Psychometric Properties of the Medical Outcomes Study Perceived Social Support Survey and a Brief Version in a Sample of Cuban Seniors Suffering from Chronic Pain

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Abstract

Background: There is a consensus that receiving satisfactory social support is crucial for elderly people experiencing chronic pain; however, no instruments have been validated for the Cuban population. The Medical Outcomes Study (MOS) is an instrument that has been widely validated across several countries, indicating significant psychometric properties to measure perceived social support; however, MOS has never been applied to Cubans. This study obtained evidence of the internal and external validity of the original MOS survey structure and its brief 8-item version in a sample of Cuban seniors with chronic pain.

Methods: The sample included 200 Cuban single and retired seniors, with an intermediate level of education. The MOS Social Support Survey and a structured interview were conducted to obtain socio-demographic information and learn about the support perceived by elders in pain. A confirmatory factor analysis (CFA) was used to test the structure. Cronbach's alpha and omega coefficients were considered for internal consistency, in addition to the relation between the item variance and error variance (Average variance extracted). Furthermore, Spearman's rho coefficient was used to estimate the correlations between the MOS scores and the support assessment given by seniors in pain.

Results: All the models assessed through the CFA indicated good adjustment indices. However, the brief version of the model gave better results. Of the coefficients assessing internal consistency, the 2-factor 8-item version indicated the best indicators and accounted for greater variance not attributable to the error. Both versions of the MOS and their corresponding sub-scales obtained significant positive correlations with the support received by seniors in pain.

Conclusions: The MOS (4-factor) and the 8-item brief version (with 2 factors) present suitable evidence of structural validity, internal consistency, and external validity.

Background

The confidence individuals have in receiving social support to meet different needs has been conceptualized as perceived social support [1]. The sense and satisfaction of receiving support has been associated with improved health, quality of life, well-being, and survival in older adults [2–6]. Furthermore, there is a consensus that receiving satisfactory social support is crucial for people suffering from chronic pain [7–9], especially in the case of seniors[8,10–16]Lee & Oh, 2020). The International Association for the Study of Pain (IASP) recommends including social support evaluation in the assessments made by older adults with chronic pain [18,19].

Cuba has the second-largest aging population within Latin America and the Caribbean, and it is expected to rank first by 2025, with demographic figures comparable with those of first-world countries in terms of aging [20]. In 2020, 21.3% of the population of 11,187,533 inhabitants were older than 60 years [21].

In 2015, 82.2% of the total number of Cuban seniors suffered from chronic noncommunicable diseases, with musculoskeletal diseases being the most morbid ones, especially osteoarthrosis and arthrosis (with pain) (36.3%)[20] The causes of mortality among seniors, especially increasing in people older than 80 years, include accidents and falls resulting from disorders in the musculoskeletal system, thereby requiring the development of social and health policies aimed at improving the populations' well-being and active aging [21]

It is typical in clinical practice to ask for support received by elders in pain. However, there is a lack of assessment of the social support perceived in terms of pain in the context of Latin America and the Caribbean, particularly among Cubans, leading to difficulties in the standardization of research in the Latin American and Caribbean context [22]. Therefore, validating social support instruments evaluating their relationship with pain is essential, especially in Cubans. This is owing to the lack of instruments considering their functional and structural elements, adapted for our population. Furthermore, the International Test Commission highlights the need to "*provide relevant empirical data on the construct equivalence, the methods equivalence and the equivalence between the items in every population involved*" as well as to "*collect information and evidence about the reliability and validity of the test's adapted version in the populations involved*" 23, p.154.

The instrument's wide heterogeneity to assess social support has been confirmed [14,15]Despite their large number, reliability issues and insufficient psychometric analyses have been observed in most of the surveys. A few surveys have been generally accepted and, as reported on several revisions [24–26], they are almost always exclusively used by their creators.

The Medical Outcomes Study (MOS) Social Support Survey [27], is probably one of the most thoroughly investigated questionnaires widely used by virtually all regions, given its ease of application, scoring, interpretation, and solid theoretical grounds.

The MOS has been translated and adapted into several languages, such as Malaysian [28], Chinese[29], Portuguese [30], Arabic [31], Canadian French [32], Mandarin Chinese[33], and Taiwanese. Furthermore, MOS has been adapted to several countries such as Brazil [34], and Serbia [35].

It features several Spanish versions and has been widely used in Spain [36–38], Chile [39], Paraguay [40], Argentina [41], and Mexico [42]. Various studies have been conducted in Colombia for its adaptation to the adult and senior populations [43–46], and it was even adapted to the sign language [47].

