“dementia” or “*demência*” or "tube

feeding" or "*nutrición enteral*" or "*nutrição enteral*" or "gastrostomy" or "*gastrostomía*" or "*gastrostomia*") were used. No date limits were applied to the searches.

The titles and abstracts of all the articles identified were read by the researcher who carried out the search and those selected were exported to the EndNote® X5.0.1 reference manager for more detailed analysis. The researcher also manually reviewed the bibliographic references of these studies in search of new studies.

The researcher who carried out the search was responsible for the selection of the studies and the references selected for full text reading were read by another researcher in order to ascertain the adequacy to the objectives of the systematic review. Divergences were resolved by consensus. Data extraction was performed without the use of a specific form for this purpose. Randomized or double-blind randomized controlled trials (RCTs), quasi-experimental, cohort, case-control, or cross-sectional studies were included. Narrative review, case reports or articles with a qualitative approach were excluded.

RESULTS

The database search resulted in 161 articles. After duplicates were removed, 156 articles remained. Of these 119 were discarded after reading the title and the abstract as they did not meet the inclusion criteria. The full texts of the 37 remaining references were examined in more detail. The analysis revealed that 30 studies did not meet the inclusion criteria. One article was added after reviewing the references of the articles included. The systematic review resulted in a total of eight studies, as shown in Figure 1. Five studies were conducted in the United States. Canada, Japan and Spain contributed one study each.

Increase in knowledge and reduction in decisional conflict

The oldest study found that evaluated these outcomes was Mitchell et al.[11]. This described the preparation of a PDA for the choice of feeding method in patients with severe dementia. The study involved the application of a questionnaire to evaluate knowledge about the subject and to measure decisional conflict through the Decisional Conflict Scale (DCS)[12] before and after reading the PDA. It used a convenience sample of 15 caregivers who were in the decision process of the feeding method. The DCS score (1 to 5 points) was lower after exposure to the intervention: 2.88 (±0.62) vs 2.29 (±0.52), p=0.004. Caregivers also achieved a higher percentage of responses in knowledge after exposure to the PDA questionnaire: 50.4% (±13.5) vs 84.0% (±13.5), p=0.004, as shown in Chart 1. The study had a quasi-experimental design and a small sample.

Kuraoka and Nakayma[13] studied the same PDA, adapting the instrument to Japanese and their study. Thirteen inpatient caregivers in two hospitals in Japan deciding on a feeding method were interviewed before and after the use of the PDA. The percentage of correct answers in the questionnaire that evaluated knowledge on the subject increased from 38.1% (±13.5) to 64.6% (±25.9), p<0.001 and the score in the DCS declined from 3.24 (1.37) to 2.56 (±1.16), p<0.001. In addition to the small sample, the researchers provided the PDA to only five caregivers, with attending physicians distributing it to the other members of the sample. The study had a quasi-experimental design.

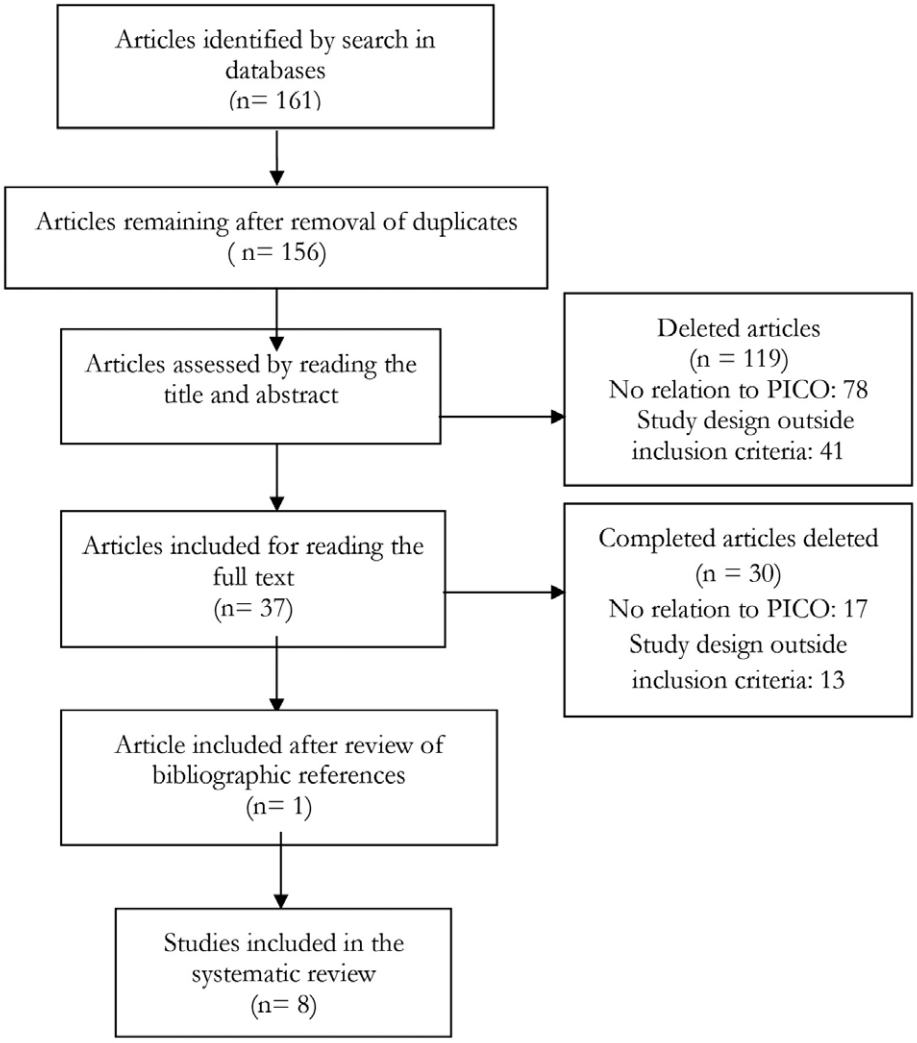

Figure 1. Flowchart for identification, selection and inclusion of studies. City of Santa Catarina, 2017.

