

Frailty and quality of life in elderly primary health care users

Fragilidade e qualidade de vida de idosos usuários da atenção básica de saúde

Fragilidad y calidad de vida de ancianos usuarios de la atención básica de salud

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How to cite this article:

Lenardt MH, Carneiro NHK, Binotto MA, Willig MH, Lourenço TM, Albino J. Frailty and quality of life in elderly primary health care users. Rev Bras Enferm [Internet]. 2016;69(3):448-53. DOI: <http://dx.doi.org/10.1590/0034-7167.2016690309i>

Submission: 04-13-2015

Approval: 12-01-2015

ABSTRACT

Objective: to investigate the association between physical frailty and quality of life in elderly users of primary health care in the capital of the state of Paraná. **Method:** a cross-sectional, quantitative study with 203 elders. Data collected included: physical activity questionnaires, weight loss, fatigue/exhaustion, quality of life, performance of gait speed tests, and handgrip strength. **Results:** of the 203 older adults, 115 were pre-frail, 49 were non-frail, and 39 were frail, with a significant association with functional capacity and quality of life in all groups. The dimensions resulting from physical aspects, pain, and vitality were associated with those that were non-frail. **Conclusion:** in this study, frailty syndrome was inversely proportional to the quality of life, and significantly associated with functional capacity of older adults. Physical frailty is a manageable condition which can be targeted through geriatric nursing interventions. **Descriptors:** Aged; Frail Elderly; Quality of Life; Primary Health Care; Geriatric Nursing.

RESUMO

Objetivo: investigar a associação entre fragilidade física e qualidade de vida de idosos usuários da atenção básica de saúde da capital paranaense. **Método:** estudo quantitativo transversal realizado com 203 idosos. Os dados foram coletados mediante questionários de nível de atividade física, perda de peso, fadiga/exaustão, qualidade de vida e realização de testes de velocidade da marcha e força de preensão manual. **Resultados:** dos 203 idosos, 115 eram pré-frágeis, 49 não frágeis, 39 frágeis, havendo em todos os grupos associação significativa para a dimensão capacidade funcional da qualidade de vida. As dimensões limitações por aspectos físicos, dor e vitalidade foram associadas aos não frágeis. **Conclusão:** no presente estudo, a síndrome da fragilidade se mostrou inversamente proporcional à qualidade de vida e associada significativamente à capacidade funcional dos idosos. Entende-se que a fragilidade física é uma condição gerenciável e pode ser alvejada por meio de intervenções da enfermagem gerontológica. **Descritores:** Idoso; Idoso Fragilizado; Qualidade de Vida; Atenção Primária à Saúde; Enfermagem Geriátrica.

RESUMEN

Objetivo: investigar la relación entre fragilidad física y calidad de vida de ancianos usuarios de la atención primaria de salud en la capital del estado. **Método:** estudio cuantitativo transversal con 203 ancianos. Los datos se recolectaron a través de cuestionarios de actividad física, pérdida de peso, fatiga/agotamiento, calidad de vida y pruebas de velocidad de marcha y fuerza de prensión. **Resultados:** de los 203 ancianos, 115 eran pre-frágiles, 49 no frágiles, 39 frágiles, con asociación significativa de la dimensión capacidad funcional de la calidad de vida en todos los grupos. Las dimensiones limitaciones por "aspectos físicos", "dolor" y "vitalidad" se asociaron con aquellos no frágiles. **Conclusión:** en este estudio, el síndrome de fragilidad era inversamente proporcional a la calidad de vida y significativamente asociada con la capacidad funcional de los ancianos. Se entiende que la fragilidad física es una condición manejable y puede ser impactada a través de intervenciones de enfermería geriátrica. **Descritores:** Anciano; Anciano Frágil; Calidad de Vida; Atención Primaria de Salud; Enfermería Geriátrica

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INTRODUCTION

There are many concerns about changes in social and epidemiological aspects and impacts on the quality of life regarding aging and longevity.

The term, quality of life, has various definitions because of its subjective nature; there is no consensus about its meaning. Thus, there are several waves of thought that address the quality of life subject, which are complementary. In this study, we used the World Health Organization definition, which defines quality of life as “an individual’s perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns”⁽¹⁾.

