Frailty of the socially vulnerable elderly

Fragilidade de idosos em vulnerabilidade social

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Abstract

Objective: To identify the relationship between frailty, sociodemographic characteristics, and social vulnerability of the elderly enrolled in a primary care service.

Methods: This was an exploratory, comparative, and cross-sectional study with a quantitative research approach performed with 247 elderly people enrolled in a primary care service, in a city in the interior of São Paulo. A questionnaire was used for socio-demographic characterization of the participants, and the *Edmonton Frail Scale* was used to evaluate frailty. Vulnerability was classified according to the Paulista Index of Social Vulnerability. Data were analyzed in a descriptive and inferential manner. All ethical recommendations were met.

Results: There was a prevalence of frail elderly women, with a mean age of 68.5 (SD=7.3) years, low education, who were retirees. There was a statistically significant difference between frailty and the number of diseases reported (p<0.001). Frailty correlated negatively with social vulnerability (r=-0.043).

Conclusion: These results should receive attention from public administrators to understand frailty of the elderly in a context of social vulnerability.

Resumo

Objetivo: Identificar a relação entre fragilidade, características sociodemográficos e vulnerabilidade social de idosos cadastrados em um serviço de atendimento primário.

Métodos: Trata-se de um estudo exploratório, comparativo e transversal, com abordagem quantitativa de investigação realizado com 247 idosos cadastrados em um serviço de atendimento primário, em um município do interior paulista. Utilizou-se questionário para caracterização sócio demográfica dos participantes e *Escala de Fragilidade de Edmonton*, para avaliar a fragilidade. A vulnerabilidade foi classificada segundo Índice Paulista de Vulnerabilidade Social. Os dados foram analisados de forma descritiva e inferencial. Todas as recomendações éticas foram respeitadas.

Resultados: Houve prevalência de idosos frágeis pertencentes ao gênero feminino, com média de idade de 68,5 (dp=7,3) anos, baixa escolaridade e aposentados. Houve diferença estatisticamente significativa entre fragilidade e número de doenças relatadas (p<0,001). A fragilidade se correlacionou negativamente com a vulnerabilidade social (r=-0,043).

Conclusão: Os resultados encontrados devem suscitar atenção aos gestores públicos para a necessidade de conhecer a fragilidade de idosos em contexto de vulnerabilidade social.

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Introduction

Frailty is a clinical condition with multiple causes and contributing factors, characterized by a decrease in strength, endurance, and physiological function that may lead to the development of dependence, physical cognitive, and social decline.(1,2) Frailty present in the elderly has multidimensional, heterogeneous, and unstable aspects that make it complex when it is influenced by characteristic factors of social vulnerability.(3)

Social vulnerability is the result of a combination of how the individual obtains information and material resources, and faces cultural barriers and violent impositions.(4) Vulnerability is related to the structural factors of society, and is a suitable concept for understanding the dynamics of inequality in social processes. Social factors can also contribute to increased vulnerability, such as: living in contexts of greater vulnerability, having a low level of education, socioeconomic status, and limited access to public services.(5)

Although social vulnerability is an important factor for all stages of life, in the elderly there is growing evidence that there is an increase in the association between social circumstances and age.(6) Frail elders, in a context of social vulnerability, bring with them demands for public policies, which can be highly related to health and welfare needs.(7) Researching the frailty of the elderly in a context of social vulnerability offers advances in knowledge, and suggests contributions to the network of public services that assist the elderly.

The scientific literature still presents gaps regarding studies that investigate the frail elderly in social services, using the Edmonton Frail Scale (EFS). A total of 639 elderly community members in a city of Minas Gerais state were evaluated according to the EFS, and results showed a prevalence of 33.6% of frail elderly.(8) Another study, with 363 elderly people in a context of high social vulnerability in São Paulo, Brazil, showed that 27.3% of the elderly evaluated were frail, according to Fried's phenotype. (9) Although there is no gold standard for assessing frailty, Cesari et al.(10) argue that the EFS is a scale composed of clinical and social issues adequate for the Brazilian population, because it is objective and consistent with the context being studied.(10)

Multidimensional and multisectoral interventions related to frailty in vulnerable elderly, is of paramount importance for primary care services, to improve monitoring and enable the conducting of long term care approaches, both of health care and basic social protection within the public system. The development of research in the area of aging is a priority, and is included in the *Research Agenda on Aging for the Twenty-First Century*, which focuses on the social aspects associated to aging.(11) This study aimed to identify the relationship between frailty, sociodemographic characteristics, and social vulnerability of elderly individuals enrolled in a primary care service.

Methods

This was a cross-sectional study with a quantitative approach, conducted with elderly people enrolled in five Social Assistance Referral Centers (Centro de Referência de Assistência Social - CRAS) in the city of São Carlos, SP, located in regions considered vulnerable.

