Nutritional status and factors associated with non-institutionalized people over 75 years of age

Estado nutricional y factores asociados en mayores de 75 años no institucionalizados

Estado nutricional e fatores associados em pessoas acima de 75 anos não institucionalizadas

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ABSTRACT

Objective: to determine the factors related to the risk of malnutrition in a non-institutionalized population over 75 years of age. **Method**: a cross-sectional study was conducted using a questionnaire in a sample of 326 individuals over 75 years of age in Castellón (Spain), during 2015, and selected through intentional sampling. **Results**: Malnutrition prevalence was 2.8%. 26.9% of the individuals were at risk of malnutrition, whereas women presented a higher rate (31.5%). Women with a good overall health status showed a lower rate than men, 55% and 69%, respectively. Individuals that showed a lower risk of malnutrition are those with a positive perception than those who have a good overall health. Frail elderly people showed a higher risk of malnutrition (57.5%) compared to non-frail subjects (20.2%) p< 0.001. **Conclusion:** Frail women, self-assessed health, overall health, and use of health care services (nursing consultation) were related to a higher risk of malnutrition.
Descriptors: Malnutrition; Quality of Life; Frail Elderly; Risk Factor; Nursing.

RESUMEN

Objetivo: determinar los factores relacionados con el riesgo de desnutrición en la población de mayores de 75años no institucionalizada. **Método**: estudio transversal realizado mediante cuestionario en una muestra de 326 individuos mayores de 75 en Castellón (España), durante 2015. Seleccionados mediante muestreo intencionado. **Resultados**: Prevalencia de desnutrición 2,8%. El 26,9% de los individuos están en riesgo de desnutrición, las mujeres lo presentan en mayor proporción (31,5%). Las mujeres presentan una salud general buena en menor proporción que los hombres, el 55% frente a 69%. Tienen menor riesgo de desnutrición los individuos que tienen una percepción positiva y los que tienen una buena salud general. Los mayores frágiles presentan un mayor riesgo de desnutrición (57,5%) frente a los no frágiles (20,2%) p< 0.001. **Conclusión:** Se relacionan con mayor riesgo de desnutrición, mujeres fragilidad, percepción de la salud, salud global y utilización de Servicios sanitarios (consulta de la enfermería).
Descriptores: Desnutrición; Calidad de Vida; Anciano Frágil; Factores de Riesgo; Enfermería.

RESUMO

Objetivo: determinar os fatores relacionados com o risco de desnutrição na população acima de 75 anos não institucionalizada. **Método**: estudo transversal realizado mediante questionário em uma amostra de 326 indivíduos acima de 75 anos em Castellón (Espanha), durante 2015, e que foram selecionados por meio de amostragem intencional. **Resultados**: prevalência de desnutrição de 2,8%. 26,9% dos indivíduos correm risco de desnutrição, sendo que as mulheres se apresentam em maior proporção (31,5%). As mulheres apresentam uma boa saúde geral em menor proporção que os homens, 55% e 69%, respectivamente. Os indivíduos que apresentam um menor risco de desnutrição são os que têm uma percepção positiva e os que têm uma boa saúde geral. Os idosos frágeis apresentam um risco maior de desnutrição (57,5%) comparado aos não frágeis (20,2%) p< 0.001. **Conclusão:** relacionam-se com maior risco de desnutrição as mulheres frágeis, a percepção da saúde, a saúde global e a utilização dos serviços de saúde (consulta de enfermagem).
Descritores: Desnutrição; Qualidade de Vida; Idoso Fragilizado; Fatores de Risco; Enfermagem.

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INTRODUCTION

Population aging is a matter of concern, and it is estimated that by the year 2064, the number of people over 65 years is expected to reach 38.7% of the total population[1]. At this stage of life, and as a result of major biopsychological changes, there is an increasing risk of malnutrition associated with a greater development and worse outcome of medical conditions[2], decrease in quality of life, lengthening of hospital stay, and rise in health care costs[3].

Malnutrition has been defined as an imbalance between the nutritional intake and the requirements that determines a change in metabolism and compromises body functions, resulting in the loss of body mass[4]. It is also a risk factor for the development of addiction and situations that have an impact on quality of life[5]. The Mini Nutritional Assessment (MNA) is a valid tool to determine the risk of having malnutrition and, as a consequence, it will raise awareness to the need for taking action to prevent it.