A study performed with 260 subjects, 65 years or older, whose objective was to evaluate the perception of the elderly about their quality of life, found that the majority of older people believe that “being healthy” and “having no disabilities” are the main definitions for the term⁽²⁾. In this sense, the concept of physical frailty is intrinsic to quality of life, given that it is “a medical syndrome with multiple causes and contributors that is characterized by diminished strength, endurance, and reduced physiologic function that increases an individual’s vulnerability for developing increased dependency and/or death”⁽³⁾.

Although the relationships between aging, physical frailty and quality of life have been little explored, a recent number of international studies link frailty syndrome to poor quality of life⁽⁴⁻⁷⁾. However, there is still no established consensus that frailty syndrome negatively affects the quality of life of individuals; more research is needed to address this issue.

The presence of the physical frailty syndrome, combined with low scores in the quality of life domains, can generate a high number of medical visits and hospitalizations⁽⁶⁾. This suggests the possibility that this population has prior functional disability, limitations on independence, changes in their psychological pattern, and consequently increased demand for geriatric nursing care. Additionally, because of the functional disabilities caused by the syndrome, it is possible that this population ages differently from what is proposed by the World Health Organization.

The analysis of the physical frailty level of older people, and its association with quality of life, supports proposed nursing interventions, where the aim is to promote screening and management of frailty, and to encourage life satisfaction in frail and pre-frail older adults. From this perspective, the objective of this study was to investigate the association between frailty and quality of life of elderly primary health care users in the capital of the state of Paraná.

METHODS

Ethical aspects

The study was approved by the Ethics Committee on Human Research in the Health Sciences Sector. The ethical principles of voluntary and informed participation of each subject were respected.

Design, setting and period

This cross-sectional, quantitative study was conducted in a Basic Health Unit (BHU) in Curitiba (PR). The target population consisted of older adults, aged over 60 years, from January to April of 2013.

Sample, inclusion and exclusion criteria

The sample size was determined based on the estimated population proportion. The BHU has a population of approximately 1050 registered older adults. We considered a confidence level of 95% ($\alpha=0.05$) and a sampling error fixed at five percent. Ten percent more participants were added to the sample size due to the possibilities of losses and refusals, resulting in a sample consisting of 203 older adults.

The sample was recruited by convenience. Individuals were invited to participate in the study in their order of arrival at the reception of the BHU. Data were collected from January to April of 2013. Initially, the Mini Mental State Examination (MMSE) was administered⁽⁸⁾ for cognitive assessment, with the following cutoffs used: 13 points for low education, 18 points for average education, and 26 for high education⁽⁹⁾.

The target population consisted of older adults awaiting consultation at the BHU, selected using the following inclusion criteria: a) 60 years of age or older; b) registered in the Basic Health Unit where the study was performed; c) having cognitive ability, i.e., being able to respond to the study questionnaires, identified through the MMSE cutoffs. The exclusion criteria were: having disease, physical or mental problems or symptoms which, for whatever reason, prevented administration of the questionnaires and the tests.

Study protocol

The physical frailty syndrome was evaluated through five physical components: grip strength, walking speed, fatigue/exhaustion, physical activity, and unintentional weight loss⁽¹⁰⁾. Older adults with a decline in three or more of these components were considered frail. Those with a decline in one or two of these characteristics were considered pre-frail, and those without a decline were non-frail⁽¹⁰⁾.

In order to make effective specificity Brazilian older adults, two changes were performed in the assessment of the frailty phenotype measures. According to American researchers⁽¹⁰⁾, in order to identify the level of physical activity, the Minnesota Leisure Activity Questionnaire is administered; the energy level is evaluated by two questions of the Center for Epidemiologic Studies Depression Scale - CES-D. In this study, for the assessment of the physical activity component, the Physical Activity Level Questionnaire for Older Adults - CuritibaAtiva – was administered⁽¹¹⁾. The energy level was assessed using one question from the Geriatric Depression Scale - GDS and a graduated visual scale, using a numbered ruler⁽¹²⁾. For the physical activity component, the older adults who obtained scores compatible with inactive or underactive profiles were considered to have declined in this component. As for energy level, those who answered

negatively to the question. “Do you feel full of energy?” and who pointed to a number less than or equal to three using the numbered ruler were considered to have declined in this component.