After ten years, this same instrument was improved and updated by Hanson et al.[14] and generated a PDA that was tested in an RCT. Twelve elderly long-term care facilities (LTCF) were randomly selected and caregivers received a PDA and were encouraged to discuss it with the health care team. Another 12 LTCF were randomly selected to receive normal care in the form of information from the health team. The primary outcome was the decisional conflict (measured by the DCS) of the caregiver after a three-month follow-up. The secondary outcomes were knowledge about dementia and feeding options, measured shortly after the use of the PDA by 19 true-false questions about the topic. One hundred and twenty-seven caregivers were in the intervention group and 129 received normal care. Those who received the intervention had a greater reduction in DCS score in three months (-1.97 vs -1.65, $p<0.001$) while after receiving the PDA caregivers increased their number of correct responses (15.1 vs 16.8, $p<0.001$). After three months, caregivers in the intervention group discussed feeding options more frequently (46% vs 33%, $p=0.04$). The study was a randomized clinical cluster trial. Due to the type of randomization and the nature of the intervention, the investigators and participants [(caregivers of patients with severe dementia with feeding problems) were not blinded. Residents of the LTCF who underwent the intervention had more problems with chewing and swallowing (91% vs 71%, $p<0.001$)].

Subsequent analysis of this same population was performed in an American study by Ersek et al.[15] with the main objective of examining how the working hours of nurses and physicians influence the number of conversations about eating disorders between the health team and caregivers who used or did not use a PDA. A secondary objective was to assess the degree of decisional conflict. A total of 256 caregiver-patient pairs were identified and divided into two groups of LTCF (12 who received the intervention and 12 who received the usual care). The LTCF were placed in three distinct groups: those that did not have a nurse practitioner and an attending physician, those with such staff in a part-time role, and those who had them in a full-time capacity. A nurse practitioner is a nursing professional who is qualified to treat certain conditions without the direct supervision of a physician. Decision aid only increased the frequency of caregivers who talked about feeding options at the LTCF with part-time workers or those without a physician/assistant nurse (26% vs 51%, $p<0.001$ and 13% vs 41%, $p<0.001$, respectively). In LTCF with full-time workers, the PDA did not change the DCS score (reduction -0.15 control vs. -0.68 intervention, $p=0.121$). The use of the instrument resulted in a difference in this outcome in LTCF with part-time professionals (reduction -0.08 control vs -0.47 intervention, $p=0.008$) or those that lacked such staff (reduction -0.30 control vs -0.68 intervention, $p=0.014$). The Hanson et al.[14] study was a randomized clinical trial and data from telephone interviews was analyzed.

A study published by Snyder et al.[16] also used the population studied by Hanson et al.[14] and the interviews performed before and after the administration of a PDA to 126 caregivers, together with a control group of 129 individuals. This study reported that decisional conflict was reduced (2.24 vs 1.91, $p<0.001$) shortly after the use of the PDA. There was an increase in the knowledge score (before 15.5 vs after 16.8, $p<0.001$). The study featured a quasi-experimental design.

Quality of the shared decision-making process when choosing the feeding method of patients with severe dementia

Five studies summarized in Table 1 contributed data. Hanson et al.[14] showed that after three months of PDA use, a higher percentage of caregivers in the intervention group discussed feeding options with physicians or nurses (46% vs 33%, $p=0.04$).

Teno et al.[17] conducted a study with data from interviews with 486 caregivers of people with dementia and feeding problems who had died in an LTCF. One of the objectives of the study was to evaluate how frequently tube feeding was discussed. For 58.9% of the interviewees, there was no discussion about the management of feeding problems between family members and the health team. Among patients who underwent tube feeding, 13.7% of caregivers reported that they did not discuss the issue with the health team before insertion. Of these, 91.1% believed that the discussion should have taken place. Among those who had had some type of conversation, 41.6% reported that the discussion lasted less than 15 minutes. The option of assisted oral feeding was not discussed in approximately one third of cases and the doctor was present in the conversations one third of the time. The interviews were conducted by telephone and took place an average of 23.8 months after the patient's death. A cross-sectional method was applied.

The study by Ersek et al.[15] describes that in LTCF with full-time attending physicians or nurses, the number of caregivers who had had conversations about feeding options with the health team was not associated with a PDA (41% control and 46% intervention, $p=0.450$). In LTCF with part-time professionals (26% control and 51% intervention, $p<0.001$) or without a responsible physician or nurse (13% control and 41% intervention, $p<0.001$), there was a difference in this outcome between the group that received the PDA and the control group.

Givens et al.[18] used data from a prospective cohort with 323 LTCF residents to determine the types of decisions made during the final stage of dementia and identify factors associated with greater satisfaction with the decision-making process. Caregivers were asked if they had made any health decisions in biweekly interviews during a follow-up period of 18 months or until the patient's death. In this event, the caregiver was interviewed two months after the event. To evaluate satisfaction, the Decision Satisfaction Inventory[19] (DSI) scale (0-100 points,

with higher scores indicating greater satisfaction with the decision process) was used. The mean DSI score was 78.4 (±19.5), indicating a high level of satisfaction. However, the items with the highest incidence of reasonable or bad evaluations were related to support, to the amount of information received and to the time spent with the main person responsible for the health care in the institution. The study evaluated several types of decisions. The management of feeding problems was the reason in 27.2% of cases. The interviews were conducted by telephone.

