Psychometric properties of the Frailty Scale in elderly Ecuadorians and correlation analysis with nutritional status and global maltreatment

Propiedades psicométricas de la Escala de Fragilidad en ancianos ecuatorianos y análisis de correlación con el estado nutricional y maltrato global

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Abstract

The general objective was to analyze the psychometric properties of the feasibility scale in the Ecuadorian elderly and to determine whether frailty is associated with nutritional status and global mistreatment of the elderly, with the purpose of generating public policies that contribute to the reduction of mistreatment of the elderly. A study of the psychometric properties was carried out by means of an exploratory and confirmatory factor analysis, in addition, a non-experimental, quantitative, descriptive-correlational, cross-sectional, and prospective research was conducted with a sample of 195 older adults ≥ 60 years old belonging to the city of Cuenca through a non-probabilistic sampling. As results, women predominated in 61%, rural and urban residence in 50%, married marital status in 53.5%, academic level secondary level in 47.1%, medium socioeconomic level in 62.3%, with a total global mistreatment of 19.7%, where the female sex evidenced significant differences in physical mistreatment (p=0. 01), finally, it was evidenced that nutritional status was positively correlated with frailty in both urban and rural residence (r = 0.67, rural r = 0.68), rural r = 0.68); rural r = 0.68), but there is no relationship between frailty and nutritional status and maltreatment. In conclusion, this study will contribute to future research, and it is recommended that more research be conducted on this problem, especially on the factors that trigger mistreatment to contribute to the generation of public policies that benefit older adults and help them to better manage their old age.

Keywords: psychometric properties, mistreatment, older adults, frailty, nutritional status.

Resumen

El objetivo general fue analizar las propiedades psicométricas de la escala de factibilidad en el anciano ecuatoriano y determinar si la fragilidad se asocia con el estado nutricional y el maltrato global del adulto mayor, con el propósito de generar políticas públicas que contribuyan a la reducción del maltrato del adulto mayor. Se realizó un estudio de las propiedades psicométricas mediante un análisis factorial exploratorio y confirmatorio, además se efectuó una investigación no experimental, cuantitativo, descriptivo-correlacional, transversal y prospectivo con una muestra de 195 adultos mayores ≥ 60 años pertenecientes a la ciudad de Cuenca a través de un muestreo no probabilístico. Como resultados, predominaron las mujeres en un 61%, residencia rural y urbana en un 50%, estado civil casado en un 53,5%, nivel académico nivel secundario en un 47,1%, nivel socioeconómico medio en un 62,3%, con un maltrato global total de 19,7%, donde el sexo femenino evidenció diferencias significativas en el maltrato físico (p=0. 01), finalmente se evidenció que el estado nutricional se correlacionó positivamente con la fragilidad tanto en la residencia urbana como en la rural (r = 0,67, rural r = 0,68), en la rural r = 0,68); rural r = 0,68), pero no hay relación entre fragilidad y estado nutricional y maltrato. En conclusión, este estudio contribuirá a futuras investigaciones y se recomienda realizar más investigaciones sobre esta problemática, especialmente sobre los factores que desencadenan el maltrato para contribuir a la generación de políticas públicas que beneficien a los adultos mayores y los ayuden a manejar mejor su vejez.

Palabras clave: propiedades psicométricas, maltrato, adulto mayor, fragilidad, estado nutricional.

Introduction

According to the World Health Organization (WHO), an older adult is 60 years of age or older, who undergoes a process called continuous aging, which consists of the progressive and generalized deterioration of vital functions that leads to a greater risk of suffering age-related diseases[1]. For this reason, older adults can reduce their quality of life and even die prematurely, due to loneliness, isolation, and social exclusion, which are considered social determinants that affect the health and well-being of the older adult population[2]. The World Health Organization (WHO) indicated that maltreatment is the intentional use of force, in fact or as a threat, against oneself, another person or a group or community, which has a high probability of causing injury, death, psychological damage, developmental disorders or deprivation[3]. On the other hand, the nutritional status of the elderly is the result of the balance between the needs that the body requires and the energy expenditure of food, given by multiple physical, biological, genetic, cultural, environmental and psycho-socio-economic determinants, thus increasing the prevalence of problems related to nutritional status, the elderly in relation to nutrition is the group most at risk of inadequate food intake that influences the risk of malnutrition or obesity[4]. Similarly, frailty in an older adult is a multidimensional syndrome, with the reciprocal action of biological, psychological, and social factors, which is associated with decreased functional and cognitive capacity, this can be identified with the prognosis of adverse events such as falls, disability and death[5].