The unintentional weight loss component was measured by self-reported weight loss in the prior year⁽¹⁰⁾. Older adults who reported weight loss equal to or greater than 4.5 kg in the prior year, or 5% of body weight, were considered to be in decline regarding this element of frailty. Slowness was measured by the gait speed test, measured in seconds (4-m distance), and adjusted for gender and height⁽¹⁰⁾. The handgrip strength was measured with a dynamometer in the dominant hand, and adjusted for gender and body mass index - BMI⁽¹⁰⁾. For both frailty components, the older adults with handgrip strength and gait speed allocated in the lowest quartile of the sample were considered to be in decline for these components.

To assess the health-related quality of life, the Medical Outcomes Study – MOS, Short Form 36 (SF-36) was used. The instrument consists of 36 questions, with a comparison between current and previous health, and 35 questions classified into eight domains: functional capacity, pain, general health, vitality, social aspects, emotional aspects, and mental health. The final score ranges from zero to 100, with the highest scores indicating a positive perception of health. The instrument was validated in the Portuguese language, and is called “Brazil - SF-36”⁽¹³⁾.

Analysis of results and statistics

Data were organized in Excel 2007, and double-checked to reduce the possibility of error. They were then checked by a third party to ensure data accuracy. Statistical analyses were performed using Epi Info, version 6.04, and Statistica, version 8.0. Initially, descriptive statistics were used (absolute frequency and percentage distribution, mean and standard deviation). For

the association between the condition of frailty variable and the quality of life variables, the Kruskal-Wallis test was used; p values < 0.05 were considered statistically significant.

RESULTS

There were 203 older adults enrolled in the study, of which 115 (56.7%) were classified as pre-frail, 49 (24.1%) were non-frail, and 39 (19.2%) were frail.

As for the frailty syndrome components, the highest frequency distribution was for the handgrip component, followed by physical activity, gait speed, unintentional weight loss, and fatigue/exhaustion (Table 1).

Table 2 shows that the frail older adults had a lower mean in all dimensions of quality of life. The highest averages were obtained by older adults who were non-frail.

Table 3 shows the comparison of the quality of life variables, which had a statistical association in the three groups of older adults. The functional capacity dimension was significant for the frail, pre-frail and non-frail older adults, and the limitations resulting from physical aspects, pain, and vitality dimensions were significantly associated to the non-frail.

Table 1 - Frequency distribution of the frailty components in older adults, by sex, Curitiba, Paraná, Brazil, 2013

Frailty components	Total n (%)	Men n (%)	Women n (%)
Fatigue/exhaustion	11 (5.3)	3 (1.4)	8 (3.9)
Unintentional weight loss	40 (19.7)	16 (7.8)	24 (11.9)
Gait speed	52 (25.6)	21 (10.3)	31 (15.2)
Level of physical activity	90 (44.3)	41 (20.1)	49 (24.2)
Handgrip strength	99 (48.7)	13 (6.4)	86 (42.3)

Table 2 – Quality of life of older adults, according to dimension and level of frailty, Curitiba, Paraná, Brazil, 2013

Quality of life dimensions	Frail older adults		Pre-frail older adults		Non-frail older adults		P value*
	Mean (SD)	Observed variation	Mean (SD)	Observed variation	Mean (SD)	Observed variation	
Functional capacity	(SD)	Observed variation	Mean	40 – 100	87.7 (16.9)	0 – 100	< 0.001 [†]
Limitations resulting from physical aspects	(SD)	Observed variation	Mean	0 – 100	96.4 (16.1)	0 – 100	0.001 [†]
Pain	(SD)	Observed variation	62.5 (31.8)	10 – 100	78.9 (24.6)	0 – 100	0.002 [†]
General health status	71.4 (17)	32 – 97	73 (22.7)	20 – 100	76 (22.5)	10 – 100	0.245
Vitality	75 (24.4)	15 – 100	75.9 (22.4)	30 – 100	85.8 (17.2)	0 – 100	0.011 [†]