Developed by Sherbourne and Stewart in 1991 [27] after following up on patients with chronic diseases, the authors considered the multidimensional and complex nature of social support. Thus, the instrument provides information about two important dimensions of perceived social support: structural, which focuses on the number of providers of support received by an individual (Question 1), and functional (Questions 2–20), which focuses on the degree to which the interpersonal relationships play different roles. These include giving emotional and affective support, providing information that an individual considers to be relevant and necessary (informational support), and giving tangible and practical assistance.

Considering the results of the factor analysis in a large sample of chronically ill patients, the authors decided to consolidate the items targeting emotional and informational support evaluation, resulting in 4 sub-scales that can obtain independent scores: 1) Emotional support. This subscale includes items that assess the expression of positive affect, understanding, and the encouragement to express feelings, as well as questions related to informational support (counseling, information, guidance, or feedback offered). 2) Instrumental support, which assesses the provision of material assistance. 3) Positive social interaction, which makes reference to the availability of people that are great for them to spend pleasant moments with and carry out pleasurable activities. 4) Affective support, associated with feeling loved and being capable of receiving and giving love [27].

Good psychometric properties have been reported in all validation studies, thereby proving the survey's reliability and validity in cancer patients[48], those with chronic pain [16], population with HIV [49], those with clinical conditions such as postpartum [28], people with mental health problems [14,50,51], and the general population [52]It has been widely used to assess social support in older adults [25,53] However, no consensus has been reached with regard to its factor structure.

Several studies found a 5-factor structure [54]. Other authors reported 4 factors [30,33,52]Haga clic o pulse aquí para escribir texto., 3 factors [28], and others even presented a 2-factor structure [55]. A study conducted on the psychometric properties of MOS in Colombian seniors confirmed that the structure with 4 correlated factors indicated appropriate adjustment indices [45]. The aforementioned result is consistent with those obtained earlier by Londoño et al. in 2012 [44] in the study conducted with the general population in Colombia.

One explanation for these dissimilar results is that various strategies have been adopted for the factor analysis, in addition to potential cultural differences. Furthermore, several authors have considered that the social support components are too correlated to be empirically differentiated. Furthermore, a single person commonly offers different types of support [27].

As the original version of MOS may exhaust the interviewee given its length, some studies have explored brief versions in terms of different countries and health concerns, mostly with samples of older adults. This is consistent with the fact that, today, brief measures aimed at facilitating epidemiological studies and the evaluation of people who may struggle or are reluctant to complete long questionnaires are required. In this sense, 56, p.185 stated the following: *"One reason for the increasing need for short scales could be a changing way to approach psychological research in general. With research questions becoming more and more complex, involving more and more constructs..."*

The brief versions of MOS have been developed after removing elements from the original scale, indicating excellent adjustment indicators and correlations with the full version. For instance, [57] reported the suitability of the psychometric properties in 12 and 4-item versions in a sample of mothers of children suffering from mental health disorders. Holden et al. [58] proposed an abbreviated 6-item version with 3 factors, validated in a large sample of young and middle-aged Australian women. Moser et al. [59] tested the validity of a 2-factor version involving 8 items in a large sample of women with cancer and elderly women from the US. This version was also explored in a sample of Spanish outpatients [60], a sample of Japanese individuals [61] and a large sample of older adults who survived cancer [48]. Furthermore, a 5-item version with 2 factors was studied too. This version was initially proposed by [62] in a research study with patients suffering from multiple sclerosis. This version was subsequently investigated with Italian, Malaysian, and Iranian seniors [63–65]. Recently, Martín-Carbonell [46] reported the validity evidence of the MOS 8- and 5-item versions in Colombian elderly people with chronic pain.

This article is the first research approach to the validity of the MOS in the Cuban population. The study provides evidence of the structural validity of the original MOS survey and the brief 8-item version in a sample of Cuban seniors with chronic pain, in addition to the evidence of its external validity (relation with the assessment made by the older adults with regard to the support received when in pain).

Methods
Participants and procedure to collect information

The data were obtained from research called "Musculoskeletal pain and psychosocial factors in older adults from Cuba and Colombia. 2018–2022." The research involved the participation of the Center for Research on Longevity, Aging and Health (CITED, for its Spanish acronym) of Cuba and the Cooperative University of Colombia.

