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Validity and reliability of the UCLA Loneliness Scale version 3 among aged Brazilians[a]

Validade e confiabilidade da Escala de Solidão da UCLA versão 3 entre idosos brasileiros

Validez y confiabilidad de la Escala de Soledad de UCLA versión 3 entre adultos mayores brasileños

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ABSTRACT

Objective: to assess the validity and reliability of the UCLA Loneliness Scale, version 3, in a sample of aged Brazilians. **Methods:** a methodological study carried out with 136 older adults registered in family health units. Construct validity was verified by exploratory factor analysis and correlation with depression and social support measures. Reliability was assessed by means of Cronbach's alpha. **Results:** in the exploratory factor analysis, a component was extracted, whose variance explained 43.6% of the instrument's composition. All items had a satisfactory factor load (≥ 0.30) distributed between 0.43 and 0.76. Construct validity was also supported by the positive correlation between loneliness and depression (r = 0.665; p≤0.001) and a negative correlation between loneliness and social support (r = -0.576; p≤0.001). It was also supported by the positive correlation between loneliness and depression (r = 0.665; p≤0.001) and a negative correlation between loneliness and social support (r = -0.576; p≤0.001). Cronbach's alpha for the sample was 0.88. **Conclusion and implications for the practice:** the UCLA Loneliness Scale version 3, presents evidence of satisfactory validity and reliability, and can be used to assess loneliness among aged Brazilians.

Keywords: Aged; Loneliness; Nursing; Psychometrics; Validation Study.

RESUMO

Objetivo: avaliar a validade e a confiabilidade da Escala de Solidão da UCLA versão 3 numa amostra de idosos brasileiros. **Métodos:** estudo metodológico, realizado com 136 idosos cadastrados em unidades de saúde da família. A validade de construto foi verificada pela análise fatorial exploratória e correlação com medidas de depressão e apoio social. A confiabilidade foi avaliada pelo alfa de *Cronbach*. **Resultados**: na análise fatorial exploratória foi extraído um componente cuja variância explicou 43,6% da composição do instrumento. Todos os itens apresentaram cargas fatoriais satisfatórias (≥0,30) distribuídas entre 0,43 e 0,76. A validade de construto também foi apoiada pela correlação positiva entre solidão e depressão (r= 0,665; p≤0,001) e correlação negativa entre solidão e apoio social (r= -0,576; p≤0,001). O alfa de *Cronbach* para a amostra foi de 0,88. **Conclusão e implicações para a prática**: a Escala de Solidão da UCLA versão 3 apresenta evidências de validade e confiabilidade satisfatórias, podendo ser utilizada para avaliação da solidão entre idosos brasileiros.

Palavras-chave: Idoso; Solidão; Enfermagem; Psicometria; Estudos de Validação.

RESUMEN

Objetivo: evaluar la validez y confiabilidad de la Escala de Soledad UCLA Versión 3 en una muestra de adultos mayores brasileños. **Métodos**: estudio metodológico, realizado con 136 adultos mayores inscriptos en unidades de salud familiar. La validez de constructo se verificó mediante análisis factorial exploratorio y correlación con medidas de depresión y apoyo social. La fiabilidad se evaluó mediante el alfa de Cronbach. **Resultados:** en el análisis factorial exploratorio se extrajo un componente, cuya varianza explicó el 43,6% de la composición del instrumento. Todos los ítems tuvieron una carga factorial satisfactoria (≥0,30) distribuida entre 0,43 y 0,76. La validez de constructo también se verificó por la correlación positiva entre soledad y depresión (r = 0,665; p≤0,001) y correlación negativa entre soledad y apoyo social (r = -0,576; p≤0,001). El alfa de Cronbach para la muestra fue de 0,88. **Conclusión e implicaciones para la práctica:** la Escala de Soledad de UCLA Versión 3 presenta evidencias de validez y confiabilidad satisfactorias, y puede utilizarse para evaluar la soledad entre adultos mayores brasileños.

Palabras clave: Adulto Mayor; Soledad; Enfermería; Psicometría; Estudio de Validación.

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INTRODUCTION

For a long time, health care for the aged population focused on reestablishment of the clinical conditions, having as its central axis diagnosis and management of diseases[1]. However, despite the importance of an adequate therapeutic approach, it is necessary to consider the weaknesses resulting from the loss of hearing, visual, cognitive and mobility abilities, which are common to an aging body. Such weaknesses are important predictors for well-being and quality of life[1]. In addition, it is known that the aged population tends to experience social, emotional and financial losses that can lead to increased feelings of loneliness and social isolation[2].

