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Redefining the passage of time: lifestyle and longevity

The growth of life expectancy is a process that brings changes to the organization of societies. Amidst discussions about the most suitable measures for adapting institutions to the new population configurations, the projection of a longer life expectancy affects, most of all, people's perception of their own life trajectories. The perspective of longevity brings greater concern about being able to live life fully throughout its duration, and dealing with physical, psychological and social changes.

Elias[1] suggests that the notion of time becomes a sensitive experience for individuals through their engagement with the world, as the need arises to define common parameters that enable the constitution of collective life processes. The models of the division and standardization of durations of life situate individuals and their particular trajectories in relation to the context in which they are inserted. The division of life into phases and age categories expresses the time of human nature and organizes a cycle to be lived. However, these classifications have a history and are transformed according to the development of society. It is in this sense that the contemporary debate on the different factors that throughout life define the conditions under which we age influences the way in which individuals plan and experience aging.

With an increasing number of people reaching older ages, such as 80 and above, there is a greater interest in expanding knowledge about the different ways of growing old. Old age is too long a period to be summarized. The age reference of "over 60 years" is being replaced by a restructuring of the phases of life through a vision that is more attentive to the complexity and peculiarities of more advanced chronological stages. This seeks to identify which factors were an advantage for those who reached an advanced age, challenging the old expectations about old age. Thus, the "very old" and especially the "super elderly" are living evidence of more successful ways of aging.

What factors favor survival until such an advanced age? What makes super elderly persons reach the age of 80, 90, or 100 and have a higher than expected physical and cognitive performance for their age? This search for elements that can modify the conditions of aging is established in accordance with the conjuncture of promoting active aging with emphasis on the idea of a process of preparation for the experience of old age. In this context, where it is necessary to guarantee quality of life, one category that has redirected the biomedical approach to aging stands out: lifestyle.

The notion of lifestyle suggests the consideration of factors, attitudes and habits that contribute to a better or worse form of aging, integrating the natural biological dimension with the active positioning of individuals in shaping their own aging. The preservation of health and functionalities in old age is associated with the previous life trajectory of the individual, in order to find signs of practices that potentially favor a healthy, active, autonomous and independent aging process.

In the demographic context, studies have tried to identify an association between well-being and satisfaction with life, and death rates[2]. From a biomedical point of view, different aspects that influence physical and mental performance over time are investigated: habits of daily living, posture towards life, practice of physical activity, quality of sleep, stress levels and eating habits. These factors are also considered in relation to strategies for the prevention and control of chronic-degenerative diseases associated with aging, such as Alzheimer's Disease[3].

The focus on lifestyle emphasizes the diversity of the aging experience as a unique trajectory, but there is a controversial bias to this emphasis: the rapid dissemination of dietary guidelines and patterns, physical exercises, and changes of habit, often contradictory, in search of an ideal performance that counteracts decline in old age.

Thinking about old age as a continuum of the life trajectory of the individual involves the challenge of ensuring that preparation for longevity is not a constant struggle against old age, but a possibility of changing the meaning of the experience of aging. It is important to consider that, instead of models for the best form of aging, the understanding of different aspects of aging can indicate the various ways to live through one's own old age as well as possible.

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Validation of a questionnaire for the evaluation of informal social support for the elderly: section 1

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Abstract

Objectives: to construct and carry out content (CV) and response process (RPV) validation for a questionnaire to assess informal social support for the elderly. *Method*: a descriptive, observational, quantitative study was performed between January and December 2016 in the city of Natal (Rio Grande do Norte) and other locations in Brazil. The inclusion criteria were: proven experience in the area of social support (for experts) or 60 years of age or older and with preserved cognitive status (for the elderly). The CV stage evaluated the relevance of the items according to the general Content Validity Index (CVI) and per item as well as the assembly of the panel based on the observations of the experts. In the RPV stage, the understanding of the items by the target audience was evaluated. *Results*: the CV stage included a total of 40 interviewees. The overall CVI was 0.88 and only one item had a CVI considered poor. In the RPV stage 41 people were interviewed. *Conclusion*: the questionnaire exhibited good relevance for the proposed items and the observations of the interviewees allowed an approximation of the language used in the instrument to the language of the elderly.

Keywoods: Social Support. Health of the Elderly. Surveys and Questionnaires. Validation Studies.

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INTRODUCTION

Social relations, when inadequate, constitute an obvious health risk, comparable to others proven to be harmful, such as smoking, high blood pressure, obesity and sedentary lifestyle, and may have clinical implications for people's health[1]. Social support (SS) seems to have a broad impact in many aspects of people's lives, especially in populations that are vulnerable in social, psychological and health terms, as is the case of the elderly[2].

SS composes the social and individual coping resources in which people base their responses to everyday needs and stressful situations[3]. An individual's assessment of their SS as successful has been related to several positive outcomes in physical and mental health, influencing how stressful situations are perceived, emotional and psychological well-being and even longevity[3,4,5].

The differentiation of social support relationships according to their content, process and development can directly impact the adaptation of individuals to their social environment. From this perspective, SS must be evaluated by distinguishing its types in accordance with the relationships that give rise to it[6]. In scientific literature it is common to observe a differentiation between Formal Social Support (FSS), which includes state services, social security, and diverse organizations, such as church groups and health professionals, among others, and Informal Social Support (ISS), which includes the network of relatives, friends and neighbors, for example[7,8]. Isolating and breaking links within the ISS network could increase the vulnerability of individuals to illness and become a barrier to achieving active aging. ISS, therefore, is the main source of support for many elderly people and, on many occasions, the only one[9,10].

In light of the above and other assumptions regarding scientific evidence in the evaluation process[11], the importance of using instruments constructed and validated for the analysis of ISS is clear, due to the scarcity of resources in literature for the evaluation of this specific construct[3]. Most such instruments deal with Formal Social Support or do not separate the constructs from one another among the elderly population[12,13,14].

Within the logic of the systematization of the evaluation process, it is important that such instruments follow the methodological rigor of the stages of the validation process[15,16]. The careful evaluation of ISS can become excessively complex, abstract and subjective, if validated evaluation tools are not used in the research process. There are multiple observation variables, which can cause difficulty for exclusively subjective observations.

Validity refers to the ability of an instrument to accurately measure the phenomenon being studied, or in other words, to what extent it can actually assess its objective[17]. For the construction and validation of a questionnaire, the steps of "content-based validity" and "response process validity " are required, which can be carried out by qualitative and quantitative procedures, according to the proposed methodology[15,17-19]. When validation is considered as a process, the publication of steps already carried out for a certain instrument foments academic discussion and consequently, the creation of new researches that corroborate its validity. Other steps to improve the instrument, such as Exploratory and Confirmatory Factor analysis, accuracy analysis and cross-cultural adaptations, are necessary and will be dealt with in later sections, as some have already been performed by the research group responsible.

Content-based validity assesses the degree to which each element of an instrument of measurement is relevant and representative of a specific construct with a particular purpose for evaluation, and is usually developed through a comprehensive literature review, consulting experts by interviews, group discussion (focus groups) or panel building, followed by assessment by judges[18,20].

Response process validity encompasses the analysis of interviews with lay people potentially related to the study population and the subsequent evaluation of judges. This step ensures the correction of sentences and an approximation of the language used in the instrument to the language frequently used by the target population, thus discarding terms that were not clear for this audience[15,17,20]. Unfortunately, most authors do not describe these steps in detail. Therefore, the purpose of this section is to analyze the content and response process validity of a questionnaire that seeks to evaluate Informal Social Support for the Elderly.

METHOD

Research Characteristics

A descriptive, observational, quantitative type research was carried out. The present study took place between January and October 2016, as part of the project "Construction and Validation of a Social Support Scale for the Elderly". This research project comprised two stages of the process of the construction and validation of the questionnaire: content and response process validity[15,18].

Data Collection

The first stage referred to content-based validity, where the judges selected the items after a thorough review of the literature for the preparation of the first version of the instrument[16]. Subsequently, the relevance of the items was judged by experts. The initial construction of the questions concerning the first model of the questionnaire was therefore carried out by two academic judges from the area of Social Support, with the choice of each item always consensual, following a review of literature. The questionnaire was then issued to specialists via the internet, using the following inclusion criteria: authors of scientific articles in the area, professors of Psychology and Social Services courses (those who train professionals working close to the evaluation and management of social support among the elderly) and professionals who worked directly with the theme.

The sample at this stage was selected for convenience and included 40 experts. Contact was made following the creation of an e-mail database of the authors responsible for the publication of articles available in the virtual computer network and contact with professors available on the websites of their respective institutions of higher education or the personal invitation of professionals in the area. The invitation was simultaneously sent to all experts through the SurveyMonkey® research tool. The letter of invitation contained the following words: "Social support is an important determinant for the health of a range of elderly people. This study aims to construct and validate a questionnaire for the evaluation of Informal Social Support for the elderly. This is the initial stage of the research, in which researchers and experts participate in the theme of Informal Social Support, to evaluate the relevance of the proposed items and possible changes or the addition of new items. Your participation is voluntary and will be given through the answers made in this questionnaire. If you feel comfortable answering the questions, you will be making a significant contribution to our research." All participants accepted the free and informed consent form.

The second stage of response process validity was also carried out with a convenience sample, totaling 41 people (target population), in face-to-face interviews, selected in a long-term institution, an association for the elderly and a public health system clinic, all located in the city of Natal, Rio Grande do Norte (RN).

The inclusion criteria were: 60 years old or older and with cognitive ability maintained (no clinical diagnosis of cognitive deficit). All participants signed the informed consent form. In addition to ISS questions, respondents were asked about their age, gender, schooling, and income. At this stage, participants were asked whether they understood each item or not, were asked to repeat the questions, and encouraged to suggest changes. In addition, the non-verbal reactions of respondents were observed during the question process (e.g. facial expressions of doubt or discomfort) along with long response times[15,18,21]. The maintenance, alteration or exclusion of the items occurred by the consensus decision of the judges after the construction of a panel with the information provided by the interviewees [17,22].

Data Analysis

The questionnaire addressed to the experts asked for answers regarding level of schooling, as well as multiple choice and open questions relating to the proposed items with the following words: "1- Classify each question below according to degree of relevance for the evaluation of Social Support for the elderly" (responses in this question followed the Likert Scale structure: 1- Irrelevant, 2- Not Very Relevant, 3- Relevant, 4- Very Relevant, 5- Extremely Relevant); 2- "If you would like to suggest the inclusion of an item, do so in the text box below"; "3- If you would like to suggest changes to an item, please state the corresponding number and how you would like it changed in the text box below"[17].

In order to determine the degree of relevance of the items and the overall relevance of the instrument, the Content Validity Index (CVI) was used to measure the degree of relevance of each item, based on the answers of the judges (responses 3, 4 or 5 were considered suitable), where: CVI by item = number of suitable judgments (answers 3+4+5)/total number of judgments. Items with a CVI greater than or equal to 0.8 were maintained[23]. The overall CVI indicates the degree of relevance of the mean of the entire instrument, where Overall CVI = Overall Mean of all Suitable Responses/total number of judgments. The maintenance, alteration or exclusion of the items was based on the consensus decision of the judges after the construction of a panel with the information provided by the interviewees and the analysis of the CVI of the items[20,22,23].

Ethical Aspects

This project was approved by the Ethics Research Committee of the Hospital Universitário Onofre Lopes, under approval number 1.644.533 and CAAE 54608616.8.0000.5292. The present study complied with Resolutions nº 196/96 and nº 466/2012, of the National Health Council (CNS).

RESULTS

In terms of descriptive analysis, in the content-based validity stage with experts, 90% of the interviewees were doctors, 7.5% were masters and 2.5% were specialists. The response process validity phase involving the elderly included a total of 41 interviewees, 17 (41.5%) of whom were males, 24 (58.5%) of whom were women, and the mean age of whom was 70.87 (±8.01). The majority (39.0%) had completed primary education, followed by secondary education (26.8%), and higher education (22.0%), those with no education (7.3%) and those with a post-graduate qualification (4.9%). The average income was: 2439.02 reais (± 2792.86). Table 1 shows the results of the overall CVI and per item.

Chart 1 provides suggestions for changes and the additions of new items made by experts. Chart 2 shows a comparison of before and after changes in the items after such suggestions. Chart 3 shows a comparison of before and after changes in the items after the suggestions of the elderly. Chart 4 presents the proposal of the questionnaire after validity steps based on the content and process of responses.

Table 1. First version of items proposed by judges following a review of literature and the Content Validity Index (CVI) by item and overall, according to the judgement of relevance by experts. Natal, Rio Grande do Norte, 2018.

Item	Content Value Index by item
1. Can sir/madam rely on many people that are close to him/her?	0.92
2. Does sir/madam live with many people?	0.82
3. Does sir/madam have close friends?	0.90
4. Does sir/madam have a close relative that lives nearby?	0.90
5. Does sir/madam have a friend that lives nearby?	0.92
6. Does sir/madam have a neighbor present?	0.88
7. Does sir/madam often pay visits other people?	0.88
8. Does sir/madam often have visitors?	0.90
9. Does sir/madam have anyone to talk to?	0.92
10. Does sir/madam have someone to help with the housework?	0.92
11. Does sir/madam have someone to help them leave the house when they need it?	0.92
12. Does sir/madam have someone to help when they are bedridden or sick?	0.95
13. Does sir/madam have someone to help when they have financial difficulties?	0.95
14. Does sir/madam take part in discussions about family decisions?	0.90
15. Does sir/madam take part in discussions about decisions among friends?	0.82

to be continued

Continuation of Table 1

Item	Content Value Index by item
16. Does sir/madam take part in discussions about community decisions?	0.82
17. Does sir/madam listen to the problems of others when asked?	0.90
18. Does sir/madam comfort others when asked?	0.88
19. Does sir/madam share their leisure time with someone?	0.95
20.Is social contact with others enduring?	0.88
21.Was the help that sir received from others in the last 30 days adequate?	0.82
22. Did sir receive adequate help from other people when young?	0.65*
CVI – Overall	0.88

*Value below reference value of 0.8[23].

Chart 1. Observations for amendments and suggestions for the inclusion of items of specialists accepted by judges. Natal, Rio Grande do Norte, 2018.

Observations of specialists accepted
Restriction to Informal Social Support in the header
Use of the singular to facilitate understanding
Reduction of the number of words in some sentences
Use "you" instead of "sir/madam"
Suggestions for the inclusion of items by specialists accepted
When you are sad or miss someone do you have anyone to talk to?
Do you have close relatives who help you look after yourself when you need it?

Chart 2. Items with and without alterations, following specific suggestions of specialists accepted by judges. Natal, Rio Grande do Norte, 2018.

Unaltered item	Reformulated Item
Did sir/madam receive adequate help from other people when young?	When you were young, did you receive adequate help from other people?
Does sir/madam take part in discussions about family decisions?	Do you take part in family decisions?
Does sir/madam participate in discussions about decisions among friends?	Do you take part in decisions among friends?
Does sir/madam listen to the problems of others when asked?	Do you listen to the problems of others when asked?
Does sir/madam often have visitors?	Do you often have visitors?
Does sir/madam have a friend that lives nearby?	Do you have a friend you see often?
Was the help that sir received from others in the last 30 days adequate?	Was the help you received in the last 30 days satisfactory?
Does sir/madam have a neighbor present?	Do you have a neighbours you can rely on when required?
Does sir/madam have a relative that lives nearby?	Do you have a relative you can rely on and who lives nearby?
Is social contact with other people enduring?	Is your social contact with other people enduring?

Chart 3. Items with and without alterations following suggestions of target audience accepted by judges. Natal, Rio Grande do Norte, 2018.

Unaltered item	Reformulated Item
Do you have a relative that you can rely on and who lives nearby?	Do you have a family member that you can rely on and who lives nearby?
Do you often pay visits?	Do you often visit other people?
Do you have someone who can help you leave the house when you need it?	Do you have someone who can help you leave the house in case you need it?
Do you have someone to help when you're bedridden or sick?	Do you have someone to help in case you're bedridden or sick?
Do you have someone to help when you have financial difficulties?	Do you have someone to help in case you have financial difficulties?
Do you take part in family decisions?	Have you taken part in a family decision?
Do you listen to the problems of others when asked?	Do you help others when asked?
Do you comfort others when asked?	Do you console others when they're sad?
Is your social contact with others enduring?	Is your social contact with others permanent?
Was the help that you had or would have had in the last 30 days satisfactory?	Was the help that you had or would have had in the last 30 days satisfactory, or would it have been?

Chart 4. Informal Social Support Questionnaire for the Elderly following content and response process evaluation stages. Natal, Rio Grande do Norte, 2018.

Informal Social Support is all emotional, financial, material or daily support for activities of daily living, received by a network of people (relatives, friends, neighbors, among others). INDICATE THE OPTION THAT YOU BELIEVE TO BE MOST SUITABLE FOR EACH ITEM REFERRING TO INFORMAL SOCIAL SUPPORT AMONG THE ELDERLY		
Item/Response alternatives	YES	NO
1.Can you rely on people close to you?		
2. Do you live with many people?		
3. Do you have a friend you see often?		
4. Do you have a family member you can rely on and who lives nearby?		
5. Do you have a friend that lives nearby?		
6. Do you have a neighbor who you can rely on in case you need it?		
7. Do you often visit other people?		
8. Do you often have visitors?		
9. Do you have someone you can talk to?		
10. Do you have someone to help with the housework?		
11. Do you have someone to help you leave the house in case you need to?		
12. Do you have someone to help you in case you're bedridden or sick?		
13. Do you have someone to help you in case of financial difficulty?		
14. Have you taken part in a family decision?		
15. Do you take part in decisions among friends?		
16. Have you taken part in a community decision?		
17. Do you help other people when asked?		
18. Do you console other people when they're sad?		
19. Do you share your leisure time with anyone?		
20. Is your social contact with other people permanent?		

to be continued

Continuation of Chart 4

Item/Response alternatives	YES	NO
21. Was the help that you had or would have had in the last 30 days satisfactory, or would it have been?		
22. Have you received adequate help from other people throughout your life?		
23. When you are sad or miss someone do you have anyone to talk to?		
24. Do you have a family member who helps you look after yourself in case you need it?		

DISCUSSION

Some points for reflection concerning the construction and validation of instruments should be highlighted. It is important to understand this process as a collection of resources and procedures that are organized as a process and not as a finished product. The stages of the validation process should complement each other and the level of evidence obtained by the instrument to measure a given construct or phenomenon should be constantly evolving[15,21,24,25].

In terms of descriptive analysis, a high degree of education and training was observed among the expert participants regarding the content-based validity sample, which could reduce response errors caused by a failure to understand the questions or the purpose of the study. All levels of education were represented among the respondents of the response process validity stage, from "uneducated" to formal postgraduate education, with a quantitative balance between men and women. In addition, data collection was performed in both a long-term institution and in public places. These aspects reinforce the applicability of the questionnaire whether in an institutionalized or non-institutionalized population.

Content-based validity was measured using a panel of experts[17]. This tool was integrated into the research as part of a preliminary phase, contributing to the establishing of the bases for research. This phase was important to support the eradication of bias and false evidence about the construct studied[17,20,26].

The general observations made by the experts regarding the instrument resulted in a reduction in the length of sentences, making them more objective, which could reduce the final application time of the questionnaire[18]. The language of the sentences was also improved, which could strengthen the link between the respondent and the process of applying the instrument and thus increase adherence, leading to all the questions being answered, and also facilitate the understanding of the interviewee, reducing response bias[27]. It was suggested that the questionnaire was restricted to the object of study of "Informal Social Support", which was not clear in the first version and was also accepted by the judges.

The experts also suggested the inclusion of some items. Accepted suggestions covered important questions that include variables that directly influence perceived informal social support and are presented as important dimensions for the evaluation of the construct studied. These are: "emotional support and social participation" and instrumental support or availability[28-30].

Regarding the CVI, the overall index was satisfactory, demonstrating the general relevance of the items initially included in the instrument[23]. Item twenty-two, "Did you receive adequate help from other people when you were young?", was the only question with an unsatisfactory performance according to the item based CVI[23] and was restructured in a way that facilitated understanding and gave the idea of perceived informal social support throughout life. It was therefore restructured as follows: "Have you received adequate help from other people throughout your life?".

On some occasions, experts can be an authority on the subject studied, but when suggesting issues pertinent to the topic, may do so in a language of debatable comprehension for the target audience. The response process validity stage is therefore important to bring the language used in the instrument closer

to the target audience's usual language, making it potentially more comprehensible[15,21].

The collection of direct and indirect indicators, such as the answers about the understanding of each question and the reaction of the interviewees to each question, was important in this stage of interviews with the elderly[21]. The documentation of the reactions and perceptions about the understanding of the questions by the target population, with the subsequent creation of the panel for this population, allowed the specificities of this group to be captured, which was only possible through face-to-face interviews.

The choice of the format of answers for the elderly, in terms of the understanding or not of each question, was dichotomous instead of using, for example, a Likert type scale. This format of responses could facilitate the interviewee's understanding and reduce the amount of random responses[18]. Regarding the analysis of the responses of the target population, in terms of the understanding of each item, the analysis was specific by item, with the aim of maximizing the understanding of the sentence according to the objective of evaluation proposed by the question and reducing the possibility of "does not apply" type answers"[22]. The specificities of the studied population were therefore taken into account in the analysis of the acceptance or rejection of the proposed changes.

The questions used a language close to that most commonly spoken by the elderly, so that they still maintained the basic principles of the cultured norm of the Portuguese language and that understanding was potentialized[18]. For example, in the question "do you listen to the problems of others when asked?", many elderly persons understood "listen to the problems of others" as something negative, so the solution found was to rephrase the question "do you help other people when asked?".

The phrase "in case of" was used to refine some questions, in order to reduce the possibility of "not applicable" answers. For example, the question "do you have someone to help when you have financial difficulties?" includes the possibility that some people have never had financial difficulties. The phrase was therefore rephrased as "do you have someone to help you in case of financial difficulty?" A similar situation occurred in the sentence that was rephrased as "do you have someone to help you leave the house in case you need it?"

At times, relatively simple terms created confusion for the respondents. For example, many elderly persons confused "have visitors" (*receber visitas* in Portuguese) with "pay visits to" (*realizar visitas* in Portuguese), so the term was restructured to "do you often visit?". The term "enduring" was unusual for this audience and was changed to "permanent". The same occurred with the term "comfort", which was modified to "console".

In general, the construct of Informal Social Support was familiar and easy to understand for the elderly persons interviewed, mainly because the questions were common and had few technical or scientific terms. However, some reactions of surprise or delays in responding or negative responses of understanding or difficulty in repeating the question that had just been read were noted, as well as suggestions of alterations by the interviewees, guided the reformulation of questions which frequently presented problems.

Limitations of the study included the fact that the answers of the experts were entirely collected in online format, which made it difficult for the responding professionals to explain their concerns about the items, which may favor the emergence of response bias in some cases. In addition, the respondents were not asked for their locality. The sample used in the face-to-face interviews with the target audience was from only one city. Ideally, this should be taken from different cities and regions of Brazil, in order to include the desired cultural variety among the interviewees. It is worth highlighting the importance of other validation steps for this instrument, such as Factor Analysis, accuracy and reproducibility analysis, among others, which will be considered in later sections to reduce the length of each article and ensure that each stage receives the proper attention.

CONCLUSIONS

The content-based validity stage identified the effective relevance of the proposed items through positive indicators of both the overall and item content

validity index. The suggestions of the specialists led to the inclusion of two items and the improvement of the other initially proposed questions. The response process validity allowed an approximation of the language used in the instrument to that employed by the elderly. A better understanding of the issues by the target population can result in more reliable responses and more effective implementation of the instrument, and other steps of the validation process are necessary.

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Social support and cognitive processing among elderly caregivers and non-caregivers of other elderly persons

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Abstract

Objective: to analyze measures of social support and cognitive processing among elderly caregivers and non-caregivers. *Method:* a comparative, cross-sectional and quantitative study was performed. Participants were divided into two groups: 41 elderly caregivers of other elderly persons (G1) and 41 elderly non-caregivers (G2). Sociodemographic, health and care variables, social support, cognition and cognitive processing (verified by long-latency auditory evoked potential acquisition with the Neuron-Spectrun-4 / EPM device) were assessed. *Results:* in G1, the majority were female (n=33, 80.5%), married (n=34, 82.9%), with a mean age of 68.5 (± 5.8) years, a mean 4.5 (± 3.7) years of schooling and had provided care on average for 18.0 (± 18.4) years for 6.5 (± 5.1) hours per day. In G2, the majority were female (n=31, 75.6%), widowed (n=23, 56.1%), had a mean age of 69.8 (± 7.2) years and a mean 3.7 (± 2) years of schooling. There were no statistically significant differences between the groups in social support, cognition and cognitive processing. *Conclusion:* the task of caring did not have a negative influence on social support and cognitive processing. This research may contribute to the planning of actions among primary health care providers and to future research investigating other factors that permeate this relationship.

Keywords: Caregivers. Social Support. Health of the Elderly. Cognition.

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INTRODUCTION

Longevity and the chronic profile of the health problems of a population may lead to a reduction in the functionality of the elderly and increase their degree of dependence in activities of daily living. Because of these situations, in many cases such individuals become dependent on care[1,2]. Such individuals are responsible for providing care to dependent elderly persons, thus improving their quality of life [3].

The profile of caregivers of the elderly has been identified in Brazilian and international literature as being informal, a family member, a woman (usually a wife or daughter), middle aged or elderly, married, with low levels of schooling and who lives with the elderly recipient of care[4-9].

The task of caring can generate negative impacts on the health of the caregiver, such as overload or burden resulting from stress[3,10]. Other negative effects arising from the task of caring may also occur, the most common of which are depression, anxiety, physical, psychological and/or social exhaustion[10].

Some conditions may be associated with the commitments of the care provided and have a negative influence on the biopsychosocial health of the caregiver. These include the hours dedicated to care, the lack of time for self-care, the duration of the illness and the increasing dependence of the elderly, as well as the reduction of work, social and leisure activities[10].

The relationship between cognitive changes and the delivery of care has been discussed in literature[11]. A study carried out with elderly family caregivers of patients with dementia found that these caregivers can suffer cognitive and psychophysiological dysfunctions, which can affect their quality of life and the ability to provide care. The authors of this same study observed that levels of brain-derived neurotrophic factor (BDNF) were affected by the chronic stress of caregivers, and were partially related to cognitive deficits. They found that younger caregivers had significant cognitive dysfunctions, and that these were even more pronounced among older caregivers[11].

The chronic stress found in the task of caring seems to be associated with cognitive decline[11]. According to Figueiredo et al.[12], instrumental activities of daily living (IADL) and advanced activities of daily living (AADL) are best performed by people with effective cognitive functioning. In this sense, caregivers need to have good cognitive performance to provide proper care, including, for example, in areas such as attention and concentration[13].

One of the tools used to evaluate attention and concentration is Auditory Evoked Potential (P-300), which is highly dependent on cognitive abilities[14]. This potential is measured by the evaluation of latency and amplitude and is characterized by a wave resulting from the discrimination of a rare stimulus, which emerges approximately 300 milliseconds (ms) after the initial stimulus[15]. The peak latency of P300 can range from 270 to 470 ms, depending on the proposed activity, although maximum amplitude occurs at about 300 ms[14,16]. A review by Pavarini et al.[17] found that, for healthy elderly persons, amplitude values ranged from 2.2 μV to 18.5 μV and, for latency, from 320 ms to 484 ms.

Adequate social support may represent a strategy for reducing the level of stress caused and, consequently, improving the health of the caregiver, resulting in improvements in the care provided[4,18]. In addition to providing better care, the mental health of caregivers can be improved if they receive sufficient social support[18]. Literature has shown that social relations benefit the cognitive functioning of the elderly[19]. It is therefore necessary to reinforce the importance of providing appropriate social support to the elderly, whether they are caregivers or not..

There is also a gap in literature exploring cognitive processing and social support among elderly caregivers. The objective of the present study was therefore to analyze measures of social support and cognitive processing in two groups of elderly persons, caregivers and non-caregivers.

METHOD

A comparative cross-sectional study was carried out based on the assumptions of quantitative research, involving elderly patients treated at the

primary care service of a municipal region in the countryside of the state of São Paulo, in the southeastern region of Brazil.

The participants were divided into two groups: elderly caregivers of other elderly persons and non-caregiver elderly persons. To preserve anonymity, the acronyms C (elderly caregiver) and N (elderly non-caregiver), followed by a number, were used to identify each of the participants of the research. In order to place the elderly in their respective groups, some inclusion criteria were established:

- *Group G1:* 60 years of age or older, enrolled in the primary health care service of the municipal region and the primary caregiver of a dependent elderly resident in the same household. It should be noted that other non-elderly persons could live in the same household, such as children, grandchildren, and nephews and nieces, among others. Elderly patients who reported being dependent in at least one basic (BADL) or instrumental (IADL) activity of daily living, evaluated by the Katz Index[20] and the Lawton and Brody[21] scale, respectively, were considered dependent. These instruments were also applied to the elderly caregivers, who should be more independent than the elderly person with whom they lived.

- *Group G2:* 60 years of age or over, enrolled in the primary health care service of the municipal region, not provide any kind of care to another elderly person and reside alone or with another non-elderly family member. Participants with self-reported neurological disorders, a history of strokes and alcoholism and/or psychoactive drug use were excluded.

A sample calculation was performed using the mean comparison method between the two groups, setting the significance level at 5% (alpha or type I error) and the power of the sample at 80% (beta or type II error at 20%). The values of mean and standard deviation were estimated from a previous study performed with elderly caregivers and elderly persons enrolled in primary care units. A sample of 41 subjects per group was therefore determined[22].

Data collection was performed from June 2016 to July 2017 and occurred in two stages. In the first stage, the interviewers, based on lists provided by the health services, visited the elderly in their homes and invited them to participate. After accepting and signing a Free and Informed Consent Form (FICF), information on sociodemographic characteristics, health and care was collected. A time for the second part of the interview, with a maximum gap of one week, was also established.

In the second stage, data on cognitive processing, cognition and social support were collected. This stage was carried out in a previously defined location in the neighborhood itself and which was easily accessible for the participants, ensuring a quiet, relaxed and well-lit environment.

The variables of interest were investigated using the following measures:

- *Sociodemographic characteristics and health:* gender (female or male), age (years), schooling (years), marital status (with or without a spouse).

- *Characteristics of care*: Caregiver (spouse, child), duration of care (years), hours per day dedicated to care, whether received material/financial help (yes or no), or emotional/emotional help (yes or no)

- *Social support:* assessed by Medical Outcomes Study (MOS), validated for the Brazilian population by Andrade et al.[23], composed of 19 items referring to five dimensions of support: material, affective, emotional, positive social interaction and information. Scores vary from 15 to 100 points, with higher scores representing higher levels of social support received in that domain[23].

- *Cognition:* evaluated by the Addenbrooke Cognitive Examination-Revised (ACE-R), validated for the Brazilian context by Carvalho and Caramelli[24], composed of five domains - attention and orientation, memory, fluency, language and visuospatial. Total scores range from zero to 0-100, with higher scores representing better cognitive status[24].

- *Cognitive processing (P300):* obtained by capturing the long-latency auditory evoked potentials using the Neuron-Spectrun-4/EPM model. The contact electrodes were fixed in the frontal (Fz), central (Cz), parietal (Pz) regions, according to

the 10/20 international system. Electrodes were also placed in the right (A1) and left (A2) earlobes and a reference electrode connected by cables (jumper - A +) was used. The artifacts related to non-cerebral signals (blinking and muscular movements around the eyes) were removed, with the aid of the additional EOG channel (electro-oculogram). The P300 was captured using the oddball paradigm, with a binaural stimulus sequence, containing two signals of the same intensity (90 dB). Within the sequence, the standard stimulus (1000 Hz) was triggered 80% of the time, while the rare stimulus (2000 Hz) was randomly interposed between the standard stimuli 20% of the time. For the P300 values the third positive wave that occurs 300–500 ms after the presentation of the rare stimulus was considered. From these findings two items of information were extracted: latency – considering the time elapsed between the rare stimulus and the P300 peak (in milliseconds) and amplitude - the peak P300 value (in microvolts)[18]. Lower latency and greater amplitude of the generated waves reflected better cognitive processing.

All the ethical aspects governing human research were respected. The study was authorized by the Health Department of the city of São Carlos and approved by the Research Ethics Committee of the Universidade Federal de São Carlos (CAAE: 51773915.1.0000.5504). Data collection began following approval.

All the data were double-entered into a spreadsheet and the data was validated and conferred. These results were subsequently transferred to the Statistical Package for the Social Science (SPSS) version 20.0 program for statistical analyzes.

Following descriptive analysis, the Shapiro-Wilk test was used to verify the normality of the data. For comparison between groups, the Mann-Whitney test was used as the data was independent and non-parametric. A significance level of $p \leq 0.05$ was considered.

RESULTS

In G1, the majority of the elderly were female (n=33, 80.5%), married (n= 34, 82.9%), had a mean age 68.5 (±5.8) years and a mean 4.5 (±3.7) years of schooling. Regarding the context of care, the elderly caregivers had provided care for 18.0 (± 18.4) years on average and provided care for 6.5 (± 5.1) hours per day. In G2, the majority were female (n=31, 75.6%), widowed (n=23, 56.1%), with a mean age of 69.8 (± 7.2) years and a mean 3.7 (± 2) years of schooling. The mean number of friends or close relatives was 4.6 (± 2.7) for G1 and 4.8 (± 3.7) for G2. There was no statistical difference between the groups.

Table 1 presents data from the comparative analysis of social support for groups G1 and G2. There was no statistically significant difference between the groups, although the elderly persons in G2 had better scores in all areas of social support. The highest mean in both groups was for affective support (G1: 90.4, [±18.5] / G2: 93.1, [±16.1]). The lowest G1 mean score was for positive social interaction support (85.4; [± 21.1]). In G2, the lowest means were for material (90.7, [±18.9]) and emotional support (90.7, [±18.6]).

Table 1. Comparative analysis of the social support of the elderly caregivers (G1) and the elderly non-caregivers (G2) groups, according to the scores obtained in the domains of Medical Outcomes Study (MOS). São Carlos, São Paulo, 2017.

Variable	G1		G2		*p*-value
	Mean (±sd*)	Min-max	Mean (±sd)	Min-max	
Material support	89.5 (±16.9)	40-100	90.7 (±18.9)	25-100	0.290
Affective support	90.4 (±18.5)	20-100	93.1 (±16.1)	20-100	0.461
Emotional support	88.5 (±19.3)	20-100	90.7 (±18.6)	35-100	0.482
Positive social interaction support	85.4 (±21.1)	10-100	91.0 (±16.6)	40-100	0.321
Information support	87.8 (±17.5)	20-100	91.6 (±14.8)	50-100	0.255

*Standard deviation

It can be seen in Table 2 that the total ACE-R score was 65.3 (± 16.3) for G1 and 65.8 (± 15.2) for G2. The mean scores obtained in the groups did not present significant differences. However, the highest mean occurred in the language domain, in both groups (G1: 19.7, [±4.7] / G2: 18.8, [±4.6]).

Regarding cognitive processing, it can be seen in Table 3 that although there was no significant difference between the groups, G2 had the highest means in Pz Latency (355.4 [± 39.3]), Fz Amplitude (5.5, [± 4.4]), Cz Amplitude (5.4 [± 4.8]) and Pz Amplitude (6.3 [± 4.0]). Among the two groups, the highest latency value was in G1 (Fz Latency: 357.7, [± 40.2]) and the lowest was in G2 (Fz Latency: 352.1, [± 39.8]). In terms of amplitude, the highest value was found in G2 (6.3, [± 4.0]) for Pz Amplitude, and the lowest was in G1 (4.7, [± 4.0]) for Cz Amplitude.

Table 2. Comparative analysis of the cognition of the groups of elderly caregivers (G1) and non-caregivers (G2), according to the scores obtained in the Addenbrooke's Cognitive Examination-Revised (ACE-R) domains. São Carlos, São Paulo 2017.

Cognition	G1		G2		*p*-value
	Mean (±sd*)	Min-max	Mean (±sd)	Min-max	
ACER – Total	65.3(±16.3)	35-92	65.8 (±15.2)	37-93	0.878
Attention/Orientation	13.7 (±2.3)	8-18	14.0 (±2.4)	8-18	0.398
Memory	14.8 (±5.9)	4-25	15.8 (±5.6)	6-26	0.463
Fluency	6.4 (±2.8)	1-12	6.4 (±2.7)	1-11	0.974
Language	19.7 (±4.7)	10-26	18.8 (±4.6)	9-26	0.350
Visuospatial	10.6 (±3.1)	4-16	10.7 (±3.0)	5-16	0.915

*Standard deviation.

Table 3. Comparative analysis of the cognitive processing of the group of elderly caregivers of elderly persons (n=41) (G1) and non-caregivers (n=41) (G2). São Carlos, São Paulo, 2017.

P300	G1		G2		*p*-value
	Mean (±sd*)	Min-max	Mean (±sd)	Min-max	
Latency Fz	357.7 (±40.2)	288-496	352.1 (±39.8)	292-484	0.512
Latency Cz	353.2 (±37.2)	280-430	353.5 (±45.8)	292-488	0.521
Latency Pz	353.4 (±36.4)	280-430	355.4 (±39.3)	292-470	0.827
Amplitude Fz	4.9 (±3.8)	(-1.7)-15	5.5 (±4.4)	(-1.3)-16	0.617
Amplitude Cz	4.7 (±4.0)	(-3.4)-18	5.4 (±4.8)	(-1.5)-21	0.651
Amplitude Pz	5.8 (±3.8)	(-2.9)-18	6.3 (±4.0)	(-1)-19	0.479

*Standard deviation.

