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Factors associated with the quality of life of older people

Fatores associados à qualidade de vida dos idosos

Factores asociados a la calidad de vida de las personas mayores

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Descritores
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Abstract
Objective: Examine the relationships between quality of life, nutrition and frailty in non-institutionalized people older than 75 years of age.
Methods: Observational, cross-sectional, analytical study conducted using a questionnaire with a sample of individuals older than 75 years of age residing in the community, who were selected via convenience sampling during 2015.
Results: A larger proportion of women had poor quality of life than men: 20.9% as opposed to 9% (p<0.01). Malnutrition risk was associated with low quality of life (35%) (23.4%) (p<0.000). A larger proportion of frail individuals had poor quality of life: 55.7% against 17.4% (p<0.000).
Conclusion: Quality of life of older people is influenced by the presence of depression symptoms, nutritional status, sex, frailty and basic and instrumental disability.

Resumo
Objetivo: Examinar as relações entre qualidade de vida, nutrição e fragilidade em indivíduos não institucionalizados com idade acima de 75 anos.
Método: Estudo observacional, transversal e analítico realizado através da aplicação de um questionário com uma amostra de indivíduos com mais de 75 anos de idade residentes na comunidade e selecionados através de amostragem por conveniência durante o ano de 2015.
Resultados: Uma proporção maior de mulheres apresentou baixa qualidade de vida em relação aos homens: 20,9% contra 9% (p<0,01). O risco de desnutrição foi associado a baixa qualidade de vida (35%) (23,4%) (p<0,000). Uma proporção maior de indivíduos fragilizados apresentou baixa qualidade de vida: 55,7% contra 17,4% (p<0.000).
Conclusão: A qualidade de vida dos idosos é influenciada pela presença de sintomas de depressão, estado nutricional, sexo, fragilidade e incapacidade básica e instrumental.

Resumen
Objetivo: Examinar las relaciones entre calidad de vida, nutrición y fragilidad en individuos no institucionalizados con edad superior a 75 años.
Método: Estudio observacional, transversal y analítico realizado durante el año 2015, a través de la aplicación de un cuestionario con una muestra de individuos con más de 75 años de edad residentes en la comunidad y seleccionados a través de muestreo por conveniencia.
Resultados: Una proporción mayor de mujeres presentó baja calidad de vida en relación con los hombres: 20,9% contra 9% (p <0,01). El riesgo de desnutrición se asoció a una baja calidad de vida (35%) (23,4%) (p <0,000). Una proporción mayor de individuos fragilizados presentó baja calidad de vida: 55,7% contra 17,4% (p <0.000).
Conclusión: La calidad de vida de los ancianos es influenciada por la presencia de síntomas de depresión, estado nutricional, sexo, fragilidad e incapacidad básica e instrumental.

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Introduction

The WHO 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] Analyzing the quality of life of older people involves understanding how they live and having information that enables assessing their degree of satisfaction according to their needs and the improvements they may require to maintain an adequate level of quality.[2] Recent studies have examined the quality of life of older people in relation to behavior, drug prescriptions, health problems and in social terms.[3–7] The quality of life of older people has aspects in common with that of other population groups, such as social relationships, leisure activities and satisfaction; social and environmental factors, social support, economic conditions and use of information technologies that have an important impact on the elderly.[8,9]

The most relevant differences associated with quality of life between the elderly and the rest of society can be noted in aspects related to disability and dependency. In this context, frailty is a state prior to disability and, consequently, dependency.[10] By understanding the existence of frailty, identifying the risk factors that can trigger it and investigating it with scales and scoring instruments, it is possible to detect the frail and prefrail population. This represents a step forward in improving the quality of life of the elderly. Some studies point out that, with simple tools and adequate health promotion, it is possible to delay dependency, improve quality of life and, consequently, reduce long-term costs in social and health systems.[11]