According to the 221,950 inhabitants of São Carlos city, five CRAS were identified in regions I, II, III, IV and V. CRAS I, II and III were located in a region with high vulnerability. CRAS IV included regions with medium vulnerability, and CRAS V is a region with very low vulnerability. The social vulnerability of the region in which these elderly people were integrated was identified based on the São Paulo Social Vulnerability Index (SVI). The SVI classifies the census tracts of São Paulo state according to levels of vulnerability, based on socio-economic and demographic dimensions.(12,13)

The sample consisted of 247 elderly people who met the following inclusion criteria: 60 years of age or older, enrolled in one of the CRAS, ability to understand the interview questions, agreed to participate and signed the Terms of Free and Informed Consent Form. The exclusion criteria were: having severe hearing or vision deficits that made the research more difficult to comprehend. An active

search was conducted at the elderly residence. The interview lasted approximately one hour, and was performed by previously trained students of the undergraduate gerontology course at the Federal University of São Carlos (UFSCar), in order to standardize the data collection.

For data collection, a socio-demographic questionnaire previously developed by the researchers was used, with information on: sex, age, ethnicity, marital status, current occupation, education, and number of diseases reported. The Edmonton Frail Scale (EFS) evaluated nine domains: cognition, general health status, functional independence, social support, medication use, nutrition, mood, continence, and functional performance. Individuals who reach 0-4 points are considered "Non-frail", 5-6 points are considered "Apparently Vulnerable", ≥7 points are considered "Frail".[14]

The descriptive and inferential analysis was performed in "The SAS System for Windows" program, version 9.2. Due to the absence of normal variable distribution, the Kruskal-Wallis test was used to estimate differences between three or more groups of numerical variables; the Fisher's Exact Test was used to compare categorical variables. The Cronbach's alpha coefficient of EFS was 0.530. To verify the correlation of frailty with vulnerability, the Spearman correlation coefficient was used. The level of significance was 5% (p-value ≤ 0.05).

The present study was approved by the Research Ethics Committee of UFSCar, under opinion nº 1,785,874 / 2016, CAAE: 57857016.0.0000.5504.

Results

The predominant characteristics of the 247 elderly participants of this study are described in table 1.

When comparing the frailty level evaluated, according to the EFS, in relation to the socio-demographic variable of female sex, 78 (39.5%) of the interviewees showed some level of frailty. Regarding the age group of the respondents, the majority was between 60 - 69 years of age, and of these, 66.9% did not present frailty. Among the

married respondents, 51.4% were non-frail; in relationship to retirement, 54.3% were non-frail. As for education, 38.3% had one to four years of study, and showed frailty at some level. Comparing the number of diseases reported, 63.6% had one to two diseases and were severely frail. A statistically significant difference was found for the number of diseases reported and for those who did not have frailty, according to table 2.

Table 1. Distribution of sociodemographic characteristics, vulnerability and frailty of elderly people enrolled in a CRAS

Variables	n(%)	Mean (SD)	[Min-Max]	Median
Gender				
Female	197(79.8)			
Male	50(20.2)			
Age group				
60-69 years	160(64.8)			
70-79 years	64(25.9)			
80-89 years	19(7.7)			
≥ 90 years	4(1.6)			
Age (in years)	247	68.5(7.3)	[60-94]	66
Skin color				
White	142(57.5)			
Black	69(27.9)			
Mixed color	35(14.2)			
Yellow	1(0.4)			
Marital status				
Married	109(44.1)			
Single	6(2.4)			
Widowed	94(38.1)			
Separated	20(8.1)			
Divorced	18(7.3)			
Current occupation				
Retired	137(55.5)			
Not retired	110(44.5)			
Education				
Illiterate	45(18.2)			
Literacy without education	23(9.3)			
1 - 4 years of education	133(53.9)			
5 - 8 years of education	35(14.2)			
9 or more years of education	11(4.4)			
Reported diseases				
None	14(5.7)			
1 - 2 diseases	133(53.8)			
≥ 3 diseases	100(40.5)			
Social vulnerability				
High	144(58.3)			
Average	56(22.7)			
Very low	47(19.0)			
Non-frail	103(41.7)			
Apparently vulnerable	53(21.5)			
Level of frailty				
Mild frailty	50(20.2)			
Moderate frailty	30(12.1)			
Severe frailty	11(4.5)			

SD - standard deviation; Min - minimal value; Max - maximal value

Table 2. Comparison of the level of frailty found, according to the EFS, in relation to the sociodemographic variables of elderly people enrolled in the CRAS