Malnutrition in elderly people is a common problem at all levels of healthcare, community, hospital, and nursing homes. It is estimated that the incidence of this problem in hospitalized patients is 40%, and higher than 60% in nursing homes[6]. Based on international studies carried out with the elderly population living in their homes, the figures of risk of malnutrition vary from 15% to 40%[7-8], whereas in studies conducted in Spain with non-institutionalized elderly people the estimate is nearly 20%[9-10].

Frailty is defined as a situation in which the functional capacity of elderly people decreases, resulting in the risk of suffering adverse events and mortality, and is documented in several studies on states of malnutrition[9-11].

The knowledge on factors related to malnutrition will allow to plan specific activities for this population group, aimed at reducing frailty and improving quality of life.

OBJECTIVE

To determine the factors related to the risk of malnutrition in the non-institutionalized population over 75 years of age.

METHOD

Ethical considerations

Before the development of this study, the research proposal was approved by the Clinical Research Ethics Committee of the Health Department of Castellón, and the people interviewed signed a free and informed consent. Data confidentiality was maintained at all times.

Study design, setting, and period

A cross-sectional and observational study was carried out in the city of Castellón de la Plana, in which factors related to frailty were analyzed, such as the risk of malnutrition, applying the Fralle survey[12]. Data collection took place throughout the year 2015.

Population and sample. Inclusion and exclusion criteria

The study population consisted of individuals over 75 years of age who belonged to the community. People of both sexes, residents in family homes, with a health care card, and who expressed their agreement in participating in the study, and people with cognitive impairment with a chaperone (in this case the questions on subjective data were not pursued) were included.

People who were terminally-ill, institutionalized, with cognitive impairment, and those who did not want to participate were excluded.

A purposive sampling was carried out by nurses from the healthcare centers participating in the study, who contacted the individuals during nursing appointments, obtaining a sample of n = 326. The collection was conducted in seven out of nine healthcare centers in the city that expressed willingness to participate in the study.

Study protocol

The measurement tool used was the Fralle survey[12], which is a survey designed and validated for studies on non-institutionalized elderly people. This survey consists of 170 questions and measures, among other things, frailty through five criteria of Fried et al.[13], the risk of malnutrition through the Mini Nutritional Assessment in its short version (MNA-SF)[14], health-related quality of life (HRQoL), and the use of healthcare services.

Data collection was carried out by the primary health care nurses when an elderly person attended a nursing appointment or by phone if the individual was unable to move. The list of individuals that accepted to participate was sent to the research team, which carried out the interviews. Data were collected throughout the year 2015, in the primary health care centers.

Several variables can be obtained with the Fralle survey, and those addressed in this study are described as follows. The dependent variable measured the risk of malnutrition applying the MNA-SF[14], which consisted of 6 questions, with the highest score of 14. A score between 12 and 14 indicates "good nutritional status", between 8 and 11 "risk of malnutrition", and from 0 to 7 "malnutrition".

The independent variables were sociodemographic: living arrangement, monthly income, and gender. The living arrangement variable is measured by two items, "alone" for those who live alone in their houses, and "accompanied". The monthly income variable consists of three categories: <600 euros, 600-1200 euros, and > 1200 euros.

As regards HRQOL, health perception and overall health were assessed. The health perception status was measured as excellent, very good, good, regular, or poor; and overall health at the time of the interview was categorized as good or poor.

Frailty was defined according to the criteria of Fried et al.[13]: unintentional weight loss, muscle weakness, fatigue, mobility, and low level of physical activity. Individuals are considered "frail" if they meet 3 or more of the frailty criteria, "pre-frail" if they meet 2, and "non-frail" if they do not meet any criteria.

The use of the healthcare services variable was measured by a question on the rate of nursing appointment attended in the last month. The answers were categorized into 2 groups, "never" and "attended" for those who answered using the service 1 or more times.

Data analysis

Statistical analysis and bivariate analysis for the factors associated with malnutrition were carried out using Pearson's chi-square test for the qualitative variables, establishing a significance level of $p < 0.05$.

The level of unanswered questions (those who chose not to answer any question of the survey or people with cognitive impairment) was assessed, taking into consideration that, according to Demaio[15], when the level of unanswered question is lower than 10%, an inference with the available cases can be carried out.

The SPSS statistical software, version 21.0, was used for data analysis.