Loneliness is a complex and subjective construct that is easily confused with isolation or abandonment. It is related to a painful and intuitive experience, and it is not always caused by being alone, but by being without some interaction that the individual feels the need for[3,4]. Loneliness is manifested by an intense feeling of emptiness with serious consequences for health and social integration[5]. It predisposes to the onset of depressive symptoms, greater cognitive decline, damage to physical health, deficient quality sleep, anxiety disorders associated with increased mortality, and suicidal ideation[2,3,6].

In the national context, research studies about loneliness in older adults are still incipient.[4,7] A systematic review study about the problem highlights that the phenomenon of loneliness in the Brazilian aged population has been portrayed as an unpleasant subjective experience, in which the relationship between objective abandonment and loneliness, although real as it occurs in long-term care institutions, can also manifest itself within the homes themselves[7].

One of the strategies to minimize the negative impact of loneliness is the creation of a social support network in order to increase social inclusion and improve quality of life[7]. The informal support network can be characterized by social relationships and material and emotional support offered by family members, friends and neighbors[8]. An international study shows that informal social support represented by the family is the main source of support that older adults receive in their daily lives[9].

In interface with the challenges encountered in the aging process, the importance of the Primary Health Care (PHC) service as a formal social support network for the older adult stands out[1]. In this context, the health team must have tools that make it possible to assess loneliness in the aged population, especially those people with low self-care ability and reduced social support, for adequate planning of health care[7,10].

It is suggested that early detection of the symptoms of loneliness is an essential practice for greater effectiveness of interventions to maintain a healthy aging process, based on meeting psychosocial needs, such as attention, affection, respect, leisure and communication[3].

With regard to instruments for assessing symptoms of loneliness, the UCLA Loneliness Scale, version 3 stands out for being a one-dimensional scale composed by 20 items that do not explicitly include the words "loneliness" or "lonely". This feature of the instrument makes it very pertinent and relevant for reducing underreporting of this feeling and embarrassment of the respondents in the face of the stigma associated with loneliness and fear of self-declaring themselves a lonely individuals[11]. Therefore, this scale has been adapted and validated to different cultures and widely used, and this justifies proposing its validation for Brazil[5,11].

Its original version was developed by the University of California, in Los Angeles, with the objective of evaluating the presence of subjective symptoms of loneliness through the frequency with which the participant experienced situations of social interaction and performed activities individually[5].

The UCLA Loneliness Scale, version 3, was already translated and adapted for Brazil including the pre-test stage of the translated version with 34 older adults[12]. However, according to psychometrics, it is known that, to apply the translated and adapted scale it is necessary that its psychometric properties be evaluated. It is noteworthy that the instrument is easy to apply, which will allow future comparisons regarding the data on loneliness experienced by the aged population in Brazil in relation to other countries. In addition to that, it will favor the establishment of specific interventions based on a diagnostic result.

Thus, the objective of this study was to assess the validity and reliability of the UCLA Loneliness Scale, version 3, in a sample of aged Brazilians.

METHOD

This is a methodological study. To guide presentation of the information, the guidelines for observational studies were considered (Strengthening the Reporting of Observational Studies in Epidemiology, STROBE)[13]. The methodological guidelines were based on the Consensus-based Standards for the selection of health Measurement Instruments (COSMIN) checklist for measuring instruments[14].

The population of this study consisted of 3.907 older adults registered in 17 Family Health Strategy (FHS) units of a municipality in the inland of Minas Gerais, Brazil.

The inclusion criteria were as follows: individuals aged 60 years old or over and preserved cognitive ability assessed through the Mini Mental State Examination (MMSE)[15]. The MMSE has 13 questions that address orientation, memory, attention and specific skills such as naming and comprehension; and its score varies from zero to 30 points, the following being considered as cutoff points for the presence of cognitive ability: 13 points for illiterates, 18 points for individuals with up to eight years of schooling and 26 points for individuals with more than 8 years of schooling[15]. The individuals were those older adults who were not found after two home visit attempts.

Definition of the number of participants was based on the COSMIN recommendation, which suggests six observations for each item of the instrument to be validated[14]. As the instrument has 20 items, the minimum sample size is 120 individuals. Through convenience sampling, 136 aged individuals (68 women and 68 men) were recruited, all of which were included in the research analysis, without losses or exclusions. A proportion

of eight participants (four men and four women) for each of the 17 FHS units was established.

