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Dizziness in the elderly

Between 20 and 30% of the world's population is known to suffer from or have suffered from dizziness, a condition which in many cases is incorrectly treated. The prevalence of dizziness is greater still among the elderly population, and the condition is the main clinical manifestation of labyrinthitis. This can lead to the impairment of the functional capacity of elderly persons, compromising quality of life, personal satisfaction and well-being.

Dizziness is a multifactorial condition that results from the cumulative effect of dysfunctions in multiple systems and results, especially among the elderly, in difficulties with performing tasks, as well as causing deficiency in the control of body balance during activities such as postural transfers, gait and other dynamic tasks that require flexion of the trunk and head due to variations in environment. This symptom is often experienced in different forms by patients, including through a false sense of movement of the body or environment, a feeling of impending fainting, feelings of instability, body imbalance, dizziness or falls and difficulties with gait.

The causes may vary and include vestibular dysfunctions (central or peripheral) and extravestibular causes such as neurological, cardiovascular, metabolic, psychogenic, visual and proprioceptive problems. The most common vestibular dysfunctions in the elderly are Benign Paroxysmal Positional Vertigo (BPPV), Meniere's Disease, Migraine Equivalents, Metabolic and Vascular Labyrinth Diseases and Multisensory Syndromes. Multiple otoneurological symptoms can result in combinations that include vertigo and other types of dizziness, changes in body balance, gait disorders, falls, tinnitus, and hearing deficits, among other conditions[1].

The otoneurological evaluation of elderly persons is a comprehensive method of detecting the cause of this problem. It involves clinical evaluation, laboratory tests, imaging, caloric tests, rotational tests, audiometry, computerized posturography and the evaluation of functional capacity, body balance, gait and the impact of dizziness on the quality of life of the elderly. The therapeutic resources used to control dizziness and/or body imbalance include: etiologic treatment, pharmacotherapy, nutritional guidance, habit modification, psychotherapy, vestibular rehabilitation (VR) and, in some cases, surgical procedures[2].

VR represents an important therapeutic option for body balance disorders of vestibular origin. VR is not an etiologic treatment as it does not act against the cause of the vestibular disorder, but instead promotes vestibular compensation through central neuroplasticity mechanisms. It consists of specific exercises of the eyes, head and/or body and therapeutic maneuvers in patients with benign paroxysmal positional vertigo to reposition the debris of statoconia improperly located in the ducts of the semicircular canals[3].

The integrated treatment of elderly persons with vestibular dysfunction achieves positive results through early and precise diagnosis, interdisciplinary intervention and adherence to treatment. The development of preventive programs and objective therapeutic measures are conducive to the remission or reduction of symptoms and the improvement of quality of life and functional capacity.

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Antidepressant use and the components of the frailty syndrome

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Abstract

Objective: to evaluate the effects of antidepressant use on components of frailty. *Methods:* a cross-sectional and analytical study comparing groups of users and non-users of antidepressants was carried out in a municipal region in the south of Brazil. The research was linked to the matrix study "Health of Elderly Persons in Primary Care". The sample was selected through access to the database of the matrix study from which two groups were extracted: *users* (n=87) and *non-users* (n=114) of antidepressants. After selection of the groups, data collection was carried out between June and September 2016 in the homes of the elderly, and included information on sociodemographic characteristics, use of medications and the evaluation of frailty. Pearson's Chi-square hypothesis test was used to verify the association between the groups and the Odds Ratio (OR) was used to calculate risk. *Results:* The prevalence of frailty was 62.7% and was associated with the group that used antidepressants. Among the components of frailty an association between the user group and fatigue, low gait speed and unintentional weight loss was found. A greater risk of frailty among elderly persons using tricyclic antidepressants and antidepressants potentially inappropriate for the elderly was identified. *Conclusions:* an association between frailty and antidepressant use was found. These results indicate the need for the clinical evaluation of the risks and benefits of prescribing antidepressants for the elderly; and reveal that when treatment begins, the monitoring and assessment of geriatric characteristics are required to ensure the safety and quality of life of the elderly.

Keywords: Antidepressive Agents. Primary Health Care. Frail Elderly.

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INTRODUCTION

Frailty is a multidimensional syndrome that involves the interaction of biological and psychosocial factors[1,2]. This syndrome, proposed by Fried et al.[3], is characterized by a decline in energy and is related to changes in the musculoskeletal, neuroendocrine and immunological systems, which especially affect muscle loss, appetite changes and chronic inflammatory conditions. According to these authors, the frailty phenotype involves five components: unintentional weight loss, fatigue, a decrease in grip strength, slow gait speed and a low level of physical activity[3].

In general, frailty is a high vulnerability factor for adverse health events such as disability, dependence, falls, hospitalization, long-term care and death[4]. Although frailty is related to physiological changes characteristic of senescence, it is also determined by the presence of chronic diseases and psychosocial determinants. It is worth mentioning that there is an increased risk of frailty in elderly women of an advanced age, low-income elderly persons, those who use three or more drugs, those suffering cognitive and functional decline and when symptoms indicative of depression are present[1,2,5].

Specifically, the presence of depressive symptoms and major depression are the most common psychiatric disorders among the elderly. The meta-analysis of Barcelos-Ferreira et al.[6] identified a prevalence of the diagnosis of major depression and symptoms suggestive of depression in 7.0% and 26.0% of Brazilian elderly persons, respectively. Consequently, antidepressants are often employed in the treatment of this disorder. The Longitudinal Study of Adult Health (ELSA) identified the use of antidepressants in 6.87% of the Brazilian adult population[7]. This percentage increases in the elderly population, with frequencies of use between 7.2% and 23.6%[8,9].

Although the consumption of antidepressants in the elderly is high, important systematic reviews by Briana et al.[10] and Benraad et al.[11] found that there is a lack of studies that relate the use of antidepressants and frailty. Briana et al.[10] concluded that the studies performed to date do not confirm or refute the association between antidepressant and frailty. Benraad et al.[11], meanwhile, found that randomized clinical trials of the antidepressant treatment of major depression in the elderly did not consider geriatric characteristics, such as frailty, as a possible effect modifier or in the evaluation of potential adverse effects on this condition.

A follow-up study by Lakey et al.[12] with women in the USA, however, identified the association between antidepressant use and the occurrence of frailty, both in the presence and absence of depressive symptoms; it was observed in this study that antidepressant users are almost twice as likely to be frail. A study by Groot et al.[13], meanwhile, identified a moderate association between antidepressant use and gait impairment, one of the components of the frailty syndrome, but did not compare the risk of one group over the other. Although the scientific evidence therefore shows that there is an association between the use of antidepressants and the occurrence of frailty, the two studies found were performed with North American and European populations. In addition, they did not examine all the components of the frailty syndrome. Considering the heterogeneity of the Brazilian population and its specific characteristics of aging, epidemiological research that investigates the use of drugs and their repercussions on the senescent body are required.

From these considerations, the present study aimed to evaluate the repercussion of the use of antidepressants on the components of frailty.

METHOD

A cross-sectional and analytical study comparing groups of users and non-users of antidepressants was undertaken. The present study was carried out in a municipal region located in the south of Brazil, linked to the matrix survey The Health of the Elderly in Primary Care.

The study population of the matrix survey was made up of elderly people aged 60 and over, of both genders, registered in the twelve Family Health Strategy (FHS) units of the urban area of the municipal region. The sample of this study was probabilistic, and the elderly persons were selected through a proportional stratified sampling technique by FHS and gender. A representativeness of 12% was assured, defined by the population aging rate of

the region. To establish the sample size, data from the Basic Care Information System[14] were used. In 2014, the number of elderly enrolled in the FHS was 5,269, meaning that considering a sample error of 5% and a test power of 80%, a sample of 636 elderly persons was required[15].

In the first stage of the study, the database of the matrix survey was accessed to identify users and non-users of antidepressants to compose the analysis groups. Two paired groups were established based on the number of subjects for the selection process in the database. A total of 140 elderly persons who used antidepressant or anxiolytic agents, whether or not in combination with other drugs, were identified and allocated to the *user* group. For each such elderly person in the "user" group, meanwhile, a *non-user* elderly person was randomly selected. The two groups were chosen from the same study population.

In the second stage, data collection was carried out in the households of the elderly persons between June and September of 2016. At this stage, those who had ended treatment with these drugs more than 30 days after the interview date were excluded from the user group. In the non-user group, elderly persons who used antidepressant or anxiolytic medication at some point in their life were excluded. Also excluded were those who did not possess the physical and/or mental capabilities to carry out the research protocol. For this study we selected only elderly users of antidepressants, with 87 elderly persons in the user group and 114 individuals in the non-user group. A total of 53 elderly persons were excluded from the user group. Of these, 21 used anxiolytic medication, while the other losses in both groups were because they did not meet the study criteria.

The variables of interest of the study were sociodemographic characteristics (age, gender, marital status, schooling and income); health conditions: presence of chronic disease (self-reported) and symptoms of depression (Geriatric Depression Scale)[16]; data on drug use (number of drugs used, the active principle and class of antidepressant, and the use of potentially inappropriate antidepressant); and classification of frailty and its components (unintentional weight loss in the previous year, grip strength, gait velocity, physical activity level and self-reported fatigue). The variables were obtained through a household survey.

For the identification of antidepressants, the third and fourth levels of the Anatomical Therapeutic Chemical (ATC) classification was used[17]. The use of potentially inappropriate antidepressants was identified according to the Beers criteria updated by the American Geriatrics Society[18].

The components and frailty classification were obtained from the matrix survey database, after the construction of the user and non-user groups. It should be noted that five months elapsed between the physical evaluation of frailty and the obtaining of the variables of the present study. To evaluate frailty, the criteria established by Fried et al.[3] were used: unintentional weight loss, gait speed, grip strength; level of physical activity; and self-reported fatigue. The elderly were classified into two categories: frail elderly persons (who presented one or more of the frailty criteria); and non-frail elderly persons (did not present any of the frailty criteria).

Unintentional weight loss, obtained by self-reporting, refers to unintentional weight loss in the last 12 months, using the loss of 4.5 kilograms or 5% of body weight as a cut-off[3].

Grip strength was evaluated through a dynamometer. Low grip strength values were those that were 20% lower than the mean values of three measurements performed, adjusted by gender and body mass index (BMI) (Kg/m^2)[19].

Gait speed indicated the time in seconds that each elderly person took to walk 4.6 meters using their usual steps. Low gait speed was verified by a 20% greater time taken to walk such a distance, from an average of three attempts by each elderly person, adjusted by the median height for men and women[20].

Fatigue was assessed through questions taken from the CES-D (Center for Epidemiological Studies - Depression), namely: (1) do you feel that you have to make an effort to carry out your usual tasks; (2) that you cannot carry out your activities[19].

Level of physical activity was identified based on items from the Minnesota Leisure Time Activity Questionnaire. Active individuals were those who performed 120 minutes of physical exercises and/or sports of vigorous intensity per week, which were those equivalent to values greater than 6 Metabolic

Equivalents (MET); which is the energy expenditure indirectly calculated by the instrument; or those who accumulated more than 150 minutes per week in moderate intensity physical exercise and sports (from ≥3 MET to ≤6 MET)[21].

Descriptive statistics tools were used, such as measures of central tendency (mean) and dispersion measures (standard deviation and 95% confidence interval (95% CI), and relative and absolute frequency for the qualitative variables. To verify the association between two or more qualitative variables, Pearson's Chi-square hypothesis test was used and the Odds Ratio (OR) was used to calculate the risk, with an OR equal to or greater than 1.5 considered a risk. For all tests, a significance level of 5% was applied.

All the ethical precepts recommended for research with human beings were observed and the study was approved by the Ethics and Research Committee under Approval Number Nº 1.570.165/2016.

RESULTS

The study included 201 elderly persons, 43.3% (87) in the user group and 57.7% (114) in the non-user group. The mean age was 71.8±7.61 years (CI 95% 70.74-72.86). The prevalent sociodemographic and health characteristics included the female gender (66.2%), those with a partner (69.2%), the presence of chronic disease (79.6%) and the absence of symptoms suggestive of depression (78.1%) (Table 1).

The prevalence of frailty was 62.7% (126) of the elderly persons and there was an association between antidepressant use and frailty (p=0.005). A total of 73.6% (64) of the user group were frail, while 54.4% (62) of the non-users suffered from the syndrome. In addition, it was found that elderly users of antidepressants were twice as likely to be frail than non-users (OR 2.33 CI 95% 1.28-4.26). When intragroup analysis for the presence of symptoms suggestive of depression and frailty was performed, no association was identified in the user (p=0.078) or non-user groups (p=0.140).

Among the components of the frailty syndrome, fatigue and low gait speed occurred most frequently among the elderly in the study, with a prevalence of 35.4% and 23.4%, respectively. Associations were found between the use of antidepressants and the fatigue, low gait speed and unintentional weight loss components. In terms of risk, it was found that members of the user group were three times more likely to lose weight and twice as likely to suffer frailty and slow gait speed than non-users, as shown in Table 2.

Table 1. Sociodemographic and health characteristics of elderly users and non-users of antidepressives (N=201) from a municipal region in the south of Brazil, 2016.

Variables	Total % (n)	User % (n)	Non-user % (n)
Gender			
Female	66.2 (133)	80.5 (70)	55.3 (63)
Male	33.8 (68)	19.5 (17)	44.7 (51)
Age group (years)			
60 to 69	47.3 (95)	48.3 (42)	46.5 (53)
70 to 79	34.3 (69)	28.7 (25)	38.6 (44)
80 or more	18.4 (37)	23.0 (20)	14.9 (17)
Marital status			
With partner	69.2 (139)	57.5 (50)	78.1 (89)
Without partner	30.8 (62)	42.5 (37)	21.9 (25)

to be continued

Continuation of Table 1

Variables	Total % (n)	User % (n)	Non-user % (n)
Education			
Illiterate	9.5 (19)	9.2 (8)	9.7 (11)
Incomplete elementary education	65.0 (130)	69.0 (60)	61.9 (70)
Complete primary education	10.0 (20)	6.9 (6)	12.4 (14)
Incomplete high education	3.5 (7)	2.3 (2)	4.4 (5)
Complete high education	7.5 (15)	9.2 (8)	6.2 (7)
Incomplete higher education	1.5 (3)	1.1 (1)	1.8 (2)
Complete higher education	3.0 (6)	2.3 (2)	3.6 (4)
Family Income (MS)			
1 to 3	79.1 (159)	85.1 (74)	74.6 (85)
3 or over to 5	13.4 (27)	11.5 (10)	14.9 (17)
5 or over to 10	5.5 (11)	2.3 (2)	7.9 (9)
Over 10	2.0 (4)	1.1 (1)	2.6 (3)
Presence of chronic disease			
Yes	79.6 (160)	83.9 (73)	76.3 (67)
No	20.4 (41)	16.1 (14)	23.7 (27)
Symptoms suggestive of depression			
Yes	21.9 (44)	34.5 (30)	12.3 (14)
No	78.1 (157)	65.5 (57)	87.7 (100)

MS= minimum salary; 1MS= R$880.00

Table 2. Distribution of frailty components among elderly users and non-users of antidepressants in a municipal region in the south of Brazil, 2016.

Component	Total % (n)	User % (n)	Non-user % (n)	*p*	OR (CI95%)
Fatigue					
Yes	35.3 (71)	47.1 (41)	26.3 (30)	0.002*	2.50 (1.38-4.51)
No	64.7 (130)	52.9 (46)	73.7 (84)		
Low gait speed					
Yes	23.4 (47)	32.2 (28)	16.7 (19)	0.010*	2.37 (1.22-4.62)
No	76.6 (154)	67.8 (59)	83.3 (95)		
Unintentional weight loss					
Yes	16.4 (33)	26.4 (23)	8.8 (10)	0.001*	3.74 (1.67-8.36)
No	83.6(168)	73.6 (64)	91.2 (104)		
Low grip strength					
Yes	18.9 (38)	21.8 (19)	16.7 (19)	0.353	1.40 (0.68-2.84)
No	81.1 (163)	78.2 (68)	83.3 (95)		
Low level of physical activity					
Yes	13.4 (27)	14.9 (13)	12.3 (14)	0.583	1.25 (0.56-2.82)
No	86.6 (174)	85.1 (74)	87.7 (100)		

*$p<0.05$

It was found that elderly persons who used tricyclic antidepressants had a greater chance of frailty (OR=2.60 / CI 95% 1.16 - 5.80) than those in the non-users group. A greater risk of frailty was not found among users of Selective Serotonin Reuptake Inhibitor antidepressants in comparison with the non-user group (OR=1.42 / CI 95% 0.70 - 2.89).

When the use of antidepressants that were potentially inappropriate for the elderly was analyzed, it was found that the users of such inappropriate drugs had a 2.39 (CI 95% 1.14 - 4.96) times greater chance of frailty than the non-user group. The inappropriate drugs used included amitriptyline, imipramine, nortriptyline and paroxetine.

DISCUSSION

The sociodemographic characteristics and health conditions of the studied population are similar to studies with Brazilian elderly persons that evaluated the use of antidepressants[8,9], with a predominance of women, low educational levels, low incomes and the presence of chronic diseases; characteristics frequently present in the Brazilian population and which were also associated with a condition of frailty among Brazilian elderly persons[1,22].

The results of the present study also identified an association between antidepressant use and frailty. The elderly in the user group had a greater chance of frailty than those in the non-user group. These data are in line with the follow-up study by Lakey et al.[12] with 27,652 women aged between 65 and 79 in the USA, which identified a greater risk of frailty among antidepressant users both with and without depressive symptoms.

The scientific evidence regarding the relationship between depressive symptoms and frailty has been widely explored in both Brazilian and non-Brazilian literature[1,2,5]. However, most of these studies do not consider the use of antidepressants as a potential interferer of frailty among the elderly[10,11]. Considering that frailty is an inherent condition of senescence, and due to the decline of the musculoskeletal, neuroendocrine and immunological systems[3], the analysis of drug use is important in the monitoring of the elderly, especially in primary care.

Furthermore, most studies of depression and its treatment are conducted with a young population. The response of the elderly to antidepressant treatment may differ from this population, however, due to their physiological and health conditions, such as the presence of comorbidities and the use of multiple medications[23], further recommending studies that include the use of antidepressants among the elderly.

Among the components of frailty, low walking speed, fatigue and unintentional weight loss were associated with the use of antidepressants. The use of antidepressant as a risk factor for a reduction in gait speed was identified in the studies of Groot et al.[13] of elderly persons in Amsterdam and Donoghue et al.[24] with elderly Irish persons. Among the potential adverse effects of antidepressants are repercussions on motor skills, such as an increased risk of falls, fractures and the impairment of functional capacity, which may be related to the impairment of gait[16,25]. These results highlight the importance of the monitoring of the elderly using antidepressants and protocols that evaluate the real necessity of the prescription of these drugs, considering the risk of iatrogenic diseases related to their use.

The association between antidepressant use and unintentional weight loss may be related to the emotional aspects of the elderly themselves, but there is also evidence that the presence of depressive symptoms and use of antidepressants may promote weight loss, especially those belonging to the serotonin reuptake inhibitor class[26,27]. Serotonin, the main neurotransmitter on which these drugs work, may act as an appetite regulator and in the choice of macronutrients, promoting appetite reduction and a preference for protein foods, which may lead to changes in body weight[28].

Weight loss in old age, especially muscle mass reduction, can affect the pharmacokinetics of medications, constituting a risk for the elderly, as in the case of tricyclic antidepressants, which in this population present a higher risk of sedation and falls. Lakey et al.[12] also found a risk among users of tricyclic antidepressants. In addition, these authors identified a risk among elderly persons using selective serotonin reuptake inhibitors, which differs from

the present study, in which there was no greater risk among users of this class of drug in comparison with non-users.

Fatigue was another component of frailty associated with the use of antidepressants. This result refers to physical and mental exhaustion, which is one of the characteristics found in subjects with depression. Studies have shown that fatigue is the component that most affects the mental and emotional evaluation of the elderly[29,30].

Tricyclic antidepressants act by inhibiting the reuptake of serotonin and norepinephrine, with a highly anticholinergic effect in terms of adverse effects such as blurred vision and the impairment of memory and delirium, increasing the risk of psychomotor disorders and the occurrence of falls[18]. In addition, there may be other central effects related to weakness and fatigue. Given these effects, the drugs in this class are classified as potentially inappropriate for the elderly according to the Beers criteria[18]. In this context, the present study found that the use of inappropriate antidepressants increases the chance of frailty, which demonstrates the need to incorporate the indications of these criteria into the clinical practice of the elderly, especially in primary health care.

The association between frailty and the use of potentially inappropriate drugs was also verified in non-Brazilian studies such as those by Cullinan et al.[31] in Ireland and Récoché et al.[32] in France. In Brazil, the study by Cassoni et al.[33] with elderly persons from the city of São Paulo taking part in the SABE (Health, Welfare and Aging) study found that 40.1% of users of inappropriate drugs were considered frail. It is inferred that the use of these drugs can have negative consequences on the health of the elderly and when associated with frailty can further impair their health and life condition. The association of the use of potentially inappropriate drugs with frailty emphasizes the importance of incorporating the Beers' criteria into the clinical practice of elderly care[18] as an instrument to guide prescriptions, with a view to the selection of suitable drugs for the characteristics of the elderly population and the prevention of potential adverse effects which may compromise the health of the senescent individual.

The best way to care for an aging society is to reduce the risk of frailty and the loss of autonomy. To achieve this different health professionals must work to achieve safe and effective geriatric pharmacology, as this is the population which most consumes medication, and such medication is potentially more harmful among them[9,31,32].

In this context, it is necessary to evaluate and accompany the frailty syndrome in clinical practice, especially when instituting drug therapies that may have an impact on this condition, such as the use of antidepressants, which require the constant monitoring of treatment to identify problems and the application of interventions necessary for the promotion of care by health teams[32,33].

However, the design of the present study did not allow the monitoring or evaluation of the impact of antidepressant treatment on the capabilities of the elderly. To achieve this, the physical-functional evaluation of the elderly at the beginning of treatment and throughout its course would be required through the performance of systematic evaluations. Considering that the results suggest that there is an association between the use of antidepressants and frailty, other studies can perform this follow-up evaluation to identify to what degree antidepressants interfere with this syndrome.

CONCLUSION

The results of the present study demonstrate the association between antidepressant use and frailty, especially in the gait speed, fatigue and unintentional weight loss components.

These findings highlight the need for the clinical evaluation of the risks and benefits of prescribing antidepressants to elderly individuals. When treatment is instituted, the regular monitoring and evaluation of geriatric characteristics such as frailty is required to identify potential harm and to ensure the safety and quality of life of elderly users of these medications.

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Dimensions assigned to Long Term Care Facilities by managers and health professionals: interfaces and contradictions

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Abstract

Objective: to analyze the dimensions assigned to long term care facilities for the elderly (LTCFs) by managers and health professionals. *Method:* a descriptive-exploratory study with a qualitative approach was conducted in the metropolitan area of Belo Horizonte, through ten focus groups with 51 managers and health professionals. Analysis was based on the content of the interviews. *Results:* considering the most common themes, three empirical categories emerged that explained the consensuses and contradictions present in the empirical material: a) the LTCF and the perpetuation of the asylum space; b) the LTCF as a space for health treatment c) a home: convergences and contradictions in the LTCF. Initially, findings relating to the political definition of the LTCF directly linked to social organs are evidenced. In the second category, LTCFs are described negatively, perpetuating the stigma of the term "asylum" which still reverberates in their daily lives. As a treatment space, LTCFs are considered health facilities due to the services offered and the presence of health professionals on a daily basis. In the third analysis, they are recognized as a home, based on current legislation that describes the LTCF as a collective, residential area. *Conclusion:* it is important to discuss the different attributes given to the LTCF to create resolutive actions in the care of the institutionalized elderly. The importance of thinking about the rights to health of the elderly and the need to understand how they inhabit this space is also emphasized.

Keywords: Aging. Elderly. Home for the Aged.

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INTRODUCTION

Rapid demographic transition has resulted in a need for the expansion of long-term care for the elderly population. Such care is characterized as a set of actions, usually provided over a sustained period, in the home or in the community, with the purpose of guaranteeing the continuity of a life with quality[1-3]. In this context, Long-Term Care Facilities for the Elderly (LTCFs) are an important structure of non-family care for the elderly.

In Brazil, however, there is a lack of consensus about the definition of a LTCF, with different nomenclatures and concepts applied. According to the National Health Surveillance Agency (ANVISA), LTCFs are governmental or non-governmental institutions that are residential in character, aimed at the collective residence of persons aged 60 or over, with or without family support[4].

For the National Council of Social Care (CNAS)[5], LTCFs are highly complex services for elderly persons who cannot live with their families and those who are homeless or suffer abandonment, violence or neglect. Other agencies associate LTCFs with health facilities because of the similarity of the services offered therein[6].

Faced with the significant increase in numbers of LTCFs and the constant demand for care structures, the guarantee of comprehensive care for institutionalized elderly persons should be based on politic directionality, which itself is mixed, involving social and health policies. Some countries already have well-structured and organized policies that consider the premise of institutionalization as an integral part of health planning and management[7-9].

Achieving this reality remains a challenge in Brazil, however. The management and inclusion of these services in the agenda of health priorities is urgently required to guarantee the principles and guidelines that govern the Brazilian Unified Health System.

The formulation of public policies and consequently the care offered to the elderly is based on the understanding that the various actors involved have of the role of LTCFs and the relevance of these institutions in the health and social network. It is believed that the meanings and dimensions attributed by administrators, coordinators and the formulators of public policies have repercussions in the establishing of priorities and the various forms of the care model offered to the elderly. Dimensions, in this case, are understood as the multiple meanings and signifiers attributed to LTCFs, the understanding of which are fundamental from a political and care perspective and help to guide practices of care.

The present study therefore aims to analyze the dimensions attributed to LTCFs by municipal administrators and LTCF professionals in the Metropolitan Region of Belo Horizonte, Minas Gerais.

METHOD

A descriptive-exploratory study with a qualitative approach was performed, based on the "Quality of Life of the Institutionalized Elderly: Aspects of Health Promotion" survey carried out in the Metropolitan Region of Belo Horizonte (MRBH) between 2014 and 2017. Data collection was performed through interviews with a semi-structured script with 51 public municipal and state health service administrators from the RMBH on the political directionality of care for the elderly, in addition to 62 professionals from 52 LTCFs, who participated in ten focus groups, with the aim of identifying their perceptions on the promotion of health for institutionalized elderly persons and the actions carried out.

The interviews were codified as follows: I for scripted interviews conducted with public administrators and FG for focus groups with professionals and managers from the LTCFs, each followed by a sequentially assigned number.

The present study was approved by the Research Ethics Committee of the Pontifícia Universidade Católica de Minas Gerais (CAAE: 31471114.4.0000.5137), and all the participants signed a Free and Informed Consent Form (FICF).

To analyze the data, the steps of the content analysis technique proposed by Bardin[10] were followed. This consisted of the organization of the empirical material, the transcription of the discourse and the exhaustive reading of the same, with the aim

of grasping the central ideas that the participants tried to transmit, as well as the relevant contents. After the central ideas were established, a vertical and horizontal reading of the text was carried out, and themes emerged through the approximation of similar ideas. The Hermeneutic-Dialectic approach was adopted as a reference for analysis, seeking to identify the social practices of individuals in terms of their consensuses and contradictions, considering the reality they experienced and conditioned in terms of historicity, taking as a starting point the maintenance and extension of intersubjectivity of a possible intention as the guiding nucleus of action[11].

RESULTS AND DISCUSSION

From the grouping of recurrent themes, three different dimensions emerged which explained the consensuses and contradictions present in the empirical material: a) LTCFs and the perpetuation of the asylum space, b) LTCFs as a treatment space, and c) a home: convergences and contradictions in LTCFs.

LTCFs and the perpetuation of the asylum space

The term asylum is no longer used due to its pejorative association as a place where needy elderly persons and those without family support are welcomed by philanthropists.

Despite the established change in nomenclature from asylum nomenclature to Long-Term Care Facility for the Elderly, suggested by the Brazilian Society of Geriatrics and Gerontology, the analysis of the discourses of the subjects indicates that even after the change of name, a strong "inheritance" of asylum remains, thus perpetuating the stigma:

> "[...] I call it this because most of the time everyone here calls it a rest home for the elderly... asylum, or put in an asylum is very critical". (FG8).

> "[...] At the time of the transition, leaving the bosom of the family for an institution is a negative milestone, most of the time, for those we care for. People still see LTCFs as asylums" (FG8).

> "[...] I don't live there, the collective home is theirs, so they're the ones who need to speak, to say that this space is not an asylum, I always say that, it's not an asylum, it's not a dumping ground for the elderly, you don't come here to die but to live, so I always emphasize this to them." (FG10).

To minimize the hurt caused to the elderly and their families by the name "asylum", other synonyms have appeared as denominations for these places: rest home and old people's home, for example. However, it is argued that the place occupied by the LTCF in the social imagination goes far beyond the names attributed to the place[12].

Studies of the elderly have indicated that abandonment can be one of the reasons that result in the elderly living in LTCFs[13,14], in tandem with the way in which the family and the institution conduct themselves and the institutionalization is handled. This, therefore, contributes to the strengthening of stigma, meaning the institution must dismantle this negative stereotype and become a place where the rights of the elderly are guaranteed by the State, the family, the community and the staff. Nevertheless, although several studies have been carried out with the lay population or the elderly themselves as subjects, it was expected that a new resignification would have been created for this phenomenon by the professionals involved in the services or even those directly involved in the creation of policies.