DISCUSSION

The results of the present study indicate a predominance of women, who were married and had low levels of schooling in G1. Corroborating the data from the present study, Anjos et al.[5] observed that the majority of the participating caregivers were female, married, with low levels of schooling and who lived with the elderly. Other studies[5,6,7,9,25] have also indicated the same caregiver profile.

Fuhrmann et al.[26], in the city of Porto Alegre, Rio Grande do Sul, carried out a study with 112 elderly/caregivers linked to a basic care unit, with the objective of characterizing the elderly dependents and their main family caregivers and verifying the association between functional capacity and caregiver burden. The results of this study showed that the caregivers had a high level of education, with an average of 12.2 (± 5.24) years of study, which differs from the data found here,

where caregivers had an average of 4.5 years of schooling (±3.7).

The mean age of the caregivers in this study was 68.5 (± 5.8) years. A study of 338 elderly caregivers found that 39.3% of the participants were aged between 65 and 69 years, and 65.7% of these caregivers were female, corroborating the findings of the present study[1]. Further corroborating the data, a survey conducted in Bahia found that 34.5% of the caregivers were older than 61 years and 89.7% were female[4]. It is noteworthy that, as caregivers age, they may also acquire disabilities and experience greater difficulty when taking care of themselves and others, which may increase the vulnerability of both the caregiver and the elderly person receiving care[9,13].

Regarding the care context, the elderly caregivers provided, on average, 18.0 (±18.4) years of care. A study carried out in the municipal region of Manoel Vitorino, in the state of Bahia, found that 68.8% of caregivers spent between two and ten years of their lives providing care and 20.8% provided care for over ten years[5].

Regarding the time dedicated to care each day, the present study observed that caregivers spent 6.5 (±5.1) hours caring per day. This result differs from some Brazilian studies where, in 2014, 86.2% of the caregivers investigated by Anjos et al.[4] devoted 18 to 24 hours to daily care, giving an average of 21.4 hours per day. Also, in 2015, Anjos et al.[5] found that 88% of caregivers provided help to those in need for a period of 13-24 hours, averaging 21.9 hours per day (±4.9). The results may be related to differences in the degree of dependency of the elderly care recipients, since caring for a highly dependent elderly person, who requires more onerous care tasks, can generate greater burden on the caregiver, as it is a long-term task with a high daily care load[5,10].

There was a predominance of women and low levels of schooling in G2. Dias et al.[27] observed that 63.1% of the elderly persons who participated in the study were female and 39.8% had low levels of schooling (0-3 years of schooling), corroborating this and other studies[6,7]. It may be that the reason for the low levels of schooling in this study is the fact that most of the elderly are from highly socially vulnerable neighborhoods, according to the Paulista Social Vulnerability Index (IPVS).

In terms of marital status, the majority of G2 were widowed (56.1%). Corroborating these findings, the Center for Study and Research in Physical Education (NEPEF/FACVEST) found, in one of its surveys, that most of the elderly participants (n=35; 70%) were also widowed[28]. Being a widower can mean living alone. Literature has shown that living alone can mean more independence and autonomy. However, the family environment is a fundamental element in the well-being of the elderly, and family relationships are extremely important when dealing with solitude and other situations that may affect the life of an elderly person[29].

In 2017, Lima-Costa et al.[30] found an average age of 69.9 years among non-caregivers living in the community, the majority of whom were female (56.4%). These data corroborate those found here. In another study, the authors found that 65.71% of the elderly participants were female, with one to four years of schooling (49.23%) and a mean age of 72.32 (±5.55) years[7].

Regarding social support, there was no statistically significant difference between the groups, although the elderly in G2 had better scores in all areas of this form of support. In 2015, Anjos et al.[5], using the score in the Social Relations domain of the Whoqol-bref instrument, which covers issues related to personal relations and social support and assistance, found that 41.4% of caregivers said they were satisfied in terms of such support. It is noteworthy that caregivers related the social support they received to direct care for the elderly. However, they stated that they did not receive formal social support.

Social support has an influence on the quality of life of the caregiver, as it allows greater freedom in activities of daily living, and may also prevent burden, biopsychosocial harm and complications to health[5]. Also regarding social support for caregivers, some studies have verified that, if suitable, such support can impact on the reduction of stress levels that result from the task of caring, improving the health of the caregiver and the care provided[4,18].

An integrative review of literature carried out by Pereira[31] found that social support was related to the well-being of the elderly. It was also observed that elderly persons can receive different types of social support, such as from family, community,

friends, groups for the elderly, self-help groups, and formal support (cited in 50% of articles, where only specialist doctors and those accompanying the treatment were mentioned).

It is also emphasized that in circumstances where social support is low and the social support network is weak or non-existent, the risks of increased vulnerability and disease are aggravated[32]. Social and emotional support networks should be seen as tools for coping with life events caused by stressful situations and the disorders associated with them. As the years go by, the significance of the social network and social support increases.[32].

A nationwide study of elderly participants with functional limitations aimed to describe the prevalence and sociodemographic factors associated with the informal and paid help that these elderly people received. It was observed that the most frequently reported aid was informal (81.8%), followed by paid (5.8%) or mixed (6.8%), and, lastly, none (5.7%). The same study found that the greater the number of residents in the household, the greater the propensity to receive help, regardless of source, age and gender. Also, as age increased, people who lived alone were more likely to receive help. The participants who received informal, paid or mixed assistance were more likely to be women and live at home with others and with older people, in comparison with those who did not receive any kind of help (75 or more years of age)[30].

The total mean ACE-R score in G1 was 65.3 (±16.3) points. A cross-sectional study carried out in a city in the state of São Paulo with 343 elderly caregivers enrolled in Family Health Units in urban, rural and high vulnerability contexts, found that 54.5% of the 189 urban elderly scored above the cut-off point (65 points) on the ACE-R instrument, corroborating the results found in this study. The same study also found that, in the rural context, 58.0% of 81 elderly caregivers achieved scores above the aforementioned cut-off point adopted by the study. Of elderly caregivers in a high vulnerability context, 19.2% of the 73 participants scored above the cut-off grade[9]. In 2017, Brigola et al.[26], in a study with elderly caregivers living in rural communities, found a mean ACE-R score of 68.7 (± 15.5), which also agreed with the findings of the present study.

The mean score of the ACE-R instrument in G2 was 65.8 (± 15.2) points. Nunes et al.[33] observed that 76.9% of the elderly participants in a study experienced cognitive decline, among whom there was a higher percentage of women and a greater proportion of dependent elderly people. Among those with cognitive decline, there was a greater prevalence of those who were ≥80 years old, widowers, who lived with children and had low levels of schooling (1-3 years of study). In a municipal region in the northern state of Rio Grande do Sul, Stamm et al.[29] found that of 368 elderly participants, 204 (55.4%) had cognitive deficits.

A study by Casemiro et al.[34] revealed a mean total score of 89.3 (± 4.0) points, which differed from the results of the present study. A probable explanation for this discrepancy may be the difference in schooling among the participants of these studies, as the participants of the study by Casemiro et al.[34] had high levels of schooling. Low schooling, among other factors, is associated with a higher prevalence of cognitive decline[33].

Regarding cognitive processing, there was no significant difference between the groups. However, G2 had higher means in Pz Latency, Fz Amplitude, Cz Amplitude and Pz Amplitude. A systematic review by Pavarini et al.[17] identified 26 studies that together involved 940 healthy elderly individuals, most of which sought to identify and determine how P300 is influenced by age. The results showed that P300 amplitude values ranged from 2.2 μV to 18.5 μV, while in the present study the variation in G1 was (-1.7) to 15, (-3.4) to 18 and (-2.9) to 18, for Fz Amplitude, Cz Amplitude and Pz Amplitude, respectively, and the variation in G2 was (-1.3) to 16, (-1.5) to 21 and (-1) to 19 for the same amplitudes. In terms of latency, the systematic review found values ranging from 320 ms to 484 ms. In the present study, the Fz, Cz and Pz Latency values in G1 ranged from 288 to 496, 280 to 430 and 280 to 430, respectively, while in G2 they varied from 292 to 484, 292 to 488 and 292 to 470 for same latencies. The authors affirm that these variations in the amplitudes and latencies analyzed may be related to the methodologies adopted, the variables studied and the samples observed in these studies. It is important to point out that the characteristics of the sample and the

way the test is applied also influence the values of amplitude and latency[35].

Some limitations of the present study should be highlighted, notably that it is a cross-sectional study carried out with a specific sample and the data can therefore not be generalized, nor is it possible to establish a cause and effect relationship. In addition, the groups were similar, but not matched. However, the results of this study can serve as a basis for future research, which can be performed with a larger number of participants, the insertion of other groups from different contexts and regions, or through the longitudinal follow-up of these elderly people.

CONCLUSION

The results showed that there were no significant differences between groups in terms of social support, cognition and cognitive processing.

The majority of the elderly in Group 1 were women, married, had a mean age of 68.5 years and had, on average, 4.5 years of schooling. The elderly caregivers provided care, on average, for 18.0 years, with 6.5 hours of daily care. In Group 2, the majority were women, widowed, with a mean age of 69.8 years and a mean of 3.7 years of schooling.

In the present study, being a caregiver did not mean having less social support, worse cognition or cognitive processing. This may mean that caring for the elderly does not necessarily negatively interfere with cognition and cognitive processing, or in other words, the elderly caregiver does not necessarily have worse memory, verbal fluency, visuospatial skills, attention, or concentration. Considering the characteristics of this sample, from the context in which they live and based on the methods of the study, being an elderly caregiver does not mean having fewer people to rely on.

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Body image satisfaction, nutritional status, anthropometric indicators and quality of life among the elderly

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Abstract

Objective: to determine the prevalence of body image satisfaction in elderly subjects, as well as its relationship with nutritional status, anthropometric indicators and quality of life. *Method*: a cross-sectional, descriptive and analytical study was carried out with elderly individuals from Primary Care units (Family Health Strategy) from all the health districts of Porto Alegre, in the state of Rio Grande do Sul. The variables studied were: sociodemographic (gender; age; marital status and schooling), anthropometric (weight; height; body mass index; arm, calf, waist and hip circumference; waist-hip ratio and triceps skinfold), nutritional (Mini Nutritional Assessment), and clinical (quality of life; body image satisfaction). The Stunkard Silhouettes Scale, the Mini Nutritional Assessment and the Flanagan quality of life scale were applied. For data analysis, logistic regression (five steps) was performed with the Conditional Backward method. *Results*: a total of 532 elderly users (68.96 (7.14) years) were evaluated, mostly women (64.8%) who were dissatisfied with their body image (71.7%). The predictors of body image satisfaction were: normal weight/underweight body mass index, insufficient/eutrophy arm circumference, and higher mean quality of life scores. *Conclusion*: in general, a low prevalence of body image satisfaction was identified among the elderly. Subjects with lower body mass index, smaller arm circumference measures and better quality of life had a greater chance of being satisfied with their body image.

Keywords: Body Image. Aged. Nutritional Status. Anthropometry. Quality of Life.

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INTRODUCTION

Body image corresponds to the mental representation of the body itself, experienced in an individual manner, including the senses, determining identity and thoughts, alluding to perceptions of personal feelings. However, it can be affected by the social environment with changes in interpersonal and behavioral relations[2]. Body image satisfaction is, therefore, constituted in a complex and multidimensional manner, based on several factors, including cultural, behavioral, sociodemographic, anthropometric and health related aspects[1,2].

The physical and psychological aspects of aging can affect the perception of body image, as well as result in greater dissatisfaction due to changes in weight and metabolism. Furthermore, elderly women experience greater societal pressure regarding their physical appearance, which negatively impacts their experience of aging[3].

In addition to questions related to body image, the elderly population is particularly prone to nutritional disorders due to physiological and social changes, the occurrence of chronic diseases, polypharmacy, sensory alterations, depression and changes in mobility with functional dependence[4]. The evaluation of the nutritional status can be performed using different anthropometric indicators, to identify if there are disorders or a need for possible health interventions[5].

Some studies have considered the influence of psychological and social aspects on the elderly, notably the perception of body image[6,7]. In addition, research related to the elderly and the aging process contemplates disease and the process of illness, rather than health itself[4].

Nevertheless, more and more researchers from different areas are seeking to know more about and use quality of life in all its multidimensionality as a tool and instrument for measuring the impact of interventions and health services for the elderly[8,9]. Therefore, when evaluating the quality of life of the elderly, it is important to emphasize the importance of the use of heterogeneous evaluation criteria, which consider intersubjective aspects that occur more often in the elderly than in young adults, such as: diseases, loss of occupational roles and affective losses. The implications for the health and life potential of the elderly may alter the interaction with the environment[10].

Therefore, identifying the relationship that the elderly maintain between their body image satisfaction and its implications for quality of life, nutritional status and anthropometric indicators is fundamental so that health professionals who work with this age group can better understand this issue and intervene in a more comprehensive manner[1,11].

In light of the above, the present study aimed to determine the prevalence of body image satisfaction among the elderly, as well as its relationship with nutritional status, anthropometric indicators and quality of life.

METHOD

A cross-sectional study was performed with data obtained from the database generated by the research project entitled "Epidemiological and clinical study of the elderly treated by the Family Health Strategy of the city of Porto Alegre (EMISUS)", developed with a random sample of the elderly population, of both genders, registered with the Family Health Strategy (FHS) of Porto Alegre, in the state of Rio Grande do Sul (RS)[12].

A total of 30 FHS teams were randomly selected, stratified by health district, with around 30% of the teams of each primary care health unit also randomly selected. Data collection was carried out in three phases: (1) screening and general data collection through a home visit conducted by Community Health Agents, who interviewed the elderly persons and applied the questionnaire containing questions related to sociodemographic, economic and social aspects, morbidity and behaviors that interfere with health; (2) collection of laboratory tests (blood, faeces, urine) in the health unit, performed by members of the research group; (3) multidisciplinary evaluations carried out in the Hospital São Lucas (HSL) of the Pontifícia Universidade Católica do Rio Grande do Sul (PUCRS) relating to the clinical, nutritional and physical aspects of the elderly. The researchers included the following professionals: physical educators, nurses, physiotherapists, geriatricians, neurologists, nutritionists, psychologists and psychiatrists, among others. The researchers

were trained to apply the different instruments and the tests used to collect data[12]. Figure 1 shows the organizational chart of the study.

The data collection period was from March 2011 to December 2012. The criteria for inclusion in the survey were: age 60 years old or over and be registered with the FHS. Individuals unable to attend the multiprofessional evaluation were excluded[12].

In this manner, the sociodemographic, clinical, anthropometric, nutritional and quality of life variables from the EMISUS database were analyzed. The description of the variables, their categorization, the evaluation instruments used and the collection sites are described in Box 1, while the description of the instruments, the specific procedures of each measurement and the diagnostic criteria used are shown in Box 2.

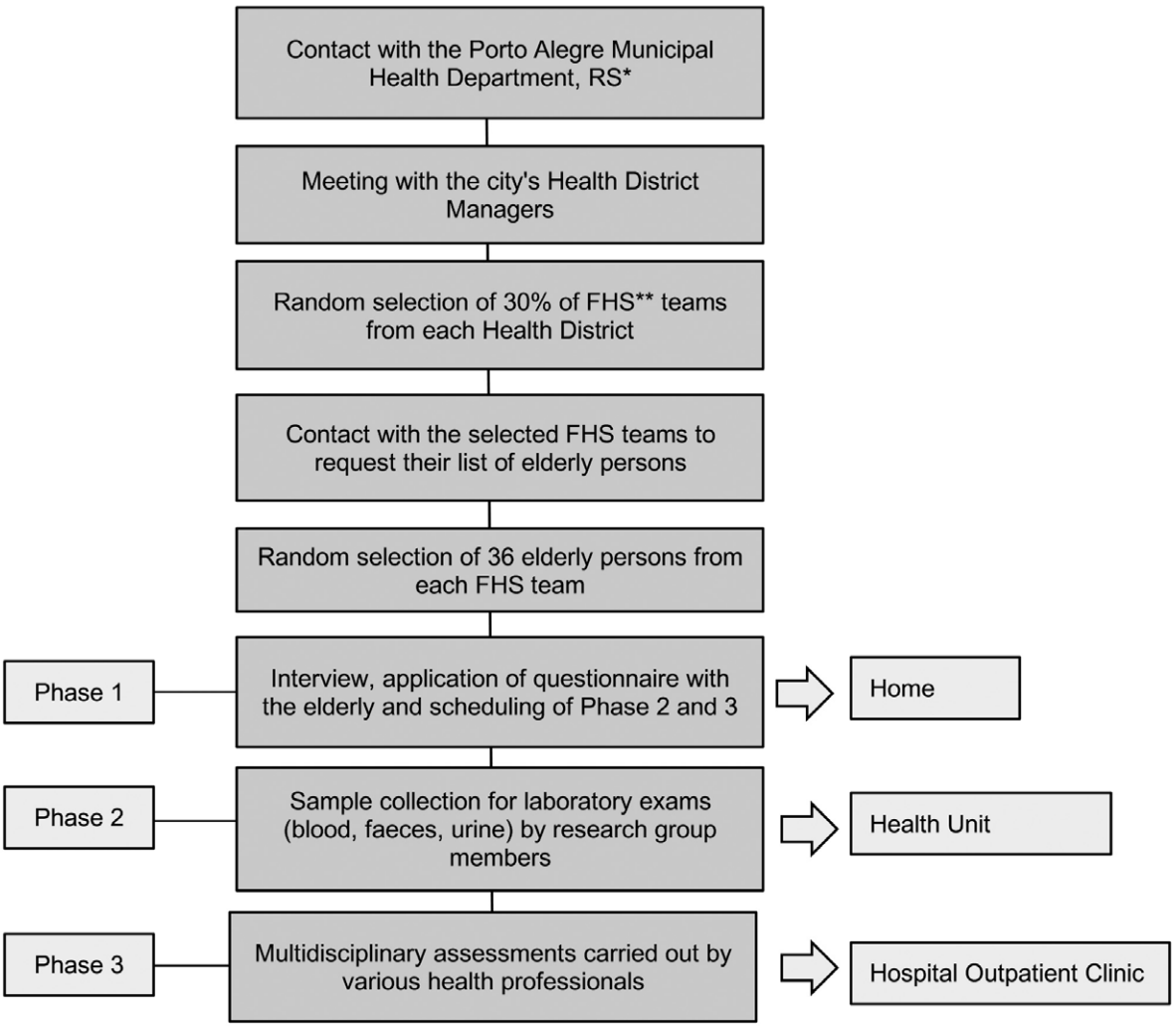

Figure 1. Flowchart of the study, Porto Alegre, RS, 2018.

*Rio Grande do Sul; **Family Health Strategy.

Box 1. Description of the variables presented, their categorization, evaluation instruments and collection sites. Porto Alegre, RS, 2018.

Variables	Categories	Collection	
		Instrument	Local
Sociodemographic			
Age	No	OAQE	Home
Age range	60 to 69 years; 70 to 79 years; ≥ 80 years	OAQE	Home
Schooling	Illiterate; low (1-8 years); medium (9-11 years); high schooling (>11 years)	OAQE	Home
Marital status	Lives with partner / doesn't live with partner	OAQE	Home
Anthropometric and nutritional			
Weight (kg)	No	Welmy Scale	HSL
Height (m)	No	Metric tape	HSL
BMI	Underweight/thinness (≤22 kg/m^2); normal weight (>22-<27kg/m^2); overweight/ obese (≥27kg/m^2)	Quetelet (BMI= weight/height^2)	HSL
AC	Age range/gender	Metric tape	HSL
CC	<31cm; ≥31cm	Metric tape	HSL
TSF	Age range/gender	Cescorf Plicometer	HSL
WHR	Men: ≥1.00cm; Women: ≥0.85cm	Metric tape	HSL
MNA	malnutrition; nutritional risk; normal nutritional state	MNA Questionnaire	HSL
Clinical			
Quality of life	low (7 to 45 points), mean (46 to 74 points), high (over 75)	Flanagan Quality of Life Scale	HSL
Body image satisfaction	yes/ no	Stunkard Silhouettes Scale	HSL

OAQE: Overall Assessment Questionnaire for the Elderly; kg: kilogram; HSL: Hospital São Lucas da Pontifícia Universidade Católica do Rio Grande do Sul; m: meter; BMI: Body Mass Index; AC: Arm Circumference; CC: Calf Circumference; TSF: Triceps Skinfold; WHR: Waist-hip ratio; MNA: Mini Nutritional Assessment.

Box 2. Description of instruments, specific procedures of each measurement and the diagnostic criteria used for the collection of anthropometric and nutritional measures, body image satisfaction and quality of life. Porto Alegre, RS, 2018.

Variables	Instruments/Diagnostic Criteria
Weight	Measured (kg) in a Welmy scale with the elderly person barefoot and not wearing accessories or adornments[13].
Height	Measured (m) with the stadiometer coupled to the Welmy scale: standing erect in the orthostatic position with the body fully extended and the head erect, looking forward with the feet together, and arms extended alongside the body[13].
BMI	Quetelet Index = Weight (kg) / Height (m^2) The evaluation criteria were[14]: - Underweight/thinness (≤22 kg/m^2); - Normal weight (>22-<27kg/m^2); - Overweight/obese (≥27kg/m^2)
AC	Measurement (cm) taken at the midpoint between the acromial process and the olecranon process[13]. The values found were classified as: insufficient (≤ 25th percentile), eutrophy (> 25th percentile and <75th percentile) and excessive (≥ 75th percentile), distributed by gender and age[15].
CC	Measured (cm) at the furthest protruding point with the individual sitting and knee flexed at an angle of 90º[16]. Absence of muscle loss was considered a CC equal to or greater than 31 cm for men and women[17].

to be continued

Continuation of Chart 2

Variables	Instruments/Diagnostic Criteria
Waist	Measured (cm) at the height of the umbilical scar[16].
Hip	Measured (cm) at the level of the pubic symphysis with the tape circling the hip at the most prominent point between the waist and thigh[16].
WHR	Waist circumference (cm)/hip circumference (cm)[16]. The classification used for cardiovascular risk was[16]: - For women, WHR ≥0.85 - For men, WHR ≥1.00
TSF	Measured (mm) at the back of the arm, relaxed and extended alongside the body, marking the midpoint between the acromion and the olecranon with the arm flexed close to the body, forming an angle of 90°[13]. The values found were classified as: insufficient (≤ 25th percentile), eutrophy (> 25th percentile and <75th percentile) and excessive (≥ 75th percentile), distributed by gender and age [18].
MNA	MNA Classification[19]: - Malnutrition < 17 points - Risk of malnutrition 17-23.5 points - Normal nutritional state ≥ 24 points
BIS	Stunkard Silhouette Scale ranges from thinness (silhouette 1) to severe obesity (silhouette 9). The elderly persons were asked to choose their real body appearance and that which they believed to be the ideal appearance from the nine silhouettes presented. The BIS was determined by subtracting the real body appearance from the ideal. If the result was zero, the individual was satisfied with his/her body image, while any other score would indicate dissatisfaction with body image[20].
Quality of life	The minimum score of the Flanagan Quality of Life Scale is zero and the maximum is 105, which allows quality of life to be classified into three levels[21]: - Low (7 to 45 points) - Mean (46 to 74 points) - High (over 75 points)

kg: kilogram; m: meter; BMI: Body Mass Index; AC: Arm Circumference; CC: Calf Circumference; WHR: Waist-hip ratio; TSF: Triceps Skinfold; mm: millimeter; MNA: Mini Nutritional Assessment; BIS: Body Image Satisfaction.

The sociodemographic variables analyzed were: age, age range, marital status and schooling. The anthropometric and nutritional variables were weight, height, Body Mass Index (BMI), arm circumference (AC), calf circumference (CC), triceps skinfold (TSF), waist circumference (WC), hip circumference (HC), waist-hip ratio (WHR) and the Mini Nutritional Assessment (MNA). The anthropometric measurements were all performed on the same day for each individual, on the right side of the body. The circumferences were obtained with a graduated, flexible and non-elastic measuring tape and the skinfold was measured with a Cescorf plicometer.

The classification used for BMI was proposed by Lipschitz[14], considering the changes in body composition that occur with aging, using three cut-off points: underweight/thinness (≤22 kg/m^2); normal weight (>22-<27kg/m^2); overweight/obese (≥27kg/m^2).

The Stunkard[20] scale was used to determine satisfaction or dissatisfaction with body image, while the Flanagan scale was used for quality of life[21].

The data were analyzed using the Statistical Package for Social Sciences version 20.0 (SPSS Inc., Chicago, IL, USA, 2008) program for Windows and a 5% significance level was adopted. The study of data distribution of continuous variables was performed by the Kolmogorov-Smirnov test. For bivariate analysis between categorical variables, the Chi-squared test ($\chi 2$) was used, where in the 2x2 contingency tables continuity correction was employed, with an estimate of the effect measure, the crude Odds Ratio (OR), with a confidence interval of 95% (95%CI). Regarding the continuous variables, when the comparison occurred between two independent groups, the Student's T-test was applied.

As the "body image satisfaction" outcome exhibited binary distribution, the Logistic Regression procedure was chosen for analysis, in which all the variables with values p<0.200 in the bivariate analysis were selected for the multivariate analysis. The Backward conditional method was used based

on the saturated model. The association was assessed with the likelihood-ratio test (2LL or -2log) and the quality of fit of the final model was evaluated with the Nagelkerk and Hosmer-Lemeshow R^2 estimators. The probability of gradual entry of the variables into the model was 0.05, while for removal it was 0.10. The significance of the cut-off point was 0.50 for the maximum of 20 interactions. Significance levels below 0.01 were considered significant based on the Bonferroni criterion.

The study was approved by the Research Ethics Committee of PUCRS (approval protocol: 10/04967) and the Municipal Health Department of the City of Porto Alegre (approval protocol: 001.021434.10.7), in compliance with Resolution nº 466/2012 of the National Health Council.

RESULTS

The following results refer to a sample of 532 cases, after 55 of those surveyed (9.4%) in the original database of 587 cases were discarded due to missing data on the primary outcome of the study, body image satisfaction. The mean age of the total sample was 68.96 (7.14) years, and 64.8% of the group were women (n=345) while 35.2% were men (n=187).

Table 1 shows the sociodemographic and quality of life characteristics of the sample, according to body image satisfaction. Only two variables presented significant relationship with body image satisfaction - gender and quality of life. Men were 2.5 times more likely to be satisfied with their body image than women, who were mostly dissatisfied with their body image (71.7%; Table 1).

Table 1. Sociodemographic characteristics and quality of life of the sample, according to body image satisfaction. Porto Alegre, RS, 2018.

Variables	Body image satisfaction			Gross Odds Ratio	
	Yes (n=165)	No (n=367)	*p**	OR	95%CI
Gender†			<0.001‡		
Male	83 (50.3)	104 (28.3)		2.560	1.750-3.744
Female	82 (49.7)	263 (71.7)		1.0	
Age (years)					
Mean (SD)	69.3 (±7.9)	68.7 (±6.8)			
Amplitude	60.0-103.8	58.0-95.0	0.402§	1.011	0.986-1.037
Age group†					
60-69 years	103 (62.4)	235 (64.0)	0.840‡	1.0	
70-79 years	47 (28.5)	104 (28.3)		1.002	0.681-1.162
≥ 80 years	15 (9.1)	28 (7.6)		1.056	0.841-1.155
Marital status†			0.216‡		
Lives with partner	70 (42.4)	135 (36.8)		1.266	0.871-1.842
Does not live with partner	95 (57.6)	232 (63.2)		1.0	
Schooling†			0.213‡		
Illiterate/Low schooling	147 (89.1)	339 (92.4)		1.0	
Medium schooling	18 (10.9)	28 (7.6)		0.675	0.362-1.258
High schooling	0 (0.0)	0 (0.0)			
Quality of life					
Mean (SD)	88.9 (±10.6)	85.4 (±10.6)			
Amplitude	33.0-105.0	34.0-105.0	0.002‖	1.03	1.01-1.05

OR: Odds Ratio; 95%CI: 95% Confidence Interval for OR; SD: standard deviation of the mean; *: Minimum significance level for bivariate analysis; †: data presented as n(%); ‡: Chi-squared test; §: *Student's* T-test for independent groups assuming heterogeneity of variances; ‖: Student's T-test for independent groups assuming homogeneity of variances.

The mean Flanagan score of individuals satisfied with their body image was significantly higher (p=0.002) than those who were dissatisfied (Table 1), where the increase of one unit in the quality of life score results in a 1.03 times greater body image satisfaction.

Table 2 shows the anthropometric characteristics and the nutritional status of the sample, according to body image satisfaction. Other factors associated with body image satisfaction were: underweight, greater height and lower BMI. Individuals classified as normal weight were 3.6 times more likely to be satisfied with their body image than obese individuals.

According to the results of Table 2, the group satisfied with their body image had a significantly lower mean AC than the dissatisfied group. The group with insufficient AC had a 6.07 greater chance of being satisfied with their body image than those with excessive AC. Similarly, cases with eutrophic AC were 3.06 times more likely to be satisfied than the excessive AC group.

There was no statistically significant difference between the two groups in terms of the WHR (Table 2). However, in the comparison between the WHR scores, the group of individuals satisfied with their body image was significantly associated with no-risk WHR, while those dissatisfied were associated with at-risk WHR.

In the CC comparison, the group dissatisfied with their body image had a significantly higher mean [37.1 (3.8)] than those who were satisfied [35.8 (3.3)] (Table 2). However, no significant difference was detected in the CC classifications, indicating that, in the present study, body image satisfaction is independent of the CC classification.

In the evaluation of the TSF results, the mean was significantly higher among those dissatisfied with their body image than among those who were satisfied (Table 2). In the comparison of body image satisfaction according to the TSF classification, those with insufficient TSF had a 3.24 times greater chance and those with eutrophic TSF a 2.54 times greater chance of being satisfied with their body image than the group with excessive TSF.

The mean MNA of the group satisfied with their body image was significantly higher than that of the dissatisfied group, with the former having a 1.60 times greater chance of being satisfied than the latter (Table 2). Evaluation of the MNA classification did not reveal a significant difference, indicating similar behavior between the two groups.

Table 3 presents the Multivariate Binary Logistic Regression models for the prediction of body image satisfaction. The following variables were considered as potential predictors for the presence of body image satisfaction and, therefore, included in the initial logistic regression model: gender, BMI, classifications of AC, WHR and TSF; MNA classification; CC; and quality of life. Weight and height were no longer chosen for the model, as their data were included in the BMI.

According to the results of Table 3, the (reduced) final model was achieved in five steps/stages, and, in addition to being significant, presented a representative quality of fit. Thus, based on the estimates presented, it was found that 37.2% of the variations that occurred in the odds ratio log were explained by the set of independent variables. With similar significance to the determination coefficient – the Nagelkerke test – it was estimated that the model explained 39.7% of the variations observed for the presence of body image satisfaction.

Furthermore, in the model summary evaluation, the Hosmer and Lemeshow test indicated that there were no significant differences between the model estimates and the actual sample classifications for the presence of body image satisfaction. Thus, there is evidence that the (final) model presents a significant predictive capacity for the presence of body image satisfaction. The total was 76.3%, where the model correctly classified 84.6% of cases that denied body image satisfaction, and 67.9% of cases that confirmed body image satisfaction.

According to the results obtained for the final model (Table 3), the predictors of body image satisfaction were: BMI of underweight or normal weight, insufficient and eutrophic AC, and better quality of life.

Table 2. Anthropometric characteristics and nutritional status of the sample, according to body image satisfaction. Porto Alegre, RS, 2018.

Variables	Body image satisfaction					*Gross Odds ratio*
	Yes (n=165)		No (n=367)			
	N	%	n	%	p	Risk (95%CI)
Weight (kg)						
Mean (SD) [Amplitude]	66.7(±11.9) [36.9-96.8]		71.8(±14.5)[32.4-122.1]		<0.001*	0.973 (0.959-987)
Height (cm)						
Mean (SD) [Amplitude]	1.59(±0.09) [1.38-1.80]		1.56(±0.08) [1.32-1.78]		0.001*	1.387 (1.094-5.881)
BMI (kg/m²)						
Mean (SD) [Amplitude]	26.4(±4.0) [17.7-48.1]		29.6(±5.7) [13.6-54.1]		<0.001*	0.879 (0.842-0.917)
BMI Categories						
Underweight	15	9.6	26	7.3	<0.001†	1.116 (0.904-1.377)
Normal weight	86	54.8	91	25.6		3.574 (1.895-11.446)
Overweight/obese	56	35.7	239	67.1		1.0
AC						
Mean (SD) [Amplitude]	30.3(±3.5) [20.5-45.0]		32.0(±4.3) [17.5-29.4]		<0.001‡	0.90 (0.86-0.94)
AC categories					<0.001†	
Insufficient	71	43.3	86	23.6		6.07 (3.01-12.29)
Eutrophy	82	50.0	197	54.1		3.06 (1.55-6.05)
Excessive	11	6.7	81	22.3		1.0
WHR						
Mean (SD) [Amplitude]	0.96(±0.07) [0.75-1.14]		0.96(±0.07) [0.72-0.91]		0.527*	2.26 (0.18-28.50)
WHR categories					0.004†	
At risk	113	73.4	293	84.2		1.0
No risk	41	26.6	55	15.8		1.93 (1.22-3.06)
CC						
Mean (SD) [Amplitude]	35.8(±3.3) [26.8-46.6]		37.1(±3.8) [25.0-48.1]		<0.001*	0.91 (0.86-0.96)
CC categories					0.720†	
Muscle loss	6	3.7	16	4.4		1.0
No muscle loss	155	96.3	347	95.6		1.19 (0.45-3.10)
TSF						
Mean (SD) [Amplitude]	16.0(±6.8) [4.0-42.0]		20.1(±7.7) [4.0-45.0]		<0.001*	0.27 (0.90-0.95)
TSF Categories					0.002†	
Insufficient	68	42.0	117	32.1		3.24 (1.63-6.43)
Eutrophy	82	50.6	180	49.5		2.54 (1.31-4.95)
Excessive	12	7.4	67	18.4		1.0
Total MNA score						
Mean (SD) [Amplitude]	26.1(±2.9) [15.0-30.0]		25.4(±3.7) [9.0-30.0]		0.042‡	1.60 (0.99-1.12)
MNA Classification					0.107†	
Normal	121	81.2	251	74.5		1.32 (0.93-1.89)
Risk of malnutrition/ malnutrition	28	18.8	86	25.5		1.0

n: sample size; p: statistical probability; 95%CI: 95% Confidence interval; SD: standard deviation of the mean; BMI: body mass index; Underweight/thinness: BMI ≤22 kg/m²; Normal weight: BMI >22-<27kg/m²; Overweight/obese: BMI ≥27kg/m²;; AC: Arm Circumference; WHR: Waist-hip ratio; CC: Calf Circumference; TSF: Triceps Skinfold; MNA: Mini Nutritional Assessment; *: Student's t-test for independent groups assuming homogeneity of variance; †: Chi-squared test; ‡: Student's t-test for independent groups assuming heterogeneity of variance.

Table 3. Models of Multivariate Binary Logistic Regression for the prediction of body image satisfaction. Porto Alegre, RS, 2018.

Independent variables	Body image satisfaction					
	Regression coefficient			Adjusted *Odds ratio*		
	Gross	S.E.	Sig.	Exp(B)	95%CI	
					Inferior	Superior
Initial model						
Male Gender	-0.317	0.453	0.484	0.728	0.300	1.769
BMI						
Underweight (BMI ≤22 kg/m^2)	1.121	0.548	0.041	3.069	1.049	8.983
Normal weight (BMI >22-<27kg/m^2)	1.220	0.292	0.000	3.387	1.912	6.001
Arm circumference						
Insufficient	1.32	0.51	0.001	3.74	1.37	10.19
Eutrophy	0.65	0.42	0.133	1.92	0.84	4.39
Waist-hip ratio						
No risk	0.51	0.27	0.054	1.67	0.99	2.81
Calf circumference	-0.03	0.04	0.447	0.97	0.90	1.05
Triceps skinfold						
Insufficient	0.45	0.47	0.336	1.57	0.63	3.92
Eutrophy	0.52	0.43	0.228	1.68	0.72	3.91
MNA Classification						
Normal Nutritional State	0.392	0244	0.108	1.48	0.92	2.39
Total MNA	0.06	0.04	0.108	1.06	0.99	1.15
Quality of life	0.03	0.01	0.035	1.03	1.00	1.05
Final model						
BMI						
Underweight (BMI ≤22 kg/m^2)	1.099	0.531	0.038	3.002	1.061	8.492
Normal weight (BMI >22-<27kg/m^2)	1.210	0.283	0.000	3.353	1.926	5.839
Arm circumference						
Insufficient	1.76	0.38	<0.001	5.79	2.73	12.26
Eutrophy	0.97	0.37	0.001	2.64	1.28	5.43
Quality of life	0.23	0.01	0.000	1.13	1.09	1.34

95%CI: 95% Confidence Interval; Gross: gross regression coefficient; S.E.: standard error for the regression coefficient; Sig.: *p*= minimum significance level for the regression coefficient; Exp(B): Odds ratio; BMI: Body Mass Index; MNA: Mini Nutritional Assessment. **Initial Model** - Score: Nalgelkerke R2 0.311; Hosmer-Lemeshow Test (Chi-squared test = 7.662; *p*=0.529); Cox & Snell: 0.297; Overall hit ratio – confusion matrix: 62.9%; OR: Odds ratio. **Final Model** - Score: Nalgelkerke R2 0.397; Hosmer-Lemeshow Test (Chi-squared test = 5.812; *p*=0.449); Cox & Snell: 0.372; Overall hit ratio – confusion matrix: 76.3%; OR: Odds ratio.

DISCUSSION

The present study deals with relevant issues in the context of research into the elderly, as it seeks to understand body image satisfaction and its relationship with nutritional parameters, anthropometric measures and quality of life. In addition, in this age group, the analysis of the relationship among body image satisfaction and the various anthropometric indicators, especially those indicative of health risks, are presented in the literature in an incipient way and inconsistent with regards to the reference standard used.