To be continued

Table 2 (concluded)

Quality of life dimensions	Frail older adults		Pre-frail older adults		Non-frail older adults		P value*
	Mean (SD)	Observed variation	Mean (SD)	Observed variation	Mean (SD)	Observed variation	
Social aspects	85.6 (25.6)	0 – 100	88.6 (25.3)	0 – 100	89.9 (24.6)	0 – 100	0.386
Emotional aspects	81.1 (36.5)	0 – 100	87.9 (31.1)	0 – 100	89.5 (30.8)	0 – 100	0.204
Mental health	76.4 (23.4)	20 – 100	77.9 (23.2)	16 – 100	85.3 (16.7)	4 – 100	0.168

Notes: * = Kruskal-Wallis Test, $p < 0.05$; †Significant variables; SD = Standard deviation.

Table 3 – Comparison of the significant quality of life variables for the frail, pre-frail and non-frail groups, Curitiba, Paraná, Brazil, 2013

Compared groups	Functional capacity	Limitations resulting from physical aspects	Pain	Vitality
Frail x pre-frail	0.010*	0.110	0.583	0.833
Frail x non-frail	0.00000003*	0.0003*	0.003*	0.031*
Pre-frail x non-frail	0.00002*	0.005*	0.001*	0.003*

Notes: * = Kruskal-Wallis Test; $p < 0.05$.

DISCUSSION

In this study, the quality of life results of the frail elderly were similar to international studies⁽⁶⁻⁷⁾ showing frail older adults had a lower quality of life. Similarly, the dimensions of quality of life - functional capacity, limitations resulting from physical aspects, and general health - are among the most affected dimensions in the frail older adults.

A study performed with 1,008 Americans of Mexican ancestry, aged ≥ 74 years, with the aim of linking frailty syndrome to quality of life, concluded that frail older adults had lower means in the aspects of functional capacity, limitations resulting from physical aspects, and general health⁽⁶⁾.

Another study⁽⁷⁾, which aimed to identify the incidence of frailty and the relationship between quality of life of older people, with 374 Chinese participants aged ≥ 65 years, showed similar results. The dimensions with lower scores, according to the frail older adults, were the limitations resulting from physical aspects, general health, and functional capacity.

The pain dimension was the most impaired in the quality of life. A study⁽¹⁴⁾ that aimed to identify the association between pain, frailty and comorbidities corroborates the present results, given that the pain and frailty variables had a strong association in a sample of 1,705 older Australians. Researchers⁽¹⁵⁾ confirmed this significance by showing that pain was related to aging symptoms that were precursors of declining health and, if identified early, could be an important factor in the prevention of frailty.

It is worth noting that pain is influenced by cultural codes, i.e., its expression varies between locations and regions, and

can be related to the prevalence of frailty components. Frail and pre-frail older adults more often displayed the components of decreased grip strength, low level of physical activity, and slowness. The decline in these components leads to frailty, declining health and increased pain.

The functional capacity dimension is directly proportional to the level of frailty, i.e., the higher the frailty status, the greater the loss of functional capacity in the older adults. A study performed with 391 elderly Brazilians, aged ≥ 65 years, investigated the characteristics, prevalence, and factors associated with frailty⁽¹⁶⁾. As a result, 16.4% of the older adults were dependent for Basic Activities of Daily Living (BADL), and 64.5% were dependent for Instrumental Activities of Daily Living (IADL). Both BADL and IADL were significantly associated with frailty ($p = 0.010$ and $p = 0.003$, respectively).

Although the concepts of frailty and functional capacity are different, it is necessary to understand the relationship between these two variables⁽¹⁷⁾. Studies indicate that factors intrinsically linked to frailty, such as low levels of physical activity, fatigue, gait speed, and decreased muscle strength, can be predictors of disability⁽¹⁷⁻¹⁸⁾. In this study, functional capacity achieved significant results in the three groups ($p < 0.001$), suggesting the importance of maintaining functional capacity, not only in pre-frail and frail older adults, but also in non-frail older adults.