Of the seniors who attended the CITED in Havana in 2019, 200 elderly people were assessed, who met the following inclusion and exclusion criteria: a) Age 60 years or older; b) being able and willing to answer the questionnaires and sign the informed consent; c) reported as having musculoskeletal pain; (d) stated being in pain during the month in which the study was conducted. However, older adults who a) had a physical or mental impairment that made it difficult for them to complete the surveys or b) did not agree to answer all the questions were excluded from it. The information was gathered by a psychologist who applied the instrument in paper and pencil format through an interview with the patient.

The participants' average age was 73.69 (SD = .42, minimum = 60 and maximum = 96, mode = 60), among whom women (77%), single individuals (63%), and retired older adults (66%), with an intermediate level of education (59.5%) were most common. Furthermore, 20.5% had completed a university degree, and 20% only attended basic primary school.
Instruments

MOS Social Support Survey [27] : A self-administered 20-item questionnaire first delves into the size of the support network available. This is followed by a classification into 4 sub-scales exploring both functional dimensions of social support: emotional/informational support (items 3-4-8-9-13-16-17-19), instrumental support (items 2, 5, 12 and 15), positive social interaction (ISP) (items 7, 11, 14 and 18), and affective support (items 6, 10, and 20).

Using a 5-point scale, the questionnaire asks about how frequently each type of support is available for the interviewee, with the following answer options: Never, Hardly ever, Sometimes, Most of the time, Always. An average of the scores was estimated to obtain a final score for each sub-scale, providing a general support index and calculating the average from the scores of the 18 elements included in the four sub-scales. The higher the score of an individual scale or the general score index, the greater the support.

This study applied the 19 items assessing the functional dimension of support and, just as in the abovementioned research articles, information from brief versions was gathered after removing elements from the original scale.

Table 1 presents the items and factors of the different versions explored in this study.

Table 1
Items of the MOS-19 (original) and the brief 8-item versions

	MOS ITEMS	MOS-8 EMOTIONAL	MOS-8 PRACTICAL
2	Someone who helps me when I need to rest in bed		X
3	Someone I can rely on to listen to me when I need to talk	X	
4	Someone who advises me when I am in crisis	X	
5	Someone who takes me to the doctor when I need to		X
6	Someone who shows me love and affection	X	
7	Someone I can spend great times with	X	
8	Someone who gives me information to help me understand a situation		
9	Someone I can trust or talk about myself and my concerns		
10	Someone to give me a hug		
11	Someone I can relax with		
12	Someone to cook my meals if I cannot do it on my own		X
13	Someone I would really wish to get advice from		
14	Someone to do activities with that help me clear my mind		
15	Someone who helps with the household chores when I am sick		X
16	Someone I can share my greatest fears and concerns with		
17	Someone I can turn to for advice on how to handle a problem		
18	Someone I have fun with		
19	Someone who understands my problems		
20	Someone to love and to make me feel loved		

[Table 1 near here]

Furthermore, information was collected through a **structured interview.** The interview included questions on sociodemographic variables and 5 questions related to the frequency in which they are supported by their relatives when in pain (with answer options: Never or hardly ever, Sometimes, Frequently, Always or almost always). The questions about the support received when in pain were about being comforted by their closest family members when in pain, receiving assistance with the household chores, feeling pleased and considered by their relatives, being in good company, and getting more attention.

Data analysis

The degree of joint relation between variables was explored using the Kaiser–Meyer–Olkin (KMO) test and Bartlett's sphericity test. The confirmatory factor analysis (CFA) was used to assess the factor structure by means of the Unweighted Least Squares (ULS) method.

This study considered the indices to assess the goodness of fit offered by the AMOS program for the ULS method: 1) Goodness of Fit (GFI), suggested by Yang-Wallentin et al.,[66] indicates the variability explained by the model, with values ranging between 0 (poor adjustment) and 1 (perfect adjustment). Values over .90 indicate proper adjustment. 2) Adjusted Goodness of Fit (AGFI) adjusts the GFI index by degrees of freedom of the proposed model and the invalid model [67]. In practice, values exceeding .90 are indicators of good adjustment of the model to data. 3) The Root Mean Square Residual (RMR) index: The smaller the RMR, the better. Values ranging from .05 and .08 [68] can be considered acceptable. An incremental fit index was also considered, in this case using the Comparative Fit Index (NFI) that measures the adjustment proportionate reduction when changing from the invalid to the proposed model[69]. The range of variation of this index is between 0 and 1; values over .90 are highly recommended. As for the standardized factor loads (λ), values ≥ 0.5 were considered appropriate[70].