At present, the elderly population is increasing as the years go by, therefore the government and the different public entities do not give due importance to the care and needs required by this population, and their rights are being violated[6], This is why it is necessary to know the nutritional status and fragility in which an older adult is and how this influences this person to receive some type of mistreatment[6,7]. According to the WHO, this population has suffered some type of mistreatment, with estimated figures of 33.4% psychological abuse, 14.1% physical abuse, 12.8% economic abuse, 11.6% neglect and 1.9% sexual abuse, and they also mention the mistreatment that exists in the institutions that take care of the elderly, where the care they receive is deficient and insufficient[8].

Worldwide, in China, mistreatment of the elderly is related to factors such as the situation of coexistence, isolation, illness, and caregiver stress. It has been identified that three rural communities have experienced mistreatment with a percentage of 36.2%, of which 27.3% are psychological mistreatment, 15.8% caregiver negligence, 4.9% physical mistreatment and 2% financial mistreatment, and it is also mentioned that one of the consequences associated with mistreatment is the risk of suffering depression[9].

In Ecuador, according to the results of the 2010 SABE I Survey, 4% of this population has been subjected to various forms of abuse, such as: 3% has suffered sexual violence, 16.4% psychological violence, 14.7% of older adults received insults and 14.9% suffered neglect and abandonment[10]. On the other hand, in relation to frailty in older adults, in Colombia, a study carried out in 4 cities showed that 34.8% were vigorous, 53% were pre-frail and 12.1% were frail, of which 6.8% were male and 17% were female[11]. Also in Cuba, a prevalence of 67.9% of frailty in women and 32.1% in men was demonstrated, of which 80.4% were adults between 65 years and older, and 19.6% belonged to an age range between 60 and 64 years[12]; while in Ecuador, in the Rosa Elvira de León geriatric center in the city of Azogues, the prevalence of frailty in the older adult population is 36.7%, of which 26.7% are women and 10% men[13].

Therefore, the following hypotheses were proposed for this research: being female, over 60 years of age, married, mestizo, frailty and underweight are associated with elder abuse, elder abuse is positively associated with nutritional status and frailty, and the female sex presents greater frailty, overweight and overall abuse. Likewise, the general objective was to determine the nutritional status and frailty associated with elder abuse in Cuenca. October 2021-March 2022 with the purpose of generating public policies that contribute to the reduction of elder abuse. Based on this, the specific objectives were to adapt the frailty scale to the Ecuadorian population through psychometric properties, to identify demographic characteristics, frailty and nutritional status and elder abuse, to verify nutritional status, frailty, and abuse according to sex, to analyze if nutritional status is associated with frailty and global abuse according to residence.

Methodology

Type of research

A quantitative, descriptive, correlational, and cross-sectional study was carried out, with a non-experimental and prospective design.

Population

The total of components that participated in a certain linkage of common characteristics, comprise the universe; that is, inhabitants residing in a certain geographic area. A total of 50,085 older adults residing in the city of Cuenca, aged 60 years or older, according to the National Institute of Statistics and Census (INEC), were included. It is worth mentioning that Cuenca is in the province of Azuay, in the center-south of the inter-Andean region of Ecuador, is made up of 36 parishes of which 15 correspond to the urban area and 21 to the rural area, is considered as the Athens of Ecuador for its great architecture and culture, its independence was on November 3, 1820, so today this date is commemorated.

Sample

A simple random sampling study of this population was carried out, obtaining a representative sample of the older adults of the city of Cuenca according to their nature and frequency. Applying Sierra Bravo's formula, a sample of 195 of the total population of older adults in the city of Cuenca was obtained.

Inclusion and exclusion criteria

We included older adults aged 60 years and older living in the city of Cuenca who agreed to participate in our study by filling out and signing the respective informed consent form. Elderly people with cognitive impairment and those who did not wish to participate in the research were excluded.

Instruments

The first part of the instrument section included the sociodemographic variables such as sex, age, marital status, race, and level of schooling. At the same time, the Modified Mini Mental State Exaination test (MMSE) was used by the authors Ramirez et al, which consisted of 30 items and evaluated the cognitive state such as orientation, attention, calculation, language, and visual space, it lasted approximately 10 to 15 minutes and its maximum score was 30[14].