However, at the heart of the findings of this study is the fact that scientific knowledge does not seem to be the only area that defines meanings in relation to the construction and implementation of policies aimed at the elderly. This is because professionals, whether working in management or care, form part of social groups, and therefore share representations about health, illness, institutions, users and how they should act. In addition, they have values, habits and customs that influence their managerial and care practices, giving meaning to them. These meanings and dimensions, in turn, are located in the imaginary register and persist in their professional experiences[15].

> "The model is still an asylum model, which comes from the culture of asylums and the abandoned elderly person. Those who deal with families in

> LTCFs understand that it can be an escape route, as it is very common for a relative to say "I'm here because I have no other alternatives, you are my last option, I have nothing else". (FG 3).

> "[...] There remain other serious prejudices related to the family and in relation to cultural values. So that's the big issue. I think when you search the internet or social networks, the first word that comes up is asylum. No one knows what the LTCF is, the size of the place. Even the institutions themselves have this problem." (FG 3).

The above discourse reveals how the family itself sees the LTCF. In general, when the family opts for institutionalization, it has already sought other alternatives, often without resolving its needs. The teams are still focused on medical knowledge, and preconceived values justify their practical approach. The institutionalization of the elderly is considered as a last resort by Brazilian legislation; it does not state, however, what the other options are.

However, it is worth remembering that there are a few discordant voices that not only attribute a new nomenclature to these physical spaces, but reconstruct them through a new vision, as exemplified in the following statements:

> "[...] There is still a great cultural challenge about what an LTCF really is, what are the true activities and functions of the space, especially thinking about the promotion of health and quality of life. And I also think that putting this in practice is the great challenge, thinking of the LTCF as a place of care, but also a welcoming space for the elderly, for professionals, and the family and all who are directly or indirectly connected with this service" (FG3).

> "[...] People still see LTCFs as asylums, until a given moment where they are in and begin to experience the space, which allows it to be "re-signified". Then the LTCF becomes somewhere they are grateful for having come to." (FG4).

It is important to emphasize that the re-signification and construction of new dimensions (perceiving in a new way and giving a new meaning to what has already been formatted in our system of values and beliefs) of a given object is a slow and progressive process. It is important, therefore, that professionals, who are at the forefront of policy-making and/or coordinating care for the elderly, are open to the construction of new meanings, as these changes involve ways of thinking and acting that are culturally incorporated and cannot be transformed quickly.

Recognizing the LTCF as an option for long-term care is to enable a new vision, new care practices and to re-signify this space through legislation, the general community, professionals, family and the elderly.

LTCFs as treatment spaces

LTCFs are commonly associated with health care facilities because of the services they offer, which "meet the demand for health care" as a consequence of the profile of elderly people admitted, most of whom have chronic or incapacitating health problems. When institutionalized, the elderly arrive with a certain autonomy, but with the advancement of age and the deterioration of their health conditions, or even through inadequately provided care, this autonomy can be compromised[6], requiring increased care and health service coverage. In terms of inspection, Health Surveillance, through Directorial Board Resolution (RDC) nº 283 of 2005, ensures that the LTCF are evaluated as health services, with criteria pertinent to the hospital context, which suggests the need for a broad review of this legislation.

Regarding the provision of resources, at a national policy level LTCFs are part of the network of social care services[6]. LTCFs should be considered as hybrid structures so that financing can be provided not only for social care but also for health, as many of the professionals working in these institutions are from the area of health, suggesting a need for systematic health care.

A correlation with health services was revealed in the present study. Possibly, the history of these institutions plays an important role in the emergence of this dimension, as institutionalization began through Christian charity, through shelters and the *Santa Casa de Misericórdia* homes, with a purely care-based outlook[6].

It is worth noting that LTCFs linked to the Catholic, Pentecostal or Spiritist Church are common in the municipal regions mapped in the study, as in smaller regions, philanthropic LTCFs are fundamental for the care of elderly persons requiring institutionalization.

For those interviewed, the LTCF is comparable to a health service, usually a clinic, where the elderly receive care and treatment:

> "[...] I work in a group of health establishments. Today health surveillance employs a university-educated inspector who is qualified in these three areas ... the third group, which is mine, is made up of eight inspectors working with health care services: clinics and health care establishments, which include the LTCFs, clinics, consultancies, hospitals, radiodiagnosis, the therapeutic community, and so on." (I2).

> "[...] When you live in an institution you are deprived of everything, there's a time to eat, a time to take a shower, a time to cut your nails, a time for everything, your life is regimented." (FG6).

The institutionalized elderly, as well having access to housing and food, receive health care. This area, which involves a vast number of professionals, removes the informality of a home and, in many cases, makes the institution resemble a hospital environment. For LTCFs to maintain the characteristics of home care, health teams require organization, respect and action planning, involving the elderly in decisions that are pertinent to them.

Exemplifying the dimension of a treatment space, the institution clearly ceases to be a home that welcomes the individuals and becomes a space of procedures and health interventions, according to some reports:

> "[...] Today I'd say there is a big problem in LTCFs ... which is the hospitalization of care. [...] it's the same dynamics as a hospital, isn't it? It's time for breakfast, time to take a shower [...]. As I already said: it's their home, they have to feel at home and instead they feel eternally hospitalized" (I2).

For participants, LTCFs remain associated with health care facilities, although the sole paragraph of art. 4 of the National Immunization Program (PNI) prohibits the permanence of people with diseases that require medical or nursing care in LTCFs[6]. In contrast to the PNI, RDC 2834 describes degrees of dependency for the elderly and the need for a caregiver according to the profile of each resident, as well as indicators of quality of care, monitoring, and evaluation of the functioning of institutions similar to those used in hospitals, such as the prevalence of pressure ulcers[4].

These two opposing views point to a lack of defined policy, even in relation to the population of the LTCFs, resulting in contradictions regarding the permanence or not of elderly people who need health care in a continuous or long-term manner. If not in the ILPI, what are the other care structures capable of providing long-term care for elderly persons for whom the family cannot provide support? Should these elderly people be hospitalized? These are fundamental issues to be discussed at a policy level due to population aging and the lack of prioritization of national long-term care policy.

Finally, this paradox may be explained, according to Camarano and Barbosa[6], by the fact that LTCFs arose because of the needs of the entire community, and not the implementation by the state of a long-term care policy, which results in practices with a focus that goes beyond care.

> "[...] On the other hand, the logic is quite perverse as we say there are problems with the institutions, but we don't have much of a model, especially a standardized model, of where we want to be. So, I say that... okay, it needs to be better, but based on what, huh? We don't have much to go on, and that's a hindrance. In terms of political gameplaying, especially regarding budgets, even guaranteeing what is set out in a law, or a guideline, would be something. We fight to improve the service, but these minimums aren't predicted very clearly, so it becomes much more difficult." (I1).

A home: convergences and contradictions in LTCFs

The recognition of the institution as a home where family bonds are created between residents and professionals, based on the coexistence and bond established was also observed in the reports of professionals and managers.

> "[...] What I like about the institution I work for is it doesn't look like an institution, it looks like a house, a home, and we do our best to keep it that way, to feel at home and have freedom." (FG4).

> "Look, the affinity we have is like a family, we treat each other like family." (FG7).

In some discourses it was possible to infer that, although it is important to think about the individuality of the elderly, the routine imposed by the institution ends up creating pre-established schedules for meals, baths and showers and other activities. The lack of flexibility, need for authorization and justifications imposed on the elderly by the institution were recognized by the participants. However, the reports show the effort and commitment towards the construction of a space that resembles a home:

> "We are fighting against standardization because everything is based on a schedule, everything has its place, everything ... so, for me everything is aimed at massification. And it's not just my opinion as a psychologist but also that of my colleagues who are also health professionals, everyone contributes to it depending on their outlook, depending or not depending on the outlook, depending on their willingness to optimize an individual's quality of life." (FG7).

> "Obviously the institution will be the home of the elderly and will welcome them and try to promote activities without imposing on them, to relax the imposition by professionals of a schedule with a time for everything, a time for workshop, times to worship, times for baths or showers ... it's difficult, but this is a model of safe care." (FG9).

Routine is necessary for the proper functioning of any institution, but when these routines are ingrained or have little flexibility, they are no longer the common practices of a home. The discourse of the professionals suggests the need for a constant effort on the part of the team to configure the LTCF as a home for the elderly. This contradiction puts the space occupied by the elderly and their own autonomy at risk. An LTCF should not look like an old people's home; it should be the elderly person's home with their personal objects, their routine, their beliefs and their way of living respected and assured.

Through institutionalization, the desire of the elderly person becomes that of the institution, that is, their daily lives associate directly with the planning and organization of the LTCF. Thus, the elderly, who are unable to counter the effects of institutionalization, comply with all the demands without questioning[12].

To solve problems through health surveillance inspections and at the same time maintain a family-like environment, as well as empowering the elderly, one institution created an alternative kitchen for workshops and other activities, with an accessible space that the elderly persons could use when they wished, which had a positive impact on the individuals:

> "[...] The kitchen is really the heart of the LTCF, but the elderly persons can't use it ... but we have created a parallel kitchen in our LTCF. We have wood stoves, just to make snacks, gather everyone from occupational therapy and they will use the time this way, this time, this moment, that they have." (FG9).

Reports such as those presented above reinforce the attempt of professionals and managers to provide adequate conditions for the institutionalized elderly to recognize the LTCF environment as a space of intimacy and freedom resembling their own homes. These attempts illustrate the breaking of the LTCF paradigm as a space of exclusion and of limitations, signaling new conceptions and practices in this context.

Among the range of professionals working in the LTCFs and the range of activities that are offered by them, a desire to "eliminate" the idle time of the elderly was reported by some respondents. This range of activities, in many LTCFs, was denominated as a "menu" of activities, a nomenclature attributed by the study participants, which includes various activities, either based on the diversity of the professionals or the demands and needs of the elderly.

> "What happens is we have a weekly schedule which takes up half of the recreation area, in addition to the therapeutic activities with these health professionals, we have other activities there such as music." (FG2).

> "Just to provide them or reduce the period of idleness, because if you stop thinking about them, like I said, they are restricted to their environment ... and if you don't insist they won't participate" (FG1).

It is questionable, however, whether these elderly people are given the option of choosing or to not participate in the proposed activities if they so wish. In this sense, the dimension of the LTCF in its entirety must be constructed in a harmonious manner, respecting the desires and choices of the elderly as well as promoting the life that pulsates in this context with quality.

Gandini et al.[16] affirm that it is not enough for the LTCF to meet the rules of safe construction, sanitation, hygiene and accessibility. It must also provide an environment that incldues social and affective aspects for elderly persons who need it. A home is a space that takes into account the preferences of those who reside in it, evidenced by the availability of objects, activities and the relationships established[17].

CONCLUSION

The present study showed that professionals and managers attribute several dimensions to LTCFs, characterizing this as a difficult and extremely challenging field for those who work or live in it.

It is necessary to discuss the different attributes given to LTCFs, from the singular dimension, with the intention of carrying out pertinent and resolutive actions for the process of care for the institutionalized elderly, including the living conditions and choices of such individuals, to the structural dimension of social and health policies in an intersectoral construction.

The real and coherent consensus is also important because of the need to think about a long-term care policy with suitable funding for the complexity of this care, which therefore requires intersectorality, co-financing, and the belief by the State, society and professionals that LTCFs are spaces of life choices, and not just protective measures. To achieve this, a social commitment to the demands of aging that must be made as part of a collective cause and the apparatus of the city, that is transversal to different policies and no longer exists as a segregated space with one-off and isolated actions.

It is essential to think about the right to health, equity and integrality of these elderly people, and the need to understand the relation of how the elderly inhabit these spaces, so that they are places of inclusion and social and family recovery.

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Quality of life of participants and non-participants of public physical exercise programs

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Abstract

Objective: to compare the quality of life of elderly participants and non-participants of public physical exercise programs. *Method*: a control, analytical and cross-sectional study analyzing 108 elderly participants of public exercise programs (SG) and 126 non-participants (CG) in the city of Goiânia, Goias, Brazil, was performed. An initial Assessment Form, the Mental State Mini-Exam, the short version of the International Physical Activity Questionnaire, the World Health Organization Quality of Life - Bref (Whoqol-Bref) and the World Health Organization Quality of Life - Old (Whoqol-Old) were used. Comparison of socio-demographic profile and health conditions was performed using the Chi-squared test, while comparison of the quality of life of the SG and the CG was performed using covariance analysis (ANCOVA), followed by the post-hoc Tukey test. *Results*: the elderly persons in the SG had higher mean scores than those of the CG in all the Whoqol-Bref and Whoqol-Old domains ($p<0.05$). The active elderly in the CG did not exhibit differences in relation to the insufficiently active or sedentary members of the CG for any Whoqol-Bref or Whoqol-old domain ($p\geq0.05$). *Conclusion:* the elderly participants in public physical exercise programs had a better perception of quality of life than non-participating elderly persons, and it was found that simply being active may not be enough to guarantee a better quality of life.

Keywords: Elderly. Quality of Life. Exercise.

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INTRODUCTION

The number of elderly persons has increased in most countries[1], including Brazil[2]. With advanced age comes a decline in physical capacity, subsequently affecting performance when carrying out several tasks, including activities of daily living[3]. In addition to this decline, many elderly persons suffer from chronic non-communicable diseases[4]. Such comorbidities can result in a disabled condition, social isolation and also depression[5].

Faced with such a reality, it is essential to maintain positive standards of health and quality of life, ensuring that longevity is accompanied by satisfactory levels of autonomy and independence[6]. For the World Health Organization (WHO), the concept of quality of life is understood as the individual's perception of their position in life within the context of their culture and the value system of where they live, and in relation to their own goals, expectations, standards and concerns[7].

Several studies have recently been carried out to understand the factors that can influence the quality of life of the elderly[8-15]. Previous studies have demonstrated that a physically active lifestyle and the regular performance of physical exercise are associated with various domains of quality of life, suggesting that the promotion of such activities can have a satisfactory impact on the functional capacity, mental health and quality of life of the elderly[9,16,17].

The Brazilian National Policy on Health Promotion, published in 2006, recognizes the importance of physical activities and practices involving the body in reducing health risks and improving the quality of life of individuals[18]. This importance is also recognized internationally, causing scientific institutions from various countries to develop guidelines for activities and physical exercises for the elderly[19,20].

Despite the evidence and recognition of the need to implement public policies for the promotion of physical activity in Brazil, few studies have analyzed the quality of life of elderly people who participate in public exercise programs. The objective of this study was therefore to compare the quality of life of elderly participants and non-participants of public physical exercise programs.

METHODS

A cross-sectional, analytical, case-control study with a quantitative approach was performed, based on interviews with elderly participants in the physical exercise programs of the Municipal Tourism and Leisure Events Agency (AGETUL) in Goiânia, Goiás, Brazil and elderly people who did not participate in exercise programs.

In 2016 AGETUL offered two physical exercise programs, *An Active Life in Old Age* and *Healthy Walking*, distributed in 18 neighborhoods of the city of Goiânia, with twenty activity nuclei. In each nucleus classes were offered in Functional Training, Group Gymnastics and walking, aimed at the general population, with weekly frequencies of two to five times and sessions of 60 minutes.

A minimum sample size was calculated considering the elderly population that frequented the AGETUL exercise programs in 2016. A sample error of 6% with a 95% confidence level was applied. The study sample consisted of a study group (SG), consisting of AGETUL elderly persons, and a control group (CG) made up of elderly community members who did not participate in any exercise-oriented activities.

Participants in the study who attended another physical exercise program, who had an attendance frequency lower than 75% in the six months before the data collection date, or who did not reach a minimum score in the Mini-Mental State Exam (MMSE), according to their degree of schooling, were excluded from the study (21). In addition to the SG criteria, individuals who participated in any exercise program in the six months preceding the date of data collection were also excluded from the CG.

AGETUL registration data were used to select the elderly in the SG, and the nuclei of the Agency with the highest number of elderly persons were visited until the minimum sample was reached, with a final total of six sites. Prior contact was made with those responsible for the activities of the selected nuclei to schedule a date and time for data collection. On the day of the visit, the objectives and procedures of the research were explained to the elderly persons, and a Free and Informed Consent Form (FICF) was given

to each individual. Those who agreed to participate in the study returned a signed copy of this document before responding to the instruments.

CG recruitment was carried out after the collection of data in the nuclei. Letters of invitation were sent to elderly persons in the community who lived close to the nuclei and who did not participate in AGETUL programs. This letter was left in residences, houses and apartments, and elderly persons who expressed an interest were contacted and data collection scheduled until the required quantity was reached. On the day of the visit, the elderly of the CG received an explanation of the research objectives and procedures and signed the FICF.

The data collection procedure began with the application of an initial Assessment Form, prepared by the authors themselves, which provided anthropometric, health status and sociodemographic variable information. Soon after an evaluation of cognitive state was performed using the MMSE[21]. Then the level of physical activity of the elderly was verified using the short version of the International Physical Activity Questionnaire (IPAQ), validated for the Brazilian population[22], classifying them as insufficiently active or sedentary (IAS) and active[13].

Afterwards, the perception of quality of life was evaluated using two instruments. The first was the Portuguese version of the World Health Organization Quality of Life – Bref (Whoqol-Bref) questionnaire validated for the Brazilian population[23], which is composed of 26 questions. The first question refers to how the individual assesses their quality of life and the second question rates their satisfaction with their own health. The other 24 are divided into physical, psychological, social and environmental domains, each composed of four questions, with scores varying from 1 to 5 on a Likert scale[23].

The second was the Portuguese version of the World Health Organization Quality of Life - Old (Whoqol-Old) questionnaire, also validated for the Brazilian population[24], composed of 24 items divided into six facets (domains): sensory functions; autonomy; past, present and future activities; social participation; death and dying; and intimacy, also composed of four questions per domain, with a Likert scale ranging from 1 to 5[24]. In both quality of life instruments, the final score of each domain was calculated using a syntax that classified the total quality of life and each domain of the instrument in percentage scores from 0 to 100[23,24].

Data were collected between September 2016 and February 2017. A team of 14 research assistants was previously trained, and a pilot study was conducted evaluating 16 elderly people from an aqua gymnastics program at a gym in Goiânia.

A significance level of 5% ($p<0.05$) was adopted and the data were presented as mean (±sd), for the continuous variables, or frequency and percentage for the categorical variables. The normality of the data was verified using the Kolmogorov-Smirnov test. The characterization of the sociodemographic profile of the study and control groups was performed using contingency tables applying the Chi-squared test. To compare the quality-of-life domains evaluated by the Whoqol-Bref and Whoqol-Old, after significant differences in BMI and study time between the SG and the CG were verified and these data were added as covariates to the general linear model, analysis of covariance (ANCOVA) was applied. For the comparisons of the quality of life among the active elderly persons of the SG and the insufficiently active and sedentary elderly of the CG, ANCOVA was used, followed by the Tukey post-test.

The present study was approved by the Research Ethics Committee of the Pontifícia Universidade Católica de Goiás under approval number 1.682.764. All the elderly persons that participated in the study signed a Free and Informed Consent Form.

RESULTS

The sample of the present study was composed of 108 elderly individuals in the SG and 126 in the CG. The majority of elderly people in the SG (42.6%) had been enrolled with AGETUL for more than two years, and the majority (51.9%) attended programs more than three times a week (Table 1).

Table 1. Period of enrolment in the Municipal Tourism and Leisure Events Agency (AGETUL) and weekly AGETUL attendance frequency of study group in the city of Goiânia, Goiás, Brazil, 2017.

AGETUL Information	Study Group n (%)
Time of enrolment in AGETUL (years)	
≤1	29 (26.9)
1 to 2	33 (30.6)
>2	46 (42.6)
Weekly Attendance Frequency at AGETUL	
More than 3x/week	56 (51.9)
Up to 3x/week	52 (48.1)

The elderly persons in the present study were predominantly aged between 60 and 69 years, and no significant differences were found between the SG and the CG in terms of age groups (p=0.27). The majority of the elderly were female and resided in the southern sub-region of Goiânia in both the SG and the CG, with no significant differences between the groups (p≥0.05). The majority of the elderly in the SG had a higher education, while the average educational level in the CG was elementary school (p=0.009). The majority of the elderly persons in both the SG and the CG lived with their families (80.6% and 68.3%, respectively), were retired (73.1% and 73.8%, respectively) and did not work (61.1% and 67.5%, respectively). These findings did not differ significantly between the groups (p≥0.05). The family income categories also did not present significant differences between the groups (p=0.11), while there was a higher frequency of elderly people in the SG with health insurance (p<0.001) (Table 2).

Table 2. Characterization of sociodemographic profile of control and study group. Goiânia, Goiás, Brazil, 2017.

Sociodemographic Variables	Study group n (%)	Control group n (%)	p*
Age Range (years)			
60-69	62 (57.4)	59 (46.8)	0.27
70-79	34 (31.5)	49 (38.9)	
≥ 80	12 (11.1)	18 (14.3)	
Gender			
Female	95 (88.0)	114 (90.5)	0.53
Male	13 (12.0)	12 (9.5)	
Sub-region of residence			
Central/Campinas	44 (34.9)	40 (37.0)	0.86
Southwest	18 (14.3)	13 (12.0)	
South	64 (50.8)	55 (50.9)	
Education			
Illiterate	0 (0.0)	7 (5.6)	0.009
Elementary School	33 (30.6)	49 (38.9)	
High school	37 (34.3)	44 (34.9)	
Higher education	38 (35.2)	26 (20.6)	

to be continued

Continuation of Table 2

Sociodemographic Variables	Study group n (%)	Control group n (%)	*p**
Lives with			
Relatives	87 (80.6)	86 (68.3)	0.05
Alone	20 (18.5)	34 (27.0)	
Others	1 (0.9)	6 (4.8)	
Retired			
No	29 (26.9)	33 (26.2)	0.90
Yes	79 (73.1)	93 (73.8)	
Kind of work			
Formal	23 (21.3)	16 (12.7)	0.21
Informal	19 (17.6)	25 (19.8)	
Does not work	66 (61.1)	85 (67.5)	
Family Income (Minimum Wage)			
Up to 3	47 (43.5)	68 (54.0)	0.11
> 3	61 (56.5)	58 (46.0)	
Health insurance			
No	16 (14.8)	44 (34.9)	<0.001
Yes	92 (85.2)	82 (65.1)	

*Chi-squared

The SG had a higher percentage of sufficiently active elderly people (p<0.001). The BMI classification of the individuals differed between the groups (p= 0.002), with the majority of the SG considered to be of normal weight and the majority in the CG found to be overweight. The number of falls reported in the last six months was higher in the CG (p<0.001). The percentage of those who declared that they had diseases differed between the SG and CG for hypertension (p=0.01) and thyroid disorders (p=0.009) (Table 3).

The first two questions of the Whoqol-Bref, which refer to how the individual assesses their quality of life and satisfaction with their own health, revealed differences between the groups, with the SG presenting a better perception of quality of life (p<0.001) (Table 4).

The SG had a better quality of life than the CG in all domains of the Whoqol-Bref and the Whoqol-Old (p<0.05). The environmental domain of the Whoqol-Bref and the autonomy domain of the Whoqol-Old had the lowest mean scores among the elderly of both groups (Table 4).

When comparing total score, questions 1 and 2 and all the domains of the Whoqol-Bref, the active elderly of the SG had higher mean scores than both the IAS and the active elderly persons in the CG (p<0.05). However, when the active and the IAS elderly of the CG were compared no significant differences were found (p≥0.05) (Table 5).

The overall mean and those of the autonomy, past, present and future activities, social participation and intimacy domains of the Whoqol-Old were higher among the active elderly of the SG than among the active and IAS elderly persons of the CG (p<0.001). For the sensory functioning and death and dying domains, the mean scores of the active individuals of the SG were higher than those of the IAS elderly of the CG (p<0.05), while there was no significant difference between the active and the other elderly persons of the CG for these domains (p≥0.05) (Table 5).

Table 3. Comparative analysis of health conditions among study and control groups. Goiânia. Goiás. Brazil. 2017.

Health condition	Study group n (%)	Control group n (%)	*p**
IPAQ			
Insufficiently active	0 (0.0)	85 (67.5)	<0.001
Sufficiently active	108 (100.0)	41 (32.5)	
BMI			
Low weight	8 (7.4)	10 (7.9)	0.002
Normal weight	56 (51.9)	37 (29.4)	
Overweight	44 (40.7)	79 (62.7)	
Falls (6 months)			
No	102 (94.4)	88 (69.8)	<0.001
Yes	6 (5.6)	38 (30.2)	
Diseases			
Hypertension	50 (38.8)	79 (61.2)	0.01
Cardiopathy	4 (80.0)	1 (20.0)	0.12
Diabetes	10 (38.5)	16 (61.5)	0.40
Osteoporosis	6 (60.0)	4 (40.0)	0.37
Osteoarticular Disorder	11 (39.3)	17 (60.7)	0.43
Thyroid Disorder	13 (76.5)	4 (23.5)	0.009
Other Diseases	23 (54.8)	19 (45.2)	0.21

*Chi-squared.

Table 4. Comparative analysis of quality of life among study and control groups. Goiânia, Goiás, Brazil, 2017.

Perception of QoL Qol Domains	Study group	Control group	*p**
Whoqol-Bref			
Q1	4.28 (± 0.67)	3.57 (± 0.81)	<0.001
Q2	4.02 (± 0.80)	3.18 (± 1.02)	<0.001
Physical	77.71 (± 13.80)	61.51 (± 17.60)	<0.001
Psychological	77.74 (± 11.72)	61.64 (± 16.39)	<0.001
Social Relations	76.08 (± 15.08)	60.58 (± 21.17)	<0.001
Environment	73.62 (± 13.94)	57.50 (± 17.45)	<0.001
Total score	76.29 (± 10.44)	60.30 (± 15.44)	<0.001
Whoqol-Old			
Sensory Functioning	83.70 (± 14.98)	71.63 (± 17.28)	<0.001
Autonomy	75.83 (± 12.93)	65.91 (± 13.53)	<0.001
PPF Activities	78.15 (± 11.81)	69.48 (± 14.53)	<0.001
Social participation	80.83 (± 11.61)	69.56 (± 15.39)	<0.001
Death and Dying	76.06 (± 18.76)	68.61 (± 20.62)	0.005
Intimacy	81.48 (± 12.39)	69.84 (± 16.61)	<0.001
Total Score	79.34 (± 9.21)	69.17 (± 11.88)	<0.001

*ANCOVA.Q1=question 1 of Whoqol-Bref – How would you rate your quality of life? Q2=question 2 of Whoqol-Bref – How satisfied are you with your health?

Table 5. Comparative analysis of quality of life between the sufficiently and insufficiently active elderly persons of the control group and the sufficiently active elderly of the study group, Goiânia, Goiás, Brazil, 2017.

Perception of QoL QoL domains	Study group Active Elderly Mean (±sd)	Control group Active Elderly Mean (±sd)	 IAS Mean (±sd)	*p**
Whoqol-Bref				
Q1	4.28 (± 0.67)[a]	3.66 (± 0.79)[b]	3.52 (± 0.81)[b]	<0.001
Q2	4.02 (± 0.80)[a]	3.29 (± 0.78)[b]	3.13 (± 1.09)[b]	<0.001
Physical	75.33 (± 17.22)[a]	63.24 (± 17.57)[b]	63.69 (± 16.26)[b]	<0.001
Psychological	74.00 (± 14.05)[a]	63.21 (± 18.32)[b]	65.64 (± 16.81)[b]	0.001
Social Relations	74.15 (± 17.35)[a]	61.59 (± 22.12)[b]	62.55 (± 20.19)[b]	<0.001
Environment	71.77 (± 15.80)[a]	56.49 (± 17.88)[b]	60.35 (± 17.14)[b]	<0.001
Total score	73.81 (± 13.19)[a]	61.13 (± 16.68)[b]	63.06 (± 15.02)[b]	<0.001
Whoqol-Old				
Sensory Functioning	83.70 (± 14.46)[a]	77.68 (± 15.78)[a,b]	68.71 (± 17.86)[b]	<0.001
Autonomy	75.79 (± 13.49)[a]	67.44 (± 12.20)[b]	65.24 (± 13.49)[b]	<0.001
PPF Activities	78.80 (± 11.62)[a]	72.20 (± 13.51)[b]	67.35 (± 14.49)[b]	<0.001
Social participation	81.62 (± 11.19)[a]	72.07 (± 14.70)[b]	67.32 (± 15.16)[b]	<0.001
Death and Dying	76.30 (± 18.89)[a]	69.15 (± 20.55)[a,b]	68.06 (± 20.50)[b]	0.017
Intimacy	81.25 (± 13.98)[a]	71.95 (± 14.14)[b]	69.12 (± 16.31)[b]	<0.001
Total Score	79.58 (± 9.23)[a]	71.75 (± 10.65)[b]	67.63 (± 11.99)[b]	<0.001

*ANCOVA; a,b=Tukey post-hoc test for multiple comparisons between the active elderly persons of the study group and the active and insufficiently active and sedentary elderly of the control group; QoL = Quality of Life; IAS = Insufficiently active and sedentary; Q1 = Whoqol-Bref question 1 - How would you rate your quality of life? Q2 = Whoqol-Bref question 2 - How satisfied are you with your health?

DISCUSSION

The quality of life scores of the elderly persons of the SG who participated in physical exercise programs was better in all the domains of the Whoqol-Bref and Whoqol-Old instruments (Table 4) and in terms of the overall mean, even when compared with only the active elderly members of the control group, which is one of the main findings of the present study. These results indicate the importance of programs of this nature aimed at the elderly population, and agree with studies that have indicated an association between quality of life and the practice of exercise in groups of elderly people[9,16].

Quality of life is a subjective concept, related to aspects such as functional capacity, emotional state, family support, health status, socioeconomic level, intellectual activity, satisfaction with the environment in which one lives and with activities of daily living[25], which are analyzed by the domains of the instruments used. In these aspects the elderly of the SG had higher scores for all the domains (Table 4).

