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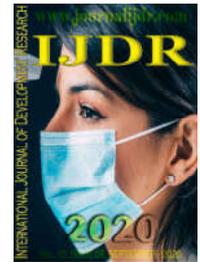
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RESEARCH ARTICLE

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CLINICAL-FUNCTIONAL VULNERABILITY OF ELDERLY PEOPLE LIVING IN A MEDIUM-SIZED BRAZILIAN CITY

Danielle Bordin^{1,2,*}, Rodrigo Bordin³, Clóris Regina Blanski Grden^{1,2}, Luciane Patrícia Andreani Cabral^{1,2}, Carla Luiza da Silva¹ and Péricles Martim Reche¹

¹Nursing and Public Health Department, State University of Ponta Grossa (UEPG), Ponta Grossa, Paraná, Brazil

²Regional University Hospital of Campos Gerais, Ponta Grossa (HURCG), Paraná, Brazil

³Professor, State Department of Education from Paraná and University Center of Pato Branco, Paraná, Brazil

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*Corresponding author: Danielle Bordin

ABSTRACT

Objective: to assess the clinical-functional vulnerability and the most prevalent limitations in elderly Brazilians. **Materials and Methods:** Observational, quantitative study, carried out with 178 elderly people living in a medium-sized Brazilian city. Data were collected using an instrument that assesses the clinical-functional vulnerability index (CFVI-20) and assessed descriptively. **Results:** Of the 178 elderly, 50% were robust, 38% potentially fragile and 12% fragile. Most of them were among 60 and 74 years old, had positive self-perception of health, the ability to perform basic and instrumental activities of daily living and mobility, adequate visual and hearing conditions. The elderly were affected by frequent forgetfulness (34.8%), discouragement and hopelessness (39.3%), reduced gait speed (43.8%), falls (23.0%), sphincter control (27.5 %) and presence of multimorbidity or polypharmacy (31.5%). **Conclusion:** the majority of the elderly people had good clinical-functional condition, being the dimensions that most frequently affect cognition, mood and behavior, aerobic/muscular capacity, sphincter continence, multimorbidity and polypharmacy.

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INTRODUCTION

Population aging is inherent to frailty and vulnerability, at the most diverse levels, encompassing negative health conditions such as functional decline and its consequences, reduction of homeostatic reserve or the ability to adapt to biopsychosocial aggressions, falls, hospitalization, institutionalization and death (DE MORAES *et al.*, 2016) what instigates the provision of adequate care for the care of the elderly population.

Given the above, study point out that in Brazil, the prevalence of frailty in the elderly varied among 8.7% and 47.2%, in the interstice 2009 to 2017, indicating that the greater the number of morbidities, the more susceptible the frail the elderly become (FARIAS-ANTÚNEZ, FASSA, 2019). In the state of Paraná, a prevalence of 10.7% of frailty is estimated in elderly residents in the community, with greater frequency in females and increasing with advancing age (PARANÁ, 2018).

When representing a potential public health problem, frailty is a dynamic and progressive process, with reduced physical, psychological and social functions.

Consequently, the early recognition of these frail elderly or at risk of fragility allows a directive action in health care capable of: enhancing the subjects' autonomy, reducing complications, preserving functional and cognitive reserves and, preventing disabilities, hospitalization and, even deaths (FALLER *et al.*, 2019; PARANÁ, 2018).

Assessing the functional disability of the elderly is relevant, as it can provide support to guide quality care in health services (AGUIAR *et al.*, 2019). Thus, the present study aims at assessing the clinical-functional vulnerability and the most prevalent limitations in Brazilian elderly living in a medium-sized city.

MATERIALS AND METHODS

This is an observational, quantitative, descriptive-exploratory study, developed with 178 elderly people living in the urban and rural area of a medium-sized city, located in the southern region of Brazil.

The data from the elderly in the rural area (n=82) are the result of an extension project developed by multidisciplinary health residents of the elderly in the areas of Dentistry, Nursing, Social Work, Pharmacy and Physiotherapy, who perform multidimensional gerontological care for the elderly.

Inclusion criteria were: being 60 years old or older. Individuals who did not acquiesce in participating in the study or who partially answered the questionnaire were excluded.

Data collection was carried out individually, by trained and calibrated researchers, in order to explain the object of the research, its character of voluntariness and non-identification, as well as on the form of data collection, analysis and destination. Those who acquiesced with their participation, did so, initially by completing a free and informed consent form. The information was collected in the period from 2018 to 2019, through a validated instrument to assess the frailty of the elderly, entitled clinical-functional vulnerability index (CFVI-20) (DE MORAES *et al.*, 2016).