Identification and contact with the participants were mediated by Nursing professionals from each FHS unit and by Community Health Agents (CHAs), who provided a list with the names of the older adults cared for in the respective service.

Data collection was conducted in the period from November 2015 to February 2016, by a team consisting of two nurses (main researcher and a Nursing master's degree student) and two students attending the seventh period of the undergraduate Nursing course, one being a scientific initiation scholarship holder and the other, a volunteer. The team was trained prior to study conduction. The interviews took place in the FHS private offices or during home visits.

The aged individuals were initially evaluated regarding the selection criteria, which also included application of the MMSE instrument. If the older adult met these criteria, the interview was initiated and the following instruments applied: sociodemographic and clinical questionnaire; UCLA Loneliness Scale version 3[12]; Social Support Medical Outcomes Study (MOS) Scale[16], and Depression Scale of the Center for Epidemiological Studies (CES-D)[17]. The questionnaire prepared by the authors included questions related to age, gender, income, professional and marital status, religion, schooling, number of children, presence of comorbidities, assessment of their own health (optimal, good, fair and poor) and frequency attending religious services in the last 12 months. Each interview lasted a mean of 60 minutes.

The UCLA Loneliness Scale version 3[12] consists of nine items written positively and 11 formulated negatively. The answer options are given in a four-point Likert scale: 1- never; 2- rarely; 3- sometimes; and 4- always. The Likert scale values must be reversed for the positively worded items. The final score varies between 20 and 80 points and the higher the total sum of the answers, the higher the level of loneliness. Scores equal to or greater than 60 points are associated with high levels of loneliness and those between 50 and 59, with a moderately high level of loneliness[5,12].

To evaluate the level of social support, the Medical Outcome Study (MOS) scale was used, translated, adapted and validated for the Portuguese language[16]. It consists of five social support dimensions, namely: material, affective, positive social interaction, emotional and information. For all questions, the answers are given on a five-point Likert scale (1- never; 2- rarely; 3- sometimes; 4- almost always; and 5- always), with minimum and maximum total scores of 19 and 95, respectively. The final score is obtained by the sum of the points totaled by the questions in each of the dimensions and divided by the maximum score of the same dimension. The higher the score, the higher the level of social support[16].

Finally, for the identification of depression symptoms, the Center for Epidemiological Studies – Depression (CES-D) scale was used, translated, adapted and validated for Brazil, consisting in 20 items related to mood, somatic symptoms, interactions with others and motor functioning. The answers are given on a Likert scale that contemplates the following options: never or rarely (0), sometimes (1), often (2) and always (3). The score is the sum of the answers to the items varying from zero to 60, and a score between 12 and 60 indicates presence of depression symptoms[17].

The data were organized in a spreadsheet using Excel® 2007 version with the double-typing technique. These were exported to the Factor, version 10.10.03, developed by Rovira i Virgili University, and Statistical Package for Social Science® (SPSS), version 21.0, statistical programs. To verify the scale's psychometric behavior, construct validity was performed through structural validity and hypothesis analysis, and reliability by means of Cronbach's Alpha[14].

The results obtained for the explanatory variables (sociodemographic and clinical characterization) were analyzed by means of descriptive statistics that included measures of central tendency (mean, median) and variability (standard deviation and interquartile interval: 25th percentile – 75th percentile) for the continuous variables, and relative frequency for categorical variables. The Shapiro-Wilk test was applied to test normality of the explanatory variables, namely: measures of loneliness, social support and depression. The results indicated normal distribution for the three variables.

Structural validity for the UCLA Loneliness Scale version 3, was assessed by means of Exploratory Factor Analysis (EFA) in the Factor program, using a polychoric matrix with the Robust Diagonally Weighted Least Squares (RDWLS) extraction method. Previously, Kaiser-Meyer-Olkin (KMO) measurement of sampling adequacy was performed, whose required score should be greater than or equal to 0.60. A hypothesis test was also made using Bartlett's sphericity, which verifies that the covariance matrix is an identity matrix, and finding out if there are no correlations. In this case, the ideal is that the test is significant and that the null hypothesis is refuted[18].

The decision on the number of factors to be retained was made by means of the parallel analysis technique with random permutation of the data observed and the rotation used was Robust Promin[19,20].

The model's adequacy was evaluated using the Root Mean Square Error of Approximation (RMSEA), Comparative Fit Index (CFI) and Tucker-Lewis Index (TLI) fit indices. According to the literature, RMSEA values should be below 0.08, and CFI and TLI should be above 0.90 or, preferably, 0.95[21].