With advancing age there is an increase in functional disorders and chronic conditions[26], which highlights the importance of considering the impact of functional capacity on the quality of life of the elderly. A better mean score in the physical domain was perceived among the elderly participants of the physical exercise programs (p <0.001), a result that corroborates recent studies[27,28]. Evidence has indicated that exercise can influence and reduce the risk of developing chronic diseases, including cardiovascular disease, hypertension, osteoporosis, obesity and cognitive impairment, as well as increasing aerobic capacity, muscle strength and other variables of physical fitness[20].

This influence could be seen in the analysis of the health conditions of the studied groups, as the SG had a higher percentage of elderly persons with normal weight (p=0.002), a lower rate of falls in the last six months (p<0.001) and a lower prevalence of hypertensive elderly (p=0.01) (Table 3), thus demonstrating the importance and impact of public physical exercise programs. These results are in line

with the guidelines of the National Health Policy of the Elderly, which stresses the need to promote active aging, seeking to maintain the functional capacity and autonomy of such individuals[29].

In the present study, the elderly of the SG had higher means for the psychological, social relations, social participation and intimacy domains (p<0.001) (Table 4). The higher scores in these domains can be attributed to the fact that the activities offered provide opportunities for social relationships, thus contributing to the exchange of experiences and the emergence of new affective bonds. Recent research has also found that elderly people who participated in physical exercise programs had higher scores in these domains than those in the control group[6,8,28,30].

The practice of physical exercises can improve self-esteem, body image and inspire pride in their appearance among elderly persons, aspects which may be related to factors such as weight reduction or the possibility of new affective relationships[31]. In this sense, participation in group activities, such as public physical exercise programs, plays an important role in the quality of life of the elderly, as such activities can also contribute to individuals feeling as though they are participating agents of community life[18].

Factors related to leisure opportunities, health care, physical infrastructure, financial resources and safety are included in the environmental domain[23]. In this study, the SG had higher scores in this domain than the CG (p<0.001). This result differed from a survey conducted with 54 elderly women in Nice, France, where after 12 weeks of a physical activity program there were no differences in relation to the control group[28]. However, differences in the values obtained in this domain can be explained by the different environmental circumstances of each country[12].

The sensory functioning domain evaluates the impact of the decline of sensory abilities, such as loss of hearing, touch, sight, taste and smell[24], on quality of life, with these losses closely linked to frailty among the elderly[12]. The fact that the elderly of the SG had higher scores in this domain than the CG (p<0.001) (Table 4), can be attributed to the effects of physical exercise, such as the optimization of blood flow in the sensory system[32], an increase in brain volume, the elevation of neurotrophic factors derived from the brain and improvements in neurotransmitter systems, resulting in good perceptual functioning[20]. Evidence has indicated an association between health problems and the sensory functioning and death and dying domains[10]. This may be the explanation for the higher scores of the SG elderly in these domains, as the CG had a higher rate of insufficiently active (p<0.001) and overweight (p=0.002) elderly persons, those who had fallen in the last semester (p<0.001) and hypertensive patients (p=0.01) (Table 3).

The SG had higher scores than the CG in the autonomy domain (p<0.001) (Table 4). This domain considers the freedom the elderly person has to make their own decisions, the control they feel they have over their future, the respect for their freedom of the people close to them, and the ability to do the things they would like to do[24]. Another recent study obtained similar results to the present study, where elderly people who performed physical exercises had better scores for this domain[6]. The regular practice of exercises gives the elderly better knowledge of their own body, as well as their aptitudes and limitations[33]. This corroborates with the results of the present study, since the majority of the SG had been enrolled in the program for more than two years (42.6%) and attended the program more than three times a week (51.9%) (Table 1).

Recent studies did not find higher scores for the present, past and future activities domain among elderly persons who performed physical exercises[8,30], unlike the findings of the present study, where the SG did achieve higher scores (p<0.001) (Table 4). While it is clear that the past satisfaction and achievements of a person cannot be altered, the regular practice of physical exercises can beneficially modify the future expectations of an individual, and further research is needed to clarify this issue.

When comparing the elderly persons of the SG and the CG in terms of physical activity, it was found that the SG had better quality of life scores for all the domains of the Whoqol-bref (p<0.05) (Table 4), even in comparison with the active elderly persons of the CG. Regarding the Whoqol-Old instrument, the elderly of the SG had higher average scores for the autonomy, past, present and future activities, social participation and intimacy domains and the overall category than the active and the IAS elderly of the CG

(p<0.05), and for the sensory functioning and death and dying domains for the IAS of the CG (p<0.05) (Table 5). These results suggest that the practice of physical exercise can be a determining factor for a better perception of quality of life. A recent study with 50 elderly persons found that those who participated in a guided exercise program had a better quality of life than those who did not participate, and that physically active non-participants did not have a better quality of life than insufficiently active non-participants[34].

No significant differences were found between the active and IAS elderly persons of the CG for the total score or any Whoqol-Bref domain. In terms of the Whoqol-Old, no differences were found between the active and IAS elderly of the CG in the mean scores of any domain or in the total score (p≥0.05) (Table 5). Another study has observed that the perception of quality of life did not differ between the active and sedentary elders[35]. These results suggest that the level of physical activity may not be sufficient for the elderly to present a better quality of life.

This study has some limitations, such as the transversal nature of the research. New research with a longitudinal methodology may contribute to the understanding of other aspects that are relevant to the analysis of the quality of life of elderly participants in public exercise programs, such as the types of activities performed, the place they are carried out, and also the frequency of the exercise programs.

CONCLUSION

The elderly participants of public physical exercise programs had a better perception of quality of life in all the domains of the Whoqol-bref and Whoqol-old. Active elderly people in public programs had a better quality of life than non-participating active persons in all the Whoqol-bref domains, and for the autonomy, past, present and future activities, social participation and intimacy domains of the Whoqol-old.

In conclusion, there are significant differences between the quality of life of elderly persons who participated in and did not participate in public physical exercise programs, while simply being physically active may not be enough to have a better perception of quality of life. This suggests that other factors related to the life of the elderly and participation in public exercise programs may be related to a better quality of life. Adherence to public exercise programs can therefore contribute to maintaining or improving the quality of life of the elderly.

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Difficulties encountered in care for elderly persons with dementia: coping based on participatory research

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Abstract

Objective: to analyze the proposal of an action plan created by nurses to deal with difficulties in caring for the elderly. The aim of the present study was therefore to analyze the difficulties that family caregivers find in relation to access to services, material resources and the support network when meeting the care needs of the elderly in accordance with Brazilian public policy. *Method:* the methodology of participatory research and content analysis proposed by Bardin was used. The context was the Geriatric service of a university hospital. The group of co-researchers included eight nurses and 12 caregivers of elderly people with dementia. *Results:* the following categories emerged from the analysis: contradictions and work proposals. The contradictions category revealed reflections about the difference between the proposed care for the elderly and the reality of a lack of care and the precarious conditions of health services. This situation leads to overburdening of caregivers. The work proposals refer to the strategies used by nurses to establish a relationship of support to family caregivers to cope with the difficulties involved in care for the elderly. *Conclusion:* nurses recognize that they are professionals capable of receiving, listening to and managing the needs of family caregivers of the elderly, thus promoting the health of the elderly and the caregivers themselves, preparing the family of the patient for home care and coping with difficulties experienced in elderly care.

Keywords: Caregivers. Health Services. Social Conditions.

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INTRODUCTION

It is known that family caregivers require special attention from health professionals who deal with the elderly. However, a degree of illness and burden has been perceived among caregivers. The relationship between caregiver-elderly person and the health professional, meanwhile, often involves conflict. Treatment strategies should therefore not be implemented vertically and the bond, affectivity, availability and willingness to care of the social actors involved should be considered.

With this in mind, the present study describes an action plan created together with nurses and family caregivers of the elderly, highlighting the value of social participation in strengthening the Brazilian Unified Health System (SUS)[1].

The SUS does not yet guarantee effective social participation[2] through the vocalization of needs and knowledge. Thus, the promotion of dialogue between nurses and caregivers through the *Caring for Caregivers* workshops can lead to reflections, an exchange of experiences on health, the renewal of life projects and the overcoming of challenges.

The theoretical reference that converged with the research proposal was the "theory of social production of the health-disease process", which in turn explains the political, economic and social determinants of health and disease distribution in rural areas and in societies, identifying the protective and harmful aspects for health present in the social organization[3].

Despite the constitutional guarantee of a universal public health system for the Brazilian population[4], there are no provisions in SUS that support the daily activity of family care. Feeling love and affection for elderly persons is not always enough to provide adequate and quality care, as specific and necessary conditions are involved in adapting homes for the demands of care and acquiring the necessary technology[5].

There is also often a divergence between how much care the elderly person requires and how much the caregiver is able to provide. As the elderly individual becomes more dependent, so caregivers are required to devote more of their time to care, often to the detriment of caring for themselves. Cupidi et al.[6] states that an increase in the degree of dependency of the elderly person negatively and progressively impacts the health of caregivers, who may exhibit symptoms of depression and other neuropsychiatric disorders.

It is therefore important to understand that family care is influenced by a person's culture, values and life history[7], with a subsequent positive or negative impact on the health of those involved[8]. Thus, when considering the family as an integral part of the process of caring for the elderly, it is fundamental to understand and care for it as a complex social unit with its own needs[9]. When health professionals seek to understand the individual within the logic of their life course and historicity, care can be planned realistically within the scope of the family and the health service[10]. This practice is challenging, however, as it is difficult to integrate personal involvement and productivity and resolutivity[11].

Mendes, Pazzato and Sacado[12] argue that encouraging dialogue and interaction can lead to the production of health.

The objective of the present study is to analyze the proposal of an action plan elaborated by nurses to tackle difficulties in the care process of the elderly.

METHOD

The participatory research methodology was used to construct an action plan prepared in conjunction with a team of nurses, based on their participation in workshops with caregivers of the elderly. This method allows participating researchers to coordinate group work activities and decide on the goals and means required to produce a particular product or service[13].

The present study was performed in the outpatient clinic of the University Hospital of the Universidade do Estado do Rio de Janeiro, and data collection occurred between July 2015 and March 2016. The participants were eight nurses from this health service and 12 caregivers of elderly people with dementia who accompanied them to the clinic. The inclusion criterion for the nurses was to have worked in the

health service for a period of ≥6 months, while the inclusion criterion for the caregivers was to have been responsible for the care of the elderly for at least six months. The invitation to participate in the workshops was given to family caregivers who accompanied the elderly persons in the waiting room or during the nursing consultation at the geriatric outpatient clinic. All caregivers who met the inclusion criteria and who attended the workshops were selected.

The decision to involve nurses was due to the fact that care is the central aspect in the work process of this category of professionals. In addition, the historical and contradictory relationship between home care, which is produced in the sphere of the reproduction of life, privately, and through social reproduction, and professional care, which today takes place in the public sphere.

After authorization from the coordinators, a meeting was held with the nursing team to form the research group. When discussing the study design with the team the idea of holding workshops for caregivers emerged, with the theme: *Caring for Caregivers*. The team was involved in the dissemination of the project and in inviting caregivers to attend the outpatient clinic. Four workshop sessions were held, one per month, as part of the pre-existing activities of the group of caregivers at the service.

Workshop 1 *How is your health?* had nine participants, of whom three were nurses and six were caregivers. The theme of Workshop 2 was *Rebuilding life projects*. It had 13 participants, namely three nurses, one nursing student, one psychologist and eight caregivers. The theme of Workshop 3 was *Look after your back*! and it had 11 participants of whom four were nurses, one was a nursing student and six were caregivers. The theme of Workshop 4 was *Overcoming challenges*, and it involved 11 participants – three nurses, one nursing student, one occupational therapist and six caregivers. Although the number of participants varied in each workshop, this difference did not affect the development of the theme in the group.

At the end of the four workshops with the caregivers, the content that had emerged was analyzed. The results of this analysis were discussed with nurses at two meetings.

The discourses were recorded, transcribed and analyzed using the Bardin content analysis method[14] at each stage of data collection (in workshops and in the meetings with nurses). The meetings were mediated through a data collection script that served as an investigative tool and contained questions regarding the care needs of the elderly, contradictions between the care that the individual considers ideal and that which is implemented, and proposals to overcome such contradictions. As an end product, an Action Plan was elaborated that concretized the results of this study.

The present study was submitted to the Research Ethics Committee of the Hospital Universitário Pedro Ernesto and approved under number CAAE 4449901520005282. All the co-researchers signed a Free and Informed Consent Form in accordance with the guidelines for research involving human beings[15].

RESULTS

The sociodemographic characteristics of the group of elderly caregivers are shown in Table 1.

Of the eight participating nurses, six were female and two were male, while their age ranged from 22 to 60 years. Regarding the time of service, one nurse had worked in the service for 12 years, four for two years, two for one year and one for six months. Two had nursing doctorates, one had a master's degree in nursing, four were nursing residents, and one had an undergraduate nursing degree.

Table 2 below shows the quantity of the Registration Units (RU) that led to the construction of the themes and from these, the construction of the categories that emerged from the analysis of the discourse of the nurses.

Table 1. Sociodemographic characteristics of family caregivers of elderly persons. Rio de Janeiro, Brazil, 2017.

Variables	n (%)
Age	
59-70	10 (83.33%)
71-84	2 (16.67%)
Gender	
Female	8 (66.67%)
Male	4 (33.33%)
Marital status	
Without partner	5 (41.67%)
With partner	7 (58.33%)
Family Income (in reais)	
≤3,000.00	6 (50%)
3,000.00 to 7,000.00	5 (41.67%)
≥7000.00	1 (8.33%)
Occupation	
Doesn't work outside home	10 (83.33%)
Works	2 (16.67%)
Schooling (years of study)	
≤20	4 (33.33%)
>20	8 (66.67%)
Degree of kinship with elderly person	
Spouse	3 (25%)
Son	5 (41.67%)
Son-in-law/daughter-in-law	4 (33.33%)
Total	12

Table created by authors.

Table 2. Subcategories and categories of discourse of nurses. Rio de Janeiro, Brazil, 2017.

Subcategories	RU/subcategory	Categories	RU/Category
The contradictions experienced by family caregivers	22	Contradictions	36
The contradictions of the public health system	14		
Listening	21	Work proposals	71
Resolutive capacity	20		
New Strategies	20		
Positive experiences	10		

RU: Registration Unit; Table created by authors.

Category: contradictions

The main contradiction that the nurses highlighted in the discourse of the caregivers refers to intergenerational conflicts. In the discourse below, which was highlighted by a nurse, a caregiver projects her own future based on the care she gives her mother today:

> "My daughter said to me 'let my grandmother go'. I found it aggressive, I didn't understand. Then my other daughter explained: "She told you not to be so worried about the future, let things go with the flow. I found it kind of grotesque" (caregiver 5).

The nurse then analyzed the discourse of the caregiver:

> "This one about the daughter telling her mother who takes care of her grandmother to stop doing it, I saw it in other discourses. I thought: how does this sandwich generation, the daughter of the elderly person who is between her mother and her daughter, plan the future... to what extent does she project: I will take care of my mother and my daughter will take care of me. I care for her the way I would like to be cared for, I respect her because I learnt it this way, I take care of her because I learned to care for my parents. So here she is projecting." (nurse 1).

> "Virtuous is not staying at home taking care of someone, virtuous is to have a master's, a doctorate. Concepts have changed" (nurse 1).

The nurse's account of what she considers as "virtuous" seems to refer to professional attributes, highlighting the devaluation of domestic work in today's society, placing responsibility on the individual to resolve the conflict between the demands of society and delivering a minimum quality of care[16].

Regarding the contradictions within the public health system, Longhi and Canton[17] analyzed the contradictions relating to the concept of citizenship among SUS users and concluded: we are undergoing a credibility crisis in Brazilian society, with a discredited political class[17]. This finding corroborates the results of the present study, which can be seen in the following discourse:

> "There are many contradictions. We are a referral center, but we have problems with physical space, a limited number of health professionals, we should have more time to carry out activities that required less intensive technology, such as cognitive stimulation. The biggest contradiction is that we are part of a university and a university hospital that says that it is a friend of the elderly, but there is no focus on them, no valorization, no incentive, no prioritizing." (nurse 1).

Correlating the findings with the "social production theory", the contradictions of the public health system lead to conflicts for caregivers, as the scarcity of financial resources is a factor makes caring for the elderly difficult[3]. Such a situation must be understood in the light of cyclical crises of capital accumulation. This dynamic affects the health sector, and difficulties in accessing services penalize those social groups that have historically suffered the effects of the profound inequality of our social order more severely[3].

It is therefore inferred that there is a conversion of biological facts into collective actions and health is influenced by environment and epidemiological issues[12]. In other words, problems of social well-being are not simply technical issues, and the contradictions of the public health system have an impact on the quality of life of the caregiver[18].

Therefore, health is the result of a process involving different dimensions of living conditions and the social contexts in which social groups exist[19].

It is therefore important for the family to define the areas in which the health team can help and what needs should be met and to prioritize interventions. This can be seen in the following discourse relating to strategy and the need for the elderly to be linked to professionals:

> "It's difficult because we're in a teaching hospital, but it's upsetting to have so many health professionals around the world complaining about disease, a lack of money, dependence, a lack of family structure..." (Nurse 4).

One way to reduce the contradictions of the Public Health system is the proposal to consolidate the National Humanization Policy (NHP) within the SUS. This represents a system of institutional support and a device used for the implantation of a more receptive structure in health services[20]. The NHP proposal seeks new ways of operating, functioning, acting and producing organizations, considering the assumptions of institutional democracy and autonomy[20].

Category: Work proposals

This category was constructed from the following themes: listening, resolutive capacity, new strategies and positive experiences.

Listening is a low-intensity technology, cited in the NHP as a device to tackle the daily impasses in the network and in health services, as well as improving the access of the users to the health system[20]. From this perspective, it was observed that the nurses are aware of the NHP and are capable of self-criticism regarding their own application of the principles of this policy:

> "I value the caregiver's actions first and foremost: 'your relative is really well cared for.' So when he says, 'I can't, I can't do it,' I say, do as much as you can because we know you're doing your best, because we know that there is love there even when it doesn't seem like it, even when the family are fighting. But we are very afraid of being mawkish, of being misinterpreted." (nurse 7).

Here the importance of active listening and reception is made explicit. When a caregiver opens up, talks about their difficulties and the health professional accepts this without judgment, a bond is established, which can guarantee adherence to guidelines.

According to the current trend, the concept of care acquires a social, anthropological, historical and ethical dimension, becoming an object of interdisciplinary research[21]. It is important to note that this type of care requires an interpersonal relationship, known as "accompaniment". The notion of accompaniment moves away from the idea of control (guidance) and opens space for a posture of more subjectivity and autonomy. In this way, if accompaniment is no longer guiding, the companion ceases to have absolute authority and so diminishes the anxiety of always being right[21]. But it is not always so. Self-criticism can be seen in the following discourse:

> "I often see myself as just one more person making demands. Then instead of walking away lighter, the other person ends up feeling more weighed down. The responsibility is too much for the caregiver. And sometimes these are problems that we can't solve, such as money problems." (nurse 4).

> "We have to stop being the patient's boss, drowning them in information, we have to stop being so cartesian and provide a helping relationship. And the rest will come." (nurse 7).

In view of these testimonies, it can be seen that the participating researchers recognize the importance of reception when listening to the user and in this unit, as in other units of the SUS, reception is used as a strategy for screening needs. However, it is important to note that reception is not a neutral space and is often seen as a form of alleviating deficiencies in the responsiveness of services.

The discourse of the nurse below points to a vision that values the potential of reception as a strategy of care management and not just a device for the pacification of the user in their quest for resolution:

> "I think we need to stratify demand. We have to identify those with needs and listen to them" (nurse 1).

The participants emphasized the importance of a professional capable of receiving, listening and managing demands. After all, nurses should be available to those accompanying the elderly, reinforcing the care guidelines so that they become safer[22].

Regarding the theme of "resolutive capacity", participants cited actions such as: empowering family

care, using resources assertively, and strengthening positive experiences as examples of strategies for achieving resolution. Statements in which the nurses emphasized the importance of practice based on the management of care through decision-making in a multi-professional team and the establishment of personal bonds between the users and the professionals are highlighted:

> "We know it's not new: the rounds, the end-of-shift meetings, it's a different approach that adds a lot." (nurse 7).

> "We tried to do this, try to always schedule the follow-up appointments with the same health professional and the results were very positive" (nurse 2).

It is the recognition of the importance of interdisciplinarity and the establishment of bonds. It is the understanding of demand as a process that is produced, not natural, the understanding of subjectivity as production, the perspective that you learn about reality through intervention[20].

The participants emphasized that these strategies are important to prevent such contradictory situations, which may become iatrogenic, as explained in the following discourse:

> "Another appointment and another professional saying the complete opposite. The advice of one doctor contradicted the other". (nurse 3).

The need to discuss the Therapeutic Plan in a multi-professional team and for the personalized service of the user by the same professionals to guarantee a bond and coherence is therefore clear.

Far from limiting one's gaze to a fixed, established reality, it aims to expand our conception of the world, including the moveable plane of the reality of the services that coexist within what is already instituted[20].

This involves permanent tension between the needs of the elderly and those of each member of the family[23], and nurses can help reduce these tensions when seeking a practice committed to integrality, promoting dignified care for the elderly[22].

The analysis of the categories that emerged from the discourse of the nurses and caregivers allowed the creation of the action plan, shown in figure 1:

- To value listening;
- Perform more inter-consultations;
- Define the demand for nursing care within the team;
- Use the area of the nursing consultation as a space for exchange;
- Stimulate the co-responsibility of the caregiver and the elderly person as a strategy to achieve adherence;
- Agree the guidelines,
- Avoid contradictions between professionals through consultation and team meetings to agree on actions;
- Perform activities of cognitive stimulation and day-center activities;
- Incorporate the workshop strategy as an activity of the Elderly Care Center (NAI);
- Carry out health promotion activities for caregivers with open themes in question format, allowing the possibility of listening to their demands.
- Perform external social activities.

Figure 1. The action plan.

Os próprios participantes, ao discutir o plano de ação, se preocuparam em:

Item I refers to the importance of listening to the demands of the group. In item II, inter-consultations are where professionals from different categories perform a service together. In the outpatient clinic, there is no recommended number of inter-consultations, and instead they are scheduled according to the organization of the team for specific cases. The nurses believe this strategy optimizes time and strengthens the professional group. In item III, the group reports that the consultation will therefore be more resolutive and adhesion easier to achieve. Item IV refers to moving away from the "policing" posture of return appointments, whether the person has been able to implement certain advice and help in relation to the difficulty the user is experiencing or not. There will be cases where it will be necessary to make adaptations and negotiate, and also to celebrate what has been achieved. In item V, co-responsibility is a consequence of participation in the therapeutic plan. Item VI means to negotiate between the professionals of the outpatient clinic and with the public health policies for the elderly. Item VII refers to a way to limit divergences. Item VIII involves performing activities of cognitive stimulation and day-center activities; in this case, it would satisfy the requests of caregivers to have an activity in which they can bring the elderly for stimulation. In Item IX, both caregivers and nurses recognized the need to talk about care in a gentler way. In item X, the nurses expressed the desire to expand the activities to other professionals who are not necessarily in the health area. Finally, item XI approximates the understanding that the Elderly Care Center can be a space for health promotion, in its broadest sense, not only providing direct care or education, but also establishing moments of exchange, leisure and the strengthening of bonds.

As a contribution to the practice of care, the present study demonstrated that difficulties are part of the life of the family caregiver. With this knowledge, health professionals should understand that they will suffer moments of burden, anxiety and even want to avoid the responsibility of care, but also that this is part of a process. Caregiver who provide an ideal, firmly-established, unshakable, disciplined, and "standard" approach do not always produce better care.

Health professionals should advise families that there is no ideal caregiver profile, as each caregiver tends to deal with critical situations differently. Thus, demanding standard behavior only causes distress, and leads to unnecessary burden.

One limitation of this study is that the location of the research is one of the few referral centers for the health of the elderly in the state of Rio de Janeiro. In other words, although the results point out several contradictions, they may not constitute the true picture of the difficulties encountered by those who lack even the access to a referral service. Therefore, the study showed that the income and high degree of schooling of the participants did not exempt them from the difficulties related to care. Thus, the results of the study may be different if the social context of the group of participants is modified.

CONCLUSION

The aim of the present study was to analyze a proposal for an action plan elaborated by nurses to tackle the contradictions in the care process of the elderly. This objective has been fully achieved. It was also possible to reveal the difficulties encountered by family caregivers in the process of caring for the elderly and to discuss the actions of nurses in coping with problems experienced by family caregivers of the elderly.

It was found that care for the elderly is socially produced. Health issues must therefore be understood beyond the problems of illness, as disease is only the consequence, the clinical manifestation, and the result of what has been produced by society. The difficulties most frequently described in the discourse of the participants were: the dilemma over caring for oneself while caring for another, the confrontation between the caregiver and the elderly, the conflict between the primary caregiver and other family

members, and the contradiction between public policies and reality.

Therefore, nurses recognize their ability to receive, listen to and manage the demands of family caregivers of the elderly and promote the health of the elderly and caregivers when preparing them for home care.

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Rheumatoid arthritis: profile of patients and burden of caregivers

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Abstract

Objective: to describe the profile of patients with Rheumatoid Arthritis (RA) and their caregivers receiving care at the Rheumatology Outpatient Clinic of a teaching hospital, and evaluate the burden of the caregivers. *Method:* a cross-sectional study was performed with 41 patients with RA and their caregivers using a questionnaire to identify sociodemographic variables; the Burden Interview Scale and the Stanford Health Assessment Questionnaire. Descriptive analyzes and comparison between clinical-demographic variables and the functional status of patients were performed and the correlation between sociodemographic variables and levels of burden of caregivers was tested. *Results:* there was a prevalence of female patients (87.8%); a mean age of 64.4 years (±12.9); a mean time for the diagnosis of RA of 13.5 years (±8.5), a prevalence of moderate disability (39.0%); lower disability in the Hygiene domain (1.6; ±0.5) and greater disability in the Other Activities of Daily Life (2.1; ±0.6), Reach (2.0; ±0.7) and Grip (2.0; ±0.7) domains. The caregivers were women (73.2%); aged between 17 and 81 years (mean: 46.8; ±15.1); with a high school education (41.4%). The degree of kinship was 56.2% offspring and 36.6% spouses. Eighteen (44.0%) caregivers suffered burden, nine (22.0%) of whom had mild burden and nine (22.0%) of whom suffered intense burden. There was a higher incidence of intense burden among spouses (12.2%) and mild burden among children (12.2%). *Conclusion*: the low occurrence of burden among caregivers may be related to the profile of the patients, who presented good levels of independence for self-care. The profile of caregivers and the prevalence of overburdened spouses and offspring shows the need and importance of the implementation of caregiver training by health service professionals to improve care for RA patients.

Keywords: Chronic Disease. Patient Care. Personal Health Services. Health Evaluation.

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INTRODUCTION

Population aging has resulted in a high prevalence of osteoarticular diseases, such as osteoarthrosis, rheumatoid arthritis and osteoporosis. These illnesses cause pain and restriction of movement, manifestations that can result in limitations in the performance of daily activities, muscular atrophy and reduced aerobic capacity, muscular strength and balance, negatively impacting the lives of the elderly[1,2].

Rheumatoid arthritis (RA) is a systemic, chronic and degenerative inflammatory disease, characterized mainly by the impairment of the synovial membrane of the peripheral joints. It affects approximately 0.5 to 1% of the global population, with a two to three times higher rate in women over 40[3]. The disease is characterized by the symmetrical impairment of the small and large joints, most frequently involves the hands and feet, and has a significant impact on the functional capacity and independence of patients. Physical deformities and pain impair the performance of professional, social and activities of daily living, affecting quality of life and mental health and increasing the risks of negative alterations in psychological parameters[4]. In addition, fatigue, a subjective symptom of low vitality (tiredness, exhaustion, weakness, malaise), accompanied by a reduction in physical and mental capacity, is present in 88 to 98% of patients[5].

The main aims of RA treatment are to reduce pain, joint edema and constitutional symptoms, such as fatigue. It also aims to improve joint function, interrupt the progression of bone-cartilaginous damage, prevent disabilities and reduce the morbidity and mortality associated with RA[4].

The education of patients with chronic diseases and their relatives is an important part of the treatment of such illnesses, as it is associated with greater understanding of the disease and increased adherence to treatment. It therefore falls to health professionals to support patients and their families, promoting health education. Usually the caregivers of patients with chronic diseases are relatives with little experience in care, who assume the task of caring for the patient and being responsible for providing or coordinating the resources required by such individuals, who are dependent, associated with temporary or permanent functional disabilities. These caregivers are considered "hidden patients" and require care and attention from health professionals, as their behavior has an impact on patient treatment[6].

According to the National Health Policy of the Elderly, care can be provided in a formal or informal system. Formal caregivers are individuals who are paid to provide care and have had training to perform such a task. Informal caregivers are family members, friends or neighbors who provide support and voluntary care to those who need it[7].

The activities of caregivers depend on the functional status of the individual receiving care, on the number and duration of tasks requiring supervision, and on their emotional involvement with the patient. The time spent, the type of tasks performed and the dedication to the patient can interrupt or reduce leisure activities, increase stress levels and impose a high physical burden. The task of caring therefore has an important physiological, social, economic and psychological impact on the caregiver, especially with respect to informal caregivers[6].