The instrument has closed questions 20 questions related to dimensions: age, self-perceived health, functional disabilities, cognition, humor, communication and multiple morbidities (DE MORAES *et al.*, 2016; PARANÁ, 2018). The total score is 40 and are categorized as follows: from 0 to 6, the elderly person is robust; from 7 to 14, the elderly person is potentially frail; and the value ≥ 15 , the elderly is characterized as frail (DE MORAES *et al.*, 2016).

The data were tabulated using Microsoft Excel 2013® software and analyzed descriptively using absolute and relative frequency.

The research was approved by the ethics committee on research with human beings, under CAAE No. 21585019.3.0000.0105, respecting the dictates of Resolution 466/12 of the National Health Council and the Declaration of Helsinki.

RESULTS

Of the 178 Brazilian elderly evaluated, most were robust (n=90; 50%), 38% were potentially frail (n=67) and only 12% (n=21) were frail (Figure 01).

Most of the elderly evaluated were aged among 60 and 74 years old (64.6%) and when compared to elderly people aged equal to theirs, they present positive self-perception of health (60.7%). Regarding to the execution of instrumental and basic activities of daily living (IADL and BADL), most elderly people continue to do their shopping (92.1%), control their money (92.1%), perform housework (94, 4%) and bathes alone (96.1%) (Table 01). Regarding to cognition, 34.8% (n=65) reported forgetfulness, of which 52.5% (n=35) reported worsening over the months and 25.8% (n=16) that this forgetfulness is preventing the performance of any daily activity.

Regarding to mood and behavior, although most do not have these conditions, 39.3% reported discouragement, sadness or hopelessness, and 18.5% lost interest in performing activities that were previously pleasurable (Table 01). In terms of mobility, most of them had a preserved condition of raising their arms above their shoulders (92.7%), picking up small

objects (94.4%), getting around (88.2%). However, 43.8% had reduced gait speed, reported falls in the last year (23.0%) and difficulty in controlling sphincters (27.5%) (Table 01).

Concerning to communication, only 18.5% and 9.6% reported difficulties with vision and hearing, respectively. However, with regard to physiological systems, medications and past history, a portion of 31.5% has five or more chronic diseases or regularly uses five or more different medications or has been hospitalized in the last six months (Table 01).

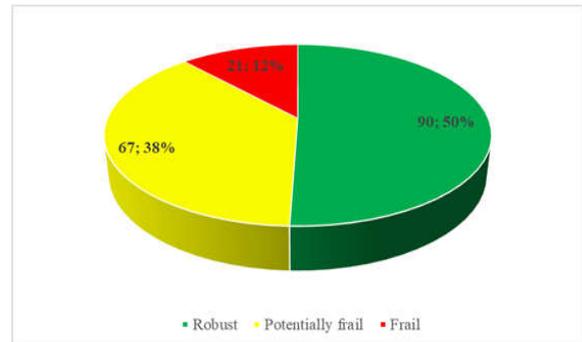


Figure 1. Stratification of elderly Brazilians, according to clinical-functional vulnerability. Ponta Grossa, Paraná, Brazil, 2018-2019 (n=178)

DISCUSSION

Functionality is defined as the ability to manage one's own life or take care of oneself, which permeates the performance of daily activities and social and community participation (LOPES, SANTOS, 2015; VEIGA *et al.*, 2016). During the aging process, physical-functional changes in normal or pathological physiological processes may occur, at different levels, according to individual characteristics and exposure to negative social determinants (LOPES, SANTOS, 2015). The literature classifies the elderly, according to their functionality into: robust elderly, who can exercise their autonomy and independence and develops all their activities of daily living independently, without presenting functional disability; potentially frail elderly is someone who presents a decrease in functional clinical condition, that is, with physical and mental weakness, but presenting himself as independent and autonomous; and the frail elderly person is one who is semi-dependent or totally dependent on his activities, that is, is unable to manage his life independently and autonomously (MORAES *et al.*, 2016; ALEXANDRINO *et al.*, 2019).

The present study that assessed the level of functionality and main limitations reported by elderly residents in a medium-sized municipality in Brazil, found that half of the elderly were characterized as robust, one third as potentially frail and 20% frail. In the study carried out 264,892 elderly people from Paraná, the level of frailty of the elderly people evaluated was lower than that found in the present study, where 66% of elderly people from Paraná were robust, 20% potentially frail and 12% frail (PARANÁ, 2018). In contrast, in the study carried out with 342 elderly people from a small municipality in Paraíba, Brazil, found a higher percentage of frail and potentially frail elderly people, making a total of 59.1% (ALEXANDRINO *et al.*, 2019).