Variable	Total	Non-frailn (%)	Vulnerable n(%)	Mild n(%)	Moderate n(%)	Severe n(%)
	Total	103	53	50	30	11
Gender						
Female	197	77(74.7)	42(79.2)	43(86)	25(83.3)	10(90.9)
Male	50	26(25.2)	11(20.7)	7(14)	5(16.6)	1(9.0)
Age						
60-69	160	69(66.9)	38(71.7)	27(54)	18(60)	8(72.7)
70-79	64	30(29.1)	11(20.7)	15(30)	6(20)	2(18.1)
80-89	19	4(3.8)	2(3.7)	7(14)	5(16.6)	1(9.0)
≥ 90	4	0	2(3.7)	1(2)	1(3.3)	0
Skin color						
White	142	58(56.3)	29(54.7)	31(62)	16(53.3)	8(72.7)
Black	69	32(31.0)	13(24.5)	12(24)	11(36.6)	1(9.0)
Mixed color	35	12(11.6)	11(20.7)	7(14)	3(10)	2(18.1)
Yellow	1	1(0.9)	0	0	0	0
Marital status						
Married	109	53(51.4)	22(41.5)	16(32)	13(43.3)	5(45.4)
Single	6	2(1.9)	2(3.7)	1(2)	0	1(9.0)
Widowed	94	33(32.0)	19(35.8)	24(48)	14(46.6)	4(36.3)
Separated	20	8(7.7)	5(9.4)	5(10)	1(3.3)	1(9.0)
Divorced	18	7(6.8)	5(9.4)	4(8)	2(6.6)	0
Retired						
Yes	137	56(54.3)	29(54.7)	26(52)	21(70)	5(45.4)
No	110	47(45.6)	24(45.2)	24(48)	9(30)	6(54.5)
Level of education						
Illiterate	45	15(14.5)	12(22.6)	10(20)	5(16.6)	3(27.2)
Literate	23	10(9.7)	3(5.6)	5(10)	3(10)	2(18.1)
1 a 4	133	50(48.5)	32(60.3)	28(56)	18(60)	5(45.4)
5 a 8	35	24(23.3)	3(5.6)	5(10)	3(10)	0
≥ 9	11	4(3.8)	3(5.6)	2(4)	1(3.3)	1(9.0)
Reported disease						
0	14	12(11.6)	2(3.7)	0	0	0
1 a 2	133	65(63.1)	33(62.2)	19(38)	9(30)	7(63.6)
≥ 3	100	26(25.2)	18(33.9)	31(62)	21(70)	4(36.3)

Kruskal-Wallis test for comparison of variables between 3 groups or more - p value <0.001

The largest percentage of elderly with severe frailty was found in areas of high social vulnerability, and the elderly who were apparently vulnerable were located in regions of medium vulnerability, as can be observed in table 3.

Table 3. Correlation of social vulnerability in relation to the levels of frailty of the elderly enrolled in CRAS

Vulnerability	Non-Frail n(%)	Vulnerable n(%)	Mild n(%)	Moderate n(%)	Severe n(%)	Corelational analysis
	103	53	50	30	11	
High n=144	61(59,2)	30(46,6)	28(56)	15(50)	10(90,9)	
Medium n=56 (CRAS IV)	20(19,4)	14(26,4)	12(24,0)	10(33,3)	0	p-value = 0,493 r = - 0,043
Minimal n=47 (CRAS II)	22(21,4)	9(17)	10(20)	5(16,7)	1(9,1)	

CRAS - Social Assistance in Referral Centers

Discussion

In the present study, female sex predominated; these individuals had a mean age of 68.5 years, low educational levels, and were retirees, data similar to surveys with community-dwelling elderly in the national context.[15-18] The sociodemographic data obtained indicated a prevalence of the female sex, a fact that corroborates the concept of the feminization of old age. In fact, women are the ones with the highest life expectancy, lower mortality rates due to external causes, less exposure to occupational risks, less tobacco and alcohol consumption, and are more likely to seek health and social services compared to men.[19]

The low level of education presented in this research may be due to living conditions. In the century in which these elderly were born, education was informal and access to school was difficult, considering that the majority lived in rural areas.[20] Evidence indicates that the level of education is a protective factor for protective factor for adverse health effects of the elderly.[11] In addition, the elderly with low educational level may present mental health problems, chronic conditions, in addition to social exclusion, less access to information, and unfavorable socioeconomic conditions.[21]

Regarding the current occupation, there was a predominance of retired elderly, of which 137 (55.4%) were found in this study. Retirement, pensions, and government benefits are the main sources of income and support for the elderly in the Brazilian population.[22] Socioeconomic status among the elderly is a broad concept that includes factors such as education, occupation, income, wealth, lifestyle, and behaviors.[12] Income, in most cases, affects the health status of those who have limited access to services. Another point of view is that education influences health, through lifestyle and behaviors. In this context, vulnerability is related to educational status, according to individuals, regions and social groups.[10]

