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Frailty in free-living older adults: Preliminary results

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ABSTRACT : *Around the world, in recent years the concept of frailty as a syndrome has gained relevance, potentially reversible if timely interventions are made. The purpose of this study is to determine the prevalence of frailty in older adults (OA) who attend institutions of social assistance in the metropolitan area of Nuevo León. It is a quantitative, descriptive and cross-sectional study in a preliminary sample of 157 OA a 83.00% (f = 130) are women and the rest men (17 per cent.00; f = 27), with a mean age of 71.0 ±6.98 years; 46.5 % (f = 73) of the OA are widowed, the majority (56.7%; f= 89) are devoted to the household, a 28.7% (f = 45) are retired. The OA reported to be economically dependent on someone (56.1%; f = 88), in line with the live together in a 73.2% (f = 115), the main pathology is arterial hypertension (46.5%), followed by diabetes mellitus with 29.3 %, high cholesterol of 28% and joint problems with 25.5%. For the OA of the metropolitan area until the moment presents a 7.6 % of frailty in accordance to the frail questionnaire.*

Key words: *Older adults, frailty, aging,disability.*

I. INTRODUCTION

Around the world, in recent years the concept of frailty in the older adults (OA) as a syndrome has gained relevance, by the increased risk of deterioration of the functionality and for being a potentially reversible if there are timely interventions once installed the condition [1].

Currently, the fragileOA is the one that has a reduction of physiological reserves and an increased risk of vulnerability to external shocks resulting in a higher probability for adverse health episodes (hospitalization, institutionalization, death, and falls) and loss of function, disability or dependence [2].

When we speak of research in frailty, it is necessary to mention to Fried et al. (2001) whom defined it as the presence of three or more than five of the following criteria: Unintentional weight loss, muscle weakness, fatigue, slow walking and low physical activity. Criteria, which are currently the most used as benchmarks for assessing the syndrome or to adapt instruments or measures of evaluation. When considering the frailty as the limitation of activity and physical function, which predicts the dependence of the OA to need partial or completely the help of a person to perform activities of daily living [3.4].

Therefore, the detection and treatment of the fragileOA is a priority issue in the area of care for the elderly, closely linked to the issue of prevention. In this respect, there are four main points that justify the relevance of the study of frailty in the elderly population [5]: (a) Relevance Theory: the increase in the susceptibility of the OA, to submit adverse events, dependence and death, highlighted the importance of time to diagnose and identify the biopsychosocial characteristics of the OA fragile, data that will provide the potential for adverse attempt to modify the course of the disease [6]. b) Clinical relevance and care: almost all health services programs, protocols, or plans of action on older people in general, and on the frail elderly persons in particular, but with recommendations do not always appropriate to the context of each country. Therefore, further research is needed to check the equivalence between the several ways to measure the different

components of the frailty and facilitate their use in clinical practice [7]. c) epidemiological relevance: there is a prevalence estimate variable, due to the imprecision in defining the concept of frailty, from a 10% (when we consider the state prior to the disability) to a 30 or 40% (to include varying degrees of disability, and clinical risk factors or related).The studies which have the aim of clinical and epidemiological definition of the frailty [8.9]. d) practical relevance: the frailty is a clinical syndrome and as such is expressed through signs and Specific symptoms resulting from a decrease in the physiological reserves in multiple body systems, with an increased risk of dependency and functional disability, which is positioned in a situation of greater vulnerability to external shocks and more likely to have an adverse impact on the overall health status,for this reason, although the timely management is by the geriatrician, there is a need for a comprehensive and multidisciplinary assessment [10].

The action and research on aging and frailty is currently a problem of priority due to the size of the population that will be part of the group of the third age [11]. The European Innovation Partnership on Active and Healthy Aging (EIP on AHA), recommends to learn more about this topic, including as one of its prioritized actions the prevention and early diagnosis of cognitive and functional impairment [12].

The purpose of this study is to determine the prevalence of frailty of OA who attend institutions of social assistance in the metropolitan area of Nuevo León, and the association between these variables.

II. METHODOLOGY

2.1 Participants

Adults of 60 years and older, formally registered on each Elderly Club House (checked by registry list of the Club House), who be agree to participate in the research and sign the informed consent and that do not have a pacemaker.

2.2 Instruments

The frailty, was measured through the FRAIL Questionnaire (Morley, Malmstrom & Miller, 2012; Woo, Leung & Morley, 2012), which classifies the elderly in the presence of frailty and risk of disability.

2.3 Procedure

The "FRAIL" Questionnaire, developed by Morley et al. (2012) and Woo et al. (2012) was used to determine the presence of frailty. This scale is validated and is one of the easiest to use, the questionnaire consists of general data, name, age, evaluator´s data and date; and 5 simple questions about each one of thefive domains (fatigue, resistance, ambulation, comorbidity, and weight loss). The scale of response is Likert-type (first question), dichotomous (question 2 and 3) and 1 self-fill question. The sum of the points obtained in each question allows the same as the criteria of Fried (2001) classify patients into fragile when sum is 3-5 points. It is a questionnaire used successfully in several international studies such as Morley, Malmstrom and Miller (2012) and the Woo, Leung and Morley (2012) using a reliability test retest.