Ortín et al.[20] performed a cross-sectional study with data from patients who had undergone gastrostomy. The aim of the study was to describe how decisions about nutrition and patient participation were made. The informed consent document for gastrostomy was included in 88% of the medical records (n=36), but only 49% of these records (n=20) reported a discussion with the family about the decision over gastrostomy. The study had a cross-sectional design. The information was based on surveys of 41 medical records and only seven patients had a diagnosis of dementia (17%).

Chart 1. Selected studies based on type of research, intervention/control, outcomes evaluated and results. City of Santa Catarina, 2017.

Type of study/ author/year of publication	Study context	Intervention/ Control	Objectives	Results
ECR Hanson et al., 2011[14]	LTCF in USA.	PDA for choice of feeding method in patient with severe dementia. Usual care, represented by information by the health team.	To evaluate decisional conflict (by DCS) and knowledge (questionnaire with 19 questions) of caregivers before and after intervention. Measure the frequency of conversations on the subject with the doctor or nurse.	24 LTCF. 127 caregivers received PDA and 129 usual care. Greater reduction in the DCS score at three months with PDA. Increase in knowledge scores. Caregivers in intervention group discussed feeding options more.
Quasi-experimental study Kuraoka and Nakayama, 2014[13]	Hospitals, LTCF and community in Japan.	PDA for choice of feeding method in patient with severe dementia.	Analyze decisional conflict (by the DCS) and knowledge of caregivers before and after intervention.	DCS declined after PDA. Increase in knowledge scores after use of PDA.
Quasi-experimental study Mitchell et al., 2001[11]	Hospitals in Canada.	PDA for choice of feeding method in patient with severe dementia.	Compare decisional conflict (using DCS) and knowledge of caregivers before and after intervention.	DCS declined after PDA. Greater number of correct answers in questionnaire of knowledge on subject after exposure to PDA.

to be continued

Continuation of Chart 1

Type of study/ author/year of publication	Study context	Intervention/ Control	Objectives	Results
Cross-sectional study Teno et al., 2011[17]	Hospitals, LTCFs, residences for the elderly or hospices in USA.	No intervention.	Examine how often tube feeding is discussed. To ascertain the quality of the discussion (DSI scale).	58.9% of caregivers did not report talking about management of feeding problems. For those who received a tube, 13.7% had no discussion with the health team. Of those who did discuss the issue, 41.6% reported doing so for less than 15 minutes. Discussion of the risks of insertion of the catheter in 49.7% of the cases. The option to continue mouth feeding was not discussed in 1/3 of the cases.
P*ost hoc* analysis of RCT Ersek et al., 2014[15]	LTCF in USA.	PDA for choice of feeding method in patient with severe dementia. Usual care.	To determine how nurses and physicians' working hours influence the number of conversations about feeding options of caregivers who used PDA with the health team. Measure decisional conflict according to the use or not of the PDA in LTCF with different working regimes of professionals.	PDA increased the frequency of conversations and reduced the DCS score in only in LTCF with less active professionals.
Quasi-experimental study Snyder et al., 2013[16]	LTCF in USA.	PDA for choice of feeding method in patient with severe dementia.	To analyze the decision-making conflict by DCS and knowledge (questionnaire of 19 questions) of caregivers before and after intervention.	Increase in knowledge score after use of PDA. Decisional conflict declined after intervention.
Cross-sectional study Ortín et al., 2005[20]	Hospital in Spain.	No intervention.	Identify how artificial nutrition decisions were made.	Twenty medical records (49%) referred to discussion with the family on decisions about gastrostomy. Informed consent document for gastrostomy was recorded in 88% of the medical records.

to be continued

Continuation of Chart 1

Type of study/ author/year of publication	Study context	Intervention/ Control	Objectives	Results
Prospective cohort Givens et al., 2009[18]	LTCF in USA.	No intervention.	To determine the types of health decisions made in patients with severe dementia. Identify factors associated with greater satisfaction with the decision-making process (DSI scale).	The mean score on the DSI scale indicated satisfaction with the decision-making process. However, the items with the highest index of reasonable or poor answers were related to the support of the main person responsible for health care in the institution, the amount of information received and the time spent with the physician responsible.

RCT: Randomized Clinical Trial; LTCF: Long Term Care Facility for the Elderly; DCS: Decisional Conflict Scale; DSI: Decision Satisfaction Inventory.

DISCUSSION

The use of a PDA as a shared decision support strategy reduces decisional conflict and increases the knowledge of caregivers of patients with severe dementia who need to decide on the method of feeding[11,13-16]. The quality of shared decision making in this scenario is low. This information is based on results from five studies[14,15,17,18,20] which suggest a low frequency of discussions about feeding options between the family and the health team, as well as dissatisfaction with the role played by the health provider in the decision-making process.

This systematic review did not identify multinational studies and the concentration of studies in North America suggests the need for care when interpreting the data in Brazil. In addition, outcomes are described using different scales, making statistically significant differences difficult to interpret clinically, since clinical significance was not established *a priori*.

Studying a complex intervention such as a shared decision is extremely challenging. The inclusion of cognitive deficit due to neurodegenerative dementia and consequent loss of autonomy adds complexity. Research in LTCF presents challenging methodological barriers. The selected studies evaluate an auxiliary tool in the process, the PDA. No information is provided to establish whether the integration of the use of these tools with communication skills training[7] would represent an advance in terms of outcomes such as increased knowledge and frequency of decisions based in values or reductions in decisional conflict and passivity in health decision-making.