Family members who become caregivers, who are often unprepared for this role and lack adequate knowledge or support, can suffer impairment of their quality of life, negatively affecting the care provided to the patient. When carrying out the activities associated with caring, caregivers limit their own lives, increasing the likelihood of burden[8].

Considering the above, the aim of the present study was to describe the profile of patients with RA receiving care at the Rheumatology Outpatient Clinic of a teaching hospital, to assess the burden of the caregivers of these patients and to verify if there is an association between the profile of the caregivers and those of the patients.

METHOD

A cross-sectional and observational study with a non-probabilistic convenience sample of patients with Rheumatoid Arthritis and their caregivers receiving care at the Rheumatology Outpatient Clinic of the São José do Rio Preto Base Hospital, on Fridays between August 2013 and April 2014, was carried out.

Patients with RA, as defined by the American College of Rheumatology (ACR) criteria, who were accompanied by their caregivers or family members and had received treated for at least six months were included in the study. Those who arrived at their consultation alone were excluded from the study.

Data were collected during outpatient care, after a medical consultation, during the study period. The instruments were applied by one of the researchers, who interviewed patients and caregivers in a room reserved for this purpose.

An instrument was prepared by the authors for the characterization of patients with RA and their caregivers, which included the variables: age, gender, schooling and duration of the disease.

The functional status of patients with RA was evaluated using the Portuguese version of the Health Assessment Questionnaire (HAQ), validated by Ferraz et al[9]. This consists of 20 questions that evaluate eight areas: dressing, waking up, feeding oneself, walking, hygiene, reach, grip and other day to day activities. For each question, the patient indicates the degree of difficulty experienced when performing the task in the previous week, on a Likert scale of 0 to 3, where 0 represents no difficulty, 1 indicates some difficulty, 2 represents very difficult and 3 means unable to perform the task. The final result is the arithmetic mean of the highest score of each of the eight domains evaluated. The degree of disability is classified as: mild disability (HAQ 0 to 1), moderate disability (HAQ> 1 to 2) and severe disability (HAQ> 2 to 3)[9-11].

Caregiver burden was evaluated with the Zarit Caregiver Burden Scale, validated for the Portuguese language[12]. This questionnaire consists of 22 questions encompassing the areas of health, social and personal life, financial situation, emotional well-being and interpersonal relationships, and can be used to assess the burden of caregivers of individuals with physical and mental disabilities. To classify levels of burden, the following cutoff points were considered: no burden (<46), slight burden (47-55), severe burden (>56)[12-15].

In data analysis, descriptive statistics were used to characterize the sample of patients and caregivers. Data from the Health Assessment Questionnaire and the Zarit Caregiver Burden Scale were scored according to the norms of adapting these instruments for Portuguese[10-13] and analyzed in terms of descriptive parameters.

The distribution of the data was analyzed by the Shapiro-Wilk test ($p<0.05$) and the comparison between clinical-demographic variables and the functional status of the patients was performed by the chi-squared test. The Pearson Correlation Test was used to analyze the correlation between sociodemographic variables and levels of burden of the caregivers. A *p*-value of less than or equal to 0.05 was considered significant.

The study was approved by the Research Ethics Committee of the institution, under approval number 300.634, dated June 11, 2013, meeting the formal requirements for research involving human beings of Resolution No. 466/2012 of the National Health Council and those of the Declaration of Helsinki. Collection occurred after the reading and signing of a Free and Informed Consent Form by the study participants.

RESULTS

The study included 41 patients with Rheumatoid Arthritis, aged between 27 and 81 years, with a mean age of 64.4 years (±12.9). There was a prevalence of female patients (87.8%). The time since the diagnosis of the disease ranged from 2 to 33 years, with a mean of 13.5 years (±8.5) and a predominance of moderate disability (39.0%). In terms of functional status, patients with RA had lower disability in the Hygiene domain (1.6;±0.5) and greater disability in Other Activities of Daily Life (2.1;±0.6), Reach (2.0;±0.7) and Grip (2.0;±0.7), as shown in Table 1.

Regarding functional status, the results showed that patients with RA required more help from caregivers to perform domestic tasks (25.6%), walk (15.4%), go to a doctor's appointment (10.3%), bathe or take a shower (10.3%) and perform all activities (10.3%). In addition, impairment in daily activities such as going to the bathroom (5.1%), dressing (5.1%) and feeding oneself (5.1%) were observed, limiting the autonomy and privacy of patients, as shown in Table 2.

Table 1. Characterization of patients with Rheumatoid Arthritis. São José do Rio Preto, São Paulo, 2013-2014.

Variables	n (%)
Gender	
Female	36 (87.8)
Male	5 (12.2)
Age Range (years)	
Up to 20	1 (2.4)
From 21 to 40	3 (7.3)
From 41 to 60	10 (24.4)
From 61 to 80	24 (58.6)
Over 80	3 (7.3)
Time since discovery of disease (years)	
Up to 5	7 (17.1)
From 6 to 10	15 (36.6)
From 11 to 15	5 (12.2)
From 16 to 20	7 (17.1)
From 21 to 25	2 (4.9)
From 26 to 30	4 (9.7)
Over 30	1 (2.4)
Degree of disability – HAQ	
Mild disability (HAQ de 0 to 1)	14 (34.2)
Moderate disability (HAQ >1 to 2)	16 (39.0)
Severe disability (HAQ > 2 to 3)	11 (26.8)
HAQ Domain	Mean (±sd)
Dressing	1.7 (±0.7)
Waking up	1.8 (±0.6)
Feeding oneself	1.7 (±0.7)
Walking	1.8 (±0.6)
Hygiene	1.6 (±0.5)
Reach	2.0 (±0.7)
Grip	2.0 (±0.7)
Other activities of daily living	2.1 (±0.6)

HAQ: Health Assessment Questionnaire.

Table 2. Distribution of activities where patients with rheumatoid arthritis require most caregiver assistance, according to the Health Assessment Questionnaire. São José do Rio Preto, São Paulo, 2013-2014.

Tasks	n (%)
Perform domestic chores	10 (25.6)
Walk	6 (15.4)
Be accompanied to a medical appointment	4 (10.3)
Bathe/Shower	4 (10.3)
All activities	4 (10.3)
Shopping	3 (7.7)
Go to the bathroom	2 (5.1)
Put on shoes	2 (5.1)
Get dressed	2 (5.1)
Feed oneself	2 (5.1)

There was a statistically significant correlation between the gender of the patients and the degree of disability (r= 0.4621, *p*=0.0356). However, there was no significant correlation between the age group of the patients and the degree of disability (r=0.02869; *p*=0.8587); duration of disease and degree of disability (r=-0.055175, *p*= 0.7479).

Table 3 shows the characterization of the caregivers. Most were female (73.2%), 41-60 years old (43.9%), with 9-11 years of schooling (46.3%), and were relatives of the patient. A total of 56.2% were children and 36.6% were spouses. The age of the caregivers ranged from 17 to 81 years, with a mean of 46.8 years (±15.1).

The Caregiver Burden Scale showed that 18 (44.0%) caregivers exhibited some degree of burden, with nine (22.0%) experiencing mild burden and nine (22.0%) intense burden. A higher incidence of intense burden was found among spouses and mild burden among children, as shown in Table 4.

Table 3. Characterization of caregivers of patients with rheumatoid arthritis. São José do Rio Preto, 2013-2014.

Variables	n (%)
Gender	
Female	30 (73.2)
Male	11 (26.8)
Age Range (years)	
Up to 20	1 (2.4)
From 21 to 40	15 (36.6)
From 41 to 60	18 (43.9)
From 61 to 80	6 (14.7)
Over 80	1 (2.4)
Schooling (years of study)	
Up to 8	18 (43.9)
From 9 to 11	19 (46.3)
Over 11	4 (9.8)
Degree of kinship	
Son/daughter	23 (56.2)
Spouse	15 (36.6)
Son/daughter-in-law	1 (2.4)
Neighbor	1 (2.4)
Grandson/daughter	1 (2.4)

Table 4. Distribution of levels of burden of caregivers of patients with Rheumatoid Arthritis, according to degree of kinship. São José do Rio Preto, 2013-2014.

Variables	No burden	Mild Burden	Severe Burden
	n (%)	n (%)	n (%)
Spouse	7 (17.1)	3 (7.4)	5 (12.2)
Son/daughter	14 (34.1)	5 (12.2)	4 (9.8)
Grandson/daughter	1 (2.4)	-	-
Son/daughter-in-law	-	1 (2.4)	-
Neighbor	1 (2.4)	-	-
Total	23 (56.0)	9 (22.0)	9 (22.0)

There was no significant statistical difference between the level of burden and degree of kinship (children and spouses) (x^2=0.8761; p=0.6453); duration of disease and level of burden (r=-0.02400; p=0.8816); degree of dependence and level of burden (r=0.1506; p=0.3472) of the caregivers.

In contrast, a significant correlation was found between the age of the patient and the burden of the caregiver (r=0.3487, p=0.0254).

DISCUSSION

The profile of the RA patients evaluated in this study – with a prevalence of women and an age range of 40 to 60 years – is consistent with literature, which indicates that the disease mainly affects women over 40 years of age[3,16]. This has a significant social impact, as, when affecting people of productive age, RA results in limitations that lead to the abandonment from work activities. Such symptoms can affect more than 60% of patients after 15 years of the disease[17].

Also in agreement with literature, the activities where RA patients required more caregiver assistance in the present study were domestic chores (25.6%). This characteristic was associated with the gender of the patients, the majority of whom were female, as the performance of domestic services is a role culturally attributed to women[18].

It was also noted that the loss of functional capacity of the RA patient throughout life is influenced not only by the age and the duration of the disease, but also by the levels of pain and medications in use[19].

It is therefore important that multiprofessional teams implement actions of guidance and health care of these patients, to improve joint function, interrupt the progression of bone-cartilaginous damage, prevent disabilities and reduce the impact caused by RA[4]. In this context, it is recommended that professionals advise patients with RA on the use of joint protection, as domestic activities require flexion movements of the metacarpophalangeal joints, increasing deviant forces and favoring ulnar deviation[20].

Actions in health education should focus on improving the understanding of patients and family members regarding the disease and increasing adherence to treatment, seeking to alleviate its symptoms, such as pain, joint edema and constitutional symptoms like patient fatigue.

Caregivers of patients with RA are therefore highly important for the treatment of the disease and require the care and attention of health teams, as their participation in the health care of the patient will have an impact on recovery from the disease[6].

The caregivers of patients with RA evaluated in this study have a profile compatible with that reported in the literature, namely women with a family relationship, young adults and those without a higher education qualification. Studies have shown that women are the primary caregivers of more dependent and vulnerable people, such as the chronically ill. In the Western context, caring is the duty of the woman and being a caregiver is naturally intrinsic to the female gender. Thus, women become responsible for the care provided to their husbands, children, parents and other relatives[6,21].

The prevalence of family caregivers has been described by other studies[6,22,23]. Caring is related to family intimacy, linked by reciprocity and solidarity, as a form of natural protection provided by family members[21]. It is therefore common for care to be provided by an informal system, including family, friends, neighbors and community members, without remuneration[23]. Among the reasons that lead an individual to exercise the role of caregiver are: moral obligation, cultural and religious aspects, marital status and the absence of other potential caregivers[22].

Family members are considered to be the main providers and coordinators of the resources required by patients with chronic diseases, requiring intense dedication on the part of caregivers due to the evolution and long duration of the disease[6,22]. The care provided by children is attributed to socio-cultural issues and is considered a natural process and the repaying of care received from parents in childhood[23]. There is therefore a reversal of roles from one generation to another, with caregivers seeing the act as a form of obligation[24].

Among spouses, it is common to find one elderly person taking care of another, more dependent elderly partner. This situation demands increased attention from health professionals, as elderly caregivers naturally present functional losses that affect their overall physical, psychological and financial potential and their quality of life, impairing their ability to assist the patient[25].

In addition, older people consider the family their natural habitat and something that is important in all phases of a person's life. The family, therefore, is the entity that best cares for the elderly[26].

Several factors inherent in caring for patients with RA can cause burden in caregivers, whether formal or informal. This burden can be objective when it covers the daily tasks of providing care to the patient, resulting in financial losses, routine disruption, social and professional life; or subjective, when related to feelings, emotions and concerns for the patient[27].

Although the majority of caregivers evaluated in this study did not present burden, negative feelings may occur when caring for the needs of patients with RA. Assuming the position of caregiver implies a change in routine and a restructuring in the organization of tasks, increasing workload and, consequently, overburdening the caregiver[28].

Care can generate stress in family dynamics, causing physical, mental and emotional complications in the caregiver, limiting their health and quality of life[24].

A study with caregivers of chronic patients showed that the more the patient requires care or feels alone, the more distant the caregiver becomes from their family and friends, missing out on opportunities for leisure and social interaction. Therefore, living and caring for a family member with an illness is an arduous task and, depending on the diagnosis, can represent a crisis in the family, generating anxiety, stress, fear and suffering[22].

Aspects such as the symptoms and degree of autonomy of the patient, the treatment performed, and the relationship between the patient and the family caregiver, can aggravate the situation of burden, making it difficult to care for the patient[29].

On the other hand, a greater level of schooling contributes to reducing burden, as caregivers with a higher level of education have a better understanding of the guidelines provided by the health team and carry out care more easily[23].

The results of the present study revealed a significant association between the age of the patient and the level of caregiver burden. This may be associated with duration of RA, which, as it is a chronic disease, requires prolonged dedication on the part of caregivers, increasing the likelihood of burden, especially in the case of family caregivers, who may have greater difficulty in caring for others.

Although other associations were observed in this study, literature points to age as an aggravating factor for the mental health of caregivers. There is evidence of lower stress rates among older individuals, suggesting that, over time, people create more appropriate coping strategies. However, some studies indicate that younger caregivers experience a loss of conviviality with friends, increasing stress levels and the risk of social impact in this population[6,29,30].

Moderating factors such as social support, financial situation and the coping strategies used have an important impact on the mental health of caregivers, and may harm or relieve them from such impacts. A study with elderly caregivers indicates that participation in weekly caregiver groups contributed to the reduction of depression and, as a consequence, there was an improvement in the quality of care provided, generating positive changes in the behavior of the elderly and their quality of life[31].

According to Pedreira and Oliveira[32], families with a better economic and emotional structure tend to act more effectively in their relationships with dependent individuals. The authors emphasize that burden may vary according to the cognition and behavior of the elderly person, the family relationship between the caregiver and this person, and the support provided.

Limitations of the present study include the lack of study of the emotional, social or occupational aspects of caregivers of RA patients; and the fact that the patients and caregivers evaluated were from a single health institution. Although it is a regional referral

service, the realization of new studies covering other health services will allow a better understanding of the profile of patients with RA and their caregivers, and deepen the understanding and discussion about the factors that cause burden in these caregivers.

CONCLUSIONS

The profile of the patients with RA observed in this study (women, mean age 64.4 years, average time of diagnosis of 13.5 years, predominance of moderate disability, less disability in the hygiene domain and greater disability in the domains Other Activities of Daily Living, Reach and Grip) and their caregivers (women, mean age 46.8 years, complete high school education, children or spouses and no burden) is similar to that reported in the literature.

The fact that most caregivers in this study did not exhibit burden may be related to the profile of the patients, who possessed high levels of independence in terms of self-care.

The prevalence of spouses and children among caregivers with burden strengthens the thesis that care is related to family intimacy, constructed through traits of reciprocity and solidarity.

The identification of the profile and functional loss levels of RA patients in outpatient care and the levels of burden of their caregivers helps health professionals to adjust their care strategies, seeking to attenuate the symptoms and impairment caused by RA, improving the clinical conditions and quality of life of patients.

In addition, it allows the implementation of programs of emotional and occupational support, capable of meeting the demands of caregivers, minimizing the effects of burden and improving the health and quality of life of such individuals.

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Prevalence and factors associated with the performance of prostate cancer screening in the elderly: a population-based study

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Abstract

Objective: to identify the prevalence and factors associated with preventive examinations for the screening of prostate cancer in the elderly. *Methods:* a cross-sectional population-based study of 181 men aged ≥60 years who were residents of a small city in the state of Rio Grande do Sul, Brazil, was carried out. The dependent variable was considered to be the performance of preventive prostate cancer tests in the past two years and the independent variables were those related to health and sociodemographic characteristics. To test the association between the outcome and the independent variables, gross and multivariable analysis using Poisson regression was performed, estimating the gross and adjusted prevalence ratios, calculating the confidence intervals of 95%. All variables with $p \leq 0.20$ were included in the multiple model. *Results:* the prevalence of preventive examinations for prostate cancer was 89%. The tests used were the Prostate Specific Antigen (PSA) (85.7%), followed by tests performed in combination: rectal examination and PSA (9.3%), rectal examination, ultrasound and PSA (3.1%), rectal examination and ultrasound (1.3%) and ultrasound and PSA (0.6%). In multivariate analysis, the variables *retirement* and *marital status* were the independent factors associated with the carrying out of at least one preventive examination of the prostate. *Conclusions:* The findings demonstrate that being retired increases the likelihood of carrying out preventive examinations and having a partner, being married or cohabiting increases the likelihood of undergoing tests.

Keywords: Risk Factors. Neoplasms. Health of the Elderly.

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INTRODUCTION

Brazil is undergoing a period of epidemiological transition, with profound changes in health and disease patterns interacting with demographic, economic, social, cultural and environmental factors[1]. Currently, Chronic Noncommunicable Diseases represent more than 70% of causes of deaths in Brazil[2].

According to research conducted by the National Cancer Institute (INCA), there were 61,200 new cases of prostate cancer in Brazil in 2016. These figures correspond to an estimated risk of 61.82 new cases per 100,000 men. Without considering non-melanoma skin tumors, prostate cancer is the most common type of cancer among men in all regions of the country, with 95.63/100,000 in the south, 67.59/100,000 in the midwest, 62.36/100,000 in the southeast, 51.84/100,000 in the northeast and 29.50/100,000 in the north[3].

Prostate cancer is currently the second most common cancer in the world for males, and the fifth most common overall, with an estimated 900,000 new cases diagnosed in 2008, affecting about 14% of the world's men[4].

While the etiology of prostate cancer is not fully known, the main risk factors for the development of the disease include the presence of testosterone and age. Screening practices for prostate cancer, especially among Brazilian elderly persons, are still little known[5].

Rectal examinations, as described in literature, is one of the forms of screening for prostate cancer. It is a low-cost procedure that allows the size, shape and consistency of the prostate to be evaluated, but is often viewed in a prejudiced manner due to being interpreted as an affront to masculinity, which may influence adherence to the exam as a prevention strategy[6].

Screening exams can be considered as the most important part of the treatment of prostate cancer, as early diagnosis provides an opportunity to offer a more effective treatment method for maintaining the quality of life of men[7].

The difficulty in adherence to prevention tests, especially rectal examinations, and elderly subjects who have never performed preventive and screening examinations, indicates the continuing need for educational health programs relating to prostate cancer and early detection tests, focusing primarily on the elderly.

The aim of the present study was to identify the prevalence and factors associated with the performance of preventive tests for the screening of prostate cancer in the elderly.

METHODS

A cross-sectional population-based study with elderly residents of the town of Estação in the state of Rio Grande do Sul was performed. Estação is located in the northwest region of the state, 256,17 km from the state capital of Porto Alegre. At the time of data collection, it had a population of 6,253 inhabitants, of which 992 were 60 years of age or older, representing 15.9% of the total population.

The Municipal Health Department possesses an outpatient clinic, which provides basic health care for the population. This outpatient unit houses the Family Health Strategy (FHS), which covers 100% of the micro areas of the region and a small for-profit hospital which has a partnership agreement with the municipal region. The referral city in health services for this region, in cases where infrastructure with greater technology is required, is located 31 km away. In terms of the provision of care services, 100% of the municipal region is covered by the FHS.

The municipal region also outsources some specialized laboratory services, procedures and medical consultations, in order to meet the demand of its residents. In addition, it has partnership agreements with other municipal regions which are reference centers for urgent and emergency care. Preventive examinations in men's health are performed by the general practitioner and only when disorders occur is the patient referred to a specialist in the accredited reference municipal region.

For the identification and location of the study population, the Basic Health Information System of the Municipal Health Department for the year 2011 was used. For the calculation of the sample, the population of elderly men (N=457),

expected frequency of the outcome of the preventive examination of prostate cancer (80%), acceptable error of 5% and confidence level of 95% were applied, giving a total of 160 individuals. To compensate for possible losses of 10% (non-eligibility, refusals, among others), an additional number of elderly persons was included as a safety margin, resulting in a total of 176 elderly.

The sample, however, contained 181 elderly men, randomly selected from the records of the ESF. Initially, they were listed by area of residence and gender and then selected by random sampling, maintaining the proportions stipulated by the sample.

The inclusion criteria were: reside for at least six months in the municipal region; possess the cognitive ability to respond to the questionnaire, or have a family member or caregiver present to assist with or provide the answers. Data collection was carried out between February and May 2011, following approval of the project by the Research Ethics Committee in of the Universidade de Passo Fundo. The collection instrument was a questionnaire structured and adapted from the questionnaire of Aging, Health and Welfare Research (SABE)[9].

A pilot test was performed by the interviewer to see if the instructions were clear when the instrument was applied to the respondents. The interviews were carried out individually at a convenient time and place for the interviewees, mostly in their homes.

The dependent variable was considered to be the carrying out of preventive examinations of prostate cancer in the last two years and the independent variables were those related to health conditions and sociodemographic characteristics. We did not investigate symptoms that may have induced the elderly to seek consultations or prostate exams, nor question the presence of prostatic or urinary diseases.

Descriptive and bivariate analysis of the data was performed. In order to test the association between the outcome and the independent variables, crude and multivariate analyzes were performed using Poisson regression, estimating crude and adjusted prevalence ratios, calculating the respective 95% confidence intervals. All variables with $p \leq 0.20$ were included in the multiple model.

The research plan was approved by the Research Ethics Committee of the Universidade de Passo Fundo under Nº 017/2011 and all the participants signed a Free and Informed Consent Form.

RESULTS

A total of 181 elderly men with a mean age of 70 years (±7.2), ranging from 60 to 94 years old, participated in the study. Most were white, married or had a partner, could read and write, were retired and received from one to two minimum wages (Table 1).

The prevalence of at least one of the preventive exams for prostate cancer in the period up to two years prior to the interview date was 89%. The most frequent was Prostate Specific Antigen (PSA) (85.7%), followed by exams performed together: rectal examination and PSA (9.3%), rectal examination, ultrasound and PSA (3.1%), rectal examination and ultrasound (1.3%) and ultrasound and PSA (0.6%).

Of the men who did not undergo prostate health screening, 100% did not do so because they considered it unnecessary. When questioned about the last time they required health care, 100% of the elderly reported that the consultation was performed by doctors.

Table 1 shows that the variables housing, marital status, retirement and reading and writing skills were associated with the performance of preventive exams for prostate cancer ($p<0.05$). Prostrate cancer exams were more frequent among elderly retirees, married men, and those who could read and write. Retired elderly men performed twice as many preventive prostate exams as non-retirees. Being married or having a partner was a protective factor (PR=0.22) for the examination.

In table 2, the variables self-evaluation of health, presence of chronic pain, smoking and seeking health care, were not statistically associated with the outcome ($p<0.05$).

In the multivariate analysis, the variables retirement and marital status were independent factors associated with at least one prostate screening exam (Table 3).

Table 1. Gross prevalence ratios of performance of at least one prostate exam by sociodemographic variables of elderly men in Estação, Rio Grande do Sul, 2011.

Variables	n total	Prevalence of exams (%)	*p**	Gross PR (CI 95%)
Age range (years)			0.683	
60 to 69	93	87.1		1
70 to 79	70	91.4		0.63 (0.22 – 1.78)
80 or more	18	88.9		0.84 (0.17 – 4.17)
Area of residence			0.027	
Urban	119	91.6		1
Rural	29	93.1		0.81 (0.17 – 3.93)
Mixed	33	75.8		3.48 (1.22 – 9.98)
Marital status			0.004	
Divorced/separated/widowed	20	70		1
Married/common-law-marriage	161	91.3		0.22 (0.07 – 0.69)
Retired			<0.001	
Yes	172	91.3		1
No	9	44.4		0.08 (0.02 – 0.34)
Value of pension (minimum salary)			0.385	
Up to 1	61	90.2		1
From 1 to 2	76	89.5		1.08 (0.35 – 3.31)
>3	35	97.1		0.27 (0.03 – 2.41)
Can read/write			0.018	
Yes	162	90.7		1
No	18	72.2		3.77 (1.15-12.29)

* *p* value obtained from Wald Poisson Regression test; PR= Prevalence ratio; CI= Confidence interval.

Table 2. Gross prevalence ratios of performance of at least one prostate exam by health-related variables of elderly persons in Estação, Rio Grande do Sul, 2011.

Variables	n total	Prevalence of exams (%)	*p**	Gross PR (CI 95%)
Self assessment of health			0.242	
Very good/good	120	90.8		1
Fair/poor/very poor	60	85		1.75 (0.68 – 4.51)
Chronic pain			0.939	
Yes	80	88.8		1
No	99	88.9		0.98 (0.39 – 2.52)
Smoking			0.217	
Smoker	28	82.1		1
Ex-smoker	58	86.2		0.74 (0.21 – 2.52)
Never smoked	95	92.6		0.36 (0.11 – 1.28)
Sought health care or assistance			0.311	
Private appointment	125	91.2		1
Public health clinic	55	83.6		2.03 (0.78 – 5.26)

* *p* value obtained by Wald's Poisson Regression test; PR= Prevalence ratio; CI= Confidence interval.

Table 3. Multiple Poisson regression model for at least one prostrate exam of elderly men in Estação, Rio Grande do Sul, 2011.

Variables	Adjusted prevalence ratio* (CI 95%)
Retired	0.08 (0.02 – 0.34)
Married status	0.23 (0.07 – 0.75)

*Adjusted by all variables with significant *p* value in model; CI= Confidence interval.

DISCUSSION

The results obtained show that the elderly men performed some kind of preventive exam for prostate cancer (PC). The most frequent were the PSA and rectal examination + PSA, with the highest probability found in the variables retired and marital status.

These data agree with the study by Restrepo et al.[10] which evaluated the incidence of mortality among Colombian men aged 16 to 80 years from PC between 1962 and 2011. This study found that the increase in PC coincided with the implementation of the PSA test, or in other words, since this exam was incorporated in the public health system, the level of mortality from PC in the country has decreased, and the period of survival with the disease has increased to five years, being strongly associated with age, period of diagnosis and socioeconomic status.

Preventive exams for PC are of fundamental importance for the diagnosis and early prophylaxis of possible health problems for the elderly. In a review study, Virgine et al.[11] evaluated several updated recommendations for the treatment and follow-up of different types of cancer in adults, including PC. It was stated that the best form of prevention is routine check-up examinations, which should be carried out constantly.

Despite the high prevalence of performing preventive exams for PC identified in the present study, the study by Belinelo et al.[12] found different results when analyzing 21 men aged from 51 to 77 years, where the influence of the social imaginary on PC and on the stigma of screening can make men who undergo such exams feel uncomfortable, inhibited, afraid or ashamed.

These findings on feelings of inhibition regarding preventive tests for PC were also found in the study by Souza et al.[13] who interviewed 77 men aged 18 to 59 years, only two of whom underwent such preventive exams, data which confirms that the present study identified a high prevalence of PC exams.

Retired men were more likely to carry out preventive exams in the present study. These data are significant as such exams can represent a primary factor in the prevention and treatment of this pathology. Such findings are corroborated by a study by Paz et al.[14] which found in a study of 155 men with a mean age of 69 years that the highest rates of PC were found among farmers and retirees.

Several factors considered as risks can influence the diagnosis of PC, and the prevalence of this condition was high among retired men in the present study. In a case-control study conducted with non-retired Iranian men aged 50-75 years, Pouresmaeili et al.[4] found different results, where the risk factors most associated with PC were the location where the individual lived, the location of their work, smoking and drugs consumed.

When marital status was analyzed, the present study found the highest prevalence of exams was among married elderly persons. A study by Neves et al.[15] found that the majority of 19 men aged over 51 years evaluated in a study in the city of Pelotas (Rio Grande do Sul) were married. This condition can influence the relationship between a couple, the family context and even the patient's social relations, due to the seriousness of the pathology[16].

Another study that corroborated the present study in relation to marital situation was carried out by Santiago et al.[5], who analyzed 2,825 men, with a mean age of 70 years, in Juiz de Fora (Minas Gerais),

and found that the majority of patients were married, and that many adhered to the practice of screening. This emphasizes the importance of implementing this treatment process in the public health system in a qualified manner and on an appropriate scale.

Family support can be one of the factors that contribute to the fact that married patients with PC undergo preventive examinations more frequently, because they are aware of the importance of tackling this difficult experience, which is intensified by the stigma of frequent association with death, generating fear and insecurity[17].

The present study presents limitations due to its cross-sectional design. The regional context prevents possible generalizations for the overall population of Brazil, as it applies to a small municipal region. In terms of gerontological care, the results can assist multi-professional health teams, as they offer pertinent elements for the definition of strategies to increase the support offered to men's health.

CONCLUSION

We can conclude that being retired increases the likelihood of undergoing preventive exams, as is having a partner, either through marriage or common-law marriage, in many cases due to the family support and awareness of the importance of the prevention and treatment of this pathology that this provides, which may prevent further harm to the health of the patient.

The study identified a high prevalence rate of at least one prostate cancer screening test among the elderly men, although literature includes few studies that explain the relationship between preventive tests and marital status.

It is therefore of fundamental importance that other studies are carried out, with different designs and which contemplate different contexts, so that a greater understanding of the associated factors and possible health care of elderly men can be obtained.