In general, a low prevalence of body image satisfaction (31.0%) was identified in the sample studied. A similar finding was found in another study of the elderly by Pereira et al.[22] (27.4%), while

Coradini et al.[23] found an even lower prevalence (12.5%). However, most studies reporting the prevalence of body image satisfaction[2,22,23] present values of around one-third or less among the elderly investigated, as in the findings of the present study.

Menezes et al.[2] reported that 56.4% of the 806 elderly people studied were satisfied with their body image. It is possible that the difference between the findings of the present study and those of Menezes et al.[2], both carried out with Brazilian elderly and using the Stunkard Scale, is due to differences in income and schooling between the two samples, as well as climatic, geographical and cultural differences between the two regions where the studies were carried out, the northeast[2] and the south, respectively.

Gomes et al.[24], when investigating 88 elderly people about body image satisfaction, concluded that despite the negative view of aging constructed by society, the sample studied exhibited a satisfactory experience of old age. However, there was dissatisfaction with body weight. A similar finding was found among the elderly in the present study, as 67.1% of those investigated who were dissatisfied with their body image had a BMI classified as overweight/obese, a finding that was particularly relevant among women, who comprised the majority of unsatisfied individuals (71.7%), which is supported by studies that indicate that BMI in women is inversely related to the satisfaction with body weight [25,26]. Nevertheless, obesity is more prevalent among women due to a greater accumulation of visceral and subcutaneous fat than among men[11], which contributes to the dissatisfaction with the physical appearance.

Another indication of the negative impact of excessive body weight on body image perception is the significant association between low/normal weight BMI and body image satisfaction, explained by the fact that the normal weight elderly persons were 3.6 times more likely to be satisfied, a finding that remained relevant at the end of the logistic regression, after controlling for the many confounding variables. There is no consensus about this result, however, as Menezes et al.[2], when evaluating 806 elderly residents in Campina Grande, Paraíba, observed that, among men and women, the chances of being dissatisfied with body image were similar among low weight and overweight/obese individuals, when compared with normal weight subjects. It is possible that different cultures and historical regional experiences explain such conflicting findings regarding body image dissatisfaction among the underweight elderly of both genders investigated by Menezes et al.[2], in comparison with the present study.

In the present study AC also indicated that excessive weight negatively impacts body image satisfaction, as individuals in the insufficient/eutrophy AC categories were significantly more likely to be satisfied, which is probably a reflection of lower body measurements, particularly considering the finding that those with insufficient AC had a 6.07 times greater chance of being satisfied. The relevance of AC for body image satisfaction was also detected by Pereira et al. [22] in their study with elderly women who regularly performed aquatic exercise for five years or more. Nevertheless, the researchers indicated that CC was the measure most related to a good perception of body image, in which their findings differed from those of the present study, where CC was not a predictor of body image satisfaction.

These findings related to excessive weight support the reflection that, particularly among the women, and even in face of the aging process, there still is influence of the body standards portrayed in the media, which favor a young and slim body. Despite the lesser influence of the media on male beauty standards and its greater influence on female beauty standards[3,27], both men and women may present distortion in body image perception, either underestimating or overestimating their perception of their bodies.

The relationship that the elderly maintain with their body and their quality of life is as important as the nutritional status. In the present study, this relationship has been shown to be another relevant outcome and one of the predictors of satisfaction with body image, since the better the score on the quality of life scale, the greater the chance of being satisfied. As in the present study, Skopinski et al.[28] also reported better quality of life among their subjects who were satisfied with their body image. The authors investigated 46 postmenopausal women, the majority of them were young old. They observed that the higher the dissatisfaction with body image, the worse the perceived quality of life in the "physical", "psychological" and "environment"

domains of the WHOQOL-bref, another instrument that measures quality of life[28].

The promotion of actions aimed at the well-being of the elderly and the improvement of public policies focused on this age group are required and must include an understanding of factors that influence body image satisfaction. The reason for the latter being its association with better quality of life and aspects relevant to health, such as lower BMI and AC. There is evidence in the literature that an increase in BMI is a predictor of body image dissatisfaction[29,30]. In addition, dissatisfaction with body image is more frequent in obese elderly than in those with normal weight and overweight[29,30], with obesity associated with morbimortality and the development of non-transmissible chronic diseases[16,31].

One of the strengths of the present study is the representativeness of the sample, collected randomly from all the city's health districts, together with the use of a group of elderly people that are not represented in surveys in general, that is, elderly users of the FHS. Another strong point is the fact that this study also involved men, and in the same proportion as that found in the total elderly population of the studied city[32].

The main limitations of the present study are the lack of specific classifications of several of the anthropometric indicators for the elderly population, as well as the instrument used to evaluate body image satisfaction (Stunkard scale), which, despite being a classic method, does not have figures adapted for different age groups. Another perceived difficulty was the scarcity of recent studies with this subject and population, both in Brazilian and non-Brazilian literature, which made it difficult to compare the findings of the present study.

CONCLUSION

In general, a low prevalence of body image satisfaction was identified among the elderly. Those with lower body mass index, lower arm circumference measures and better quality of life were more likely to be satisfied with their body image.

The physical changes typical of aging are contrary to the demands of the media and society, which impose a stereotype of slimness and youth. It is fundamental to develop more actions aimed at the elderly, which include the understanding of aspects related to body image satisfaction.

Studies that aim to understand how the elderly perceive their body image and which factors influence this perception are, therefore, suggested. Instruments that use body images appropriate to this age group, which allow greater reliability in evaluation, are also required.

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Prevalence of and factors associated with frailty in elderly users of the Family Health Strategy

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Resumo

Objetivo: analisar a prevalência e fatores associados à fragilidade em idosos usuários da Estratégia Saúde da Família. *Método:* estudo epidemiológico de corte transversal com 377 idosos. A variável dependente, a fragilidade, foi investigada através do *Tilburg Frailty Indicator* (TFI). As variáveis independentes foram as sociodemográficas e as condições de saúde (avaliadas através dos instrumentos validados: Escala de Katz, Escala de Lawton, Escala de Depressão Geriátrica - GDS-15, Miniavaliação Nutricional - MAN, CIRS-G e polifarmácia). Foi realizada análise descritiva das variáveis categóricas e numéricas. Na análise bivariada calculou-se as razões de prevalência através do teste qui-quadrado de Mantel Haenszel e, na análise múltipla, utilizou-se a regressão de *Poisson*. *Resultados:* a prevalência estimada de fragilidade para a amostra foi de 65,25%. Na análise múltipla as variáveis estado civil (divorciado ou separado, viúvo ou solteiro), presença de sintomas depressivos, dependência em atividades instrumentais de vida diária, estado nutricional (desnutrição/risco de desnutrição) e presença de comorbidades se mantiveram associadas, com significância estatística, à fragilidade. *Conclusão:* o presente estudo apontou elevada prevalência de fragilidade, ressaltando a importância no conhecimento dessa temática a fim de estimular ações preventivas para minimizar desfechos adversos na população idosa, como hospitalização, quedas, fraturas e morte.

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

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INTRODUCTION

The term aging is usually used to describe different changes that occur throughout life. At the biological level, aging is associated with the accumulation of a variety of molecular and cellular damage. There is a gradual loss of physiological reserves, an increased risk of developing various diseases and a general decline in the intrinsic capacity of the individual. This process does not occur in a linear manner, but in a dynamic and progressive way[1].

The most recent demographic research indicates that Brazil, like many developing countries, faces a rapid process of population aging, leading to a major increase in demand for health care services[2].

In Brazil, the point of entry and treatment of the spontaneous health care needs of the elderly is carried out by the Family Health Strategy (FHS), through specific programmatic actions defined by the Ministry of Health[3]. However, the health service sometimes has difficulty identifying and responding to all the complicating factors of the aging process.

In this context, frailty has grown in importance as another condition that allows the identification of health problems in the elderly[4,5]. While there are several concepts of frailty, one of the most up to date is defined by Gobbens[4], where it is considered a multidimensional syndrome involving a complex interaction of biological, psychological and social factors in the life course of the individual, culminating in a state of greater vulnerability, associated with an increased risk of adverse outcomes such as functional decline, falls, hospitalization, institutionalization and death.

The Tilburg Frailty Indicator (TFI)[6,7], a tool that was transculturally adapted and validated for the evaluation of frailty in Brazil was found to be adequate for the socioeconomic and cultural conditions of the Brazilian population. Literature has demonstrated the importance of the frailty syndrome among the elderly and its relationship with adverse effects such as falls, disability, hospitalization and death. Therefore, the identification of frail elderly people in primary health care using the TFI as a screening instrument enables the elaboration of adequate health policies for the prevention of these adverse events and the treatment of already established disabilities.

The present study used a simple instrument that can be applied by any trained health professional, and which includes not only biological characteristics, but also psychological and social dimensions. The study follows the objectives of the field of geriatrics and gerontology, as it seeks to jointly study biological, psychological and social aspects to improve the care provided to the elderly.

Thus, the objective of the present study was to analyze the prevalence and factors associated with frailty in elderly users of the Family Health Strategy.

METHOD

A cross-sectional epidemiological study was performed with elderly individuals living in Várzea Grande, Mato Grosso, the second most populous municipal region in the state, and which borders the state capital, Cuiabá. Its population is estimated at 282,009 inhabitants, with 18,030 individuals aged 60 years and over[8].

The sample was determined from the calculation for finite populations, considering a 95% confidence interval, a sampling error of 5% and an assumed prevalence of frailty of 50%. We chose to add 10% of the total sample to perform the tests of association. Using the cluster sampling model, nine FHS were selected from the 15 existing units in the municipal region at the time of data collection. The sample size was divided proportionally by the same units, according to the population of the 4364 elderly persons enrolled in the 15 FHS of Várzea Grande[9], 43 elderly persons in the Água Vermelha FHS, 36 elderly persons in the Capão Grande FHS, 52 elderly persons in the Jardim Glória I FHS, 18 elderly persons in the Jardim União FHS, 27 elderly persons in the Manaíra FHS, 29 elderly persons in the Manga FHS, 93 elderly persons in the São Matheus FHS, 55 elderly persons in the Unipark FHS and 24 elderly persons in the Vila Arthur FHS, giving a total of 377 elderly individuals. If the elderly had cognitive deficits, refused to participate or were absent at the time of the interview, they were replaced by the elderly person in the next nearest residence. The interviews were carried out between March and June of 2016 in the homes of the elderly and were applied by three medical students and two nurses, after training and standardization of data collection among the interviewers.

All individuals aged 60 years or older were eligible for inclusion in this study. The inclusion criterion was to live permanently at home, while individuals with cognitive deficits, conditions such as dementia, psychiatric disorders, mental disability, stroke sequelae with language impairment, blindness and deafness were excluded. Cognitive deficit was evaluated by the Mini Mental State Exam (MMSE), using the version adapted for the Brazilian population which considers two different cutoff points according to educational level[10].

The dependent variable of the study was the presence of frailty, evaluated through the Tilburg Frailty Indicator (TFI)[6,7]. This instrument is composed of 15 objective, self-referential questions, distributed in three domains: physical, psychological and social. Most questions are answered with yes or no, except for four questions that include the option "sometimes". The end result is a score ranging from zero to 15 points. Higher scores mean higher levels of frailty or, alternatively, scores ≥ five points indicate that the individual is frail[6].

As independent variables, the following sociodemographic characteristics were evaluated: age; gender; self-reported ethnicity/skin color; marital status; schooling; number of residents or household arrangement (live alone or with others); and per capita income (calculated by dividing the total family income in reais by the number of people living in the household). Functional dependence in activities of daily living (ADL) and instrumental activities of daily living (IADL) were evaluated, respectively, by the Katz and Lawton scales[11,12]. Depressive symptoms were investigated by the Geriatric Depression Scale (GDS-15)[13]; nutritional risk was evaluated by the Mini Nutritional Assessment (MNA)[14]; and the classification of comorbidities was performed using the Cumulative Illness Rating Scale (CIRS-G)[15], where the fourteen most prevalent morbidities among the elderly were considered and later regrouped into up to two and three or more morbidities. Polypharmacy was included, taking as a reference the use of five or more regular medications[16].

The data collected were double entered for comparison between data bases and the detection and correction of typing errors.

The variables were described in absolute (n) and relative (%) frequencies. In the bivariate analysis, the associations between the response variable (frailty) and the other exposure variables were identified. For the calculation of the statistical significance of the association, the Chi-Squared Test with the Mantel-Haenszel method was used (CI 95%). Also in the bivariate analysis, Fisher's Exact Test was used for the analyzes where the expected frequency was less than five. The variables with $p \leq 0.20$ were selected for multiple analysis through Poisson Regression. After progressive withdrawal of the variables (stepwise backward), those whose a level of significance less than or equal to 0.05 were maintained in the model. Poisson regression was chosen as a multiple model instead of Logistic Regression due to the fact that the odds ratio, the measurement used in the latter method, overestimates the magnitude of the association when the event studied is common (not rare). Another reason is that Poisson regression reports the Prevalence Ratio itself as a measure of association, the same measurement as is used in the bivariate analysis.

This study is part of the "Vulnerability and Frailty: Proposal of Epidemiological Indicators for Monitoring the Health of the Elderly in Basic Health Care" of the Graduate Program of the Institute of Public Health (ISC) of the Universidade Federal de Mato Grosso (UFMT).

The present study was approved by the Ethics Research Committee of the Hospital Universitário Júlio Muller (HUJM) under number 1.243.299. The structuring and planning of this project follow the rules set forth in Resolution 466/2012 of the National Research Ethics Council. All participants signed a Free and Informed Consent Form.

RESULTS

The mean age of the study population was 69.6 years, with a median of 68.0 years (±7.48). The majority of the individuals were female (60.21%), brown-skinned (58.89%); had a partner (56.24%) and were literate (71.62%) (Table 1).

In the distribution of the elderly according to frailty, according to the cut-off point proposed by the TFI, the estimated prevalence among the sample was 65.25%. The mean total score of this instrument in the evaluated population was 5.93 points (values not shown in table).

In the bivariate analysis, the sociodemographic variables that were found to be associated with frailty in this population were: absence of a partner (PR = 1.20 CI 95% 1.04-1.39) and, in relation to schooling, not being literate (PR = 1.21 CI 95% 1.05-1.40) (Table 2). The variables related to the health conditions associated with frailty were dependence in basic activities of daily living (ADL) (PR= 1.35 CI95% 1.18-1.55); dependence in IADL (PR= 1.83 CI95% 1.49-2.24); presence of depressive symptoms (PR= 1.59 CI95% 1.38-1.82) or severe depression (PR= 1.83 CI95% 1.64-2.05); presence of nutritional condition of risk of malnutrition (PR= 1.44, CI 95% 1.23-1.70); classified as malnourished (PR = 1.91, 95% CI 1.68-2.18); (PR = 1.18 CI 95% 1.02-1.36) and the use of five or more medications (PR = 1.23 CI 95% 1.05-1.44) (Table 3).

In multiple analysis via Poisson regression, the following variables remained in the model: marital status (absence of partner); symptoms of depression or severe symptoms of depression, nutritional status of at risk of malnutrition or malnutrition, dependence in IADL and presence of comorbidities, as they maintained a statistically significant association with frailty (Table 4).

Table 1. Sociodemographic aspects of the elderly population of Várzea Grande, Mato Grosso, 2016.

Variables	n (%)
Gender	
Female	227 (60.21)
Male	150 (39.79)
Skin Color	
Brown	222 (58.89)
White	73 (19.36)
Black	71 (18.83)
Yellow	8 (2.12)
Indigenous	1 (0.80)
Marital status	
Married	186 (49.34)
Living with a partner	26 (6.90)
Divorced or separated	47 (12.47)
Widower	95 (25.20)
Not married	23 (6.09)
Education	
Literate	270 (71.62)
Illiterate	107 (28.38)

Table 2. Prevalence and Prevalence Ratio of frailty according to sociodemographic characteristics. Várzea Grande, Mato Grosso, 2016.

	Prevalence of Frailty			
Variables	n (377)	Frail (%)	Gross PR* (CI95%)	*p* value
Gender				
Male	150	91 (60.67)	1	0.129
Female	227	155 (68.28)	1.12 (0.96-1.31)	
Household arrangement				
Live with others	319	198 (62.07)	1	0.002
Live alone	58	48 (82.76)	1.33 (1.15-1.54)	

to be continued

Continuation of Table 2

	Prevalence of Frailty			
Variables	n (377)	Frail (%)	Gross PR* (CI95%)	*p* value
Age group				
60 to 69 years	214	141 (65.89)	1	
70 to 79 years	117	79 (59.83)	0.91 (0.76-1.08)	0.274
80 years and over	46	35 (76.09)	1.15 (0.96-1.39)	0.180
Ethnicity/skin color				
White	73	43 (58.90)	1	0.198
Others	302	202 (66.89)	1.13 (0.92-1.39)	
Marital status				
Lives with partner	212	127 (58.91)	1	0.013
Lives without partner	165	119 (72.12)	1.20 (1.04-1.39)	
Per capita income				
Up to 1 MW **	333	219(65.77)	1	0.564
Over 1 MW	44	27 (61.33)	1.07 (0.84-1.37)	
Education				
Literate	270	166 (61.48)	1	0.014
Illiterate	107	80 (74.77)	1.21 (1.05-1.40)	

*Prevalence Ratio; **Minimum wage at time (R$ 880.00).

Table 3. Prevalence and Prevalence Ratio of frailty according to dimensions of overall health of the elderly of Várzea Grande, Mato Grosso, 2016.

Variables	Prevalence of Frailty			
	n (377)	Frailty (%)	Gross PR (CI95%)	*p* value
Basic activities of daily living				
Independent	274	163 (59.49)	1	<0.001
Dependent	103	83 (80.58)	1.35 (1.18-1.55)	
Instrumental Activities of daily living				
Independent	142	61 (42.96)	1	<0.001
Dependent	235	185 (78.72)	1.83 (1.49-2.24)	
Emotional condition				
Without depression	259	141 (54.44)	1	
Symptoms of Depression	97	84 (86.60)	1.59 (1.38-1.82)	<0.001
Severe Symptoms of Depression	21	21 (100.00)	1.83 (1.64-2.05)	<0.001
Nutrition assessment				
Not at risk	205	107 (52.20)	1	
At nutritional risk	135	102 (75.56)	1.44 (1.23-1.70)	<0.001
Malnutrition	37	37 (100.00)	1.91 (1.68-2.18)	<0.001
Comorbidities				
Up to two	315	198 (62.86)	1	0.030
Three of more	62	48 (77.42)	1.18 (1.02-1.36)	
Polypharmacy				
No	295	187 (63.39)	1	0.027
Yes	82	59 (71.95)	1.23 (1.05-1.44)	

PR: Prevalence Ratio; CI 95%: confidence interval for prevalence of 95%.

Table 4 – Analysis of final Poisson regression model for variables associated with frailty of the elderly of Várzea Grande, Mato Grosso, 2016.

Variables	PR* (CI 95%)	*p* value
Marital status		
Divorced or separated / widowed / single	1.17 (1.033-1.336)	0.014
Depressive state		
Symptoms of depression	1.17 (1.001-1.363)	0.050
Severe symptoms of depression	1.19 (1.034-1.355)	0.014
Instrumental activities of daily living		
Dependent	1.54 (1.261-1.885)	<0.001
Nutritional assessment		
At nutritional risk	1.18 (1.071-1.307)	0.001
Undernourished	1.72(1.400-2.100)	<0.001
Comorbidities		
3 or more	1.23 (1.055-1.434)	0.008

* Prevalence ratio.

DISCUSSION

The prevalence of frailty found in this study was 65.25%, corroborating Brazilian studies that found a high prevalence of frailty in the elderly. In a study carried out in Bahia of 139 elderly people living in the community, which applied the Fried method of evaluation[17], 61.8% were pre-frail and 18.6% were frail. A longitudinal study on living and health conditions in Latin American and Caribbean countries, which in Brazil involved the elderly of the city of São Paulo, found that 40.6% of the elderly were frail[18]. However, this study involved different concepts of frailty and instruments, and the TFI considers issues beyond the physical, psychological and social domain. In a study with Dutch elderly persons aged 75 years or older residing in communities that used the TFI instrument, a lower prevalence of frailty was detected (47%)[19].

It is important to consider that instruments that evaluate only the physical domain tend to find lower prevalences of frailty in similar populations than instruments that include the evaluation of other domains, such as the psychological and social. In addition, there is some complexity in standardizing the meaning of frailty. Different instruments have been used, with the objective of a more efficient identification of frailty based on clinical judgment, geriatric assessment and the accumulation of deficits[20]. Among these, the TFI seems to be the most appropriate for the current concept of frailty[7] and one of the most suitable for use in assessing the health of the elderly in basic care[21].

In the present study, the TFI identified a strong correlation with quality of life, in particular the psychological and social components of frailty, strengthening the integral definition of the condition[22]. In a review study to verify the efficiency of the Tilburg Frailty Indicator, there was evidence of its reliability and validity, as well as the ease and speed of its application. However, the author himself suggests that there is a need for further studies among specific groups, such as hospitalized patients[23].

There is therefore a need for periodic evaluation by a multidisciplinary team for the early detection of signs of frailty [24].

The association found in this study between the absence of a partner and frailty does not differ from many studies that discuss this relationship. In a study using one-dimensional instruments with 958 elderly people from the urban area of the city of Uberaba, Minas Gerais, there was a higher proportion of elderly people in a situation of frailty among those who did not live with a partner[25]. A study that also used an instrument that evaluated only the physical domain identified that frailty is associated with being older, female, living alone, being underweight, being

insufficiently active and with the number of falls[18]. In a study carried out in Mexico, the authors also found higher prevalences of frailty among elderly individuals living alone[26]. The presence of a partner may result in greater economic stability, a source of support and improvement in health habits, while the absence of a partner can be a stressful factor, with the impairment of longevity, requiring changes and adaptations[27]. However, it is known that a large number of the elderly sometimes choose to live alone, and, in this condition, such individuals may be less frail.

In the present study, dependence in both basic and instrumental activities of daily living was associated with the presence of frailty in bivariate analysis, similar to the findings of a study[28] that used the TFI and evaluated individuals aged 75 years or older residing in Roosendaal, in the Netherlands, and which identified strong associations between these variables. Inability or dependence in performing activities of daily living, both basic and instrumental, is often described as representative of the disability process in frailty studies[25]. The early detection of frailty is important in order to prevent the decline in functional capacity, indicating a certain bi-directionality between functional disability and frailty[29].

A Brazilian study carried out in Belo Horizonte using a one-dimensional instrument found an association between disability in instrumental activities of daily life in increasing degrees of severity and the stages of frailty, as well as a greater chance of reduced accomplishment of advanced activities of daily living[30]. It is worth noting the lack of Brazilian studies to date that evaluated IADL and frailty with the TFI instrument.

Only IADL remained associated with frailty in the final model, most probably due to the collinearity between the ADL and the IADL instruments. Disability in instrumental activities occurs first, causing other activities, including basic, to no longer remain associated when both are included as explanatory variables in the multiple model.

In the present study, a positive association was found between the presence of symptoms of depression and frailty. A study that evaluated the relationship between frailty, depression and quality of life in 100 hospitalized elderly heart failure patients in Wroclaw, Poland, also identified this association[29]. A previously mentioned study, which used the same instruments for the classification of symptoms of depression, found a significantly higher proportion of such symptoms among frail elderly persons than among the non-frail[25].

Other studies have also suggested this association, even when using different instruments to evaluate depressive symptoms and frailty. Research has found an association between depressive symptomatology and frailty, suggesting that these associations may be linked to the overlapping of coexisting characteristics in such health conditions, such as inactivity, weight loss, exhaustion and reduced levels of physical activity[31].

The present study identified an association between nutritional risk and malnutrition and frailty. In studies which used different instruments for the evaluation of frailty and nutritional status, a three times greater prevalence of frailty was found among elderly patients with nutritional risk in a sample of 143 elderly persons in hospitals in Vienna, Austria, while there was a twelvefold increase in the prevalence of frailty among those with malnutrition[32]. It seems that the concomitance of these two health conditions are complicating factors for other outcomes. In a longitudinal study of 143 colorectal cancer patients in the Netherlands evaluated prior to chemotherapy using the multi-dimensional GFI (Groningen Frailty Indicator) for the classification of frailty and the Mini Nutritional Assessment found that malnutrition together with frailty was strongly associated with an increased risk of mortality in these patients[33].

The presence of comorbidities was associated with frailty in the present study. A study to evaluate predictors of frailty in elderly people living in a community in the city of Roosendaal, Netherlands, which used the TFI instrument, found that the presence of comorbidities explained an additional 2.4% in frailty variance, concluding that the inclusion of the evaluation of comorbidities in data analysis is significant for the completeness of the explanatory model[19]. A Brazilian study evaluating the profile of

frail elderly people receiving treatment at a referral outpatient clinic in Campinas, São Paulo, found an association between frailty and referral for respiratory diseases, using a different instrument from our study to evaluate frailty. Aging brings greater morbidity and mortality as a cause or consequence of frailty. The elderly suffer a greater number of chronic diseases, especially cardiovascular diseases, systemic arterial hypertension, diabetes mellitus, pulmonary diseases, cancer and strokes, diseases described as the most closely associated with the worst possible health conditions of this population[34].

Polypharmacy was associated with a greater prevalence of frailty only in bivariate analysis. It is known that there is a fine line between the risks and the benefits of the use of polypharmacy by the elderly, where the increased use of medications can adversely affect the quality of life of the elderly due to the greater occurrence of adverse effects and drug interactions. On the other hand, these same medicines help to prolong life[35]. Nor should we disregard the joint effect of the presence of comorbidities and polypharmacy, thus justifying the loss of significance of the latter in the final analysis.

The limitations of the study are its cross-sectional nature, which means there is no possibility of establishing a cause and effect relationship, as well as the fact that some instruments use subjective or self-reported information, which can lead to memory bias. Longitudinal investigations are necessary to allow inferences about the predictive indicators of frailty. However, the use of the prevalence ratio as a measure of effect in both the bivariate analysis and the multiple Poisson model allows a good fit of the measures of effect and prevents the overestimation of the measures of association.

Some of the positive aspects of the present study are the fact that it is one of the first to use the Tilburg Frailty Indicator (TFI) instrument in the elderly population living in the community in Brazil. The TFI has a suitable configuration for this purpose, both in relation to the current concept of frailty, and the sociocultural context of the Brazilian elderly[11]. Additionally, among the other multidimensional instruments that evaluate frailty, the TFI seems to be the most accurate and one of the most adequate for the joint evaluation of the physical, psychological and social domains of the elderly[4].

The identification of situations of frailty should be a priority in primary care in order to allow early interventions and the mitigation of harm through primary and secondary health prevention. It is therefore important to understand the factors associated with frailty in elderly groups in public health.

The results described the diversity of factors that are directly related to frailty, and that different aspects of both daily living and the physiological process of aging can influence the autonomy and quality of life of the elderly.

CONCLUSION

There was a high prevalence of frailty among the elderly persons in this study. The main variables associated with frailty were being divorced, separated, widowed or single, exhibiting symptoms of depression, dependence in activities of daily living, being at nutritional risk and suffering from comorbidities.

Understanding the factors associated with frailty, bearing in mind its multifactorial nature, is essential for the elaboration and implementation of actions and strategies of prevention, rehabilitation and health promotion.

The Tilburg Frailty Indicator, by evaluating the physical, psychological and social domains, tends to detect elderly people with frailty in these dimensions, and as such is an important instrument to guide the planning of care in the basic health units. It is therefore recommended that this instrument is used in the identification and monitoring of frail elderly persons in Family Health Strategies in order to increase the benefits to the health of the elderly population.

Other longitudinal studies are also suggested, which should evaluate the association of frailty with other health conditions in elderly persons living in the community and make it possible to reduce the occurrence of adverse outcomes in this population.

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Self-medication and adherence to drug treatment: assessment of participants of the Universidade do Envelhecer (the University of Aging) program

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Abstract

Objectives: to evaluate the use of medication (for continuous use and self-medication) and adherence to treatment among elderly and non-elderly participants of the Universidade do Envelhecer (UniSer). *Method:* an observational, quantitative and cross-sectional study, using the interview technique, was carried out at UniSer with 215 subjects. A structured instrument was used for the collection of sociodemographic variables and self-medication data. The 1986 Morisky-Green-Levine Scale (MGL) and the Brief Medication Questionnaire (BMQ) regimen screening tool were used to assess adherence. Descriptive analyzes of the data were performed, and the chi-squared Test and Fisher's Exact Test were applied to evaluate the association between variables of interest. *Results:* of the participants, 127 (59.1%) were elderly (< 60 years old), of whom 81.9% were women. Regarding self-medication, 22.9% of elderly and 21.7% of non-elderly persons practiced it in the previous seven days (p=0.848), even if they considered it dangerous (p=0.472). A total of 45.8% of the elderly and 55.6% of the non-elderly irrationally self-medicated within the analyzed period, while 76.4% of the elderly and 64.8% of the non-elderly used medications of continuous use (p=0.063). A total of 78.8% of the elderly and 76.1% of the non-elderly were not adherent to treatment (p=0.719) according to the MGL scale, while the BMQ Regimen Screen found that 36.7% of the elderly and 41.1% of the non-elderly were not adherent (p=0.595). *Conclusion:* these findings demonstrate that there were no significant differences between the groups studied and health education actions should be carried out with an emphasis on guidelines on adherence and the rational use of medicines.

Keywords: Aging. Drug Utilization. Self Medication. Treatment Adherence and Compliance. Chronic Disease.

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INTRODUCTION

Aging brings an increase in the prevalence of chronic diseases and the application of medications, especially continuous use drugs[1-3]. In addition to taking such medications, adults and elderly persons practice self-medication as a form of self-care. This is defined as the selection and use of medications for the treatment of diseases and symptoms that affect the user, without prescription or monitoring by a qualified professional (doctor or dentist)[4-6].

Some factors may affect this practice, such as different forms of access to health services, the degree of information available about the medications, as well as the influence of friends, family members, drug advertisements and medicines leftover from previous treatments[7]. Disadvantages related to self-medication can be found in all strata of the population, but especially among the elderly. These include unnecessary expense, delays in diagnoses, potential risks of intoxication and drug interactions, and bacterial resistance[7].

On the other hand, it is important to evaluate adherence to drug treatment involving continuous use medications, as this is considered to be one of the main determinants of the effectiveness of pharmacotherapy. Adherence is defined as the degree of concordance between the behavior of the user and the instructions of the doctor or other health professional[8,9].

The reduced effectiveness of treatments can be explained by several factors, such as barriers of access to the health system, financial difficulties, adverse effects and non-adherence. This problem may vary within population groups, and geographical location (distance that individuals have to travel to access health services), lifestyle (such as eating habits and physical activity), and health conditions may interfere directly with adherence[10].

Interdisciplinary actions are important and can contribute to the rational use of medication. In this context, strategies that focus on health care can be beneficial to improving the quality of life of the elderly population. These strategies include projects linked to health and social welfare departments, such as groups for the elderly, and those linked to universities such as the Universidades Abertas à Terceira Idade (Universities for the Third Age) (UnATI) and other university extension programs such as the Universidade do Envelhecer (University of Aging) (UniSer). Therefore, understanding the health and medication profile of the participants of strategies like these is important for the definition of educational actions that promote the rational use of medication.

The present study therefore sought to evaluate the use of drugs taken in a continuous and self-medicated manner among elderly and non-elderly participants of the University of Aging (UniSer), as well as to evaluate the adherence to treatment with continuous medication of these two groups.

METHOD

An observational, quantitative, cross-sectional type study using an interview technique was applied. The study was carried out in the Distrito Federal (DF), in an extension program of the Universidade de Brasília (UnB), entitled the Universidade do Envelhecer (the University of Aging) (UniSer). This program proposes actions that encourage the promotion of citizenship and health among the elderly and adults over 45 years of age. The intention of this program is to promote an education that broadens a sense of quality of life, adding knowledge, experience and the constant participation of the students in the promotion of healthy aging[11].

The total number of students enrolled in the extension program in 2017 (420) was used for sample calculation. A prevalence of outcome of 50%, a 95% confidence interval and a 5% sample error were considered, resulting in a minimum sample of 201 subjects. The sample was selected for convenience, and participants from all the centers of the extension program were included until at least the minimum estimated sample size was achieved. Participation in the extension program was used as an inclusion criterion. The exclusion criteria were the participant's inability to respond to questions relating to the use of medication or the interruption of the interview before completion. Participants aged between 45 and 59 years were considered to be non-elderly, while those aged 60 years or over were considered elderly.

Data collection was carried out from April to December 2017, at the centers where the classes of the extension program in Brasília took place (in the Administrative Regions of Ceilândia, Taguatinga, Candangolândia, Riacho Fundo I, Estrutural and Plano Piloto). The interviews were conducted by groups of calibrated interviewers who underwent training based on a manual and regular meetings to resolve any questions that arose during the procedure. All the completed interview scripts were checked and the database was created. Where inconsistencies or incomplete data were identified the interviewee was contacted by telephone.

The interview script allowed the collection of a range of variables. The sociodemographic variables collected were gender, age, city of origin, ethnicity/color (self-declared by respondents), marital status, schooling, profession, and family income. The variables related to health were reported health problems, health insurance and whether any of the participants had a relative who was a health professional. Variables related to medication were also considered, namely continuous use medicines, adoption of self-medication, adherence to treatment and access to medication (form of acquisition of continuous use medication).

To analyze the rationality of self-medication, in this case understood as adequacy, the following criteria were adopted: the medicine used in the self-medication should be exempt from medical prescription (EMP); the health problem must be self-limiting (acute); and the duration of the symptoms shorter than 15 days. Practices that met all the above criteria were considered rational.

For the results of self-medication, the interviewees were asked to report whether the health problem had been resolved after the adoption of the practice. The problem was considered resolved when so perceived by the interviewee and when he/she related the improvement to the self-medication.

Home-made medicines, teas, and herbal and homeopathic medicines were not considered self-medication in the present study. During the interviews the participants were informed about the meaning of self-medication and its variations, from going to a health establishment and buying a medicine without a prescription, to taking medicine on the recommendation of friends or family, as well as using leftovers from previous treatments. This concept was explained to all the interviewees before they answered questions related to the practice. For the analysis of self-medication a recall period of seven days prior to the interview was applied as a way of minimizing memory bias.

Medications of continuous use were defined as those that the participants used every day, or almost every day, with no predicted date for the end of the treatment. When participants forgot the medications used, whether continuous use or self-medication, they were informed that they would be contacted later by telephone to collect this information.

the 1986 Morisky-Green-Levine Adherence Scale (MGL) [12], and the Brief Medication Questionnaire (BMQ) regimen domain[13], previously validated in other studies, were used to obtain data related to treatment adherence.

The MGL scale used was translated from the version published in 1986, recommended by Dr. Donald Morisky and notable for the simplicity of its application (as it consists of only four questions)[10]. The scale indicates that inadequate medication use occurs for one or all of the following reasons: carelessness, forgetfulness, and the discontinuation of treatment when feeling better or worse. In the present study scores of YES = 1 point and NO = 0 point were considered. If the answers to the four questions were NO the score was 0 and the participant was considered "adherent to treatment medications". Those participants who scored between 1 and 4 were considered "non-adherent"[12].

The BMQ is made up of three domains: Regimen, Belief and Recall. For the present study, the Regimen domain was adopted as an instrument for the evaluation of adherence, as it evaluates the behavior of the participants in relation to the treatment[13,14].

Prior to data collection, the instrument used in the study was tested in a pilot study with 50 participants to verify the adequacy of the questions and to train the interviewers. Only minor adjustments were necessary in the order of the questions and in the form of approach, meaning the exclusion of the pilot data in the study was not required.

The database was constructed in the EpiData 3.0 program and later analyzed in the SPSS 23.0 and EpiInfo 7.0 programs. Descriptive analyzes of the data were performed, and the prevalences related to the profile of the participants were estimated with a 95% confidence interval (CI). Bivariate analysis was also performed using a chi-squared test to evaluate the association between the categorical variables, and the prevalence ratios were presented. When necessary, Fisher's exact test was used. A level of significance of 5% ($p < 0.05$) was applied.

The present study was approved by the Research Ethics Committee of the Faculdade de Ceilândia (FCE/UnB), under approval number 1.985.490, and complied with the requirements for studies involving humans of National Health Council Resolution nº 466/2012 and the Declaration of Helsinki. The participants signed a Free and Informed Consent Form (FICF).

RESULTS

Of the 420 participants of the project, 215 were included in this study and there were no exclusions. It was observed that the interviewees were predominantly female (189; 87.9%), with a mean age of 61.3 years (+8.6); non-white (139; 65.6%), with low levels of schooling (<12 years of schooling) (150; 69.9%) and had a family income of over three times the minimum wage (121, 56.3%). The majority of respondents were retired (121; 56,3%). Of the total sample, 88 (40.9%) were non-elderly, with a mean age of 53.6 years (+4.95) and 127 (59.1%) were elderly, with a mean age of 66.7 years (+6.23). Table 1 shows the data related to the sociodemographic variables of the UniSer participants.

Table 1. Sociodemographic profile of participants of UniSer. Brasília, DF, 2017.