The prevalence of frailty and its causes vary, and may be found in 5% to 58% of older people.[12] A factor that contributes to increased frailty among the elderly is having a poor nutritional status,[13,14] which is considered a predictor of longevity and quality of life during this stage,[14] since it is associated with physiological changes such as loss of oral function, reflected in motor activities of the mouth, such as chewing, swallowing, salivation and lack of dental parts.[15] It is also manifested by altered or decreased discernment of the taste of foods and beverages (generally related to the consumption of certain drugs, neuropathies, gastrointestinal or endocrine disorders, inflammatory diseases, chronic diseases, neoplasms, immobility, social isolation, economic limitations and poor quality of life).[15,16]

As a result, it seems to be generalized that older people, at times, ingest less food than necessary, a situation that if persistent triggers a catabolic state that causes a progressive reduction in muscle mass, weight loss and decreased strength and functionality.[16,17] In this sense, nutritional status plays a key role in the frailty process of older people.[14]

Given the importance of nutrition and frailty as critical elements in the quality of life of older people, the objective of this study was to analyze the relationships between quality of life, nutrition and frailty in non-institutionalized people over 75 years of age.

Methods

Observational, cross-sectional study which examined factors related to quality of life. The data were drawn from the "FRALLE Survey"[18] whitch consists of 172 questions from validated measurement instruments. It measures frailty, malnutrition risk and health-related quality of life (HRQoL). Data were collected throughout 2015. The sample was formed by non-institutionalized individuals older than 75 years of age. The study included people of both sexes, living in family dwellings, who had health cards and agreed to participate in the study, as well as people with cognitive impairment with a companion (in this case, questions regarding subjective data with were not asked). People in terminal stages of life, institutionalized, with cognitive impairment and no companion, and those who did not wish to participate were excluded. The sample was obtained through intentional sampling in nursing appointments at primary healthcare centers in the department of Castellón (Spain). A sample of 400 individuals was obtained according to the established calculation. Quality of life: measured through the Short

Form 36 health questionnaire[19,20] which consists of 36 items on a scale ranging from 0 (lower health status) to 100 (higher health status). The items are organized into eight dimensions, divided into two scales: a physical component (physical functioning, physical role functioning and bodily pain) and a mental component (mental health, emotional role functioning, social role functioning and vitality). Quality of life was categorized as good (score greater than or equal to 50) or poor (less than 50). Sociodemographics: Marital status ("Alone" for people who lived by themselves in their home and "With someone" if they lived with a family member or caregiver). Monthly income (< 900 euros and > 900 euros) and sex (Female and male). Malnutrition risk: measured through the short form of the Mini Nutritional Assessment (MNA-SF)[21] which consists of 6 questions with a maximum score of 14. A score between 12 and 14 indicates "normal nutritional status", between 8 and 11 "at risk of malnutrition" and from 0 to 7 "malnourished". Frailty was defined according to the criteria of Fried et al.:[17] Individuals were considered "frail" if they met three or more frailty criteria, "prefrail" if they met one or two criteria, and "not frail" if they did not meet any criterion. Comorbidity was measured with the Charlson index,[22] The total score is 37, and comorbidity is considered to be a score ≥ 3. Basic activities of daily living (BADL): were measured with the Lawton and Brody scale.[23] A score of 0 to 1 was considered "no or slight disability". Scores of 2 or more were considered "moderate-severe disability".

Instrumental activities of daily living (IADL). Were measured with the Lawton and Brody scale,[24] it was categorized as: absence and instrumental disability (inability to perform 1 or more of the activities). Symptoms of depression: The Center for Epidemiologic Studies Depression Scale (CES-D)[25] was used to measure the presence of depression symptoms. It has a questionnaire with 22 items, and a score ≥17 indicates depression.

Prior to commencing the study, the Clinical Research Ethics Committee of the Department of Health of Castellón approved the study project request. The interviewees signed a free and informed consent form, and data confidentiality was preserved at all times. Descriptive analysis was performed through measures of central tendency and frequency percentages. For the bivariate analysis, Pearson's chi-square test was used for the qualitative variables, with a significance level of $p<0.05$. Afterwards, a binary logistic regression multivariate analysis was performed, adding previous statistically significant results to the model. The level of non-response was assessed (those who chose not to answer certain questions in the survey or people with cognitive impairment). Taking into account that according to Demaio[26] when the level of non-response is below 10% an inference can be made with the available cases, it was decided not to use any imputation process. The statistical program SPSS, Version 21.0, was used for data analysis.