Pearson's correlation tests were performed on construct validity in the context of the hypothesis analysis, between the UCLA Loneliness Scale version 3 measures and the social support and depression measures. It is emphasized that, prior to verification of the relationships between the variables, it was investigated whether the parametric statistics assumptions were present in the sample. Thus, the Shapiro-Wilk test was used to verify normality and all the variables presented normal distribution. The forces of the correlations were analyzed considering values between 0.20 and 0.49 as of weak magnitude, between 0.50 and 0.79 as of moderate magnitude, and above 0.80 as of strong magnitude[22]. For categorical variables, the t-test was performed

in order to identify possible differences in the UCLA Loneliness Scale version 3 measurements regarding gender and marital status, according to the following hypotheses: 1) absence of statistically significant difference in the level of loneliness between men and women; and 2) older adults without partners present a significantly higher level of loneliness than those with partners.

Reliability was calculated by means of the scale's internal consistency, and that of the items, from Cronbach's alpha coefficient, with values above 0.7 being considered acceptable[23]. A significance level of p≤0.05 was adopted for all the analyses.

The original author if the instrument granted authorization for validation of the scale. In compliance with the recommendations set forth in Resolution nº 466/2012 of the National Health Council, referring to research studies related to human beings, the study was approved by the Research Ethics Committee of the Federal University of Minas Gerais (*Universidade Federal de Minas Gerais*, UFMG) under opinion nº 860.453. Data collection was initiated after signature of the free and informed consent form, with the participants keeping one copy.

RESULTS

Among the 136 older adults who participated in this study, the median age was 70 years old (64-76), and more than half had a partner (78; 57.3%) and were retired (80; 58.5%). Regarding schooling, the median of years of study was four (0-6). In relation to income, the median was 880 *reais* (788-1500), which corresponds to approximately one minimum wage at the time of data collection. The median number of children was four (2-6). In addition to that, the majority declared themselves as Catholics (108; 79.4%) and approximately half of the participants attended religious services once a week (65; 47.8%).

Regarding the older adults' clinical characteristics, the majority stated having some disease (122; 89.7%), and 74.3% reported having Systemic Arterial Hypertension (SAH) and 33.1% Diabetes Mellitus (DM).

Regarding construct validity analyzed through structural validity, the KMO test presented an index of 0.78, considered good. Bartlett's spherical test presented the following values: χ^2 (190) = 1,467.9; p<0.001, which allowed rejecting the null hypothesis and confirming use of the EFA as a method for analyzing the instrument's structural validity.

The parallel analysis showed that the scale is suitable for a unidimensional structure, since, in the scree plot, one factor is responsible for the explained variance of the data (empirical) equal to 43.6% and, therefore, the only one higher than the explained variance of the random (simulated) data (Figure 1).

Analysis of the matrix of factor loads showed values above 0.30 in all the items. Thus, there was no exclusion of items from the UCLA Loneliness Scale version 3. It is emphasized that items 1, 5, 6, 9, 10, 15, 16, 19 and 20 presented a negative factor load (Table 1). The factorial structure presented adequate fit indices (χ^2 = 241.89, *DoF* = 170; p<0.001; RMSEA = 0.056; CFI = 0.971; TLI = 0.967).

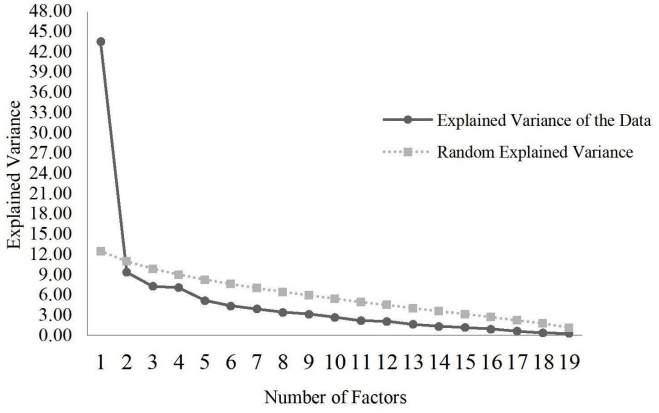

Figure 1. Scree diagram obtained in the Parallel Analysis of the UCLA Loneliness Scale version 3. Divinópolis, Minas Gerais, Brazil.
Source: Prepared by the authors.

In the construct validity assessed by the analysis of hypotheses, no statistically significant difference was identified between the loneliness measure and gender (t = 0.915; p = 0.362), as well as between the loneliness measure and marital status (t = 1.940; p = 0.054).