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The frailty syndrome in institutionalized elderly persons

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Abstract

Objective: to analyze the relationship between the level of frailty and sociodemographic and health characteristics among elderly residents of a long-term care facility (LTCF) in Ribeirão Preto, São Paulo, Brazil. *Method:* this descriptive and cross-sectional study included 56 elderly persons living in a LTCF. Data were collected from April to June 2016. A questionnaire addressing sociodemographic and health profiles was used together with the Mini-Mental State Examination, the Tilburg Frailty Indicator, the Barthel Index, and the Geriatric Depression Scale (GDS-15). Descriptive statistics were applied. The normality of the continuous variables was tested using the Shapiro-Wilk test. Spearman's correlation was used for the continuous variables with frailty as the dependent variable. *Result:* Most elderly individuals were female (57.1%); the average age was 77.77; and 35.7% were widowed. In terms of health, 55.4% presented cognitive deficit; 62.5% had depression symptoms; 75.0% were considered frail; 42.9% had suffered falls in the last 12 months; and the individuals scored an average of 68.30 in the Barthel Index. A positive correlation between the frailty score and the GDS-15 (r=0.538; p=0.00) was observed, while a negative correlation was found between frailty and the Barthel Index (r=-0.302; p=0.02). *Conclusion:* increased frailty among institutionalized elderly persons is correlated with the presence of depressive symptoms and inferior performance of basic activities of daily living. The results of the present study can support the planning of care provided to elderly individuals living in LTCFs and encourage broader assessments of these individuals.

Keywords: Frail Elderly. Geriatric Nursing. Homes for the Aged.

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INTRODUCTION

Brazil is undergoing a process of increasing population aging. It is estimated that by 2020 people aged 60 and over will represent 13.8% of the total population, rising to 33.7% in 2060[1].

The process of human aging is multifactorial and progressive in all its dimensions: biological, psychological, socioeconomic, cultural and spiritual[2]. This results in a loss of functional reserve, which makes the individual more susceptible to chronic diseases, which in turn can contribute to a reduction in functionality and the emergence of the frailty syndrome[3]. Frailty is an important indicator of the health condition of elderly persons, and research has therefore been carried out to elaborate a concept of frailty which can be used in health service practices. Due to its multidimensional nature, however, the challenge of establishing a definition has yet to be overcome[4].

Frailty is a state of vulnerability with poor resolution of homeostasis after a stressor event, increasing the risk of adverse outcomes such as muscle weakness, bone fragility, malnutrition, risk of falls, vulnerability to trauma and infections, as well as unstable blood pressure and decreased functional capacity[5]. For this study, frailty is understood as a dynamic state that affects individuals who suffer losses in one or more domains of human functioning (physical, psychological and social), caused by the influence of a series of variables, and which increases the risk of adverse events[6].

The elderly population has distinct characteristics in relation to other age groups and their health assessment requires a wide and multidimensional investigation, encompassing functional, cognitive, psychic, nutritional and social evaluations, performed by a multi-professional team, to guarantee the best possible evaluation and treatment for elderly persons and thus prioritize their autonomy and independence in the environment in which they live[7].

Deficits in functional, cognitive and psychic abilities are the major cause of loss of independence[8], causing the elderly to require more care when performing activities of daily living. The difficulties encountered by the family or the impossibility of finding a caregiver means Long-Term Care Facilities for the Elderly (LTCFs) are sought to meet these requirements[9]. Institutionalization is not common in Brazil, with only 0.8% of the elderly population living in LTCFs, but it is believed that there will be an increase in these numbers in the near future[10].

The description of the factors associated with frail elderly persons, especially in LTCFs, is rare in Brazilian literature. The presence of frailty can compromise the quality of life of the elderly population. In view of the above, the research question proposed is: what is the relationship between frailty and the sociodemographic and health characteristics of elderly persons living in a long-term care facility?

Based on this question, the objectives of the present study were to identify the cognitive ability, degree of independence for basic activities of daily living, presence of depressive symptoms and level of frailty of elderly persons residing in an LTCF in the city of Ribeirão Preto, São Paulo, and to analyze the relationship between the level of frailty and sociodemographic and health characteristics.

METHOD

A quantitative, descriptive and cross-sectional study was carried out in a LTCF in the city of Ribeirão Preto, São Paulo, Brazil. The study population was the elderly persons living in the LTCF between April and June 2016, who met the inclusion criteria: be 60 years of age or older, of both genders and be able to communicate verbally, and the exclusion criteria: have a medical diagnosis of dementia.

Thus, the study population was composed of 56 elderly people, as set out in Figure 1.

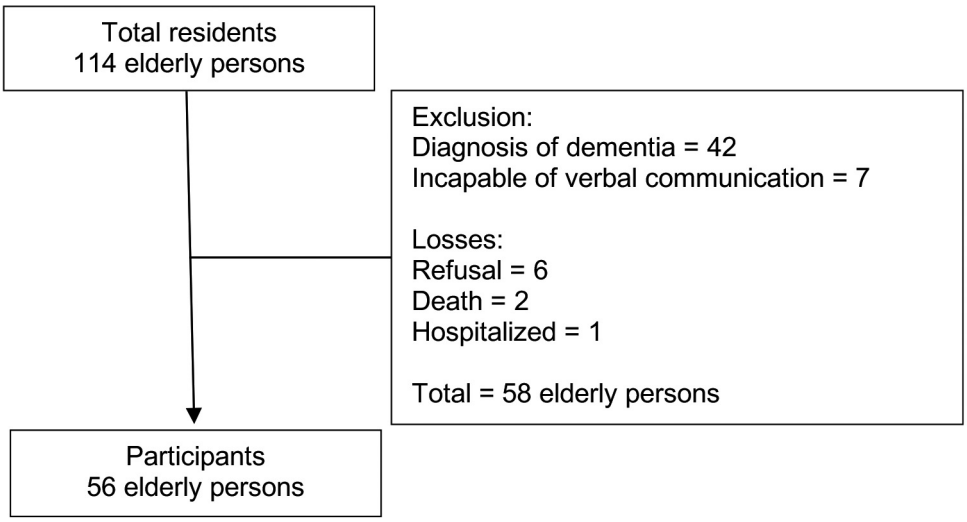

Figure 1. Flowchart of study population, Ribeirão Preto, São Paulo, 2016.

Data collection was carried out in the aforementioned period through an interview conducted by one of the researchers, using the following instruments:

a) sociodemographic and health questionnaire, containing information regarding gender, age, schooling, marital status, monthly income; health status - medical diagnoses, number of medications used (data collected from medical records) and number of falls in the last 12 months;

b) Mini-Mental State Exam, developed to evaluate cognitive function[11] and validated for Brazil[12]. This consists of seven categories, temporal orientation, spatial orientation, word registration, attention and calculation, recall (memory of recall), language and visual constructive ability, with variation from zero to 30 points. Due to the influence of schooling on performance in this instrument, the following cut-off scores were applied in the present study, 13 points for illiterates; 18 for schooling from one to four years; 26 for five to eight years and 30 for nine years or more[12];

c) Tilburg Frailty Indicator (TFI) created with the purpose of measuring the level of frailty of the elderly for the use of health professionals[13]. It has been adapted transculturally and validated for Brazil[14], and the reliability of the internal consistency of the Brazilian version was considered satisfactory, with a Cronbach alpha of 0.78. It contains 15 questions distributed in three domains, physical (eight questions) related to health, weight loss, difficulty walking, maintaining balance, weakness, fatigue, vision and hearing; psychological (four questions) that assess cognition, the presence of depressive symptoms, anxiety and coping, and social (three questions) regarding social relations and support. Scores vary from zero to 15 points, with the highest score indicating a higher level of frailty, although the authors determined a cutoff point of ≥5 to indicate frailty in the individual[13],

d) Barthel Index, to measure the performance of basic activities of daily living (BADL)[15], translated and validated for Brazil, with a sensitivity of 92.7% and a specificity of 65.2%[16]. This evaluates performance for feeding, bathing, dressing, personal hygiene, bowel and bladder elimination, toilet use, chair-bed transfer, walking, and the ability to go up and down stairs. The score ranges from zero to 100 points, with higher scores indicating greater independence[16].

e) Geriatric Depression Scale (GDS-15) validated for Brazil with test-retest (rho=0.86, $p<0.001$), a Kappa coefficient of 0.64 and good internal consistency, with a Cronbach's alpha score of 0.8117.

The GDS-15 is composed of 15 items and evaluates satisfaction with life, interruption of activities, anger or irritation, mood, isolation, energy, joy and problems related to memory. It has scores from 0 to 15, where zero represents absence of depressive symptoms and fifteen indicates a greater presence of these symptoms. The cut-off point ≥5 was used to categorize the elderly with depressive symptoms[17].

The interviews were carried out at the LTCF, where the elderly persons were approached by the researcher, who identified herself, explained the study, and discussed the free and informed consent form. After signing of the same by the elderly, they went to a location (bedroom or other room) to guarantee privacy and avoid possible interruptions and noise. The mean duration of the interviews was 29 minutes.

For the qualitative variables (nominal and ordinal), simple frequency calculations were performed, as well as contingency tables and prevalence ratios. For the quantitative variables measures of central tendency (mean and median) and variability were used (standard deviation, shown in the text as ±, and amplitude). For the numerical variables, normality was tested by means of the Shapiro-Wilk test. It was verified that the number of diseases and falls data of the Barthel scale did not follow normality, and so the use of non-parametric tests was necessary. The Spearman correlation was used for the numerical variables, with frailty as the dependent variable.

The study was authorized by the board of directors of the LTCF and approved by the Research Ethics Committee of the Ribeirão Preto Nursing School of the Universidade de São Paulo, CAE 51034615.0.0000.5393. Authorizations were requested for the use of all scales used in this study.

RESULTS

A total of 56 elderly people living in the LTCF participated in the study, with a predominance of females (57.1%) and a mean age of 77.77 years (±9.27), the majority (46.4%) of whom were 80 years or older. A total of 35.7% of the elderly persons were widowers. The majority (53.6%) had between one and four years of schooling and the mean number of years of study was 4.70 (±3.58). Of the elderly surveyed, 82.1% reported being retired with an average monthly income of R$1,136.96 (±R$1,134.22) (Table 1).

The mean time of institutionalization of the elderly persons was 36.34 months (±46.56) and the main reason for residing in the LTCF was the need for care (60.7%). The majority (75.0%) reported that they shared their bedroom with another person(s). It was verified that 89.2% of the elderly received visits from family or friends and 33.9% reported leaving the LTCF to visit family members.

In the evaluation of health, 55.4% of the elderly had cognitive deficits, 62.5% had depressive symptoms and 75.0% were classified as frail. A total of 42.8% of the elderly persons reported having fallen in the last 12 months, and the mean number of falls was 2.04 (±1.96). The mean number of diseases was 3.68 (±1.85), and 44.6% had three to four diseases. The median number of medications of continuous use was 8.89 (±3.87) and 42.9% took between six and ten medications. Regarding the performance of basic activities of daily living, the mean score on the Barthel scale was 68.30 (±2.78) (Table 2).

There was a positive correlation between the Frailty Indicator score and GDS-15 ($r=0.538$, $p=0.00$) and a negative correlation between frailty and the performance of BADL ($r=-0.302$; $p=0.02$) (Table 3).

Table 1. Distribution of elderly persons living in a Long Term Care Facility according to sociodemographic variables. Ribeirão Preto, São Paulo, 2016.

Variables	n (%)	Mean	Standard Deviation	Minimum	Maximum
Gender					
Female	32 (57.1)				
Male	24 (42.9)				
Age (in years)		77.77	9.27	61	93
61 – 69	14 (25.0)				
70 – 79	16 (28.6)				
80 or more	26 (46.4)				
Marital Status					
Single	18 (32.1)				
Married	6 (10.7)				
Widowed	20 (35.7)				
Separated/divorced	12 (21.4)				
Schooling (years)		4.7	3.58	0	13
Illiterate	9 (16.1)				
1 – 4	30 (53.6)				
5 – 8	6 (10.7)				
9 – 11	6 (10.7)				
12 or more	5 (8.9)				
Income (in reais)		1136.96	1134.22	0	6000
Pension	46 (82.1)				
Pension and retirement payments	5 (8.9)				
None	5 (8.9)				

Table created by authors

Table 2. Distribution of elderly persons living in a Long Term Care Facility according to health variables. Ribeirão Preto, São Paulo, 2016.

Variables	n (%)	Mean	Standard Deviation	Minimum	Maximum
Cognitive state					
Deficit	31 (55.4)	16.52	6.04	6	28
Without deficit	25 (44.6)	21.6	2.95	16	29
Depressive symptoms		5.82	3.16	0	13
With	35 (62.5)				
Without	21 (37.5)				
Frailty		6.64	2.78	2	13
Not frail	14 (25.0)				
Frail	42 (75.0)				
Falls in last 12 months		2.04	1.96	1	10
1	13 (23.2)				
2 – 3	9 (16.1)				
≥ 4	2 (3.6)				
None	32 (57.2)				

to be continued

Continuation of Table 2

Variables	n (%)	Mean	Standard Deviation	Minimum	Maximum
Number of diseases		3.68	1.85	1	9
1 – 2	15 (26.8)				
3 – 4	25 (44.6)				
5	16 (28.6)				
Number of medications		8.89	3.87	1	16
1 – 5	10 (17.9)				
6 – 10	24 (42.9)				
≥ 11	22 (39.3)				
Barthel Index		68.3	2.78	15	100

Table created by authors

Table 3. Correlation coefficient between frailty scores and the sociodemographic and health variables of the elderly living in a Long Term Care Facility, Ribeirão Preto, São Paulo, 2016.

Variables	r	*p*- value
Age	0.08	0.55
Education	0.14	0.92
Income	-0.78	0.6
Time to live ILPI	-0.08	0.51
Cognitive status	-0.23	0.08
Number of diseases	-0.09	0.42
Number of medicines	-0.01	0.9
Number of falls	-0.03	0.88
Performance of BADL	-0.3	0.02
Depressive symptoms	0.538	<0.001

Spearman Correlation; $p \leq 0.05$; Table created by authors

DISCUSSION

A predominance of women was found in the present study, a result which was also observed in other studies[3,18] and which can be explained by the greater longevity of women. In Brazil, the life expectancy for men is 70.5 years and 77.7 for women[1]. The average age was 77.7 years, with the majority of respondents aged 80 years old or older. In a study conducted in Juiz de Fora, Minas Gerais, it was verified that 55.7% of the institutionalized elderly were 80 years old or older, with a mean of 80.3 years[18].

In terms of marital status, single and widowed institutionalized elderly persons have been found to be more prevalent, as was observed in this study. The absence of a partner and weak social and family support are factors that lead to the institutionalization of the elderly[19].

The mean level of schooling was considered low. Generally, low levels of schooling are found in studies with elderly populations, as education was not a priority in the childhood of these individuals, especially for females[20]. There was a predominance of retirees, which corroborates with data from another study that indicates that the source of income of the elderly population is through pensions or retirement payments (66.2%), from half to one minimum wage per month (38.3%)[1].

The mean time of institutionalization found in the present study is similar to that found in a study which identified an average of 37 months[21]. The place where one lives is not just a physical space but is a refuge, a place for rest, protection and to store belongings. It also represents a space of expressions, stories and memories that relate to the life of its inhabitants[22]. The main reason for institutionalization was the

need for care. Elderly persons living in LTCFs generally, despite having family members, opt to live in the institution due to the loneliness and illness caused by age, which leads them to require care and companionship[23].

Regarding the health evaluation of the elderly persons studied, the majority had cognitive deficits, although no statistically significant correlation with frailty was found. In Poland, a study with 86 institutionalized elderly showed that 55.8% had severe cognitive impairment and 26.7% had moderate cognitive impairment[24]. It is known that frailty and cognitive deficit are directly related, since elderly people with cognitive deficits present greater loss of strength and muscle mass, fatigue, gait alteration and body composition, which lead to frailty[25]. In addition, the decline in cognitive status associated with the frailty syndrome increases the risk of mortality in the elderly[5].

Another aspect evaluated in the participants was the presence of depressive symptoms, which revealed a predominance of elderly people with such symptoms. A study with 205 elderly people, using the GDS, found that 65.0% had depressive symptoms, with an average of 7.3 points (±3.37)[26]. Depression is a psychiatric syndrome characterized by behavioral changes, feelings of worthlessness, emotional distress and reduced quality of life[27]. Depression may be related to social and affective issues, as well as the perception of elderly persons about institutionalization in relation to factors such as isolation, lack of family members, reduced activities, lack of financial flexibility and the process of adaptation.

A high prevalence (75.0%) of frail elderly persons, with a mean of 6.64 points, was found in the present study. In a literature review[28], it was found that the prevalence of frailty in the community dwelling elderly persons was lower than that of elderly persons in hospitals or long-term institutions. In a study in the Netherlands[13] of elderly residents in the community using the TFI, the prevalence of frailty was 47.0%, while a Brazilian study of institutionalized elderly people found a rate of 52.0%, with an average of 4.9 points[29]. In a study with hospitalized elderly persons using the Edmonton Frail Scale[30], 95.2% were considered frail.

One possible explanation for this finding was the fact that institutionalized elderly persons are afflicted by health problems that make them more susceptible to the frailty syndrome[28].

The prevalence of falls suffered in the last 12 months was 42.8%, with an average of 2.04. According to a study conducted in New Haven, Connecticut, USA, the probability of an elderly person being institutionalized after a hospital stay due to hip fracture or fall-related injuries is greater than after hospitalizations not associated with such events[31]. Another study carried out with 744 institutionalized individuals over 65 years of age indicated an average number of falls of 2.4 per person per year and concluded that elderly people living in LTCFs generally have more than one risk factor for falls, such as a higher prevalence of comorbidities, cognitive and functional deficits and polypharmacy[32], leading to a decrease/loss of autonomy, functional capacity and the worsening of quality of life[28].

The mean numbers of diagnosed diseases and medications in use observed in this study were higher than those found in another study[18]. It is known that institutionalized elderly individuals suffer greater health impairment than elderly residents who live in the community. Generally, elderly persons with a greater number of comorbidities make concomitant use of several medications, leading to poorer health conditions, which may lead to a decrease in functional performance and increase the vulnerability of the elderly[19].

Decreased functionality can cause a loss of independence. The maintenance of self-care is fundamental to living well and, therefore, the search for knowledge and information about the maintenance of health, the regular practice of physical activity, the adoption of healthy habits and monitoring in health services are determinant factors for sustaining a desirable level of functioning, thereby delaying disability and providing benefits for the biopsychosocial health of the elderly[33].

The present study identified a negative correlation between frailty and the performance of BADL, with a higher TFI score (greater frailty) associated with a lower Barthel Index score (greater dependence). Another study identified that the reduction of

the capacity of the elderly to perform basic and instrumental activities of daily living was related to the presence of the frailty syndrome. Both are indicated as important markers of health for the elderly, and so professionals in this area must apply programs that minimize frailty and its consequences[34].

A positive correlation between frailty and the presence of depressive symptoms was also observed, with a higher TFI score (greater frailty) associated with a higher GDS-15 score (greater presence of depressive symptoms). It should also be emphasized, however, that the psychological domain of the TFI also evaluates mood, which may have influenced this result.

Although the appearance of depressive symptoms may contribute to both functional impairment and frailty, becoming a risk factor for frailty syndrome, these symptoms can also be considered signs of the early manifestation of this syndrome, as the causes of the association between frailty and depression remain unknown[35].

Due to the high prevalence of frailty and the severity of this syndrome, it is important to identify the factors associated with the condition in a broad sense, so that care for frail elderly persons can be planned by a multi-professional team, considering physical, psychological and social elements.

Regarding the limitations of this study, the results presented are specific to the population studied, and so generalizations should be viewed with caution to avoid misunderstandings. In addition, because it is a cross-sectional study, the causality of the frailty identified cannot be determined.

CONCLUSION

The results of the present study of institutionalized elderly persons revealed that the majority were women, most of whom were 80 years of age or older. There was also a predominance of elderly people with cognitive deficits and with depressive and frail symptoms. There was a correlation between increased frailty and the presence of depressive symptoms and reduced performance in basic activities of daily living.

It is known that frailty implies negative aspects for the quality of life of the elderly, leading to hospitalization, institutionalization and even death. Frail elderly persons should be considered a priority group in public health policies, with a focus on prevention, treatment and rehabilitation.

This syndrome encompasses biological, psychological, social and cognitive factors, and so the comprehensive evaluation of the elderly is necessary. This should be carried out by a multi-professional team, through instruments that allow the evaluation of all these dimensions, with the purpose of supporting the planning of care for the elderly and the early identification of frailty, with the possibility of minimizing the consequences and harm caused by the condition.

It is therefore hoped that the results of the present study can support the planning of care for elderly residents of such institutions, in addition to encouraging broader assessments of these elderly people.

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Influence of symptoms of depression on the quality of life of men diagnosed with prostate cancer

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Abstract

Objective: to evaluate the prevalence of symptoms of depression among men diagnosed with prostate cancer and their association with quality of life and treatment-related factors. *Methods*: a cross-sectional study of 85 men with a mean age of 66±8 years who were diagnosed with prostate cancer was performed. The survey was based on a questionnaire with previously validated instruments which investigated social, demographic and economic characteristics, the history of the disease, quality of life (European Organization for Research and Treatment of Cancer Questionnaire C30 - EORTC QLQ-C30 / QLQ-PR25) and symptoms of depression (Beck Depression Inventory). The presence of symptoms of depression was considered an outcome, and statistical analyzes were performed using the Chi-square test, Fisher's exact test, Mann Whitney U test and Poisson regression (p<0.05). *Results:* significant results were found for quality of life in relation to symptoms of depression in the functional, global and symptomatic health scale (p<0.001). This demonstrates that the presence of symptoms of depression is related to a negative quality of life. *Conclusions*: for a greater understanding of prostate cancer and its consequences on the quality of life of patients it is important to consider possible disorders in psychological aspects caused by the illness, as symptoms of depression are frequent in patients undergoing treatment for prostate cancer.

Keywords: Prostate Neoplasm. Quality of Life. Depression Symptoms.

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INTRODUCTION

With increased prevalence since the 1960s, prostate cancer is considered a global public health problem. It is the sixth most common cancer in the world and accounts for about 10% of all such diseases[2]. In Brazil, it is the second most common type of cancer among men and it is estimated that of the 600,000 new cancer cases in 2016 and 2017, 61,000 thousand involve prostate cancer[3]. The Brazilian Society of Urology[4] observes that Santa Catarina is one of the Brazilian states with the highest incidence of cases.

The increase in this incidence over the years can be explained by the evolution of diagnostic methods and the improvement of the quality of the country's information systems[5]. Faced with such increased incidence, early diagnosis and appropriate treatment are essential, along with suitable posttreatment and the individual's perception of their quality of life[6], as all the therapeutic modalities present significant risks and side effects to patients[5].

Among the modalities of treatment for prostate cancer, radical prostatectomy, in which the patient undergoes complete removal of the prostate, is the oldest and possibly the most effective[7]. Such a method can cause several side effects, such as urethral stenosis, urinary incontinence, erectile dysfunction[5], fatigue, general distress, functional disability and depression[8,9], factors that can significantly affect the quality of life of such men[5].

Studies evaluating quality of life and prostate cancer have identified depression as one of the main psychological problems exhibited[10-12], and this condition is present in one in five patients[13]. Depression can trigger problems related to recovery and a decrease in immunity, minimizing the survival chances of patients[14], and the treatment of cancer through adjuvant chemotherapy may further increase the risk of this condition[15]. Patients live with pain, physical disfigurement and the threat of death on a daily basis, and these problems often do not end with surgery or the completion of conventional treatment, as the phantoms of metastasis and the recurrence of the disease remain, leading to states of depression and negative quality of life[13].

Surveys that address the relationship between depressive symptoms and the quality of life of patients with prostate cancer are extremely important, as greater knowledge about the subject may aid in the treatment and post-treatment of the disease, as well as the promotion of the good social and mental well-being of these patients, which are essential to their daily life. The objective of the present study was therefore to evaluate the prevalence of depressive symptoms in men diagnosed with prostate cancer and the association with quality of life scores and factors related to treatment.

METHODS

An observational, analytic cross-sectional study was performed, comprised of 85 men diagnosed with prostate cancer undergoing treatment and post-treatment in the Centro de Pesquisas Oncológicas (the Center of Oncological Research) (CEPON) in the city of Florianópolis, Santa Catarina, Brazil. The recruitment of these men occurred in various sectors of CEPON, namely the chemotherapy, radiotherapy and physiotherapy centers and the waiting rooms of doctors' surgeries. Their selection was based on inclusion criteria, namely that they were between 40 and 80 years and were in the clinical treatment or post-treatment phase. The exclusion criteria included a classification of illiterate in level of schooling due to the need to understand the questionnaire, previous oncological treatment in an institution other than CEPON, or a diagnosis of metastasis, to avoid bias in the type of treatment and prognosis. The sample size was calculated based on a significance level of 5%, a test power of 80% and a mean effect size of 0.5 considering the comparison of means test, meaning that 102 patients were required to compose the sample.

The data were collected using a structured questionnaire, applied by three researchers trained for this task. All patients who agreed to voluntarily participate in the study were asked to sign a Free and Informed Consent Form.

The structured questionnaire included variables relating to the general characterization of the sample, anthropometric measurements (body mass and height), symptoms of depression and quality of life. General characteristics and those related to disease (age, marital status, education, economic level, presence of diseases, surgical intervention), as well as the anthropometric measures were self-reported.

The classification of weight was performed based on the calculation of Body Mass Index (BMI), and was categorized according to the WHO[16], which suggests: underweight (BMI<18.4); normal weight (BMI 18.5-24.9); overweight (BMI 25.0-29.9); pre-obesity and obesity (BMI>30.0). For the present study, for statistical purposes, we chose to group the categories into normal weight (underweight and normal weight) and overweight (overweight, pre-obesity and obesity) due to the low numbers in those categories.

Economic level was verified based on the IBGE criterion, classifying the subjects into economic strata A, B, C, D and E, according to number of minimum wages in the monthly family income, based on the 2014 minimum wage of R$724.00. Due to the lower number of men in these categories, the subjects were classified into upper class (A+B), middle class (C), and lower class (D+E).

Quality of life was evaluated through the European Organization for Research and Treatment of Cancer Questionnaire C30 - EORTC QLQ-C30[17], validated in Brazil with a Cronbach alpha score of 0.72 for the overall health scale, 0.86 for the functional scale and 0.81 for the symptomatic scale[1,18]. This questionnaire is based on assessing the quality of life of cancer patients over the last four weeks, in terms of functional (physical, functional, emotional, social and cognitive), symptomatic (fatigue, pain and nausea/vomiting, dyspnea, insomnia, appetite, constipation, diarrhea and financial difficulties) and global health. The question scores result in a total score from 0 to 100, with the higher the value found the better the quality of life in the overall and functional scales. In the symptomatic scale, meanwhile, a higher value represents a greater presence of symptoms, determining a worse quality of life. The EORTC QLQ-C30 is supplemented by specific modules for different types of cancer, and the QLQ-PR25 is specifically used for prostate cancer. This instrument has 25 questions incorporated in multi-item scales to measure the symptoms of the treatment over the previous week, the symptoms occurring in the last four weeks and sexual functioning.

The Beck Depression Inventory (BDI), originally developed by Beck[19], was used to investigate depressive symptoms. It is a self-reported instrument with 21 multiple-choice objective questions that indicate depressive symptoms (lack of hope, irritation, depressive cognitions, guilt and feelings of punishment, as well as physical symptoms such as fatigue, weight loss and loss of sexual interest). It was validated in Brazil by Cunha[20], who maintained the original scale of 21 items, with scores ranging from zero to three, with four alternative responses, which correspond to increasing levels of the severity of depression. The BDI has been successfully used in studies with men with cancer[21,22]. The scores of the individual items are added together and result in a total score, with a maximum score of 63 points, which indicates a high degree of depression, and a lowest possible score of zero, which corresponds to the absence of depression. Categorization was performed according to the standardization used in studies with cancer patients, with scores from zero to 10 equaling without depression or minimal depression; scores from 11 to 18 representing mild depression; scores from 19 to 29 corresponding to moderate depression; and scores from 30 to 63 indicating severe depression[23]. For statistical and analytical reasons, scores were categorized into the absence of depressive symptoms (scores from zero to 10) and the presence of depressive symptoms (scores ≥11). We chose not to use the term depression, as this term is only recommended for use in patients with concomitant clinical diagnosis[24].

In order to compare general characteristics and those related to disease and quality of life among the groups with the presence and absence of depressive symptoms, the chi-squared test or Fisher's exact test were used. The Mann Whitney U-Test was used to compare the quality of life scores of the groups, as the Kolmogorov Smirnov Test ($p>0.05$) did not identify the data as normal, except for the functional scale variable. Poisson regression was used to estimate the crude and adjusted prevalence ratios (PR) with a respective 95% CI. The dependent variable (outcome) was the presence of depressive symptoms, so for regression analysis the sample was divided into two groups, namely men with depressive symptoms and those without depressive symptoms. Adjusted analysis was performed for all the demographic, social, economic and clinical variables. The criterion for remaining in the adjusted analysis was a value of $p\leq0.20$.

The data were collected between October 2014 and July 2015. The study complied with National Health Council Resolution nº 466/2012 and was approved by the Ethics Committee on Research Involving Human Beings (CEPSH) of UDESC, protocol nº 688.548 on June 16, 2014 and by the Ethics Research Committee of CEPON (CEP), protocol nº 818.174, on October 3, 2014.