Results

A total of 400 individuals, 52.8% (women), with a mean age of 81.3 years, within a range of 75 to 96 years, were interviewed. A prevalence of low quality of life was noted in the mental (8.8%) and physical (15.3%) components.

Physical component

Significant differences in quality of life were observed in relation to sex, in that the proportion of women with poor scores (20.9%) was higher than men (9%) ($p<0.01$).

Table 1 summarizes the results obtained from the bivariate analysis for the physical component of quality of life. An association was found between malnutrition risk and quality of life. The proportion of individuals who obtained a poor score in the physical component of quality of life was higher among those with malnutrition risk or who were malnourished (35% and 13.3%) than the proportion of individuals with good quality of life who had malnutrition risk or were malnourished (23.4% and 1.2%) ($p<0.000$).

In relation to frailty, the results showed that the proportion of individuals with poor quality of life increased according to the degree of frailty. The

proportion of frail individuals with poor quality of life (55.7%) was higher than that of frail individuals with good quality of life (17.4%). In the case of no frailty or being in a prefrail condition, the proportion of individuals with good quality of life (25.4 and 57.2%) was higher than that of individuals with poor quality of life (4.9 and 39.3%, respectively) (p<0.000).

The presence of depression symptoms was associated with a lower score in the physical component of quality of life, in a higher proportion: 77% against 49.3% who did not have depression symptoms (p<0.000). In addition, the results showed a statistically significant difference for the basic disability and instrumental disability variables, in that the proportion of individuals with basic disability for activities of daily living (moderate-severe) obtained worse quality of life scores (9.8%) than individuals with no or slight disability (3.3%) (p=0.019). A good score in physical quality of life was associated with no or slight basic disability (99%) (p=0.019). The proportion of individuals with instrumental disability who had poor quality of life in the physical components was higher: 62.1% as opposed to those who did not 47.3% (p=0.46).

No association was found for the comorbidity and sociodemographic variables (marital status and income).

Table 1. Physical component of quality of life in relation to the study variables

Variables	Physical component			*p-value*
	Total n(%)	Poor n(%)	Good n(%)	
Sex				
Female	211 (52.8)	44 (72.1)	167 (49.3)	0.001
Male	189 (46.4)	17 (27.9)	172(50.7)	
Marital status				
With someone	258 (64.5)	43 (70.5)	215 (63.4)	0.288
Alone	142 (35.5)	18 (29.5)	124 (36.6)	
Monthly income				
<900	135 (41.5)	26 (52)	109 (39.6)	0.103
≥ 900	190 (58.5)	24 (48)	166 (60.4)	
Nutritional status				
Normal	283 (71.8)	31 (51.7)	252 (75.4)	0.000
At risk	99 (25.1)	21 (35)	78 (23.4)	
Malnourished	12 (3)	8 (13.3)	4 (1.2)	
Frailty				
Not frail	89 (22.3)	3 (4.9)	86 (25.4)	0.000
Prefrail	218 (54.5)	24 (39.3)	194 (57.2)	
Frail	93 (23.3)	34 (55.7)	59 (17.4)	
Comorbidity				
None	229 (57.3)	29 (47.5)	200 (59)	0.140
Low	83 (20.8)	13 (21.3)	70 (20.6)	
High	88 (22)	19 (31.1)	69 (20.4)	
Depression				
No	186 (46.5)	14 (23)	172 (50.7)	0.000
Yes	214 (53.5)	47 (77)	167 (49.3)	
Basic disability				
None-Slight	382 (95.7)	55 (90.2)	327 (96.7)	0.019
Moderate-Severe	17 (4.3)	6 (9.8)	11 (3.3)	
Instrumental disability				
None	198 (50.5)	22 (37.9)	176 (52.7)	0.038
Moderate-Severe	194 (49.5)	36 (62.1)	158 (47.3)	

Mental component

For the mental health component of quality of life (Table 2), the results showed statistically significant differences in relation to sex, where women's scores were lower than men's: 22.9% vs. 77.1% respectively (p=0.003). There were also statistically significant differences with respect to malnutrition risk and frailty: the proportion of individuals who obtained a low score in the mental component of quality of life was higher for individuals with malnutrition risk and who were frail: 62.9% and 60%, respectively (p=0.000).