The Geriatric Scale of Elder Abuse (GMS), validated by Rodriguez and Carrasco in 2013, consists of 22 items and measures 5 types of abuse: psychological, physical, economic, neglect and sexual. It is worth mentioning that this scale identified each type of abuse: the time and frequency of abuse, the person who carried out the aggression and the sex of the aggressor. This scale was designed for a duration of approximately 8 to 20 minutes[15].

Another scale used in this study is the Frail Scale to measure frailty in older adults, authored by Carrasco et al. It is composed of 5 items with a validity of 1 point and measures fatigue, endurance, ambulation, illness, and weight loss, and has a rating scale of frail, pre-frail and robust[16]. Finally, Mini Nutritional Assessment by Vellas et al. was used to measure the nutritional status of the older adult; this scale has been validated in several countries of the world with significant samples, consists of 18 items and measures: anthropometric indicators (height, weight, BMI), dietary parameters (number and types of food), global assessment (diseases, medication, mobility, injuries, psychological state) and subjective assessment (nutritional problems, health status). This test had a maximum score of 30 points and lasted approximately 10 minutes[17].

Procedimiento

La investigación se realizó de manera online, la información fue recogida mediante formulario de Google, en el que se han implementado las preguntas correspondientes a las variables sociodemográficas, test mini mental, maltrato, fragilidad y estado nutricional que fueron aplicadas a la población de estudio en la cual se suministró el consentimiento informado. Se estimo una muestra de 310 adultos mayores de la ciudad de Cuenca, los datos se recogieron automáticamente en una hoja *EXCEL* y los mismo fueron tabulados y analizados en el programa SPSS 26, *InfoStat y Jamovi 2.*

Ethical considerations

The document called “The Helsinki Declaration” given by the World Medical Association (WMA) was used as a priority for the present study, where greater emphasis will be given to the key points of informed consent (Assent, consent) and ethical principles[18]. The ethical principles given by the WHO were also considered, such as: integrity (acting for the benefit of the population with honesty and equity), accountability (taking responsibility for the consequences or actions, whether positive or negative), respect (respecting the confidentiality of each person), independence (acting under the ethical principles and recommendations of the WHO)[19].

Statistical analysis

An exploratory and confirmatory analysis was carried out for the psychometric adaptation of the frailty scale to the Ecuadorian population (specific objective 1). Then, a descriptive analysis was carried out using absolute and relative frequencies for qualitative variables and measures of central tendency, dispersion, and position for quantitative variables. Subsequently, contingency tables were used to identify demographic characteristics, frailty, and nutritional status according to elder abuse (specific objective 2). Then, a normality test (Shapiro Wilk or France) and homoscedasticity (Levene) were performed, assuming parametric assumptions. Therefore, a mean difference analysis was used to verify nutritional status, frailty, and maltreatment according to the sociodemographic characteristics of the study through the t-test for independent samples (2 groups of the independent variable) and the ANOVA test (3 or more groups of the independent variable) and finally, to analyze whether elder abuse is associated with frailty and nutritional status (specific objective 4) through Pearson’s r-test. The analyses indicated were performed in the InfoStat, Jamovi 2 and SPSS 26 programs.

Results

In this section of the results, the reliability of the items of the frailty scale in the Ecuadorian population is described in Table 1, in the order of the specific objectives.

N	Ítems	M	DE	Item-restest	If item dropped	
					Cronbach's α	McDonald's ω
1	Systemic arterial hypertension	0.41344	0.4931	0.3955	0.840	0.818
2	Diabetes	0.34109	0.4747	0.4132	0.838	0.817
3	Cancer (other than cancer)	0.03618	0.1870	0.3081	0.841	0.821
4	Chronic lung disease (COPD)	0.99742	0.0508	0.0636	0.846	0.834
5	Ischemic heart disease	0.99742	0.0508	0.0476	0.846	0.835
6	Asthma	0.05168	0.2217	0.1269	0.846	0.832
7	Arthritis (including osteoarthritis)	0.29199	0.4553	0.4236	0.837	0.816
8	Cerebral vascular disease	0.00258	0.0508	0.1121	0.846	0.832
9	Chronic kidney disease	0.04651	0.2109	0.2709	0.842	0.825
10	Covid-19	0.87597	0.3300	0.2383	0.844	0.826
11	Endurance. Alone without any aids such as a cane or walker; do you have difficulty climbing 10 steps (a staircase)?	0.45220	0.4984	0.7434	0.813	0.795
12	Ambulation. You alone without any aids such as cane or walker; do you have difficulty walking 100 meters (2 blocks) without resting?	0.50388	0.5006	0.6893	0.818	0.799
13	Have you fallen in the last year?	0.19380	0.3958	0.7288	0.817	0.793
14	Have you stopped doing your daily activities at home for fear of falling?	0.22739	0.4197	0.7180	0.817	0.794
15	Have you stopped going outside to do errands or activities for fear of falling?	0.23514	0.4246	0.7202	0.817	0.793
16	When you are standing or walking, do you feel that you lose your balance?	0.31783	0.4662	0.7645	0.812	0.793
Total, Frailty Scale		0,374	0,2		0,84	0,82