Variables	n (%)	CI95%***
Gender (n=215)		
Female	189 (87.9)	82.9-91.6
Male	26 (12.1)	8.4-17.1
Ethnicity/Skin color (self-declared) (n=211)		
Non-white	139 (65.8)	59.2-71.9
White	72 (34.2)	28.1-40.7
Marital status (n=213)		
Without partner	123 (57.7)	51.0-64.2
Lives with partner	90 (42.3)	35.8-49.0
Schooling (n=215)		
Less schooling (<12 years)	150 (69.9)	63.3-75.5
More schooling (>12 years)	65 (30.1)	24.5-36.7
Place of Origin (n=215)		
Central (Plano Piloto and neighboring regions)*	20 (9.3)	6.1-13.9
Periphery (Distant from Plano Piloto)	195 (90.7)	86.1-93.9
Family Income** (n=215)		
Up to three times minimum wage	94 (43.7)	37.2-50.4
Over three times minimum wage	121 (56.3)	49.6-62.7
Occupation (n=215)		
Retired	121 (56.3)	49.6-62.7
Without pension	94 (43.7)	37.2-50.4
Has health insurance		
Yes	111 (51.6)	45.0-58.2
No	104 (48.4)	41.8-55.0
Has relative trained in area of health		
Yes	135 (62.8)	56.2-69.0
No	80 (37.2)	31.0-43.8

*The Plano Piloto and neighboring regions such as Park Way, Lago Sul and Norte and Sudoeste are considered the most affluent regions of the DF; **Minimum wage in 2017 (R$ 937.00=U$ 282.22); ***CI95%: Confidence interval.

The taking of continuous use medications was reported by 154 (71.6%, CI: 65.3%-77.2%) of those interviewed, of whom 83 (53.9%, CI: 46.0%-61.6%) acquired their medicines with their own resources, 52 (33.8%, CI: 26.8%-41.5%) from health units of the public system of the Distrito Federal and 19 (12.3%, CI: 8.0%-18.5%) from the *Farmácia Popular* (the Popular Pharmacy) program.

The prevalence of those who had practiced self-medication at some stage in their life in the interviewed group was 188 students (87.4%, CI: 82.3%-91.2%). Of these, 42 (22.3%, CI: 17.0%-28.8%) had practiced self-medication in the seven days prior to the interview. The variables analyzed in the comparison between the elderly and non-elderly of UniSer for self-medication are shown in Table 2.

Table 2. Analysis of practice of self-medication among elderly and non-elderly participants of UniSer. Brasília, DF, 2017.

Variables	Non-elderly n (%)	Elderly n (%)	PR*(CI95%)	*p***
Consider self-medication dangerous (n=215)				0.472
Yes	85 (96.6)	120 (94.5)	1.022 (0.965-1.83)	
No	3 (3.4)	7 (5.5)	1.000	
Self-medication (n=188)				0.848
Yes	18 (21.7)	24 (22.9)	0.949 (0.553-1.627)	
No	65 (78.3)	81 (77.1)	1.000	
Result of self-medication (n=42)				0.122***
Health problem resolved	18 (100.0)	20 (83.3)	1.200 (1.003-1.435)	
Health problem not resolved/continues	0 (0.0)	4 (16.7)	1.000	
Adequacy of self-medication (n=42)				0.533
Rational self-medication	8 (44.4)	13 (54.2)	0.821 (0.425-1.547)	
Irrational self-medication	10 (55.6)	11 (45.8)	1.000	

*Prevalence ratio; **p<0.05: Chi-squared; ***Calculated by Fisher's Exact Test.

No significant differences between the age groups were observed, with a tendency for the use of continuous use medications and reports of health problems to increase among the elderly, as can be observed in Table 3.

There was no significant difference between the age groups in terms of adherence, with both demonstrating limited adherence to treatment with continuous use medications. According to the MGL Scale, 67 elderly (n=85; 78.8%) and 35 non-elderly (n=46; 76.1%) persons were considered non-adherent to treatment. For the BMQ regimen domain, 33 elderly (n=90, 36.7%) and 23 non-elderly (n = 56; 41.1%) persons were also considered non-adherent to treatment (Table 3).

Table 3. Comparison of the reports of health problems and continuous use of medications among elderly and non-elderly participants of UniSer. Brasília, DF, 2017.

Variables	Non-elderly n(%)	Elderly n(%)	PR* (CI95%)	*p***
Reports of health problems (n=215)				0.064
Yes	61 (69.3)	102 (80.3)	0.863 (0.733-1.016)	
No	27 (30.7)	25 (19.7)	1.000	
Use of continuous use medication (n=215)				0.063
Yes	57 (64.8)	97 (76.4)	0.848 (0.707-1.017)	
No	31 (35.2)	30 (23.6)	1.000	
Adherence to treatment with medication MGL Scale (1986) (n=131)				0.719
Adherence	11 (23.9)	18 (21.2)	1.129 (0.584-2.182)	
Non-adherence	35 (76.1)	67 (78.8)	1.000	
BMQ (Regimen Domain) (n=146)				0.595
Adherence	33 (58.9)	57 (63.3)	0.930 (0.711-1.128)	
Non-adherence	23 (41.1)	33 (36.7)	1.000	

*****Prevalance ratio; ***p*<0.05: Chi-squared.

DISCUSSION

While is increasingly common to begin studying (and to return to one's studies) in adulthood, there is little information about the health of this population. The University of Aging (UniSer), while an extension course (with a timetable of 720 hours) rather than a university, has a different objective from other such projects in Brazil, like the Open Universities for the Third Age (UnATI), as it offers training for adults, especially among the elderly. In this context, the present study is important in terms of trying to understand the behavior related to the use of medication among this population.

The present study found that participants of UniSer are mostly women, non-white (including those with brown, black and "yellow" skin-colours and indigenous peoples, among others), with low levels of schooling, and were retirees, data which is consistent with other Brazilian studies[15-19].

In Brazil, 38.3% of elderly persons have a family income of between half the minimum wage and the minimum wage[20]. The findings of the present study, however, were different. One of the possible explanations for this is that the Distrito Federal has the highest Human Development Index (HDI) of all the federative units of Brazil, and the greatest difference between the HDI of the DF and the other states is found in the Income component[21].

Moreover, more than half of the participants did not have a partner, as other studies have found[17,19]. Having a partner becomes important in health care, and often caregivers are the spouses of the patient. Their involvement can contribute to the administration of medicines and also the monitoring of health services[1,22].

In relation to the acquisition of continuous use medications, it was observed that most of the interviewees acquired these with their own resources. This may be a reflection of the quality of primary care in the Distrito Federal, one of the most problematic in the country in terms of state capitals[23], as well as the need for up-to-date medical prescriptions for both public-sector procurement and through the *Farmácia Popular* (Popular Pharmacy) program. In addition, it should be pointed out that the list of medicines is restricted in both the aforementioned access points.

No significant differences were found between the groups of elderly and non-elderly participants in the program for the variables used in the comparison of the practice of self-medication. In other words both groups used medication in an inadequate manner, which is a risk to the health of the adults and especially the elderly of UniSer. Low schooling may be one of the identified factors that interferes with self-care. Older, more educated individuals tend to understand the information provided by health

professionals better, as well as the importance of the rational use of drugs[24], even if this was not observed in the present study.

Among UniSer participants, 76.4% of the elderly persons take medications of continuous use. According to the National Survey on the Access, Use and Promotion of the Rational Use of Medication (PNAUM), this figure reaches as high as 95.0% among the elderly population[25]. Other local studies have shown that these values can range from 75.7% to 85.5%[17,26], findings compatible with the results obtained by the study. The vulnerability of the elderly to adverse effects is high, mainly due to the need to use more than one drug to treat their health problems, in addition to the pharmacokinetic and pharmacodynamic changes that occur with aging itself[26]. In the case of UniSer, it is estimated that healthier elderly persons use the program, which would explain the differences in the prevalence of drug use. Discussions on health education are necessary, especially in relation to self-medication, thus helping to prevent or minimize the adverse effects that the inappropriate use of medicines can cause in the elderly population and also the masking of diseases[26].

The prevalence of the practice of self-medication at some point in the lives of UniSer participants was 87.4%, while it was practiced in the seven days prior to data collection among 22.3%. Values from 14.9% to 35.0% were found in literature[6,7,27]. The prevalence obtained in the present study is similar to those found by other Brazilian studies. However, there are some methodological differences, such as the seven-day recall period employed, compared to the 15 day period used by other studies, as well as the characteristics of the investigated population (age and income). It should also be noted that self-medication can increase with higher educational levels and better socioeconomic levels[7,28]. The more an individual acquires knowledge throughout life and improves their financial situation, the more access and confidence they have in relation to self-medication. However, it is important that this process occurs based on the criteria of the rational use of medicines. It should not be adopted, for example, for chronic problems or with medications sold subject to medical prescription[6,25].

When considering only the elderly population, a prevalence of 22.9% was found for self-medication in the previous seven days, which falls within values found in studies specific to this group which provide results ranging from 8.9% to 70.8%[16,29]. This variation can also be explained by the characteristics of the researched population, the concept of self-medication adopted and the recall period.

Regarding the rationality of the practice of self-medication, 45.8% of the elderly who engaged in this practice during the previous seven days did not meet the criteria defined as rational by the study, even though 94.5% considered it dangerous for their health. Self-medication when practiced in a rational manner can avoid harm to health, as well as unnecessary expenses with self-limiting diseases. However, it is important to be aware of the disadvantages that can arise from self-medication, especially among the elderly population, from the masking of serious diseases to the appearance of adverse reactions (consequently increasing health spending). In addition, there is a risk of drug interactions and intoxications[4,6]. Therefore, self-medication should be carried out rationally, especially among the elderly population, and must be assisted by trained health professionals, since the risk of the practice is also related to the levels of education and information of users about medications[30].

In the present study, the prevalence of elderly patients who were nonadherent to treatment with continuous use medications was high. When using the MGL scale, 78.8% of the interviewees were considered non-adherent, compatible with other results found in previous studies[14,31,32]. According to the World Health Organization (WHO), adherence to treatment with continuous use medications is usually around 50.0% in developed countries. In developing countries this value may be much lower[33].

Adherence was also assessed using the BMQ regimen domain, which found that 36.7% of the elderly did not adhere to treatment. The result obtained was different from that of the MGL scale. Some factors may explain this variation in non-adherence rates, such as cultural differences, health status, and the origin of the population studied[10], and especially the fact that data collection instruments differ in their questions and contexts, such as the time of evaluation in relation to the use of medicines. The MGL scale considers a longer period, while the BMQ considers data from the previous week, which restricts

the time period investigated and could minimize memory bias. In addition, a simplified version of the BMQ was used in the question of dosage. A study carried out in Porto Alegre, Rio Grande do Sul, found in a pilot study that the participants of the research could not report the concentrations of the drugs used, thus suggesting the simplification of BMQ regimen domain[13]. Failure in this regard could already be considered non-adherence to treatment. This detail may have contributed to the difference in results between the instruments.

On the other hand, the use of two questionnaires allowed the identification of different behaviors in terms of non-adherence to treatment, allowing a better understanding of the phenomenon under investigation. This allows the creation of health education strategies with this population, in order to improve the use of continuous use medications.

Consequences of non-adherence to treatment with medication include the lack of control of diseases, the increased risk of hospitalizations and increased mortality[8,10,14,31,34]. In other words, this practice involves clinical, social and economic consequences, yet receives little attention. Its evaluation is therefore essential to slow the progression of diseases and avoid the emergence of side effects. In this context, regardless of the questionnaire applied, no significant difference was found between the elderly and the non-elderly groups.

It should be emphasized that health education, including topics on the use of medication and self-care, should form part of adult education, as well as the training of all health professions, regardless of their relationship with this form of technology.

One limitation of the present study is the fact that most of the information obtained was self-reported, and there is therefore a possibility of memory bias among the participants, as it involves recall evaluation. However, it is important to note that the instruments adopted for the evaluation of adherence are recognized for their validity, and the recall form and period adopted for the determination of self-medication and its context (the adopted concept) are consistent with other works described in literature for this age range.

CONCLUSION

No significant differences were identified in self-medication or the continuous use of medication among the groups of elderly and non-elderly participants of the University of Aging program. Similarly, no differences were found between the groups for the rationality of self-medication or adherence to treatment. In this context, the practice of self-medication in the previous seven days was considered irrational. These data are important, as more than half of the participants of the University of Aging are elderly, and more susceptible to the negative effects of self-medication.

The data related to adherence were not adequate, even though two different questionnaires were used for evaluation. Both groups exhibited low adherence to treatment with medications of continuous use, which consequently poses health risks, mainly due to the inefficacy of the use of the medication prescribed for the reported diseases.

Thus, the findings of the present study reinforce the need to educate both adults and the elderly about self-care, either through content related to the practice of self-medication or the use of medications on a continuous basis, with a view to encouraging adherence to treatment to improve the health profile of this population.

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Perceptions of aging and falling ill: a study with elderly persons in palliative care

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Abstract

Objective: to learn the perceptions of elderly persons in palliative care regarding coping with aging and illness. *Method*: an exploratory, descriptive, qualitative study was carried out. The study included 11 elderly persons in palliative care because of oncologic disease. Semi-structured interviews were carried out which were analyzed with the aid of the ALCESTE software. *Results*: two axes were identified from the content analysis. The first, Resist to Survive and Live, has two categories: the first, aging with integrity, portrays the positive perception of the participants regarding the aging process, and coping strategies used to deal with aging and with illness; the other category, resilient development, refers to the life trajectories of the participants and the adversities of the process of development and aging. The second axis, Resist to Die Well, has only one category and refers to the perceptions of the elderly about the stress related to illness. *Conclusion*: the results show that the perceptions of aging and falling ill involved resilience, as the participants focused on what they had gained rather than their losses. In this context, they used resilient coping strategies: spiritual support, cognitive restructuring, and acceptance.

Keywords: Aging. Medical Oncology. Palliative Care. Adaptation, Psychological. Resilience, Psychological.

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INTRODUCTION

Aging is the main risk factor for the development of chronic diseases, including cancer. Neoplasms account for more than 45% of deaths in individuals over 80 years of age, with a tendency towards a gradual increase in mortality rates[1].

Cancer affects the body, mind, social well-being, family relationships, and spirit. Due to this complexity, caring for cancer patients requires an approach that goes beyond biological needs and provides comprehensive therapy, including psychological, social and spiritual components[2].

Psycho-socio-spiritual dimensions rarely occupy a prominent role in the care of elderly persons with life-threatening oncological diseases; treatments focus most of all on increasing survival, and cause suffering. In order to transform this perspective into a profile of relief, the philosophy of palliative care should be applied[3].

The World Health Organization (WHO) defines palliative care as an approach that seeks to provide the best quality of life for patients and families facing life-threatening illnesses through pain relief, the management of pain and other physical problems, including the psychological and spiritual[4].

In old age, one of the causes of psycho-social-spiritual suffering consists of successive losses throughout life that include: awareness of one's own finitude, loss of health and/or physical capacity, loss of quality of emotional relationships, social integration, reduction of quality of life in both a material and cognitive sense[5,6].

All loss generates a reaction known as grief that can be experienced differently by each elderly person depending on their previous characteristics of personality, lifestyle, history of losses and internal and the external resources used to deal with them[7].

From this perspective, one can say that the ability to adapt to the losses resulting from aging and its challenges, including illness, necessarily depends on the resilience developed throughout the life trajectory of each person[8,9].

Resilience is the ability to withstand adversities with flexibility and adaptability. When understood as a process that develops throughout life, resilience is interpreted as a bridge between the processes of coping and development[8,10].

On the other hand, coping consists of responding to a stressor, and in old age past coping experiences serve as a guide to deal with current stressful situations[9]. In this context, the present study aims to answer the following guiding question: How do elderly persons in palliative care cope with aging and becoming ill?

It is hoped that the present study will raise the awareness of health professionals about the importance of listening to the life trajectory of the elderly person in order to understand the coping strategies used in previous situations of loss, in order to help such professionals provide personalized and qualified care. In view of the above, the objective of the present study was to learn the perceptions of elderly people in palliative care about coping with aging and becoming ill.

METHOD

An exploratory, cross-sectional, descriptive, qualitative study was performed. The choice of the qualitative design was due to the fact that it was suitable for research that seeks to understand participants from the meaning they attribute to their experiences, much like the objective of the present study[11].

The data were collected during the months of August and December 2016 in the Medical Clinic and the Center for High Complexity Oncology Care of a university hospital in Brasília, in the Distrito Federal (DF). Eleven elderly persons with cancer undergoing palliative care participated in the study.

The inclusion criteria were: people aged 60 years or over who had a record of palliative care for oncological disease on their medical records. Persons with difficulties in verbalization, expression and organization of ideas were excluded.

The data were collected in three different stages of meetings between the researcher and the participant: 1) an initial talk about the participant's life history in order to encourage rapport between the individual and the researcher, with this step serving as preparation for the subsequent stages. 2) application of a sociodemographic questionnaire to delineate the profile of the individual. 3) interview with a semi-structured script, created after an extensive review of literature in seven databases, which included topics on aging, illness and coping[12].

The interviews were carried out personally by the researcher and were recorded, once the consent of the participants was obtained. They had an average duration of 30 minutes and, after each interview, the researcher wrote down his or her impressions and relevant aspects of the discourse; this continuous record constituted a field diary.

The interviews were carried out until the moment when redundancy was identified in the discourse of the interviewees, which dispensed with the need for new participants in the research and, therefore, characterized the saturation point.

The obtained data were transcribed and submitted to thematic content analysis with the aid of the ALCESTE (*Analyse Lexicale par Contexte d'un Ensemble de Segment de text*) software. This program performs a statistical analysis based on the individualization of the text of each interviewee, which are called Initial Context Units (ICU), when these are processed within the program, Elementary Context Units (ECU) are created, organized into classes interpreted from their meanings [13].

Through quantitative grouping the ALCESTE software generated a dendrogram with two axes and three classes. From the words and verbs with the greatest chi-squared value highlighted in the dendrogram and the field diary, we sought to extract meanings by continuing the analysis of content[14].

Content analysis seeks to describe the content emitted in the communication process through systematic procedures that allow the inference of knowledge [14].

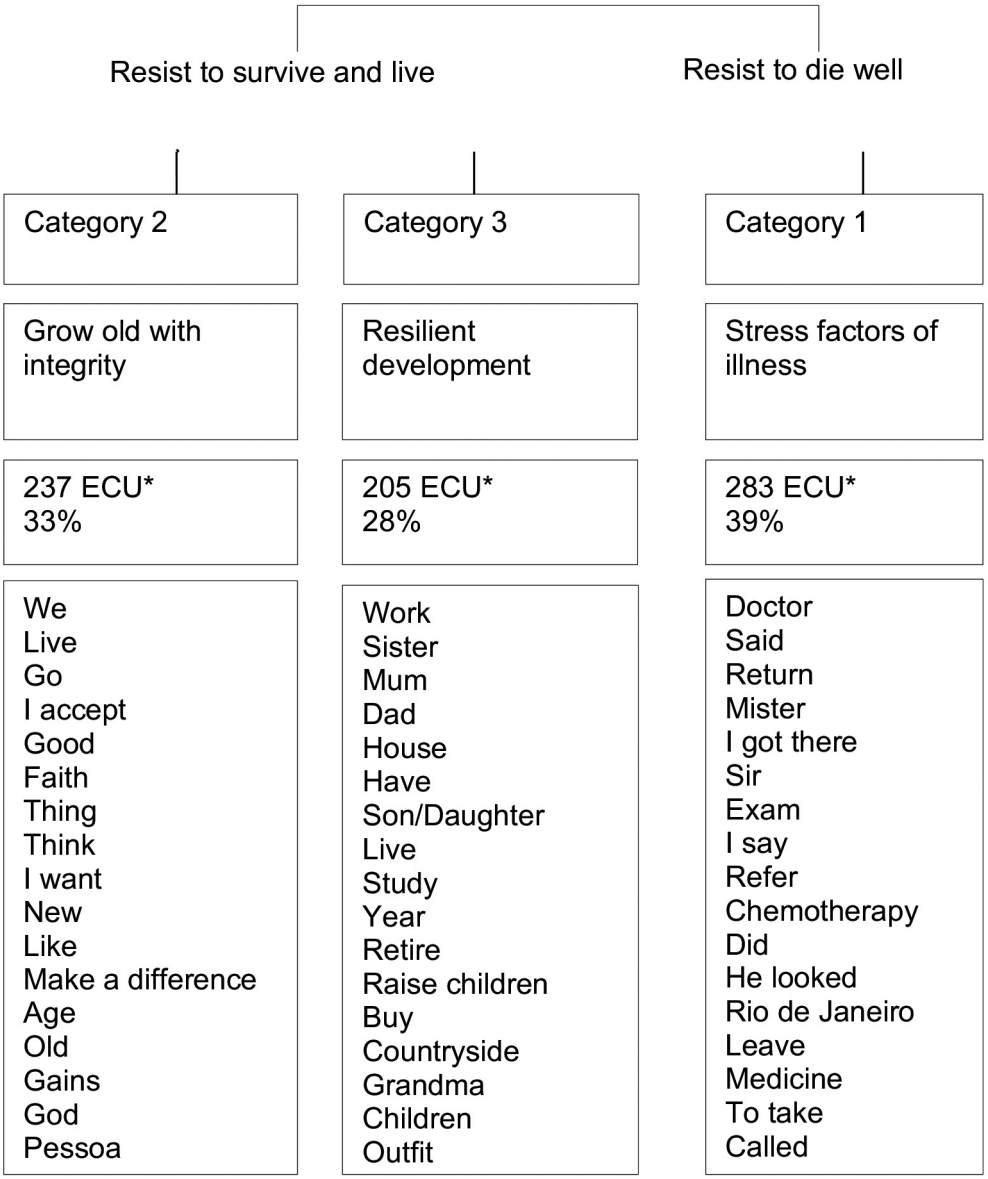
The theoretical references used to support the content analysis were: the classification of coping according to Skinner et al. and the conception of resilience according to Anaut [10,15].

The study was carried out in compliance with National Health Council Resolution nº 466 and was approved by the Research Ethics Committee of the School of Health Sciences of the Universidade de Brasília under approval number 1.667.697. All participants signed the Informed Consent Term and the real names were replaced by aliases.

RESULTS

Eleven elderly persons participated in the study: six men and five women, with a mean age of 68.9 years and a mean of 4.54 years of schooling. Eight elderly persons had been made aware of their diagnosis more than a year previously, indicating some familiarity with the disease. Five needed to leave their city of origin, home and family to seek treatment in the capital, highlighting the difficulties of access to treatment in certain parts in the country.

Content analysis revealed three categories, distributed into two axes (Figure 1). The ALCESTE software identified the words with a greater chi-squared value in each category, as shown in Figure 1.



*ECU: Elementary Content Unit

Figure 1. Dendogram of corpus of interviews organized into two axes and three categories. Brasília, DF, 2016.

DISCUSSION

The first axis, called Resist to Survive and Live, mentions the participants' life trajectories and the strategies used to survive the numerous challenges faced in the aging process. This axis was composed of the categories entitled grow old with integrity and resilient development. The two categories together comprised 61% of the discourse (Figure 1).

The second axis known as Resist to Die Well was formed by a single category, called Stress Factors Of Illness, and explained the difficulties experienced during illness, mainly caused by difficulties in accessing treatment. This category represented 39% of the participants' discourse (Figure 1).

The percentages identified in the first and second axes indicate that during their narratives

the interviewees were more focused on the living process than on the prospect of dying. Similar results were reported in a study conducted in Norway that described the daily life experience of elderly persons with incurable cancer and pointed out the need these people had to maintain a strong connection with life[16].

Resist To Survive And Live

This axis emphasizes that the behavior of the elderly throughout life has remained focused on facing and overcoming adversities rather than avoiding them.

Category 2: Grow Old With Integrity

The excerpts from the prominent words in category 2 point to a positive perception of aging even though the elderly mentioned the losses in their life trajectories. According to Erik Erikson's theory, in old age people may experience feelings of despair when they do not recognize meaning in their life trajectory, or they may experience integrity when they are able to distinguish their losses and achievements and assign a meaning to them[17].

It could be seen that the elderly in this study approached their losses in a positive way and used, according to the classification of Skinner et al., the following coping strategies: 1) cognitive restructuring, 2) spiritual support, and 3) acceptance[15].

1) Cognitive restructuring

Cognitive restructuring is a coping strategy that actively seeks to change the view of a stressful situation so that it is seen in a positive light[15]. It was from this perspective that participants focused primarily on gains, rather than the negative aspects of aging.

> "So it means that aging brought gains for me, I could go out more, I go to my church things, because before I could not, because sometimes I had to take care of the boy." (Lúcia)

> "The things you wanted to have when you were young and you did not have, you have when you get old, as you get older, you're going to have them." (Fernando)

Focusing on the positive aspects, the participants highlighted the material achievements they enjoyed. The reference to freedom as a gain of autonomy and emancipation was also notable. These perceptions value the positive aspects of aging and are corroborated by a study of elderly people attending an Open University of the Third Age. In this study, a balance between gains and losses was identified in both the biological, emotional and social aspects of aging[18].

It was observed that the elderly did not mention the denial of or escape from the problems and restrictions that came as a result of aging They have removed the focus on pain, restrictions and difficulties to live better.

> "With all the tribulation, you know how to live, everything is going well. If you do not know how to live, you won't do well." (Alexandre)

By recognizing, in the aging process, aspects that were beneficial for maintaining well-being despite their tribulations, the cognitive strategy was configured as an important coping tactic.

2) Spiritual Support

Spirituality seeks a connection with God or with a higher power, with that which gives meaning to life and transcends the tangible in search of something greater than the self and which may or may not include religious affiliation[19,20].

In the discourse of the elderly it could be perceived that spiritual support represented a coping strategy that contributed to manage the stress of aging and illness, favoring the attribution of meaning to the process of living.

In the discourse, it was identified that the bases of spiritual support were anchored in faith, in the reading of holy books and the practice of prayer[20].

Faith can attribute meaning to existence, constituting a universal human concern that allows us to follow religious paths towards an organized and value-oriented life[19]. Through faith, the elderly sought an approach to the divine form that governs all.

> "It's faith that takes us away, you're thinking that everything is in God's hands and that it's no use, it's no use worrying, because what's going to be is going to be." (Lúcia)

Religious books were the basis of the values of their lives and arguments for facing the difficulties they experienced.

> "The Bible tells us that when you reach old age, you see, there comes fatigue from the life of others, anguish." (Alexandre)

Prayer represents an important means of approaching the sacred for protection and support in the face of adverse situations as part of the process of getting old and falling ill.

> "Being close to God and praying, and I pray a lot, praying, it seems that it eases things." (Lúcia)

Religious practice based on the reading of holy books, associated with the act of praying, laid the foundation of spiritual support. A study carried out in Croatia found that religious beliefs associated with the act of praying contributed to a greater acceptance of the disease and confronting the psychological adversities that occurred with the diagnosis of cancer[21].

3) Acceptance

The elderly perceived old age as a natural process and as an integral part of life. Although they recognized the evidence of some limitations, they accepted old age in a serene and natural way rather than opposing and trying to modify the situation.

> "I accept old age like this without it bothering me. There's this saying: if you don't want to get old, die at thirty, half, more or less. If you don't want to get old, die young [...] When you accept that this is a natural cycle, when you accept it, there's no loss." (Fernando)

It could be inferred that disease was perceived as part of the aging process. Acceptance is the last step of the stages of death and dying, when the individual has had the time to understand their situation. It seems that the elderly have stripped themselves of their fears and anguish, and are able to manifest feelings of peace and tranquility.

> "Now I'm really recovered. It is good to die happy, better than to die sad, now I am not afraid any more, to die happy instead of dying sad, the worst thing; dying happy is the best thing. Feel safe, happy death you know? It's like this, feel more secure, here I'm safe." (Samuel)

In Samuel's account it was possible to establish a comparison between "happy death" and "sad death"; it was noted that feelings of security, lack of fear and feeling well cared for in the hospital environment made up the expression of "happy death". A similar discourse was evidenced in a study conducted in Australia with 40 patients in a hospice, where participants reported a feeling of relief as they had found a place that could help them at the end of their lives[23].

Category 3: Resilient development

In this category there emerged from the narratives of the elderly a struggle for life that was permeated by numerous challenges: limited opportunities to access education, financial difficulties, the need to work in childhood to supplement family income, poor housing conditions, lack of basic sanitation and the loss of parents and spouses.

Of the 11 participants, only two were able to finish primary education.

> "We didn't have the opportunity to study, my father lived in the countryside, and in the countryside we traveled leagues to get to school, at that time, there were no free schools, it was paid for and only for those who could afford it." (Maria)

Maria's testimony shows the barriers to access to education due to financial difficulties. In a situation of hardship, children had to work to contribute to family income.

> "Everyone had to work to help at home, we were poor, just our father and mother to support so many children, everybody had to work, even at a young age, they had to work, to help." (Lúcia)

The reality described by the participants corroborates the result of a Brazilian study that relates family income to child labor, indicating that this situation still exists today. It is known that when family income is low, the parents have no alternative and choose to make their children work instead of studying. This choice has a significant consequence for the future, as it impacts on professional qualifications, with consequent difficulties for increasing income, thus perpetuating the cycle of poverty[24].

In Brazil, in 2015, 17.6% of children aged from zero to four years of age and 18.0% of children and adolescents aged five to 14 years lived in households whose maximum monthly income per capita was one quarter of the minimum wage[25].

The interviewees mentioned the poor housing conditions and the lack of access to basic sanitation that they experienced during childhood.

> "My life was a struggle! At that time, there in Formosa, there were lots of straw houses, my mother lived at home like that ... it was wattle and daub, I'm not ashamed to say it, it was wattle and daub, real hard ground." (Maria)

However, faced with all the challenges, the loss of the death of parents in childhood and widowhood represented the most difficult episodes to overcome.

> "Another loss was that I did not know my father, my father left my mother in the countryside of Bahia, it was in fifty-two, when I was born they came to Goiás, he and two other brothers of mine, for me, it was a loss too." (Alexandre)

In childhood, the primary needs for affection are satisfied by the parents. A person's sense of security, recognition, self-esteem, and emotional development are influenced by the active presence of the parents. In this perspective, the loss of a parent, when young, produces a void that can generate repercussions, even in situations of adult life, such as building a family and raising their own children[7].

In this same perspective, widowhood burdens old age with the weight of continuous solitude. The individual loses their companion of many years and of a life built for two, leaving a feeling of emptiness[7].

> "Then I lost my second husband, because I am a widow twice. I lost her father, I was nineteen, after a time I got married again, it's been seventeen years since I lost the second." (Regina)

However, despite the innumerable difficulties and losses, the participants reported facing each adversity that arose in their lives with strength and determination; the marks of struggle, rather than evasion, are imprinted on the trajectory of their lives. They were proud of their values and humble origins..

> "I have never stolen, never inherited, all by my own sweat; since childhood, fighting to the end." (Marcelo)

The struggle for survival has given meaning to life; despite adversity, pride in the lived experience and values learned were part of the concept of integrity. The narrative of the elderly confirms that the integrity described by Erikson allows one to be able to experience old age by recognizing their achievements and triumphs[17].

In this context, it can be seen that resilience constructed throughout the live of the individual stood out as a way of dealing with the adversities experienced, and as such, the participants can deal with stress from a positive persepctive[10].

Resistance to die well

This axis relates to the main stressors of illness and the perception of the elderly about their health condition.

Category 1: Stress Factors of Illness

In the narratives of the elderly, it was noted that disease and treatment represent stress factors, notable among which are: the signs and symptoms of the disease, the diagnosis and, above all, the lack of access to treatment.

Cancer consists of a growth in the number of cells that invade tissues and organs, creating masses that alter the initial structure of an organ and that can spread to other regions of the body[26]. The discovery of masses in one's own body was the first sign and stressor perceived by the participants.

> "She said: you have a lump under your tongue, right here, she put her finger on it, it was a hard lump." (Alexandre)

As well as such masses, the participants referred to pain and anorexia as symptoms that made them suspect they had a serious illness.

> "What I am feeling, I'm going to tell you, this pain here never stops." (Eduardo)

> "I lost my appetite, my hunger, I couldn't even bear to look at food, when I got here I weighed 60 kilos." (Samuel)

The health complaints of those interviewed agreed with a study that indicated the prevalent symptoms among those with advance stage cancer: pain (78.4%), anorexia (64.4%) and constipation (63.5%)[27].

Pain is one of the most common symptoms experienced by elderly persons with cancer, and is hard to assess and manage due to its subjective nature. The consequences of poor pain management include: depression, anxiety, substance abuse, cardiovascular problems, delirium, insomnia, functional impairment and a loss of appetite that generally results in weight loss[28].

Anorexia is also part of the process of oncological disease and is associated with an increase in inflammatory activity, with reduced intestinal absorption capacity and a loss of muscle mass in hypercatabolic states, characterized by increased weight loss[28,29].

Additionally, among the elderly it is associated with other factors that contribute to a loss of appetite: social, physical, psychological and medical factors. In this context, close contact with family members can contribute to avoiding the worsening of anorexia[30].

The physical signs in one's body lead to the suspicion of a serious illness which results in a heightened level of stress. Despite such suspicion, bad news about an illness can still have a significant impact on their lives.

Bad news can lead patients to experience anticipatory pain related to all the losses that they have and will have in the future: loss of functionality, of their social role, and possible death. As a result, some people with serious diseases prefer not to know the truth about their diagnosis[31].

Although literature describes hesitation at the moment of diagnosis, the elderly persons in the present study were unanimous in stating that they wanted to have access to the truth and be given complete Information about their health condition.

> "I said: what's the bad news, doctor? You're going round in circles, aren't you? All this chit-chat, I say: I already know what it is, you can open your mouth and tell the truth!" (João)

Despite the negative feelings derived from receiving a diagnosis of cancer, the main stress factor was the difficult access to treatment, which was described as distressing. Some said that the treatment in their own towns was inadequate, and that as a result they had to move to the national capital seeking a firm diagnosis and adequate treatment.

> "I came here because things were a bit of a mess in my life, but the guy said it was diabetes, so I came here to have this treatment. When I got here, the doctor said: I'm going to refer you, and he did, and I had a clinical exam there..." (João)

In addition to the difficulty of starting treatment, the participants also described having to abandon it due to a lack of technical resources:

> "Lots of people have to abandon treatment, don't they? They have go to another state, they say the machine is broken, some say yes, others say no, so you have to leave, but that takes another month, because it was a waste of time going there, to Rio de Janeiro." (Samuel)

The reports of those interviewed validate another study which described the main barriers in cases of oncological disease: the discovery of the disease and the difficulties of access to treatment; including delays in diagnosis, difficulties in access to tests, collateral effects and barriers to carrying out treatment[32].

It is important to point out that the present study has limitations, namely that the research was carried out in a single public oncological care institute, which prevents comparison with other scenarios. Future studies can expand the research context to identify coping strategies in other contexts.

CONCLUSION

The results show that, throughout the life trajectory of the studied group, coping with adversity has forged a capacity to positively manage the stressors identified in their narratives.

Perceptions about the process of aging and illness showed that for these individuals aging was a privilege and, despite its difficulties, they were grateful for life, and so experienced integrity rather than hopelessness.

Nevertheless, illness and access to treatment were perceived as stress-generating events, constituting a source of distress and suffering. In order to cope with the losses and adversities of aging and illness, they used, above all, the coping strategies characteristic of a process of resilience, such as: spiritual support, cognitive restructuring and acceptance.

It is understood that the health team's understanding of coping strategies can add quality to the care provided to such individuals. Therefore, it is suggested that this theme is disseminated among professionals who provide care to the elderly in palliative care, through group discussions and continuous training activities in health institutions.

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Risk of malnutrition and associated factors in institutionalized elderly persons

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Abstract

Objective: to evaluate the risk of malnutrition and associated factors in institutionalized elderly persons. *Method:* a cross-sectional study was carried out with elderly persons living in long-term care facilities in the municipal regions of Passo Fundo (Rio Grande do Sul) and Carazinho (Rio Grande do Sul) in 2017. A standardized, pre-codified questionnaire with sociodemographic variables was used, along with anthropometric data and the Mini Nutritional Assessment. Cognitive decline and non-intentional weight loss were also evaluated. The qualitative variables were presented in terms of univariate frequencies and the quantitative variables were described through measures of central tendency and dispersion. In order to verify the association between the categorical variables, the Pearson's correlation coefficient, Chi-Squared test and the Fisher Exact test were applied, and in the crude and adjusted analysis the Poisson regression was used with robust variance. The level of significance was 5%. *Results:* a total of 399 elderly people were included, of whom 69.9% were female, 54.5% were aged 80 years or older and 88.4% were white. Of these elderly people, 61.7% lived in non-profit facilities. In the evaluation of nutritional status, 26.6% of the elderly were found to be malnourished, 48.1% were at risk of malnutrition and 25.3% had normal nutritional status. The highest prevalence ratio of at risk of malnutrition/malnutrition was with cognitive decline and unintentional weight loss (p<0.001). *Conclusion:* through the results, identifying nutritional status and the characteristics associated with the risk of malnutrition contribute to effective evaluation and nutritional monitoring, assisting in the prevention of diseases related to this condition.

Keywords: Nutritional Status. Elderly. Homes for the Aged. Manutrition. Aging.

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INTRODUCTION

Global malnutrition is considered one of the most common problems among the elderly population, and may interfere significantly with the evolution of the health of such individuals. Protein-caloric malnutrition contributes to increased mortality and susceptibility to infections and reduced quality of life, and can cause even greater problems among people living in long-term care facilities for the elderly (LTCF)[1].

The characteristics of institutionalization make this population more vulnerable to impaired nutritional status. The numbers show that, in the majority of cases, a large part of the population is at risk of malnutrition, with a prevalence of more than 60% of the elderly having a deteriorated nutritional status[2,3].

The aging process brings with it physiological changes, such as alterations in taste, digestive disorders, polypharmacy, a reduction in lean mass and an increase in fat mass which contribute to a nutritional state of malnutrition. Allied to this, environmental conditions including an inadequate diet and lifestyle make the elderly even more susceptible[4]. In the elderly living in LTCF, the presence of depression, cognitive and functional impairment and difficulty in swallowing often increase the possibility of malnutrition, with mortality the main result[5].