The models below were assessed considering the available evidence on the MOS structure:

1. 19-item model of 4 correlated factors
2. 8-item model of 2 correlated factors in its shortened form

For studying the internal consistency, Cronbach's alpha and omega (also known as McDonald's omega coefficient or Raykov composite reliability) coefficients were considered. The relation between the item variance and the error variance was evaluated (Average variance extracted, AVE), considering that the higher than .5, the greater the actual variance explained [71]

The correlations between the MOS scores and the assessment of the support the older adult receives when in pain were correlated using Spearman's rho coefficient.

SPSS 26 and AMOS software programs were used for statistical analyses [72].

Ethical Considerations

This project was approved by the Ethics Committee of the Scientific Board of the Center for Research on Longevity, Aging and Health (CITED). All participants were requested to sign an informed consent in writing, in accordance with the official model prepared for research purposes, following the regulations passed by the Declaration of Helsinki.

Results

Table 2 presents the descriptive statistics of the 19 items and their correlations with the scale. As can be observed, items indicated a standard deviation equal or close to 1, and the average values were around the midpoint of the scale.

Table 2
MOS-19's descriptive statistics

Item	Average	SD	Min.	Max.	Asymmetry	Kurtosis	Corrected total correlation between elements
2- Someone to help when he/she needs to rest in bed.	4,0750	1,06539	1	5	-,957	,040	,509
3- Someone to rely on to listen when he/she needs to talk.	3,5750	,93743	1,00	5,00	,094	-,598	,659
4- Someone to ask for advice on how to handle a problem.	3,5400	,98144	1,00	5,00	-,193	-,303	,655
5- Someone to take him/her to the doctor when needed.	4,1950	1,04999	1,00	5,00	-1,003	-,152	,521
6- Someone who shows him/her love and affection.	3,7600	1,02354	1,00	5,00	-,327	-,909	,590
7- Someone to spend great times with.	3,4550	,93399	1,00	5,00	,057	-,527	,611
8- Someone who provides information to help him/her understand a situation.	3,3850	,92251	1,00	5,00	,168	-,271	,714
9- Someone to trust or talk about himself/herself and his/her concerns.	3,4500	1,02604	1,00	5,00	-,061	-,472	,639
10- Someone to give him/her a hug.	3,7000	1,04665	1,00	5,00	-,329	-,960	,573
11- Someone to relax with.	3,2800	1,04742	1,00	5,00	,080	-,767	,530
12- Someone to cook meals if he/she cannot do it on his/her own.	3,7500	1,14194	1,00	5,00	-,478	-,824	,456
13- Someone he/she would really wish to get advice from.	3,6500	1,10162	1,00	5,00	-,364	-,685	,561
14- Someone to share activities with that help clear his/her mind.	3,5650	1,01039	1,00	5,00	-,224	-,560	,546
15- Someone to help with the household chores when he/she is sick	3,6850	1,03009	1,00	5,00	-,340	-,456	,496
16- Someone to share his/her most personal fears and concerns with.	3,4400	,96491	1,00	5,00	-,235	-,020	,722
17- Someone to turn to for advice on how to handle his/her personal problems.	3,4200	,92078	1,00	5,00	-,152	,142	,669
18- Someone to have fun with.	3,3950	1,04134	1,00	5,00	-,149	-,525	,596
19- Someone to understand his/her problems.	3,4450	,97557	1,00	5,00	-,172	-,346	,619
20- Someone to love and make him/her feel loved.	3,8550	1,01446	1,00	5,00	-,580	-,376	,561

[Table 2 near here]

The results obtained from the KMO tests (= .960) and Bartlett's sphericity (approx. Chi-square = 8246.596, gl = 171, p = .000) for the 19-item matrix of the MOS proved the feasibility of the factor analysis.

Table 3 summarizes the results of the CFA of the models assessed, indicating that both models have good adjustment indices. However, the brief version indicates the best ones.

Table 3
CFA results

Model	Adjustment indices				
	CMIN	NFI	RMR	GFI	AGFI
4 factors/19 items	125,658	,976	,058	,983	,978
2 factors/8 items	9,145	,989	,036	,995	,990

[Table 3 near here]

Table 4 summarizes the data from the coefficients used to assess the internal consistency. The 8-item version with 2 factors had the best internal consistency indicators, explaining the greater variance not attributable to the error.