While there is no other option other than seeking shared decision-making among these patients, there is still much to be done on this subject, especially in Brazil. The review found no Brazilian studies, not even among excluded works. Some barriers to shared decision-making are common to many countries, such as time constraints on health care, resistance of health professionals due to the fear of loss of control in their relationship with the patient, and the belief that people do not want to be involved in decision-making about their health or do not have this ability and may make inappropriate decisions, putting themselves at risk, even in the presence of scientific uncertainty[7,21].

However, there appear to be aggravating factors in the case of Brazil. The more traditional model of Brazilian medical education does not favor the embracing of this subject, since the development of communication skills has only recently been formally inserted in the country's medical education[22]. The low educational level of the Brazilian population may have been a limiting factor for the development of the shared decision-making habit, since people

with lower levels of education take fewer health decisions[23]. This may, however, be an opportunity, as these people derive more benefits from shared decisions than groups with a higher educational level. These include a greater increase in knowledge and more defined reductions in decisional conflict levels and uncertainty in treatment choices. In this way, shared decisions can reduce health disparities[24]. It is also possible that the belief that patients are unable to decide has limited the role of physicians as educators in health practice.

The practice of medicine cannot be dissociated from scientific evidence, nor can it be performed without respecting the informed choice of patients. Without shared decisions, Evidence-Based Medicine (EBM) may become a dictatorship of evidence, but without attention to the principles of EBM, shared decision-making is limited, as preferences of the individual will not be based on reliable estimates of the risks and benefits of the available options, resulting in poorly informed decisions[25]. Brazilian medicine appears to have a long way to go in terms of the advancement of technical knowledge, the socialization of this knowledge and the democratization of choices in the doctor-patient relationship.

This study has limitations. The fact that two separate searches were not performed may have resulted in selection bias and the failure to find important articles for review. The fact that some databases were not used in the selections process may also have contributed to this. The researchers did not use appropriate instruments to evaluate the quality of the articles chosen. However, to minimize this limitation the main shortcomings of the studies were described in the results.

CONCLUSION

The use of a shared decision support tool in the choice of feeding method in severely demented patients reduces the intensity of decisional conflict and increases the level of awareness of caregivers to a statistically significant degree. The quality of the decision-making process in this situation appears to be very poor, due to the lack of discussion on the topic between caregivers and health staff, and the negative evaluations of the participation of health providers in the decision-making process. This study represents a step towards fostering the use of shared decisions in the difficult scenario of choice of feeding method in patients with severe dementia.

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Received: October 30, 2017
Reviewed: February 02, 2018
Accepted: March 14, 2018

http://dx.doi.org/10.1590/1981-22562018021.170144

Elderly care in the emergency department: an integrative review

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Abstract

Objective: To identify the care practices of nurses for the elderly in emergency departments. *Method:* An integrative review was carried out in the CAPES database, selecting publications in English, Portuguese and Spanish published between January 2011 and October 2016. The descriptors used were: "Emergency nursing"; "Geriatric nursing"; "Health services for the elderly"; "Elderly person"; "Nursing care". *Results:* Sixteen articles were analyzed in English, the majority of which had a qualitative approach (56.2%). Australia had the largest number of publications (31.2%). After reading the studies in full, the common themes were organized and classified into three categories: *Challenges/difficulties in the care of the elderly in the emergency department, Positive experiences of elderly care in the emergency department and The emergency department as a space of death and dying. Conclusion:* The care practices of nurses are focused on identifying the main problems regarding elderly care, adaptation and the planning of their work routine. Another strategy is the implementation of instruments of evaluation specific to elderly patients and the involvement of the family in all stages of care.

Keywords: Emergency Nursing. Geriatric Nursing. Health Services for the Aged. Elderly. Nursing Care.

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INTRODUCTION

The need for emergency care of the elderly has gradually increased due to population aging and a changing epidemiological profile[1]. A study carried out in emergency departments in the USA found that the elderly, especially those over 75 years old, have a higher admission rate for emergencies than other age groups, a rate that is likely to increase as the population ages[2].

Increased life expectancy can result in the occurrence of problems arising from morphophysiological changes inherent to aging, leading to an increase in chronic diseases, morbidity and functional disability[1]. The elderly are therefore more likely to seek emergency care, and are usually admitted to the hospital twice as often as younger individuals[2]. As the elderly suffer from more complex health problems they need specialized care and therefore represent the most frequent users of the main health services[3,4].

This is due to the clinical heterogeneity of these patients, which combined with a depletion of physiological reserves and diminished cognitive capacity results in the atypical manifestation of common diseases, casting doubts over the efficacy of standard approaches and representing a challenge for the implementation of care by emergency department nurses[2]. The objective of the present study was therefore to identify the care practices performed by nurses for elderly persons receiving care in emergency departments.

METHOD

An integrative review was carried out in accordance with the six methodological steps proposed by Mendes et al.[5] In the first step the following guiding question was defined: *what are the nursing care practices for elderly persons receiving treatment in emergency departments described in Brazilian and non-Brazilian nursing publications in the last five years?*

In the second stage the following inclusion criteria were established: complete articles in English, Portuguese and Spanish available online, published from January 2011 to September 2016, which addressed nursing care for the elderly treated in emergency departments. The exclusion criteria were: systematic, integrative reviews, case studies, reports of experiences and editorials.