RESULTS

Although there were no significant differences in the variables, it was observed that the men with depressive symptoms were mostly older (61 to 80 years (76.9%)), had attended elementary school (53.8%), were unemployed, retired or absent from work due to health reasons (84.6%), of a lower economic class (88.5%), married (80.8%) and overweight (61.5%). These data are not shown in the table.

Table 1 presents the data comparing the groups with the absence and presence of depressive symptoms in relation to the demographic, social and economic characteristics of the study participants.

The clinical characterization of the participants revealed that 64.7% of the patients had other diseases, 48.2% reported urinary incontinence, 54.1% had not undergone radical prostatectomy surgery as a form of treatment, while the majority (56.8%%) underwent radiotherapy and did not finish treatment (43.5%). In addition, 89.4% of the participants did not receive advice to undergo physiotherapy as part of the treatment (data not shown in the table).

Table 2 shows the characteristics of the disease in relation to the absence or presence of depressive symptoms. A significant result was found in the physiotherapy category (p<0.021), in which men with the greatest presence of depressive symptoms were those who did not undergo such treatment (76.9%).

Table 1. Comparison between groups with absence and presence of depressive symptoms in relation to the demographic, social and economic characteristics of men after the diagnosis of prostate cancer (N=85). Florianópolis, Santa Catarina - CEPON 2014/2015.

Variables	Depressive symptoms		*p* value	PR (CI95%)***
	Absent n(%)	Present n(%)		
Age (years)			0.222*	
40 to 60	11(18.6)	6(23.1)		1.061 (0.825-1.364)
61 to 80	48(81.4)	20(76.9)		1
Schooling			0.315*	
Elementary School	35(60.3)	14(53.8)		1
High School or Higher Education	23(39.7)	12(46.2)		1.059 (0.865-1.296)
Current profession			0.210**	
Unemployed/Retired/Sick Leave	43(72.9)	22(84.6)		1.149 (0.931-1.416)
Up to two categories	16(27.1)	4(15.4)		1
Marital status			0.307*	
Partner	41(69.5)	21(80.8)		1.129 (0.919-1.387)
No partner	18(30.5)	5(19.2)		1
Economic class			0.769**	
Upper Class (A+B)	2(3.4)	1(3.8)		1.158 (0.899-1.492)
Middle Class (C)	9(15.5)	2(7.7)		1
Lower Class (D+E)	47(81.0)	23(88.5)		1.164 (0.651-2.078)
Weight status			0.689*	
Overweight	41(70.7)	16(61.5)		1
Normal weight	17(29.3)	10(38.5)		1.094 (0.881-1.358)

*Chi-squared test; **Fisher's Exact Test; ***Prevalence Ratio – Poisson's Regression.

Table 2. Comparison between groups with the absence and presence of depressive symptoms in relation to the characteristics of the disease and the treatment of men after the diagnosis of prostate cancer (N=85). Florianópolis, Santa Catarina - CEPON 2014/2015.

Variables	Depressive symptoms		*p* value	PR (CI95%)***
	Absent n(%)	Present n(%)		
Suffers other diseases			0.562*	
Yes	37(62.6)	18(69.2)		1.062 (0.869-1.299)
No	22(37.3)	8(30.8)		1
Urinary incontinence			0.247*	
Yes	15(44.1)	26(57.7)		1.123 (0.924-1.365)
No	11(55.9)	33(42.3)		1
Radical prostatectomy			0.973*	
Did not undergo	14(54.2)	32(53.8)		1
Underwent	12(45.8)	27(46.2)		1.003 (0.824-1.221)
Type of treatment			0.528**	
Chemotherapy	5(21.7)	2(14.3)		1
Radiotherapy	14(60.9)	7(50.0)		1.049 (0.710-1.55)
Hormone therapy	4(17.4)	5(35.7)		1.310 (0.822-2.088)
Finished o treatment			0.154*	
Yes	12(20.3)	7(26.9)		1.217 (0.941-1.573)
No	23(39.0)	14(53.8)		1.229 (0.998-1.513)
Not yet started	24(40.7)	5(19.2)		1
Physiotherapy			0.021*	
Yes	3(5.1)	6(23.1)		1.497 (1.083-2.069)
No	56(94.9)	20(76.9)		1.00

*Chi-squared test (N=85); **Fisher's exact test; ***Prevalence ratio - Poisson Regression.

In the EORTC QLQ C30 instrument, the closeness of the score to 100 represented a better quality of life; except on the symptomatic scale where a score closer to 100 meant a worse quality of life. The results of the comparison between quality of life and the absence and presence of depressive symptoms are presented in Table 3. Significant results were observed in most variables, except for loss of appetite (p=0.078) and sexual functioning (p=0.068).

In the components of the functional scale, men with depressive symptoms had a more negative quality of life than those with the absence of depressive symptoms, with p<0.001 for the emotional, physical and social functions, and p=0.025 for cognitive function. The same was found in the overall health scale (p<0.001). In the symptomatic scale, significant differences were observed for the majority of variables, namely fatigue (p<0.001), insomnia (p<0.003), pain (p<0.003), nausea and vomiting (p<0.011), dyspnea (p<0.041) diarrhea (p<0.050) and financial difficulties (p<0.011), but not for the variable loss of appetite. Worse results were found among men with depressive symptoms.

When the specific instrument for men with prostate cancer (EORTC-PR25) was observed, significant results (p<0.039) were identified on the functional scale, as well as for all the variables of the symptomatic scale, with the presence of depressive symptoms group exhibiting worse quality of life results.

Table 3. Comparison between the groups with absence and presence of depressive symptoms in relation to the quality of life of men following the diagnosis of prostate cancer (N=85). Florianópolis, CEPON 2014/2015.

Variables	Total	Depressive symptoms		*p* value
	Mean (±sd)	Absent Mean (±sd)	Present Mean(±sd)	
EORTC-C30				
Functional scale *	78.77±18.48	86.10±10.07	62.13±22.30	<0.001
	Median (Q25-Q75)	Median (Q25-Q75)	Median (Q25-Q75)	
Cognitive function	83.33(66.66-100.00)	100.00(83.88-100.00)	75.00(66.66-100.00)	0.025
Emotional function	75.00(54.16-91.66)	83.33(66.67-100.00)	50.00(25.00-75.00)	<0.001
Physical function	93.33(73.33-93.33)	93.33(80.00-100.00)	70.00(36.67-93.33)	<0.001
Social function	100.00(66.66-100.00)	100.00(100.00-100.00)	75.00(66.66-100.00)	<0.001
Overall health scale**	75.00(15.38-35.89)	83.33(66.67-91.66)	54.16(47.91-66.66)	<0.001
Symptomatic scale**	23.07(15.38-35.89)	20.51(12.85-28.20)	42.30(23.07-62.17)	<0.001
Fatigue	11.11(0.00-33.33)	0.00(0.00-22.22)	44.44(19.44-100.00)	<0.001
Loss of appetite	0.00(0.00-0.00)	0.00(0.00-0.00)	0.00(0.00-33.33)	0.078
Insomnia	0.00(0.00-66.67)	0.00(0.00-66.66)	66.66(0.00-100.00)	0.003
Ache	0.00(0.00-33.33)	0.00(0.00-16.66)	25.00(0.00-66.66)	0.003
Nausea and vomiting	0.00(0.00-0.00)	0.00(0.00-0.00)	0.00(0.00-33.33)	0.011
Dyspnea	0.00(0.00-0.00)	0.00(0.00-0.00)	0.00(0.00-0.00)	0.041
Cold	0.00(0.00-33.33)	0.00(0.00-33.33)	16.66(0.00-100.00)	0.014
Diarrhea	0.00(0.00-0.00)	0.00(0.00-0.00)	0.00(0.00-33.33)	0.050
Financial difficulties	0.00(0.00-33.33)	0.00(0.00-0.00)	33.33(0.00-100.00)	<0.001
EORTC- PR25				<0.001
Functional scale **	84.21(64.91-93.85)	91.22(78.94-96.49)	71.05(59.64-84.21)	<0.001
Sexual activity	66.66(33.33-66.66)	50.00(33.33-83.33)	75.00(50.00-100.00)	0.039
Sexual functioning	75.00(54.16-75.00)	75.00(41.66-75.00)	58.33(50.00-100.00)	0.068
Symptomatic scale**	15.78(6.14-35.08)	8.77(3.5-21.05)	28.94(15.78-40.35)	<0.001
Urinary symptoms	25.00(12.50-50.00)	20.83(4.16-37.50)	43.75(21.87-57.29)	0.001
Intestinal symptoms	0.00(0.00-12.50)	0.00(0.00-8.33)	8.33(0.00-16.66)	0.017
Hormone treatment	11.11(0.00-30.55)	11.11(16.67-38.88)	22.22(16.66-38.88)	<0.001
Incontinence	0.00(33.33-100.00)	0.00(0.00-100.00)	33.33(0.00-100.00)	0.041

* Independent T-test, values presented as mean and standard deviation; **Mann Whitney U-test, values presented as median and interquartile range. Md - Median; IQ - Interquartile.

DISCUSSION

Despite increases in survival rates and advances in diagnosis and treatment[24], cancer is still considered a death sentence and carries with it psychological consequences, such as fear, sadness, and depression[1]. Literature shows that the main psychological problems presented by patients diagnosed with prostate cancer are depression and anxiety[13,24]. The aim of the present study was to investigate the relationship between the presence or absence of depressive symptoms and the quality of life of men in the treatment and post-treatment phase of prostate cancer.

The results showed that men with depressive symptoms had worse quality of life in the functional, overall health and symptomatic scales. These results corroborate the findings of Brazilian and non-Brazilian literature[13,25]. The functional quality of life scale identified an association with physical,

functional, emotional, social and cognitive issues. These aspects were more affected in patients with depressive symptoms. It is known that depression has a substantial impact on the health of patients with chronic diseases, including cancer[26], and that the presence of depressive symptoms is directly related to physical, psychological and social decline, with characteristics that impact quality of life and its functionality[5,27]. With a disease such as cancer these factors can be exacerbated, as the illness can bring feelings of inferiority and fear of rejection in social relationships[28], as well as side effects such as a decline in physical functioning[29,30]. In addition, non-Brazilian studies have shown that cancer treatment coupled with psychological factors such as depression can also affect some cognitive functions, such as short- and long-term memory, attention span, concentration, and language skills[6,31].

Life habits are closely related to cancer[32] and influence quality of life in terms of physical and emotional health[14]. The results in the present study showed that patients with depressive symptoms had an inferior quality of life in the overall health scale. This may be due to the possible side effects of cancer treatment, such as reduced bone density, decreased muscle mass and strength, weight and body fat gain, and a decline in physical functioning[29,30]. A study of sixty patients undergoing prostate cancer treatment showed that their physical functioning was significantly reduced after treatment and that they suffered weight gain and reduced muscle mass[6]. Van den Bergh et al.[33], in a study with patients at the end of treatment, found low scores for physical health, anxiety and quality of life in general.

It has been found that in the treatment period of the disease there are consequences for the physical health of the patient, such as fatigue, insomnia, nausea and vomiting, pain, dyspnea, constipation, diarrhea, urinary and intestinal symptoms and urinary incontinence[8,9]. In the present study, the symptomatic scale of both the general and specific questionnaire for men with prostate cancer revealed that worst results were related to the presence of depressive symptoms. Such results may be because most patients are still undergoing treatment and are affected by its consequences, as previously mentioned.

Other symptoms that are uncomfortable for patients are urinary incontinence and dysfunction in sexual activity[1], aspects of the functional scale of the specific instrument for prostate cancer which demonstrated a significant relationship with the presence of depressive symptoms. A non-Brazilian study of four hundred and thirty-seven patients with prostate cancer found that, two years after treatment, urinary incontinence was present in 48.8% of men and sexual dysfunction in 82.8%[34]. The treatment modalities for prostate cancer are the main causes for these two symptoms, which may persist even after the end of treatment[3,35], and may be considered as a diminishing of their masculinity by patients, as the prostate is part of the masculine identity[10]. Literature reveals that the main feelings expressed by patients with prostate cancer are depression, failure, impotence in relation to the disease, fear of sexual impotence, anguish over loss of urinary control and autonomy, pain due to the loss of the capacity to have satisfactory erections and fear of being betrayed or abandoned by a sexual partner[27,35].

It is important to highlight some limitations of the present study, such as the use of a questionnaire as a data collection tool, as well as the self-reporting of some data on the characteristics of the disease by patients, as the researchers did not have access to medical records; Also, as this is a cross-sectional study, it did not examine cause and effect relationships. Nor was it possible to achieve the expected sample size, with 17 participants fewer than required. Such a limitation may have occurred due to the refusal of some men to be part of the study, most probably due to the difficulties that accompany the treatment of cancer, as sample recruitment occurred in the hospital environment, and also because it deals with a topic considered a taboo for the population male as it affects a symbolic organ of masculinity. The advantages of the study, however, include its contribution to a greater knowledge of men with prostate cancer through other aspects of health, as well alerting to the risk that other factors, such as depression, can affect cancer treatment.

CONCLUSIONS

In view of these results, it can be seen that the presence of depressive symptoms significantly affects the quality of life of men with prostate cancer. There is therefore a need for greater support for the male

population with this disease. These findings therefore support the idea that it is important to provide greater psychological attention to these patients in order to provide quality of information, psychological care, the formation of support groups and other measures, as in many cases survival without good quality of life may not be the best option for the patient, causing more suffering.

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Elderly people receiving care through an aeromedical service

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Abstract

Objective: to characterize the care given to the elderly by an aeromedical service in the south of Brazil. Method: a descriptive, cross-sectional and quantitative study was performed. The data were collected from reports of care of the elderly between July 2014 and June 2016, and were analyzed using simple descriptive statistics with numerical measures and descriptive charts. *Results:* of the 1071 care visits performed, 214 (19.9%) were related to occurrences involving the elderly, the majority of whom were male (64.5%) and aged between 60-64 years (29%). The types of care were classified into clinical, trauma or inter-hospital transfer. With respect to clinical care, cardiorespiratory arrest was the most prevalent incident (35.9%), while in trauma care falls were the most frequent occurrence (48.9%). The highest percentage of visits occurred on Sundays (18.7%). In the majority of cases care resulted in referral to reference hospitals (69.63%), followed by visits that evolved to death in the case of 47 elderly persons (21.96%). *Conclusion:* the findings of the present study represent a relevant contribution to the planning and implementation of care for elderly persons in an emergency situation receiving treatment from an aeromedical service.

Keywords: Nursing. Elderly. Air Ambulances. Emergencies. Emergency Medical Services. Epidemiology Descriptive.

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INTRODUCTION

With the disorganized development of cities, urban mobility has become more complex, making it difficult to provide rapid health care by land, especially in more remote locations.

It is understood that the survival of a critical patient is directly related to the speed with which they are submitted to suitable definitive treatment[1]. Faced with such a reality, the need for prompt and adequate care in the prehospital phase is imperative. Factors such as time of day, traffic movement, the distribution of mobile service units and the location to which the patient will be referred directly influence prehospital care time.

Aeromedical services are important in this context, as patients in a serious condition require the rapid displacement of health professionals, reducing the risk of deterioration of their critical state of life. Aeromedical care is a complex activity aimed at finding, locating, rescuing and caring for patients who have suffered accidents, violence or medical problems in distant, remote or difficult to reach places which ambulances cannot easily access, or disaster situations such as earthquakes, floods, fires, air crashes and shipwrecks[2].

With the increase of longevity in Brazil, there is a need to structure health services to provide specialized attention, especially regarding the rapidity of emergency and urgent care, as the physiological organic systems of elderly persons are frailer due to the changes caused by aging[3]. The structural and functional alterations associated with multimorbidity predispose the elderly to accidents and explain the basic differences in health/illness outcomes[4]. The response of geriatric patients to injuries is less effective than among young adults and the results are more frequently fatal, even when severity is low[5].

The aeromedical service should therefore be prepared to meet the needs of the elderly in order to maintain the quality of care and the positive results obtained by the interventions performed.

In Santa Catarina, the location of the present study, the Corpo de Bombeiros Militares de Santa Catarina (the Santa Catarina Fire and Emergency Service) (CBMSC) working in partnership with the Serviço de Atendimento Móvel de Urgência (the Mobile Emergency Response Service) (SAMU/SC) created, in 2010, the Batalhão de Operações Aéreas (the Air Operations Battalion) (BOA)[6]. This service operates with a Squirrel model (HB 350 B) rotary-wing aircraft, known as Archangel 01 (Advanced Life Support Helicopter). This aircraft has the capacity to transport six people, namely two pilots, two to three crew members (operational flight crewmember, doctor and nurse) and one patient.

This is a relatively new service, with a need for further studies on the needs of those using the service, especially when serving the largest part of the population (the elderly), so that specific action plans can be created to meet the growing demand for care of this group.

The following research question is therefore asked: what is the sociodemographic profile and characteristics of the care provided to the elderly by the BOA Santa Catarina aeromedical service? The objective of the study was to characterize the profile of the elderly assisted by the aeromedical service of the Santa Catarina Batalhão de Operações Aéreas.

METHOD

A quantitative, descriptive, cross-sectional study of retrospective documentary type was carried out. The data were collected from records of digitized care reports, covering occurrences with the elderly in the period between July 2014 and June 2016, representing 214 call-out visits. The eligibility criteria were: people aged 60 years of age or older who were cared for and transported by the BOA advanced life support helicopter during the abovementioned period. Excluded were records in which no health care was provided by the SAMU/BOA service, such as fire-fighting records, transport of authorities or patrol flights.

The variables gender, age group, month of occurrence, day of the week of occurrence, nature of occurrence and outcome of care were considered. To organize and record the data, a form was developed with the purpose of assisting in the retrospective analysis of the service reports completed by the BOA team. Descriptive statistics were used for analysis, with numerical measures and descriptive graphs, discussed through pertinent literature.

The study was approved by the Ethics Research Committee of the Universidade Federal de Santa Catarina (Santa Catarina Federal University), process Nº 1.691.870/2016, under Certificate of Ethical Evaluation (CAAE) number 57454116.9.0000.0121, complying with National Health Council (CNS) resolution nº466 of 2012.

RESULTS

In the period between July 2014 and June 2016, 1,071 flights were performed by the Air Operations Battalion with the Archangel helicopter in the region of Greater Florianópolis. Of this total, 214 visits were related to occurrences with people over 60 years old, representing 19.90% of the total number of visits.

Regarding the gender variable, there were a total of 138 male patients (64.48%) and 76 female patients (35.52%) of the total number of care visits provided to the elderly.

The arithmetic mean age of the patients attended was 72.43 years and the age distribution is presented in table 1.

Table 1. Distribution by age group, clinical occurrences and occurrences of trauma of the elderly attended by the Archangel aircraft in the period between July 2014 and June 2016 (N.214). Florianópolis, Santa Catarina, Brazil, 2016.

Variables	n (%)
Call-outs by age-range (years)	
60-64	62 (29%)
65-69	35 (16%)
70-74	29 (14%)
75-79	35 (16%)
>80	54 (25%)
Clinical occurrences	
Cardiopulmonary resuscitation	52 (35.9%)
Cardiology Emergency	36 (24.8%)
Stroke	30 (20.7%)
Respiratory Emergency	8 (5.5%)
Neurological Emergency	6 (4.1%)
Others	13 (9%)
Trauma occurrences	
Falls	22 (48.9%)
Traffic-accidents	16 (35.6%)
Drowning	3 (6.7%)
Knife Injury	2 (4.4%)
Firearm Injury	1 (2.2%)
Others	1 (2.2%)

There was a predominance of clinical events, with 145 call-outs (67.76%), followed by trauma, with 45 call-outs (21.03%) and inter-hospital transfers, with 24 helicopter transported patients (11.21%).

Table 1 shows the details of these statistics, according to the nature of the visits.

Among the Cardiological Emergencies treated, arrhythmias and acute myocardial infarcts were the most prevalent. In the clinical cases classified as Other, patients were treated for gastrointestinal bleeding, severe hypoglycemia, septic shock, acute chronic renal failure, psychiatric care and even elderly patients with cancer in palliative care.

Among the traffic accidents treated were car crashes (6 call-outs), tram accidents (6 call-outs) and accidents involving motorcyclists (4 call-outs).

Inter-hospital transfers were divided into clinical and traumatic. The total number of patients transferred by helicopter was 24, 22 of which were of a clinical nature and two of which were traumatic in nature.

In terms of the month of occurrence of the call-outs, Figure (1) shows the quantitative (n) of call-outs according to the months of the year.

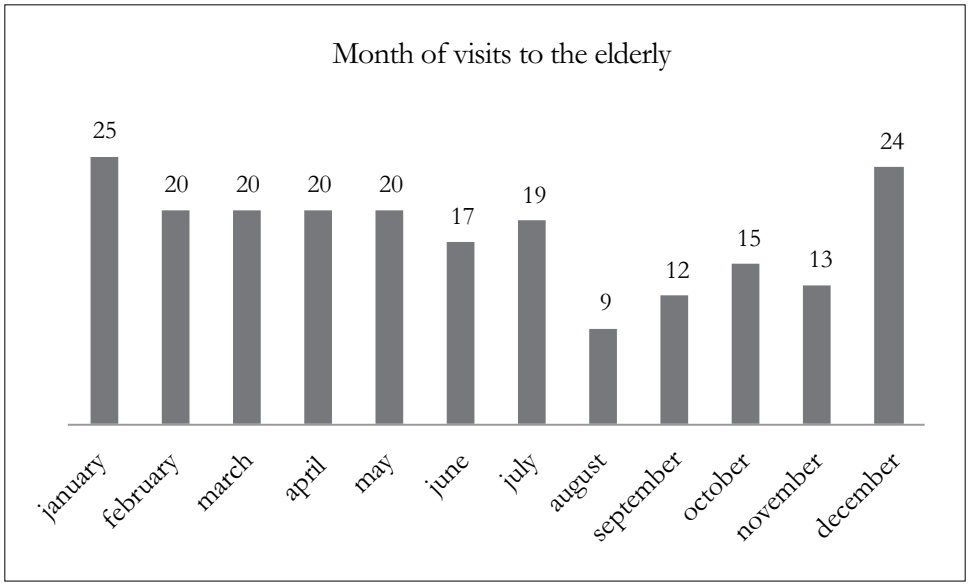

Figure 1. Monthly distribution of visits to the elderly made by the Archangel helicopter in the period between July 2014 and June 2016. Florianópolis, Santa Catarina, Brazil, 2016.

In relation to the occurrence rate per day of the week, the following variation was observed: on Sundays there were 40 call-outs (18.69%); Mondays 26 call-outs (12.15%), Tuesdays 27 call-outs (12.62%), Wednesdays 35 call-outs (16.35%), Thursdays 32 call-outs (14.96%), Friday 30 call-outs (14.02%) and Saturday 24 call-outs (11.21%).

Regarding the outcome of the call-outs, the greatest number of elderly persons were referred to Public Reference Hospitals (49, 69.63%), while 47 elderly people died (21.96%) in the call-out location after receiving care from the aeromedical service team, and were therefore not transported by the helicopter. Four elderly persons were referred to Emergency Care Units (1.87%) and three elderly patients were directed to Basic Health Units (1.4%). In 11 call-outs (5.14%) there was no need for aeromedical transport for the continuation of treatment, or in other words the elderly were stabilized and released at the treatment location.

DISCUSSION

People undergo many changes during aging, both in physical and physiological structure and in their emotional and social needs. As a result, they are more susceptible to illness and lesions and can lose their potential to combat a wide-range of diseases[7].

Researchers have reported that the majority of visits to elderly persons by a mobile prehospital care service were for females[8,9]. This contrasts with the findings of the present study, in which care for elderly males (64.48%) prevailed.

The reality of the aeromedical service was characterized by the findings of a survey of SAMU in João Pessoa (Paraiba), which described the care provided to the elderly population and identified a greater demand for care related to clinical diseases. A study conducted in this city in 2011 analyzed 240 occurrences and identified 135 (56.25%) visits of a clinical nature, 68 (28.33%) trauma call-outs and 37 (15.41%) other visits[8].

In clinical care, the high index of cardiorespiratory arrest involving the elderly in a prehospital setting is notable. The conduct and protocol provided should be suitable for each type of patient and cardiorespiratory resuscitation should not be restricted among elderly patients due to concerns over its effectiveness[10].

Also with regard to cardiac emergencies, some elderly patients may not experience pain symptoms during an episode of cardiac ischemia or acute myocardial infarction, especially those who are physiologically more tolerant, due to the collateral circulation around the cardiac tissue undergoing a low rate of blood flow[10]. This greater tolerance to symptoms can lead to a delay in seeking care among geriatric patients and a consequent worsening of health conditions.

In the treatment of strokes, prehospital care teams should avoid hasty judgments and not assume that symptoms of mental confusion and disorientation are natural to the aging process, but rather the outcome of an acute illness or exacerbated chronic disease process. The individual may also experience difficulty in limb movement or have suffered prior ischemia that hinders speech[10]. Such situations predispose the elderly to clinical instability. Health professionals need to be able to detect early signs and symptoms of cerebrovascular events and monitor and guide suitable interventions, considering the particular needs of this population.

The elderly often undergo multimorbidities, mainly chronic degenerative diseases. In 2007, 72% of deaths in Brazil were attributed to chronic noncommunicable diseases (CNCD), such as cardiovascular and respiratory diseases, diabetes, cancer and other conditions, including kidney diseases; 10% to infectious and parasitic diseases and 5% to maternal and child health disorders[11]. In this way, aging is associated with a higher prevalence of chronic diseases and disabilities, and is a phase of life in which the use of health services tends to increase[12].

In this context health professionals have an important role in the promotion of educational actions for elderly persons with chronic disease. Health education in all contexts of health care can encourage positive behavior among the elderly, in order to control complications and increase adherence to treatment, with the aim of promoting a healthy life, even with the presence of chronic pathologies[13].

In trauma cases, the care provided in relation to accidents due to falls, whether from their own height or other levels, is notable. One of the aspects most evident in the aging process is the physical disabilities and degree of dependence of the elderly. While functional disability is not inherent to the aging process[14], as an individual ages, the chances of suffering injuries from accidents increase[15]. Studies have shown that such injuries are among the main causes of death in elderly people and that falls represent up to two-thirds of accidents with the elderly, becoming one of the main predictors of morbidity and mortality[16,17].

Fall accidents can be caused by several factors, whether intrinsic and/or extrinsic[18]. Falls among the elderly constantly result in injuries and fractures, compromise activities of daily living, increase institutionalization rates, generate a decline in general health and increase fear of falling, which, in turn, increases the risk of a subsequent fall[19].

Several studies have indicated the problem of falls among the elderly, as in addition to their high rate of occurrence, they can cause damages that

affect the well-being of the individual and increase hospitalization and other health service costs, thus representing an important public health problem[20]. Preventive measures for accidents due to falls in the elderly should therefore be a constant theme in the implementation of public health policies focused on this population profile[8,10,16].

The importance of traffic accidents among this population group should be discussed, given the complexity of the aging process and the seriousness of such incidents. In the USA, motor vehicle trauma is the leading cause of death due to trauma in the elderly population aged between 64 and 74 years of age[21]; the elderly represent more than 20% of all pedestrian fatalities[1].

International studies have reported that increasing age and the severity of lesion are predictive of complications and mortality. The increase in age reduces tolerance to the shock of collisions and a preexisting health problem can represent a risk of death that is up to 50% greater among the elderly[21,22]. These fatality rates were attributed to subtle memory and attention changes, along with decreased visual and auditory acuity, resulting in delayed reaction time[22].

Anatomical and physiological changes associated with aging, chronic disease and medications can make elderly people more susceptible to trauma, complicate traumatic injuries and decrease the ability to compensate for hemorrhagic shock. Elderly patients have less physiological reserve and tolerate trauma poorly[1].

In Singapore, a study with traumatized elderly people to identify the injury patterns, specific risk factors and needs of injured individuals, found that traffic accidents were the second greatest cause of trauma in this population[23]. These findings agreed with the results of the present study, where traffic accidents corresponded to the second most frequent cause of trauma in the elderly population, representing 35.56% of trauma occurrences.

In Brazil, the profile of events due to trauma in the elderly differs in some aspects from that of younger populations, with a greater vulnerability to being knocked down, as demonstrated by the high proportion of deaths (48.2%) arising from this cause[24]. The vulnerability of the elderly to traffic accidents is unquestionable and as a pedestrian this is accentuated by their greater exposure and restricted mobility at the time of the collision. With reduced mobility it is not always possible to cross wide streets in the time allotted by the traffic lights.

Another relevant aspect identified by the study is related to the transportation of elderly people between institutions. The aircraft is of great importance, not only in providing immediate care, but also in allowing quick, safe transfers. Transfers of critical patients between health institutions through helicopter transport with an advanced life support teams allows effective stabilization of the most serious cases[1,10]. Helicopter transport can limit environmental exposure, shorten the duration of the care process and ensure faster access to specialist referral services[1].

The results did not identify the predominance of occurrences on a particular day of the week, revealing that this group is subject to illness and trauma on any day, although there was a greater incidence of occurrences on Sundays. The greater number of attendances on that day may be related to the behavior adopted by the individuals, or the recreational activities performed at the weekend.

Regarding the distribution of visits in relation to the months of the year, seasonality was found to be important due to the number of occurrences in the months of December and January, influenced by the climatic differences of the region. The Greater Florianópolis region undergoes an expressive increase of tourists in the summer, reflecting in greater demand for health care.

Considering such seasonal demand, there is a need to allocate resources to anticipate seasonal changes to improve operational efficiency and maximize care for elderly patients, so that the supply of services corresponds to real demand in periods of higher numbers of call-outs[1].

Regarding the final outcome of care, the participation of health services as an entry point for the elderly patients treated by the aeromedical service was notable. Excluding patients who were not transported to health services, 69.63% were transferred to a public hospital reference service, identifying the SUS-funded system as the main entry point for emergency situations.