There was a significant and positive correlation of moderate intensity between the loneliness measure and depression (r = 0.665; p = 0.001); a significant and negative correlation of moderate intensity between the loneliness measure and social support (r = -0.576; p<0.001) and a significant and negative correlation of weak intensity between the social support and depression measures (r = -0.378; p<0.001). These findings indicate that the higher the level of loneliness, the greater the presence of depression symptoms and the lower the level of social support perceived by the older adult.

Regarding reliability of the UCLA Loneliness Scale, version 3, the overall Cronbach's alpha was 0.88, which demonstrated high internal consistency. As for the correlation strength of its items with the total scale, the values obtained varied between 0.26 and 0.65. It was observed that exclusion of each of them provided an alpha varying from 0.87 to 0.88 (Table 2).

DISCUSSION

The results showed diverse evidence of validity and reliability of the UCLA Loneliness Scale version 3. Identifying the level of loneliness in the aged Brazilian population is extremely necessary due to transitions in population aging and because it is a subjective perception. Thus, tools that make it possible to assess loneliness are valuable so that institutional strategies are devised by the health services and professionals to provide individualized health care to the older adult[24].

In order to explore dimensionality of the scale, an exploratory factor analysis was performed, and the best factor solution consisted of extracting a factor, which shows unidimensionality.

Table 1. Exploratory factor analysis of the UCLA Loneliness Scale version 3 with the respective factor loads. Divinópolis, Minas Gerais, Brazil, 2017.

Item	UCLA Loneliness Scale (version 3)	Factor load
1	How often do you feel you that are "in tune" with the people around you?	-0.44
2	How often do you feel that you lack companionship?	0.68
3	How often do you feel that there's no one you can turn to?	0.71
4	How often do you feel alone?	0.61
5	How often do you feel part of a group of friends?	-0.43
6	How often do you feel that you have a lot in common with people around you?	-0.49
7	How often do you feel that you are no longer close to anyone?	0.74
8	How often do you feel that your interests and ideas are not shared by those around you?	0.55
9	How often do you feel outgoing and friendly?	-0.51
10	How often do you feel close to people?	-0.70
11	How often do you feel left out?	0.66
12	How often do you feel that your relationships with others are not meaningful?	0.53
13	How often do you feel that no one really knows you well?	0.51
14	How often do you feel isolated from others?	0.73
15	How often do you fee1 that you can find companionship when you want it?	-0.66
16	How often do you feel that there are people who really understand you?	-0.64
17	How often do you feel shy? (Inhibited/Embarrassed)	0.51
18	How often do you feel that people are around you but not with you?	0.59
19	How often do you feel that there are people you can talk to?	-0.73
20	How often do you feel that there are people you can turn to?	-0.76

When considering the value found for an explained variance equal to 43.6% and the variability of factor loads distributed between 0.43 and 0.76, it is verified that such results, in addition to corroborating the assumptions by the author of the original scale[5], are also in accordance with what is recommended in the literature[25]. Unidimensionality of the instrument was also confirmed by other validation studies in the population of older adults[26,27] and of students[28].

On the other hand, some research studies that also explored the factor analysis results of the UCLA Loneliness Scale version 3, in the aged population identified the presence of more than one factor, being described as a two-dimensional[29], three-dimensional[30,31] and even four-dimensional model[32]. Thus, although the instrument is widely used in the literature, it still does not have a definitive factor structure, which reinforces the importance of results such as the one found in this study.

With regard to the construct validity analysis from the comparison between different groups, no difference was identified between the levels of loneliness by gender and marital status. It was expected that there would be no differences between men and women in the measures obtained by the UCLA Loneliness Scale version 3, and, on the other hand, the existence of differences between older adults who have and those who do not have a partner. The hypothesis of non-existence of differences in the loneliness measure in relation to gender was confirmed, while the hypothesis of the existence of differences between aged individuals who have and do not have a partner was refuted.

In a research study, whose objective was to analyze the relationship between loneliness, depression and satisfaction in older adults, a high level of loneliness was found in women who did not have a partner or who lived alone[2]. In another study, the results indicated that aged men without partners presented higher loneliness scores[3]. Thus, it is inferred that, regardless of marital status, there are other factors capable of influencing feelings of loneliness, mainly based on the informal social support network maintained by the older adults, which supports the self-planning, self-efficacy and self-management abilities[24].