These aspects show, therefore, the vulnerability of elderly persons residing in LTCF to nutritional risk, suggesting a need for the early and systematic implementation of nutritional evaluation and actions aimed at prevention. Different methods of nutritional evaluation can provide support for health professionals in the monitoring of nutritional risks and, thus, guide the application of resources for nutritional care aimed at promoting the quality of life and autonomy of this population. In light of the above, the present study aims to evaluate the risk of malnutrition and associated factors in institutionalized elderly persons.

METHOD

A cross-sectional study of elderly persons living in LTCF in Passo Fundo and Carazinho - Rio Grande do Sul (RS) - was carried out in 2017. This is a section of the "Patterns of Aging and Longevity: biological, educational and psychosocial aspects" survey, carried out by the Graduate Program in Human Aging of the Universidade de Passo Fundo (UPF).

We included 15 LTCF from the municipal regions of Passo Fundo and Carazinho (RS). All elderly residents were surveyed, based on the following inclusion criteria: age 60 years or more, of both genders, for whom nutritional status could be assessed. The exclusion criteria were: impossibility of carrying out anthropometric evaluation and answering the questions of the questionnaire. It was decided to include elderly people living in LTCF in the two municipal regions in the study as they presented similarities in the general population in terms of the proportion of elderly persons, distribution by gender and age group.

The municipality of Passo Fundo is located to the north of the state of Rio Grande do Sul and its population is estimated at 196,741 inhabitants, of whom 26,729 are elderly and aged 60 years or more, corresponding, therefore, to 13.5% of the population total. The municipality of Carazinho is also located to the north of the state and has a population of 62,037 inhabitants. Of these, 10,007 thousand are elderly and aged 60 or over, corresponding to 16.1% of the population[6].

For a prevalence of outcome (prevalence of nutritional risk in the institutionalized elderly) of 20% the following data were considered for the sample calculation: a ratio of non-exposed: exposed of 1:2, a 95% confidence level and 80% statistical power, giving a total of 209 elderly persons. However, all the elderly individuals who fulfilled the inclusion criteria were included, as the sample calculation of the original study included other outcomes of interest of a larger sample size.

Data collection was carried out in the LTCF by the research team. The interviewers included professors/researchers, masters students, students from the area of health and recipients of scientific initiation grants, all of whom underwent training.

A standardized, pre-codified questionnaire was used. The variables were: sociodemographic (type of LTCF, age, gender, skin colour), anthropometric [weight, height, Body Mass Index (BMI)], Mini Nutritional Assessment (MNA), cognitive decline evaluated by the Mini Mental State Exam[7] through questions related to arithmetic, memory and orientation, and self-reported non-intentional weight loss in the previous 12 months.

The outcome was evaluated using the MNA which is composed of six questions that include data on the reduction of food intake, weight loss in the previous three months, mobility, psychological stress or severe disease in the previous three months, neuropsychological problems and BMI. The scores were added together to give a total of between 0 and 14 points and classified according to the following cut-off points: 0 to 7 "malnutrition", 8 to 11 "at risk of malnutrition" and 12 to 14 "normal nutritional state"[8].

Where it was impossible to weigh and measure the height of the elderly the measurements were estimated. Height was estimated using the equation of Chumlea et al.[9], based on gender and using age and knee height (KH). Weight was also estimated using the Chumlea et al.[9] equation, based on gender and using calf circumference (CC), KH, arm circumference (AC) and subscapular skinfold (SS). All the anthropometric measurements followed the protocols established by the International Society for the Advancement of Kinanthropometry (ISAK)[10].

After being reviewed and codified, the questionnaires were entered in a statistical software package. The qualitative variables were presented as univariate frequencies (absolute and relative). The quantitative variables were described by measures of central tendency and dispersion. To verify the association between the categorical variables, the Chi-squared test, Pearson's Correlation Coefficient and Fisher's Exact were used, and Poisson Regression with robust variance was used in the crude and adjusted analysis. The level of significance was 5%.

The study was approved by the Research Ethics Committee of UPF under approval number 2,097,278. All the elderly were protected by signing a Free and Informed Consent Form. The study followed the standards of Resolutions nº 466/2012 and nº 510/2016 which deals with research involving human beings.

RESULTS

A total of 399 elderly people were evaluated, 69.9% of whom were female, 54.5% were aged 80 years or older and 45.5% were less long-lived, 88.4% were white and 11.6% were non-white. Of these elderly people, 38.3% were residents of private institutions and 61.7% of non-profit institutions.

In the evaluation of nutritional status according to the MNA, 26.6% of the elderly were malnourished, 48.1% were at risk of malnutrition and 25.3% had a normal nutritional status. The mean MNA score was 9.25 (±2.93).

Table 1 presents the gross analysis between nutritional status according to the MNA (normal versus at risk of malnutrition/malnutrition) and socio-demographic variables, cognitive decline and unintentional weight loss. The highest prevalence of at risk of malnutrition/malnutrition was among the elderly living in private facilities, those who were long-lived, female and white. However there was no significant association between the variables. A higher prevalence of at risk of malnutrition/malnutrition was identified among the elderly with cognitive decline and unintentional weight loss (p<0.001).

In the adjusted analysis, we chose to include all the sociodemographic variables as well as the variables with a value of p≤0.20. Table 2 shows that the highest prevalence ratio of nutritional status of at risk of malnutrition/malnutrition remained among the elderly with cognitive decline and unintentional weight loss (p<0,001).

Table 1. Nutritional status of institutionalized elderly according to exposure variables (crude analysis). Passo Fundo, RS, 2018 (N=399).

Variables	Nutritional State				Gross analysis		
	Normal		At risk/malnutrition				
	n	%	n	%	PR	CI95%	*p*-value
Type of LTCF*							
Private	38	24.8	115	75.2	1.004	0.955-1.056	0.862
Non-profit	63	25.6	183	74.4	1		
Longevity							
Long-lived	52	24.0	165	76.0	1.018	0.969-1.070	0.480
Not long-lived	49	27.1	132	72.9	1		
Gender							
Male	32	26.7	88	73.3	0.989	0.937-1.044	0.687
Female	69	24.7	210	75.3	1		
Skin colour							
White	87	24.9	262	75.1	1.032	0.957-1.121	0.448
Non-white	14	30.4	32	69.6	1		
Cognitive decline							
Yes	52	18.7	223	81.3	1.149	1.080-1.223	<0.001
No	49	42.2	67	57.8	1		
Unintentional weight loss							
Yes	17	14.5	100	85.5	1.102	1.048-1.158	<0.001
No	71	31.7	153	68.3	1		

*Long Term Care Facility for the Elderly

Table 2. Nutritional state of institutionalized elderly persons according to exposure variables (adjusted analysis). Passo Fundo, RS, 2018 (N=399).

Variables	Adjusted analysis		
	PR	CI95%	*p*-value
Type of LTCF*			
Private	1.018	0.900-1.151	0.776
Non-profit	1		
Longevity			
Long-lived	1.013	0.889-1.154	0.848
Not long-lived	1		
Gender			
Male	1.045	0.908-1.203	0.539
Female	1		
Skin colour			
White	1.152	0.904-1.467	0.253
Non-white	1		
Cognitive decline			
Yes	1.406	1.189-1.664	0.000
No	1		
Unintentional weight loss			
Yes	1.228	1.092-1.380	0.001
No	1		

*Long Term Care Facility For The Elderly

DISCUSSION

The present study showed that the majority of the studied population is at risk of malnutrition (48.1%) or is already in a state of malnutrition (26.6%). This result is common among the elderly, particularly those who reside in LTCF. The rate of nutritional risk in these environments can be as high as 95% of individuals[11].

Studies that use the MNA to assess the nutritional status of institutionalized elderly persons are common in literature. Generally, the prevalence of individuals with impaired nutritional status exceeds those with good nutritional status. Vandewoude and Van Gossum[12] conducted a survey in Belgium addressing institutionalized elderly persons and those residing in the community and found that the overall risk of malnutrition was 57%, and was significantly higher among institutionalized persons (p<0.001).

Corroborating this information, Senior et al.[3], in a study carried out in Australia, found that 14.9% of the total institutionalized elderly were malnourished, 48.5% were at risk of malnutrition and 36.6% had a normal nutritional status. The results of a study by Souza et al.[13] carried out in Uberlândia (Minas Gerais) also agree with those of the present study. This study evaluated a group of institutionalized elderly individuals and found the majority were malnourished or at nutritional risk, with rates of 26.2 % and 41.6%, respectively.

Diverging from the present study, a survey by Saka et al.[14] conducted in Turkey with elderly residents of institutions showed that only 18.7% of the subjects were malnourished, 24.8% were at risk of malnutrition and 56.5% were well-nourished. Furthermore, a study by Serrano-Urrea and García-Meseguer[15] in Spain showed that 2.8% of the residents were malnourished, 37.3% were at risk of malnutrition and 59.9% had normal nutritional status. Cultural characteristics, public policies and the economic development of these countries can be decisive for a positive outcome in the process of human aging. However, although the majority of the elderly have a good nutritional status, the prevalence of malnutrition/malnutrition risk is notable.

No significant association was found with the sociodemographic variables, however, it was observed that elderly people living in private institutions, who were long-lived, female and white had a higher prevalence of risk of malnutrition. It has been observed in literature, however, that some demographic conditions predispose the individual to an increased chance of developing malnutrition.

Old age brings changes in body composition, with malnutrition rates increasing as age increases. Vandewoude and Van Gossum[12], in their research with community-aged and institutionalized adults, found that the risk of malnutrition was more frequent in the older age group (p<0.001). In addition, the frequency of this condition was higher among women (p<0.001). Stange et al.[16], when evaluating elderly residents of institutions, also observed that those at nutritional risk were more often women (p<0.05).

Diverging from the present study, Pereira et al.[2] in a survey of elderly residents of institutions found that nutritional risk was more prevalent among men (p=0.012). Another finding of this study is that individuals with low schooling had higher rates of nutritional risk (p=0.042).

In relation to cognitive decline, this condition directly interferes with mealtimes, as sufferers for the most part present difficulties and dependence in the act of feeding themselves. It was observed in the present study that of the population in this condition, 81.3% are at nutritional risk. The numbers show that elderly people with cognitive decline have a 1.4 times greater prevalence of nutritional risk. The adjusted analysis showed that this condition was significantly associated with a condition of malnutrition/risk of malnutrition.

Literature supports the fact that elderly people with neurological problems are more likely to develop malnutrition. De Rouvray et al.[17], in a study with elderly persons with and without dementia observed that patients with dementia were more malnourished than those without dementia (p<0.001) possibly due to low food intake and being isolated during meals.

Likewise, data from the study by Pereira et al.[2] with elderly people living in LTCF show that the prevalence of nutritional risk was higher among those with cognitive decline (p=0.006). Carlsson et al.[18] in a study with elderly individuals with physical and cognitive deficits, also noticed that

the condition of nutritional risk was higher among individuals with cognition problems (p=0.024). This condition was also higher among eating-dependent individuals (p= 0.014).

Vandewoude and Van Gossum[12] also found in their research with community dwelling and institutionalized individuals that the risk of malnutrition was significantly higher among those with neuropsychological problems, including dementia or depression (p<0.001). Furthermore, this condition was higher among elderly individuals with swallowing difficulties, mobility problems and social isolation (p<0.001).

Also directly related to the nutritional status of the elderly, unintentional weight loss is common in the institutionalized population, and may be related to low food intake, which the data show to be a common event. The present study shows that among those interviewed with this condition, 85.5% were at nutritional risk, and elderly people with unintentional weight loss had a 1.2 times higher prevalence of nutritional risk. After adjusted analysis, we identified that this condition also remained significantly associated with a condition of risk of malnutrition/malnutrition.

Corroborating the present study, Rambousková et al.[19], in a study of elderly residents of an LTCF, found that malnutrition was positively correlated with weight loss in the previous 3 months (r=0.45, p<0.001). There was also a positive correlation between MNA and BMI (r=0.57, p<0.001), immobility (r= 0.63, p<0.001), arm circumference (r=0.56, p<0.001), and calf circumference (r =0.28, p<0.001).

As the data above support, the rates of institutionalized elderly at nutritional risk are high. The living conditions of these elderly people, including eating conditions and the presence of diseases, are closely related to the nutritional outcome. A consequence of a compromised nutritional status is a reduction in quality of life and a higher probability of mortality. Studies confirm this hypothesis by associating MNA scores with mortality, where a significant association was observed, that is, nutritional risk contributed to higher mortality (malnutrition: 28.0%, nutritional risk: 20.0%, normal: 10.6 %, p<0.001). The importance of nutritional assessment with early detection of nutritional deficit among this population is therefore emphasized.

The results found in the present study are determinant for the remodeling of the nutritional care of institutionalized elderly persons and are in agreement with literature. However, interpretations should be made with caution, as this is a cross-sectional study, with the possibility of reverse causality and memory bias as the variables investigated occurred in the past.

CONCLUSION

The majority of the elderly persons were at risk of malnutrition and malnutrition (74.7%), and the highest prevalence rate was among those with cognitive decline and unintentional weight loss. From these results it can be seen that identifying nutritional status and the characteristics associated with the risk of malnutrition contribute to the understanding of this phenomenon and the proper nutritional assessment and monitoring with early detection of individuals at risk of malnutrition, and the treatment of those who are already malnourished. Such measures can mean the prevention of diseases related to this condition and improvement in quality of life.

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Agreement among methods for study estimation of elderly height at the nutrition ambulatory

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Abstract

Objective: to evaluate methods of elderly height estimation attended at the Nutrition ambulatory. *Method*: a total of 43 elderly individuals of both genders were evaluated during nutrition consultations. Sociodemographic data were collected from charts and height, knee height, arms wingspan and semi-span were measured. Statistical analysis were made through Bland-Altman test to evaluate concordance among statures estimated by predictive formulas and the height measured. *Results*: the values found were: height measured in meters 1.53 (±0.08), height estimated by the wingspan 1.60 (±0.10), by the semi-span 1.61 (±0.11) and by the knee height 1.56 (±0.10). According to the Bland-Altman graph, the height estimated by knee height showed a better agreement with the measured height. *Conclusion*: according to this study results, poor predictive formulas concordance in height estimation in elderly, using the measures: arms wingspan and semi-span with real stature measured were observed. Knee height, using Chumlea formula, presented the best concordance with measured stature and seems to be a good way for stature estimation at the studied population.

Keywords: Health of the Elderly. Nutrition Assessment. Body Height.

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INTRODUCTION

The physiological changes caused by time have an impact on elders nutritional and health status[1]. There is a decrease in body water, causing changes in skin elasticity and a change in body composition due to a decrease in the basal metabolic rate, resulting in an increase in body fat mainly in the abdominal region, among other alterations[2]. In addition, depletion of skeletal muscle tissue associated with decreased strength and functionality characterizes sarcopenia in the elderly[3].

Changes in elders nutritional status are also associated with sensory modifications, such as altered taste and reduced sensitivity, one of the most relevant factors in food consumption reduction in the elderly. The use of medications may also interfere with certain foods ingestion, digestion and absorption[4].

Thus, it is important to use nutritional assessment tools considering elders physiological changes. Nutritional status evaluation encompasses several methods and techniques, as anthropometric measures, specially body weight and height. Both measures are indispensable for establishing nutritional diagnosis and calculating nutritional needs[5,6].

In the elderly population, it is common to find individuals who are unable to stand, making it difficult to measure their height and weight. Another important factor is the evidence of decreasing individuals stature after 40 years of age, decreasing from one to two and a half centimeters per decade. This reduction in height is due to changes in spine during aging process[7].

In these cases, there are several methods to estimate weight and height, among them, predictive formulas, using measures such as: knee height (KH), wingspan and semi-span to estimate stature[8]. Weight can be estimated, through estimated height and Body Mass Index (BMI), using the reference range of the World Health Organization (WHO), among other methods[9].

These formulas are routinely used in clinical practice for anthropometric evaluation and nutritional needs calculation, however, the accuracy and precision of these are little known for Brazilian elderly[10]. Therefore, the study aims to evaluate the agreement between the methods of height estimates and the measured height of elderly patients attended in a outpatient clinic.

METHOD

A cross-sectional observational study was carried out, comprising 43 elderly patients, aged ≥60 years, attended at the Nutrition Outpatient Clinic located at the Reference Center for Health Care of Elderly (CRASI / Mequinho), Universidade Federal Fluminense (UFF).

To determine the sample size, the procedure based on the operating characteristic curves was used. This procedure limits the error to be made when not rejecting H0 (Type II error), based on the relation between the deviation of the analyzed variable according to its standard deviation. A 20% probability was defined for the occurrence of Type II error (β risk). It was also defined the deviation "D" between variables analyzed in the study and its variability would be at most 45%, where:

$$D=\frac{(X-\mu 0)}{\delta}$$

With these values, the characteristic curve for bilateral tests with $\alpha = 5\%$, the value of $N = 40$ was withdrawn, with N being the minimum number of patients needed to enter the survey[11].

CRASI serves elderly people living in the cities of Niterói, Itaboraí, Maricá, Rio Bonito, São Gonçalo, Silva Jardim and Tanguá. It offers outpatient geriatric, nutrition and psychology services, as well as groups of coexistence with cognitive stimulation and physical exercise practice.

Patients are referred to the nutrition outpatient clinic by the geriatrician or by a professional in the cohabitation group. During consultation, sociodemographic data are collected and a nutritional assessment is done through clinical anamnesis and anthropometric measurements, as a part of the ambulatory care protocol. These measures are done by two nutritionists trained to perform anthropometry.

Individuals arriving at the outpatient clinic for nutritional consultation underwent evaluations according to the outpatient protocol. At the end

of the consultation, they were informed about the study proposal and invited to attend. Individuals who accepted, signed the Term of Free and Informed Consent (TCLE).

The following inclusion criteria were used: elderly patients, age ≥ 60 years, of both genders, with decision autonomy and who were able to perform all anthropometric measurements. As exclusion criterion: patients who presented with some clinical condition interfering in anthropometric measures determination, such as patients not able to stand, with amputations, edema or ascite.

The following anthropometric measures were evaluated: height, KH, wingspan and semi-span. Height was measured as described by Guedes and Guedes[12].

To measure KH, flexible and non-elastic metric tape was used with the patient sitting, bending the knee to form a 90º angle. The tape was positioned from the base of the heel to the head of the fibula. To estimate height, the Chumlea formula[13,14] was used, and the protocol described by Rosa et al.[8] was used to measure the wingspan and semi-span.

The graph proposed by Bland-Altman was used, with the measures estimated and measured, to analyze agreement between them[15]. The limits of agreement are estimated by the mean difference (± 1.96), assuming that the differences are normally distributed[16]. Also, the Pearson correlation coefficient was determined between variables. Statistical analyzes were performed through statistical program.

The data that were collected in this study are already part of the consultation protocol of the Nutrition Outpatient Clinic (CRASI-UFF). The project was submitted to the ethics committee of the Universidade Federal Fluminense and approved under the number of opinion 1.836.802.

RESULTS

The study included 43 patients, 88.37% female, mean age was 74 years (± 7.1), 55.8% of the participants lived in the city of Niterói and 31.53% in other municipalities (Table 1).

Mean height measured in meters was 1.53 (± 0.08), for height estimated by the wingspan 1.60 (± 0.10), for the semi-span 1.61 (± 0.11) and for the knee height 1.56 (± 0.10).

According to Pearson's correlation, the stature measured and those estimated by the wingspan ($r = 0.89$, $p < 0.0001$), semi-span ($r = 0.86$, $p < 0.0001$) and knee height ($r = 0.69$, $p < 0.0001$) presented a strong positive correlation (Figure 1).

In Figure 2, the Bland-Altman graphs are presented. This graph shows good agreement only when the points on the graph lie close to the horizontal solid line, with 95% concordance limits represented by horizontal dotted lines. It was observed the stature measured and the estimated with wingspan, as well as with the semi-span did not present good agreement. The measured height and the knee height showed good agreement.

Table 1. Sociodemographic characteristics of patients attended at the Nutrition outpatient clinic of the Center for Reference and Health Care of the Elderly (N = 43). Niterói, RJ, 2016.

Variables	n (%)
Sex	
Female	38 (88.37)
Male	5 (11.63)
Age (years)	
74.51 (±7.09)	43 (100)
Country	
Niterói	24 (55.81)
São Gonçalo	17 (39.53)
Itaboraí	1 (2.32)
Rio Bonito	1 (2.32)

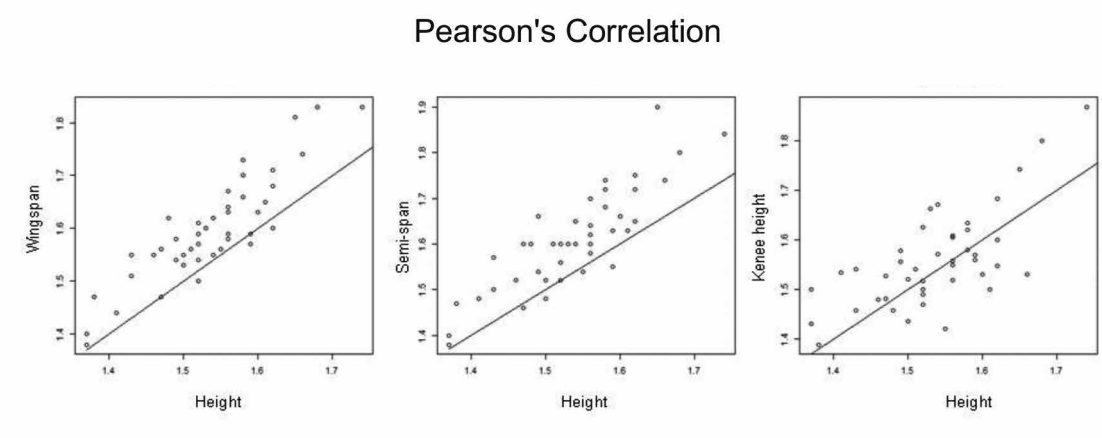

Figure 1. Measured stature and span, measured and semi-span stature, measured stature and knee height. Niterói, RJ, 2016.

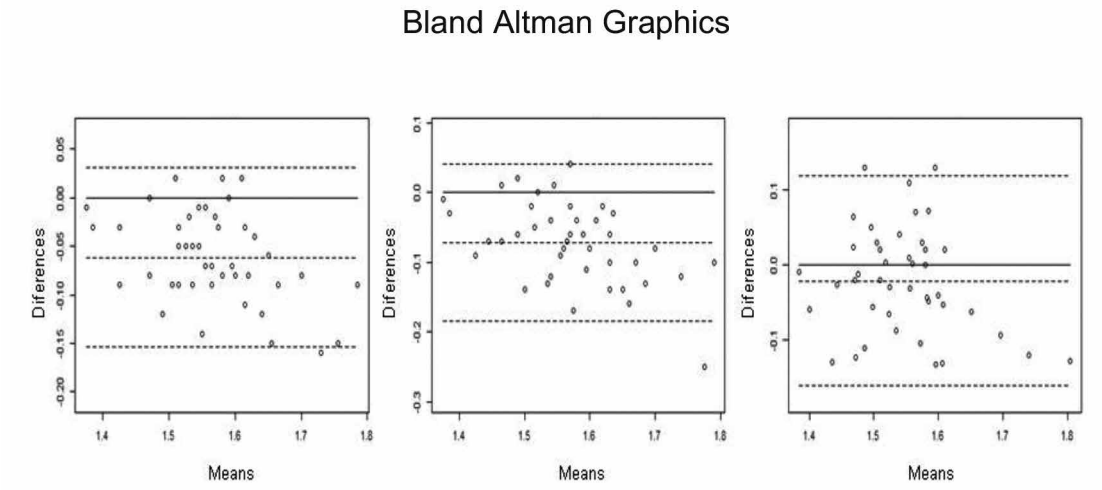

Figure 2. Analysis of concordance between measured stature and span, stature measured and semi-span, stature measured and knee height. Niterói, RJ, 2016.

DISCUSSION

The present study evaluated elderly attending CRASI/UFF nutrition clinic. The higher proportion of women has already been described in other studies and can be explained by differences in mortality between the sexes, where men tend to die earlier, since women have less exposure to risk factors, such as smoking and alcoholism, and seek more the health services, with a higher life expectancy[17, 18].

Regarding the methods of height estimating in elderly, after the statistical tests were applied, the results did not show good agreement in the measured stature and the estimated with arm span, where a variation of approximately 10 cm was found, being relevant in clinical practice, because if the predictive formula overestimates height, it would impact on estimated weight and, following errors on nutritional needs calculations[19]. Analyzing the measured height and the estimated semi-span of the arms, it was also observed an overestimation on height, but with a smaller variation when compared to the wingspan, approximately two centimeters.

One study found data corroborating the present study. The authors evaluated predictive formulas applicability for weight and height in 98 adult men.

The results also showed the measures of wingspan and semi-span overestimating individuals stature [20].

Melo et al.[6], when evaluating estimated height in a sample of 142 adults of both sexes, using the Means Comparison Test, observed a significant difference between measured stature and estimated height by semi-span. However, these tests do not seem to be the most adequate in this type of evaluation[14].

In a study of 30 adult and elderly patients hospitalized at the Intensive Care Unit at a University Hospital in Rio de Janeiro, authors evaluated the concordance between recumbent stature and the estimated through Chumlea formula, the semi-span and the patient or family report. Semi-span presented lower concordance when compared to other measures, suggesting in clinical practice, semi-span would not be a good option[20].

When assessing measured height and knee height using Chumlea formula, good agreement was observed, with the lowest height variation, approximately one centimeter.

In the study by Souza et al.[10], measured height and the Chumlea formula were also evaluated, in a sample of 131 elderly people. The results showed a variation between measurements of approximately two centimeters, probably not clinically relevant when one considers the subsequent calculations (weight estimation and nutritional needs).

Melo et al.[6] evaluated methods to estimate height, among them, Chumlea formula, with a sample composed of 142 adults of both sexes. This formula was the only one not presenting significant difference with the measured stature. The authors suggest this formula as a measure of easy application in clinical practice.

Santos[21] also, when comparing methods of height estimation, observed Chumlea formula as the best option in relation to the estimated by semi-span, as observed in the present study, where knee height using the Chumlea formula was the best alternative for estimating stature in elderly individuals.

In this study, it was not possible to evaluate all the elderly patients attending the nutrition clinic, and for this reason, the sample size consisted of only 43 elderly individuals, the majority female, not allowing the adequacy assessment of the use of predictive formulas for elderly men and elderly women.

CONCLUSION

According to the results presented in this study, it was not observed good agreement of the predictive formulas for estimation of height in the elderly, using wingspan and semi-span, with the measured stature. Knee height, using Chumlea formula, presented the best concordance with the measured stature and seems to be a good way for stature estimation of the studied population.

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Analysis of the sexual behavior of elderly women treated at a gynecological outpatient clinic

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Abstract

Objective: to analyze the sexual behavior of the elderly women treated at the gynecological outpatient clinic over a period of one year, estimating the proportion of sexually active women, those with an interest in sex, and those who considered the activity of sex important for quality of life, among other findings. *Method*: a cross-sectional, descriptive, and exploratory study was performed. A pilot study was carried out in order to adjust and validate the data collection instrument. A convenience sample of 100 women was considered for the evaluation of socio-demographic characteristics and sexual behavior, including questions relating to sexual practice and interfering factors. The data were analyzed using frequencies and percentages, and the associations were verified by Pearson's Chi-squared test, considering a significance of 5%. *Results*: it was observed that 60.0% of the elderly women felt sexual desire, although 26.0% were sexually active. While 75.5% reported that aging does not improve the quality of sex, 83.0% believed that it is important for quality of life and 78.0% affirmed that there is no age limit for sexual activity. The cultural view of the elderly may interfere with the maintenance of a sexual life, since 51.0% reported feeling sexual prejudice due to their age. *Conclusion*: sexuality is directly related to the perception of quality of life and as it is a vital human function, can interfere in the social, professional, physical and psychic performance of the individual. The practice of and the desire for sex are not extinguished with aging, which contradicts the myth that the elderly person is an asexual being.

Keywords: Sexuality. Elderly. Aging.

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INTRODUCTION

The global population has undergone an increase in life expectancy. A number of health issues have therefore emerged, including the need to maintain quality of life, which encompasses the perception of sexuality as a fundamental element, as it involves physical, psychological and social domains[1]. This subject, however, is still seen as taboo[2,3].

The elderly suffer numerous cultural repressions and prejudices, but the issue is even more pronounced when dealing with sexuality[4,5]. While society designates elderly persons as incapable of exercising their sexuality, sexual desire remains present in all phases of life[6,7]. Although the aging process involves physical, biochemical and functional changes that may influence the reduction of sexual activity, many elderly persons maintain a notable interest in sex with advancing age, refuting social prejudice[8]. It should be remembered that there are several ways of exercising sexuality, such as touch, hugging or caressing[7]. The range of possible interactions accept that the need to attract another person may be more related to the need to live together than the sexual act[8]. Thus, the elderly can exercise their sexuality for longer and with greater satisfaction, strengthening their self-esteem, confidence and improving their quality of life.

A gynecological consultation deals with intimate matters and regions, involving modesty. Doctors could take advantage of this opportunity to approach subjects related to sexuality, the psychosocial environment of the elderly woman and possible diagnoses of changes that hinder the sexual act. The present study can contribute to spreading knowledge about the need for such an approach due to the sexual perception of these patients[9]. It should be emphasized that sexuality is not restricted to an isolated action of the genitals, but constitutes a biopsychosocial process, making it necessary to understand patients in their totality and complexity in order to better address and aid their well-being[10,11].

The objective of the present study was to evaluate the sexual behavior of elderly patients receiving care at a gynecology outpatient clinic, identifying factors that interfere with sexual satisfaction and practice, estimating, among other findings, the proportion of sexually active individuals, those with an interest in sex and those who consider sex important for quality of life.

METHOD

A cross-sectional, descriptive and exploratory study of a quantitative nature was carried out between May 2017 and April 2018, approved by the Plataforma Brasil (Brazil Platform) under No. 2142370. The study participants were informed about the research and signed a free and informed consent form (FICF) as a guarantee of the confidentiality and privacy of the responses.

The sample calculation was performed in G*Power to verify the association between the presence of desire and the perception of sex, considering a 95% confidence level, a power of 85%, an effect size of 0.3 and one degree of freedom. The sample size was 100 patients. The sample was selected without distinction of race and socioeconomic status, considering as inclusion criteria female patients, aged 60 years or older, who spontaneously sought the general gynecology outpatient clinic of the Hospital Santa Casa de Misericórdia in Vitória, Espírito Santo. Patients treated for neoplasia, neuropsychiatric disorders and bedridden elderly women were excluded.

A questionnaire, based on a review of literature, was used as a data collection instrument, composed of structured questions about sexual activity, presence of sexual desire and interest, comorbidities and the perception of quality of life in relation to sex[7]. For the validation and identification of possible confounding factors or poor understanding, a pilot study was performed with 20 patients, the data of which were disregarded in the final study. The data collection instrument was also evaluated and assessed by five gynecologists, in order to verify the relevance of the items for the evaluation of sexual behavior. The final version of the validated, unpublished instrument was applied in a private setting, a doctor's surgery, guided by a single attending gynecologist, who was one of the researchers involved in the study.

The data were initially analyzed by descriptive statistics such as frequencies and percentages. Associations between the categorical variables were verified using the Pearson chi-squared test, considering a level of significance of 5%.

RESULTS AND DISCUSSION

A prevalence of married women with complete primary education, who were catholic and suffered from comorbidities, was identified (Table 1).

Table 1. Sociodemographic characteristics of patients (N=100). Vitória, Espirito Santo, 2018.

Characteristics	N	%
Marital status		
Married	36	36.0
Widow	31	31.0
Divorced	19	19.0
Single	13	13.0
Others	1	1.0
Education		
Illiterate	14	14.0
Elementary School	69	69.0
High school	14	14.0
University	3	3.0
Religion		
Catholic	51	51.0
Evangelical	46	46.0
Others	2	2.0
Atheist	1	1.0
Comorbidities		
Yes	78	78.0
No	22	22.0

Most of the patients studied were sexually inactive (74.0%), while 40.5% said they would like to change this situation, demonstrating that sexual interest is preserved with age. Of the 26 patients who had sex, 61.5% said they were satisfied with the quality of their relationships, demonstrating that this can be an important factor in the life of the patients[9]. In contrast to what was imagined, in view of taboos about the sexuality of elderly women, it was observed that 60.0% of the elderly women felt sexual desire (Table 2).

While 75.5% said that advancing age does not improve the quality of sex, the results of this study revealed that sexuality is a fundamental element for a good quality of life in old age, with 83.0% of patients corroborating this hypothesis, In addition, 78.0% believed that there is no age limit by which sexual relations should end, contrary to the view that sexuality is incompatible with the advancing age[7].

Of the interviewees, 78.0% suffered from comorbidities and 64.4% reported that their partners had a factor that limits sexual activity, such as a lack of desire, physical limitation and sexual impotence. Physiologically or as a result of diseases and the use of medication, it is expected that there will be an overall reduction in sexual practice when compared to non-elderly patients[12], but the increase in life expectancy and medical contributions have facilitated the multidisciplinary treatment of comorbidities, dysfunctions and changes that hinder sexual practice[11].

It was observed that due to these difficulties the elderly approach sexuality through different forms of penetration, obtaining satisfaction through other actions. Although 58.0% of the patients affirmed that sexual intercourse depends on penetration, other forms of sexuality were also considered, such as autoeroticism (24.0%) and touching and kissing (41.0%), often allowing an active sexual life to be maintained irrespective of physical limitations or comorbidities[7]. Additionally, the presence of a romantic partner may be associated with increased sexual activity[13]. Sexuality goes beyond sex, companionship in this phase of life reveals important facets such as the existence of feelings, love, respect and complicity[9].

In order to understand sexuality among the elderly it is necessary to consider several factors, such as culture, education and the social environment in which it is inserted[7]. Some of these factors, which influence the maintenance or fullness of sexual life, were reported, such as body changes (37.1%), lack of privacy (11.3%), feelings of guilt (7.2%), anxiety 2%), and especially the cultural view of the elderly, as 51.0% affirmed that they feel they are victims of sexual prejudice due to age, and because they feel less valued.

Even though 63.0% said they are not ashamed of talking about sex and 81.0% believed that medicine can help improve their sexual relationships, only 25.0% talked about the subject with their doctor. Patients experience great difficulty when approaching the subject[14,15], a fact that should serve as an incentive for improvements in the physician-patient relationship during consultations, a better medical approach and consequent better care for the reported problems.

There was an association between the presence of desire and some factors of sexual perception (Table 3). It was observed that most patients continued to feel sexual desire. Of the sexually active, 80.8% still felt sexual desire, but unfortunately, due to a lack of knowledge and cultural pressure, many such elderly people also experience feelings of guilt or shame for simply perceiving themselves to have the desire to seek pleasure[16].

There was a greater proportion of women who believed that sex improves quality of life and who continued to feel sexual desire (68.7%). The results point out that sexuality is an important factor for a good quality of life in old age, making an understanding of how the elderly perceive and experience the same essential[16].

From this perspective, the potential effects of sexual experiences are also recognized. Of the patients who believed that they have had an orgasm, the majority still felt desire (70.7%) as well as those who believed the quality of sex improved with age (79.2%) and that there is no age limit for the end of sexual intercourse.

Table 2. Characteristics of sexual behaviour of patients (N = 100). Vitória, Espirito Santo, 2018.

Sexual Behavior		n	%
Do you still have sexual relations?	Yes	26	26.0
	No	74	74.0
If you answered no, would you like to have such relations?	No	44	59.5
	Yes	30	40.5
Are you satisfied with the quality of the sexual intercourse you have?	No	10	38.5
	Yes	16	61.5
Do you feel sexual desire?	No	40	40.0
	Yes	60	60.0
Are you ashamed to talk about sex?	No	63	63.0
	Yes	37	37.0
Do you think you have ever had an orgasm?	No	25	25.0
	Yes	75	75.0
Do you believe that sex is important for quality of life?	No	17	17.0
	Yes	83	83.0

to be continued

Continuation of Table 2

Sexual Behavior		n	%
Do you believe there is an age limit for the end of sexual relations?	No	78	78.0
	Yes	22	22.0
Do you believe that increasing age improves the quality of sex?	No	74	75.5
	Yes	24	24.5
Do you feel a victim of sexual prejudice due to age?	No	49	49.0
	Yes	51	51.0
Do you believe that medicine can help improve sex?	No	19	19.0
	Yes	81	81.0
Have you talked to your doctor about this?	No	75	75.0
	Yes	25	25.0
As you get older, how do you feel?	More valued	39	39.0
	Less valued	48	48.0
	Do not know	13	13.0
Factors that interfere with sexual practice	Body	36	37.1
	Anxiety	5	5.2
	Privacy	11	11.3
	Guilt	7	7.2
	None	22	22.7
	Others	36	37.1
Does your partner have any limitations with regard to sex?	Impotence	16	35.6
	Lack of desire	5	11.1
	Physical limitation	8	17.8
	No	16	35.6
Perception of sexual act	Masturbation	24	24.0
	Depends on penetration	58	58.0
	Doesn't depend on penetration (touching, kissing ...)	41	41.0

Table 3. Association between the presence of desire and sexual perception. Vitória, Espirito Santo, 2018.

Sexual perception	Presence of sexual desire				
	No		Yes		
	n	%	n	%	p
Do you still have sexual relations?	35	47.3	39	52.7	0.012
	5	19.2	21	80.8	
Do you think you have ever had an orgasm?	18	72.0	7	28.0	0.000
	22	29.3	53	70.7	
Do you believe there is an age limit for the end of sexual relations?	26	33.3	52	66.7	0.010
	14	63.6	8	36.4	
Do you believe that increasing age improves the quality of sex?	34	45.9	40	54.1	0.029
	5	20.8	19	79.2	
Do you believe that sex is important for quality of life ?	14	82.4	3	17.6	0.000
	26	31.3	57	68.7	

It is not intended that the results presented here will end this discussion. The data should not be generalized, as the results and conclusions of the present study may not be related to other populations due to the sample. This study presupposes the reality of the subject within the context of the health of the elderly and encourages the carrying out of further research and the validation of instruments that involve all aspects of the sexuality of the individual.