As can be seen in Table 1, it has a median of 0.99 for questions four and five with a standard deviation of 0.05 in which all items correlated positively, Cronbach's alpha and McDonald's alpha were above 0.79, demonstrating the adequate reliability of the items, as well as the entire scale.

Figure 1 identifies the reliability of the scale by means of the psychometric properties through the fit indices of the confirmatory factor analysis.

The frailty scale has an adaptation in relation to the psychometric properties with an absolute adjustment of the root mean square error of approximation (RMSEA = 0.01), standardized root mean residual (SRMR = 0.05); and the comparative adjustment of the goodness of fit index (CFI = 0.91), the Tucker-Lewis index (TLI = 0.92), indicating that it is acceptable, since its values are optimal. In the Ecuadorian population, this scale shows adequate reliability and content validity indexes, as well as adequate adjustment indexes by means of confirmatory factor analysis.

Figure 1. Goodness-of-fit indices of the Frailty in the Elderly Scale (Spanish version).

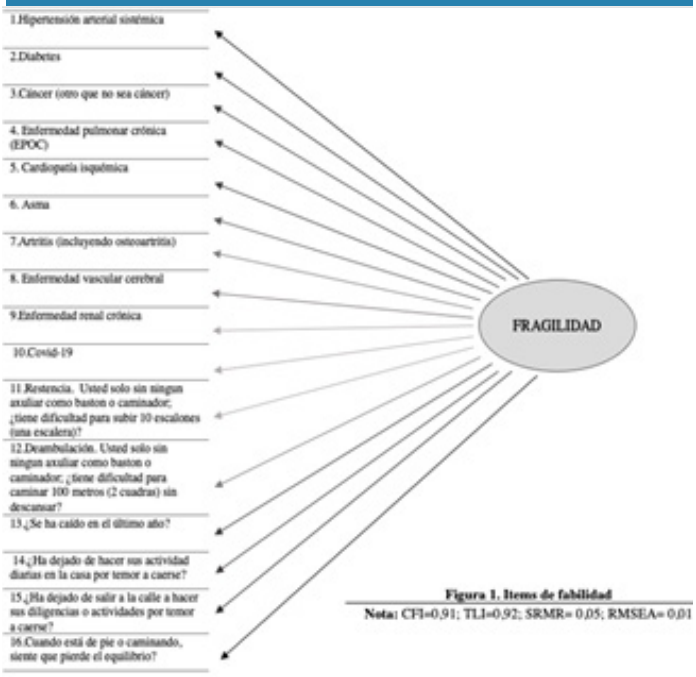

Figura 1. Items de fabilidad

Nota: CFI=0,91; TLI=0,92; SRMR= 0,05; RMSEA= 0,01

This table shows the sociodemographic characteristics and mistreatment of older adults in the city of Cuenca (Table 2).

Table 2: Sociodemographic variables and maltreatment.

		n	%
Gender	Male	121	39,0
	Woman	189	61,0
Residence	Urban	155	50,0
	Rural	155	50,0
Marital Status	Single	9	2,9
	Married/Unmarried Union	166	53,5
	Separated/Divorced	42	13,5
	Widowed	93	30,0
Academic level	Primary	59	19,0
	High School	146	47,1
	Technical or higher	103	33,2
	None	2	0,6
Social stratum	High	101	32,6
	Low	16	5,2
	Medium	193	62,3

In relation to sex, 61% were women (n=189); residence corresponded to 50% for both urban and rural (n=155); marital status was predominantly married with 53.5% (n=166); academic level stood out at the secondary level with 47.1% (n=146); the middle socioeconomic stratum was the highest with 62.3% (n=193); according to the types of mistreatment, physical and psychological with 13.5% (n=42), economic with 5.5% (n=17), with an overall total of 19.7% (n=61) of older adults who have experienced mistreatment respectively.