Older people with impaired functional capacity have limitations resulting from physical aspects. Furthermore, the higher the level of frailty, the greater the limitation of these older adults. This result is associated with the biological character

of the syndrome, given that in the frailty cycle, physical problems such as sarcopenia, multiple diseases, excessive use of drugs, and neuroendocrine deregulation, have a direct relationship to frailty and, consequently, affect the quality of life of these individuals. Researchers⁽¹⁹⁾ state that the disabilities in physical health inherent in frailty are associated with a reduced quality of life in older adults.

The pain and limitations resulting from physical aspects dimensions are significantly associated with the group of non-frail older adults. This finding suggests the need for attention to these quality of life dimensions, mainly in non-frail older adults, because from the moment the older adults begin the frailty process, these dimensions are likely to become damaged, with less potential for intervention.

The dimensions showing higher scores on the quality of life questionnaire answered by the frail elderly were those related to the psychosocial dimension: vitality, social functioning, emotional aspects, and mental health. Many older adults, despite showing signs of frailty, are active, participate in society and are satisfied with life⁽²⁰⁾, which justifies the best scores on these dimensions.

The dimension vitality had lower scores in the frail older adults. American researchers claim that there is an influence of the decrease in gait speed on vitality of older adults, because its execution, motion control, and support are related to the functioning of multiple organs, such as the heart, lungs, circulatory system, nerves, and skeletal muscle⁽²¹⁾. The reduction of gait speed can reflect damage to any of these systems or components, and is therefore considered a summary indicator of simple and accessible vitality⁽²¹⁾.

The vitality dimension was significantly associated with the non-fragile group, indicating that this dimension of quality of life deserves attention and intervention when there is no development of frailty in the older adults. After establishment of frailty, either frailty or pre-frailty, the trend is that the actions become less efficient.

One of the reasons why the mental health dimension was less impaired was the low rate of older adults who reported fatigue and exhaustion. According to a study of fatigue/exhaustion in the older adults, those with pre-frailty considering this component have increased psycho-neuro-immunological mechanisms, which increases the production of cytokines, and thereby contributes to depressive disorders and low score in this dimension of quality of life⁽⁴⁾. Low levels of fatigue/

exhaustion resulted in higher scores on the mental health dimension in the frail group.

The emotional aspects and social aspects dimensions slightly improved when comparing their positions in the group of frail, pre-frail and non-frail older adults, although there were lower scores in the frail older adults. That is, although there was a mean good quality of life in the non-frail, pre-frail and frail older adults, these dimensions were evaluated higher by the older adults. A literature review study⁽²²⁾, whose aim was to synthesize studies with a relationship between depression and frailty in the elderly, showed that of the 39 studies evaluated, all (16 cross-sectional studies and 23 cohort studies) found that frailty, its components, and functional impairment were risk factors for depression.

The limitation of the study is related to the cross-sectional design, which does not allow for a better understanding of some relationships of cause and effect between variables. Longitudinal and cohort studies that can further explore these relationships and the long-term effects of frailty in the quality of life of the older adults are suggested.

The results of this study can guide nursing care of frail, pre-frail and non-frail older adults in gerontology. Investigations on the physical frailty syndrome and quality of life in older adults support the establishment of care to fight frailty, therefore resulting in improved quality of life for these patients.

CONCLUSION

Frailty is associated with quality of life in older adults, because the higher the level of frailty, the lower the quality of life of these individuals. In the frail, the physical dimensions of quality of life were the most affected, whereas the psychosocial dimensions were those with better evaluations.

Physical frailty in the elderly does not equal an outcome of poorer quality of life, nor are aging and frailty synonymous. Physical frailty is a manageable condition that can be targeted through geriatric nursing interventions. These interventions are performed by controlling the physical decline with a stimulus for the performance of basic, instrumental and advanced daily living activities, adequate caloric and protein supports, careful administration of vitamin D, and a reduction in polypharmacy. Therefore, frailty screening and management programs in settings that care for the health of the elderly are mandatory and urgent.

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