RESULTS

The Fralle survey[12] was applied to a total of 326 individuals (48% men), with a mean age of 81.32, ranging between 75 and 96 years of age. A malnutrition prevalence of 2.8% was measured with the MNA-SF[15], included in the study.

Descriptive analysis (Table 1) shows that 26.9% of individuals are at risk of malnutrition, whereas women presented a higher proportion (31.5%) compared to men (21.9%). 21.2% of the individuals lived alone, with a higher proportion among women (30.8%) than men (18.8%).

Regarding monthly income, 11.4% of the elderly individuals earn less than 600 euros, 56.7% earn between 600 and 1200 euros, and 31.9% earn more than 1200 euros.

As for their health-related quality of life, results show statistically significant differences, whereas women reported having a good overall health status in a lower proportion than men, 55% and 69% ($P = 0.012$), respectively. When it comes to the subjective perception of health, there is no statistically significant difference between men and women.

From the total sample, 66.9% not even once attended a nursing appointment in the last month, with no statistically significant differences between men (65%) and women (68.6%).

The prevalence of frailty was 13.7%. It was higher in women than men, with no statistically significant differences between them.

In the bivariate analysis between the risk of malnutrition and the studied variables (Table 2), the observed results were not statistically significant for the living arrangement variables ($p > 0.05$). As for the HRQoL, the results showed a lower risk of malnutrition for individuals with a positive perception of life (71.7% without risk) than those individuals with negative perception (28.9% without risk) (0.001). The same was observed for those who reported a good overall health status, with no risk of malnutrition at a higher proportion (66.7%) than those with a poor overall health status (33.3%) with a p value = 0.005.

There were no statistically significant differences between the risk of malnutrition and the income earned. In contrast, it was observed that individuals who attended a nursing appointment have more risk of malnutrition than those who do not, and these are statistically significant differences ($p = 0.029$).

Regarding the frailty variable, it was noted that frail elderly individuals show a higher risk of malnutrition (57.5%) compared to non-frail people (20.2%), $p < 0.001$. Combining living arrangements with income variables, there was no statistically significant difference with the risk of malnutrition for none of the studied items.

Table 1 – Characteristics of the studied population: sample size (n) and frequency (%)

Variables		Total		Men		Women		p value
		N	%	n	%	n	%	
Living arrangement	Alone	69	21.2	17	18.8	52	30.8	**< 0.001**
	Accompanied	257	78.8	140	87.2	47	69.2	
Monthly income*	< 600	29	11.4	10	8.1	19	14.5	0.010
	600-1200	144	56.7	63	51.2	81	61.8	
	> 1200	81	31.9	50	40.7	31	23.7	
Overall health	Good	188	61.6	100	69.0	88	55.0	0.012
	Poor	117	38.4	45	31.0	72	45.0	
Health perception	Good	200	65.6	101	69.7	99	61.9	0.153
	Poor	105	34.4	44	30.3	61	38.1	
Attended a nursing consultation	Never	218	66.9	102	65.0	116	68.6	0.482
	Attended	108	33.1	55	35.0	53	31.4	
Frailty	Yes	41	13.7	14	9.8	27	17.2	0.062
	No	259	86.3	129	90.2	130	82.8	
Nutritional status	With risk	87	26.9	34	21.9	53	31.5	0.052
	No risk	236	73.1	121	78.1	115	68.5	

*Note: * Due to the level of unanswered questions for this variable (see Demaio 1980), the inferred values may not represent the characteristics of the population.*

Table 2 – Factors associated with malnutrition: frequency (%)

Factors		Malnutrition			p value
		Total	With risk	No risk	
		%	%	%	
Living arrangement	Alone	21.4	14.9	23.7	0.087
	Accompanied	78.6	85.1	76.3	
Monthly income	<600	11.5	13.6	10.8	0.101
	600-1200	56.7	65.2	53.8	
	>1200	31.7	21.2	35.5	
Health perception	Good	65.7	50.0	71.1	0.001
	Poor	34.3	50.0	28.9	
Overall health	Good	62.0	48.7	66.7	0.005
	Poor	38.0	51.3	33.3	
Attended a nursing appointment	Never	66.9	57.5	70.3	0.029
	Attended	33.1	42.5	29.7	
Frailty	Yes	25.0	57.5	42.5	**<0.001**
	No	74.8	20.2	79.8	
Living arrangement/ Income	Alone + <600	2.8	3.0	2.7	0.082
	Alone + 600-1200	17.9	12.1	19.9	
	Alone + >1200	2.0	1.5	2.2	
	Accomp + <600	8.7	10.6	8.1	
	Accomp + 600 1200	38.9	53.0	33.9	
	Accomp + >1200	29.8	19.7	33.3	