CONCLUSION

Sexuality is directly related to the perception of quality of life, which is a broad concept that contemplates not only the health situation of the elderly person, but also their image in terms of physical, psychological and social aspects. Sexual practice is not extinguished with aging, countering the myth that the elderly person is an asexual being.

Most of the patients studied were sexually inactive, but would like to change this situation, reflecting the permanence of sexual interest despite advancing age. However, factors that cause the overall reduction of sexual practice were identified, such as the presence of comorbidities, bodily changes, sexual impotence, and a distorted social view of sexuality, making the elderly feel ill at ease or even guilty when expressing their desires. Despite this, it was observed that the patients find other ways to obtain satisfaction and that cultural prejudice in relation to sex and age was not observed among the elderly themselves, the majority of whom said they believed that there is no age limit for the end of sexual practice.

Studies that explore and identify the factors involved and the difficulties encountered by these patients make a fundamental contribution to the integral care of the patient. Although this subject is considered of great importance to the lives of people of all ages, Brazilian studies on the theme are scarce. Greater knowledge of this subject is increasingly necessary, as a revolution has been taking place in the practice of sexuality, with an indisputable effect on the elderly.

Further studies on the subject are therefore important, improving the field of geriatrics/gerontology and facilitating the doctor-patient relationship, which is an opportune moment for the providing of quality information and, if necessary, the treatment of specific dysfunctions. Psychosocial support and the planning of public health actions are also important to ensure greater discussion of the topic and the demystification of the sexuality of the elderly, bestowing the subject with a naturalness which will have repercussions on the well-being and quality of life of the patient.

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Dietary patterns of elderly persons from the city of São Paulo: evidence from the SABE (Health, Wellbeing and Aging) survey

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Abstract

Objective: to determine the dietary patterns of elderly persons in terms of sociodemographic, lifestyle and clinical aspects. *Method*: a cross-sectional study was conducted using the cohorts of the SABE (Health, Wellbeing and Aging) study. An epidemiological, home-based study representative of the city of São Paulo was carried out. The population of this study included 1,304 elderly persons (≥60 years), of both genders, selected by probabilistic stratified sampling, interviewed in 2010. Food intake data were obtained through a qualitative food frequency questionnaire. Dietary patterns were determined by exploratory factorial analysis by principal components. The Wald test was used for complex sampling. *Results*: four dietary patterns were identified: inadequate patterns, consisting of fried and canned food, sausages, sweets, tubers, industrialized sauces and eggs; modified pattern, skimmed milk, whole grain breads and cereals, light/diet/zero foods; beneficial pattern, fruits, vegetables and tubers; and traditional Brazilian pattern, vegetable oils, rice, refined cereals and white bread, meats and legumes (beans). The sociodemographic and lifestyle profile of the elderly persons who adopted each dietary pattern was different. *Conclusion*: healthier dietary patterns were associated with the female gender, older elderly persons, two or more chronic diseases, higher levels of schooling, a better lifestyle and a better self-perception of health. It is important to consider all these aspects as they are determinant in the type of diet adopted by this population.

Key words: Health of the Elderly. Diet. Factor Analysis, Statistical. Social Conditions. Life Style.

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INTRODUCTION

Nutritional epidemiology traditionally focuses on the relationship between the effect of nutrients or a specific food on health outcomes[1-3]. However, this type of analysis has be considered limited, as the human diet is complex and involves different components (chemicals, the combination of foods, soil characteristics, water, the use of pharmaceuticals, among others) which can alter the bioavailability of a determined nutrient. As a result, many researchers have instead studied dietary patterns, based on the view that food items are not ingested in the diet in isolation[4,5] .

According to the Dietary Guidelines for Americans, a pattern of food consumption is defined as "the description of the types and quantities of food and beverages consumed, on average, over time". In other words, the description may be of an eating habit or a combination of foods recommended for consumption[6]. Dietary patterns express real food availability situations and involve selections, choices, occasions and rituals, and can vary according to age or ethnic group, socioeconomic status and culture[3,7]. Food choices do not only involve the most nutritious or accessible foods or those offered by the market, but are also affected by culture, which defines dietary permissions or prohibitions and plays a fundamental role in the formation and maintenance of dietary habits[8].

The typical Brazilian diet is currently undergoing a process of transformation, especially among younger age groups, although these changes also impact the elderly[9,10]. Freitas et al.[10] found that there was a decline in the purchasing of basic traditional foods, such as rice, beans and vegetables, and significant increases (up to 400%) in the purchase of processed foods such as biscuits, cookies, processed meats and ready meals, in the dietary patterns of the Brazilian elderly. This may be a reflection of the changes reported in studies that analyzed food purchasing by Brazilian families from the 1970s to the mid-2000s.

Souza et al.[11] analyzed the food record data of a sub-sample of 25% of Brazilian households comprising the original sample of the Family Budget Survey 2008-2009, representing a total of 34,003 individuals, aged over ten years, including the elderly. The most consumed food in the Brazilian population was rice (84.0%), coffee (79.0%), beans (72.8%), bread rolls (63.0%) and beef (48.7%). Age stratification revealed that coffee was the most consumed food item among the elderly, while elderly persons were the only individuals with more fruits and vegetables among their most frequently consumed foods (bananas and oranges; salad and lettuce).

Healthy dietary patterns characterized by increased intakes of fruits and vegetables have been linked to lower risks of cancer, diabetes, cardiovascular disease and Alzheimer's disease, while Western dietary patterns (sugar, fat, processed foods and refined grains) may have the opposite effect. Studies have indicated that dietary patterns can be influenced not only by age, but also by gender, socioeconomic status, marital status, household arrangement, lifestyle and clinical conditions such as disease and mastigation[12-15].

It has been suggested in literature that factor analysis can be used to determine dietary patterns, as this technique examines the overall diet as well as the interactive effects of foods and their nutrients, and does not focus solely on a specific food or nutrient. This type of approach can improve our understanding of current dietary practices, provide a means of evaluating the health outcomes of people who adhere to a particular pattern, and produce more directly applicable results, as recommendations for population groups based on foods are easier to understand than guidelines based on nutrients[4,16].

While it seems obvious that less suitable dietary patterns may be negatively associated with health, this relationship can still be better understood among the elderly, as an inadequate diet at this age seems to be related to fewer chronic diseases and complications. The follow-up monitoring of elderly persons is therefore required to identify the determinants and timing of dietary changes. The present study aimed to identify the dietary patterns of the elderly population of the city of São Paulo through a survey of participants of the SABE (Health, Welfare and Aging) cohort study of elderly persons, and to verify the association with sociodemographic, lifestyle and clinical variables.

METHOD

Study design

A cross-sectional study of elderly persons from three cohorts of the SABE study, Brazil was carried out.

The SABE study aimed to identify the life and health conditions of elderly persons (≥60 years) in Latin America and the Caribbean. The Pan American Health Organization (PAHO) coordinated a multicenter, epidemiological, home-based study from 2000 to 2001 in seven countries: Argentina (Buenos Aires); Barbados (Bridgetown); Brasil (São Paulo); Chile (Santiago); Cuba (Havana); Mexico (Mexico City) and Uruguay (Montevideo)[17].

In Brazil, the study was conducted in the city of São Paulo in the state of the same name, and was coordinated by the Faculdade de Saúde Pública (FSP) of the Universidade de São Paulo (USP), supported by PAHO and funded by the São Paulo State Research Support Foundation (FAPESP) and the Ministry of Health[17].

All the procedures of the sampling process (elderly and domicile-based), data collection, and elaboration of the database have been previously published[17,18]. The questionnaire used for the study was that proposed by PAHO, translated and adapted for use in Brazil.

The procedures for data collection and the questionnaire used to record the data were the same in the three cohorts considered in this study. Elderly survivors from 2000 and 2006 were interviewed in 2010, excluding those who had died, moved, could not be located, were hospitalized/institutionalized or refused to participate.

Study population

The population of the present study was composed of 1,304 individuals obtained by combining the data of elderly persons (≥60 years) of both genders who participated in the SABE Study in 2010, belonging to three cohorts: **cohort A** - started in 2000, with elderly persons ≥60 years (n=738); **cohort B** - started in 2006, with 60-64 year olds (n=239); and **cohort C** - started in 2010, with elderly individuals aged 60 to 64 years (n=327).

All the individuals interviewed in 2010 with complete study variable data were included, while individuals who did not know or did not answer some of the questions were excluded from the analysis.

Study variables

The study variables were subdivided into:

- *Food intake*

The usual diet of the individuals was investigated through a qualitative food frequency questionnaire (FFQ) validated by a committee of experts in the area of diet and aging and which considered usual intake during the previous month. It was composed of 107 foods, subdivided into 18 food groups as shown in chart 1.

Chart 1. List of foods belonging to each food group of the food frequency questionnaire used in the SABE Study. City of São Paulo, 2010.

Food Group	Foods
Fruits	banana, orange, apple, papaya, watermelon, grape.
Vegetables and legumes	zucchini, carrot, *chayote*, cucumber, tomato, lettuce, watercress, kale, cabbage, arugula.
Nonfat dairy products	skimmed or semi-skimmed milk, nonfat yogurt, white cheeses and light cheeses.
Whole Dairy Products	whole milk, whole yogurt, mozzarella and *prato* cheese.
Meat	beef, chicken, fish or pork.
eggs	chicken and quails eggs.
Legumes	beans (white, black, *carioca*), lentils, chickpeas, dried peas and soybeans.
Sausages	sausages, salami, mortadella, ham, turkey breast, *blanquet*.
Rice, bread and refined pasta	bread, white rice, pasta, cake, oatmeal, cookies without filling, cornmeal, corn flour and cassava flour.
Whole grains and breads	bread, rice, cake, pasta, biscuits.
Tubers	potatoes, yams, manioc, cassava, sweet potatoes.
Sweets	boiled sweets, candies, lollipops, chocolate, filled wafers, jam, pudding, mousse, ice cream, milk pudding, pumpkin pudding, coconut, cane juice and non-diet soda.
Light, diet or zero foods	soft drinks, juices, gelatin, candies and chocolates.
Vegetable oils and derivatives	Soybean oil, corn oil, sunflower oil, canola oil, olive oil, margarine and mayonnaise.
Animal fat	butter, full cream, butterfat, lard and pork belly.
Fried food	*pastels*, French fries, chicken patties, kibbes and rissoles.
Canned	peas, corn, olive, pasta or tomato sauce.
Processed seasonings or sauces	sauces for salads, stock in tablets or powder, processed soup, instant noodles and packaged snacks.

Possible responses for frequencies of intake were: 1. does not eat or eats from time to time; 2. eats once a week; 3. eats two to three times a week, 4. eats four to six times a week; 5. eats once a day; 6. eats two to three times a day; 7. does not know; 8. did not respond. Individuals who did not know or did not respond to the FFQ were excluded from this analysis.

- Sociodemographic:

Gender (male and female); age group (60 to 74 years and ≥75 years in 2010). Schooling, classified into years of study (illiterate, one to four years, five to eight years, > eight years). Lives alone or with others (alone, with others). Marital status (married, widowed and unmarried – single or divorced). Currently working (yes, no). Considers income sufficient for household expenses (yes, no).

- Lifestyle

Alcohol consumption, obtained by the answer to the following question: "in the last three months, on average, how many days a week did you drink alcohol?" This was categorized as never or between one and seven days (no, yes). Smoking (currently smokes, has smoked or never smoked). Level of physical activity, identified by the International Physical Activity Questionnaire (IPAQ), short version, classified as active (individuals who performed ≥150 minutes of moderate physical activity per week in different domains (leisure, transportation, work and household

chores)), and non-active (individuals who performed <150 minutes per week in different domains (leisure, transportation, work and household chores).

- *Clinical data*

Difficulty chewing hard foods like meat or apples in the last 12 months, categorized as frequently (three to seven times a week), sometimes (once or twice a week), and never (never occurs). Self-perception of health, categorized as good (good and excellent), fair, and poor (poor and very poor); and non-communicable chronic diseases (CNCD) - self-reports of the following diseases: systemic arterial hypertension, diabetes mellitus, cancer, chronic lung disease, heart disease, strokes, osteoarticular disease and osteoporosis, categorized as zero, one, two or more CNCD.

Statistical analysis

The study variables were presented as means of absolute and relative frequency. The latter was weighted by the sample weight of the census sector to which the individual belonged, based on the 2010 census.

Dietary patterns were obtained by exploratory factor analysis by major component. The adequacy of the sample was verified by the Kaiser-Meyer-Olklin Test (KMO). Additionally, the adequacy of the applicability of factor analysis was evaluated by Bartlett's Sphericity Test. In order to identify the number of factors (patterns) to be retained, the Kaiser latent root was used as the initial criterion, according to which eigenvalues greater than 1.0 would be extracted. Analysis by Cattell Graph (scree test) was subsequently performed.

Varimax orthogonal rotation was performed and the groups of foods with rotated factor loads greater than 0.30 were considered significant. Scores were derived from each of the patterns obtained; the mean score of each pattern was calculated and analyzed according to the independent variables. The differences between the means of scores were estimated using the Wald Generalized Test of Equality between Means, and those with the highest positive means were considered adherent to the dietary pattern. Variables with $p<0.05$ were considered significant. The effect of the sample design was considered in all the analyzes. The STATA 13.1 statistical program was used for statistical calculations.

All the elderly participants signed a Free and Informed Consent Form. The present study was approved via the *Plataforma Brasil* (Brazil Platform), under number 128,945.

RESULTS

Of the 1,304 elderly persons evaluated, 60.2% were women, and 71.4% were aged between 60 and 74 years old, 51.0% had one to four years of schooling, and 13.1% were illiterate. Regarding living arrangements, the majority lived with another person or other persons (84.6%), were married (54.9%), did not currently work (67.5%) and considered their monthly income sufficient for all household expenses (56, 9%). In terms of the lifestyle variables studied, 67.5% were inactive, 51.6% had never smoked and 78.9% did not drink alcoholic beverages. Regarding mastication in the previous year, only 53.1% did not have difficulty chewing hard foods, while 49.6% reported having good or excellent health and 52.7% had two or more CNCDs (Table 1).

The present study found four dietary patterns through exploratory factor analysis, which together accounted for 38.5% of the total consumption variance (Table 2).

The first pattern to be extracted was entitled *inadequate*, as it consisted of foods such as fried foods, sausages, canned foods, sweets, seasonings and processed sauces, tubers and eggs. The second pattern found was described as *modified*, as it is comprised foods that are traditionally indicated for consumption in the dietary treatment of the main CNCDs that affect this population (skimmed milk, rice, bread, cereals and whole grains and light, diet or zero foods). The third pattern, which was composed mainly of *in natura* foods (vegetables, fruits, and tubers), was entitled *beneficial*, while the fourth pattern was characterized by foods that make up the typical Brazilian diet (vegetable oils, margarine, rice, bread, refined pastas, meats and legumes - beans) and so was denominated *traditional Brazilian* (Table 2).

Table 1. Characteristics of study population. SABE Study*. City of São Paulo, 2010.

Variables	n (%)
Gender	
Male	463 (39.8)
Female	841 (60.2)
Age	
60 to 74 years	783 (71.4)
≥ 75 years	521 (28.6)
Schooling	
Illiterate	200(13.1)
1 to 4 years	696 (51.0)
5 to 8 years	179 (15.3)
> 8 years	229 (20.6)
Living arrangements	
Lives alone	218 (15.4)
Lives with others	1.086 (84.6)
Marital status	
Married	644 (54.9)
Unmarried	163 (13.2)
Widowed	485 (31.9)
Current job	
Yes	360 (32.5)
No	938 (67.5)
Income sufficient for expenses	
Yes	728 (56.9)
No	547 (43.1)
Physical activity	
Active	421 (32.5)
Non-active	883 (67.5)
Smoking	
Never smoked	694 (51.6)
Has smoked	473 (36.6)
Current smoker	136 (11.8)
Consumes alcohol	
Yes	270 (21.1)
No	1.033 (78.9)
Difficulty chewing hard foods	
Never	645 (53.2)
Sometimes	298 (23.1)
Frequently	329 (23.7)
Difficulty eating alone	
Yes	51 (2.7)
No	1.253 (97.3)
Self-perception of health	
Good and excellent	584 (49.6)
Fair	566 (42.6)
Poor and very poor	108 (7.8)
Number of chronic diseases reported	
None	209 (16.3)
1	390 (31.0)
≥ 2	705 (52.7)

*Health, Well-being and Aging.

Table 2. Distribution of factor loads of components of food patterns, according to food groups, of elderly persons of the SABE Study, City of São Paulo, 2010.

Food groups	Dietary patterns			
	Inadequate	Modified	Beneficial	Traditional*
Light, diet or zero fat foods	0.113	0.499	0.105	-0.065
Rice, breads and whole grains	-0.029	0.585	0.229	-0.173
Rice, breads and refined pasta	0.031	-0.207	-0.009	**0.655**
Meat	-0.019	0.093	0.005	**0.576**
Sweets	**0.491**	-0.145	0.182	0.096
Sausages	**0.594**	-0.059	-0.007	0.140
Canned	**0.557**	0.115	0.023	0.102
Fried food	**0.644**	-0.052	-0.260	0.028
Fruits	-0.074	0.079	**0.741**	-0.028
Animal fats	0.259	-0.123	0.099	-0.117
Nonfat dairy products	0.007	**0.754**	0.173	0.060
Whole dairy Products	0.122	**-0.689**	0.186	0.032
Legumes	0.043	-0.089	0.015	**0.465**
Processed sauces/seasonings	**0.383**	0.069	-0.228	0.115
Vegetable oils	0.125	0.065	0.108	**0.681**
Eggs	**0.396**	-0.129	0.133	-0.155
Tubers and roots	**0.400**	-0.039	**0.445**	-0.155
Legumes and vegetables	-0.035	0.085	**0.742**	0.147
% Variance explained	12.1	10.3	8.4	7.7
% Accumulated	12.1	22.4	30.8	38.5
Eigenvalue	2.18	1.86	1.50	1.38

*Traditional Brazilian; bold: significant factor load; *Kaiser-Meyer-Olkin* test = 0.61.

Comparison between mean adherence to dietary pattern scores and sociodemographic, lifestyle and clinical variables showed that the *inadequate pattern* was related to male individuals, those with a higher education, who were not physically active, who consumed alcoholic beverages, who sometimes had difficulty chewing hard foods, who considered their health to be good and reported none or only one CNCD (p>0.05). The *modified pattern,* meanwhile, was statistically associated with the female gender, elderly persons with more years of schooling, who had or currently smoked and who had a greater number of CNCDs (Table 3).

Table 3. Distribution of mean food pattern scores according to sociodemographic, lifestyle and clinical variables. SABE study. Municipality of São Paulo, 2010.

Variables	Dietary Patterns			
	Inadequate	Modified	Beneficial	Traditional Brazilian
	Mean (SD*)	Mean (SD)	Mean (SD)	Mean (SD)
Gender				
Female	-0.05 (0.04)‡	0.13 (0.04)§	0.06 (0.04)§	-0.02 (0.04)‡
Male	0.09 (0.05)	-0.07 (0.05)	-0.14 (0.06)	0.10 (0.05)
Age				
60 to 74 years	-0.01 (0.04)	0.12 (0.04)§	-0.09 (0.04)§	0.10 (0.04)§
≥ 75 years	0.05 (0.07)	-0.12 (0.05)	0.15(0.04)	-0.16 (0.05)

to be continued

Continuation of Table 3

Variables	Dietary Patterns			
	Inadequate	Modified	Beneficial	Traditional Brazilian
	Mean (SD*)	Mean (SD)	Mean (SD)	Mean (SD)
Education				
Illiterate	-0.08 (0.08)§	-0.26 (0.07)§	-0.28 (0.08)§	0.04 (0.07)‡
1 to 4 years	-0.07 (0.04)§	-0.06 (0.04)§	-0.11 (0.04)§	0.12 (0.04)§
5-8 years	0.04 (0.08)	0.19 (0.08)‡	0.09 (0.08)	-0.05 (0.09)
> 8 years	0.22 (0.07)	0.41 (0.07)	0.28 (0.08)	-0.15 (0.07)
Living arrangements				
Alone	-0.11 (0.07)	0.10 (0.07)	-0.07 (0.08)	-0.20 (0.08)§
With other(s)	0.03 (0.03)	0.04 (0.03)	-0.01 (0.04)	0.07 (0.03)
Marital status				
Married	0.01 (0.04)	0.06 (0.04)	-0.06 (0.05)	0.09 (0.04)
Unmarried	-0.01 (0.08)	0.08 (0.08)	0.01 (0.09)	-0.07 (0.09)
Widower	0.02 (0.05)	0.02 (0.05)	0.06 (0.05)	-0.04 (0.05)‡
Currently working				
Yes	0.06 (0.06)	0.09 (0.06)	-0.09 (0.06)	0.07 (0.06)
No	-0.02 (0.03)	0.03 (0.04)	0.01 (0.04)	0.01 (0.03)
Sufficient current income				
Yes	0.05 (0.04)	0.09 (0.04)	0.09 (0.04)§	-0.12 (0.04)§
No	-0.04 (0.04)	-0.01 (0.04)	-0.18 (0.05)	0.24 (0.04)
Physical activity				
Active	-0.20 (0.05)§	0.03 (0.05)	0.07 (0.05)‡	-0.01 (0.05)
Inactive	0.10 (0.04)	0.06 (0.04)	-0.07 (0.04)	0.04 (0.04)
Smoking				
Never smoked	-0.04 (0.04)	0.10 (0.04)	0.12 (0.04)§	-0.03 (0.04)‡
Has smoked	0.03 (0.05)	0.05 (0.05)‡	-0.08 (0.06)§	0.10 (0.05)
Currently smokes	0.12 (0.09)	-0.15 (0.09)‡	-0.47 (0.11)§	0.05 (0.10)
Consumes alcohol				
Yes	0.27 (0.07)§	0.02 (0.03)	0.18 (0.06)§	-0.06 (0.06)
No	-0.07 (0.03)	0.16 (0.07)	-0.08 (0.04)	0.05 (0.03
Difficulty chewing				
Never	-0.06 (0.04)§	0.10 (0.04)	0.04 (0.04)	0.11 (0.04)§
Sometimes	0.27 (0.06)§	0.00 (0.06)	-0.09 (0.06)	-0.17 (0.05)§
Often	-0.12 (0.05)	0.02 (0.06)	-0.13 (0.06)‡	0.06 (0.06)
Self-perception of health				
Good and excellent	0.08 (0.05)‡	0.12 (0.05)	0.04 (0.05)	-0.01 (0.04)‡
Fair	-0.06 (0.04)	-0.00 (0.04)	-0.07 (0.05)‡	0.11 (0.04)‡
Poor and very poor	-0.07 (0.10)	0.06 (0.11)	-0.32 (0.11)§	-0.18 (0.11)
Number of CNCD **				
None	0.15 (0.07)	-0.23 (0.06)§	0.04 (0.07)	0.12 (0.06)
One	0.07 (0.06)‡	0.07 (0.06)	-0.01(0.06)	0.08 (0.05)
Two or more	-0.08 (0.04)§	0.12 (0.04)§	-0.05 (0.04)	-0.03 (0.04)‡

*Standard error; **Chronic non-communicable diseases; ‡Wald Test $p<0.05$; §Wald Test $p<0.01$.

The *beneficial pattern* had greater adherence among women, elderly persons aged over 75 years, with a higher educational level, who considered their current income sufficient for the expenses of the household, who were physically active, never smoked and who consumed alcoholic beverages, besides not presenting difficulties of chewing hard foods that considered their health as good and very good (p> 0.05) (Table 3).

The profile of the adherents to the traditional Brazilian pattern was composed of male subjects, 60 to 74 years of age, with less years of study, who were accompanied and were married, that the income was not enough for the expenses, they smoked, however did not present difficulties to chew hard foods, did not report CNCDs and considered their health as regular (p> 0.05) (Table 3).

DISCUSSION

In this study four food patterns were identified among the elderly of the SABE Study, in the city of São Paulo, Brazil. Distinct sociodemographic, lifestyle and clinical variables were associated with the eating patterns of this study, showing that these are frequently the determinants of dietary choices and intake in this stage of life.

The patterns were identified by the use of factorial analysis. This type of analysis integrates multivariate statistical methods, which use information reported in food frequency questionnaires or food records to identify common patterns of food intake. Factor analysis is considered a *posteriori* approach as dietary patterns are derived through statistical modeling of existing dietary data. They generate patterns based on the available data, without any *a priori* hypothesis, and therefore do not necessarily represent optimal or acceptable patterns according to literature, but reflect the reality of the intake of the individuals studied[19,20].

Four food patterns were identified and accounted for 38.5% of variability. This proportion, despite being considered below that recommended by Hair et al.[21] (who suggest 60% as a recommended figure) is acceptable, as studies with food data generally present a large number of groups and/or foods, reducing the possibility of a high explanation of variability in factor composition. Literature describes variable proportions depending on the size of the sample. Ferreira et al.[22], for example, studied 355 elderly persons from Botucatu, and using similar pattern identification methods to the present study, obtained a 25.9% explanation of variability, with six patterns extracted.

Dietary pattern analysis can improve understanding of current dietary practices, offer a way of evaluating the health outcomes of people who adopt a particular pattern, and produce results that may be more directly applicable, as food-based recommendations for populations are easier to understand than those based on nutrients[23].

As dietary standards are culturally determined, national studies are best suited for comparison purposes. International literature, however, contains much discussion of less healthy patterns known as "western or modern" and healthier patterns known as "prudent or Mediterranean-style", often influencing Brazilian literature to use these terms for patterns with similar foods. In the present study the nomenclature of the patterns was based on their effect on health and the composition of the foods that characterized them. Souza et al.[5] in a representative sample of elderly people from Viçosa (N=402) also identified four patterns, one characterized by the presence of unhealthy foods (fat and sugar pattern) and others characterized by the presence of fruits, leafy vegetables and fish, all associated with socioeconomic variables, showing that those with lower schooling adhere more to less healthy patterns.

In general, studies show that women have a better diet than men, both among adults and among the elderly[24,25]. Baker and Wardle[24] studied 1,054 elderly persons and found that women ingest significantly more fruit and vegetables than men, with a total of 3.5 servings per day for women compared to 2.5 servings for men. Only 16% of men compared to 34% of women consumed the five recommended servings of fruits and vegetables per day. The core of this gender difference may be knowledge, as men have less information about up-to-date dietary recommendations and are less aware of the interrelationship between diet and morbidities.

Higher levels of education are related to higher income and impact the acquisition of food[24]. In the present study, schooling was associated with healthier

foods (fruits, vegetables, cereals and whole grains, and legumes). The higher the level of education, the higher the frequency of the intake of foods that are high in fiber and low in fat. Similar results were found in a study by Nascimento et al.[26] where a higher socioeconomic level had a weak association with foods such as rice and beans, but also had a strong association with vegetables, fruits, oleaginous fruits, etc.

Active individuals reported a lower frequency of intake of ultra-processed and sodium-rich foods than did non-active subjects. Chan et al.[27] studied Chinese elderly persons (N=3,707) in a home-based study and found that more active elderly persons were more associated with a dietary pattern with fruits and vegetables and less associated with a pattern of meats and processed foods. Those with two or more CNCDs have a lower frequency of high-carbohydrate and low-fiber foods. This may be due to the fact that the diagnosis of diseases, in parallel with the advancement of age, tends to modify and improve the quality of diet due to the nutritional guidelines and care advice delivered by health professionals.

Many physiological and psychosocial changes which impact the quality and quantity of food intake occur during the aging process. The most common are related to changes in peripheral hormones, control of the central nervous system and the organs directly involved in digestion, such as slow gastric emptying, xerostomia and reduced sensitivity of the senses, such as the palate[5,14]. Depression, mood disorders, loneliness, widowhood, lack of social support, isolation and poverty complete the factors that must be considered in the holistic approach of this population[28]. All of these conditions are associated with health-related consequences, including declining functional status, impaired muscle function, decreased bone mass, micronutrient deficiencies, reduced cognitive functions, increased hospitalization, and premature death[28].

Similarly, Gomes et al.[29] investigated difficulty with mastication and found that individuals with greater chewing difficulties presented a lower quality of food intake. This is often seen as being due to a reduced consumption of foods such as raw meats, fruits and vegetables, considered important to health, and can lead to the inadequate supply of proteins and micronutrients[30].

International literature emphasizes the importance of the Mediterranean dietary pattern for the prevention of CNCDs in this age group[31,32]. However, despite this scientific evidence, it should be noted that the dietary pattern of a population is the result of multiple aspects, including individual, cultural and social factors. Adopting a dietary pattern from another geographic region means the foods involved will be more expensive and less available. The economic factor makes it difficult or impossible for elderly persons to apply a healthy diet that includes the daily intake of fruits, vegetables, whole grains, oleaginous fruit, legumes, meat, milk and dairy products, as these represent a significant expenditure in comparison with other expenses and individual and family needs. The challenge is therefore to adapt the dietary pattern of the region in which the individual resides, with achievable and feasible changes to the social and health reality of each person, always seeking the best dietary arrangement combined with the pleasure that only good food provides[31,32].

The limitations of the present study include its cross-sectional design, which does not allow changes in dietary pattern during the aging process to be identified. However, it was not the purpose of this study to analyze these changes over time, although other studies have shown that the dietary pattern of the elderly can be influenced by age, reduced food intake, difficulties in chewing and swallowing, insufficient income, the abusive use of medications and the presence of diseases, among other factors[28].

The main strengths of the present study are that it is a population-based study with a representative sample of elderly people from the city of São Paulo, based on the last census (2010), and applies methodological rigor in data collection and processing, with extensive training, standardization and the supervision of different interviewers and data input staff.

CONCLUSION

The results of the present study contribute to the understanding of the association between the dietary intake of today's elderly persons and social, clinical and lifestyle aspects in a population that is progressively growing in Brazil. Four predominant dietary patterns were identified in the study: inadequate, modified,

beneficial and traditional Brazilian, named according to the foods that make up each one.

The *inadequate* dietary pattern was adopted by elderly men, with a higher education, favorable clinical conditions, but with a precarious lifestyle. On the other hand, the *modified* pattern was characteristic of younger elderly women, who were more educated, with a more life style, but with greater clinical complications. The profile of the elderly who adopted the *beneficial* pattern was composed of longer-lived women, with a better economic status, schooling and lifestyle. Finally, the *Brazilian* pattern was adopted by younger men, who did not live alone with good clinical conditions, but had lower levels of schooling and income sufficiency.

This evidence should be considered as support for the holistic nutritional approach of the elderly, as it is understood that the current socioeconomic and clinical situation of this population directly affects the food and lifestyle choices adopted. National longitudinal studies are needed in Brazil to elucidate the motivation for adopting a particular food pattern and identifying when it is modified; and thus, help guide effective public policies for dietary change and the promotion of healthy lifestyles for the Brazilian elderly.

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The perception of family caregivers regarding the changes that occur after the diagnosis of dementia

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Abstract

Objectives: to identify the perceptions of family caregivers regarding the changes that occurred in the family after an elderly relative received a diagnosis of dementia, measuring the changes in the level of burden and analyzing the discourse of such caregivers. *Method:* the research was conducted through an interview and sociodemographic questionnaire, in addition to the application of a scale that measures caregiver burden, the Zarit Burden Interview. These procedures were applied in two stages, in the multidisciplinary reception of a geriatric clinic, and after three months of care. For the qualitative analysis, the *IRaMuTeQ* software was used, where, in the first stage, the results were as follows: in the Descending Hierarchical Classification (DHC) four classes were identified: Time (25.00%), Knowledge (33.00%), Consequences and Causes (19.40%); In the Word Cloud (WC), the word 'No" prevailed. In the second stage, DHC presented six classes, Current Time (13.70%), General Causes (15.70%), Future Time (13.70%), Actions (17.60%), Consequences (23.50%) and Immediate Causes (15.70%). The WC continued to refer most frequently to the word 'No'. For quantitative analyzes, the SPSS software was used. *Results:* in most cases, the profile of caregivers was women (75.00%), wives (62.00%), primary caregivers (87.50%), and the elderly (60-75 years). The assessment of burden was moderate to severe (75.00%). *Conclusion:* caring for a relative with a diagnosis of dementia has direct implications for family caregivers, especially family caregivers facing the aging process. The demands of caring modify the family routine and greatly increase the burden of caregivers.

Keywords: User Embracement. Caregivers. Dementia. Family.

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INTRODUCTION

A high prevalence of chronic diseases is inherent to the elderly population is. One example of these are syndromes of dementia, and there is a tendency for the number of elderly people suffering from this condition to increase. Population aging and increased life expectancy lead, as a consequence, to the emergence of chronic-degenerative diseases, notably dementias[1-3]. According to the Diagnostic and Statistical Manual of Mental Disorders (DSM-5)[4], major neurocognitive disorder is a clinical syndrome, which includes the deterioration of the cognitive domains, behavioral changes and impairment in one or more of the following areas: attention; executive functioning; learning and memory; language; motor perception; social cognition. It also interferes with social and occupational functioning. This situation inevitably results in a reliance on care, and therefore requires caregivers.

Alzheimer-type dementia and other diseases that have a major psychosocial impact are considered family-related diseases[1,5,6], especially syndromes of dementia, considered the 21st century epidemic, as they require prolonged and specific care[2].

The development of profiles of dementia has implications for the life and social support network of patients[7]. In Brazil, care for elderly people with some form of major neurocognitive disorder is generally provided by families, with little or no institutional support or even specific policies for this purpose[8].

Studies have demonstrated the social impact on the health and well-being of formal and informal caregivers[5,9,10]. It is they who immediately and directly suffer the negative consequences of having to deal with a relative with Alzheimer's disease[11].

It is important to highlight that the construction of the care process continues throughout the life experience of the family caregiver and is directed by the reality of the family, as well as by the guidance provided by the multiprofessional health team and support groups and associations[1,12].

In Brazil, data from epidemiological-type research prevails. Studies related to the financial costs of elderly people with dementia are still incipient in gerontology literature[13-15].

According to Ministry of Health Ordinance no. 2,528 (2006) which approved the National Policy on the Health of the Elderly Person (PNSPI) and revoked Ordinance no. 1,395 (1999), the caregiver is any person, whether a family member or not, paid or otherwise, formal or informal, who provides care to an elderly person who depends on assistance in their activities of daily living, such as eating, personal hygiene, medication, being accompanied to health services, bank services or pharmacies, among others[16].

Another way to interpret the role of the caregiver was provided by the Ministry of Health in the Basic Care Handbook, which states that he or she is a family member or non-family member who provides care to a dependent elderly person. The caregiver's tasks involves accompanying daily activities, such as aid with eating, personal hygiene, routine medication, among others; assisting in the recovery and quality of life of that person[17].

Therefore, elderly people with dementia syndromes need permanent care and usually receive this care from their relatives. The construction of the caring process is directed by the reality of the family and the internal and external resources to provide care. Understanding the resources of caregivers can help to design psychoeducational interventions and changes in health policies. The purpose of the present study was to illustrate the perceptions of family caregivers after an elderly relative was diagnosed with dementia, measuring the changes in the level of burden and analyzing the discourse of these family members.

METHOD

A qualitative study featuring a non-intentional convenience sample, based on the demand met, was carried out between September and December 2017, taking into account the difficulty of random selection. The sample initially consisted of 19 caregivers receiving care in the geriatric service of the Multidisciplinary Center for the Elderly (MCE) of the Hospital Universitário de Brasília (HUB).

It is worth noting that around 20 elderly people enter the MCE per month, and there was therefore an expectation that the sample would include the study of at least 50 such individuals. However, the

months evaluated were atypical due to holidays and internal activities, leading to the closure of the outpatient clinics.

It is also worth noting that, as this is a qualitative study, there was no minimum expectation for the sample, as the validity of the research is not based on the size of the sample, as in a quantitative study, but rather on the depth with which the study is performed. Trivinõs[18] states that in qualitative research random resources can be employed to fix the sample. In this case, one can intentionally decide the size of the sample, considering a series of conditions, such as subjects that are essential to clarify the subject in focus, from the point of view of the researcher, including ease of meeting people, the time individuals have available for interview and so on.

For the inclusion criteria, we selected family caregivers with a minimum age of eighteen, male or female, literate, with the following levels of kinship: spouse, son or daughter, brother or sister, grandson or granddaughter, nephew or niece, son or daughter-in-law. We excluded formal caregivers hired by the family and those who cared for relatives without the diagnosis of dementia.

After the inclusion and exclusion criteria were applied, and including after the beginning of the study, four elderly patients withdrew for the following reasons: one patient, who described herself as a relative (because of her proximity to the elderly person) was actually a formal caregiver (exclusion criterion); in one patient cognitive decline, rather than dementia, was observed on a follow-up appointment; one patient was institutionalized, and was unable to continue care or continue as the objective of this study; one family member gave up and appeared unmotivated for further meetings.

In the end eight family caregivers were evaluated, with a median age of 67 years (33-75 years) who cared for elderly persons with a median age of 73 years (67-84 years), selected at the reception unit of the multidisciplinary care center, which consists of physicians and medical residents, physiotherapists, odontologists, pharmacists and pharmaceutical residents and social workers, the latter being responsible for receiving the elderly within the service and who were solely responsible for the procedures that made up the methodological process.

The initial care in the reception unit is carried out once a week in the morning, where each professional carries out an initial approach specific to the area for around 30 to 50 minutes. After the consultations, a multidisciplinary team meeting is held to discuss the cases and create the therapeutic care plan.