The results indicated a significant association between quality of life and comorbidity. The proportion of individuals without any comorbidity who had a good mental component of quality of life was higher (58.4%) than those with low or high comorbidity (21.4% and 20.3%, respectively) (p= 0.026).

Depression was shown to be a factor associated with a low score in the mental component of quality of life in that there was a larger proportion of individuals with depression symptoms (71.9%) with poor quality of life than individuals without any symptoms (26.7%) (p=0.000).

In relation to basic disability, the results indicated that among individuals with moderate or severe disability the proportion of poor quality of life (5.7 and 2.9%) was higher than good quality of life (1.5% and 0.3%) (p=0.028).

Table 2. Mental component of quality of life in relation to the study variables

Variables	Mental component			p-value
	Total	Poor	Good	
	n%	n(%)	n(%)	
Sex				
Female	211 (52.8)	27 (77.1)	184 (50.4)	0.002
Male	189 (47.3)	8 (22.9)	181 (49.6)	
Marital Status				
With someone	258 (64.5)	24 (68.6)	234 (64.1)	0.598
Alone	142 (35.5)	11 (31.4)	131 (35.9)	
Monthly income				
<900	135 (41.5)	14 (51.9)	121 (40.6)	0.256
≥ 900	190 (58.8)	13 (48.1)	177 (59.4)	
Nutritional status				
Normal	283 (71.8)	13 (37.1)	270 (75.2)	0.000
Risk	99 (25.1)	15 (42.9)	84 (23.4)	
Malnutrition	12 (3)	7 (20)	5 (1.4)	
Frailty				
Not frail	89 (22.3)	1 (2.9)	88 (24.1)	0.000
Prefrail	218 (54.5)	13 (37.1)	205 (56.2)	
Frail	93 (23.3)	21 (60)	72 (19.7)	
Comorbidity				
None	229 (57.3)	16 (45.7)	213 (58.4)	0.026
Low	83 (20.8)	5 (14.3)	78 (21.4)	
High	88 (22)	14 (40)	74 (20.3)	
Depression				
No	186 (46.5)	3 (8.6)	183 (50.1)	0.000
Yes	214 (53.5)	32 (91.4)	182 (49.9)	
Basic disability				
None-Slight	382 (95.7)	32 (91.4)	350 (96.2)	0.186
Moderate-Severe	17 (4.3)	3 (8.6)	14 (3.8)	
Instrumental disability				
None	198 (50.5)	17 (51.5)	181 (50.4)	0.904
Moderate-Severe	194 (49.5)	16 (48.5)	178 (49.6)	

When analyzing the effect of the variables associated with the components of quality of life, in the estimated model (Table 3), the variables that explained the physical component of quality of life were frailty and basic disability. The risk of having poor physical quality of life was 1.5 times higher among older frail people than non-frail (OR=1.566, CI=0.047-0.924) and the risk of having a poor score in the physical component of quality of life was 0.6 times higher among older people with a basic disability for activities of daily living. For the mental component of quality of life (Table 3), the variables that explain it are nutritional status (OR=1.393, CI=0.107-0.579) and depression symptoms (OR=1.223, CI=0.130-0.664).