DISCUSSION

In this study, using the MNA-SF tool, a 2.8% prevalence of malnutrition in the sample was found, which was higher than the one obtained in a similar study[9,16], as well as in a study carried out in Orense[17] and another in Almería[18], where a 3% prevalence was observed. However, the percentage of people associated with the risk of malnutrition was 26.9% with lower results than those in other studies, such as Guerrero[11] and De La Montana[17], in which a prevalence of 54.1% and 57.5% were obtained, respectively, on the ground they were carried out in populations with different characteristics than the current study. In contrast, the studies of Méndez et al.[16] and Hernández[18] obtained a prevalence of 15.2% and 22.8% lower than this study with a risk of malnutrition, respectively, in an environment similar to this study.

Analyzing the differences by gender, this study found a higher risk for women than men, consistent with the studies carried out by Cuerda et al.[10] and Schilp et al.[19], and contrary to the study of Méndez et al.[16] in which it was higher among men. These results could be attributed to the geographic environment or the time of data collection.

In our community, this study found 21.2% of elderly people living alone, but most lived accompanied, data that agrees with studies carried out in our environment[20], and with the study of Méndez et al.[16], which observed a lower percentage of elderly people living alone compared to those living accompanied.

In addition, regarding frailty, statistically significant differences between women and men and similar to Schilp et al.[19] have been found. There is a significant link between frailty and the risk of malnutrition (p<0.001). These results are similar to those found in Lleida and Viena[9,21]. There is a probability that the aging process is associated with an increase in common factors related to malnutrition and frailty, rather than geographic environments.

Regarding the risk of malnutrition, there were no differences found between living alone or accompanied, which is similar to a recent study carried out in Barcelona[22]. However, the differences in terms of number of inhabitants and in its surroundings are distinct. Most probably, the samples of the studied individuals are comparable and this could be explained by the sociodemographic characteristics of the sample.

When comparing the results related to socio-demographic and malnutrition risk factors, there were no significant differences, and the results are similar to the study of Sánchez-Ruiz et al.[23] and attributable to the fact that most of the studied population did not present social risk factors, since they have upper and middle socio-economic levels. Despite this, economic incomes are considered a factor related to the risk of malnutrition[24-25], taking into account that people with lower income may have difficulty accessing a healthy diet.

As for health perception and overall health as variables of quality of life related to the risk of malnutrition, the results showed an association with the risk of malnutrition to the extent that the higher the quality of life, lower the risk, in which similar conclusions were obtained in the studies of Jiménez et al.[26] and Méndez et al.[16] carried out in our environment, a data that confirms that the quality of life variables are correlated to the actual health status.

Study limitations

As a limitation of this study, the participating centers do not represent all centers of the city; however, the obtained sample is a representation of socio-demographic characteristics.

In contrast, some answers to subjective questions of the survey were lost, because the participants with impairment were unable to answer. It would be necessary to develop a similar study on institutionalized elderly people.

Implications for the nursing area

The development of this study using a validated survey, already applied in an environment similar to ours, allows obtaining

reliable results on the frailty and nutritional status of the elderly. The results may be useful to nurses at the care and socio-health levels, and provide valid information for related studies.

CONCLUSION

Based on the results of this study, it is possible to conclude that the positive perception of health and good overall health are associated with a lower risk of malnutrition in elderly people.

Individuals that attended a nursing appointment have a higher risk of malnutrition than those who did not, and this is possibly due to the fact that those who consult with nurses are in the group with already established pathologies.

Similarly, it can be concluded that, in the Castellón surroundings, women have a higher risk of malnutrition, and elderly people who are considered frail show a higher risk of malnutrition when combining the variables of living arrangement and income. There was no significant association for the risk of malnutrition with none of the studied items, a fact that may be explained because most of the people in the sample live accompanied and have no monthly income lower than 600 euros.

The prevalence of risk of malnutrition justifies the need for nursing intervention in the nutritional habits of elderly people; therefore further research should be conducted with an aim at obtaining dietary changes oriented to improve the nutritional status of this population group.

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