In the third step, it was decided that the online search platform of the Coordination for the Improvement of Higher Education Personnel (CAPES) would be used to research scientific productions, as this encompasses several Brazilian and non-Brazilian databases and is available for public access. The online search occurred in October 2016, using the following descriptors: emergency nursing, geriatric nursing, nursing care, the elderly, health services for the elderly, emergencies, geriatric hospitals. To search for articles, the following combinations of descriptors in Portuguese, English and Spanish were used: "emergency nursing" AND "elderly", "emergency nursing" AND "health services for the elderly", “emergencies” AND "elderly", “emergencies AND “geriatric nursing”, "nursing care” AND “elderly”, “health services for the elderly" AND "emergencies", "geriatric hospitals" AND "emergencies".

Firstly, two researchers independently evaluated the titles and abstracts of the publications in the database for the selection of potentially eligible studies. From these, full texts were obtained for a thorough reading. Afterwards, those that did not meet the inclusion criteria were excluded. The flowchart of the article selection process based on the PRISMA[6] model is shown in Figure 1.

In the fourth stage data analysis was performed, organized by categories. In the fifth stage the discussion was developed according to the pertinent literature and in the sixth stage the synthesis of the review was elaborated.

RESULTS

The sample consisted of 16 articles in English, with eight (50.0%) qualitative, seven (43.8%) quantitative and one (6.2%) mixed approach studies. In relation to the year of publication, four (25.0%) articles were published in 2015; three (18.7%) in the years 2011, 2013 and 2014; two (12.5%) in 2012 and

one (6.25%) in 2016. Australia had the largest number of publications on the subject, with 31.2%, followed by Canada with 18.8%, and the USA and Spain both with 12% each. Also included were articles from other countries such as Finland, Switzerland, Sweden and England, which accounted for 26.0%. The articles were published in 15 journals, with *International Emergency Nursing* publishing the most articles (12.0%) (Chart 1).

The topics covered in the studies were classified into three categories: *Challenges/difficulties in care for the elderly*, *Positive experiences of care for the elderly* and the *Emergency department as a place of death / dying.*

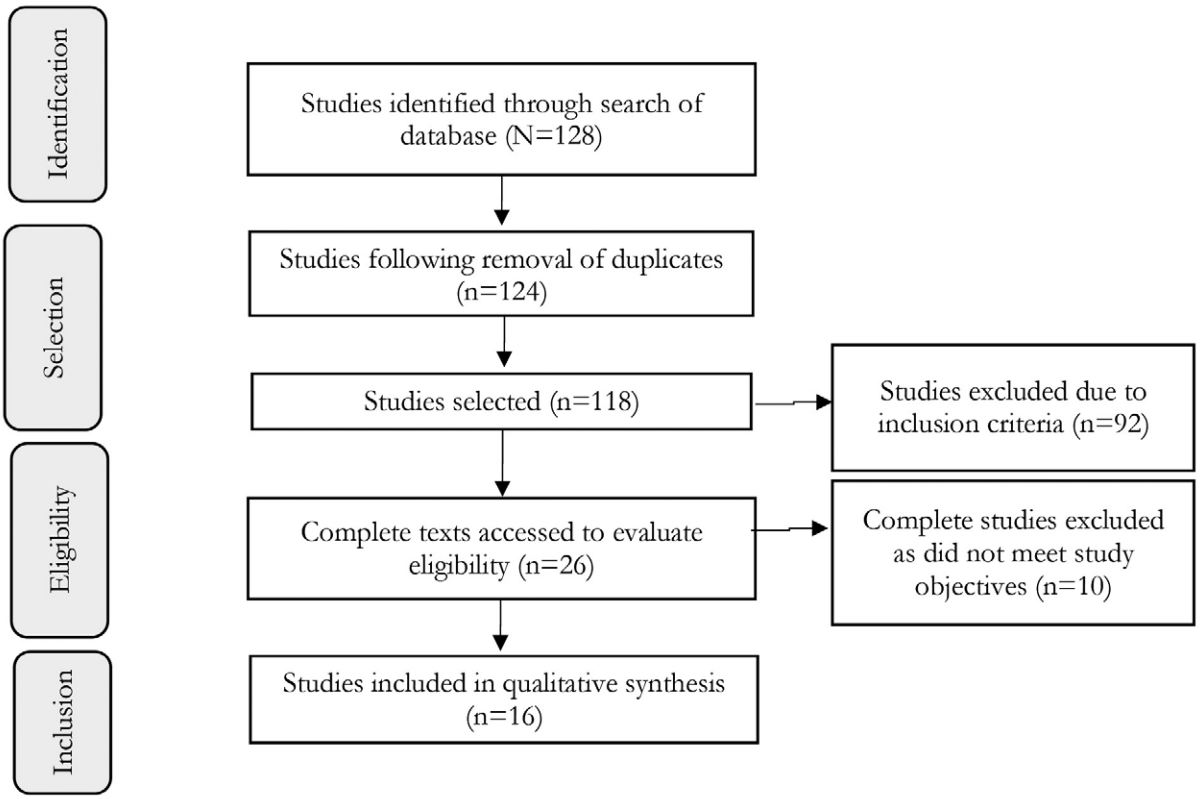

Figure 1. Flowchart of selection of publications for integrative review, based on PRISMA model[6]. Curitiba, Paraná, 2017.

Chart 1. Results of study. Curitiba, Paraná, 2017.

