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Differences between robust, frail, prefrail and dependent institutionalized older people

Diferencias entre personas mayores institucionalizadas robustas, prefrágiles, frágiles y dependientes

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Determining frailty situation in older adults allows to detect a group of elderly people who although independent, are unstable and at risk of functional loss and dependence.¹ So there should be a relationship between the presence of frailty and the worsening in the biomedical and psychosocial levels.

The main objective of this research is to establish the differences between robust, prefrail, frail and dependent institutionalized elderly people in relation to the data offered in the comprehensive geriatric assessment.

The sample was composed by 194 institutionalized seniors from Spain. The median age was 86.5 years. 73.6% were women and 26.4% men.

To assess frailty, Short Physical Performance Battery (SPPB) was used; validated in different populations. It is a reliable tool for detecting frailty and predicting disability.¹ It has got four cut-off points: dependent (0–3); frail (4–6); prefrail (7–9); or robust (10–12).

The rest of the variables were evaluated with specific tools, all with good psychometric properties and commonly used.

Among the participants, 91 are dependent (46.91%), 52 are frail (26.80%), 33 are prefrail (17.01%) 18 are robust (9.28%). The average score obtained is 4.17.

Frailty and clinical assessment

Anova shows significant differences between groups ($F_{(3,190)} = .998$, $p = .032$) in relation to comorbidity; in the screening score ($F_{(3,188)} = 1.497$, $p = .001$) and total score ($F_{(3,128)} = .092$, $p = .008$) of Mini Nutritional assessment; in risk of falls ($F_{(3,187)} = 22.237$, $p = .001$); and risk of pressure ulcers ($F_{(3,187)} = 62.486$, $p = .001$).

Frailty and functional assessment

The differences between the frailty groups are significant in relation to basic ($F_{(3,190)} = 111.656$, $p = .001$) and instrumental ($F_{(3,190)} = 12.261$, $p = .001$) activities of daily living.

Frailty and mental assessment

Significant differences appear in relation to cognitive function ($F_{(3,189)} = 24.654$, $p = .001$); anxiety ($F_{(3,175)} = 4.358$, $p = .005$); depression ($F_{(3,175)} = 9.719$, $p = .001$); caregiver's exhaustion subscale in neuropsychiatric state

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Table 1 Post hoc–Bonferroni.

Variable	Averages differences (I–J)	Standard error	Sig.	Confidence interval 95%	
				Inf. limit	Sup. limit
<i>Robust–prefrail relationship</i>					
Comorbidity	.929*	.315	.021	.09	1.77
IADL	–1.722*	.630	.041	–3.40	–.04
<i>Prefrail–frail</i>					
BADL	–14.624*	4.449	.007	–26.49	–2.76
Apathy	.84543*	.26893	.012	.1284	1.5625
<i>Frail–dependent</i>					
Nutritional status (screening)	–1.737*	.433	.001	–2.89	–.58
Nutritional status (total)	–2.4176*	.8811	.042	–4.779	–.056
Fall risk	.952*	.238	.001	.32	1.59
PU risk	–3.342*	.359	.000	–4.30	–2.38
BADL	–41.909*	3.475	.000	–51.17	–32.64
IADL	–1.217*	.374	.008	–2.21	–.22
Quality of life	–24.65659*	4.86719	.000	–37.6333	–11.6799
Cognitive function	–8.566*	1.484	.000	–12.52	–4.61
Anxiety	1.264*	.462	.041	.03	2.50
Depression	1.571*	.459	.005	.35	2.80

* Differences are significant level 0.05.

IADL: instrumental activities of daily living; BADL: basic activities of daily living; PU: pressure ulcer.

Assessment instruments: Comorbidity – Charlson Index Brief. Nutritional status – Mini Nutritional Assessment. Fall risk – J. H. Downton. PU – Norton Scale. BADL – Barthel Index. IADL – Lawton & Brody Scale. Cognitive function – Mini Mental State Examination. Anxiety and depression – Goldber Anxiety and Depression Scale. Neuropsychiatric status – Neuropsychiatric Status NPI-Q. Apathy – Dementia Apathy Interview and Rating. Quality of life – GENCAT.