The following table shows the nutritional status and frailty of older adults in the city of Cuenca (Table 3).

Note: m=mean

Table 3. Quantitative variables

		Age	How long have you resided in this dwelling? (year)	How long have you lived in this city? (year)	Nutrition	Fragility
m		74,12	31,39	72,21	8,9226	6,4290
Med		74,00	30,00	73,00	9,0000	6,0000
DE		7,865	18,552	12,131	4,07381	4,06816
Mín		60	1	10	2,00	1,00
Máx		97	89	97	19,00	16,00
Sum		22976	9731	22384	2766,00	1993,00
Percentiles	25	68,00	15,00	67,00	5,0000	3,0000
	50	74,00	30,00	73,00	9,0000	6,0000
	75	80,00	40,00	80,00	11,0000	10,0000

Our study in terms of age, the minimum was 60 and maximum 97 years (m=74.1; de=7.9), in terms of the item How long have you lived in this dwelling? A minimum of 1 and a maximum of 89 years (m=31.4; de=18.6), in the question How long have you lived in this city? A minimum of 10 and a maximum of 97 years (m=72.2; de=12.1), in relation to nutrition a minimum of 2 and a maximum of 19, (m=8.9; de=4.1) and finally frailty with a minimum of 1 and a maximum of 16 (m=6.42; de=4.1). The graph shows the difference in nutritional status, frailty, and maltreatment according to sex (Table 4).

Table 4. Differences in nutritional status, frailty, and maltreatment according to sex.

		N	m	DE	Desv. Error average	t	p
Nutrition	Male	121	9,4050	4,21224	0,38293	1,67	0,09
	Female	189	8,6138	3,96313	0,28828		
Fragility	Male	121	6,7273	4,23478	0,38498	1,03	0,3
	Female	189	6,2381	3,95741	0,28786		
Global maltreatment	Male	121	3,6364	1,13284	0,10299	-,735	0,4
	Woman	189	3,7460	1,36796	0,09950		
Sexual Abuse	Man	121	0,0000	0,00000	0,00000	-,800	0,4
	Woman	189	0,0053	0,07274	0,00529		
Economic abuse	Man	121	0,11	0,424	0,039	,590	0,5
	Woman	189	0,08	0,398	0,029		
Neglect	Man	121	0,01	0,091	0,008	-,470	0,6
	Woman	189	0,02	0,162	0,012		
Psychological Abuse	Man	121	3,4298	0,78344	0,07122	,604	0,5
	Woman	189	3,3757	0,75909	0,05522		
Physical Abuse	Man	121	0,09	0,342	0,031	-2,71	0,01
	Woman	189	0,27	0,673	0,049		

In relation to nutrition there is no significant evidence between men and women (t= 1.67; p=0.09), as well as frailty (t= 1.03 ; p= 0.3), there are also no significant differences for global maltreatment (t=-.735 ; p= 0.4), sexual maltreatment (t=-.800 ; p= 0.4), economic maltreatment (t=.590 ; p= 0.5), neglect (t=-.470 ; p= 0.6), psychological abuse (t=.604 ; p= 0.5), physical abuse if there is evidence of significant differences in favor of sex (t= -2.71; p= 0.01), therefore it is evident that women present more physical abuse than men (m men = 0.09 vs m women= 0.27). This table shows the binary correlations between nutritional status with frailty and maltreatment according to the type of residence (Table 4).

Correlations of nutritional status with frailty and global maltreatment according to residence.			
Residence		Fragility	Global maltreatment
Urban (n=155)	Nutritional Status	673**	0,001
		0,000	0,995
Rural (n=155)		,682**	-0,049
		0,000	0,543
Se realizó mediante el análisis mediante el coeficiente de Pearson (r). ***. La correlación es significativa en el nivel 0,01 (bilateral).*			

In both urban and rural areas, it is evident that nutritional status correlates positively with frailty in a strong manner (urban r = 0.67; rural r = 0.68), that is, the higher the nutritional status in urban and rural areas, the greater the frailty; but no relationship between nutritional status and global maltreatment is evident (urban r = 0.001; rural r = - 0.04), which indicates a non-existent correlation; likewise, it was not demonstrated that frailty has a relationship with maltreatment.