Title	Periodical	Objectives	Synthesis of results
1. In-reach nursing services improve older patient outcomes and access to emergency care[29].	Australasian Journal On Ageing	Identify the impact of basic care performed by the specialized nursing service on the clinical results of elderly patients from long-term care facilities treated at the emergency department, before and after the implementation of the service.	The average length of stay in the emergency department decreased by 24 minutes and the hospitalization rate by 23%. The proportion of people who returned to the emergency department within six months decreased by 12%. The proportion of hospitalized patients discharged with a palliative care plan increased by 13%. There was a significant decrease in the average length of hospitalization, fewer hospitalizations of patients coming from long hospitalizations after the implementation of the primary care/follow-up service.

to be continued

Continuation of Chart 1

Title	Periodical	Objectives	Synthesis of results
2. Referrals to hospital emergency departments from residential aged care facilities: stuck in a time warp[14].	Contemporary Nurse	Characterize elderly persons admitted to emergency services from long-term care facilities and to explore the perception of nurses of the reasons why these "residents" are referred to the emergency department.	The main themes identified are related to professional competence, lack of equipment in nursing homes, relatives and residents requesting referrals, communication difficulties and poor team attitude. It is important to use strategies for the detection of residents with deteriorating conditions and to provide prompt care for the same.
3. Respect in the care of older patients in acute hospitals[30].	Nursing Ethics	To describe the experiences of elderly patients and their relatives in relation to the respect shown in the care offered at an acute care hospital.	The concept of respect can be defined through the actions taken by nurses (kindness, patience when listening, trust, response to information needs, assistance with basic needs, pain relief, response to requests and time management), through the family (support, care and protection of the patient's interests) and by environmental factors (such as the valuation of the elderly by society, management of health organizations, the culture of nursing, the flow of information and patient accommodation)).
4. Geriatric screening tools to select older adults susceptible for direct transfer from the emergency department to subacute intermediate-care hospitalization[16].	Journal of the American Medical Directors Association - JAMDA	Evaluate whether easy, fast and inexpensive geriatric tracking tools predict a discharge outcome other than returning to the previous condition for patients admitted to a subacute/ intermediate care department.	Among the geriatric screening tools, the ISAR - Identification of Seniors at Risk was used independently in the discharge of patients transferred from the emergency department to intermediate care. Predictive validity was poor. More research is needed on the selection of candidates for alternatives to conventional hospitalization.
5. Impact of observation on disposition of elderly patients presenting to emergency departments with non-specific complaints[18].	Plos One	Prospective study of the referral process of patients treated in the emergency department with nonspecific complaints.	Planning for optimum referral of patients with nonspecific complaints improves after the observation period if it is strictly defined in relation to the hospitalization of patients with acute morbidities.
6. Patient transfer forms enhance key information between nursing homes and emergency department[20].	Geriatric Nursing	To assess the extent to which transfer forms facilitate communication between the employees of a long-term facility for the elderly and the emergency department based on the criteria proposed by Terrell and Miller.	During the study period there were 306 patient transfers. Transfer forms were used in 157 cases. The results suggest that information considered valuable for the benefit of a patient in the emergency department has a greater chance of being acknowledged when using transfer forms. However, the availability of this information does not translate into observable differences in the case of time resolution and referrals. The forms reinforce the communication between the long-term institution and the emergency department. Essential information for emergency patient care is significantly increased with the use of the transfer form.

to be continued

Continuation of Chart 1

Title	Periodical	Objectives	Synthesis of results
7.Implementation and effectiveness of 'care navigation', coordinated management for people with complex chronic illness: rationale and methods of a randomised controlled trial[31].	Health Services Research - BMC	Measure the impact of coordinated care interventions through the Care Navigation method on the use of health services and quality of life in elderly patients with chronic diseases over two years.	This study of mixed methods informs the generality and sustainability of care coordination programs in Australia and internationally. The Care Navigation trial aims to develop these principles to provide a comprehensive program of coordinated care to improve health outcomes among patients with chronic disease.
8. Dying cases in emergency places: Caring for the dying in emergency departments[12].	Social Science & Medicine	Investigate end of life care in an emergency department.	Evidence was found for the importance of the role of the nurse in modifying practices and improving the quality of end-of-life care through patient liaison, effective communication, and patient-centered care.
9. During and beyond the triage encounter: Chronically ill elderly patients' experiences throughout their emergency department attendances[21].	International Emergency Nursing	Explore and describe the experiences of a group of chronically ill elderly patients cared for in the emergency department.	The elderly perceived care in the emergency sector as a contradictory event. The initially receive fast and efficient care during triage, but then receive indifferent and inattentive behavior by the nurses.
10. Emergency nurses' perceptions of the role of confidence, self-efficacy and reflexivity in managing the cognitively impaired older person in pain[32].	Journal of Clinical Nursing	To explore the practices of emergency nurses in the care of elderly people with cognitive deficits and long bone fracture pain to assess confidence and self-efficacy.	Confidence, self-efficacy and reflexivity allowed the provision of appropriate, timely and compassionate care. Confidence and self-efficacy in nursing practices were based on clinical and reflexive experience and were crucial for the acquisition of skills and knowledge.
11. Facilitators and barriers to safe emergency department transitions for community dwelling older people with dementia and their caregivers: A social ecological study[33].	International Journal of Nursing Studies	Identify factors that facilitate or prevent safe care transitions for elderly people with dementia in two emergency sectors.	Four categories were identified: under-triaged; waiting and worrying about what was wrong; time pressure with a lack of care for basic needs; and relationships and interactions leading to feeling ignored, forgotten and unimportant. These consequences arise from a triage system that does not recognize the atypical presentation of disease and illness. This results in a cascade of vulnerability in elderly people with dementia.
12. Geriatric emergency nurses: addressing the needs of an aging population[15].	Journal Of Emergency Nursing	Describe the innovative role of emergency nursing implemented to meet the needs of the elderly in the emergency department.	Three themes emerged: defining the role and its functions; a collaborative relationship: tailoring the same to the emergency department and recommendations for future role development.