Table 4
Internal consistency of the different MOS versions

	FACTORS	INDICATORS		
		Alpha	Omega	AVE
MOS 19 – 4 FACT	TANGIBLE	.702	,764	,393
	IPS	.753	,754	,434
	EMOTIONAL	.876	.880	.479
	AFFECTIVE	.721	,796	,565
	TOTAL	.980	.975	.487
MOS 8 – 2 FACT	TANGIBLE	.702	.844	.577
	EMOTIONAL	.762	.873	.632
	TOTAL	.828	.848	.413

[Table 4 near here]

All MOS versions and their corresponding subscales indicated significant positive correlations with the support received by the older adults in pain (Table 5), except from the MOS-19's IPS subscale with the question related to the perception of receiving more attention.

MOS	BEING COMFORTED	HELP WITH HOUSEHOLD CHORES	FEELING PLEASED AND CONSIDERED	MORE ACCOMPANIED BY FAMILY AND FRIENDS	INCREASED ATTENTION PAID TO THEM
EMOTIONAL (MOS-19)	.258**	,174*	,237**	,225**	,154*
TANGIBLE (MOS-19)	,187**	,239**	,210**	,227**	,147*
IPS (MOS-19)	,197**	,181*	,279**	,258**	,098
AFFECTIVE SUPPORT (MOS-19)	,567**	1,000	,445**	,424**	,258**
TOTAL (MOS-19)	,258**	,258**	,258**	,306**	1,000
EMOTIONAL (MOS-8)	,294**	,206**	,314**	,280**	,177*
TANGIBLE (MOS-8)	,187**	,239**	,210**	,227**	,147
TOTAL (MOS-8)	,258**	,233**	,280**	,277**	,181*
Note: *The correlation is significant at the .01 level (bilateral) * The correlation is significant at the .05 level (bilateral)					

[Table 5 near here]

Discussion

This study provides evidence of the validity of two different versions of the MOS questionnaire to assess the social support perceived by Cuban older adults with chronic pain. This constitutes a significant contribution since, thus far, no instruments were available with informed results for this population. We were interested in studying the internal validity which, as known, assesses the degree at which the relations between the test items and components make up the construct to be measured and upon which the interpretations will be based (the reason why we analyze the dimensionality and the internal consistency), in addition to the external validity. Therefore, we explored the relations between the scores, with a criterion expected to be predicted by the test[73], such as the case of the support perceived by the older adults in pain.

We opted for the model of 4 correlated factors from the original 19-item survey as this is the one recommended by the authors of the instruments. Furthermore, this is the most frequently reported instrument by Ibero-American populations culturally related to ours, especially in studies on seniors 36,44,45. The same criterion supported the selection of the brief version we assessed [46, 60, 63 −65]. Furthermore, the CFA confirmed that both the original and shortened tests obtained suitable adjustment indices in the Cuban sample under research.

To conduct the CFA, we chose the ULS method since, according to Valdivieso Taborga [75], this is a great alternative as it does not require large samples. This method was also employed by Gómez-Campelo et al. [60] in a study including a MOS with Spanish and by Martín-Carbonell [46] on Colombian older adults. As per Ferrando & Lorenzo-Seva [76], when the ULS method is used, the adjustment must be evaluated through indicators not directly dependent on the chi-square, as the good fit indicators would be incorrect and probably inflated. Accordingly, Thakkar's recommendations [77] were considered, and the absolute adjustment indices and an incremental index were considered. These measures allowed us to evaluate the general goodness of fit and identify the most suitable models, considering the differences in the factor structure of the MOS highlighted by the literature [15, 24−25] Furthermore, this highlighted the validity of the 8-item shortened version to gather information about the two most universal roles attributed to social support: the provision of emotional and practical support in light of the contingencies of life. In this regard, a shorter measurement will allow for a faster assessment, more adjusted to the needs and expectations of the instrument's users.

Moreover, the reliability of a measurement instrument makes reference to its ability to obtain least-error measures [73]. One of the most widely used strategies entails establishing it through the internal consistency test [78]. Currently, the alpha and omega coefficients should be studied, as it has been proven that α is usually affected by several variables and is lower than omega. Thus, we recommend studying it as the lower limit for reliability [79]

Among the MOS versions studied, we believe that the 8-item one with 2 factors is the most advisable for research, not only for its excellent adjustment indices but also for the internal consistency values, considering that values over .7 are acceptable when a new measurement is under development, in addition to

values exceeding .8 when applied to research [80]. As acknowledged since the last century, the creation of a shortened version allows us to surpass some of the development phases of a new survey.