The data of the weight loss were confirmed by measurements of height, weight, and BMI. The weight is carried out with a Tanita scale model BC- 418 that uses a tetrapolarmethod, this is the most common form of measure the impedance [13].

To assess the size was used a stadiometerSECA brand, with the following procedure to assess the height of the subject: the patient is maintained in the Frankfort plane, the evaluator shall apply a gentle traction upward through the mastoid processes, the score assistant placed the triangular piece in the bracket firmly on the vertex by tightening the hair as much as possible. The Body Mass Index (BMI) is the relationship between body weight with the square of the size of the person. It is also known as Quetelet index, and its calculation formula is BMI = Weight (kg) / height $(m)^2$.

2.3 Data Analysis

The preliminary results were analyzed with the statistical package SPSS (Statistical Package for the Social Sciences) version 21.0 IBM. For the analysis of the data was applied both descriptive statistics and inferential statistics, the steps taken are described below: First, use descriptive statistics to know the demographic characteristics of the sample, the variable of frailty (frequency and percentage) and the instruments (mean, median, mode, standard deviation, minimum and maximum value).

III. RESULTS

The familiar and personal characteristics of the OA of the total sample (n = 157) a 83.00% (f = 130) are women and the rest men (17 per cent.00; f = 27). The average age of the OA is 71.0 years±6.98, the ranges of age ranged from a minimum of 60 years and a maximum value of 90 years. In relation to the scholarship level the average years of education in this population is of 6.00 ±4.10, with a minimum value of 0.00 and a maximum of 19.00. Table 1 shows the values for age and scholarship level when dividing the sample by gender.

Table 1. *Personal characteristics of the OA participants divided by gender*

Variable	*M*	*Mdn*	*SD*	Minimum	Maximum
Women *n1* = 130					
Age	71.66	71.00	6.84	60.00	88.00
Schooling	5.50	6.00	3.76	0.00	17.00
Men *n2* = 27					
Age	74.11	76.00	7.39	61.00	90.00
Scholarship	7.59	6.00	5.19	1.00	19.00

Note*: n* = 157; *M* = Average; *Mdn*= Medium; sd = standard deviation.

From the overall sample of OA 46.5 % (*f*= 73) of the OA are widowed. Most are engaged in the home (56.7%; f = 89), a 28.7% (f = 45) are retired and the rest are engaged in another activity (14.6%; f = 23). A higher percentage of the participants, are economically dependent on someone (56.1%; f = 88), this is consistent with the fact of living together, living together in a 73.2% (f= 115). Table 2 shows the socio- familiar features of the sample of OA divided by gender.

Table 2. *Familiar Features of the OA divided by gender*

Variable	Women *N1* = 130		Men *N2* = 27	
	F	%	*F*	%
Marital status				
Married	43	33.1	19	70.4
Widowed	68	52.3	5	18.5
Other	19	14.6	3	11.1
Occupation				
Home	88	67.7	1	3.7
Retired	28	21.5	17	63.0
Other	14	10.8	9	33.3
Coexistence				
Live Alone	37	28.5	5	18.5
Live with someone	93	71.5	22	81.5
Number of children				
None	4	3.1	0	0
1 to 5	85	65.4	19	70.4
>5	41	31.5	8	29.6
Economic dependence				
Yes	84	64.6	4	14.8
Not	46	35.4	23	85.2
In charge of economic status				
No one	44	33.8	23	85.2
Husband	35	26.9	0	0
Children	46	35.4	3	11.1
Other	5	3.8	1	3.7

Note: *n* = 157; *f* = frequency; *%* = percentage

The challenge to the OA about the background from their skeletal muscle was found 65.6% (f= 103) to be are afraid to fall, a 33.1% (f=52) of OA have suffered falls in the last year, however, the 73.2% (f=115) report does not present any fracture in the past two years. In the anamnesis on the number of falls in the last year were presented similar percentages for women (66.9%; f=105) and men (66.7%; f=22) that mention not falling,

with a range of 0 to 10 falls for men and 0 to 5 falls for women. The parts of the body affected by fracture for both gender are the ankle, wrist, arm, hip and some toe. About their lifestyle,a 91.1% (f = 143) of men and 93.6% (f = 147) of women, respectively reported a non consumptionbehaviourof alcohol and smoking.

According to the anthropometric characteristics made to the OA of the overall sample was found an average of 68.3 kg ±14.30 weight, a size of 152 cm±7.48. The average percentage of fat is 37.10± 7.13, of lean mass is 42.2 kg ±8.14 and for body mass index is 29.4 ±5.22. There was a diagnosis of the nutritional status of normality in 81.5% (f = 128), risk of malnutrition in 17.2% (f = 27) and malnutrition in a 1.3% (f = 2). Table 3 shows the diagnosis of nutritional status in the sample divided by gender.