Discussion

Since 1990 instruments have been developed to measure frailty for research purposes, some of these are valid and reliable, but others lack Cronbach's alpha, so it was until 1998 when a publication appeared that specified how to measure frailty, where it mentions the geriatric frailty scale, which has 5 criteria to classify an older adult as frail[20].

According to our study in the Ecuadorian population, the frailty scale (frail scale) shows adequate reliability and content validity indexes, also adequate adjustment indexes through confirmatory factor analysis, in which all items correlated positively, Cronbach's alpha and McDonald's alpha were above 0.79, compared to a study by the author Duncan R, et al. mentioned that the frailty scale had good reliability and acceptable internal consistency (k=0.77, P=0.0001, n=18), a Cronbach's alpha of 0.62 and required less than 5 minutes for its application so it demonstrated construct validity and was acceptable to the operators and study participants[21].

Similarly, Dent et al. indicate that there is no international standard for identifying frailty, but in this review the Frail scale stands out, since its validity, reliability, and ease of application in less than 5 minutes make it a recommendable instrument in different clinical and community scenarios for older adults[22]. The frailty scale was also applied in Paraguay, which was adequately adapted to the study, finding adequate ranges of reliability and reliability with the items, highlighting a prevalence of frailty of 53%[23], and in Colombia the same instrument was applied to measure frailty in the elderly, It also mentions that this scale constitutes an additional tool to identify the frailty syndrome in older adults, since it is reliable and trustworthy in its questions, since it reflects the diseases they suffer, as well as the activities they perform and how they perform them[11].

According to the second objective of our study, we found outstanding results, in relation to sex 61% are women, residence 50% for both urban and rural, marital status married with 53.5%, academic level secondary level with 47.1%, middle socioeconomic stratum with 62.3%, according to the types of abuse, physical and psychological with 13.5% (n=42), while in China showed results in relation to sociodemographic variables; Between the ages of 60 and 93 years, 63.4% were married, 81% had 5 years or less of schooling, and the prevalence of psychological mistreatment was 27.3%[24]; similarly, in the United States, the primary outcome of elder abuse was physical mistreatment with 32.2%, being more common in women with 73.7%, with lower incomes for 36.7% of the population. 7% with lower incomes for 36.8% and for those with low schooling with 35.2%[25].

In our data, economic mistreatment had a result of 5.5% (n=17), but with respect to Cuba, economic mistreatment was identified with 53.1% of which the female sex predominated with 65.6%, ages 70 to 79 years with 49.5% and widowed with 52.5%[26]. On the other hand, in our study we found 1% (n=3) of people who suffered from neglect and in Portugal, 72.2% were women, with an average age of 74.91, incomplete primary education level of 46.2%, and 24.5% of this population experienced abuse, of which 30% was neglect, 13.3% economic and 10% physical[27]. On the other hand, sexual abuse in our study was 0.3% (n=1), the situation is identical for the WHO, since sexual abuse is 0.9%, being the lowest of the types of abuse[28]. For our study, the total global maltreatment rate was 19.7% (n=61), the same is true for 3 cities in Colombia where there is evidence of global maltreatment with a percentage of 9.3% (n=43) for Medellín, 5.3% (n=26) for Barranquilla, and 14.9% (n=74) for Pasto[29].

According to objective 3 in relation to nutrition there is no significant evidence between men and women (t=1.67; p=0.09), on the other hand in Colombia there are significant differences in nutrition (p=0.03) since about a third of older adults presented nutritional problems, being higher in women with 54.2%[30], in terms of frailty there were no significant differences t=1.03; p=0.3, unlike in Spain, the prevalence of frailty is high in the elderly with 27.7% and 44.9% for prefrailty, with a higher frequency in the female sex, 77%[31].

According to global mistreatment there are no significant differences t=-.735; p=0.4, however in Mexico global mistreatment does occur with 8.1% and predominates in the female sex with 50.3%[32], and in Ecuador according to the SABE survey 21.3% (n=922) of older adults suffered violence and it is more frequent in women (OR=0.753, p<0.001), thus indicating that being a woman and having a low level of education are factors for suffering mistreatment[33]. For sexual mistreatment there were no significant differences t=-.800; p=0.4, as well as in Mexico sexual mistreatment occurs but in a lower proportion 0.6%, the situation for economic mistreatment is similar, since there are no significant differences t=.590; p=0.5 compared to Mexico where the most predominant mistreatment was economic with 31.4% and this is more common in women with 60.2%[34].