Nonetheless, in the case of clinical evaluations, this instrument should present values over .90 in situations in which scores are used to make important decisions individually affecting people [80]. Therefore, in this case, the larger original version may be more reliable, as it provides more detailed information about the functionality of the support received by the elderly. In this vein, it is worth considering that, as proposed by Alcaraz et al.[81], the efficiency of a shortened version makes reference to a comparison of the economy (i.e., the length of the reduced questionnaire or time saved with the shortened version) and the loss of information or validity. Every process of instrument reduction or refinement may lead to a loss of psychometric properties.

The 8-item version indicated the best AVE values; however, we consider that the original MOS can be a good measurement despite its AVE values lower than 0.50, as recommended by Fornell & Larcker [71]. Nonetheless, several authors have indicated that this criterion can be considered to be conservative and that it may accept slightly lower values [82], especially in a context in which constructs show accumulated empirical evidence and theoretical support, as is the case of MOS. Besides, as already known, the actual variance does not only rely on the characteristics of the survey but also on the variability of the construct in the population under study [78]. This study implemented a small sample, quite homogeneous from the sociodemographic and clinical perspectives. Moral de la Rubia [83] recently noted that a higher number of items may result in a damaged AVE.

As for the external validity, the correlations confirmed between the scores of MOS and the older adults' assessment of the frequency at which they receive support when in pain were confirmed by the literature [84,85]. Only the correlation between the MOS-19 sub-scale assessing the positive social interaction and the report of the older person who receives more attention when he/she is in pain was found to be not significant. This finding must be the object of further research, although a possible explanation may be that the ISP dimension is not relevant for the situations in which the person is in pain.

In this regard, our results are consistent with the idea that social support has different roles. Thus, it should be considered a multidimensional construct whose main roles are emotional and practical support, particularly with their conceptualization for the assessment and design of interventions with seniors [86]. Thus, obtaining differentiated information may be useful since it will help acknowledge that various "types" of support are different in terms of their predictive value with diverse results or that they are related in different ways with the same result in the stress stages [15]. They also support the MOS value to obtain information about the functionality of social support in older adults, as it has already been highlighted in multiple articles cited above.

A limitation of this research, which may affect the inferences that can be made from the shortened version, is that the full MOS version was applied, followed by the removal of the items for its development, despite the fact that, given the efficiency of this procedure, this is a regular practice [87]. This is how researchers of the brief MOS version under research proceeded [46, 58, 60]. However, a need exists to explore other properties of the validity that may be affected by this procedure, such as the content validity or the face validity.

Another limitation of this study, which is frequent in research developed with scarce economic resources, is the impossibility of accessing a representative sample. Thus, research should be conducted with people living in different contexts and struggling with other problems. In addition, the sample is relatively small for a psychometric study; however, the size and sample structure have been the object of discussion by researchers for decades. Lloret-Segura et al. [70] indicated evidence that the factor analysis can be accepted with a size of 200 cases when we have commonalities between .40 and .70 and that the number of variables per factor is of 3–4 items, as in the case of our study.

Conclusions

We believe that the study presents indicators so that physicians and researchers can use an instrument to assess social support, with all due precautions derived from the limitations of our research, which fills the gap in the array of instruments available for the Cuban population. In addition, it provides a brief version and helps reduce the burden on respondents, which will ease efficiency in key stages of this research, such as data collection.

Abbreviations

If abbreviations are used in the text they should be defined in the text at first use, and a list of abbreviations should be provided.

Medical Outcomes Study – MOS

Positive social interaction - ISP

Confirmatory factor analysis – CFA

The International Association for the Study of Pain – IASP

Center for Research on Longevity, Aging and Health – CITED

Kaiser–Meyer–Olkin – KMO

Unweighted Least Squares – ULS

Goodness of Fit – GFI

Adjusted Goodness of Fit – AGFI

Root Mean Square Residual – RMR

Comparative Fit Index – CFI

Declarations

Ethical approval and consent to participate

The study was conducted according to the guidelines of the Declaration of Helsinki and approved by the Research Ethics Committee of the Center for Research on Longevity, Aging and Health (CITED). (Protocol No. 004-2018, 20 de marzo del 2018). Informed consent was obtained from all subjects involved in the study.

Consent to publication: "Not Applicable"

Availability of data and materials: The datasets used and/or analyzed during the current study are available from the corresponding author upon reasonable request.

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Authors' contributions: "Conceptualization: Both authors; methodology: Both authors; formal analysis, MMC.; investigation: RPD.; data curation: MMC.; writing—original draft preparation: Both authors; writing—review and editing: Both authors. Both authors have read and agreed to the published version of the manuscript."

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