($F_{(3,188)} = 5.631$, $p = .001$) and apathy ($F_{(3,189)} = 11.709$, $p = .001$).

Frailty and social assessment

The Anova shows differences between groups in relation to quality of life ($F_{(3,190)} = 22.802$, $p = .001$).

As frailty grows and approaches de dependence extreme; malnutrition, comorbidity, risk of fall and ulcers, caregiver's exhaustion, anxiety, depression and apathy increase; while cognitive function and activities of daily living development decrease.

Differences especially relevant are those that occur in robust–prefrail, prefrail–frail and frail–dependent relationships as they are correlative groups in the continuum robustness–prefrailty–frailty–dependence; post hoc analysis shows this differences in Table 1.

Due to the reversibility of frailty; this study provides that a percentage of 43.81% of people living in these centres could reverse it.

Although no literature that performs this type of analysis of the differences between these four groups of fragility has been found, there are studies related to the variables used, as; comorbidity^{1,2}; risk of falls^{1,3}; activities of daily living^{3,5}; quality of life⁴; cognitive function^{1,3,5}; depression^{2,3}; regard to apathy.⁶

This studio has found that there is a continuum robustness–prefrailty–frailty–dependency as there are

significant differences between groups. However, due to the non-probabilistic and convenience sample, results may not be generalized.

Knowing the differences between groups allows an early and more specific diagnosis, these differences will also determine the type of treatments that each group should receive since the associated deficits will not be the same or have the same severity.

The differences between robust and prefrail allow to differentiate this state of prefrailty in an early way; between prefrail make possible an earlier detection and better prognosis and reversion; and, between frail–dependent allow to prevent a state of dependence or disability from being reached.

In relation to this, interventions aimed at physical activity, nutrition, activities of daily living, analysis and adaptation of activities and environment, medication review, cognitive stimulation, fall and pressure ulcers prevention; are proposed; with an interdisciplinary approach focused on preventing or reversing frailty, dependence and other adverse effects, including death.

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References

1. Ministerio de Sanidad, Servicios Sociales e Igualdad. Documento consenso sobre fragilidad y caídas. Estrategia de promoción de la Salud y Prevención en el Sistema Nacional de Salud [*Consensus document on frailty and falls. Health Promotion and Prevention Strategy in the National Health System*]. Madrid, España: Ministerio de Sanidad, Servicios Sociales e Igualdad Centro de Publicaciones; 2014 [in Spanish].
2. Rohrmann S. Epidemiology of frailty in older people. in frailty and cardiovascular diseases. [place unknown]: Springer, Cham; 2020. p. 21–7, http://dx.doi.org/10.1007/978-3-030-33330-0_3.
3. Abizanda P, Rodríguez L. Evolución histórica del término 'fragilidad'. Realidad actual. In: Ramos P, editor. Guía de buena práctica clínica en geriatría. Fragilidad y nutrición en el anciano [Good clinical practice guide in geriatrics. Frailty and nutrition in the elderly]. Madrid: International Marketing and Communication; 2014. p. 15–30 [in Spanish].
4. Vanleerberghe P, De Witte N, Claes C, Verté D. The association between frailty and quality of life when aging in place. Arch Gerontol Geriatr. 2019;85:103915, <http://dx.doi.org/10.1016/j.archger.2019.103915>.
5. Máximo RDO, Lopes IC, Brigola AG, Luchesi BM, Grato ACM, Inouye K, et al. Pre-frailty, frailty and associated factors in older caregivers of older adults. Rev Saude Publica. 2020;54:17, <http://dx.doi.org/10.11606/s1518-8787.2020054001655>.
6. Ayers E, Shapiro M, Holtzer R, Barzilai N, Milman S, Verghese J. Symptoms of apathy independently predict incident frailty and disability in community-dwelling older adults. J Clin Psychiatry. 2017;78:e529, <http://dx.doi.org/10.4088/jcp.15m10113>.