The results about frailty are noteworthy, since half of the evaluated population has some level of frailty, to a lesser or

greater level. Frailty increases the chances of the elderly being affected by adverse clinical outcomes, such as increased functional dependence, falls, worsening of chronic or acute diseases, hospitalizations, institutionalization and death (ALEXANDRINO *et al.*, 2019).

As it is mostly a young public (60 to 74 years old), characterized as potentially active elderly people and with a participatory role in society, the level of clinical-functional vulnerability found is even more worrying, since the natural aging process brings with it reduction in the functionality of the physiological systems that determine the individual's

community, respectively, it was found that in most of the elderly in this study they are well preserved. The findings corroborate with studies carried out with elderly people living in a city in the northeast of Brazil (LOPES, SANTOS, 2015) and in Minas Gerais, Brazil (AGUIAR *et al.*, 2019) that identified that the majority was independent to perform all IADL and BADL.

Now denoting the main limitations mentioned by the elderly evaluated, the forgetfulness, discouragement, sadness or hopelessness, reduced gait, falls, sphincter incontinence and the presence of multimorbidities, use of polypharmacy or

Table 01. Clinical-functional vulnerability of Brazilian elderly Ponta Grossa, Paraná, Brazil, 2018-2019 (n=178)

Variable	Total n (%)	
Age		
60 to 74 years	115(64,6)	
75 to 84 years	55(30,9)	
Over 85 years	8(4,5)	
Self-perceived health		
Excellent, very good or good	108(60,7)	
Regular or bad	70(39,3)	
Variable	Yes n (%)	No n (%)
Basic and instrumental activities of daily living (BADL and IADL)		
Stopped shopping because of health	14(7,9)	164(92,1)
Ceased to control money because of health	14(7,9)	164(92,1)
Has stopped doing small housework because of health	10(5,6)	168(94,4)
Has stopped bathing alone because of health	7(3,9)	171(96,1)
Cognition		
It's getting forgotten	62(34,8)	116(65,2)
This forgetfulness is worsening in recent months	35(19,7)	143(80,3)
This forgetfulness is preventing the performance of some daily activity	16(9,0)	162(91,0)
Humor and or behavior		
Discouragement, sadness or hopelessness	70(39,3)	108(60,7)
Lost interest or pleasure in previously pleasurable activities	33(18,5)	145(81,5)
Mobility		
Unable to raise arms above shoulder level	13(7,3)	165(92,7)
Unable to handle or hold small objects	10(5,6)	168(94,4)
Difficulty walking capable of preventing the performance of some daily activity	21(11,8)	157(88,2)
Low gear	78(43,8)	100(56,2)
Two or more falls in the past year	41(23,0)	137(77,0)
Lose urine or feces	49(27,5)	129(72,5)
Communication		
Vision problems	33(18,5)	145(81,5)
Hearing problems	17(9,6)	161(90,4)
Physiological systems, drugs and past history		
Multimorbidities, polypharmacy or frequent hospitalization	56(31,5)	122(68,5)

functional capacity (ALEXANDRINO *et al.*, 2019), making a future visualization of these elderly assessed an even greater condition of fragility. Therefore, monitoring and intervention strategies to minimize or avoid these limitations must be further intensified and in a sharp and immediate way.

Still, another factor that influences the frailty of the elderly people is the way they perceive their own health (CONFORTIN *et al.*, 2015; RIBEIRO *et al.*, 2018). One third of the elderly evaluated their health in a negative way, a condition that, according to the literature, which increases the greatest risk of death, as it influences the management of the way of life and expectations in relation to the context of life (CONFORTIN *et al.*, 2015). The negative perception of their health permeates the concreteness of the impact of the cumulative exposure of health determinants and conditions on their life history and on the involvement of chronic diseases, as well as their aging process and their level of fragility (RIBEIRO *et al.*, 2018).

Regarding to the performance of IADL and BADL, which refer to self-care and practical life and social interactions in the

frequent hospitalization are highlighted. With regard to the cognitive aspect, measured exclusively by forgetfulness, a portion of the elderly people referred to this condition, with worsening conditions. The literature points out that memory complaints are frequent and tend to increase with advancing age (ESPIRITO-SANTO *et al.*, 2016). However, further investigation must be carried out, as forgetting is not always pathological, but a transitory reflection of an emotional situation, or even, even the level of education, individuals with low education tend to be more affected in terms of cognitive aspects in the aging process (ESPIRITO-SANTO *et al.*, 2016). However, frequent forgetfulness should be a warning sign for thorough assessments of cognitive status, as cognitive changes are frequent in the elderly (AGUIAR *et al.*, 2019; BORTOLI *et al.*, 2015) and interfere with the individual's abilities to understand and integrate the steps that characterize performance in daily activities (BORTOLI *et al.*, 2015). Still, the more severe the change in cognitive function, the worse the balance, functionality and the greater the risk of falls (BORTOLI *et al.*, 2015).