The materials used were divided into three, as described below: a) socio-demographic evaluation, which aimed to evaluate the socioeconomic and demographic reality in which the family member and the elderly person are inserted, consisting of 21 objective items relating to the dimensions of family, financial situation and support network; b) an interview about the perception of the caregiver, which is composed of five open questions that allowed the free expression of the interviewees in the dimensions of diagnosis, difficulties and perspectives; c) the Zarit Burden Interview scale.

The Brazilian version of the Zarit Scale was used to evaluate caregiver burden. This is a standardized and validated instrument used in the study of the impact of mental and physical illness on informal caregivers. It allows the assessment of the burden of the informal caregiver and includes information about health, social life, personal life, financial situation, emotional situation and type of relationship. The scale is multidimensional, and evaluates the factors of impact of delivering care, interpersonal relationship, expectations of caring, and perception of self-efficacy. Scores range from zero to 88, and the higher the score, the greater the burden of the family caregiver[14].

The procedures were divided into two types: methodological procedures and data analysis.

The methodological procedures involved three steps:

1 - Selection, carried out during the social service operating hours, in the reception unit of the geriatric clinic. A Free and Informed Consent Form was read and signed by all the caregivers, once they had received information about the objectives, content and duration of the interview, the conditions of

participation in the two phases of data collection and the rights of the participants.

2 - Evaluation in the reception unit, where the following instruments were applied: a socio-demographic assessment, in order to identify the profile of the family caregiver; the Zarit Scale, to measure the informal caregiver's level of burden; and an interview recorded with a digital device and transcribed in its entirety by the researcher, to identify the perception of the family caregiver about the reality of caring for an elderly relative with dementia. This phase had an average duration of 40 minutes for each participant and was carried out individually. Pre-intervention was performed from September to December 2017. The instruments were applied by the researcher, a social worker of the geriatrics department/MCE/HUB.

3 - Evaluation following reception, in which the following instruments were applied to the eight participants who remained in the survey: the Zarit Scale and the interview recorded in a digital device and transcribed in its entirety by the researcher, to identify the perception of the caregiver. The researcher carried out this second evaluation in the geriatric service/MCE/HUB on days and at times previously scheduled with the participants. The post-reception phase was carried from February to March 2018. By that time, the participants had already returned for at least one medical consultation after reception and at least one orientation provided by the social service. The intervention of the social service aims to get to know other relatives whether included or not in the context of elderly care, to welcome them into the service and to provide information about how to deal with a family member diagnosed with dementia, what risk situations should be avoided, what measures should be taken from a legal point of view, such as for example, the prohibition and cessation of the elderly from driving a vehicle, and also on the activities available in the geriatrics service.

The data analysis procedures were performed for the quantitative and qualitative data. The most recent version of the Statistical Package for the Social Sciences (SPSS) was used for the quantitative data, taking into account the fundamental statistical assumptions for the correct use of the various statistical techniques, which were the normal distribution of the variables (*Kolmogorov Smirnov*) and homoscedasticity (Levene's Test). All analyzes were performed with a level of significance of $p<0.05$.

Some descriptive measures were generated for the characterization of the sample and, as it involves non-parametric distribution with the objective of comparing whether the measurements of position of two phases would be equal in cases where the samples are dependent, Wilcoxon's test was used. This analysis was used to evaluate the Zarit Scale, comparing the two phases in which these tests were applied to the caregivers.

For the qualitative data, the interviews about caregiver's perception were analyzed using the IRaMuTeQ software (*Interface de R pour les Analyses Multidimensionnelles de Textes et de Questionnaires*), which allows statistical analyzes on the textual corpus to be made. The software used is licensed and free, and enables different types of analysis of textual data. With this analysis, it was possible to explore the interviews, as they were recorded and literally transcribed. Each interview generated a text and the set of these texts constituted the corpus of the analysis. The software requires that the raw textual data be formatted in the manner read by the program (txt), following which the analysis is processed. It was first used in Brazil in 2013 and the area of health has since appropriated this tool[19] which uses Bardin[20] for content analysis.

The present study was approved by the Ethics Research Committee of the Universidade Católica de Brasília (Approval Nº 2.233.802/2017) and the School of Medicine of the Universidade de Brasília (Approval Nº 2.306.606/2017), which also approved the Free and Informed Consent Form. The methodological procedures described were only performed after submission and acceptance by the referent Committees.

RESULTS

The data presented will always relate to the caregivers who were the objects of this study. The quantitative data will be presented for the characterization of the sample (Table 1) and for the comparison of the measures of the Zarit Scale of care burden.

Table 1. Sociodemographic description of family caregivers of the Multidisciplinary Center for the Elderly of the Hospital Universitário de Brasília. Brasília, Distrito Federal, 2017.

Variables	n	%
Kinship		
Spouse	5	62.50
Son/daughter	3	37.50
Income		
No income	1	12.50
From one to four times minimum wage	6	75.00
Over five times minimum wage	1	12.50
Financial collaboration		
Yes	6	75.00
No	2	25.00
Marital status		
Married	8	100.00
Children		
Yes	8	100.00
Age		
From 30 to 59	2	25.00
From 60 to 75	6	75.00
Gender		
Male	2	25.00
Female	6	75.00
Burden		
Yes	6	75.00
No	2	25.00

The profile, based on social assessment, shows the majority of the care is provided by spouses (62.50%), with children (100.00%), who were elderly (65.00%), female (75.00%) and who claimed to suffer burden through this activity (75.00%). It is noteworthy that of these eight caregivers, four, all of whom were elderly, became MCE patients, a husband and three wives, with symptoms of anxiety and depression. In terms of kinship and marital status, daughters and wives were the most frequently responsible for providing care.

The information about experiencing burden in Table 1 can be corroborated by the analysis of the level of burden at the reception and post-reception phase. After the Wilcoxon test, there was no significant difference between the measurements at reception and two months later, with p=0.40. However, there was a tendency for the median caregiver burden to increase from 26.00 (19-48) to 28.00 (14-58).

Regarding changes in the level of caregiver burden, based on the Zarit Scale scores of mild from 0 to 20, moderate from 21 to 40, moderate to severe from 41 to 60 and severe from 61 to 88, the caregivers scored from 19 to 48 and 14 to 58 in the first and second stages of the survey, respectively. In the first application of the scale, two sons or daughters had mild burden, four wives and one husband had moderate burden, with the husband experiencing less burden, and one daughter had moderate to severe burden.

In the post-reception application of the Zarit Scale, the two sons or daughters with mild burden obtained the same classification, however, the daughter's score increased (23 points) while the son's score decreased (14 points). The classifications of the four wives and the husband, who had moderate burden in the first phase, changed as follows: one remained moderate, although with a higher score (33 points), two increased from moderate to severe (41 and 43 points), the burden of one wife changed to mild (15 points), while the husband remained

at mild, though with a lower score (19 points). The other daughter continued at the moderate to severe level with a higher score (58 points).

As the qualitative classifications relate to the perception of the familiar caregiver, based on the reality of study, the textual corpus was analyzed by the IRaMuTeQ method in both stages (reception and post-reception) using three methods, a) Descending Hierarchical Classification (DHC), from a dendrogram of word classes; b) Word cloud, which is a lexical analysis as a function of frequency; c) textual corpus (exemplifying the discourse of daughters, wives and one husband), for a greater understanding of the discussion about the changes that occur following multiprofessional interventions.

Reception stage

The DHC shows words that are similar to each other. Figure 1 is divided into four classes, where class four, categorized as "getting to know", is the basis for the formation of other classes, covering 33.30% of the total content analyzed.

The DHC analysis presented four classes, categorized here as Time (25,00%), Knowledge (33,30%), Consequences (22,20%) and Causes (19,40%).

The word cloud (Figure 2) made it possible to identify the keyword. The most frequent word: "No" was compatible with the analysis of similitude. This type of analysis makes it possible to use statistical calculations on qualitative data, the texts[21].

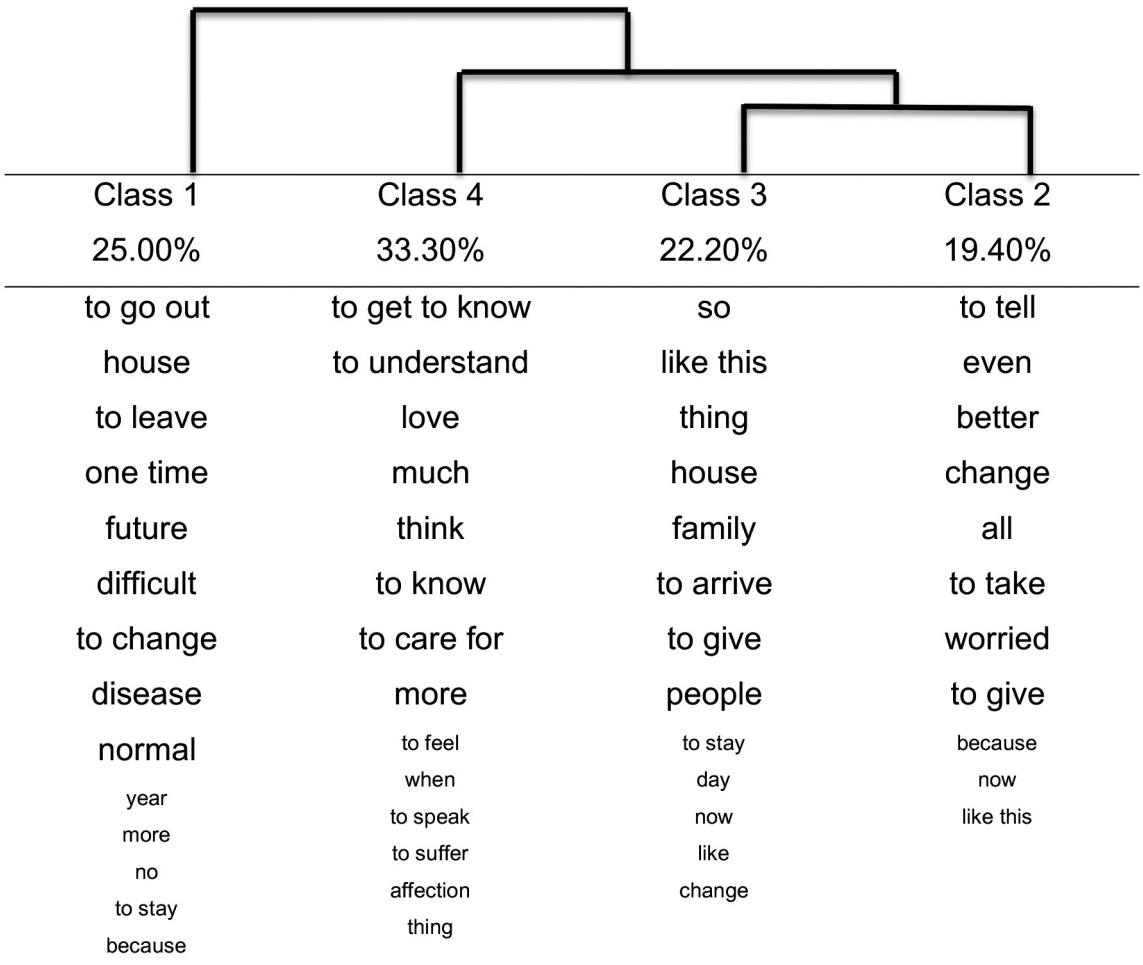

Figure 1. Dendogram of the words of the family caregivers of the Multidisciplinary Center for the Elderly of the Hospital Universitário de Brasília. Brasília, DF, 2018.

Figure 2. Frequency of words analyzed in the content of the family caregivers of the Multidisciplinary Center for the Elderly of the Hospital Universitário de Brasília. Brasília, DF, 2018.

The textual corpus that can exemplify the pre-intervention moment are presented below:

> "I don't think I'm a good caregiver, I learned from my mother not to be subtle. The hardest thing is, I have this duty every day, I have no day off. For example, I retired a year ago, my life got worse than when I worked, because I did not leave the house anymore" (Daughter, 61)

> "I feel it's something I have to do for him, even if he was not my husband. Because, if it were me, wouldn't he? The hardest part is that I work every day, but it's not difficult for me yet. The family routine, in fact I think we relied on him for many things and then we stopped relying. That was the change and the family was surprised to see how much he was forgetting things and lost his autonomy" (Wife, 65).

> "I think it's even a pleasure to know, I say this because on one hand we're sad, but God gives me health and I have enough strength to have enough knowledge to provide quality care, the care offers quality of life. So far there have been no changes, because I take on the burden. Because we did not give up on letting him do things with our help, but letting him take the lead, so there hasn't been much change, just the burden on me" (Wife, 69).

The difficulties of coping with the existing changes for these elderly caregivers can clearly be perceived. Even if such changes are denied.

Post-Reception Stage

The corpus of the DHC was divided into two groups and four subgroups. In this second stage, the word dementia was highlighted (23.50%), as can be observed in Figure 3.

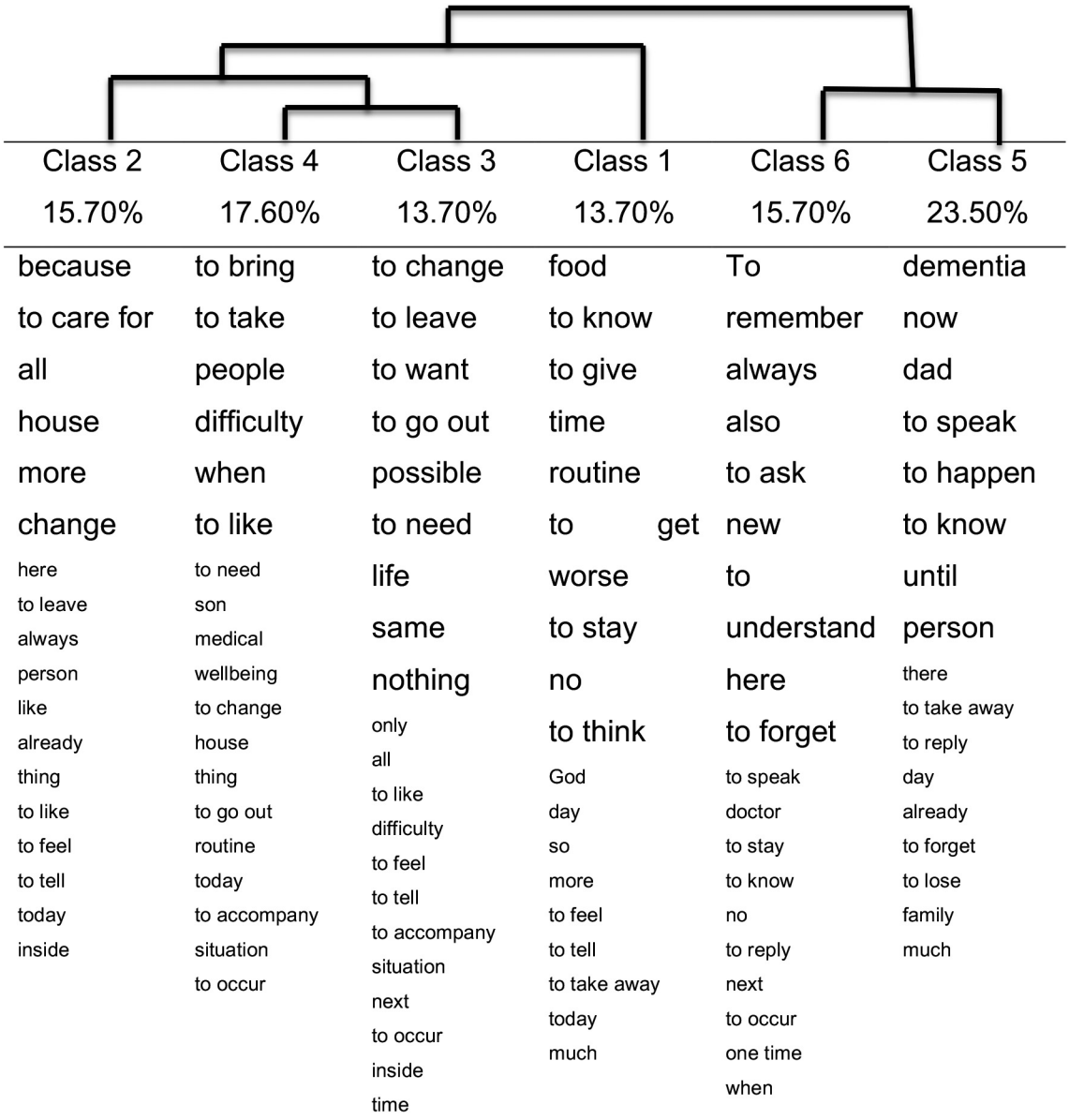

Figure 3. Dendrogram of the classes and frequency of words of the family caregivers of the Multidisciplinary Center for the Elderly of the Hospital Universitário de Brasília. Brasília, DF, 2018.

The analysis by DHC presents six classes that are categorized here as: Current moment (13.70%), General causes (15.70%), Future (13.70%), Actions (17.60%), Consequences 23.50%) and Immediate causes (15.70%).

In the word cloud, the word "No" remains constant in frequency, followed by much, difficult, caring, dementia and family, according to Figure 4.

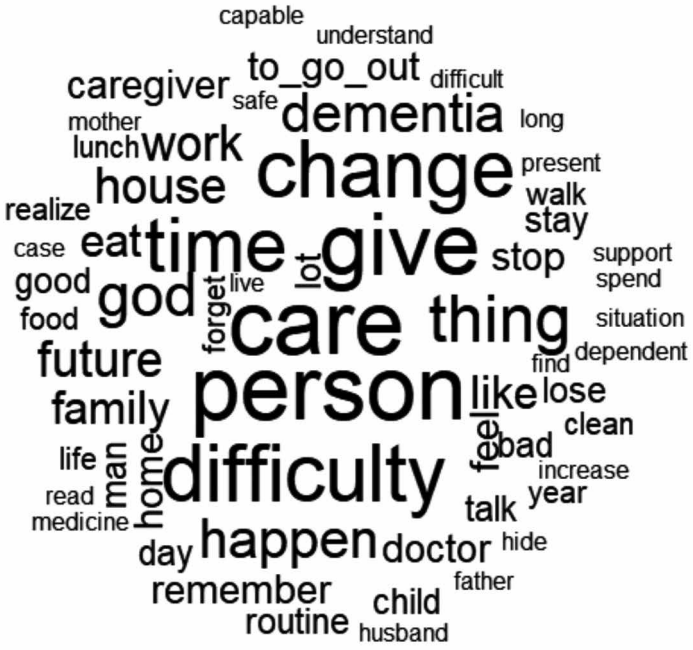

Figure 4. Frequency of words analyzed in the content of caregivers of the Multidisciplinary Center for the Elderly of the Hospital Universitário de Brasília. Brasília, DF, 2018.

To characterize the change in the perception of the family caregivers, in the face of the reality of caring, some excerpts from the post-reception phase are described below.

> "As a caregiver I try to do my best, there is not much change. The only change is that when we go to Unaí, we have to take him." (Daughter, 37)

> "I would like him to be well enough to go out, we had a lot of freedom to go out, he drove, I did not drive, we didn't stay at home, he was very independent but we're not anymore. The changes aren't slight, the routine of the family has changed, we just take him to the doctor, get his medicine when he needs it, but not much has changed" (Wife, 69)

> "The hardest thing, I don't think, I don't find it hard to do what I do for her, I do it with pleasure for her to be well, I don't find anything difficult. I give her food, I do whatever she needs. The change I had was to stop working, even though I was recovering from surgery, and there was the normal concern for the children and the husband for their mother. So there was no change, the change that there was I think is because every family suffers a lot with it." (Husband, 71)

Thus, in the perspective of these relatives, the context in which they are inserted is characterized by changes, and it can be observed that they contradict each other at all times, and these data are discussed below.

DISCUSSION

Although significant differences in the measurements of the Zarit Scale between the reception and post-reception phases were not found, the data of the present study revealed the presence of burden in 75.00% of the relatives.

The results observed in this study are very similar to previous studies, such as that by Enrique Ramon,[22] which found that the daily care of a family member with dementia generates changes in the family, as well as burdening the main caregiver, who is usually a daughter or a wife.

In terms of the profile of the elderly caregiver found in the present study, of the sample of eight, six were women (two daughters and four wives), similar to the results of other studies. This finding is

related to the issue of gender in the function of care, which historically and even today has been attributed to women, with daughters and wives assuming the status of primary caregivers, which seems intrinsic to the gender issue in the performance of the role of caring[23,24]. Family caregivers carry out their role in a context characterized by personal change, both in relation to the person receiving care (those with dementia suffer cognitive and behavior alterations and experience changes in social roles) and in the social and cultural context[25].

In the present study moderate to moderate severe burden was observed in five family members when the Zarit Scale was applied. This finding points to the considerable level of effort required from caregivers who provide help in the self-care and routine household activities of elderly persons with dementia[26,27].

It was found that elderly caregivers at the time of the study (one husband and three wives) were diagnosed with depression and anxiety, a fact that reveals frailty in the caregiver profile[27,28]. This reality of the elderly caregiver has become increasingly common and influences quality of life, acquired burden, as well as the changes resulting from aging[29-31]. With the stressors of this age group, it was found that the burden of the task of caring involves physical, psychological, social and financial problems.

When attempting to understand how the family member perceives themselves as caregivers and the difficulties they face in this role, it was verified that their reality is characterized by the change in the context in which they are inserted[25].

Their reports confirmed the degree of difficulty in the unexpected situations of the behavior of the elderly with dementia, which must be confronted by the family caregivers. The challenge of caring needs to be perceived by caregivers[32].

In the present study it was possible to understand that, despite the difficulties in dealing with an elderly person with dementia, the family members perceive themselves as caregivers with a range of feelings, with apprehension and with physical, emotional and financial burden. However, they face such a condition with affection, spirituality and in some cases, with the support of family members.

In addition, elderly people experiencing the aging process and being caregivers of their relatives experience worry over recognizing their own aging and need for care[31,33]. It is assumed here that the caregiver and the family require psychosocial support in order to receive suggestions for coping with the situation. In the present study, the importance of a gerontology outpatient clinic which, in welcoming the patient and the family, is considering a long-term therapeutic plan, was clear.

The importance of the present study is based on the fact that it provides continued investigation into a subject of great current importance and urgency, notably burden and the fact that the elderly are taking care of fellow elderly persons. Its limitations are related to the reduced number of family caregivers of the elderly, the short time gap in measurement following reception, and the lack of comparison with the group of family caregivers who had been receiving care at the MCE for a longer period (six months, one year), verifying if the time factor is important within the multidisciplinary intervention variable.

CONCLUSION

The data from the present study show that caring for a relative diagnosed with dementia has direct implications for family caregivers. Faced with this reality of aging, which demands care for the elderly, it is important to rethink and expand the progress of the Unified Health System, through the creation of Reference Centers for Health Care for the Elderly. Services related to diagnosis, treatment, follow-up care of patients, guidance for family members and caregivers, with a multidisciplinary care team, should systematically support the needs of patients with dementia and family members, not only in outpatient and hospital settings, but also at home.

The family member, while presenting burden, is perceived as the primary caregiver and often assumes this condition alone, and is unprepared for this sudden changes of roles, in other words where children take care of parents.

Due to these facts it is important to carry out studies that investigate the profile of family caregivers and the implications of this care, especially in the expanding scenario of elderly caregivers, to understand the phenomenon as it affects their reality, in order to provide theoretical support for the formulation of public policies that guarantee a network of support to these caregivers.

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Which factors are associated with sarcopenia and frailty in elderly persons residing in the community?

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Abstract

Objective: to broaden knowledge about the factors associated with sarcopenia and frailty in elderly persons residing in the community. *Method*: an integrative systematic review based on the PRISMA recommendations was carried out, using articles published from 2012 to March 2017 in the PubMED, SciELO, Virtual Health Library, CINAHL and Springer electronic databases with the following descriptors: frail elderly, sarcopenia and etiology and their synonyms. The articles identified by the initial search strategy were independently assessed by two researchers, according to the eligibility criteria, and the articles selected were evaluated for methodological quality. *Results*: the results of this survey show that frailty may be associated with sarcopenia, low serum vitamin D levels, anemia, subclinical hyperthyroidism in men, while the greatest evolution in women was for osteoporosis. An association between sarcopenia and advanced age was also observed, with worsening quality of life, physical-functional capacity, nutritional status and comorbidities, as well as an increased risk of death in sarcopenic elderly persons. *Conclusion*: this systematic review showed that low serum levels of vitamin D are associated with frailty and factors that predispose this condition. It is therefore important to monitor the serum levels of this vitamin in the elderly population, and it is suggested that new studies are carried out related to supplements of this vitamin in frail elderly persons.

Keywords: Frail Elderly. Sarcopenia. Etiology. Vitamin D.

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INTRODUCTION

During the aging process various physiological changes occur simultaneously in the different systems of the human body, associated with the accumulation of a wide variety of molecular and cellular damage[1]. In relation to the musculoskeletal system, aging leads to central and peripheral neuronal degeneration, muscular atrophy and increased adipose tissue in the muscle, and these changes increase the risk of dependence and disability[2] and can encourage the emergence of sarcopenia.

Sarcopenia was initially described by Rosenberg[3] as a reduction of overall muscle mass, which occurs throughout aging. Currently, this definition covers the reduction of muscle strength and physical performance, according to the consensus published by the European Working Group on Sarcopenia in Older People[4]. Sarcopenia leads to reduced quality of muscle contraction, strength and coordination of movements, predisposing the individual to functional decline, leading to disability and increased risk of falls and mortality[5].

Sarcopenia can be associated with frailty, as observed in the study by Mijnarends et al[6], which found a heightened risk of the condition of 60% among frail elderly persons aged 60-70, while among the non-frail elderly this risk was 10%. This same study showed that in the elderly aged between 80 and 90 years there is also a heightened risk of 60% for sarcopenia; however, no difference was observed between frail and non-frail elderly.

Frailty has been widely studied in recent decades, causing the conceits regarding the condition to change. The most widely accepted definitions today are those suggested by Rockwood et al[7] which combines frailty with disabilities and by Fried et al[8] who defined the frailty syndrome as a spiraling decline in energy, supported by a tripod of aging-related changes; composed of sarcopenia, neuroendocrine dysregulation and immunological dysfunction[9]. As it is a physical syndrome, the frailty phenotype includes unintentional weight loss, weakness, low resistance and energy, slowness and a low level of physical activity[8]. Like sarcopenia, frailty is also a predictive factor for increased dependence and death[10].

Sarcopenia and frailty are conditions that arise from multiple factors that trigger interrelated events in a cause and effect relationship, which hinders an appropriate and effective therapeutic approach. There is therefore a need for scientific evidence on the subject that can elucidate the factors associated with sarcopenia and frailty and instigate hypotheses of cause and effect, with the perspective of guiding new research aimed at proposing more resolutive treatments for these conditions. In this context, the present study aimed to broaden knowledge about the factors associated with sarcopenia and frailty in elderly residents of the community.

METHOD

An integrative systematic review was carried out, based on the recommendations of PRISMA[11], and which was registered in the international prospective register of systematic reviews under code CRD42017079102. The guiding question for the survey was: which factors are associated with sarcopenia and frailty among the elderly residing in the community? The search was conducted in April 2017, from articles published in the period from 2012 to March 2017 in the following electronic databases: PubMED, SciELO, Virtual Health Library, CINAHL and Springer. In order to search for the articles, we used as descriptors frail elderly, sarcopenia and etiology and their synonyms, according to Chart 1.

Chart 1. Search strategy. Porto Alegre, Rio Grande do Sul, 2017.

	"*Frail Elderly"[Mesh]* OR *"Elderly, Frail"* OR *"Frail Elders"* OR *"Elder, Frail"* OR *"Elders, Frail"* OR *"Frail Elder"* OR *"Functionally-Impaired Elderly"* OR *"Elderly, Functionally-Impaired"* OR *"Functionally Impaired Elderly"* OR *"Frail Older Adults"* OR *"Adult, Frail Older"* OR *"Adults, Frail Older"* OR *"Frail Older Adult"* OR *"Older Adult, Frail"* OR *"Older Adults, Frail"*
AND	"Sarcopenia"[Mesh] OR "Sarcopenias"
AND	"Etiology" [Mesh] OR "Causality" OR "Causes" OR "Pathogenesis"

The articles identified by the search strategy were independently evaluated by two researchers. The first step in the selection of articles was the reading of titles and abstracts. The inclusion criteria were: original articles, elderly population and texts that addressed the etiology of sarcopenia or frailty. There was no restriction on the language of publication of articles. The exclusion criteria were: narrative review articles, with therapeutic interventions, populations with specific conditions or diseases, and hospitalized or institutionalized elderly. After the first selection and exclusion of duplicate articles, the researchers read the articles in full for data extraction and methodological quality analysis. When there was a divergence in selection, the evaluators discussed the issue until they arrived at a consensus.

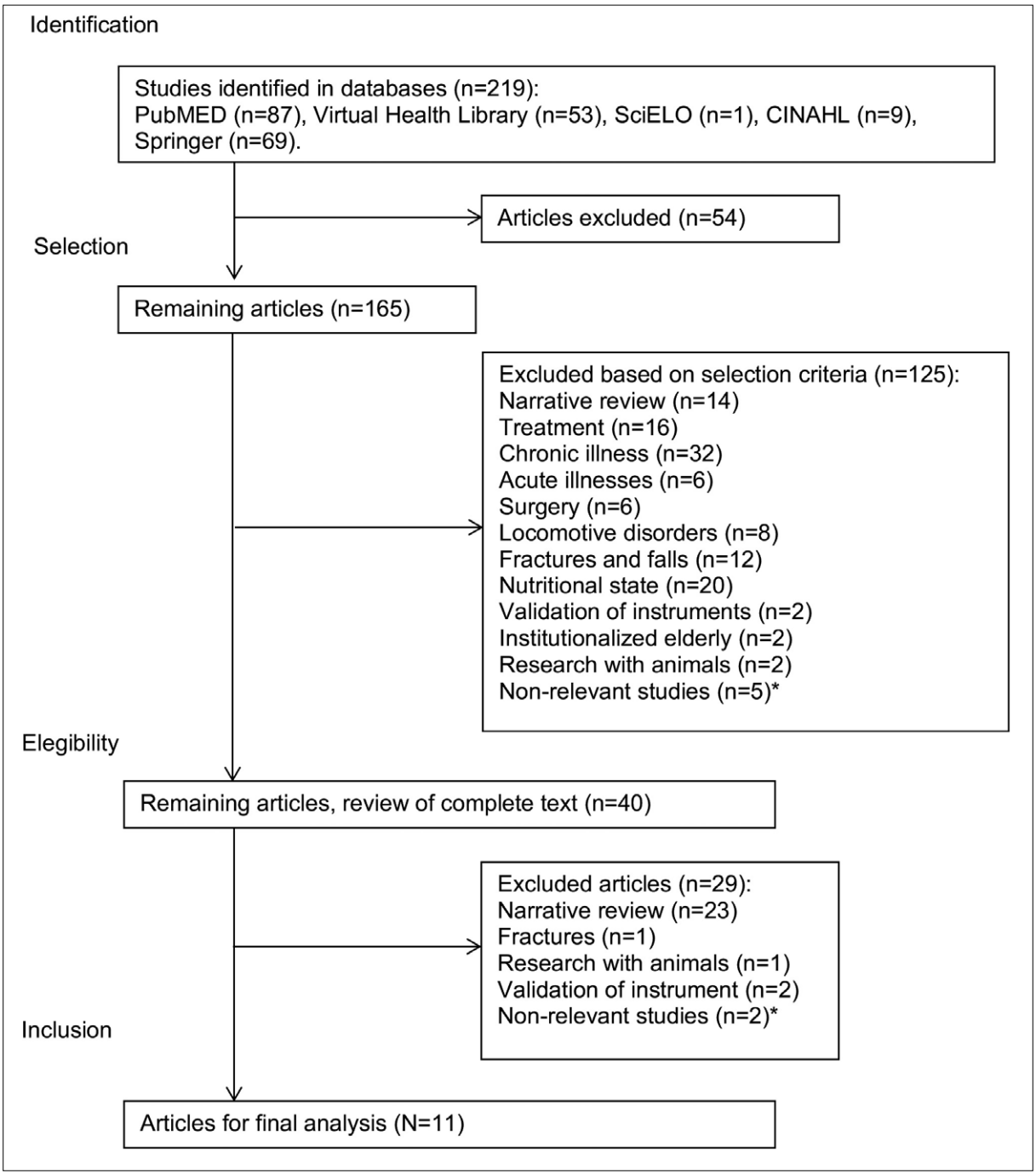
In the extraction of data from the articles, the search for the following information was emphasized: study objective, type of study, sample, location where the study was carried out; and the main results presented were analyzed. The articles included were assessed for methodological quality through the scale of Loney et al[12] for cross-sectional studies evaluating aspects related to the validity of the method, interpretation and applicability of the results; and the Newcastle-Ottawa Scale[13] for cohort studies through evaluation of sample selection, comparability, and outcome. The two scales have a maximum score of eight points and higher values mean higher methodological quality.

RESULTS

A total of 219 articles were selected in the electronic databases PubMED, SciELO, Virtual Health Library, CINAHL and Springer. After initial reading, 11 articles were selected for final analysis. The processes performed in the selection of articles and the reasons for exclusion are described in Figure 1.

During the extraction of data from the selected articles carried out by researchers, the search for study objectives, methodologies used, sample size and gender of the subjects, country of research (Chart 2) and main results of each study were prioritized, with greater relevance given to statistically significant data (Chart 3).

In the evaluation of the methodological quality carried out by the two researchers (Chart 2), the articles obtained a score equal to or above average, which represents a good methodological quality of the level of scientific evidence.



* Studies with no causal relationship with sarcopenia and frailty.

Figure 1. Flowchart of article selection. Porto Alegre, RS, 2017.

Chart 2. Description of Articles selected for integrative review. Porto Alegre, RS, 2017.

Authors (Year) Reference	Objective	Type of study	Sample	Research location	Methodological Quality
He, Liu, Tian, Papasiano, Hu, Deng (2016)[14]	To investigate the relationship between sarcopenia and body composition and osteoporosis in cohorts of three different races.	Cross-sectional study	17,891 individuals of both sexes	USA and China	5/8**
Virgini, Rodondi, Cawthon, Harrison, Hoffman, Orwoll, Ensrud, Bauer (2015)[15]	To evaluate the associations between subclinical thyroid dysfunction and frailty and the five subdomains of frailty.	Cohort study	1455 men	USA	6/8*
Beaudart, Reginster, Petermans, Gillain, Quabron, Locquet, Slomian, Buckinx, Bruyère (2015)[16]	To evaluate the prevalence of sarcopenia and the relationship between sarcopenia and sociodemographic, clinical and physical components.	Cross-sectional study	534 individuals of both sexes	Belgium	5/8**
Corona, Andrade, Duarte, Lebrao (2015)[17]	To explore the relationship between anemia, hemoglobin concentration and frailty syndrome in the elderly.	Cross-sectional study	1256 individuals of both sexes	Brazil	7/8**
Serra-Prat, Papiol, Monteis, Palomera, Cabré (2015)[18]	Investigating the relationship between plasma levels of ghrelin and sarcopenia in the elderly.	Cross-sectional study	88 individuals of both sexes	Spain	4/8**
Sternberg, Levin, Dkaidek, Edelman, Resnick, Menczel (2014)[19]	To examine the relationship between frailty and osteoporosis in elderly women living in the community.	Cohort study	235 women	Israel	6/8*
Chen, Yang, Chan, Lee, Lu, Huang (2014)[20]	To investigate the relationship between serum selenium level and skeletal muscle mass in the elderly residing in the community.	Cross-sectional study	327 individuals of both sexes	Taiwan	4/8**
Silva, Duarte, Santos, Wong, Lebrão (2014)[21]	To examine the prevalence of and factors associated with sarcopenia in elderly residents of São Paulo, Brazil.	Cross-sectional study	1.149 individuals of both sexes	Brazil	8/8**
Tieland, Brolsma, Rousseau, Loon, Groot (2013)[22]	Explore the association between vitamin D intake and serum 25 (OH)D status and muscle mass, strength and physical performance in a pre-frail and frail elderly population.	Cross-sectional study	127 individuals of both sexes	Holland	5/8**
Landi, Jentoft, Liperoti, Russo, Giovannini, Tosato, Capoluongo, Bernabei, Onder (2013)[23]	To assess the impact of sarcopenia on the risk of death from all causes in a population of frail elderly persons living in a community.	Cohort study	197 individuals of both sexes	Italy	6/8*
Arango-Lopera, Arroyo, Gutierrez-Robledo, Perez-Zepeda, Cesari (2013)[24]	To determine the association between sarcopenia and mortality in a group of Mexican elderly persons.	Cohort study	345 individuals of both sexes	Mexico	7/8*

* article score/total score of Newcastle-Ottawa scale; ** article score/total score of Loney scale.

Chart 3. Main results of articles selected for integrative review. Porto Alegre, RS, 2017.