to be continued

Continuation of Chart 1

Title	Periodical	Objectives	Synthesis of results
13. Nurses' experiences of caring for the older adult in the emergency department: A focused ethnography[34].	International Emergency Nursing	Investigate the experiences of nurses caring for elderly persons in the emergency department.	Three themes were identified: the culture of the emergency sector, care organized according to a pattern of priorities; the care of the elderly does not fit into this culture; managing the lack of adjustments between the elderly and the emergency sector, puts the elderly at risk of precarious care.
14. Results of a national survey of Australian nurses' practice caring for older people in an emergency department[8].	Journal of Clinical Nursing	To report the practices of Australian nurses in the care of the elderly in the emergency department.	Nurses use positive clinical practices and understand that patient-centered care can reduce adverse events and length of stay in the emergency department. It is important to improve language and tone in clinical practice.
15. Screening for fall risks in the emergency department: a novel nursing-driven program[9].	Brief Research Report	To describe the use of TUGT in evaluations carried out by geriatric nurses in the emergency department.	The evaluation of gait with the Timed Up and Go Test (TUGT) was performed in 443 elderly people, of whom 368 had a positive result, i.e. it took more than 12 seconds to complete the three-meter walk. Interventions for positive outcomes included physical therapy (17.1%), outpatient visits with physical therapy (12.2%), and social work and consultation (44.0%).
16. Undertriage in older emergency department patients – tilting against windmills[17].	Plos One	To test whether a teaching intervention had a long-term sustainable effect on reducing undertriage rates in elderly patients.	A total of 519 patients were evaluated before and 394 after the intervention. It was observed that the knowledge among nurses of triage was already high before the teaching intervention. The prevalence of undertriaged patients was 22.5% before the intervention and 24.2% one year after the intervention. The teaching intervention was not significant. Undertriage is not merely a matter of actual knowledge.

DISCUSSION

Challenges/difficulties in care for the elderly

The results show that the profile of care in the emergency departments is changing as a consequence of population aging, with the number of elderly people seeking this service gradually increasing[7,9]. Although these patients are treated by pre-hospital and primary care services, the hospital emergency department is the most frequently used in cases of health problems[10].

A documentary study on the identification of health problems that led the elderly to seek treatment in the emergency departments of two public hospitals in Rio de Janeiro showed that most were suffering from more than one basic disease, which was the main reason for seeking care[11]. An aggravating factor is that these patients are admitted with more serious health problems, as their disease is combined with several comorbidities[12], which increases the risk of mortality, the length of stay in the emergency department and the number of hospitalizations[13,14].

This situation indicates that more and more of the work of nurses in the emergency department includes care for the elderly. Thus, care priorities must be continually rethought[13] as admission to the emergency sector exposes these patients to the risk of functional decline and incidents arising from the care itself[7,15]. Unfavorable outcomes such as delirium and death may increase when the hospitalization of elderly patients occurs in non-specialized settings[16].

Elderly care in the emergency sector is a challenge for nurses and begins with triage[17]. It includes difficulties in assessment and diagnosis due to atypical presentation of symptoms, the presence of multiple comorbidities, changes in mental state and communication difficulties[7,18]. In this sense, health care professionals must invest in the communication process to allow effective and efficient care[19].

The establishment of satisfactory communication begins in the patient's first contact with the nurse, usually when the patient undergoes triage. Inadequate triage can increase the risk of deterioration of the health status of the patient while they wait for care. In this aspect the elderly represent a vulnerable group and are more susceptible to undertriage due to the atypical manifestation of diseases and difficulties in interpreting the vital signs, which may appear normal even in cases of severe disease[17].

Although training and skills in emergency care allow nurses to quickly recognize a critical illness, they may have difficulty detecting a problem in elderly patients because of the complexity of some chronic conditions[8,12].

An integral approach to older patients requires critical thinking skills to minimize adverse events and prolonged hospitalization, as well as planning and organizing skills for care. While nurses are competent at providing emergency care, they may exhibit limitations when addressing the complex needs of the elderly[8].

Additionally, a study carried out in Spain in 2014 revealed that the characteristics of the environment, such as excess numbers of patients awaiting care, a shortage of health professionals and a lack of physical space can influence the decision making of professionals and, consequently, the care offered, which can compromise the physical integrity of the patient[17].

Another difficulty faced by nurses relates to the transfer of care of the elderly, which involves a set of actions aimed at allowing the safe and timely passage of users between different health sectors and services. As they can suffer from several chronic diseases with different treatments, elderly patients are often treated by many health services.

However, the transfer of patient care information between services usually fails to happen, resulting in the elderly person being returned to emergency departments and leading to further hospitalizations and the occurrence of adverse events[7,15,20]. The implementation of instruments that enable the transfer of patient information is of great importance if continuity of care is to be ensured.

The emergency department is a dynamic environment in which there is pressure for tasks to be executed in a timely manner due to the severity of cases and the number of patients waiting for treatment[13]. In this environment, in which new patients are continuously admitted, elderly persons waiting for a hospital bed are no longer a priority for nurses, who direct their attention to those in life-threatening situations[13].

As a consequence, elderly persons undergo a contradictory experience in the emergency department, as they are initially the focus of the nurse's attention, before being left to one side and having their care needs, such as assistance to get up and go to the bathroom, ignored[13,21]. In this way, the environment can result in stress for the elderly and cause episodes of confusion due to its fast pace[8].

These findings indicate the need to restructure the working processes of the emergency department to ensure care that meets the needs of the elderly.

Positive experiences of care for the elderly

Emergency departments follow a curative model aimed at quick treatment and short stays. However, this model is inconsistent with the management of care for elderly persons with chronic and complex conditions, which requires health services based on health care models that encompass their biopsychosocial needs[8].