The aeromedical service is a type of health care that provides advanced support to the lives of severely ill elderly persons[10] offering fast, efficient transportation to the location where definitive treatment can continue.

Greater approximation and understanding of the needs of the elderly can allow practitioners, especially nurses, to implement specific measures aimed at the elderly in emergency situations[9], in order to promote greater quality in the initial care of such patients.

As they are inserted in all areas of pre-hospital emergency care, nursing teams should consider the possibility of implementing gerontological actions, given the particularity of the care required by the elderly, thus contributing to the reduction of sequelae and morbidities and mortalities arising from these occurrences.

As a limitation of the present study, in addition to having been performed in a single institution, there are issues inherent to cross-sectional retrospective studies, which do not allow the establishing of causal relationships. Also, the incipient nature of previous studies of aeromedical services made comparison of the results in the discussion difficult. A more detailed exploratory analysis about the procedures performed in the care of the critical elderly is recommended in later studies.

CONCLUSION

The aging process influences morbidity and mortality rates. Prehospital care for the elderly population presents peculiarities that differentiate such individuals from the care provided to young adults and which directly influence the care provided by the aeromedical service to the elderly patient.

This study identified that the elderly receiving care from the aeromedical service were mostly male, with a predominant age group of 60 to 64 years, who mainly suffered impairment of their clinical health conditions, especially through cardiorespiratory arrest.

It was verified that the main clinical events that affected the study population consisted of diseases of the cardiovascular system. With regard to trauma, falls required the most call-outs in the studied period.

The present study allowed an understanding of the characteristics of the care provided to the elderly by the aeromedical service, allowing the construction of standardized institutional protocols and training of multiprofessional staff aimed at the elderly person.

Finally, it is believed that this research has the potential to stimulate and contribute to reflections on the part of the teams that work in prehospital care, as well as evidencing and strengthening information about the aeromedical service.

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Notification of intrafamily violence against elderly women in the city of São Paulo

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Abstract

Objective: the aim of the present study was to characterize the population of elderly women who have suffered sexual and physical violence and describe the characteristics of this aggression. *Method:* a cross-sectional study was carried out using secondary data from the Violence and Accident Surveillance Information System, which registers reports of physical and sexual violence against the female population aged 60 and older. *Results:* in 2013 289 acts of physical violence against elderly women in the city of São Paulo were recorded, and sexual violence was reported in ten cases. *Conclusion:* physical and sexual violence occurred mainly in the family environment, with the majority of aggressors male and a family member or known to the victim. In their direct and daily dealings with elderly health service users at all levels of complexity, doctors should know how to investigate and identify cases of violence, properly approach patients, act in coordination with other professionals and apply interventions that are effective for each case.

Keywords: Elder Abuse. Violence Against Women. Ethics.

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INTRODUCTION

Intrafamily violence encompasses relationships of abuse practiced in a private family context against any of its members. Elderly persons are potential victims of such violence, as they are often dependent on family members in various areas, including health care, social relations, financial matters, or even simple family coexistence[1-3].

Violence against the elderly population has consequences for physical and mental health and has become a public health problem, due to its prevalence and the severity of its consequences, which include physical, moral and psycho-emotional trauma. Such harm can lead to disability, dependence and even death[4].

Violence is closely related to the aging-illness process. According to Silva and Dias[5], cultural issues can also contribute to violence, especially in the domestic environment, where the elderly are often devalued, seen as useless and marginalized[5,6].

Studies on family violence have gradually sought to understand situations of violence against the elderly. This increased interest is the result of the growth in the number of elderly people and of the work of national and international surveys that have identified the family as the main context of violence against this age group[6,7].-

Despite the importance of the topic, publications on violence and abuse of the elderly in Brazil are still incipient[8]. The theme of violence against the elderly needs to be more widely studied and the participation of several sectors of society in preventive actions encouraged[9].

The lack of information about both aggressors and the abused is problematic and is largely caused by the fact that the elderly often fail to report the abuses and aggressions suffered, due to embarrassment and fear of repression by their caregivers, who are themselves often the aggressors. Explaining intrafamily violence against the elderly within or outside the home environment requires that basic health care provides a system that allows the identification of such incidents and proposes actions that address the problem[10].

The use of data collected by Brazilian information systems through analysis of the health situation and the impact of interventions has increased in recent years[11]. The implementation of the Violence and Accident Surveillance Information System (SIVVA) in the municipal health network of the city of São Paulo allows the production of information for the diagnosis, planning, monitoring and evaluation of actions to combat violence and accidents[12].

The projected elderly population of the city of São Paulo in 2013 was 1,470,719 inhabitants, with women corresponding to 59.8% of this group[13]. In the same year, the hospital information system reported spending R$30,058,110.88 (Brazilian real) on external causes in the elderly[14].

Based on the scenario described, it is believed that providing information on the characteristics of violence against elderly women may assist in creating strategies to tackle the problem within health services[15].

The effects of violence are clearly perceived within health services, either because of the costs they involve or by the complexity of the care they require. In this sense, this sector has an important role in coping with family violence. However, professionals in this area tend to underestimate the importance of the phenomenon, focusing on physical injuries and rarely attempting to prevent or diagnose the origin of injuries[16].

The Code of Medical Ethics does not explicitly describe the term "domestic violence". However, some articles refer to the obligation of the medical professional to care for health, dignity and human integrity[16]. In 2003, Law 10,741, known as the Statute of the Elderly, came into force, providing guarantees to protect the elderly[17].

Elderly persons or indeed any other citizens have the inalienable right to protection against any type of physical aggression, including through the support of the authorities, if they are mistreated or threatened, even by their families. Articles 19 and 57 of the Statute clearly state the obligation of health professionals, as well as doctors and institutions, to report cases of abuse of which they are aware. The complaint can be made to the Council of the Elderly

(municipal, state or federal), the Public Prosecutor's Office and Police Stations[17].

Medical professionals have a duty to notify cases of domestic violence that they discover, and may even be required to respond legally and ethically in the case of omission. Although the Code of Ethics does not include the expression "domestic violence" or "intrafamily violence", it clearly establishes the duty of a medical professional to care for the health and dignity of his or her patients[16,17]. In view of the above, the present study aimed to characterize the population of elderly women who have suffered sexual and physical violence, and to describe the characteristics of the aggression that occurred and the care provided in the city of São Paulo in 2013 based on the Violence and Accident Surveillance Information System (SIVVA).

METHODS

A cross-sectional, quantitative, descriptive, retrospective study was carried out.

A survey was performed of data from the Violence and Accident Surveillance Information System (SIVVA) of the Municipal Health Department of the city of São Paulo, which registers reports of physical and sexual violence against the female population aged 60 and over by means of a notification form for suspected or confirmed cases[18].

The inclusion criteria for the study were records of violence (physical and sexual) in women aged 60 years or older. Other variables collected in the database were: age (in years), type of violence (physical and sexual), frequency of violence, degree of kinship of the aggressor in relation to the victim, type of instrument of aggression, diagnosis of injury, result of case (referral for services, hospital discharge), location of violence (street, home, long-term care facility), disability (physical, mental, visual).

The definitions of physical and sexual violence adopted in this study, according to the Ministry of Health were[19].

- Physical Violence: occurs when a person, who is in a relationship of power with another, causes or attempts to cause non-accidental harm, through the use of physical force or some type of weapon that may or may not cause external or internal injuries or both. According to more recent concepts, repeated, non-severe punishment is also considered physical violence.

- Sexual Violence: any action in which a person in a relationship of power and through physical force, coercion or psychological intimidation, forces another into the sexual act against their will, or exposes them to sexual interactions that propitiate their victimization, from which the aggressor seeks to obtain gratification,

After data collection, all the data were processed and tabulated. The analysis of these data was based on descriptive statistics, on the basis of which the absolute and relative frequencies were calculated.

The research project did not require approval from the Research Ethics Committee of the University, as it uses a public domain database, according to Resolution 466/12 of the National Health Council (CNS).

RESULTS

During the year of 2013, 289 cases of physical violence were reported against elderly women in the city of São Paulo. In the same period ten cases of sexual violence were reported (Table 1).

Table 1. Elderly female victims of physical and sexual violence by age group. São Paulo, 2013.

Age Group (in years)	n	(%)
60 to 64	97	32.4
65 to 69	74	24.7
70 to 74	56	18.7
75 to 79	39	13.0
80 to 84	20	6.7
85 to 89	08	2.7
≥90	05	1.7
Total	299	100.0

In relation to physical aggression against elderly women, 73.7% of aggressors were family members or known to the victim and 41.7% were male. A total of 62.3% of incidences of violence occurred within the residences of the elderly women. A total of 76.5% of the cases involved the use of physical strength and 4.5% involved a blunt object. In terms of the frequency of aggression, 28.4% of the elderly victims of physical aggression said it was not the first time they had suffered physical abuse.

The main injury diagnoses were: 9.7% superficial head trauma and 3.8% physical injuries, while data on this subject was not provided in 18.0% of cases.

In cases of sexual violence committed against elderly women, 70.0% of aggressors were family members and 30% were unknown persons (thieves and muggers). A total of 50% of aggressors were male while 50% of cases did not provide this data. With regard to the location of the aggression, 40.0% of cases occurred in the victim's home while the other cases did not provide this data. The instrument of aggression was the use of physical strength (40.0%). In terms of the frequency of aggression, 80.0% of cases did not provide this data, 10.0% of victims said it was the first time they had suffered sexual abuse and 10% had suffered sexual abuse from six to nine times.

According to the diagnosis of injury of elderly women who suffered sexual violence, 40.0% described the violence as sexual abuse, 10% as unspecified maltreatment, and 50% did not provide this information.

Data was not provided regarding the time the violence occurred.

It was also evaluated if the victim had a disability, whether physical, visual or of another type. In the case of sexual violence, all the elderly women had a disability, although which type was not specified. Among the elderly women who suffered physical violence, 1.0% were physically disabled and 1.0% had a visual impairment, while the other data were ignored.

Among the victims of physical violence, 3.8% abused alcohol or drugs. This information was not provided for victims of sexual violence.

Of the cases of elderly women who suffered physical and sexual violence, 57.5% were immediately discharged from hospital, 0.4% died in care, 1.3% were hospitalized and 12.4% were transferred to another service.

Only 13.7% of cases of elderly female victims of physical and sexual violence were referred to the Protective Services Authority for the elderly.

DISCUSSION

Understanding the different manifestations of the types of violence against elderly persons is fundamental for an intervention. In the studied period, 289 cases of physical violence and ten cases of sexual violence were reported. The present study aimed to analyze elderly women who were victims of violence, and this profile of victims is in line

with international studies that also report the strong genderization of this phenomenon, with more women than men suffering this phenomenon[20].

Studies have found the family environment to be the main context for the occurrence of violence against elderly women, making this a serious social and public health problem[21]. In the present study, the majority of the physical and sexual violence was committed by relatives or acquaintances and occurred within the victim's own residence.

For a more in-depth analysis of the context of violence, one aspect investigated was the victim and aggressor relationship. Most of the perpetrators were relatives of or were known to the victim. Differences have been found in relation to the gender of the victim, as men were the aggressors in the majority of cases of violence against women[22]. In the present study, 40.1% of aggressors in physical violence and 50.0% of aggressors in cases of sexual violence were men.

The predominance of violence in the domestic environment corroborates recent research where violence was more prevalent in the home – a place considered a warm, loving environment which offers protection against external violence. In contrast, the intra-family relationship emerges concomitantly as a source of conflict that exposes elderly women to the risk of violence of a veiled nature by family members, with a high degree of underreporting[20,23].

The study discusses the process of coping with violence against elderly women from the perspective of services, identifying the need for intersectoral operations and professional training in relation to referrals and notification, so that elderly women can be cared for in an integral manner[24].

The obligation of health professionals to identify and report violence against elderly women is noted, as this issue has gained momentum in recent research and through the formulation of more effective public policies to guarantee the rights of this age group, especially in the field of health and safety[25].

It is compulsory that public and private health services notify cases of suspected or confirmed violence committed against the elderly to the health authorities and also to the following services: the police; the Public Prosecutor's Office; the Municipal Council of the Elderly; the State Council for the Elderly and the National Council for the Elderly[25]. In the present study, it was found that only 13.7% of cases of elderly female victims of physical and sexual violence were referred to the Protective Services Authority for the Elderly.

In many cases underreporting and a lack of monitoring and guidance make it difficult to achieve a continuous, standardized and adequate record of violence. This situation is repeated when the victims of violence are children, women, homosexuals, the elderly, the sick, the poor and the homeless, leading to the interpretation that there are people who are not recognized as citizens and who lack rights[26].

The compulsory notification of violence against the elderly, which is viewed in a consensual manner in literature, should be considered an instrument of guaranteeing rights and social protection, allowing medical professionals and other health, education and social care professionals, as well as Protective Services Authorities, to adopt suitable measures[26].

In order to ensure efficient and effective care by the professionals involved in the welfare of elderly female victims of violence at a local level, a policy of institutional responsibility is required to encourage doctors and nurses to perform this notification. A care protocol should also be implemented, clearly defining the role of each member, institution, government body and sector of civil society and those of professionals involved in the care and prevention of violence, so as to build a hierarchical, articulated and continuous network of actions[27].

The need for specific training of professionals is emphasized, including of doctors who work in health services, so that they can provide care for elderly victims and their families and have the ability and competence to prevent situations of violence and carry out epidemiological research into this subject, which can guide actions relating to the prevention, recognition and confrontation of violence against the elderly[28]. It is important to state that the results of the present study do not provide sufficient support to assess the magnitude of intrafamily violence against elderly women, identify cases of omission of victims and their families, or evaluate whether proper notification is carried out by health services.

The creation of a culture of acceptance of the aging process as a normal and irreversible stage of human existence is required, in which the elderly have the right to live with dignity and are given opportunities to fully participate in social life without violence[28].

CONCLUSION

In the present study, 299 cases of physical and sexual violence against women aged 60 years and older occurred in the city of São Paulo in 2013. During the study period, 289 cases of physical violence and ten cases of physical violence were reported. Much of the physical violence and sexual violence against the elderly woman was committed within the family, with the aggressors relatives or known to the victims, and mainly male.

Regarding the care provided to elderly female victims of physical and sexual violence, 57.5% of cases were immediately discharged from hospital, and only 13.7% of cases were referred to the Protective Services Authority for the elderly.

Further studies of the issue of violence against the elderly population are needed, with a view to improving care and the completion of the data in the notification form for suspected and confirmed cases of accidents and violence, as well as the implementation of relevant and effective health policies.

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Vitamin D intoxication through errors in administration: a case report

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Abstract

Vitamin D intoxication caused by the irregular consumption of medications is a major concern in geriatric health. Due to errors in administering such vitamins and medical malpractice, many patients lack the proper management of vitamin supplementation, considering what is actually prescribed. The present study, which aims to report on intoxication by this vitamin, describes an elderly couple who lived alone and divided their household tasks. The wife, who is the main focus of the report, was lucid but suffered musculoskeletal disorders and used a wheelchair, while the husband could function physically. The wife was hospitalized with a clinical profile of delirium. Intoxication is a major cause of metabolic encephalopathy, which explains how the case developed. The co-adjuvant was the husband, who suffered apparent mild cognitive impairment, and modified the doctor's dosage of vitamin D alone, contradicting the guidance of the family. The family monitored the health status of the couple through weekly telephone calls to check if their medications were being taken properly. After investigation with new anamneses and a review of medical records, intoxication was confirmed due to an error in the amount of the drug administered over a prolonged period. It is extremely important to be aware of the clinical profile of hypercalcemia and how to treat the same. In geriatrics, diagnosis should involve both clinical treatment and special care to understand the daily routine of elderly persons in order to avoid further repercussions.

Keywords: Vitamin D. Intoxication. Hypercalcemia.

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INTRODUCTION

Brazil is undergoing an increase in the life expectancy of its population, contributing to a greater incidence of aggravations caused by senescence and senility. Hydroelectrolytic disorders involving calcium, which represent a significant number of such events, are often caused by the excess or insufficient intake and absorption of vitamin D[1].

When vitamin D is lacking, supplementation aims to avoid and treat diseases such as osteomalacia, osteopenia and osteoporosis, as well as secondary hyperparathyroidism, conditions which are involved in the increase of morbidity and mortality in this age group[2].

We have identified cases of vitamin D poisoning associated with high daily doses due to errors in formulations, prescriptions or administration, as in the case described in this article.

Hypervitaminosis D is a rare cause of hypercalcemia and renal injury. However, high doses of either vitamin D2 (ergocalciferol) or vitamin D3 (cholecalciferol) may be more prevalent, both in prescribed and exaggerated administration[3].

Fat-soluble vitamins provide benefits at physiological levels but can be dangerous when taken in excessive quantities. For many people, the word "vitamin" indicates something beneficial and essential, not potentially toxic[4].

It is said that the diet of more than a third of the population of the USA involves supplements. However, data also exists to show that the diets of more than 50% of Americans feature supplements, often of more than one type. Between 60-70% of patients fail to report the use of these supplements to their physicians[5]. Clinical research carried out prior to the completion of diagnosis of intoxication is often flawed or prolonged. The case described in the present article shows the importance of knowledge of the properties of calcium in the body and its repercussions. Profiles of delirium as a consequence of metabolic encephalopathy[6], as occurred with the patient here, also require attention.

In geriatrics, detailed anamnesis is the key to many conditions, emphasizing the importance of an integrated approach to the health of the elderly, ranging from knowledge of the patient's daily life to the appropriate treatment for specific diseases[7].

In this scenario, questions to caregivers should also be clarified: to what extent are they necessary or dispensable, and are family and medical orders followed correctly. The objective of the present study is to report a case of vitamin D intoxication caused by administration error, as well as to discuss the possibilities of adverse effects attributable to the management of this medication.

METHOD

The initiative behind the project was based on the increase of vitamin replacement prescriptions observed both in a local geriatrics outpatient clinic and in hospitalizations, with the majority of patients receiving formulas containing cholecalciferol. We therefore began to study the phenomenon of an increase in supplementation, and found articles that described not only an increase in scientific publications on vitamin D of more than 250%, but also an increase in the use of this vitamin in primary care prescriptions in England of 8,000% and an increase in costs of 5,000% since 2008[2]. In this specific case, the research team had no contact with the patient, who had died three years previously. All data were obtained by reviewing medical records, interviews with relatives after the death of the patient, and with the geriatric doctor responsible for her during hospitalizations.

Firstly, we obtained authorization from the relatives of the patient to obtain post-mortem information and carry out data collection for scientific research. The case doctor contacted the patient's children by telephone and explained our interest in reporting the incident, explaining that no one would be identified at any time, and thus obtained consent. A review of medical records obtained from a teaching hospital of the public health system in the municipality of Catanduva, São Paulo, Brazil was then carried out.

The doctor responsible for the case signed a Consent Form in relation to this work and assisted us with interviews regarding the course of the case during the period in which it actually occurred. Meetings were also held during the production of

the work to clarify visits and hospitalizations, which were also checked against the medical records.

The present study was approved by the Research Ethics Committee of the Faculdades Integradas Padre Albino (Approval No.: 1.644.191), in accordance with resolution nº 466/2012 of the National Health Council.

RESULTS

The patient was an 84-year-old female pacemaker user with a history of hypertension, dyslipidemia, hypothyroidism, congestive heart failure, coronary artery disease with acute myocardial infarction, a stroke, chronic non-dialytic renal disease, and spine and hip osteoarthrosis.

She was hospitalized in January 2013, 15 days after undergoing a behavioral change towards aggressive and mental confusion, combined with pain in the whole body, nausea, vomiting and inappetence.

She was taken to the emergency room by her husband and daughter-in-law, who also brought a medical prescription which included the medications shown in Chart 1.

At the initial physical examination the following information was recorded: weight 83kg, height 1.55m, blood pressure 140x90 mmHg, heart rate 85bpm and mild prior right-sided hemiparesis.

In terms of tests carried out, an electrocardiogram was ordered to rule out the possibility of a new episode of acute myocardial infarction and a chest radiography to check for pulmonary alterations, neither of which revealed acute pathological signs. A skull tomography for the investigation of mental confusion showed a sequelae lesion in the left insula, physiological basal nuclei calcification, but no other disorders.

The biochemical tests requested were related to the diagnostic hypotheses of infection, hydroelectrolytic disorders and especially delirium. On the first day of hospitalization, complete blood count, urine 1, sodium, potassium, calcium, phosphorus, magnesium, urea and creatinine tests were requested to verify renal function and chronic kidney disease activity, and transaminases were used to check liver function due to the daily use of so many medications.

The results of these initial exams are shown in chart 2.

Chart 1. Medications of daily use, dose and posology. Catanduva, São Paulo, 2013.

Medication	Dose	Quantity (pills)	Time
Levothyroxine	50 µg	1	Morning
Omeprazole	20 mg	1	Morning
Losartan	25 mg	½	Morning
Furosemide	40 mg	½	Morning
Venlafaxine	37,5 mg	1	After breakfast
AAS	100 mg	1	After lunch
Flunitrazepam	2 mg	½	Night
Simvastatin	20 mg	1	Night
Complex 46	-	2	Night
Amitriptyline	75 mg	1	Night
Alendronate	70 mg	1	1x week
Metoprolol	25 mg	1	Every 12h
Vitamin D	7000 U	1 capsule	1x week

Source: Public hospital geriatrics ward, Catanduva, São Paulo 2013.

Chart 2. Exams, results and reference values. Catanduva, São Paulo, 2013.

Exams		Results	Reference
Blood count	Hemoglobin	12.1 g/dL	13-16 g/dL
	Hematocrit	37.2%	36-46%
	Leukocytes	10.600/mm^3	4.000-10.000/mL
	Basophils	4%	0-2%
	Neutrophils	68%	45-75%
	Eosinophils	0	0-5%
	Lymphocytes	22%	22-40%
	Platelets	382.000/mm^3	130.000-370.000/mm^3
Sodium		136 mEq/l	135-145 mmol/L
Potassium		4,2 mEq/l	3.5-5.5 mmol/L
Urea		68 mg/dl	16-40 mg/dL
Creatinine		2,3 mg/dl	0.6-1.2 mg/dL
Urine I		Normal	Normal
Ionic Calcium		1,98 mEq/l	1.17 a 1.32 mEq/l
Total Calcium		16,8 mg/dl	8.5-10.2 mg/dL
Phosphor		3,6 mg/dl	2.5-4.8 mg/dL
Magnesium		1,6 mg/dl	1.9-2.5 mg/dl
Glutamic oxaloacetic transaminase		21 U/L	5-40 U/L
Glutamic pyruvic transaminase		17 U/L	7-56 U/L

Source: Public Hospital Geriatrics Ward, Catanduva, São Paulo, 2013.

There were slight signs of infection in the blood count, while urea and creatinine were elevated as expected due to the patient's renal condition. The presence of hypercalcemia and hypokalemia were of greatest interest.

Parenteral hydration was started with 1000ml of 0.9% saline solution every 12 hours. For the hypercalcemia, 40 mg intravenous furosemide was administered every 12 hours, intravenous hydrocortisone 100 mg every eight hours and nasal calcitonin every 12 hours. The measures for hypokalemia were based on the intravenous replacement of 19.1% potassium chloride.

On the second day of hospitalization, with the cause of the potassium and calcium disorders still unknown, a new blood sample was collected with the same control tests, but this time with a dosage of parathyroid hormone (PTH) and 25OH Vitamin D on suspicion of kidney malfunction. The results showed PTH 15pg/ml (reference 15-65pg/ml), inappropriately "normal" in the presence of hypercalcemia, and vitamin D 160ng/ml (reference 30-100ng/ml), confirming vitamin intoxication and excluding hyperparathyroidism.

On the eighth day of treatment without response to therapy, 60 mg of pamidronate was administered for two days, with an evident improvement in ionic calcium levels to a value of 1.66mEq/l, in addition to the initial therapy. Hyperhydration and the diuretic were continued for a further six days with dose and posology reduction until normalization of the serum levels of the ionizable calcium. The patient was discharged after 14 days of hospitalization, with the diagnostic hypothesis of hypervitaminosis D, and replacement was suspended.

Three months after discharge, the patient returned to the emergency room with the same complaints and serum calcium concentration again increased to a value of 1.90mEq/l. Subsequent exams again revealed PTH below normal and vitamin D elevated to levels above the gauging ability of this method.

As medication was suspended on the first hospitalization, the relatives were invited to a meeting to carry out a new anamnesis. The conversation with the family lasted approximately 40 minutes in an attempt to identify the possibilities behind the clinical picture. It was discovered that the elderly couple lived alone and were visited every fortnight by their family, who organized the medicines into charts and calendars.

During the anamnesis, it was found that while the woman's 90-year-old husband administered the pills to his wife, he did not appear to have a complete understanding of the situation, presenting mild cognitive deficits such as being easily distracted and failing to understand the seriousness of the case. The family explained that the husband played the role of "functioning body" and the wife the role of "lucid mind" so that the couple could live together without assistance, sharing household chores.

The children of the couple were asked to bring the medication schedule and packaging the next day for verification purposes. It was noticed that vitamin D was not scheduled for the days of the week and the reason for this was asked. The children explained that since the prescription was only once a week, they telephoned on Saturdays to remind the husband to get the bottle of vitamins and administer the supplement, until the medication was suspended during the first hospitalization.

At this point, the husband said that he thought his wife was too weak and for the last two years had been administering the vitamin every day to "strengthen" her, assuming that she would improve. This continued even after the suspension of the vitamin three months earlier.

The patient took a tablet of 7,000 IU of vitamin D per day for two years, when the recommended dose was one tablet per week. The 90-year-old husband continued this situation for a prolonged period, resulting in irreversible hypercalcemia in his wife upon arrival at hospital. The patient died two days after the second hospitalization, with respiratory sepsis.

DISCUSSION

Symptoms of severe vitamin D poisoning are evidenced mainly by hypercalcemia, changes in bone metabolism, and disturbances in the amounts of phosphorus and calcium in the serum[8].

There are few previous reports of such cases in literature, since hypercalcemia suggests other diagnostic hypotheses. This condition tends to be associated with primary hyperparathyroidism, multiple myeloma, or other neoplasms. The diagnosis of vitamin D intoxication is not usual in cases of hypercalcemia, as it is infrequent, especially prior to the advent of vitamin D supplementation. In recent times, the number of reported cases has increased as this vitamin has been prescribed more frequently due to hypovitaminosis D treatment[9].

Calcium is essential for processes intrinsic to the human body, such as action potentials and bone formation. Serum concentrations fluctuate through the regulation of three main sites responsible for the transport and storage of calcium: the intestine, kidney and the bones. Low serum levels of vitamin D are a well-known risk factor for osteoporotic diseases and have been associated with the occurrence of a variety of other common chronic diseases such as hypertension, cardiovascular diseases, diabetes mellitus, various cancers, infections and various autoimmune conditions[10].

Recent reviews have concluded that vitamin D3 supplementation can prevent a number of premature deaths, but further studies are needed to assess the levels required to reduce levels of mortality[10]. Treatment with vitamins with very high doses of cholecalciferol should be avoided, but are tolerated at low daily, weekly or monthly doses[11].

Normal total serum calcium levels are between 8.8 and 10.4mg/d. Hypercalcemia occurs when there is an imbalance between calcium absorption and excretion from the kidney and its deposition in the bone[1].

The clinical symptoms of hypercalcemia include anorexia, nausea, vomiting, polyuria, polydipsia,

constipation, weakness and changes in mental status, and cases can be fatal. The patient may develop cognitive problems, go into a coma, and cardiac arrhythmias and renal failure may occur. There are recent reports in literature of potentially fatal complications of vitamin D toxicity with severe hypercalcemia and renal failure due to errors in manufacturing and the labeling of supplementation[12]. Every year, one in three people aged 65 or older experiences at least one fall, with 9% of these occurrences leading to an emergency room visit and 5-6% resulting in a fracture. Doses of 700 IU to 1,000 IU of supplemental vitamin D per day can reduce falls by 19% or, with vitamin D3, by up to 26%. This benefit was found to be significant within two to five months of treatment and lasted beyond 12 months of treatment[13].

The estimated toxic dose of vitamin D is more than 100,000 IU per day over a period of at least one month[9]. In the present report, the dose used was more than double that recommended, and the situation continued for two years.

With intense daily media advertising of products based on multivitamins and microelements that supposedly improve physical and mental performance, poisoning by such substances has become a considerable risk for patients. Such findings underpin the latest recommendation that those 65 years or older should receive around 800 IU of vitamin D per day. It should also be remembered that an intake of calcium supplements of 1,000 mg per day or more, combined with a high dose of vitamin D (≥800 IU per day), may be harmful[14].

Finally, well-balanced vitamin D levels are essential for maintaining the structural integrity of bones and other processes of homeostasis of the human body[15]. Integrated health care for the elderly is required, considering all the variables that can interfere with the patient's condition between diagnosis and appropriate treatment. The case described herein is a useful example, as the important variable was the caregiver, who interfered with good intentions but caused irreversible harm to the patient. Communication must always be carefully established and monitored.

Even though the diagnosis of the case is described, the present study has limitations, such as the fact that the patient died a few years before publication, making it impossible for the team to obtain additional information, and resulting in reliance on retrospective interviews of an old case.

CONCLUSION

The aim of the present study was to report a case of exaggerated vitamin D dosage due to failures in administration by the caregiver, and thus to alert physicians, patients and family members about the risks involved in the management of this supplementation.

Vitamin D replacement should be closely monitored, especially in geriatric cases, due to its potential risk of intoxication. Adequate monitoring is the responsibility of the patient, the family, and the medical staff.