For neglect there are no significant differences t=-,470; p= 0.6 similarly it was for two studies where the percentages for neglect were very low; for Ireland they were: financial mal-

treatment 1.3%, psychological 1.2%, neglect 0.3% and for physical 0.5%[35] and an investigation of maltreatment in countries around the world indicates prevalence rates of maltreatment for psychological with 11.6%, financial with 6.8% and neglect with 4.2%, physical 2.6 and sexual 0.9%[36], On the contrary, for Madrid, which detected mistreatment of older adults by third parties in a hospital with 18.7%, in which the people who experienced the most mistreatment were women with 93.5%[37]; p= 0.5, while for Colombia it was found that the most predominant type of mistreatment was psychological with 12.3% and it was more frequent in women[38], also in Spain, mistreatment of the elderly was shown with 29.1%, where the most common subtypes were psychological with 4.2% and where situations of abandonment stood out with 24.1% and the highest risk of suffering mistreatment was for the female sex[39].

Finally, in our research on physical mistreatment, there is evidence of significant differences in favor of the sex t= -2.71; p= 0.01, therefore it is evident that women present more physical mistreatment than men (m_{Men}=0.09 vs m_{Women}=0.27), similarly in Portugal where the most reported type of mistreatment was physical with 86%, the victims were more frequently women 63%[40].

While for objective four in our study it was evident that nutritional status correlates positively with frailty in a strong way (urban r=0.67, rural r=0.68); rural r=0.68), the same circumstance occurs in Colombia with a study on nutrition which shows that there is a significant relationship in the different factors involved in the nutritional status of the elderly as the degree of frailty in which the elderly is[41], likewise Garcia[42] agrees with the study, since he mentions that chronic noncommunicable diseases are major markers of the state of frailty causing nutritional problems.

It was also evident that in both urban and rural areas there is no relationship between nutritional status and global maltreatment (urban r=0.001; rural r=-0.04); Likewise, it was not demonstrated that frailty has a relationship with mistreatment, although in Colombia 15.1% of older adults suffered mistreatment and it increases when the age ranges from 60 to 69 years, they are women, with lower educational level, in addition they mention that the home is a place of risk for older adults, especially for those with functional dependence because of the diseases they suffer and the level of disability in which they are (frailty)[43], in Switzerland there was also evidence of different types of psychological mistreatment 47%, financial 35%, physical 30%; This is due to risk factors such as the need for support (73%), the need for care (59%) and dementia (41%), i.e., the more health problems the elderly person has, the greater the risk of suffering mistreatment[44]. On the other hand, in Iran, 27.9% of older adults have suffered abuse, more frequently in educated and married women due to musculoskeletal and cardiovascular diseases, which were positively associated with the experience of abuse as indicated by Pearson's correlation (r= 0.65)[45], while in China the causes of abuse are depression, physical disability, chronic diseases, living alone and dependence on their own income[24].

Conclusion

As time goes by, the older adult's quality of life is reduced because their physical and psychological health is affected, and because of this they are vulnerable, so they need care and if this care is not adequate it can affect their health and even lead to premature death; they are also at greater risk of suffering some type of mistreatment due to the degree of dependence in which they are.

Therefore, in our research all the objectives were met, concluding that the frailty scale showed adequate reliability and reliability indices (Cronbach's alpha and McDonald's alpha were above 0.79), therefore, its application is recommended in the older adult population to measure frailty, At the same time, in relation to the sociodemographic variables, the highest percentages, predominantly women with 61%, rural and urban residence with 50%, married marital status with 53.5%, academic level of secondary school 47.1%, medium socioeconomic status with 62.3%, with a total global mistreatment of 19.7%, where the female sex showed significant differences in the physical mistreatment story (p=0.01). On the other hand, it was possible to demonstrate that nutritional status correlated positively with frailty for both urban and rural residence (urban r=0.067; rural r=0.68) but no relationship was found between nutritional status and global maltreatment, in the same way as for frailty. To conclude this research, these results will contribute to future research with real statistical data, and it is also recommended to continue investigating more about this problem, especially the factors that trigger mistreatment, to contribute to the generation of public policies that benefit older adults and help them to better manage their old age. On the other hand, it would be interesting to conduct empirical studies on the fear of COVID-19 in the face of the health emergency due to the COVID-19 pandemic in both the confinement, distancing, and vaccination stage in various populations[46,47] related to emotional[48] and educational aspects[49,57].

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