Regarding the results for the correlation between levels of loneliness, social support and depression, it was identified that the greater the level of loneliness, the greater the presence of depression symptoms and the lesser the social support. Similar results were evidenced by the author of the original instrument, who found correlation coefficients varying from -0.48 to 0.52 for social support and depression, respectively[5]. Other studies

Table 2. Items of the UCLA Loneliness Scale version 3 with the overall Cronbach's alpha, correlation coefficient (corrected item-total) and Cronbach's alpha in the absence of any of the scale's items. Divinópolis, Minas Gerais, Brazil, 2017.

Item	UCLA Loneliness Scale (version 3)	Item-Total Correlation	Cronbach's alpha if the item was removed
1	How often do you feel that you are "in tune" with the people around you?	0.26	0.88
2	How often do you feel that you lack companionship?	0.60	0.87
3	How often do you feel that there's no one you can count on?	0.59	0.87
4	How often do you feel alone?	0.53	0.87
5	How often do you feel as if you were part of a group of friends?	0.36	0.88
6	How often do you feel that you have a lot in common with people around you?	0.42	0.88
7	How often do you feel that you are no longer close to anyone?	0.65	0.87
8	How often do you feel that your interests and ideas are not shared by those around you?	0.48	0.87
9	How often do you feel sociable and friendly?	0.31	0.88
10	How often do you feel close to people?	0.49	0.87
11	How often do you feel left out?	0.54	0.87
12	How often do you feel that your relationships with others don't matter?	0.37	0.88
13	How often do you feel that no one really knows you well?	0.44	0.88
14	How often do you feel isolated from other people?	0.61	0.87
15	How often do you feel that you can find company when you want?	0.54	0.87
16	How often do you feel that there are people who really understand you?	0.53	0.87
17	How often do you feel shy? (Inhibited/ Embarrassed)	0.42	0.88
18	How often do you feel that people are around you but not with you?	0.52	0.87
19	How often do you feel there are people you can talk to?	0.55	0.87
20	How often do you feel that there are people you can turn to?	0.59	0.87

using the UCLA Loneliness Scale version 3, also reinforce these results[2,6,30].

Regarding reliability of the UCLA Loneliness Scale version 3, its internal consistency confirmed by Cronbach's alpha revealed the instrument's homogeneity. The value found in this study was very close to the one reported by the author of the original instrument (0.89)[5]. A Spanish study that also performed the reliability analysis of the UCLA Loneliness Scale version 3, found a value of 0.85 in a sample of older adults[29]. Another survey conducted in Canada also found a reliability of 0.85 in individuals aged between 45 and 84 years old[32].

The use of measures that are easy to apply and interpret assists in the accurate identification of loneliness symptoms in older adults, even in cases of care provided by health professionals who are not specialized in mental health. In addition to that, they favor early detection and identification of aged individuals at greater risk of loneliness, which is extremely important in the context of primary care services, whose main focus is based on health promotion and disease prevention.

CONCLUSIONS AND IMPLICATIONS FOR THE PRACTICE

The UCLA Loneliness Scale version 3, presented diverse evidence of validity and reliability for the Brazilian aged population, as recommended by the psychometric manuals. Thus, its use in the clinical evaluation of the older adults can support social, political and assistance changes in health care for the aged population in the Brazilian scenario, in order to favor actions that support a healthier aging process.

However, the limitations evidenced in this study refer to non-reproducibility of all the analyses carried out by the original author of the scale, since the instruments used are not yet validated for Brazilian Portuguese. Data regarding the characteristics of the older adults' social network, including the number of relatives and

non-relatives, mean contact frequency and network density, as well as the Social Provisions Scale, were not evaluated.

However, its use is recommended as a tool to identify the level of loneliness in older adults, so that appropriate strategies and interventions can be implemented by nurses and/or other health professionals, in order to reduce the level of loneliness and increase quality of life, which is consistent with a healthy aging process.

The diverse evidence of validity and reliability of the UCLA Loneliness Scale version 3, is expected to be verified in other contexts, among older adults living in other demographic regions, such as in rural areas, or residents in long-term care institutions or in shared therapeutic residences. It is known that loneliness is a feeling influenced by several factors and, therefore, knowing the specifics will favor future comparisons in different populations.

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Data analysis. Tatiane Prette Kuznier. Fabrícia Moreira Amorim Amaral. Aline Carrilho Menezes. Cissa Azevedo.

Interpretation of the results. Tatiane Prette Kuznier. Tânia Couto Machado Chianca. Fabrícia Moreira Amorim Amaral. Aline Carrilho Menezes. Cissa Azevedo.

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