In this study, 53.8% of the respondents reported having one or two diseases. The relationship of frailty to chronic disease may be an underlying condition. Many noncommunicable chronic diseases, an epidemiological occurrence common in aging result in an-

atomical, physiological, functional changes, reduce functional and cognitive capacity and have a deleterious impact on health; this results in a risk factor for frailty.[23] Concerns arise with the need to create mechanisms for monitoring, application, and identifying solutions to guarantee prevention. In fact, the rapid demographic transition requires higher expenditures for the elderly public, and this endangers the sustainability of health and social systems, requiring redirection of actions and long-term care planning, as part of the primary care service, and as a warning of possible risks for frailty.[24]

Comparing the level of frailty with the sociodemographic profile, females and retired individuals demonstrated frailty at some level. These data are similar to the results of a study conducted with elderly individuals of the community, in which females presented with the highest level of frailty, evaluated using the EFS, and other studies conducted in an international context with frailty evaluated based on the frailty phenotype proposed by Fried, and the proposed Frailty Index by Rockwood.[25-27] The greater prevalence of frailty in women is due to their living longer, being economically dependent, and influenced by conditions marked by sexual issues, and having a restricted social life.[28]

In the present research, the prevalence of frailty can be verified in the interviewed elderly. Among the 247, 36.8% presented frailty at some level - mild, moderate or severe; similar data were found in the literature. Researchers of a study conducted with elderly people receiving basic health care in the interior of São Paulo, interviewed 128 elderly people and found that 21.4% were vulnerable, and 30.1% presented frailty at some level, according to the EFS.[25] Another study, with 240 elderly people,[29] showed that 39.1% were frail. To evaluate frailty in the elderly in the last five years has been of interest to researchers, with the intention of verifying those who most need health care and assistance, with the intention of developing prevention strategies in the context in which the individual is integrated. Actions to eradicate, prevent, and delay frailty, when possible, should be integrated in both service and research, because the evaluation consists of alerts for initial identification of this syndrome,

which is the only way to prevent the risk conditions for frailty, focusing especially on the less favored sectors, with a view to improving the quality of life in elderly people.

Although the correlation between vulnerability and social vulnerability in this study was not statistically significant, there was a higher prevalence of frailty in regions with high social vulnerability (21.2%). International research reveals the importance of continuing to study frailty in a vulnerable context, considering the factors that lead to the development of frailty. Social vulnerability is associated with factors related to financial conditions, education, access to health services, and lack of social support, which may be an outcome for the development of frailty accompanied by physical, functional, and comorbidity limitations.[30] Vulnerability in the social situation in a given area is characterized by the population's degree of education, per capita income, the age of the head of the family, and the presence of children.[22] In the context of greater social vulnerability, the elderly are the source of income for their family unit. Thus, the frail elderly in vulnerable situations need protection for their moral integrity, human dignity, and autonomy.[31]

Studies in the area of social vulnerability are particularly relevant when it is necessary to address the concrete situation of the frail elderly, and the context in which they are located.[13] In vulnerable regions where the population is a customer of social services, accessibility in the service is given in a specific way, in search of problem solving. There is a need to foster strategies to increase professionals' focus of attention, in order to understand the context in which they act by stimulating a proactive and participative action, opening access to the choice of the best political and social intervention, considering especially characteristics of the health care system, such as universal access, that are capable of directly addressing the different exposures and vulnerabilities.[32]

It is evident that changes in the status of frailty should be considered when planning care for the elderly who receive care in the public health care systems. Basic care service staff members need to familiarize themselves with the conditions of aging, optimizing their actions with the population,

in order to foster integrated care approaches. There are few data on potential economic gains for frailty monitoring systems; early identification of the syndrome can help services allocate resources to those most in need, thus highlighting the importance of translating knowledge between researchers and caregivers, such as local and scientific evidence.[33,34]

As a limitation of the study, the use of a cross-sectional design did not allow for finding of causality between the explanatory variables and outcome. The sample size may limit the generalization of the results, as the elderly were enrolled in reference centers for social assistance.

Conclusion

This study enabled us to know the profile of the elderly living in a context of social vulnerability, and its relation with frailty, indicating that the frail elderly lived in more vulnerable regions. The results obtained can incite the attention of public managers to the need to know the frailty of the elderly, and redirect preventive actions to all the actors involved in the process of frailty. Home visits can be included, so that the service relationship with the elderly is active, and the population needs can be known at the site of need.   Further studies are recommended to increase knowledge on vulnerability for frailty within a vulnerable social context.

Collaborations
Machado ITJ, Santos-Orlandi AA, Grazziano ES and Zazzetta MS contributed to the study design, analysis, data interpretation, relevant critical review of the intellectual content, and final approval of the version to be published.

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