Also related to another aspect of mental health, a considerable portion of the elderly showed symptoms of sadness and

depression with loss of interest in previously pleasurable activities. The prevalence of depressive symptoms in the elderly population is high and is associated to conditions commonly present in aging such as the presence of multimorbidities, the occurrence of falls, the degree of fragility and dependence to perform activities of daily living, reduction of social interaction and change in their body image (AGUIAR *et al.*, 2019; ALEXANDRINO *et al.*, 2019; MENDES-CHILOFF *et al.*, 2019; RIBEIRO *et al.*, 2018).

Still, it was found that almost half of the elderly people had reduced walking speed. In a study carried out with long-lived elderly people in outpatient follow-up, they found that the locomotion domain was the one with the highest percentage of decline among the evaluated subjects (VEIGA *et al.*, 2016). The difficulty in this task can occur due to the various deficiencies, such as strength, sensitivity, balance, coordination or vision, but also to some chronic conditions (FONTES, BOTELHO, FERNANDES, 2013).

In addition, the decrease in aerobic resistance and worsening of motor performance can increase the presence of cognitive decline, adverse health outcomes, functional disability, risk of falls and even death (BINOTTO; LENARDT; RODRÍGUEZ-MARTÍNEZ, 2018; LENARDT *et al.*, 2019). Therefore, it is important that strategies are adopted to identify the risks associated with limiting mobility and physical exercise, to improve, stabilize or even reverse this phenomenon, reducing the potential risks caused by reduced mobility (ALEXANDRINO *et al.*, 2019).

Falls in the elderly are one of the main public health problems and are associated to reduced gait speed, balance and postural instability, level of fragility, morbidity, polypharmacy, cognitive level, and several environmental factors (BORTOLI *et al.*, 2015; FHON *et al.*, 2016). Due to their high incidence, they are considered the main cause of morbidity, reduction in years of life, loss of autonomy and quality of life in aging, as it usually causes fractures, health decline and psychological damage (BORTOLI *et al.*, 2015). In this study, 23% of the elderly reported having fallen two or more times in the past year. This result should signal strategies for environmental modification and interventions aimed at deficiencies in functions related to falls.

It was also found that a portion of individuals presented sphincter incontinence, considered a multidetermined phenomenon, associated to aging and multiparity, in the case of women, and has a significant impact on quality of life and health status, being a reason for embarrassment, anxiety and social isolation (LOPES, SANTOS, 2015). The findings corroborate with a study conducted with elderly people living in a municipality in northeastern Brazil, which identified a prevalence of 32.3% of dysfunction or incontinence, being exclusively urinary in the elderly (LOPES, SANTOS, 2015).

A previous study points out that fecal incontinence is less prevalent than urinary incontinence, and is often associated to long-lived, immobility syndrome and some health conditions, negatively altering the functionality of individuals (FONTES, BOTELHO, FERNANDES, 2013).

With regard to the presence of multimorbidities or polypharmacy and frequent hospitalizations, a part of the elderly reported having one or more of these conditions. In the

aging process, the incidence of chronic diseases is expected to increase, these are frequent causes of impaired functionality and quality of life and lead to polypharmacy (MALTA *et al.*, 2017).

A study also points out that the majority of the elderly reported using polypharmacy, justified by the involvement of chronic diseases, the elderly end up being the most medicalized part of society and the group with the highest prevalence of multimorbidities (ALEXANDRINO *et al.*, 2019), which in turn, has a higher risk of hospitalization and fragility (ALEXANDRINO *et al.*, 2019; PARANÁ, 2018).

This study has some limitations, such as the small size and convenience sampling and does not guarantee to generalize the results to other territories. However, the limitations do not minimize the relevance of the study when knowing the functional profile of the elderly for the elaboration of an action plan that integrates health promotion, prevention and treatment activities, to guarantee an active, autonomous and independent aging.

Conclusion

The elderly people have good clinical-functional condition, most of them autonomous and independent. Among the dimensions that most frequently affect are cognition, mood and behavior, aerobic or muscular capacity of lower limbs, sphincter continence, multimorbidity and polypharmacy.

The findings show the importance of continuous and comprehensive care for the elderly with a view to preventing vulnerability and maintaining functionality, with safety and autonomy, with special investment in strategies that encourage the strengthening of muscles, posture and balance, mental health, and prevention of injuries resulting from chronic non-communicable diseases.

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