Authors (Year) Reference	RESULTS		
	Relationships	Prevalence	OR/RR (CI95%)
He, Liu, Tian, Papasiano, Hu, Deng (2016)[14]		Based on low appendicular skeletal muscle mass e relative to the definition of sarcopenia, the prevalence of sarcopenia in African American, Caucasian and Chinese subjects was 1.82, 3.87 and 1%, respectively. According to the definition of the European Working Group on Sarcopenia in Older People (EWGSOP), the prevalence of sarcopenia in African American, Caucasian and Chinese individuals is 1.40, 3.23 and 0.8%, respectively.	Individuals with sarcopenia defined by relative appendicular skeletal muscle mass were twice as likely to have osteopenia/ osteoporosis as normal individuals (OR = 2.04, 95% CI 1.61-2.60). Similarly, subjects with sarcopenia defined by EWGSOP were 1.87 times more likely to have osteopenia/ osteoporosis than normal individuals (OR = 1.87, 95% CI 1.09 to 3.20).
Virgini, Rodondi, Cawthon, Harrison, Hoffman, Orwoll, Ensrud, Bauer (2015)[15]	The interaction between age and subclinical thyroid function was suggestive of significance in the criteria of exhaustion (p = 0.07) and slowness (p = 0.09). After five years of follow-up, subclinical hypothyroidism and hyperthyroidism were not consistently associated with the general state of frailty or frailty components.		At the beginning of the study, men with subclinical hyperthyroidism presented greater risk of frailty (OR = 2.48, 95% CI, 1.15-5.34). Men with hyperthyroidism and aged <74 years had a higher risk of frailty and decreased strength. There was no increased risk for the separate frailty criteria.
Beaudart, Reginster, Petermans, Gillain, Quabron, Locquet, Slomian, Buckinx, Bruyère (2015)[16]	In the comparison of sarcopenic individuals with non-sarcopenic individuals, there was a higher average regular use of medication (6.79 ± 3.14 versus 5.66 ± 3.50, p = 0.01), a higher number of comorbidities (5, (p = 0.01), kidney problems (p = 0.025) and dizziness (p = 0.018), a higher hospitalization rate (p <0.001) and a higher risk of malnutrition (p <0.001), lower cognitive capacity (p <0.001), worse physical quality of life in relation to health (p = 0.001), a higher risk of falls, were more frail, more frequently fatigued when performing daily activities, had a lower fat mass and lower lean mass (p <0.001).	In the sarcopenic population, 34.2% of the individuals were also diagnosed as frail and 47.9% as pre-frail versus 12.6% and 47.9% respectively in the non-sarcopenic population (p = 0.03 and p = 0.81, respectively).	

to be continued

Continuation of Chart 3

Authors (Year) Reference	RESULTS		
	Relationships	Prevalence	OR/RR (CI95%)
Corona, Andrade, Duarte, Lebrao (2015)[17]	The mean hemoglobin concentration was significantly lower in the frail elderly (13.3 g / dL versus 14.3 g / dL in the non-frail elderly, p <0.001).	The prevalence of anemia was significantly higher in the frail elderly than in the non-frail elderly (24.2% and 3.8%, p <0.001).	In the fully adjusted regression models, anemia was strongly associated with frailty (OR = 3.27, 95% CI 1.89-5.65, p <0.001), and lower levels of hemoglobin were associated with a greater number of criteria of frailty.
Serra-Prat, Papiol, Monteis, Palomera, Cabré (2015)[18]	In the elderly group, subjects with sarcopenia had significantly lower levels of ghrelin than those without sarcopenia (650 versus 899 pg mL-1, p = 0.036), but these differences vanished when stratifying by sex. Elderly subjects without sarcopenia had the same levels of ghrelin as young adults (899.3 vs. 899.6 pg mL-1.		
Sternberg, Levin, Dkaidek, Edelman, Resnick, Menczel (2014)[19]	No correlation was found between Bone Mineral Density and frailty scales at baseline. An association was found between baseline frailty and osteoporosis during follow-up in subjects who did not present baseline osteoporosis (p = 0.0459).	After one year, 63.9% of the females who had frailty at baseline had lower bone mineral density of the hips (p = 0.0393) and the spine (p = 0.0069) than women who were not frail at baseline.	
Chen, Yang, Chan, Lee, Lu, Huang (2014)[20]	The mean serum selenium level was significantly lower in the group with low muscle mass than the normal group after adjusting for confounders (1.01 ± 0.03 µmol / L vs 1.14 ± 0.02 µmol / L, p <0.001).		Participants with serum selenium in the lowest quartile had a 4.62-fold higher risk of having low muscle mass than those in the highest quartile (OR= 4.62; CI 95% 2.11-10.10; p <0.001).
Silva, Duarte, Santos, Wong, Lebrão (2014)[21]	Advanced age (p <0.01), cognitive impairment (p <0.014), lower income (p <0.036), malnutrition (p <0.001) and risk of malnutrition (p <0.001) were factors associated with sarcopenia.	The prevalence of sarcopenia was 16.1% in women and 14.4% in men.	

to be continued

Continuation of Chart 3

Authors (Year) Reference	RESULTS		
	Relationships	Prevalence	OR/RR (CI95%)
Tieland, Brolsma, Rousseau, Loon, Groot (2013)[22]	Serum status of 25 (OH) D was associated with lean appendicular mass (p = 0.05) and physical performance (p = 0.035) and showed a tendency for a positive association with lean leg mass (p = 0.08). Gait speed (4.8 vs 6.3 s, p = 0.01) and the ability to get up from a chair (13.6 vs 16.6 s, p = 0.02) were faster and balance scores (3.5 vs 2.8 points, p = 0.01) were higher among those with sufficient levels of 25 (OH) D than among subjects with insufficient levels.	53% of the frail participants had a serum level of 25 (OH) D below 50 nmol/L.	
Landi, Jentoft, Liperoti, Russo, Giovannini, Tosato, Capoluongo, Bernabei, Onder (2013)[23]	Compared with those without sarcopenia, those with a diagnosis of sarcopenia were more likely to have functional impairment (1.3 versus 0.5, p<0.001), lower body mass index (24.3 versus 26.7, p< 0.001), higher serum TNF-α level (2.4 versus 1.5 pg / ml, p= 0.01).	During the seven-year follow-up period, 67.4% (29) of the participants with sarcopenia died, in comparison with 41.2% (63) of subjects without sarcopenia (p <0.001).	Participants with sarcopenia had a higher risk of death than non-sarcopenic individuals, adjusted for age, gender, education, activities of daily living, body mass index, hypertension, congestive heart failure, chronic obstructive pulmonary disease, number of diseases and level of TNF-α (RR = 2.32, 95% CI 1.01-5.43).
Arango-Lopera, Arroyo, Gutierrez-Robledo, Perez-Zepeda, Cesari (2013)[24]		Sarcopenia was present in a total of 116 (33.6%) individuals. During the three-year follow-up period, a total of 43 (12.4%) subjects died. The negative predictive value for sarcopenia in relation to mortality was 90%.	Individuals who were diagnosed as sarcopenic were at greater risk of dying regardless of other known risk factors, such as Ischemic Heart Disease, Activities of Daily Living, Age or gender (RR= 2.39; CI 95% 1.05-5.43; p= 0.037)

The results show that frailty is associated with several factors such as: sarcopenia[16], low vitamin D levels[22], anemia[17], subclinical hyperthyroidism in men[15], and a greater evolution of osteoporosis in women[19]. Sarcopenia is associated with poorer quality of life[16], advanced age[21], reduced physical-functional capacity[16,23] (greater risk of falls, fatigue when performing activities of daily living and greater probability of functional deterioration), poor nutritional status[16,21,23] (malnutrition, risk of malnutrition, lower fat mass, lower lean mass and lower body mass index), increased comorbidities[14,16,18,20,21,23] (respiratory failure, renal and dizziness, osteopenia and osteoporosis, use of medications, greater number of hospitalizations, inferior cognitive capacity, higher serum TNF-α levels, lower serum levels of selenium and ghrelin); sarcopenia also increases the risk of mortality[23,24] -

DISCUSSION

The evidence of the articles analyzed shows that the factors that predispose the individual to frailty are related to immunological dysfunction, neuroendocrine dysregulation and dysfunction in the musculoskeletal system. Among the disorders that occur with these dysfunctions, vitamin D appears to be a risk factor for frailty. This relationship between vitamin D and frailty can be explained by three different pathways[25] related to the three pillars of frailty.

The first pathway is explained by the negative regulation between vitamin D levels and inflammatory markers[25], while it is also known that chronic inflammation and immune activation are related to the condition of frailty[26]. In addition, vitamin D deficiency is associated with chronic inflammatory anemia, through the deregulation of pro-inflammatory cytokine release and the synthesis of hepcidin[27], which is responsible for the absorption of iron into the duodenum and its release from the stock cells[28]. Studies have shown the relationship between frailty and high serum levels of Interleukin-6 associated with low levels of hemoglobin and hematocrit[29] and found a 3.27 times greater chance of anemic elderly persons developing frailty [17].

The second pathway is related to vitamin D reduction and secondary hyperparathyroidism, as this thyroid disorder increases the levels of parathyroid hormone (PTH), which has been associated with poor physical function and frailty[30,31]. In addition, the relationship between vitamin D deficiency and elevated PTH levels also appears to be associated with the prevalence of sarcopenia. Research has shown that 41.2% of people with altered levels of PTH have sarcopenia; while this prevalence declines to 16.2% for populations with normal levels (p=0.046)[32]. The study by Virgini et al[15] also shows the relationship between frailty and other hormones such as Thyroid Stimulating Hormone (TSH) and free thyroxine circulating in the blood (T4). The authors of this study observed that there is a 2.48 times greater chance of the occurrence of frailty in men with subclinical hyperthyroidism when compared with individuals without hormonal alterations. In addition to the hormones already mentioned, one of the selected studies emphasizes the relationship between the hormone ghrelin and sarcopenia, as the sarcopenic individuals presented significantly lower levels of ghrelin than those without sarcopenia[18]. Ghrelin is an appetite stimulant and inducer of growth hormone (GH), and the low levels of this hormone associated with the anorexia of aging trigger a cascade of events that predisposes the individual to developing sarcopenia[33].

The third pathway explains the molecular effects that vitamin D can exert on skeletal muscle[34], influencing calcium flow, the internal regulation of minerals and the signaling pathways of anabolic protein routes[35,36]. In this way, it affects the mass, strength and quality of muscle contraction in the elderly[25] and causes the presence of sarcopenia in this population. From multivariate regressions, studies have shown that in the sarcopenic elderly the risk of death is 2.39 times higher than among the non-sarcopenic elderly, adjusted for ischemic heart disease, activities of daily living, age or gender[24]; and 2.32 times greater when adjusted for age, gender, education, activities of daily living, body mass index, hypertension, congestive heart failure, chronic obstructive pulmonary disease, number of diseases and level of TNF-α[23]. In addition, the study by Beaudart et al[16] found a significant association between frailty and sarcopenia; as 34.2% of the

sarcopenic population were diagnosed as frail while only 12.6% of the non-sarcopenic population suffered from this condition (p=0.03).

It was also observed in this review that the studies demonstrated a relationship between osteoporosis and frailty in women[19]. This relationship can be explained by biological pathways common to the two conditions, such as the sharing of inflammatory markers through increased C-reactive protein and interleukin-6 associated with frailty, osteoporosis and sarcopenia[37,38]. The other pathway shared by muscles and bones corresponds to the relationship between PTH and insulin-like growth factor 1 (IGF-1)[39], which affect bone remodeling[40] and the reduction in muscle mass and strength[38], and interact with the regulation of the circulating calcium. Vitamin D has the role of modulating the calcium pumps in the sarcoplasmic reticulum and sarcolemma, thereby regulating muscle calcium concentrations[41], assisting in the intestinal absorption of calcium and interfering with bone resorption[42]. Also, it is noted that sarcopenic elderly are 1.8 times more likely to develop osteopenia and osteoporosis[14].

With scientific evidence showing the relationship between vitamin D and frailty, serum levels of 25-hydroxyvitamin D (25(OH)D) constituted an important biological marker for frailty and should be considered in the follow-up care of the elderly. For this population, values below 50 nmol/L43 are considered deficient; studies show that serum levels below this value are associated with the reduction of lean appendicular mass and physical performance[22]. Regarding vitamin D supplementation as a form of prevention or treatment for frailty, there are still no interventionist studies with solid evidence on this issue, as evidenced by a current systematic review[25], in which only effectiveness in gaining muscle strength was proven[44]. Research is still required to study the effects of vitamin D supplementation on the elderly and the repercussions on frailty and sarcopenia, as well as studies that seek to define the optimal treatment modalities, including dose, mode of administration and duration.

Primary care is the entry point of the Unified Health System and aims to prevent disabilities that occur in aging, thus improving health indicators and promoting active aging[45]. Therefore, protocols that assess the conditions associated with frailty in the elderly, aimed at the planning of individual and collective health actions and the early detection of frailty, are essential; as this condition may evolve into dependency and loss of autonomy.

One of the limitations of this systematic review is that the search for articles only covered the last five years, as the themes of sarcopenia and frailty have been discussed in scientific journals for a long time. However, through the articles selected, scientific evidence has been collected that can support primary health care teams in the prevention of frailty among the elderly population. In addition, the review demonstrates the importance of epidemiological studies that evaluate prevalence and identify the causal factors of frailty; as well as studies that monitor the evolution and outcomes of this condition in the Brazilian population, as the majority of studies found involved European and North American elderly persons.

CONCLUSION

Frailty has been associated with several factors, among which this review highlighted sarcopenia, low vitamin D levels, anemia, subclinical hyperthyroidism in men and a greater evolution for osteoporosis in women. The study also identified an association between sarcopenia and old age and a decline in the following aspects: quality of life, physical-functional capacity, nutritional status and comorbidities; as well as an increased risk of mortality in sarcopenic elderly persons.

This systematic review has shown that low serum levels of vitamin D are associated with frailty and also interfere with factors predisposing this condition. It is therefore important to monitor the serum levels of this vitamin in the elderly population and to suggest new studies related to supplementation in frail elderly persons. At the primary care level, the importance of assessing the conditions associated with frailty in the elderly is emphasized, with the aim of preventing the installation and evolution of frailty, and its repercussions for the quality of life of the elderly and their family.

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Approaches of psychoanalysis in the care of the elderly: an integrative review

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Abstract

Objective: to map publications about the clinical psychoanalytical care of the elderly and describe their characteristics. *Method*: an integrative review was carried out, considering the period 2008 to 2017 using the following databases: Index-Psychology, LILACS, MedLine, PubMED, SciELO and RedALyC, irrespective of language. The terms Elderly (*Idoso*), Aging (*Envelhecimento*) and Psychoanalysis (*Psicanálise*) were used. The guiding question was: what scientific literature exists about the elderly and psychoanalytical clinical care? A total of 33 articles were considered. *Results*: five categories were constructed: "Elderly clinical care with a psychoanalytical approach" (15), "Psychoanalytical Approaches in old age" (9), "Psychoanalytical Interventions in long-term care facilities" (6), "Representations of old age for health professionals in the light of psychoanalysis" (2) and "Generationality and psyche" (1). The concern of psychoanalysis for the elderly is incipient and precedes epistemological issues, meaning that production regarding clinical practice is greater; in turn, there are fewer research studies, as most of the articles are reflective in nature. *Conclusion*: the published studies indicate the possibility of employing psychoanalysis with the elderly, as the unconscious does not age and symptoms are continuously updated. The timidity of psychoanalysis in contrast to the increase in the numbers of elderly persons may be criticized. It is also emphasized that the losses, the effects on the body and the reduction of social ties require adjustments in clinical care, such as the inclusion of group activities and activities beyond the analytical setting, especially hospitals, homes and LTCFs.

Keywords: Aged. Psychoanalysis. Health of the Elderly. Old Age.

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INTRODUCTION

The United Nations Fund for Population Activities estimates that there were 15 million elderly people in the world in 2010, and that this number will climb as high as 20 million by the year 2051[1]. This development could hardly be overlooked by the field of psychoanalysis. While the effectiveness of this approach among people over 50 was initially questioned, such an idea is no longer valid.[2].

Psychoanalysis has introduced a new form of understanding human beings. The human psyche is formed by the preconscious/conscious and unconscious systems, which is understood by subjectivity. To speak of the psychic apparatus leads rapidly to a reference to the drives that make up the same, in its articulation to the registering of the symbolic and, therefore, to language[3].

The elderly are prone to suffering losses of all natures: bodily changes, retirement, the loss of social status, the death of loved ones, and the ghosts of death itself[4] which can be elaborated by psychoanalytic practice.

Finitude emphasizes feelings of helplessness and distress. Remembrance may emerge as a way of dealing with this distress, through the re-signification and reconstruction of identity[5].

One of the main issues of the psychoanalytical treatment of the elderly is the fact that the timelessness of the unconscious intersperses with chronological time, where the presence of bodily alterations[6] (whether through senility or senescence) is frequent. To this we must add a certain distancing from the psychoanalytic field that precedes the Freudian orientations of the past when dealing with psychoanalysis for those aged over 50[2].

In considering contemporaneity and the rapid aging process, there are aspects that cannot be overlooked when using psychoanalysis in the care of the elderly. The present study therefore aims to map publications that deal with the psychoanalytic care of the elderly and their specific characteristics.

METHOD

An integrative review was carried out. This allows the synthesis of knowledge and the incorporation of significant studies in the practice, and is considered an instrument of Evidence Based Practice[7]. The guiding question was: *What scientific literature exists about the elderly and psychoanalytical care*?

The search was carried out in February 2018 and considered the period from 2008 to 2017, using the following databases: Psychological-Index, LILACS, MedLine, PubMED, SciELO and RedALyC, in any language. The following descriptors were used: elderly (*idoso*), aging (*envelhecimento*), psychoanalysis (*Psicanálise*), composed as follows: (elderly OR *idoso*) AND (aging OR *envelhecimento*) AND (psychoanalysis OR *psicanálise*).

Repeat articles, editorials, books, course papers, studies where full access was not possible, those that did not respond to the guiding question or which were published outside the period considered were excluded. The selection of the articles occurred in three stages:

1) search for articles according to listed descriptors, period and databases. This phase identified 198 articles;

2º) application of exclusion factors. A total of 51 articles remained;

3º) interpretative reading of the 51 articles, where 18 were excluded, as they did not address the guiding question, leaving 33 articles.

The articles were read in full and categorized based on thematic similarities.

RESULTS

A total of 33 articles were considered, of which 14 were published in LILACS, seven in the Psychology Index (VHL Psi), seven in PubMED, three in SciELO and two in RedALyC. The numbers of articles per year were as follows: 2008-3, 2009-1, 2010-1, 2011-8, 2012-4, 2013-1, 2014-6, 2015-6,

2016-2 and 2017-1. The following types of article were identified: 19 Reflections, six Case Studies, five Surveys and three Experience Reports.

From the survey, five categories were created: "Elderly Clinical Care with a Psychoanalytical Approach" (15), "Psychoanalytical Approaches in Old Age" (9), "Psychoanalytical Interventions in Long-term Care Facilities For The Elderly" (6), "Representations of Old Age for Health Professionals in the Light of Psychoanalysis" (2) and "Generationality and the Psyche" (1).

Elderly Clinical Care with a Psychoanalytical Approach

The articles in this category are described in Chart 1 and discuss the clinical pathways in the treatment of the elderly.

Psychoanalytical approaches in old age

The articles in this category are described in Chart 2, and address the psychoanalytic views about the elderly individual.

Psychoanalytical Interventions in Long-term Care Facilities For The Elderly

The articles in this category are described in Chart 3, and address the psychoanalytic work in Long-Term Care Facilities For the Elderly (LTCF).

Representations of Old Age for Health Professionals in the Light of Psychoanalysis

The articles in this category are described in Chart 4 and deal with how health professionals see old age.

Chart 1. Clinical treatment of elderly persons with a psychoanalytical approach. Uberaba, Minas Gerais, 2018.

Title	Proposal of Study	Synopsis
Care of the elderly as an intersubjective field: ethical reflections [8].	Reflection on the care of the elderly with a basis in intersubjectivity.	Four types of intersubjectivities were described: transobjective (difference between the Self and the Other), traumatic (the other in a constitutive and traumatic relationship), interpersonal (symmetrical/horizontal relationship between the Self and the Other) and intrapsychic (based on psychoanalytic theory – the relationship between the Self and its introjected psychic objects). The ethics of caring is described in the sense that the elderly should assume self-care as much as possible.
Clinical Considerations The psychoanalysis of aging in the SUS: the CRI-Norte[9].	Experience Report on the management of a Winnicottian psychoanalytic clinic in the SUS.	The use of brief psychodiagnosis and individual and group psychotherapy and thematic therapeutic groups. The dependence of humans themselves is described. The valorization of feeling oneself in the cycle of real life, and being alive (in Winnicotti), which is beyond the determinism of diseases.
Aesthetics and poetics of old age in autobiographical narratives: a study in the light of psychoanalysis [5].	Reflection on autobiographical writing as a technique.	Autobiography is defended as a technique for proposing sublimation, desexualization, and the use of written words to give vent to the drives of the elderly. The use of group workshops in which the elderly recall facts for the resignification of identity and the remaking of their social place and relations is described.
Directing clinical treatment of the elderly[10].	A reflection on psychoanalytical care for the elderly, focusing on the symptom.	Analysis is performed with the unconscious which does not age and not with the aged body and, as such, the symptom brings up to date the inscribed marks. There are no symptoms of the old but rather old symptoms, which are primary marks. Many elderly people have many bodily symptoms that are a form of pleasure, of weaving a bond with the "other".

to be continued

Continuation of Chart 1

Title	Proposal of Study	Synopsis
Psychoanalysis and aging: clinical considerations[11].	Case study with elderly woman in panic syndrome and "delicate surgery".	After surgery, the elderly woman requested medical care, since she now has an "artificial organ". This "signifier" referred to existential questions. The analytical work allowed resignification and the search for activities to give meaning to her life.
Older Adults and psychoanalytic treatment: it's about time[12].	Case study with elderly woman hospitalized in a Geriatric Psychiatry Clinic.	Analysis sessions three times a week for 18 months in the hospital and then for three further years after discharge. Transfer was observed with the patient feeling herself motivated to change, tolerant towards her frustrations and searching for new meanings in life.
Winnicotti and the challenge of care for elderly patients in a confused state[13].	Qualitative research with categorization performed with four elderly women in a confused state, in an orthopedic hospital.	Two categories were elucidated: "characterization of the clinical picture" and "performances of the Psychotherapist". In the former the patients suffered attention and consciousness disturbances, memory loss and confusion. In the second category, the condition of the patients prevented traditional analysis using holding, from the perspective of reception and support. Like with the care of the psychotic, listening, reception, guidance for the family and team had an effect.
Special problems for the elderly psychoanalyst in the psychoanalytic process[14].	Reflection on the special conditions of elderly psychoanalysts in the therapeutic process.	The condition of the elderly psychoanalyst as a context requires awareness of his or her existence and continuous monitoring of transference and countertransference, avoiding silent, dangerous and unconscious interaction with his or her patients.
Psychoanalysis and old age: are the elderly obsolete[15].	Psychoanalytical reflection on the elderly in a University hospital outpatient clinic.	The patient gives authenticity to his or her illness as much as he or she can, and the doctor contributes to this antidepressants that instead of "elaborating his or her context" makes the patient numb. In the analytic perspective, pain, recurrent falls, forgetfulness should be seen in the elderly in the subjective dimension.
Pour une approche intégrative de la maladie d'Alzheimer: pertinence et limites[16].	Reflection of the need to combat Alzheimer's beyond neurological issues.	The concept of a memory trait from psychoanalytic and neuropsychological theories is described. Forgetfulness in Alzheimer's disease may be a defense mechanism that is rooted in a "desire for forgetfulness" associated with traumatic loss, leading to real psychic suicide.
Aging in the light of psychoanalysis[4].	Reflection on losses experienced by the elderly.	Argues that the age of neurosis is more important than chronological age, necessitating the elaboration of loss, mourning, and reinventing life.
The aging of Anna Freud's diagnostic profile: a re-examination and re-application of the psychoanalytic assessment for older adults[17].	Case study of the applicability of the Anna Freud diagnostic profile in the elderly	Case study of a 70-year-old woman using Ana Freud's diagnostic profile technique for greater clarity, intrapsychic diagnosis or understanding.
The workshop of letters, photographs and souvenirs as a group psychotherapeutic intervention with the elderly[18].	Winnicottian psychoanalytic research, developed in a group of six elderly people.	The mediating materiality was used. Patients were invited to bring letters, photographs, or other souvenirs. There were 16 weekly meetings of 90 minutes each. The objects were placed on a magnetic board and the group talked about what they brought up. They were then photographed and recorded for a new memory. The socialization of the meanings of the objects allowed affective exchanges and projection of the future.

to be continued

Continuation of Chart 1

Title	Proposal of Study	Synopsis
Clinical observations on the value of reminiscences in the aging process[19].	Case study with a 89-year-old woman on historical reminiscences that broke the barrier of repression .	The children (50 years old or older) ask the elderly woman to reveal past love stories that involved guilt caused by religious values. She has a "blackout" and a spell of anger and crying. In the past, her husband died and she was left with five small children, experiencing moments of depression and suicide attempts. The analysis took around two months with two sessions per week, and conflicts over the forbidden themes emerged, giving way to a reconciliation with herself, showing that there is no time limit for the return of repressed memories.
Psychoanalytical diagnostic[20].	Case study with David Libermam Algorithm (DLA) psychoanalytic diagnosis.	The case presented is of an elderly writer, and relates to fragments from an interview about a dream and a literary work, with drive stagnation and various physical (respiratory) symptoms. Phallic genital eroticism and intra-somatic libido fixation is demonstrated in a poem. In the dream there is a smaller and dramatic intra-somatic component. The interview focuses on economic issues, the will to live and breathe the air on a ranch. The DLA is cited as an instrument that orders words, phrases, rhetoric, narratives, intonations and provides the semiological ordering of discourse.

Chart 2. Psychoanalytical approaches in old age. Uberaba, Minas Gerais, 2018.

Título	Study Proposal	Synopsis
The silencing of old age: social erasure and processes of subjectivation[21].	Reflection on subjectivities of the aged body and social imaginary.	Prejudice as everyday attitudes: social exclusion, subjective erasure, disinterest in life history and fear of contact with old age due to link to death. Terms like "the best age" mask the difficulty of accepting this cycle. The passage of the "ideal of the self" regulates the subject with marks of the insignias of the "other", in the hope of recognition.
The “third age”, subjectification and biopolitics[22].	Reflection of the concept of the third age as significant in the reading of biopower and biopolitics.	The significant "third age" brings new modalities of subjectivation in the field of old age – such as the "end of life" for a "new time of life". In the figure of biopower and biopolitics and the control of vital processes, there is the medicalization of social space, the prevention of diseases and the promotion of health.
Body and aging: a psychoanalytic perspective[23].	Reflection on the body, aging and psychoanalysis.	An unconscious body image is created, with identity, despite the changes of the body over time. It is the phase of the "negative mirror". There are losses in subjectivation, the reduction of the libidinal flow, the search for ways out (diseases, therapeutics, use of medication); ways of re-creating links and contacts with the "other".
The shadow of a body that declares itself: body, image and aging[24].	Reflection on old age and impacts on the subject from the psychoanalytic gaze.	There is a mismatch between the timeless unconscious and the body, within the scope of temporality. The reduction or loss of libido causes the elderly to seek a certain narcissism, focusing on memories, fantasies and pain.
Symptoms of the elderly?[25].	Reflection about symptoms in the elderly.	The symptom in psychoanalysis contrasts with the biological and cultural view of aging. The symptom may be old but not specific to the elderly. Psychoanalysis does not deal with pathologies, but with the subjectivated symptoms, in which the subjects are implicated. There are no "symptoms of the old" and in the real and symbolic the symptom can also be "enjoyed".

to be continued

Continuation of Chart 2

Título	Study Proposal	Synopsis
"Old age? I think it's great considering the alternative ": reflections on old age and humor[26].	Reflection on humor and old age, from the starting point of psychoanalysis.	Old age is seen and lived through in a negative way and there is an incessant search for happiness and a denial of suffering and death. Examples of Freud's life are presented with the use of humor for the relief of suffering and tolerance towards the ambiguities of life.
Old Age and Death: Reflections on the Grieving Process[27].	Reflection on death and aging in the light of psychoanalysis.	Death of friends and companions, loss of work, family and social relations refer to real and symbolic losses. Death is not accepted as natural, and religious ideas and beliefs are born out of the need to make helplessness bearable. In suppressing the loved object, the libido needs to be directed, a somewhat painful and slow process.
Vieillir en terre étrangère: une nouvelle épreuve de l'exil[28].	Reflection on aging in the LTCF* and migratory situation.	Being old and outside the cultural context can generate suffering of the social and psychic order. Foreign elderly people in the LTCF experience psychic suffering because of the proximity of death and because they do not see possibilities for the reformulation of life. Listening spaces that see uniqueness as a conscious or unconscious investment in culture are necessary, considering the symbolic resources.
Encounters and solitudes of our time[29].	Reflection on the relationship between Psychoanalysis and modern Philosophy, highlighting: adolescence, the elderly and love.	Adolescence, aging and love are described as moments of transition, which are difficult to live through. With analytical work, it is possible to assume "responsibility" for one's own destiny, which allows the emancipation of the lived past, opening up the future through human freedom, which is however limited.

* Long-Term Care Facility for the Elderly

Chart 3. Psychoanalytic Interventions in Long-Term Care Facilities for the Elderly. Uberaba, Minas Gerais, 2018.

Title	Study Proposal	Synopsis
Too much love: institutional care for old age[30].	An ethnographic case study, based on a psychoanalytic study of an LTCF* on representations of old age.	Love, care and attention were understood by the professionals as requirements for the proper exercise of the task, conceived as a gift (talent) and independent of technical knowledge. The idea of this talent as a disinterested action evidences care in a relationship of "charity" and power.
L'apport de la psychanalyse aux soins en institution gériatrique[31].	Reflection on contributions of psychoanalysis to caregivers.	There is transference and countertransference from the professional in relation to the elderly; in addition, the same experience frustrations in the constant losses of autonomy and death. Psychoanalysis can contribute to the understanding of the care practice for both the elderly and the caregiver.
The foreign relative: the care of the other in the geriatric institution[32].	Quantitative-qualitative research, based on psychoanalysis and on cultural representations.	The foreign workers in the LTCF* were women, with a mean age 39, from South America and Eastern Europe, had more than 13 years of schooling, had resided in Italy for 10 years, were mostly nurses or nursing technicians, 25% had already suffered discrimination. In interviews with 13 nursing directors, three categories emerged: "*safety for us*" (aspects that unite and reassure), "*familiar but threatening*" (fear of relatives and family members) and "*radically strange*" (leaving one place and arriving in another). The group activities showed that through the symbolic one can reduce the sensation of strangeness to "ourselves", elaborating it, without living in the denial of this "other".

to be continued

Continuation of Chart 3

Title	Study Proposal	Synopsis
Institutionalization of old age and regression: a psychoanalytic view of old people's homes[33].	Reflection of practical reality in two LTCFs in partnership with universities, with use of "Psychology workshops", and trips.	The infantilization (speech, type of care) and psychological regression of the elderly was observed through prostration, apathy towards a routine; and also among caregivers, because only basic needs were valued, the stimulus to self-care was non-existent. There is a mortification of the 'Self' through the loss of subjectivity and the notion of territory. The departure from the institution (trips) sought re-signification, contact with the external world.
Old age as a brand today: a psychoanalytic view[34].	Report of experience of working in a group in a LTCF*.	Activity carried out with four to six elderly women in four meetings of a total of 16 residents. The narratives revealed the silence of the institution regarding symptoms, an attempt to protect desires, in contrast to the drivers of life and death. There was a devaluation of the knowledge of the elderly; a feeling of abandonment and helplessness; communication that was not tolerated by the LTCF*; deletion of individual traits; and, repetition of stories.
The unveiling of old age: the contributions of psychoanalysis in the search for meanings for the experience of aging[35].	Experience report of the relationship of psychoanalysis, aging and old age, with six elderly persons.	Experience has shown that there is an emotional, psychic life, and the existence of unconscious processes that govern the behaviors, actions and symptoms of very old people.

*Long Term Care Facilities For The Elderly

Chart 4. *Representations of Old Age for Health Professionals in the Light of Psychoanalysis.* Uberaba, Minas Gerais, 2018.

Title	Study Proposal	Synopsis
Collective imaginary of mental health professionals regarding aging[36].	Qualitative survey on the collective imaginary of mental health workers.	Two fields of affective-emotional meaning emerged: "suffering and loneliness" and "age does not matter". This shows that being old is seen as sad and lonely, but few professionals see the possibility of creative and healthy lifestyles.
Death from the view of a cleaning team[37].	Survey of views of cleaning workers in a geriatric nursing ward on death.	Four categories were observed: *perception about death* (repetition, fear of fragility); *death and religion* (religious practice for managing helplessness); *death of the elderly* (acceptance in this age cycle, penalty); *space offered to participants* (reflection of finitude).

Generationality and the psyche

The article in this category is described in Chart 5, and deals with generationality and the psyche.

Chart 5. Generationality and the psyche. Uberaba, Minas Gerais, 2018.

Title	Study Proposal	Synopsis
Transmission of the psyche between generations [38].	Reflection on a case in the transmission of the psyche.	Elderly woman with a history of generational repetitions including events such as: incest, denial and hiding facts, showing that unprocessed psychic traumas can pass to future generations.

DISCUSSION

Elderly population growth in comparison with the general population[6,9] and the distance from the Freudian gaze of "proscribing" psychoanalytic care to the elderly cannot be denied[11,18].

Aging occurs from birth, but for psychoanalysis old age is the stage where the elderly are to be found[4]. If the main subject of psychoanalysis is the unconscious, and if this does not age, in addition to the fact that "symptoms of the old" do not exist, the symptom itself brings the direction of analysis up to date[6,10,19,37]. One study showed that analysis with the elderly allowed the construction of knowledge of the real, through the elaboration of the process of guilt[19]. Thus, it is up to the analyst to create a relationship with their patient, so that the symptoms presented connect with healthy elements[39].

The articles show that the classic approach needs to be reviewed when providing care in old age. There is a possibility of group actions, including the elderly individual, their family and the professionals who take care of them[5,9,15,18].

Through varied contexts, old age is the cycle that occupies the most hospital beds. In this period the elderly receive clinical care while their unconscious remains active. Their symptoms bring up to date their psychic condition, their life history (and their neurosis) and their drives, all of which are there; it is, therefore, a unique analytical moment[11,13,16].

Another niche is the home. An elderly person may be hospitalized (in conditions of intermediate or palliative care) in their home and, if there is no significant cognitive impairment, such an individual can be subject to psychoanalytic care[12,19].

The non-aging of the unconscious and the maintenance of structure in the elderly, despite the physical and emotional condition that old age denotes, require other instruments of psychoanalytic intervention.

The intersubjectivity and importance of the subjective dimension, especially in the meaning of pain, recurrent falls, forgetfulness and dependence on care can adopt an empathetic route[8,15]. Or in the projective identification, passing from one affect to another, which may occur between the elderly and caregiver[8,15].

The representations of old age in a social panorama bring a contrast of advances in various areas (sanitation, health, economy, politics, education) that extend life expectancy, access to goods and services, perspectives of well-being[40,41]. But these advances can create other issues of suffering, especially psychic.

The "ideal of the Self" regulates the subject with the insignia of the "Other", in the search for recognition and being loved, but not fulfilling this requirement can bring the haunting sense of failure; so that unprocessed changes reveal something we want no contact with, old age[21].

Achieving old age (even from a biological point of view) for the present day (considering the past) is a success; and brings about a new symbolic and social experience.

Elderly men and women tend to become castrated with age, through difficulties in getting erections and menopause, which bring distress to the subjects; who may not want to give up what they were, and still less readjust to new life projects[23]. But to medicalize the social space, prevent health problems and promote health without subjectivation and the elaboration of life scenarios is unproductive.

Symptoms subjectivated in diseases, or as a form of pleasure, can make old age tragic and more acute, and the elderly may stop caring and become more and more detached from life. In this case, the analyst's function is to listen to human beings who speak, in an attempt to build a bridge between the real and the symptom[38].

We are talking here of a subject with desires but a weakened body, which will require the revision of narcissistic ideals and the search of projects, to the limits of the body and to social and cultural questions, influencing daily life. It is the dilemma of the temporal body with a timeless unconscious[24].

The loss of a loved one or an object that replaces it can generate grief with a high instinctual investment, and thus the libido needs to be redirected[27].

The fact of being in an LTCF reveals several contexts of institutional insertion: the decision of the family, an elderly person with multimorbidities and polypharmacy, dependent on a great deal of care.

The distress of the institutionalized elderly person is beyond the distress of the life cycle. There are losses in the body, but especially in the symbolic and imaginary dimensions, which generates introspective behavior and absence of openness to speech. One study showed that the notion of charity as a gift and the need of the elderly converge towards the intention of the "Other," which transitions from the power of the caregiver to the dependence of caring[30].

However, LTCF professionals tend to suffer from psychic suffering, so they can receive psychoanalytic support for the constant experience of loss, lack of autonomy and proximity to death[31] experienced by caring for elderly people.

Infantile and psychological regression, overvaluation of basic needs (analogous to childlike dependence), discouragement of self-care, lack of interaction between the elderly and the external world, and monotony through routines are described[33].

The disinterest towards the elderly on the part of psychoanalysis as a whole, makes its contribution to the LTCF a distant reality; but there is much to be done in this space, whether through the elderly, family members or caregivers.

The view of the health professional about old age does not tend to be very different from the social perspective. Even if different visions were hoped for, they are usually negative. Research on social representations of old age and a good old age from the view of the elderly was due to being active or not and, of the people around them, by valorization or devaluation; and for both by economic, family and behavioral dimensions[41,42].

The issue of sexuality and the support of social services (especially health) are not mentioned. Studies claim that it is not old age that determines the absence of desire or the diminution of sexual relations, but the complexity of desire that imposes new hues for sexuality in old age[43,44].

CONCLUSION

Among the main gaps found in the literature are: the need for more clinical studies of psychoanalysis with the elderly, the mapping of experiences, knowledge of what psychoanalysts think in this clinical area, cognitive capacity in old age, psychoanalytic actions and psychoanalysis in Long Term Care Facilities for the Elderly.

Essential supports of psychoanalysis widely used in other life cycles (sexuality, free association, the symptom and its time and temporal chronological relationship, specific or more creative approaches) need to be adapted to the care of old age.

The scientific community and journals need to create pendular movements (of dialogue, of coming and going, of criticism) that stimulate not only the production and the interest of psychoanalysis, but also the training of psychoanalysts focused on actions in old age, a contemporary demand.

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