With the increase in the use of this medicine, along with the aging population, hypercalcemia has become an increasingly common profile for medical care professionals in Brazil.

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Effects of photobiostimulation in the treatment of post-herpetic neuralgia: a case report

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Abstract

Objectives: to describe the effect of photobiomodulation therapy in the treatment of post-herpetic neuralgia in the elderly. *Case report:* a female patient, 61 years old, 56 kg, 1.67cm tall, sought treatment at the Laser Therapy Center of the Universidade do Vale do Paraíba, in the city of São José dos Campos, São Paulo, Brazil, on October 27, 2015. She had been diagnosed with herpes zoster on September 4, 2015 with complaints of intermittent neuralgia in the long thoracic nerve path and spikes of intense pain (level 10, according to the analogue pain scale). Photobiomodulation was performed with low intensity laser spot irradiations at 20 points around the herpesvirus nerve, with a distance of 2cm between each point. Irradiation was performed at each point after 20 seconds, with 3J/cm^2 per point and total energy of 60 J. At the end of the treatment the pain level was 0 and the patient exhibited a normal sleep pattern (8 hours of sleep). *Conclusions:* Photobiomodulation treated painful discomfort, improved the quality of life of the patient and proved to be an effective, safe and promising treatment, with significant potential to become the therapy of choice in such cases.

Keywords: Herpes Zoster. Elderly. Neuralgia. Low-Intensity Laser Therapy.

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INTRODUCTION

The name herpes comes from the Greek *herpein* which means "that emerges unexpectedly," as the condition in its different viral forms may remain latent for years until primary infection breaks out[1].

The varicella-zoster virus (VZV) is a *herpesvirus* that causes chickenpox and remains latent in the nervous system after a primary infection. The reactivation of VZV in the cranial nerve or in the dorsal root ganglion, which propagates along the sensory nerve to the dermatome, leads to painful cutaneous manifestations, a condition known as herpes zoster[2].

The reactivation of *herpesvirus* is closely correlated with the immune system, as the disease mainly occurs in individuals immunocompromised by other diseases, such as cancer, acquired immunodeficiency syndrome, post-transplant immunosuppression and chemotherapy. There is a strong correlation between the increased incidence of herpes zoster (HZ) with increasing age, especially among those over 55 years, as advanced age is associated with a decline in T cell-mediated immune response[1,3].

The clinical picture of HZ is almost always typical. The majority of patients report neuralgic pain prior to skin lesions, in addition to local paresthesia, burning and pruritus, accompanied by fever, headache and malaise. The elemental lesion is a vesicle with an erythematous base. The rash is unilateral, rarely crosses the midline, and follows the path of a nerve. The symptoms emerge gradually, establishing themselves over two to four days[2,4].

Most diagnoses are performed clinically without the need for further tests. Several other skin diseases may appear similar, and should be considered as part of a differential diagnosis. The diagnosis is more likely to be HZ in those with a previous known history of varicella and with the classic manifestations: prodromes of pain, cutaneous eruption and dermatome distribution and neuralgia[1,2].

Neuralgia, the most common symptom in patients with HZ, is characterized by chronic neuropathic pain in the affected nerve pathway. It lasts for at least one month, begins between one and six months after the rash has been cured, and may persist for years. The incidence of post-herpetic neuralgia (PHN) varies between 10% and 20% in immunocompetent elderly persons[5].

Therefore, the use of low intensity laser treatment (LIL) represents a viable therapeutic approach to PHN treatment. In the health sciences LIL has been consistently employed in clinical practice due to its anti-inflammatory, analgesic and anti-edematous effects and contribution to tissue repair[6]. The effects mentioned also include an acceleration in the process of bone sedimentation and the degranulation of mast cells, as well as promoting an increase in peripheral circulation, vasodilation and fibroblastic proliferation[7].

Therefore, the present case report aimed to describe the effect of photobiomodulation in the treatment of post-herpetic neuralgia in the elderly.

CASE REPORT

The present study was carried out at the Laser Therapy and Photobiology Center of the Universidade do Vale do Paraíba (UNIVAP), in São José dos Campos, São Paulo, Brasil, following approval from the UNIVAP Research Ethics Committee, under protocol No. 1.610.060, on 24/06/2016. Prior to starting treatment, the patient was informed of all the treatment steps and the subsequent description of the clinical case for possible publication. She was invited to sign a Free and Informed Consent Form that guaranteed the safeguarding of her identity and her right to withdraw from the study at any time.

A female patient, aged 61 years, 56kg, 1.67cm tall, born in São Paulo, Brazil, currently residing in the state of Florida, USA, who had refused the use of licit and/or illicit drugs, sought the Laser Therapy Center on October 27, 2015 with complaints of intermittent neuralgia and peaks of intense pain (level 10, according to the analogue pain scale). She described the first symptoms of the disease (severe neuralgia) as having occurred in June 2015 and was diagnosed with HZ on September 4, 2015. The clinical picture of intense neuralgia was maintained.

When she sought the Laser Therapy Center the patient was undergoing the same treatment as prescribed at the time of diagnosis: acyclovir

(400 mg, orally, five times a day for seven days), gabapentin (300 mg every 12 hours) clonazepam (0.5 mg every 12 hours), tramadol (50 mg orally every 12 hours) and dipyrone (500 mg orally every 8 hours) to aid in the treatment of HZ and PHN, without significant effects according to the patient's reports. She complained of neuropathic pain in the long thoracic nerve tract, a site previously proliferated by vesicles characteristic of HZ.

The irradiations were performed by legal and technically qualified professionals using lab coats, goggles, gloves, hats and masks (Figure 1). Sterile gauze soaked in 70% alcohol was used to remove soils from the irradiated site to improve light penetration into the tissue. The apparatus was coated with clear plastic to prevent possible contamination.

Laser therapy was performed at 20 points around the herpesvirus nerve, with a distance of 2cm between each point. The demarcation of the points on the skin was performed with the aid of a hypoallergenic long-lasting, moisture resistant pen. The measurement of the distance between the points was performed with a ruler. Irradiation was performed by the transcutaneous technique (direct contact with the skin), for 20 seconds at each point, with energy of 3J/cm^2 per point, total energy of 60J and a beam area of 0.5cm^2. The laser device used was a cluster of five GaAlA lasers (Clean Line, Brazil) with a wavelength of 654 nm (red) and power of 200mW.

Ten laser therapy sessions were instituted, with two irradiations per week. At the final stage of treatment (the last three irradiations) only one irradiation per week was performed. Pain level[8,9] (Table 1), quality of life (Table 2) and sleep pattern were assessed at each session to accompany the therapy. The pain level was evaluated based on the Analog Pain Scale[8], sleep pattern was evaluated based on a guiding question about the quality and quantity of sleep hours, while quality of life was evaluated through the SF-36[10].

The guiding question was used to evaluate, in each session of the photobiomodulation, the quality and quantity, in hours, of sleep. At the beginning of the treatment (until the third session) the patient reported a maximum of three hours of sleep under the effect of medication (gabapentin, clonazepam and tramadol). In the interval between the fourth and seventh LIL sessions there was a significant improvement in sleep patterns (about five to six hours of deep sleep). Between the eighth and tenth photobiomodulation sessions there was stabilization in sleep patterns, with about eight hours per day of deep sleep.

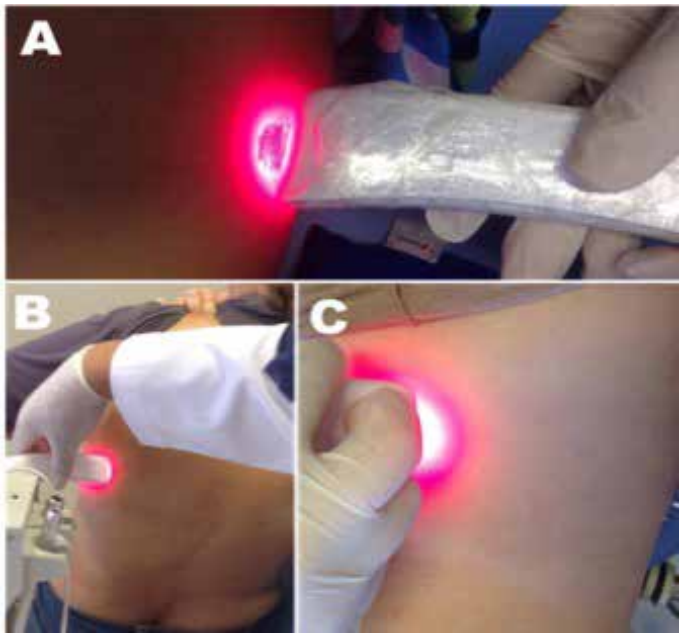

Figure 1. Low intensity laser irradiations. São José dos Campos, São Paulo, 2016.

Table 1. Assessment of pain level (Analog Pain Scale). São José dos Campos, São Paulo, 2016.

Irradiations	Pain Level	Type of treatment
0	9 (continuous pain)	AV + AC + BD + OP + DIP
1st	8 (intermittent pain)	AV + AC + BD + OP + DIP + LIL
2nd	8 (intermittent pain)	AV + AC + BD + OP + DIP + LIL
3rd	8 (intermittent pain)	AV + AC + BD + OP + DIP + LIL
4th	7 (intermittent pain)	AV + AC + BD + OP + DIP + LIL
5th	5 (at night only)	AV + AC + BD + OP + DIP + LIL
6th	5 (at night only)	LIL
7th	4 (at night only)	LIL
8th	3 (at night only)	LIL
9th	2 (at night only)	LIL
10th	0	LIL
Reassessment	0	No treatment

AV: antiviral; AC: anticonvulsant; BD: benzodiazepine; OP: opioid; DIP: dipyrone; LIL: low intensity laser treatment.

Table 2. Assessment of quality of life using SF-36. São José dos Campos, São Paulo, 2016.

SF-36 Domains	Initial assessment	Final assessment
Functional capacity	25	85
Physical aspects	20	90
Pain	0	100
General health status	10	90
Vitality	0	90
Social aspects	30	95
Emotional Aspects	30	85
Mental health	40	90

A value of zero represents the most negative result possible (worse quality of life) and 100 corresponds to the most positive result (better quality of life).

DISCUSSION

The varicella-zoster virus (VZV), a member of *Herpesviridae*, is a highly contagious virus with major neurotrophic potential and which can infect only humans. Herpesviruses have the ability to induce latency in infected organisms and can therefore be reactivated at any time[11,12].

HZ is due to the reactivation of VZV, which remains latent in the sensory or cranial nerve ganglia after primary infection[12]. Primary infection by VZV occurs through the inhalation of aerosols when the virus comes into contact with the mucosa of the upper respiratory system and/or the conjunctiva[13].

HZ transmission, meanwhile, occurs through direct contact with the injured areas of infected individuals. The most common complications of HZ are neurological and ophthalmologic impairment and NPH, which occurs most frequently[2,13].

NPH, which involves pain that lasts after the rash is removed, can continue for many months or even years and may be severe, interfering with the sleep and quality of life of patients[2,12].

The recommended treatment is with antiviral medications, the most common of which are aciclovir, valaciclovir and fanciclovir. These three drugs have proven effective at reducing the formation of new lesions, accelerating the resolution of existing lesions and reducing the intensity of acute pain. Valaciclovir and fanciclovir appear to be more effective in the treatment of HZ than acyclovir[2,14].

While there is consistent evidence that oral acyclovir is ineffective in reducing the incidence of NPH, there is insufficient evidence for the recommendation of other antivirals for this purpose[14].

Pain is a common complication of HZ, and its management varies according to its intensity and duration and the characteristics of the patient. Opioids are usually used for more intense pain, while for mild pain non-steroidal anti-inflammatory drugs can be administered. Pruritus is also a common symptom, and can be treated with the use of calamine[14,15].

Medications recommended to minimize the severe pain associated with NPH include tricyclic antidepressants (amitriptyline, nortriptyline and imipramine), anticonvulsant agents (gabapentin and pregabalin), opioids, topical lidocaine (lidocaine patch), and capsaicin. Combined therapies with anticonvulsants and tricyclic antidepressants, or with opiates and anticonvulsants, have been shown to be more effective than monotherapy. However, even in these cases the pain may remain[16].

Conventional antiviral, antidepressant, anticonvulsant, opiate and anti-inflammatory therapy, however, is not completely effective in treating signs and symptoms caused by VZV in HZ. LIL, therefore, is studied as an alternative treatment modality and/or coadjuvant[9,16].

LIL therefore offers a safe treatment modality that is generally free of deleterious effects. Due to the athermal nature of the lasers used in LIL there are no reports of adverse effects related to this therapy[17,18].

The biomodulation mechanism of LIL has been associated with the activation of the mitochondrial respiratory chain, resulting in a signaling cascade that promotes cell proliferation and cytoprotection. Evidence suggests that cytochrome c-oxidase is the major biomodulator[7]. The anti-inflammatory and analgesic response is related to a mechanism involving the inhibition of arachidonic acid and the consequent reduction of the production of prostaglandin E2, as well as factors of pro-inflammatory cytokine modulation[17,18].

In the present case, positive results were obtained for the reduction of neuralgia, both in improvement of quality of life and sleep patterns. Other studies have found similar evidence when highlighting the effects of photobiostimulation[1,3,5].

Photobiostimulation in the infrared region has been widely reported in scientific and clinical settings because of its positive effects on NPH reduction. The results found in this case corroborate clinical studies that highlight the anti-inflammatory and analgesic action of the laser applied to patients with NPH[3,6,18].

A review carried out with 11 scientific studies demonstrated the potential of LIL as a viable means for the treatment of HZ, since there was a significant reduction in the main complications (pain, sleep and rest) related to NPH[17,18]. However, in order to be properly used and to achieve satisfactory results it is essential to understand the technique, its operating principle, HZ itself and the peculiarities intrinsic to each patient[9,19,20].

CONCLUSION

Photobiostimulation treated the discomfort of pain, improved the quality of life of the patient and proved to be an effective, safe and promising treatment, with potential to become the therapy of choice in such cases. Therefore, the photobiostimulation protocol adopted in this case report was effective and demonstrated its therapeutic capacity in neuralgia. With the aim of standardizing the parameters of photobiostimulation used in this study, further research involving more participants is recommended.

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FRAX Tool in Brazil: an integrative literature review following validation

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Abstract

The present article is an integrative review the objective of which was to assess research carried out with the FRAX tool in Brazil following its validation, and describe the conclusions drawn. Two databases were used to select the articles (the Capes Portal and the Virtual Health Library), and the sample of this review was the only four articles published in Brazil relating to the FRAX tool following its validation in May 2013. After analyzing the articles, the results demonstrated that despite some limitations the FRAX Tool can be used to reduce the prevalence of fractures due to its simplicity of use, with an emphasis on prediction and orientation, allowing early and safe therapeutic decision-making.

Keywords: FRAX. Osteoporotic Fractures. Diagnosis. Mass Screening. Diagnostic Techniques and Procedures. Brazil.

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INTRODUCTION

The role of the gynecologist can be described as that of a doctor who treats only women, carrying out their professional practice in a certain social space by making use of the instruments of the culture of their society and producing knowledge and representations with specific purposes, aiming at the integrated care of women in a clinical setting, especially when the patient is elderly[1].

The role of the gynecologist, in the social and technical space of his or her surgery, is growing in complexity, in that it must interconnect the human aspects explicit in patient care, considering the patient as a unique individual in terms of their particularities and frailties, simultaneously with the nuances of the interpersonal relationship[1].

It is therefore understood that the sphere of action expected of the gynecologist today, in addition to listening to these patients and the performance of the inherent activities of the specialty itself, such as specific physical examinations and the requesting the mandatory complementary exams required by medical protocols, more complete complementary exams for the screening and prevention of diseases for the reduction of morbidities. Often, the gynecologist is the only doctor the woman seeks on a regular basis. This care is based on the understanding that we must reduce the missed opportunities to carry out a complete diagnosis of such women, especially when they are elderly, when several comorbidities appear[1].

Such diseases include osteoporosis, considered one of the most common and serious health problems of the elderly female population in developed countries. This disease is characterized by low bone density and the degeneration of the bone microarchitecture, which leads to an increase in bone fragility and the increased risk of fracture. Bone mass increases in childhood and adolescence, peaks in the third or fourth decade of life, and declines thereafter. The groups at greatest risk for osteoporosis are postmenopausal, white, Asian, lean, small women with a family history of the disease[2-4].

According to recent estimates, it is estimated that osteoporosis affects 200 million women worldwide and that there are now 44 million people in the USA with osteoporosis or osteopenia. The predictions for 2020 are that there will be more than 61 million individuals with osteoporosis or low bone mineral density (BMD) in the USA alone[2,4].

According to the National Osteoporosis Foundation, an osteoporotic fracture occurs every three seconds and an osteoporotic vertebral fracture every twenty-two seconds.

Osteoporotic fractures impose serious physical, psychosocial and financial barriers, both for the patient and for society[5].

The introduction of the FRAX (Fracture Risk Assessment Tool) facilitated the evaluation of the risk of bone fractures. FRAX was developed by the World Health Organization Collaborating Center for Metabolic Bone Diseases of the University of Sheffield, England, in partnership with the World Health Organization (WHO) and was launched in 2008. It is based on the individual analysis of each patient, correlating risk factors with the bone mineral density of the femur as measured by bone densitometry. The algorithm calculates the probability of bone fractures from easily obtained clinical factors and the result is the likelihood of a fracture of the femur or other bones in the subsequent ten years. The probability is calculated from data such as age, gender, body mass index (BMI), and risk factors such as history of fractures due to bone fragility, family history of femoral fracture, smoking, prolonged use of steroids, rheumatoid arthritis, other causes of secondary osteoporosis and high alcohol consumption[6,7].

Approximately 21% of women aged 50-84 years in the biggest countries in Europe (Germany, France, Italy and the United Kingdom) have osteoporosis, which means more than 12 million women in these countries alone[8].

Following its creation, the FRAX tool has been calibrated for different countries based on mortality rates and bone fractures specific to each country. The model is now available in 28 languages (Arabic, English, Traditional and Simplified Chinese, Danish, Finnish, French, German, Japanese, Polish, Russian, Spanish, Portuguese, Swedish, Turkish, Bengali, Czech, Dutch, Greek, Icelandic, Indonesian, Italian,

Korean, Lithuanian, Norwegian, Romanian, Slovak, Thai) and has already been validated for more than 30 countries[9,10].

It is available as an application for IOS and Android and is both appreciated and criticized for its simplicity. It is not applicable for patients where treatment is clearly indicated and in very elderly patients with various bone fractures due to frailty[9].

FRAX is currently the most widely used tool in the selection of individuals for the treatment of osteoporosis. For this reason, in July 2017, the Brazilian Federation of Gynecology (FEBRASGO) recommended the use of the tool in gynecological consultations, aiming to improve the care provided to women[1].

The justification for the use of the tool by gynecologists is the knowledge that the main risk factors associated with loss of bone mass are advanced age, female gender and the postmenopausal period. Thus, evaluative studies on the importance of the use of the tool in Brazil are required.

Given this context, the present study aims to investigate the use of the FRAX tool in Brazil following its validation, synthesize and interpret the results of these studies and discuss the main recommendations and limitations of the tool.

METHODS

This is an integrative review based on a retrospective and documentary study, carried out through a survey of the scientific productions published between 2013 and 2017 and located in the Library of the Capes Portal (Coordination for the Improvement of Higher Level Personnel), which includes numerous databases, and the Virtual Health Library, which includes the Medline and Lilacs databases.

An integrative review involves the analysis of studies, providing scientific basis for decision making, improving the results obtained in clinical practice, with the perspective of increasing knowledge in a specific subject, as well as helping to fill gaps identified in previous studies. It also allows the use of several studies to highlight a line of research[11].

The integrative review followed the following steps: definition of the theme and guiding question; establishment of inclusion and exclusion criteria; definition of the information to be extracted from the studies; evaluation of studies; interpretation of the main results and the preparation of the document that includes all these phases[12].

After defining the topic, the following question was asked: what knowledge was produced in Brazil by articles on the FRAX Tool following its validation in the country in 2013?

The only guiding axis used to obtain the publications in the study was the descriptor registered in MeSH (Medical Subject Headings), as nothing related to the FRAX tool was found in the Descriptors in Health Sciences (Desc/Virtual Health Library). The descriptors "FRAX tool" and "Brazil" and "ten-year fracture probability" in English and Portuguese were used, interconnected by the Boolean operator AND.

The following inclusion criteria were adopted for data collection: surveys available online, referring to research carried out in Brazil, in the English or Portuguese languages, with free access to the entire publication, published in the last five years, indexed in periodicals available in the Capes Portal Library (Coordination for Improvement of Higher Level Personnel) and the Virtual Health Library (VHL). The following databases were used in this study: Scientific Electronic Library Online (Scielo), National Library of Medicine (PubMed), Latin American and Caribbean Literature in Health Sciences (Lilacs), Medical Literature Analysis and Retrieval System Online (Medline).

The following were excluded: medical guides, reviews, comments, technical and scientific reports, dissertations, ministerial and governmental documents, and other documents that did not follow the IMRDC format (introduction, method, result, discussion and conclusion) of a scientific article. Repeated articles were also excluded as well as those where the central theme was not the FRAX tool.

The search process of manuscripts in the referred databases resulted in 44 articles referring to the descriptor "FRAX tool and Brazil".

After establishing the inclusion criteria and the reading of the titles and abstracts seven texts related to the descriptor described above were selected.

The detailed exclusion criteria were then applied. A careful analysis and an integral reading of the articles was also carried out, and four articles were chosen to form the basis of the analysis of this study.

The following criteria were used to collect the data of the articles that were included in the integrative review: identification of the original article, methodological characteristics of the study, evaluation of methodological rigor and application in FRAX tool article.

For the analysis and subsequent synthesis of the articles that met the inclusion criteria, a synoptic framework specially designed for this purpose was used, which included the following aspects: name of the study; authors name; title of the periodical; language; year; institution; research design; goals; results and recommendations.

In order to have access to the full text of the article, the available link was selected directly in the VHL database or in Capes. However, the content of the abstract did not always correspond to the description contained in the article. For this reason, for the construction of this study, we opted to read all the publications analyzed in full.

For the mapping of the set of scientific productions, the following variables were identified:

- Area of knowledge of the journal or of professional activity: according to the information at the beginning of the article, referring to the authors or to the title of the journal;
- Methodological or study approach: the studies were considered quantitative when they involved statistical inferences with a mathematical description; qualitative, when they evaluated the relationships and human activities represented in collective or individual consciences; and quantitative, when both approaches were used in a complementary manner.

RESULTS AND DISCUSSION

In the present integrative review, we analyzed four articles that met the inclusion criteria. An overview of the evaluated articles is shown below.

Chart 1. Description of articles included in integrative review.

	Study title	Title of Periodical	Authors	Language/ Year	Institution
A1	Correlation between osteoporotic fracture risk in Brazilian postmenopausal women calculated using the FRAX with and without the inclusion of bone densitometry data	Arch Osteoporos	Bastos-Silva,Y, et al.	English/2016	Universidade de Campinas
A2	Low health related quality of life associated with fractures in obese postmenopausal women in Santa Maria, Brazil	Bone Reports	Copês, R.M. et al.	English/2017	Universidade Federal de Santa Maria
A3	Low self-awareness of osteoporosis and fracture risk among postmenopausal women	Arch Osteoporos	Langer, F. W.et al.	English/2016	Universidade Federal de Santa Maria
A4	Incidence of hip fracture in Brazil and the development of a FRAX model.	Arch Osteoporos	Zerbini, C. A. F. et al.	English/2015	Centro Paulista de Investigação clínica e outros

The four articles included in the integrative review were written by physicians. One was developed in a research center and three were epidemiological studies carried out by universities. Three surveys were performed in single institutions while one had a multicentric approach.

All the articles were published in international osteoporosis medical journals, and all were published in or after 2015 and in English.

Chart 2. Designs and aims of articles.

	Study design	Aims	Results	Recommendations
A1	Cohort study, exploratory and comparative design.	To assess the degree of agreement between the risk of fractures in the next ten years in menopausal women calculated by the FRAX tool with and without inclusion of bone mineral density	FRAX represents a good alternative for predicting fracture risk, identifying patients that should be treated even without knowledge of bone mineral density, avoiding the need to submit patients to densitometry, which is unavailable in several regions	It is necessary to define the threshold for initiating pharmacological treatment based on the FRAX risk rate for use in the Brazilian population.
A2	Cohort study, exploratory and comparative design.	To explore the effect of both obesity and fractures on self-reported quality of life	Lower rates of self-reported quality of life were found in obese women with fractures in comparison with obese women without fractures and non-obese women with fractures	The FRAX tool should be modified as it does not effectively measure risk in obese people, underestimating the probability of fractures and leaving them untreated. In addition, there is a need for studies to evaluate the efficacy of the anti-fracture effect of different medications in obese patients.
A3	Cohort study, exploratory and comparative design.	To evaluate the concordance between self-perception of osteoporosis and risk of fracture with the risk of fracture in the next ten years calculated by the FRAX Tool	There is no agreement between the self-perception of fracture risk and the risk calculated by FRAX. A total of 79.3% of the women identified as having a high risk of fractures by FRAX perceived themselves as having low risk	Need for educational measures on osteoporosis in postmenopausal patients
A4	Cohort study, exploratory design.	To calculate the mean age and gender referring to rates of femur fractures in Brazil for the creation of the Brazilian FRAX Tool and to be able to perform interventions.	The incidence of fractures increases with age, with a preponderance in men when young and in women when over 50 years. The probability of bone fracture was higher in patients with clinical risk factors such as parents with femoral fractures, lower bone density, low BMI, women with a history of previous bone fracture and advanced age.	Interventions should be applied in elderly women with a history of previous fractures. The FRAX tool is the first model for the prediction of fracture risk specific to Brazil based on the original method and has been validated by several independent cohort studies. Despite some limitations, it is effective for use in clinical practice.

In terms of the research design of the evaluated articles, four were cross-sectional population epidemiological studies, while one was the description of the validation of the FRAX Brazil Tool with retrospective application.

Regarding the purpose of this review, that is, to investigate the use of FRAX in Brazil after its validation in 2013, four articles were found.

In relation to the second specific objective to synthesize and identify the results of these studies, there seems to be agreement that the FRAX Tool is an important and simple method of screening for the risk of fractures in the next ten years at the outpatient level.

In terms of the objective of discussing its main indications and limitations, a consensus was found in recommending the use of this tool in clinical practice for elderly patients, especially for postmenopausal and elderly women, the highest risk group.

One article described the use of the FRAX tool in obese women and concluded that high body mass index could mask the risk of fractures, underestimating this outcome[13].

One study demonstrates the lack of knowledge about the real condition of bone quality and the risk of fractures among women, concluding that there is a need for educational measures on osteoporosis in postmenopausal patients[14].

However, a 2012 multi-center study conducted in a partnership between the Universities of Santa Maria in Brazil, the University of Cambridge in England and four study centers in the USA, with 6,049 women of whom 18.5% were obese, concluded that the FRAX tool is valid for the prevention of fractures in obese postmenopausal women, particularly when using bone density results[15].

The lack of information about the disease shows the difficulty in medical practice of establishing a better form of control and treatment. In this item the FRAX tool is useful for the individual screening of the risk of fractures and the possibility of introducing personal modifications in the quality of life of these patients[16].

Changes in the personal sphere can promote greater health and functionality for the elderly, as well as reduce mortality and the use of the health system with a consequent reduction of costs[17]. This reinforces the need for educational and preventive measures; firstly in an attempt to reduce the number of patients with osteoporosis, and secondly to intervene as early as possible in favor of patients with osteoporosis, so that they remain physically active and can reduce the occurrence of fractures[16].

The study that compared the risk of fractures in the following ten years with and without the use of bone mineral density, which is only accessible through the bone densitometry test, found similar results for the two approaches. This finding is important as there are regions of Brazil where it is impossible to perform bone densitometry[18], and shows the tool could represent a strategy for reducing the prevalence of fractures through outpatient use due to its simplicity of application, allowing early and safe therapeutic decision making.

The limitations of FRAX are described in the updates of the tool in 2016 and include: the use of the tool in people born in one country, but descended from immigrants from another nation, for whom the tool used should be that of the country of origin of the parents; the impossibility of using the tool as the only screening strategy for treatment, as it does not allow the inclusion of risks such as previous fracture of the femur, the dose of the glucocorticoid used, the level of smoking, the result of spine densitometry, as well as the previous history of falls, reflecting a failure to capture important data. It is known that the high risk of falling in a patient alone increases the risk of fracture by 30%[9].

This integrative review consists of a broad literature review, contributing to discussions about research results, as well as considerations about future studies. The purpose of this research method is to obtain knowledge of a particular phenomenon, in this case the use of the FRAX tool in Brazil,

based on previous studies, and should include a satisfactory level of information, after gathering and synthesizing the evidence available in the literature, allowing the reader to evaluate the adequacy of the procedures used in the preparation of the review, aspects related to the subject addressed and the details of the included studies. Limitations include the inclusion of several studies with different research designs, which can hamper the final analysis[12].

A limitation of the present study was the small number of articles found, even though several databases were searched (those belonging to the Capes Portal and the VHL) as the objective of the research were studies on the FRAX tool in Brazil only and after 2013.

CONCLUSION

It was found that in general all the authors demonstrated that the tool, despite some limitations, is an important and simple method of screening the risk of fractures at an outpatient level, and is one of the strategies which can be used to reduce the prevalence of fractures due to its simplicity of application, allowing early and safe therapeutic decision-making.

The earlier we identify patients with a medium and high risk of fracture, the earlier we can begin to treat them and further raise awareness, allowing them to modify living habits that decrease their health and interfere with their bone mass, reducing their morbidity and improving their quality of life.

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