Table 3. *Nutritional status of the OA, sample divided by gender*

Nutritional Status	Women		Man	
	N1 = 130		*N2* = 27	
	F	%	*F*	%
Normal	108	83.1	20	74.1
Risk of poor nutrition	22	16.9	5	18.5
Poor nutrition	0	0.0	2	7.4

Note: *n* = 157; *f* = frequency; *%* = percentage

According to the FRAIL Questionnaire was observed in the overall sample of OA a 7.6 % (f = 12) classified in fragile and the rest, 92.4% (f = 145) without frailty. In the table 4 shows the presence of frailty in the sample of OA divided by gender.

Table 4. *The presence of frailty in the OA according to the FRAIL Questionnaire, sample by gender*

Frailtyclassification	Women		Men	
	N1 = 130		*N2* = 27	
	F	%	*F*	%
Frailty	10	7.7	2	7.4
Withoutfrailty	120	92.3	25	92.6

Note: *n* = 157; *f* = frequency; *%* = percentage

IV. DISCUSSION

In this section we discuss the results of the OA older evaluated so far with the findings of other studies related to the investigation. Most of the OA of the study are women (83.00%), these figures are consistent with the current situation in almost all countries of the world, Mexican women tend to live longer than men. The results of the study indicate that the sample has an average age of 71.0 years (SD = 6.98), the majority of participants are widowed, are devoted to the home (56.7%) and economically dependent on someone (56.1%). With regard to age, the data of the study are very closely related with Varela- Pinedo et al. (2008) evaluated 246 people with an average of 69.9% years and with the data reported in the last national census [15]. The study data on the marital status differs to data from the National Survey of Nutrition and Health (Gutierrez et al., 2012) that reported a higher proportion of older women married (60.5%).

The level of primary scholarship (6 years±4.10) found in the study is slightly higher than data from the Population and Housing Census 2010; point out that 28.7% of women and 19.9% of men both OA cannot read or write, the average level of education of the adult population was estimated at 4.6 years, which didn't complete the basic education, which for those generations attended only the primary school. The situation is greatest disadvantage for older people, these data are also associated with being a sample that consisted mainly of women, the literature shows that in all cases, women have less education than men [15].

Most of the OA of the study reported live on companion of someone else (73.2%), these data differs with the study of Choque and Dusseau (2013) about older adults in Bolivia, who found a lower percentage (49.7%) of the population that referred not to live alone.

With regard to pathologies, as well as Valera-Pinedo et al. (2008) found the hypertension, dyslipidemia and diabetes as the main diseases that are present in the OA. In addition, the

reproductive burden associated with high fertility may have an impact on the health of women due to wear caused, in addition to the biological changes in the post-reproductive health that increase the risk of chronic diseases such as diabetes and hypertension [16]. In the present study also included joint problems and gastritis.

The results of the study are outstanding to observe a high level of functionality in a sample that consisted mostly by women. In relation to gender, a factor associated with poor quality of life in most of the studies is that the gain of life of women (higher life expectancy) happens at the expense of years lived in disability, that is to say, with processes that restrict the usual activity or disability, impairment or disability, which translates into lower quality of life. In relation to these there are several theories: greater exposure to emotional problems, opportunities for improvement in their quality of life, among other [17].

On the other hand, the data found agree with those reported by Cabrero et al. (2007) who found in a sample with similar demographic characteristics to the present study men and women aged 70 years and over belonging to four primary health care centers in urban and semi-urban centers- a functional capacity above the average, this may be related to the fact that older adults who attend centers for the elderly at the primary level participate in recreational activities and fitness and in most cases the OA move on your own, which allows them to remain independent and functional for a longer period of time than the adult asylum seekers.

With regard to the aspect of the nutritional status was presented an 81.5% a normal range as opposed to the study by Choque and Dusseau (2013), where it was found that the majority of the population (64.3%) of the OA are at risk of malnutrition, and 16.3% present malnutrition. The data of the study may be related to the age of the shows that, on average, is not above the age of 85 years which is considered to at risk, it is necessary to check the consumption of medication, dietary parameters and the economic situation, these factors are considered to be at risk with the highest prevalence associated with nutritional status.

V. CONCLUSION

Unlike a study that was conducted in an urban population over the age of 65 years and its relationship with the comorbidity and disability [18] in which it was obtained an estimated 10.3% frailty, in our case the OA of the metropolitan area until the time is only a 7.6 % of frailty, but the percentage of frailty found is greater than through the SPPB; however it is similar in the percentage of 7.7% found by Varela-Pinedo (2008) in the adult population in the community of Metropolitan Lima, associated also with greater frequency in women.

The results presented so far are the preliminary sample of 157 OA, it is recommended to continue with the collection, capture and analysis of data to complete the sample of 377 and correlate with social factors, life style, each of the parameters outlined above and with the prevalence of frailty reported by objective measures.

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