Table 3. Associated factors with physical and mental components of quality of life

Variables	Physical component		
	OR	95% CI	*p-value*
Basic disability	0.643	1.173-3.085	0.009
Instrumental disability	0.069	0.853-1.345	0.555
Depression	0.596	0.282-1.074	0.080
Nutritional status	0.357	0.349-1.402	0.314
Frailty	1.566	0.047-0.924	0.039
Sex	0.749	0.210-1.064	0.070
Variable	**Mental component**		
	OR	95% CI	*p-value*
Depression	1.393	0.107-0.579	0.001
Nutritional status	1.223	0.130-0.664	0.003
Comorbidity	0.552	0.258 - 1.285	0.178
Frailty	17.84	0.000 -	0.997
Sex	0.854	0.167 - 1.087	0.074

Odds Ratio (OR); Confidence interval of 95% (95% CI)

Discussion

Although there are numerous instruments for measuring HRQoL, the SF-36 was chosen for the present study because it is widely used for its internal consistency and reliability. In this study, the prevalence of poor quality of life for both components was low, comparable to the results of the study by Jürschik et al.(18). These results may be explained by the fact that the study did not include institutionalized individuals, among whom there might have been a higher prevalence of poor quality of life, and because the study was conducted in a medium-sized city, comparable to results obtained in rural settings.[27,28]

There is abundant literature that shows an association between low scores for perception of quality of life in the two components and the female sex,[29–31] which coincides with the findings of the present study. This data could explain, as in the case of the authors cited, why women view aging as a negative factor in life, and men adapt better to this process.

Although the present study was not able to establish an association between quality of life and monthly income, Morcillo et al.,[32] Ploubidis et al. and Coronado et al.[31,33] found that quality of life was worse among older people with lower monthly income. This may be because the level of non-re-

sponse on this point was high in the sample of the present study.

As in the present study, it has been observed that health-related quality of life is impacted by multiple pathologies,[34] although it is also related to a decrease in the two components of HRQoL in patients with only one pathology,[35,36] generally associated with chronic conditions. It is important to note that an association was found in the elderly population of Castellón between the mental component of quality of life and comorbidity, as in a study conducted in Tarragona with an adult population.[37]

Another factor that is associated with quality of life is depression, which in the present study had an influence on the two components, as was also found in studies by Coronado et al. and Capote et al.[30,31]

In addition, an association between basic and instrumental disability and the physical component of HRQoL has been observed. This may be because diseases appear in advanced ages and can result in the functional and mental deterioration of older people, creating dependence in activities of daily living and placing restrictions on autonomy, as was also concluded by Coronado et al.[31]

The relationships found between frailty and quality of life are similar to those in a study by Toledo.[38] In the present study, a positive causal relationship was found among quality of life, frailty, and basic disability in the physical component and between nutritional status and depression symptoms in the mental component, which confirms that quality of life in the elderly population of Castellón was influenced by multiple factors, both sociodemographic and health-related, as was also the case in the study by Miranda et al.[39]

The findings underscore the role of frailty and basic disability on the physical component of quality of life, and nutritional status and depression on the mental component of quality of life, thus identifying these variables as important areas of intervention for improving health outcomes.[40,41]

Although there are numerous studies on quality of life, the results of this study emphasize the importance of assessing and addressing the negative perception that older people have of themselves, and determining which factors influence this perception. Health promotion is an interdisciplinary concept, and the function of nurses is essential since they are the professionals who most frequently care for older people living at home. It is important that nurses assess the quality of life of their older patients and implement interventions to improve quality of life.

A limitation of the study was the low number of centers that participated in it. Even though it did not represent all the centers from the department, the sample obtained was representative of sociodemographic characteristics. There were also losses that occurred in the answers to the survey's subjective questions, since the participants with cognitive impairment could not answer them.

Conclusion

Most of the older people in Castellón living in the community had good quality of life. The quality of life of the older people was influenced by the presence of depression symptoms, nutritional status, sex, frailty and basic and instrumental disability. Frailty, basic and instrumental disability and sex increased the probability of poor quality of life in the physical component. Nutritional status, comorbidity, depression symptoms and sex increased the probability of poor quality of life in the mental component.

Collaborations

Esteve-Clavero A, Ayora-Folch A, Mácia-Soler L and Molés-Julio MP contributed with project and interpretation of data, writing of the article, critical review of the intellectual content and final approval of the version to be published.

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