Changing this model is a long process which begins when professionals first become aware of its problems. A study of nurses from an emergency department in Australia in 2016 revealed that, even though there was no specific evaluation of elderly persons, such professionals identified their main

care-related problems as being adequate pain control, hygiene, psychosocial care and the maintenance of the patient's independence[8].

Becoming aware of the problems they faced led nurses to seek new practices such as using appropriate language when talking to the elderly without labeling them, promoting patient independence, and performing close observation[8]. Another key element is confidence and self-efficacy, which need to be strengthened by nurses in the emergency department to ensure appropriate, timely and compassionate care[12].

Respectful actions, honest and understandable information and allowing patients to express their opinions and anxieties are fundamental actions in the emergency department. It is essential that nurses approach family members, as when an elderly person cannot provide accurate information about their health status and participate in the decision-making process, the family must assume this role[8,15].

Two-thirds of patients admitted to the emergency department suffer cognitive impairment and are unable to describe their personal history and the medications they use or provide information about allergies and the dates and reasons for recent hospitalizations. The use of forms, such as discharge summaries that contain records of the history of hospital visits by the elderly, improves the transmission of essential information to the nurses who admit the patients to the emergency department[20].

Access to accurate patient information can help nurses identify their limitations and plan care with an emphasis on promoting autonomy. Although it takes up time, the benefits of this practice are vital to prevent the patient from becoming dependent on intensive care[21].

In this process the elderly and their families can be considered as active agents in the construction of care, with the family assuming the role of supervising health status, making decisions and accompanying their loved one[22,23]. Therefore, the elderly and their family require special attention from the nurse, which contributes to the development of a relation of trust and respect and to quality and humanized care[24].

Studies have also reported the use of tools for evaluating the elderly as an element that can contribute to the improvement of care in the emergency department and the targeting of the interventions to which the elderly should be submitted. One of the tools identified in the studies is the Timed Up and Go test, which evaluates the gait and balance of the elderly, which are predictive elements for the risk of falls. The author states that approximately one third of individuals over 65 years old will fall at least once a year, with such incidents resulting in fractures, surgeries, hospital admissions, prolonged rehabilitation and death[9].

Falls are common events among the elderly population and progressively increase with age, due to reduced muscle strength, changes in gait and maintenance of posture, resulting in a greater chance of stumbling and falling. They represent a public health problem, as they can result in fractures and injuries, which results in a need for emergency department care and even hospitalization[25].

A study carried out in the municipality of Barbacena (Minas Gerais) in 2015 found that 31.08% of patients who had fallen in the previous year were hospitalized. In addition to the psychosocial consequences, after a fall the elderly experience feelings of fear, frailty and a lack of confidence, which represent the beginning of the degeneration of their overall health[25].

The emergency sector can act in the prevention of these falls and alter the trajectory of the functional decline of the elderly, identifying individuals with a high risk of falls when they seek care. The application of the Timed Up and Go Test (TUGT) test is feasible and inexpensive as it can be performed by nurses, and its results allow the creation of a mobility care plan to change the trajectory of functional decline among the elderly[9].

The emergency department as a space of death/dying

In contemporary society, death has been transferred to the hospital, which in turn has become legitimized as a place to die[26]. Thus, caring for the end-of-life patient in the emergency department

has become more frequent. A study performed in the emergency department of a São Paulo hospital showed that the higher the level of care required by the patient, the higher the percentage of death[27].

Advances in technology and the improvement of health knowledge have enabled people with multiple comorbidities to live for a long time, leading to an increase in life expectancy, as well as an increased need for care in the latter stages of life[12].

Emergency departments, as the gateway to hospital care, have become an environment of palliative care. In this way, professionals and patients experience the experience of caring for and being cared for in spaces that were originally designed to save lives[12].

Death is seen as dirty and inconvenient by society[26]. This connotation contradicts the idealization of the emergency sector as a clean location where the fight for life is carried out on a daily basis. Consequently, the approach taken to caring for the elderly at the end of life often falls short of the expectations of the dying patient and their relatives[12].

Even if the death/dying process is solitary, it must be experienced by the patient with care, comfort and comfort offered by prepared professionals who are aware of the pain and suffering that surrounds them, so that the dignity of the patient is preserved, regardless of where they are receiving care[28]. Although nurses believe that the emergency sector is an unsuitable place to care for terminally ill elderly persons,[8] they have a role in challenging existing practices and improving quality of end-of-life care[12].

One of the limitations of the present study is that only the search platform of the Coordination for the Improvement of Higher Level Personnel (CAPES) was used to seek scientific productions. The survey included publications from different countries, however, diversifying the sample in relation to cultural, political and social aspects, which directly or indirectly influence the care actions performed by nurses.

CONCLUSION

The emergency department has become the main point of access of the growing elderly population with multiple comorbidities and chronic diseases, evidencing the need to change the paradigm of care. Nursing care practices carried out by nurses in such departments are aimed at adapting their routine and work structure to meet the needs of these patients.

Nurses face a number of difficulties in this process, however. These include the physiological changes of aging, which interfere with how diseases manifest themselves, and a lack of knowledge about how to interpret these manifestations; communication barriers, especially in relation to elderly persons suffering cognitive decline; a lack of adequate physical structures; and the increased time spent evaluating patients and performing care, especially as the dynamics of emergency work rarely allow them to devote more time to the elderly.

These difficulties have challenged nurses to rethink the care they provide. The starting point has been the identification of the main problems related to caring for the elderly, the implementation of specific instruments of evaluation and the involvement of the family in care. Communication is the principal means of achieving these goals.

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Received: September 14, 2017
Reviewed: February 27, 2018
Accepted: March 03, 2018

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